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COTTON BELT CORRIDOR REGIONAL RAIL PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT/ RECORD OF DECISION (FEIS/ROD)

COTTON BELT

PREPARED BY:
US DEPARTMENT OF TRANSPORTATION (USDOT)
FEDERAL TRANSIT ADMINISTRATION (FTA)
DALLAS AREA RAPID TRANSIT (DART)

IN COOPERATION WITH:
FEDERAL AVIATION ADMINISTRATION (FAA)

COTTON BELT CORRIDOR REGIONAL RAIL PROJECT
DFW INTERNATIONAL AIRPORT TO PLANO, TEXAS
TARRANT, DALLAS & COLLIN COUNTIES, TEXAS
FINAL ENVIRONMENTAL IMPACT STATEMENT

Prepared by
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION
FEDERAL AVIATION ADMINISTRATION (cooperating agency)
DALLAS AREA RAPID TRANSIT

Applicable federal environmental laws, regulations, and executive orders during the environmental review process include, but are not limited to: National Environmental Policy Act of 1969 (42 USC § 4321 et seq.); applicable Federal Transit Laws (49 USC § 5301 et seq.); Department of Transportation Act of 1966, Section 4(f) (49 USC § 303 and 23 USC §138); National Historic Preservation Act of 1966, Section 106 (54 USC § 306108 et seq.); Clean Water Act (33 USC § 1251 et seq.); Endangered Species Act of 1973 (16 USC § 1531 et seq.); Clean Air Act (42 USC § 7401 et seq.); Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USC § 4601 et seq.); the Council on Environmental Quality implementing NEPA (40 CFR Parts 1500-1508) and FTA's regulations on environmental impact and related procedures (23 CFR Parts 771 and 774); Executive Order 11988 (Floodplain Management); Executive Order 11990 (Protection of Wetlands); Executive Order 12898 (Environmental Justice); USDOT Order 561 0.2(a) Environmental Justice); Federal Aviation Administration Authorization Act, Title 49 USC 47107(a)(16); FAA Order 1050.1 F, Environmental Impacts: Policies and Procedures, and Order 5050.4B, the National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions; and all relevant laws, regulations, and procedures of the State of Texas, among others.

by the
U.S. Department of Transportation, Federal Transit Administration
in cooperation with the Federal Aviation Administration
and Dallas Area Rapid Transit

The Federal Transit Administration has issued this single document that consists of the Final Environmental Impact Statement and Record of Decision pursuant to 23 USC 139(n)(2).

For FTA: _____ **Date:** 11/8/18
Robert C. Patrick
Regional Administrator, Federal Transit Administration Region 6,
Lead Agency

For DART: _____ **Date:** 11/9/18
Gary C. Thomas
President/Executive Director
Dallas Area Rapid Transit

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DFW INTERNATIONAL AIRPORT TO PLANO, TEXAS
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by the
U.S. Department of Transportation, Federal Transit Administration
in cooperation with the Federal Aviation Administration
and Dallas Area Rapid Transit

The Federal Aviation Administration has issued this single document that consists of the Final Environmental Impact Statement and Record of Decision pursuant to 23 USC 139(n)(2).

For FAA: _____ **Date:** 11/9/18
Terry L. Biggio
Regional Administrator, Southwest Region
Federal Aviation Administration
Cooperating Agency

For DART: _____ **Date:** 11/9/18
Gary C. Thomas
President/Executive Director
Dallas Areas Rapid Transit

COVER SHEET

Abstract: The Federal Transit Administration (FTA) as the federal lead agency, in cooperation with DART as the local project sponsor, provides this Final Environmental Impact Statement (FEIS) for the Cotton Belt Corridor Regional Rail Project (Project) in Tarrant, Dallas and Collin counties, Texas. The Federal Aviation Administration (FAA) is a cooperating agency for the FEIS. The FEIS for the Project has been prepared in accordance with regulations developed by the Council on Environmental Quality for the National Environmental Policy Act (NEPA) and the U.S. Department of Transportation's Federal Transit Administration (FTA) ***Environmental Impact and Related Procedures (23 CFR Parts 771 and 774)***, as well as FAA Order 1050.1F, ***Environmental Impacts: Policies and Procedures***, and FAA Order 5050.4B, the ***National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions***.

The Project will provide a new 26-mile regional rail line that extends from DFW Airport Terminal B in Tarrant County to Shiloh Road in Plano, providing connections to major activity centers, employment centers, community resources, and other regional transit services. Two alternatives were considered in this FEIS, a No-Build Alternative and a Build Alternative. The FEIS identifies the Build Alternative as the selected alternative. The No-Build Alternative includes transportation and transit projects that have a reasonable expectation of funding and are programmed for implementation. The No-Build Alternative is used as a basis for determining the potential environmental impacts that will be associated with the Project. Impacts are identified in a broad range of environmental categories including but not limited to: land use, transportation, air quality, noise, vibration, visual and aesthetic, ecosystems, hazardous materials, cultural resources, parklands, safety and security, and neighborhoods.

Comments: The Draft EIS was made available to the public for a 45-day review and comment period from April 20, 2018 to June 4, 2018. Three public hearings were conducted during the review and comment period on May 14 (Addison), May 15 (Richardson), and May 16 (Irving). The DEIS was also available at seven local libraries, and on-line at www.DART.org/cottonbelt. Following the DEIS comment period, the DART Board of Directors approved the Project with some changes in response to public and agency comments. The FEIS reflects the Project as approved by the DART Board of Directors. The FEIS also includes revisions to the DEIS, a summary of comments and recommendations received on the DEIS, a list of persons organizations, and agencies commenting on the DEIS; and responses to substantive comments raised in the review and consultation process. Changes to the text of the DEIS are indicated in this FEIS by a vertical line in the margin.

FTA and DART examined the public and agency comments received during the DEIS public circulation period and made a final decision based on the input received to advance the Project for implementation. The FTA and FAA issued a single document that consists of the Final Environmental Impact Statement and Record of Decision pursuant to 23 USC 139(n)(2).

For further information concerning this document, contact the following individuals:

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Additional information on the project can be obtained at www.DART.org/cottonbelt or from DART Community Engagement at (214) 749-2522.

RECORD OF DECISION
on the
Dallas Area Rapid Transit (DART) Cotton Belt Corridor Regional Rail Project
in
Tarrant, Dallas, & Collin Counties, Texas
by the
Federal Transit Administration and Federal Aviation Administration
U. S. Department of Transportation

DECISION

The Federal Transit Administration (FTA) in accordance with 23 Code of Federal Regulations (CFR) part 771, the regulation that governs the federal environmental review process for transportation projects funded by the FTA, has determined that the requirements of the National Environmental Policy Act of 1969 (NEPA) and related federal environmental statutes, regulations, and executive orders have been satisfied for the Cotton Belt Corridor Regional Rail Project in Tarrant, Dallas, & Collin Counties, Texas. The Federal Aviation Administration (FAA), as a cooperating agency, also participated in the NEPA review in accordance with the requirements of the Council of Environmental Quality (CEQ), 40 CFR 1505.2 and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*.

This Record of Decision (ROD) applies to the Preferred Alternative which is described in detail in the Final Environmental Impact Statement (FEIS) for the Cotton Belt Corridor Regional Rail Project. The combined FEIS/ROD was made available by the U.S. Environmental Protection Agency (EPA) and noticed in the Federal Register. In accordance with the Fixing America's Surface Transportation (FAST) Act and 23 United States Code (USC) § 139(n), FTA is issuing a single document that consists of the FEIS and ROD as it has been determined that circumstances, such as changes to the proposed action, anticipated impacts, or other new information, do not preclude issuance of such a combined document. The FAA is jointly issuing this ROD as to the aspect of the Preferred Alternative subject to its jurisdiction, as described below.

The Cotton Belt Corridor Regional Rail Project (herein referred to as the Project) includes 26 miles of regional passenger rail transit operating in an exclusive right-of-way (ROW) with at-grade, depressed, and aerial sections between Dallas/Fort Worth International Airport (DFW Airport) at the Terminal B Station east to the Shiloh Road Station in Plano. The Project traverses through seven cities and includes 10 stations, parking facilities, improved yard and shop facilities at the existing Trinity Railway Express (TRE) Irving Yard, rail vehicles, fare collection equipment, communications and train control systems.

This ROD provides background on the Project's development; describes the alternatives FTA considered; discusses the public opportunity for comment on the Draft EIS (DEIS); explains the basis for FTA's decision; documents compliance with applicable federal environmental laws, regulations, and executive orders; and sets forth the mitigation measures required as part of the decision. This ROD, the DEIS for the Cotton Belt Corridor Regional Rail Project (April 2018), the FEIS for the Cotton Belt Corridor Regional Rail Project (October 2018), and additional information in FTA's files, constitute the FTA environmental record for the Project and are incorporated herein by reference. The brief descriptions included in this ROD provide a summary of the basis for the decision which is based in full on the environmental record.

The project sponsor, Dallas Area Rapid Transit (DART), intends to seek financial assistance from the US Department of Transportation (USDOT) Build America Bureau Railroad Rehabilitation and Improvement Financing (RRIF) program for the Project. If USDOT provides financial assistance for the final design and construction of the Project, FTA will require DART to design and build it

as presented in the FEIS and ROD. Any proposed change to the Project must be evaluated in accordance with 23 CFR §771.130 and must be approved by FTA before DART can proceed.

The FAA has issued this ROD jointly with FTA in accordance with the requirements of the CEQ, 40 CFR 1505.2 and FAA Order 1050.1F. By so doing, the FAA adopts the FEIS. The principal features of this ROD, with respect to the aspect of the Preferred Alternative subject to the FAA's Jurisdiction, include:

- A statement of the FAA's decision;
- An identification of all the alternatives considered by the FAA in reaching its decision with a specification of the alternative that is considered to be environmentally preferable; and
- The means adopted (mitigation measures) to avoid or minimize environmental harm from implementation of the alternative selected.

In reaching its decision, the FAA has given careful consideration to:

- The aviation safety and operational objectives of the Project in light of the various aeronautical factors and judgments presented;
- The anticipated environmental impacts of the proposed action and alternatives;
- Consideration of alternatives to the proposed action, including the environmentally preferred alternative; and
- Mitigation measures to minimize or avoid harm by the proposed action, including the means to monitor and enforce mitigation measures through conditions of approval set forth in the ROD.

The FAA participated in the Project's NEPA review as a cooperating agency because construction of the Project requires the use of airport property. Therefore, the Preferred Alternative requires FAA's approval of a change to the Airport Layout Plan (ALP) at DFW Airport. No ALP changes are planned for Addison Airport. An Airspace Study (FAA Form 7460-1, Notice of Proposed Construction or Alteration) will be completed and provided for FAA approval during the Design-Build phase of the Project. FAA has determined that since the majority of the Cotton Belt Corridor Regional Rail alignment would remain the same, there is no land use change; therefore, a Runway Protection Zone (RPZ) alternative analysis was not required.

The FAA decision is based on information contained in the FEIS and all other applicable documents available to, and considered by the FAA, which constitute the FAA's administrative record. Based on this review, the FAA has determined that the aspect of the FTA's Preferred Alternative subject to the FAA's jurisdiction—the required ALP approval—is the FAA's Preferred Alternative.

PROJECT DEVELOPMENT

A passenger rail corridor concept from the DART Red Line in the Richardson/Plano area to the Green Line in Carrollton was included in the original 1983 DART Service Plan. In 1989, the DART Transit System Plan (TSP) recommended the purchase and preservation of the Cotton Belt Corridor right-of-way from Wylie, Texas, to north Fort Worth, Texas, and the 52-mile corridor purchase was completed in 1990. During the development of the 1995 DART TSP, this corridor was combined with others as alternatives for further study to serve an expanded North Crosstown Corridor.

DART conducted a high-level alternatives analysis and completed an existing conditions report on the North Crosstown Corridor as part of its 2030 TSP. The 2030 TSP identified the Cotton Belt Corridor as a focus area and concluded that by 2030, the North Crosstown Corridor area would experience notable insufficient roadway capacity equivalent to more than 10 freeway lanes. The report indicated that "express" passenger rail service on the Cotton Belt Corridor (from DFW

Airport to the DART Red Line), using 20-minute peak and 60-minute off-peak service, was the most cost-effective and direct route to serve this east-west crosstown corridor. The 2030 TSP identified an implementation timeframe of 2025-2030 when the TSP was adopted in 2006. Following the recession of 2008-2009, the Cotton Belt, as well as several other projects, were deferred to post-2035.

The Cotton Belt Corridor has also been recognized on a regional level and has been included in the North Central Texas Council of Government's (NCTCOG) Metropolitan Transportation Plan (MTP) since 1986. The NCTCOG serves as the Dallas-Fort Worth Metropolitan Planning Organization (MPO).

In October 2008, the Fort Worth Transportation Authority (FWTA; recently renamed as Trinity Metro) completed a DEIS for the section of the Cotton Belt Corridor from DFW Airport to Fort Worth as part of their Southwest-to-Northwest (SW2NE) project (now known as TEXRail). The FEIS was completed in September 2014. Construction began in August 2016 and the project is scheduled for operation in early 2019.

In May 2010, a Memorandum of Understanding (MOU) between DART and the Regional Transportation Council (RTC) Policy Board of the MPO, was executed concerning the identification of funding sources to implement rail service on the Cotton Belt Corridor. The MOU established DART's role to advance the preliminary engineering and conduct an EIS for the Project, and the NCTCOG was to develop a financial plan sufficient to design, build, and implement regional rail service on the Cotton Belt Corridor.

On July 8, 2010, a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the Cotton Belt Project was published in the Federal Register. The FTA was identified as the lead agency and the Federal Railroad Authority (FRA) and the FAA were invited to be cooperating agencies. Scoping meetings were held in July 2010. DART continued to advance the EIS effort while the RTC finance initiative was underway.

The funding MOU with the RTC expired on September 30, 2012, without a substantive financial plan. The RTC/NCTCOG efforts to identify funding did not result in any financial proposals. As a result, DART suspended the NEPA process in late 2012.

In April 2014, DART compiled the data collected and analysis completed during the EIS effort and assembled this information into an *Alternatives and Environmental Considerations Repor*t (AECR). The AECR documented the 5 percent design for the Cotton Belt Regional Rail Project and identified existing environmental conditions and potential impacts along the length of the corridor.

In 2015, DART included the Cotton Belt Corridor in the FY2016 DART Twenty-Year Financial Plan for implementation in year 2035. DART and regional stakeholders continued to discuss methods to accelerate or phase the Project earlier than 2035.

In 2016, DART moved the project schedule forward by more than 10 years as part of its FY2017 Twenty-Year Financial Plan by proposing a phased approach to implementation that would initially include a mostly single-track project and by taking advantage of a new federal loan program called RRIF. Under this program, DART plans to obtain a low-interest federal loan that is specific for regional rail and freight projects.

To support the new project schedule, DART reinitiated preliminary engineering and prepared a DEIS under the original NOI, which includes the identification of environmental impacts, design considerations and cost estimates. DART and the FTA, in cooperation with the FAA, and participation with the FRA, developed the DEIS in accordance with NEPA (42 USC § 4321 *et seq.*) and the regulations implementing NEPA set forth in 40 CFR Parts 1500-1508 and 23 CFR

Parts 771 and 774; and FAA Orders 1050.1F and 5050.4B. The DEIS was made available on April 20, 2018, as notified in the Federal Register and provided for review on DART's website (www.dart.org/cottonbelt) and at local libraries. The DEIS was circulated for a 45-day public and agency comment period between April 20 and June 4, 2018.

On August 28, 2018, the DART Board of Directors approved the Project with some changes in response to public and agency comments on the DEIS, including elimination of two stations and addition of three grade separations. This action and modified Project elements are included in the FEIS. The FEIS addressed the impacts of the Preferred Alternative to human and natural resources, including Project benefits and mitigation measures. The Preferred Alternative is consistent with the goals and objectives developed for the project and it best meets the Project Purpose and Need statement.

ALTERNATIVES CONSIDERED

The FEIS evaluated the No-Build Alternative and Regional Rail Build Alternative based on the Purpose and Need to improve quality of life and how it addresses congestion in the Cotton Belt Corridor. Comments and responses received during the public comment period of the DEIS are included in the FEIS. This ROD describes the Cotton Belt Corridor Regional Rail Build Alternative as both the selected and the environmentally preferred alternative.

No-Build Alternative: The No-Build Alternative includes transportation and transit projects that have a reasonable expectation of funding and are programmed for implementation. The Cotton Belt Project would not be in operation and the existing freight service conditions would continue to exist as it does today and would continue to have standard, routine maintenance over the next 30 years. Travel times would increase over what they are today as congestion increases, and safety and mobility would continue to decline in the area as population increases. Although it does not meet the Purpose and Need of the Project, the No-Build Alternative allowed for the environmental impact analysis to assess the impacts of no action as a comparison to the Build Alternative.

Build Alternative: The selected Build Alternative (Preferred Alternative) includes all the programmed transportation and transit projects contained in the No-Build Alternative, plus the Cotton Belt Corridor Regional Rail Project. The Preferred Alternative consists of a 26-mile regional rail corridor from Terminal B at DFW Airport to Shiloh Road in Plano. The Preferred Alternative is located primarily within the existing DART-owned Cotton Belt Corridor railroad right-of-way. There are four areas where the Preferred Alternative alignment deviates from the railroad corridor: 1) at DFW Airport where the rail will connect to DFW Terminal B and share right-of-way and stations with the Trinity Metro TEXRail Project, which is under construction (DFW Airport Connection); 2) in the Coppell/Dallas area near North Lake to serve the growing Cypress Waters development (Cypress Waters Alignment); 3) near downtown Carrollton, where portions of the existing Cotton Belt Corridor, the existing Madill Subdivision, and the Dallas Garland Northeastern (DGNO) track are realigned to facilitate grade separation of the two rail corridors and maintain connections through this area for freight operations (Downtown Carrollton Reconfiguration); and 4) near the President George Bush Turnpike (PGBT) in Richardson and Plano to serve the growing mixed-use CityLine development (CityLine/Bush Alignment).

At DFW Airport, DART has coordinated the Preferred Alternative with Trinity Metro, the TEXRail Project and DFW Airport. Portions of the Preferred Alternative will be co-located with the TEXRail track in a corridor that has previously been environmentally cleared for the TEXRail Project. On September 29, 2014, both FTA and FAA issued a ROD for the TEXRail Project. On April 16, 2015, FTA issued an amended ROD for project changes off airport property. DART and Trinity Metro are constructing tracks within this corridor and the two projects will share infrastructure. This

infrastructure includes portions of two stations, a culvert over a creek, a bridge over a creek, two roadway bridges over the tracks, and a railroad bridge over a freeway.

Ten new station locations are included in the Preferred Alternative including DFW Airport Terminal B (under construction as part of TEXRail), DFW North (under construction as part of TEXRail), including a future "through" platform that will allow direct east-west movements across the corridor, Cypress Waters, Downtown Carrollton, Addison, Knoll Trail, University of Texas (UT) Dallas, CityLine/Bush, 12th Street (which includes a proposed new infill light rail transit (LRT) station on the existing DART Red Line), and Shiloh Road. All stations will provide parking for transit patrons except DFW Airport Terminal B Station and Knoll Trail Station.

FRA-compliant diesel multiple unit (DMU) technology will be used, and a fleet of eight vehicles will be procured. The new fleet will require an Equipment Maintenance Facility (EMF) to store and maintain vehicles. The existing TRE Irving Yard at 4801 Rock Island Road in Irving was selected for the EMF and will be modified to maintain and dispatch the Project fleet. A layover facility will be constructed in rail ROW on tail track just east of the Shiloh Road Station. The Preferred Alternative also includes the relocation of Mercer Yard, a small freight yard in downtown Carrollton, to a new location east, near Kelly Boulevard in Carrollton.

The 2022 operating plan (initial year of operations) assumes that the Preferred Alternative will operate seven days a week, with 30-minute peak headways and 60-minute off-peak headways. The 2040 operating plan assumes service level increases to 20-minute peak headways.

BASIS FOR DECISION

The FEIS constitutes the detailed statement on environmental impacts for the Preferred Alternative. DART and the FTA, in cooperation with the FAA, and participation with the FRA, prepared the EIS in accordance with NEPA and the regulations implementing NEPA set forth in 40 CFR Parts 1500-1508 and 23 CFR Parts 771 and 774 and FAA Orders 1050.1F and 5050.4B.

The Cotton Belt Corridor Regional Rail Project lies within the North Crosstown Corridor, which has long been identified as a heavily congested area in need of additional capacity and mobility solutions. The Project's primary purpose is to provide passenger rail connections that will improve mobility, accessibility and system linkages to major employment, population and activity centers in the northern part of the DART Service Area and support sustainable growth, local and regional land use visions, and economic development. Specific transportation needs identified for the Cotton Belt Corridor are to improve transit travel times by providing an alternative to congested roadway networks, provide reliable connections between the existing and proposed transit systems, improve accessibility to employment, activity centers and residential areas in the corridor, and promote sustainable development patterns in the Study Area. The Study Area is generally a 0.25-mile buffer of the alignment and a 0.5-mile buffer around station locations.

In addition to the above Purpose and Need, the following goals for the Cotton Belt Corridor Regional Rail Project have been identified:

- Enhance corridor mobility and accessibility
- Reduce Vehicle Miles of Travel (VMT)
- Promote economic development and sustainable land use patterns
- Provide an environmentally-sensitive transit investment

The information in the FEIS provided the basis for the public, agencies and decision-makers to assess the potential environmental consequences, benefits, and costs of the alternatives against the project goals. The No-Build Alternative would not achieve the purpose or needs identified in the corridor and would not fulfill the project goals.

The Preferred Alternative will meet the Purpose and Need identified in the corridor. The Preferred Alternative will be designed to provide a high-speed, reliable transit option for residents and commuters in the corridor with convenient connections to existing and planned transit systems. The Preferred Alternative will create an east-west connection of three LRT lines, a major bus transit center, and one regional rail line, thus enhancing regional connectivity and providing an improvement over east-west transit travel times in the corridor. These connections will improve mobility, accessibility and system linkages to major employment, population and activity centers in this part of the DART Service Area. The Preferred Alternative will also offer opportunities to connect with the proposed future regional rail corridor between Frisco and Irving, and a potential southern extension of the Denton County Transportation Authority (DCTA) A-Train, with connections in downtown Carrollton. The Preferred Alternative will support sustainable growth, local and regional land use visions, and economic development opportunities around station areas, which is consistent with local and station area land use plans.

The Preferred Alternative will fulfill each of the Project goals. Corridor mobility and accessibility will be improved through direct connections to key transit facilities, including the Orange Line and future TEXRail at DFW Airport, the Green Line in downtown Carrollton, bus transit at Addison Transit Center, and the Red/Orange Lines at both CityLine/Bush and 12th Street. These connections will enhance mobility options for residents of the region to access activity and employment centers within the Study Area and will provide more direct linkages for Study Area residents to access other areas for entertainment, education or jobs. DFW Airport will have a direct connection for this growing area of the region. More than 11,000 riders per day will use the Preferred Alternative. Transit ridership will increase on both the bus and rail systems, with 7,400 added trips regionally. The Preferred Alternative will provide an additional transportation option for the numerous special events in the Study Area, potentially reducing parking and event congestion on roadways.

Compared to a No-Build condition, the Preferred Alternative will also reduce VMT by nearly 80,000 miles per day within the DART Service Area. Hours of congestion delay will be reduced by 3,800 hours per day. Both factors contribute positively to air quality. Transit capacity will be improved by adding regular service seven days a week. Compared to auto and bus travel, the Preferred Alternative will operate on an exclusive guideway that will not be subject to incidents and traffic congestion.

The Preferred Alternative will promote economic development and sustainable land use patterns. The Preferred Alternative will be consistent with both local and regional station area and comprehensive plans, which focus on new development around stations to enhance access to jobs, a more sustainable development pattern and livable communities. The Preferred Alternative will continue to provide opportunities for DART and local and regional agencies to coordinate economic and transit-oriented development.

Lastly, the Preferred Alternative will support the goal of providing an environmentally-sensitive transit investment. The Preferred Alternative will be developed to minimize negative impacts to the community through sensitive design. Where impacts are identified, mitigation will be provided to ensure the Preferred Alternative will be implemented in a manner that is sensitive to neighborhoods. The Preferred Alternative will also have minimal impacts to the natural environment, as it will be located primarily within an existing rail right-of-way. There will be some vegetation removal for construction and limited amounts of fill for bridges.

The adverse social, economic, and environmental impacts of the Preferred Alternative are commensurate with its transportation benefits. Where impacts cannot be avoided, they will be minimized as discussed in the FEIS and summarized below.

BASIS FOR THE FAA'S DECISION

The purpose of the FAA's ALP approval in connection with the FTA's proposed implementation of the Cotton Belt Corridor Regional Rail Project is to ensure the proposed alterations to the airport would not adversely affect the safety and efficiency of aircraft operations. Under 49 USC 47107(a)(16), the FAA Administrator (under authority delegated from the Secretary of Transportation) reviews and approves or disapproves any revision or modification to an ALP that materially impacts the safe and efficient operation of aircraft at, to, or from the airport; adversely affects the safety of people or property on the ground adjacent to the airport as a result of aircraft operations; or adversely affects the value of prior Federal investments to a significant extent.

As discussed below, DART will coordinate with the FAA to evaluate and monitor the vibration impacts of the Project on navigational aids. This continuing evaluation relates to the Project's potential to materially impact the safe and efficient operation of aircraft at, to, and from DFW, necessitating the FAA's approval of the ALP change. The ongoing evaluation will ensure the continuing safety and efficiency of aircraft operations.

PUBLIC AND AGENCY INVOLVEMENT AND OPPORTUNITY TO COMMENT

Public and agency involvement activities officially started with the publication of the NOI to prepare an EIS for the proposed Cotton Belt Corridor Regional Rail Project. The NOI was issued in the Federal Register by the FTA on July 8, 2010. The public scoping meeting was held on Thursday, July 29, 2010, at 6:30 p.m. at the Addison Conference Center. DART held an Interagency Scoping Meeting on July 28, 2010. Numerous federal, state, tribal, regional and local agencies were invited to provide input during the scoping process. In August 2016, DART relaunched the Project and EIS documentation efforts.

A variety of methods and tools were used to solicit input, ranging from regular DART Board of Directors meetings, federal agency meetings, city and stakeholder coordination meetings, and formation of specific Area Focus Groups (AFGs) along the corridor. Four AFGs (DFW Airport/Coppell/Cypress Waters, Carrollton/Addison, North Dallas, and Richardson/Plano) were established after project scoping and reconvened in early 2017 to provide input and assist with resolving issues and developing support for the Preferred Alternative. These AFGs, which consist of residents, property owners, schools, and other community leaders representing a variety of interests, reviewed the recommendations relative to the environmental analysis and preliminary design of the Preferred Alternative. A web page and project email address were also established for the Preferred Alternative. The website is a comprehensive source of project information.

In August 2016, DART relaunched the public process for the Preferred Alternative with a series of public meetings held along the Cotton Belt Corridor. DART has hosted four sets of public meetings (May 2017, August 2017, November/December 2017, and March 2018 in North Dallas only) to present information to the public, as well as receive input from the affected community. A Facebook Live public meeting was held on March 15, 2018, which had nearly 14,000 views. Public meetings were tailored to meet community needs and have occurred in accordance with project milestones. Meeting presentation materials, technical information, and documentation of the meeting summaries were posted to the project website after each meeting.

For public meetings, a variety of outreach methods were used. As DART sought meaningful public input specific to the Environmental Justice (EJ) communities, a special effort was made to involve these communities. EJ inclusion efforts included bilingual advertisements and publications, outreach to minority organizations, and material distribution within EJ communities.

DART also held four public hearings for the Preferred Alternative. One was held on March 27, 2018, for the Service Plan amendment, and three were held on May 14, 15, and 16, 2018, to

receive comments on the DEIS. DART also held a Sound Wall Demonstration in the north Dallas area from July 31 to August 4, 2018, to illustrate the height options of the noise barriers.

In addition to the public engagement, numerous meetings were held with federal agencies (FTA, FAA, FRA); state agencies (Texas Department of Transportation, Texas Historical Commission); regional agencies (NCTCOG, DFW Airport, Trinity Metro, and DCTA); local agencies (cities of Grapevine, Coppell, Carrollton, Addison, Dallas, Richardson, and Plano); and other stakeholders. These on-going meetings will continue throughout final design and construction. In addition to the above, coordination during the NEPA process occurred with the following federal agencies: EPA; U.S. Army Corps of Engineers (USACE); U.S. Department of the Interior, Bureau of Indian Affairs; Federal Emergency Management Administration (FEMA); Federal Highway Administration (FHWA); U.S. Department of Housing and Urban Development; and U.S. Fish and Wildlife Service (USFWS).

The DEIS was made available to the public, stakeholder organizations, and local, regional, state and federal agencies for a 45-day comment period from April 20, 2018 (when notice of the availability of the document was published in the Federal Register) to June 4, 2018. Comments were transmitted in several ways including in written communications (letters, email communications, and comment cards filled out at public hearings) and by people testifying at public hearings. All correspondence, along with the transcripts from the public hearings, has been reviewed. All comments were reviewed and have received complete responses.

Within the comment period, DART and FTA received 119 distinct communications from agencies, Project stakeholders, and the general public on the DEIS. Commenters included elected officials, federal, state, and regional agencies, plus individuals. Some individuals commented in more than one format. One petition, signed by 90 individuals, was received.

DART also followed the public involvement process as outlined in Section 2(d) of Executive Order (EO) 11988 Floodplain Management. In compliance with EO 11988, public notice was included as part of the local advertisements for the DEIS public hearings. No individuals commented on the floodplain encroachment at DFW Airport or if the Preferred Alternative would affect human life, safe airport operations, aircraft services, or the natural and beneficial floodplain values.

The FEIS includes a summary of comments and responses. FEIS Appendix J documents all comments received on the DEIS. This appendix is organized with 1) responses to comments; 2) written elected official/agency comments received on DEIS; 3) written public comments on DEIS; and 4) public hearing summary and transcripts.

The availability of the FEIS/ROD will be announced in the Federal Register. The notice of availability (NOA) will also be announced in local media and newspapers.

MITIGATION MEASURES TO MINIMIZE HARM

The Preferred Alternative's effects on the existing social, environmental, economic, and transportation environment in the Study Area were assessed in the FEIS in coordination with the public and interested agencies. DART will implement, as necessary, all mitigation to which the FEIS commits and will coordinate with the public and agencies during the Design-Build phase as stipulated in the FEIS. The mitigation measures and other project features that avoid or reduce adverse impacts are incorporated into the Preferred Alternative and are summarized in Attachment A, "Summary of Mitigation Measures." The FEIS provides a complete description of these mitigation measures and design features.

DART will design and build the Preferred Alternative in accordance with the mitigation measures contained in the FEIS and documented in Attachment A. DART will establish a Mitigation Monitoring Program (MMP) to ensure communication of mitigation and design commitments to

the Design-Build team, and to provide a means for DART and FTA to track the progress in accomplishing the mitigation commitments. The MMP will be implemented and monitored by DART through quarterly updates of the MMP. Following is a summary of key mitigation measures of interest to the community. Attachment A includes a complete list.

Acquisitions and Displacements Mitigation: All acquisition of property will adhere to the DART Board of Directors' Real Estate Policy and Procedures, adopted August 25, 1987, and modified in October 2000. These policies and procedures adhere to all federal guidelines regarding acquisition and relocation assistance including the Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA) of 1970 (42 USC § 4601 et seq.). For all real property acquired, DART compensates the property owner for the fair market value of their property and for damages to any remaining parcel(s). Relocation benefits are provided for all businesses and residents (owner occupants and tenants) that are displaced by acquisition.

The use of DFW Airport land to build and operate the Preferred Alternative will be gained through a Public Mass Transit Easement agreement between DART and DFW Airport. DFW Airport will be compensated fair market value for the use. A release from federal obligations and land use requirements is not anticipated.

Visual Mitigation: DART will design a complementary structure next to the Addison Wheeler Bridge. In addition, to minimize visual impacts, DART will provide mitigation using strategies such as preserving existing vegetation to the greatest extent possible and installing landscaping at intervals of approximately 120 to 150 feet along residential areas. During final design, DART will conduct a visual screening location assessment and provide it to the Design-Build contractor to develop a corridor landscape plan.

Coordination by DART with DFW Airport will ensure compliance with development guidelines as the design progresses. Any project lighting will be designed to ensure compliance with DFW Airport development guidelines and will be compatible with approved and installed developments of similar elevation and distance from the airfield.

Noise Mitigation: DART will eliminate noise impacts by implementing quiet zones at 34 at-grade crossings, installing a total of 22,250 lineal feet (4.21 miles) of approximately 15-foot high noise barriers (from top of rail) in 20 sections adjacent to the tracks near locations with noise impacts. Noise from grade crossing bells at seven locations will be mitigated by adjusting the bell volume to the minimum industry standard level of 75 noise decibels (dBA) at 10 feet or by installing acoustic shrouds covering the back half of the bells. While a 12-foot noise barrier is sufficient to mitigate noise, walls will be 15 feet to also serve as a visual screening where both noise barrier walls and visual mitigations are required. DART will reevaluate the noise analysis during final design to determine if additional sound absorption treatments may be necessary along any portion of the walls. Furthermore, the draft specifications for the vehicle include wheel skirts that may dampen noise generated by the train. Vehicle specifications also address enclosures, baffles, seals, acoustical absorption, body panels with adequate sound transmission loss, vibration isolators, or other appropriate methods that will be incorporated into the vehicle design to lessen noise and vibration generated by wheels, rails, engines, motors, and all elements and equipment. Lastly, DART will monitor wear of the tracks and implement a maintenance program that will be established to include rail grinding at appropriate intervals to prevent the incremental increase in Project noise.

Vibration Mitigation: Vibration impacts identified at nine residential locations will be mitigated by installing 2,850 lineal feet of tire derived aggregate (TDA) material beneath both tracks at three locations along the alignment. While the FTA impact threshold for determining vibration impact is 72 vibration decibels (VdB) for Category 2 (residential) land use, the City of Dallas, City of Carrollton and residents along the corridor raised concern over the applicability of mitigating the

72 VdB standard in the Preferred Alternative given limited data available for the new technology vehicle that will be used for this corridor. Therefore, DART is using a more conservative threshold of 65 VdB. As a result, TDA will be installed beneath both tracks at 10 additional locations along the alignment resulting in additional 8,600 feet of TDA, for 11,450 total feet. DART will also conduct detailed, site-specific vibration studies at three community facilities (UT Southwestern Medical Center Clinic, the Qorvo facility, and the Texas Instruments facility in Richardson) during project design to make a final determination regarding impact and any required mitigation.

FINDINGS AND DETERMINATIONS UNDER OTHER ENVIRONMENTAL LAWS

The following describes FTA and FAA findings and determinations, or findings and determinations related to the Preferred Alternative made by other agencies, regarding other environmental laws that pertain to the Preferred Alternative.

Clean Air Act: The Clean Air Act (CAA) Amendments of 1990, 42 USC § 7401-7671, et seq., establish federal policy to protect and enhance the quality of the nation's air resources to protect human health and the environment. The CAA and the EPA's Transportation Conformity Rule (40 CFR § 93.104) require that proposed transportation projects must be found to conform to the State Implementation Plan (SIP) before they are adopted, approved, or funded by FTA or the FHWA. The SIP is a state's comprehensive plan to clean the air and meet the federal National Ambient Air Quality Standards (NAAQS). Transportation conformity under the CAA requires mass transit projects to conform to the applicable SIP, and transportation activities cannot cause new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS. The project is consistent with the DFW metropolitan area's financially constrained and conforming MTP and the SIP. The DMU vehicles that will be operated within the Preferred Alternative will also comply with EPA's air quality standards for non-road diesel engines as set forth in 49 CFR Part 89.

Section 106: Section 106 of the National Historic Preservation Act (NHPA) of 1966 (54 USC § 306108 et seq.), as amended (16 USC 470 et seq.) and its implementation regulations (36 CFR 800), requires federal agencies to take into account the effects of their undertakings on historic properties and afford the public, consulting parties, the State Historic Preservation Officer (SHPO) at the Texas Historical Commission (THC), and the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.

No archaeological resources will be disturbed by the Preferred Alternative. If archeological resources are discovered during construction, all construction activities will cease in the area and be monitored by a certified historian or archeologist. Work will not proceed until additional review and clearance by the THC has been completed. One area that will require additional testing prior to construction is for relocation of two towers for the Cypress Waters alignment. Additional design and siting of the relocated towers is necessary before additional archeological efforts can begin. This will occur during final design efforts.

As a result of Preferred Alternative review, FTA determined and the SHPO concurred that relocating and reusing the White Rock Creek Railroad Bridge will have an adverse effect on the resource per the NHPA Section 106 regulations. DART will replace the existing National Register of Historic Places (NRHP) eligible bridge with a new bridge which will accommodate a double track structure, in order to provide a safe and reliable operation for the proposed passenger train. The NRHP eligible bridge will be relocated over the same creek to an area approximately 30 feet northeast of its current location within the Preferred Alternative right-of-way, thus allowing the existing structure to be reused as a pedestrian/bike trail bridge for the proposed Cotton Belt Regional Trail. Converting the bridge from a rail transit resource to a pedestrian transportation resource will extend its life and could provide further opportunities for interpretation of the history of the bridge.

A Memorandum of Agreement (MOA) has been executed between the SHPO, FTA and DART to document the review process and mitigation measures for the White Rock Creek Bridge. The MOA also details the actions to be taken by DART if an unanticipated discovery of resources is made during construction. The MOA is included in the FEIS as Appendix I. On February 26, 2018, FTA informed the ACHP of the adverse effect on White Rock Creek Bridge and invited them to participate in the MOA. The ACHP declined to participate in a letter to DART on March 5, 2018.

Section 4(f)/6(f): Section 4(f) of the USDOT Act of 1966 (codified at 23 CFR § 138 and 49 USC § 303) and its implementing regulations codified at 23 CFR Part 774 protects publicly-owned parks and recreation areas, as well as wildlife and waterfowl refuges and historic sites, and directs the conditions under which such properties may be used by transportation projects. Properties may only be used if:

1) there is no prudent and feasible alternative to using that land; and,

2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965, as amended, (16 USC 4601-4 et seq.) protects recreational lands purchased or improved with LWCF program funds.

The Preferred Alternative intersects or is adjacent to eight Section 4(f) resources. Two of the eight Section 4(f) resources, the historic White Rock Creek Bridge and the Spring Creek Trail, required evaluation under Section 4(f). The FTA has determined that Section 4(f) does not apply to the White Rock Creek Bridge because the relocation of the bridge is a transportation enhancement that will result from mitigation as specified in 23 CFR 774.13(g). On March 26, 2018, FTA consulted with the SHPO regarding the 4(f) exception. The SHPO, as the official with jurisdiction over the resource, concurred with FTA's determination to apply this exception. This consultation is documented in the FEIS Appendix G. An MOA has been prepared between the SHPO, FTA and DART to document the mitigation measures and review process for the White Rock Creek Bridge.

The City of Richardson Spring Creek Trail is a 12-foot-wide multi-use hike and bike trail on the City's comprehensive transportation and open space parks plan that provides a significant route for transportation bike commuters to safely travel under US 75. The Preferred Alternative's CityLine Alignment will intersect with the Spring Creek Trail at two locations and displace approximately 150 linear feet of the Spring Creek Trail near Alma Road and approximately 100 linear feet of trail approximately 1,500 feet east of Alma Road. As a result, another 1,500 feet of the trail will be severed by the Preferred Alternative. As mitigation, DART will rebuild the displaced portion of the trail within the new right-of-way, parallel to and south of the new tracks, reconnecting the trail connection at Alma Road to the untouched portion of the trail 1,500 feet to the east. A new pedestrian structure over Spring Creek will be constructed to accommodate the relocated trail.

FTA has made a *de minimis* impact determination following circulation of the DEIS and its 45-day public comment period. Additionally, the Spring Creek Trail realignment and Section 4(f) use was presented in a series of public meetings for the Preferred Alternative. On December 4, 2017, the City of Richardson provided a letter that stated support for the Preferred Alternative and use of the Spring Creek Trail. Chapter 26 of the Texas Parks and Wildlife Code was also considered in that there is no feasible and prudent alternative to the use, and the Preferred Alternative includes all reasonable planning to minimize harm to the trail, resulting from the use. The City of Richardson advertised a public hearing in June 2018 and held a public hearing in compliance with Chapter 26 on July 9, 2018. The City of Richardson passed a resolution which allows the use of

the Spring Creek Trail for the CityLine/Bush Alignment. As mitigation, DART will stage construction to maintain access to the Spring Creek Trail. This will be accomplished by first building the new portions of trail before severing the existing trail. Coordination between DART, its contractor, and the City of Richardson will be required to develop detours and/or construction methods to limit or minimize temporary closures to Spring Creek Trail.

Two parks within the Study Area qualify as 6(f) properties; neither property will be affected by the Preferred Alternative.

Endangered Species Act: The Endangered Species Act of 1973, 16 USC §1531 et seq., requires federal agencies, in consultation with the USFWS and the U.S. National Oceanic and Atmospheric Administration, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed plant or animal species or result in the destruction or adverse modification of designated critical habitat of such species. Additional federal laws applicable to this project include the Migratory Bird Treaty Act of 1918, and Magnuson-Stevens Fishery Conservation and Management Act of 1976. Texas Parks and Wildlife Department (TPWD) maintains a Texas Natural Diversity Database (TXNDD) on rare, threatened, and endangered species, natural communities and other significant features of conservation concern to TPWD.

The Study Area is mostly urban and suburban in nature. Most wildlife species inhabiting the Study Area would be anticipated to be those which are generally associated with these types of areas. No designated critical habitat or preferred habitat for any federally-listed species was identified within or near the Study Area. Fourteen state-listed threatened species could occur in the Study Area. Twenty state-listed species of concern could occur within the Study Area counties, however only one of these, the Texas garter snake (*Thamnophis sirtalis annectens*) has a TXNDD element of occurrence record, located approximately seven miles north of the Study Area.

Site planning and construction techniques will be designed to avoid and preserve existing mature native trees and shrubs to the greatest extent. To enhance the value of the Preferred Alternative to both wildlife and the community, and to aid in water conservation, native vegetation beneficial to fish and wildlife will be used by DART. To avoid soil disturbances, machinery and other vehicles will utilize nearby roadways and bridges when crossing drainages, wetlands, and creeks. DART will reduce or eliminate impacts to riparian hardwood forest as well as floodplain hardwood forest and adjacent upland woodlands. Replacement vegetation will utilize native species that are generally useful to wildlife. The replacement vegetation can provide habitat for numerous wildlife species. Areas of re-vegetation will be monitored to ensure that plantings are established to their original condition.

Due to the abundance of available habitat within and adjacent to the Preferred Alternative, the potential impacts to the riparian areas within the Study Area are not anticipated to adversely impact the Texas garter snake. However, per best management practices (BMPs), contractors will be advised of potential occurrence in the Study Area, and to avoid harming the species if encountered.

On DFW Airport property, any new landscaping or replacement vegetation will use recommended vegetation that will not attract hazardous wildlife to comply with FAA and DFW Airport design criteria.

The Preferred Alternative includes a number of river or stream crossings. In accordance with TPWD recommendations for the Preferred Alternative, the use of BMPs will avoid or minimize water quality impacts to these water bodies, thus avoiding significant impacts to aquatic species. As a precautionary measure, Freshwater Mussel BMPs will be included in the MMP. DART will avoid placement of temporary fills, culverts or structures into waters serving as suitable habitat for freshwater mussels. If construction should occur during times when water is present and

dewatering, fill or trampling activities are involved, then DART will relocate potentially impacted native aquatic resources in conjunction with a *Permit to Introduce Fish, Shellfish or Aquatic plants into Public Waters* and an Aquatic Resource Relocation Plan (ARRP). DART will coordinate with TPWD Kills and Spills Team (KAST) for appropriate authorization if work is required within streams.

As prescribed in the DART General Provisions for LRT construction contracts, Item 52 Protection of Existing Site Conditions, the contractor shall, "preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site which are not to be removed and which do not unreasonably interfere with the work required under this contract." Re-vegetation of disturbed areas will also be planned to avoid invasive species gaining footholds on disturbed soils as directed in EO 13112.

Executive Order 11988: EO 11988, "Floodplain Management and Protection", and USDOT Order 5620.2 state that a federal agency may not approve an alternative involving a significant floodplain encroachment unless a federal agency can make a finding that the proposed encroachment is the only practicable alternative.

The Preferred Alternative spans or borders the following flood zones: Cottonwood Branch, Grapevine Creek, Elm Fork of the Trinity River, Hutton Branch, Perry Branch, White Rock Creek, McKamy Branch, Cottonwood Branch, Prairie Creek and Spring Creek. There are 1,344 acres of 100-year floodplain, 387 acres of 500-year floodplain, and 33 acres of 0.2 percent chance flood hazard within the Study Area. No station locations lie within 100-year floodplain.

FEMA has regulations governing alterations or development within floodplains shown on Flood Insurance Rate Maps (FIRM). Under FEMA regulations, no alterations of flood zones can result in an increase in the 100-year base flood elevation or cause an increase in the velocity of floodwaters. In addition, the cities have their own floodplain ordinances, and DFW Airport is responsible for issuance of construction permits on airport property. It would also be necessary to coordinate with the USACE on the issue of fill in any floodplains, streams, or wetlands. While a Nationwide Permit might suffice for the construction of an aerial structure above the floodplain, an Individual Permit may be required if permanent or short-term construction impacts occur in associated streams or wetlands. This will be determined with the development of engineering details during final design.

Current design proposes that all floodplain crossings be bridged, limiting direct impacts to the floodplain to minor amounts of fill associated with retaining walls and structures associated with the Preferred Alternative.

A Trinity River Corridor Development Certificate (CDC) is required for projects located within the Trinity River Regulatory Zone and is intended to minimize flood risk by regulating development within the Trinity River Corridor in North Central Texas. The Trinity River Regulatory Zone is consistent with the 100-year floodplain for the Trinity River, of which the Elm Fork of the Trinity River is crossed by the Preferred Alternative. Under the CDC process, local governments retain ultimate control over floodplain permitting decisions, but other communities along the Trinity River Corridor are given the opportunity to review and comment on projects in their neighbor's jurisdiction.

Section 408 of the Clean Water Act requires that projects which would take possession of, use, or cause injury to harbor or river improvements be reviewed and approved by the USACE. No facilities subject to Section 408 have been identified within the Study Area.

With regard to floodplain impacts, DART will continue to coordinate with the USACE, DFW Airport, and the cities of Dallas, Fort Worth, Carrollton, Grapevine, Richardson, Plano, and the Town of Addison during final design. The Preferred Alternative design will require review and approval,

and will include any mitigation measures that may be required. Preliminary coordination with the USACE has been initiated to document the expected permits and mitigation needs. Permit authorization will occur after the FEIS/ROD and into final design as more design details are known but will be available for public review. DART followed the public involvement process as outlined in Section 2(d) of EO 11988 Floodplain Management. In compliance with EO 11988, public notice was included as part of the local advertisements for the DEIS public hearings. No individuals commented on the floodplain encroachment at DFW Airport or if the Preferred Alternative would affect human life, safe airport operations, aircraft services, or the natural and beneficial floodplain values.

FTA and FAA find that the Preferred Alternative's encroachment on floodplains has been minimized to the extent practicable and that the remaining encroachments represent the only practicable alternative. A detailed hydrologic/hydraulic analysis will be conducted during final design to ensure that that the project will not result in a significant encroachment in a floodplain as defined in DOT Order 5650.2. In addition, DART will continue to follow all requirements and remain in contact with FEMA's Local Floodplain Administrator during final design and construction to further explore design measures to reduce floodplain encroachments.

Executive Order 11990: EO 11990, "Protection of Wetlands", establishes standards for evaluating actions by federal agencies within protected wetland areas. The USACE is authorized by Section 404 of the Clean Water Act to regulate all activities associated with impacting waters of the U.S. including wetlands. EO 11990 is implemented by USDOT Order 5660.1A which requires USDOT agencies to avoid undertaking or providing assistance for new construction located in wetlands unless the agency finds: (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result.

The Preferred Alternative will cross from west to east: Grapevine Creek (three crossings), Cottonwood Branch (two crossings), Elm Fork of the Trinity River, two unnamed tributaries to Hutton Branch, Hutton Branch, Perry Branch, an unnamed tributary to White Rock Creek, White Rock Creek, McKamy Branch, McKamy Branch East Fork, Prairie Creek, Spring Creek, and an unnamed tributary to Spring Creek. In addition, North Lake is immediately adjacent to the centerline at the Cypress Waters alignment. Three wetlands are crossed by the centerline (west of Elm Fork Floodplain, near Luna Road, and west of downtown Carrollton). Several of these water resources lie adjacent to the Preferred Alternative but will be avoided. To minimize filling of the water resources, the preliminary designs indicate that all potential jurisdictional waters of the US will be bridged.

Impacts to water resources from construction of the Preferred Alternative will primarily be from placing support columns for bridge structures within the ordinary high water mark (OHWM) of each water body. The quantities of impacts are estimated by the size and number of support columns in each location. No additional impacts to water bodies will occur. Given the current design of the Preferred Alternative, the permanent impacts appear to be limited to the stream crossings where bridge columns would be placed in the water bodies. These bridge column impacts would total approximately 1.32 acres.

The remaining bodies of water lie adjacent to the proposed location of construction and will not receive any direct impacts. However, indirect impacts could occur via surface water runoff, which may transport sediment into these water bodies.

No wetlands were identified in the station areas or at Mercer Yard. No wetlands were identified at the proposed EMF site at the existing TRE Irving Yard, which will be expanded to accommodate the Cotton Belt Corridor Regional Rail DMU vehicles.

During final design, DART will continue to investigate reducing both the direct and indirect impacts to wetlands. DART will coordinate with USACE on all waters of the US and wetlands issues. Any changes developed during final design will be tracked and adjusted through DART's MMP. Consultation with the USACE has been initiated to document the expected permits and mitigation needs. Additionally, the Preferred Alternative is identified as a regionally significant project that can benefit from expedited review under the Section 214 program of the Water Resources Development Act (WRDA) Program which includes an MOA between NCTCOG and USACE to support expedited review and cost savings to major projects. The program was extended in the fall of 2016 to December 31, 2019. DART participates in the program and will inform NCTCOG when project permitting is initiated to take advantage of the program.

All Project facilities located within wetlands will be designed to comply with USACE Section 404 regulations, and DART will comply with all applicable regulations governing construction in wetlands. FTA and FAA find that the Preferred Alternative's impact to wetlands has been avoided or minimized to the extent practicable and that the remaining impacts represent the only practicable alternative. During final design and construction, DART will continue to further explore design measures to reduce wetland impacts.

Executive Order 12898: EO 12898, "Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations", requires Federal agencies to ensure that disproportionately high and adverse human health or environmental effects of proposed Federal projects on minority and low-income communities are identified and addressed.

The EJ communities in the Preferred Alternative corridor are generally located around stations; therefore, these communities will have the benefit of improved access to the regional transit system and major employment/activity centers. While there are limited impacts in the EJ areas, they will be mitigated consistently with other areas along the corridor. Impacts are not disproportionate compared to non-EJ areas: minimal visual impacts and noise and vibration impacts are anticipated to occur along the alignment both in and outside of EJ population areas. In addition, DART staff has documented public participation efforts to ensure full and fair participation by all potentially affected communities in the transportation decision making process. Therefore, no mitigation is needed or required to address EJ concerns.

Based on the evaluation in the FEIS, FTA and FAA has determined that the adverse health and environmental effects of the project will not be disproportionately borne by minority or low-income populations.

Conformance with 49 USC 47107 (Airport Improvement): The FAA finds that approval of the revised ALP for DFW Airport, depicting the proposed changes described in the FEIS, is consistent with the requirements of 49 USC 47107(a)(16). The proposed alterations will not adversely affect the safety and efficiency of the operation of aircraft at, to, or from DFW Airport. However, as discussed below, DART will coordinate with the FAA to evaluate and monitor the impact of vibrations on navigational aids. This ongoing evaluation will ensure the continuing safety and efficiency of aircraft operations.

Vibration Impacts Regarding ASR-9: FAA identified the existing Area Surveillance Radar (ASR)-9 facility located approximately 400 feet from the TEXRail and DFW Airport Preferred Alternative alignments as a potential vibration impact site. During the TEXRail assessment, potential vibration impacts at the ASR-9 radar facility were analyzed based on vehicle technology, number of train cars, and projected train speeds near the ASR facility.

In October 2018, as part of its study and evaluation of the ASR-9, the FAA utilized the Radar Analysis Support System tool to measure the vibration or "jitter" in the antenna pedestal group. The FAA also studied and evaluated the operational system software and performed data

recordings to ensure the radar is performing within its operational tolerance and at an operational capability equal to or better than before the installation of TEXRail and the operations thereon. FAA's study and evaluation determined that TEXRail will have no impacts to the ASR-9 facility. DART will coordinate with FAA to conduct similar analysis on the Cotton Belt operations. DART will also coordinate with FAA to study, evaluate, and as necessary, conduct further vibration testing once test rail operations have commenced on the Preferred Alternative.

If Cotton Belt vibration testing indicates potential for Project impacts, mitigation measures will be identified through implementing the following process:

a) In the event that trains operating per the Preferred Alternative cause or produce any interference or false targets for the ASR-9, the FAA will perform radar data recordings to determine if the radar reflector tables can eliminate the interference and false targets caused by the operating train.

b) In the event that vibration or "jitter" is an issue with regard to the operational capability of the ASR-9, the offending frequencies would have to be mitigated. DART and DFW Airport would be required to mitigate all of these issues and will work with the FAA to remedy the situation prior to operation of the Preferred Alternative.

c) In the event that interference or false targets are an issue with regard to the operational capability of the ASR-9, the FAA would attempt to optimize the radar so as to eliminate or "mask out" the interference or false targets created by the trains so that the ASR-9 does not misinterpret or "confuse" the trains as or with airborne targets.

d) The foregoing additional testing, and mitigation, if necessary, will take approximately three to six months. It is anticipated that this testing will be conducted concurrently with the Preferred Alternative testing period.

e) The FAA construction representative or Resident Engineer (RE) must be present for any work associated with this facility.

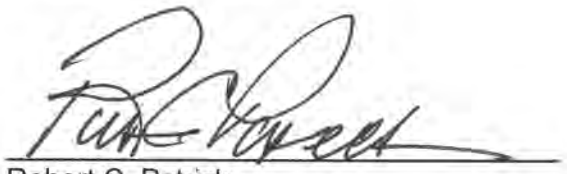
Construction Activities at DFW Airport: DFW Airport, FTA, and DART will honor the following commitments regarding construction at DFW Airport:

- FTA and DART will not initiate construction activities on or near DFW Airport property until the FAA has completed aeronautical evaluations of the construction plan;
- FTA and DART will not initiate construction activities at DFW Airport in floodplain areas or potential Waters of the U.S. (Cottonwood Branch) until final design of the project for this portion of the work at DFW Airport is to the satisfaction of USACE, FEMA, and DFW Airport.
- In the event that further cultural resources are discovered on DFW Airport property during construction, FTA and DART will ensure that activities cease in the immediate area and that the FAA and SHPO are promptly notified.

The FAA finds that all practical means to avoid or minimize environmental harm have been adopted through appropriate mitigation planning and the FTA commitments specified in this ROD and included in Attachment A.

ENVIRONMENTAL FINDING UNDER NEPA

The FTA and FAA have determined that the environmental record prepared for the Preferred Alternative satisfies the statutory and regulatory requirements of the NEPA and related federal environmental statues, laws, and executive orders; that the environmental record fully evaluates the potential environmental impacts of the Preferred Alternative; and that DART is committed to additional coordination with regulatory agencies as design and construction of the Preferred Alternative advances. FTA and FAA find that adequate opportunity to present views was given to all parties having a significant economic, social, or environmental interest in the Preferred Alternative. FTA and FAA have reviewed the public and agency comments on the FEIS and find that the preservation and enhancement of the environment and the interest of the community in which the Preferred Alternative is located were considered. The FEIS (Appendix J) documents the public and agency comments on the DEIS and responses to the comments. In addition, FTA and FAA find that, with the execution of the mitigation measures summarized in Attachment A, all reasonable steps will be taken to minimize the adverse environmental effects of the Preferred Alternative, and where adverse environmental effects remain, no feasible and prudent alternative to such effect exists.



Robert C. Patrick
Regional Administrator
Federal Transit Administration, Region VI

11/8/10
Date

for Terry L. Biggio
Regional Administrator, Southwest Region
Federal Aviation Administration
Cooperating Agency

11/9/18
Date

Right of Appeal

This order constitutes a final agency action and order of the Administrator of the FAA under 49 U.S.C. § 46110. Any party having a substantial interest may appeal this order to the United States Court of Appeals for the District of Columbia Circuit or in the court of appeals of the United States for the circuit in which the person resides or has its principal place of business, upon petition, filed within 60 days after entry of this order.

Attachment:
Attachment A Summary of Mitigation Measures

Attachment A

Cotton Belt Corridor Regional Rail Project

Summary of Measures To Mitigate Impacts

DALLAS AREA RAPID TRANSIT (DART)
COTTON BELT CORRIDOR REGIONAL RAIL PROJECT
SUMMARY OF MEASURES TO MITIGATE IMPACTS

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
General (GEN) Mitigation Measure				
GEN-1	DART will prepare a Mitigation Monitoring Plan (MMP) prior to construction activities.	Prior to and during construction DART will implement and monitor mitigation measures to ensure compliance with the MMP.	DART	Final Design and Construction
Corridor-Wide (COR) Mitigation Measures				
COR-1	Land Use (FEIS 4.2) DART will work with corridor cities and private developers to coordinate the Project design with land use planning efforts.	Coordinate with local plans. Project design will require review by local jurisdictions.	DART and local jurisdictions	Final Design
COR-2	Community Cohesion (FEIS 4.3) Utilize DART's comprehensive transit education program to educate schools and community organizations about transit safety.	Coordinate with schools and neighborhoods to provide transit education sessions prior to operations.	DART	Construction
COR-3	Acquisitions and Displacements (FEIS 4.4) Land acquisitions will commence upon issuance of FEIS/ROD by FTA. Relocation benefits are provided for all businesses and residents (owner occupants and tenants).	All acquisition of property will adhere to the DART Board of Director's Real Estate Policy and Procedures (adopted 1987, modified 2000). These policies adhere to all Federal guidelines, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.	DART	Final Design
COR-4	Visual and Aesthetic Conditions (FEIS 4.7) Implement DART Art & Design Program for Stations	Coordinate with local jurisdictions and neighborhood groups and other stakeholders using the established process.	DART	Final Design
COR-5	Visual and Aesthetic Conditions (FEIS 4.7) Preserve existing vegetation to the greatest extent possible	DART will conduct a visual screening location assessment using final design plans. Assessment will document where existing vegetation will be preserved and maintained during construction.	DART	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
COR-6	Visual and Aesthetic Conditions (FEIS 4.7) Landscaping will be installed at intervals of approximately 120 to 150 feet along residential areas for visual screening and to soften views	Based on the visual screening location assessment DART will identify appropriate locations for landscaping. Vegetation will be native and low maintenance.	DART	Final Design
COR-7	Visual and Aesthetic Conditions (FEIS 4.7) Where sound barriers are identified visual screening will also be achieved by extending the height of the noise barrier from 12 feet up to 15 feet.	Coordinate design with sound barriers identified in in FEIS 4.14 (see CB2-7 and CB3-13).	DART	Final Design
COR-8	Visual and Aesthetic Conditions (FEIS 4.7) All lighting sources will be indirect, diffused, or covered by shielded type fixtures, and installed to reduce glare at adjacent properties.	Adhere to local development codes, DART Specifications and BMPs.	DART	Final Design
COR-9	Police Protection and Community Safety (FEIS 4.8) Coordinate with police, fire, schools, emergency response teams, employers, and other interested parties to on safety and security issues.	During construction and before service start-up, DART will host sessions with police, fire, schools, emergency response teams, employers, and other interested parties to discuss regional rail operations, potential safety or security issues, and agency or public responsibilities.	DART and DART Police	During construction and before service start-up
COR-10	Fire Protection and Emergency Medical Mitigation (FEIS 4.8) Coordinate alternate routes for fire and emergency service vehicles operating near at-grade crossings	Fire/Life Safety Committee will review, evaluate and recommend alternative routes.	DART and local jurisdictions	Final Design
COR-11	Fire Protection and Emergency Medical Services (FEIS 4.8) Final design of the project will be done in accordance with National Fire Protection Association NFPA-130 (Standard for Fixed Guideway Transit and Passenger Railway Systems), as well as the applicable fire and building codes of local jurisdictions	Internal review will ensure compliance. Project design will require review by local jurisdictions.	DART and local jurisdictions	Final Design
COR-12	Pedestrian and Vehicle Safety (FEIS 4.8) Special signage, designated street crossings, and adequate lighting, as required, will be installed to prevent the potential for accidents involving pedestrians. Corridor safety fencing will be used to control informal pedestrian crossings and secure the project at select locations, including those areas where there are adjacent residential land uses, schools, or	DART will coordinate with local jurisdictions to determine needs for enhanced pedestrian crossing features to address localized concerns for school children activity and special events.	DART	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	other high pedestrian activity centers. All crossing approaches will be protected with warning signs, lights, bells, and gates.			
COR-13	Station Area Safety (FEIS 4.8) Crime Prevention through Environmental Design (CPTED) principles will be followed to enhance safety and security at stations. This includes design elements, adequate lighting, clear pedestrian access points at dedicated crossings, and good visibility and sight lines. In addition, station cameras will be located on platforms and in parking lots and monitored 24 hours per day. Stations will be regularly patrolled by police to deter crime.	DART will follow Crime Prevention through Environmental Design (CPTED)	DART	Ongoing
COR-14	Soils (4.10) Ensure soil stability.	Adhere to local DART Specifications and BMPs.	DART	Final Design
COR-15	Hydrology and Floodplains (FEIS 4.11) Conduct detailed hydrologic/hydraulic analysis. Coordinate with USACE and local jurisdictions to identify additional mitigation measures which may include channel improvements or design modifications to ensure that neither the 100-year base flood elevation nor floodwater velocity is increased as a result of this project. Final design will evaluate corridor drainage and provide for open ditches and underdrains as needed. Final design will also include erosion and runoff controls and include measures to restore beneficial natural functions of the floodplain including water circulation	DART and its contractors will comply with all federal, state, and local regulations regarding construction and operation of the project within floodplains and will ensure that the project will not result in a significant encroachment in a floodplain as defined in DOT Order 5650.2.	DART and local jurisdictions	Final Design
COR-16	Surface Water Quality (FEIS 4.11) Mitigation will consist of the preparation of a complete storm water pollution protection plan (SW3P) which will include an identification of BMPs for water quality. Consultation with USACE to establish any necessary actions.	Construction activities will comply with the TCEQ Storm Water Construction General Permit (CGP) TX150000, effective March 5, 2018 for five years. Coordinate with USACE.	DART	Final Design
COR-17	Waters of the U.S. and Wetlands (FEIS 4.12) During final design, DART will continue to investigate reducing both the direct and indirect impacts to waters and wetlands. DART will coordinate with USACE on all waters of the US and	Coordinate with USACE and NCTCOG. Project will be reviewed under the Section 214 program of the Water Resources Development Act (WRDA). MOA between NCTCOG and USACE allows expedited	DART/NCTCOG	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	wetlands issues.	review and cost savings to major projects.		
COR-18	Noise (FEIS 4.14) DART will construct several noise barriers along the corridor. DART will reevaluate noise impacts during final design to determine if additional sound absorption treatments may be necessary along any portion of the noise barrier walls.	During testing, DART will measure noise characteristics of the Project vehicle to determine if treatment is required.	DART	Final Design
COR-19	Noise (FEIS 4.14) DART will implement a rail maintenance program that will include rail grinding at appropriate intervals to prevent the incremental increase in Project noise.	DART will monitor wear on track to determine appropriate intervals of grinding	DART	Operation
COR-20	Noise (FEIS 4.14) The Project vehicle will be designed to minimize noise generated by wheels, rails, engines, motors, and all elements and equipment.	Draft vehicle specifications include wheel skirts, enclosures, baffles, seals, acoustical absorption, body panels, and vibration isolators.	DART	Final Design
COR-21	Hazardous/Regulated Materials (FEIS 4.16) Further investigation of at-risk areas will be done during final design in areas where construction activities involve soil excavation and/or dewatering operations. Environmental due-diligence activities will be performed prior to property acquisition or other real estate transactions. If unanticipated sources of hazardous/regulated materials are encountered during construction, the construction manager or designee will immediately notify the DART Environmental Compliance Section (ECS). Specific mitigation activities addressing the specific contamination occurrence will then immediately be implemented.	Mitigation measures will be needed only in areas where construction activities encounter known or suspected contaminated soil or groundwater. A compliant Phase I ESA will be conducted, and a Phase II ESA will be conducted if necessary. The design and preparation of required monitoring and remediation plans for at-risk hazardous/regulated materials areas will be coordinated with the TCEQ. All ECS activities will be performed according to all applicable federal, state, and local regulations.	DART	Final Design
COR-22	Biological Resources/Vegetation (FEIS 4.17) Preserve existing mature native trees and shrubs to the greatest extent possible. Reduce or eliminate impacts to riparian hardwood forest as well as floodplain hardwood forest and adjacent upland woodlands. To avoid soil disturbances, machinery and other vehicles will utilize nearby roadways and bridges when crossing drainages, wetlands, and creeks.	Site planning and construction techniques will be designed to avoid and preserve desired vegetation. Replacement vegetation will utilize native species that are useful to wildlife. Areas of re-vegetation will be monitored to ensure that plantings are established to their original condition. Re-vegetation of	DART and local jurisdictions	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	Long-term impacts would be mitigated through re-vegetation. Re-vegetation within the existing and proposed right-of-way, where mainly infrastructure improvements are proposed, would be undertaken to the extent that is reasonably feasible. Native vegetation beneficial to fish and wildlife has been proposed for use by DART.	affected areas would use durable, native, and non-native materials that require little maintenance. Plant materials will also be drought resistant and be supported by operating irrigation systems and a permanent commitment to on-going maintenance. Coordinate with local jurisdictions for recommended vegetation. Adhere to local tree protection ordinances. Use BMPs.		
COR-23	Biological Resources/Wildlife and Threatened and Endangered Species (FEIS 4.17) Avoid or minimize impacts to wildlife and wildlife habitat. Follow guidance of Texas Parks and Wildlife Department (TPWD) regarding Migratory Birds, Reptile, and Aquatic Species as discussed in Section 4.17 and Section 4.21 of FEIS and detailed in May 4, 2017 letter in Appendix G.	DART/contractors will use appropriate BMPs and comply with all state and federal regulations. Contractors will be informed of TPWD guidance. DART/contractors will acquire all appropriate permits will coordinate with TPWD Kills and Spills Team (KAST) for appropriate authorization if work is required within streams.	DART/TPWD	Final Design Construction
COR-24	Construction Staging Areas (FEIS 4.21) Store equipment and materials in conformance with local regulations and DART Specifications. Use BMP's to prevent storm water runoff. Restore area to original condition	Adhere to DART Construction Guidelines Specifications Section 01560 Part 1.3 E. Develop a SW3P. Use BMPs	DART	Construction
COR-25	Construction Noise (FEIS 4.21) Construction will be carried out in compliance with all applicable noise regulations and DART Specifications. Apply noise control measures as needed.	Adherence to DART Facilities Standard Specifications Section 01560 Part 1.11. In addition to following all applicable local, FTA guidance, and DART-specific noise regulations.	DART	Construction
COR-26	Construction Vibration (FEIS 4.21) Construction will be carried out in compliance with all applicable vibration regulations and DART Specifications. Apply vibration control measures as needed.	Adherence to DART Facilities Standard Specifications Section 01560 Part 1.11.	DART	Construction
COR-27	Construction Traffic Flow (FEIS 4.21) Minimize impacts to traffic during construction.	Adherence to DART Facilities Standard Specifications Section 01570, Maintenance and Control of Traffic 01570-1. Appropriate jurisdictions will be notified of	DART and local jurisdictions	Final Design Construction

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
		all construction activities within public rights-of-way. All traffic control plans and mitigation measures will be approved by local traffic engineering authorities prior to construction and incorporated into construction specifications.		
COR-28	Construction Water Resources (FEIS 4.21) Minimize impacts to water resources. Provide erosion controls and minimize the introduction of sediments, wastewater and chemicals to surface and subsurface waters.	Follow the guidelines of the USACE Nationwide Permit 14 or 25. Adherence to DART Facilities Standard Specifications Section 01562-1, Implement a comprehensive SW3P.	DART	Final Design
COR-29	Construction Air Quality (FEIS 4.21) Minimize dust and emissions.	Adhere to General Requirements and Standard Specifications for Construction Projects Section 01560 (Part 1.8, Dust Control). Provide dust control measures for construction activities. The control of exhaust emissions from construction equipment will be in accordance with EPA guidelines.	DART	Construction
COR-30	Construction Soils (FEIS 4.21) Minimize soil erosion and impacts to soil stability.	Use appropriate BMPs as prescribed in *Storm Water Quality Best Management Practices Manual for Construction*, prepared by the NCTCOG.	DART	Construction
COR-31	Construction Utility Disruptions (FEIS 4.21) Minimize and mitigate disruption of utilities during construction.	Prior to construction, utility providers will be contacted to confirm line locations and obtain approval of alteration. Businesses and residences will be notified of disruptions at least two weeks in advance. Business disruptions will occur during off-business hours and should not exceed a 24-hour period; Businesses such as restaurants, grocery stores or food preparation/manufacturing facilities will be	DART	Construction

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
		accommodated in order to protect food preparation and storage mechanisms. Newly identified lines will not be disrupted until businesses and residences are notified.		
COR-32	Roadway and Intersection (FEIS 5.2) All grade crossings will have active warning devices, train signals, and gates that are activated by approaching trains.	Grade crossing warning devices would be designed in conformance with the TMUTCD, TxDOT, and the recommended AREMA practices.	DART	Final Design
COR-33	Roadway and Intersection (FEIS 5.2 and Appendix A) In general, roadways would be reconstructed to match existing cross-sections. Where feasible street design will promote higher quality street designs and safe, multimodal streets for all users.	DART will coordinate with the appropriate jurisdictions to design the streets to local standards. Roadway modification design will adhere to the Complete Streets guidelines within the envelope of the existing right-of-way.		
COR-34	Freight (FEIS 5.3) Minimize or mitigate impacts to freight operations	DART will dispatch trains within and across the Cotton Belt. DART will coordinate with the freight providers to identify windows of opportunity for freight operations. BNSF will provide windows of opportunity to use the Madill Subdivision to bring trains to and from the EMF.	DART/Railroads/FRA	Final Design Operations
COR-35	Station Access (FEIS 5.4) Minimize local traffic impacts due to station automobile and bus traffic.	DART will conduct a detailed traffic study based on final configuration of roadways and feeder bus plans for stations if required by the local jurisdiction. Develop appropriate mitigation.	DART and local jurisdictions	Final Design
COR-36	Non-motorized Transportation (FEIS 5.5) DART will minimize closures of pedestrian and bicycle facilities as roadway crossings are rebuilt.	Measures could include enhanced traffic signals, crosswalks, and striping, and signage and notifications of road and sidewalk closures and detours during construction.	DART and local jurisdictions	Final Design Construction
COR-37	Non-motorized Transportation (FEIS 5.5)	10% PE plans identify an envelope to accommodate Cotton Belt Regional Trail	DART and local jurisdictions	Final Design Construction

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	DART will coordinate with cities to ensure that future non-motorized facilities are not precluded. This includes the Cotton Belt Regional Trail to be located within the DART right-of-way.	and other programed trails. Coordination with NCTCOG and communities along the corridor is ongoing.		
CB1 — DFW Airport to Elm Fork of the Trinity River (Mitigation measures at DFW Airport are designated DFW, off DFW are designated CB1)				
DFW-1	DFW Traffic Impacts (FEIS 5.2) DART will construct a new at-grade crossing at DFW Airport Fire Station 6 (711 Regent Boulevard) along the existing railroad ROW to allow fire access to the north of the ROW. DART will add a private rail crossing at the existing Chesapeake Access Road north of the DFW North Station.	Crossing is included in 10% PE plans per approved DART Board Service Plan Amendment. Coordinate construction with DFW Airport and DFW Airport Fire Station 6. Coordinate construction with DFW Airport and Chesapeake.	DART	Final Design
DFW-2	DFW Traffic Impacts (FEIS 5.2) DART will share the TEXRail corridor south of the DFW North Station. This includes 3 roadway grade separations being constructed by TEXRail: International Service Road, North Airfield Drive, and SH 121/SH 114.	Included in 10% PE plans per approved DART Board Service Plan Amendment. DART will coordinate with DFW Airport and TEXRail to design and construct Cotton Belt rail through these crossings.	DART	Final Design
DFW-3	DFW Traffic Impacts (FEIS 5.2) Signal timing improvements will be implemented at at-grade crossings: Crossover #2 and North Employee Road.	DART will coordinate with DFW to determine if intersection capacity improvements may be necessary to achieve maximum efficiency and improve the overall level of service.	DART	Final Design
DFW-4	DFW Traffic Impacts (FEIS 5.2) Two future aerial roadway crossings of the Cotton Belt rail line are planned: one crossing the existing railroad ROW east of the DFW North Station to connect to future airport developments north of the Cotton Belt rail line, and Dallas Road which would cross the shared corridor south of the DFW North Station.	Included in 10% PE plans per approved DART Board Service Plan Amendment. The precise alignment of the aerial roadway east of the station will be coordinated with DFW Airport. Future Dallas Road construction will be coordinated with DFW Airport and TEXRail.	DART	Final Design
DFW-5	Station Area Access (FEIS 5.4) Ensure appropriate parking at DFW North Station	Monitor parking utilization. Options for future parking expansion include construction of a garage or expanding parking into area north of the platform between TEXRail and the Cotton Belt.	DART with DFW Airport	Operation
DFW-6	DFW Airport Air Quality (FEIS 6.3.2 and 6.4.1.1)	The air quality inventory will be completed	DART, Design-Build	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	Construction Emissions will will be completed and submitted to DFW Airportat least 60 days prior to construction.	by the Design-Build contractor once construction material quantity estimates are completed and construction staging is planned.	contractor	Construction
DFW-7	An Airspace Study (FAA Form 7460-1, Notice of Proposed Construction or Alteration) will be completed and submitted to FAA at least 60 days prior to construction.	Form 7460-1 will be completed by the Design-Build contractor after final design.	DART, Design-Build contractor	Final Design Construction
DFW-8	DFW Airport Air Quality (FEIS 6.4.1.1) To minimize exhaust emissions, contractors will use emission control devices and limit the unnecessary idling of construction vehicles. Measures to mitigate air quality include minimizing emissions through the use of clean fuels in construction equipment, deployment of clean diesel construction equipment and the implementation of anti-idling practices at construction sites.	Adhere to General Requirements and Standard Specifications for Construction Projects Section 01560 (Part 1.8, Dust Control). Provide dust control measures for construction activities. Control of exhaust emissions from non-road equipment and other construction related vehicles will be in accordance with EPA guidelines.	DART, Design-Build contractor	Final Design
DFW-9	DFW Airport Biological Resources/Wildlife and Threatened and Endangered Species (FEIS 6.4.1.2) Avoid or minimize impacts to wildlife and wildlife habitat. Follow guidance of Texas Parks and Wildlife Department (TPWD). See FEIS Section 6.4.1.2 for details.	DART and its contractors will use appropriate BMPs and comply with all state and federal regulations. Comply with Migratory Bird Treaty Act (MBTA). Implement TPWD recommendations to: minimize disturbance to undeveloped areas and riparian vegetation; cross streams perpendicular to the stream course; allow wildlife to cross under structures; replant with native vegetation (coordinate with DFW Airport for recommended vegetation.)	DART/DFW Airport	Final Design Construction
DFW-10	DFW Airport Hazardous Materials (FEIS 6.4.1.4) If unanticipated sources of hazardous/regulated materials are encountered during construction, environmental due diligence activities will be performed prior to use agreements.	Suspect soil will be tested and appropriately disposed of. See COR-21. A compliant Phase I ESA will be conducted. A Phase II ESA will be conducted if necessary	DART	Final Design
DFW-11	DFW Airport Land Use (FEIS 6.4.1.5) The use of DFW Airport land needed to build and operate the Project will be gained through a Public Mass Transit Easement agreement between DART and DFW Airport. DFW	DART will coordinate use agreement with DFW to determine fair market value.	DART/DFW Airport	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	Airport will be compensated fair market value for the use.			
DFW-12	DFW Airport Vibration (FEIS 6.4.1.7) Coordination with the FAA will continue for the ASR-9 tower and a determination of potential mitigation measures that may be required will be made during the regional rail testing period (as requested by the FAA).	DART will participate with the testing to determine if an additional track and increased frequency will result in any impacts.	DART/TEXRail/DFW/ FAA	Final Design
DFW-13	DFW Airport Visual Effects – DFW Airport (FEIS 6.4.1.8) Ensure lighting follows DFW Airport development guidelines.	DFW Airport Staff will review the design of the Project to ensure compliance and compatibility with approved and installed lighting at similar elevation and distance from the airfield.	DART/DFW/FAA	Final Design
DFW-14	DFW Airport Water Resources (FEIS 6.4.1.9) Conduct detailed hydrologic/hydraulic analysis. Coordinate with USACE and local jurisdictions to identify additional mitigation measures which may include channel improvements or design modifications to ensure that neither the 100-year base flood elevation nor floodwater velocity is increased as a result of this project. Final design will evaluate corridor drainage and provide for open ditches and underdrains as needed. Final design will also include erosion and runoff controls and include measures to restore beneficial natural functions of the floodplain including water circulation.	DART will continue to investigate reducing the impacts to the stream crossings. DART and its contractors will comply with all federal, state, and local regulations regarding construction and operation of the project within floodplains and will ensure that the project will not result in a significant encroachment in a floodplain as defined in DOT Order 5650.2. DART and its contractors will employ BMPs. See COR-15, COR-16, and COR-17.	DART/DFW	Final Design
CB1-1	School Safety (FEIS 4.3) Provide safe crossings at locations where school children cross tracks. Enhanced safety will be considered at crossings near W.W. Pinkerton Elementary and Barbara Bush Middle schools.	DART will consult with affected schools and the City of Coppell. Flashing signals, pedestrian gates, enhanced signage or striping, and/or tactile strips will be evaluated for feasibility and reasonableness as the project advances.	DART, school district and local jurisdiction	Final Design
CB1-2	Archeological Resources (FEIS 4.6) Archeological testing is recommended for the Oncor transmission tower relocations at the Cypress Waters alignment.	Coordinate archeological testing with SHPO, Oncor and/or property owners once exact tower sites are known.	DART	Final Design
CB1-3	Noise Impacts (FEIS 4.14)	DART will coordinate with the City of	DART and City of	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	Seven (7) quiet zone crossings will be installed in CB1: 1. Coppell Road 2. Southwestern Boulevard 3. East Belt Line Road 4. Moore Road 5. Mockingbird Lane 6. S MacArthur Boulevard 7. Fairway Drive	Coppell to apply for new Quiet Zones per FRA rules. Will follow FRA guidance for implementation. Note: Coppell may pursue additional quiet zones per an Interlocal Agreement.	Coppell	
CB1-4	Utility Relocation (FEIS 4.21.3) DART will relocate one or two of the transmission towers in Cypress Waters area to reconfigure the transmission lines crossing of the rail and station. May require additional environmental analysis.	Coordination with Oncor and adjacent property owners will be necessary to appropriately locate the towers and potentially modify the station plan.	DART and Oncor	Final Design Construction
CB1-5	Traffic Impacts/Grade Separations (FEIS 5.2) A new grade separation will be constructed at South Belt Line Road and the parallel Sanders Loop to elevate the rail over the roadway.	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB1-6	Traffic Impacts/Intersection Improvements (FEIS 5.2) Signal timing and signal phasing improvements will be implemented at MacArthur Blvd. and East Belt Line Road.	DART will coordinate with the appropriate jurisdictions to determine if intersection capacity improvements may be necessary to achieve maximum efficiency and improve the overall level of service.	DART with Coppell	Final Design
CB1-7	Station Area Access (FEIS 5.4) Ensure appropriate parking at Cypress Waters Station.	Monitor parking utilization and preserve excess right-of-way for potential parking expansion.	DART with City of Dallas	Operation
	CB2 — Elm Fork to Dallas North Tollway			
CB2-1	School Safety (FEIS 4.3) Provide safe crossings at locations where school children cross tracks. Enhanced safety will be considered at crossings near Carrollton Elementary, Ted Polk Middle, DeWitt Perry Middle, and Newman Smith High schools.	DART will consult with affected schools and the City of Carrolton. Flashing signals, pedestrian gates, enhanced signage or striping, and/or tactile strips will be evaluated for feasibility and reasonableness as the project advances.	DART, school district, and local jurisdiction	Final Design
CB2-2	Visual and Aesthetic Conditions (FEIS 4.7) At Wheeler Bridge: One complementary arch will be located on the north side of the bridge along the westbound track to be visible from southbound motorist.	Coordinate with Town of Addison to achieve complementary design. Develop Interlocal Agreement with Addison regarding maintenance.	DART with Town of Addison	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
CB2-3	Station Area Safety and Access (FEIS 4.8 and 5.4) Pedestrian access and safety features at the Downtown Carrollton Station include: • A pedestrian crossing of the Madill Subdivision at the western edge of the Cotton Belt platform. • A pedestrian crossing of the UP corridor near the intersection of Broadway Street and College Street. • A stairway and accessible vertical circulation to a new aerial pedestrian walkway that will extend from the Cotton Belt platform to the Green Line aerial light rail platform. • Fencing segregating parking and pedestrian areas from freight lines. • Signage, pedestrian crossings and markings to direct passengers to safe crossing locations.	Coordinate plans with City of Carrollton. Adhere to all FRA guidelines regarding pedestrian crossing.	DART with City of Carrollton	Final Design
CB2-4	Hydrology and Floodplains (FEIS 4.11) Obtain Trinity River Corridor Development Certificate (CDC) for Project within 100-year floodplain of the Elm Fork of the Trinity River, which is in the Trinity River Regulatory Zone,	Coordinate with Community Floodplain Administrators.	DART with local jurisdictions	Final Design
CB2-5	Noise Impacts (FEIS 4.14) 14 quiet zone crossings will be installed in CB2: 1. Luna Road, Carrollton 2. I-35E Access Road (SB), Carrollton 3. I-35E Access Road (NB), Carrollton 4. N Broadway Street, Carrollton 5. N Denton Drive, Carrollton 6. Perry Road, Carrollton 7. Kelly Boulevard, Carrollton 8. Marsh Lane, Carrollton/Addison 9. Surveyor Boulevard, Addison 10. Addison Road, Addison 11. Quorum Drive, Addison 12. Spectrum Drive, Addison 13. Dallas Parkway (SB), Addison 14. Dallas Parkway (NB), Addison	DART will coordinate with Addison and Carrollton to apply for new Quiet Zones per FRA rules. Follow FTA guidance and DART policy for implementing noise mitigation.	DART, Carrollton, Addison	Final Design
CB2-6	Noise Impacts (FEIS 4.14) Crossing Bell Mitigation will be implemented at two (2) crossings: 1. NW Quadrant Marsh Lane	Follow FTA guidance and DART policy for implementing noise mitigation. Consider adjusting bell volume to minimum industry	DART	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	2. NW Quadrant Spectrum Drive	standards of 75 dBA at 10 feet or by installing acoustic shrouds.		
CB2-7	Noise Impacts (FEIS 4.14) Install a total of 4,550 lineal feet noise barriers in three (3) sections adjacent to the tracks at noise impact locations. Noise Barrier Locations: 1. WB Civil Station 2134+00 to 2150+00 (1,600 ft.) 2. WB Civil Station 2152+50 to 2172+00 (1,950 ft.) 3. WB Civil Station 2252+00 to 2262+00 (1,000 ft.)	Follow FTA guidance and DART policy for implementing noise mitigation. Base wall height will be extended from 12-feet to 15-feet to also provide visual screening. (See COR-7 and FEIS 4.7)	DART	Final Design
CB2-8	Vibration (FEIS 4.15) Tire Derived Aggregate (TDA) will be installed at all locations where the projected vibration is 65 VdB or greater at vibration sensitive receptors, 1,650 ft in CB2. TDA locations in CB2: 1. Civil Station 2253+00 to 2263+00 (1,000 ft) 2. Civil Station 2146+00 to 2150+00 (400 ft.) 3. Civil Station 2283+50 to 2286+00 (250 ft.)	Follow FTA vibration guidance and DART policy. FTA threshold for Cotton Belt Project was adjusted from 72 VdB to 65 VdB by DART Board of Directors (See FEIS 4.15.3).	DART	Final Design
CB2-9	Traffic Impacts/Grade Separation (FEIS 5.2) A new grade separation will be constructed at Josey Lane to elevate the rail over the roadway	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB2-10	Traffic Impacts/Grade Separation (FEIS 5.2) A new grade separation will be constructed at Midway Road to elevate the rail over the roadway.	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB2-11	Traffic Impacts/Intersection Improvements (FEIS 5.2) Signal timing and signal phasing improvements will be implemented at Marsh Lane. Dual left turn lanes will be provided from southbound Marsh Lane to Arapaho Road; a right turn lane will be provided from eastbound Realty to Marsh Lane; a right turn lane will be provided from Southbound Marsh Lane to Realty Road; a traffic signal at Stonehenge Lane and Marsh Lane will be provided.	DART will coordinate with both Addison and Carrollton to implement mitigation.	DART with Addison and Carrollton	Final Design
CB2-12	Traffic Impacts/Intersection Improvements (FEIS 5.2) Signal timing and signal phasing improvements will be implemented at: • Luna Road • Addison Road	DART will coordinate with the appropriate jurisdictions to determine if intersection capacity improvements may be necessary to achieve maximum efficiency and improve the overall LOS.	DART with Addison and Carrollton	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
CB2-13	Traffic Impacts/Intersection Improvements (FEIS 5.2) At stations (Downtown Carrollton and Addison) directly adjacent to an at-grade street crossing, DART will design the operating system to avoid unnecessary downtime for crossing gates. Crossing signals will be coordinated with train operations to accommodate railroad safety and facilitate crossings of automobiles and pedestrians without unnecessary delays.	Internal coordination with DART Train Operations	DART	Operation
CB2-14	Freight (FEIS 5.3) The Cotton Belt will be grade separated over the Madill Subdivision to avoid any conflicts with BNSF Railway operations.	Included in 10% PE plans. Coordinate with BNSF on final design.	DART/FRA	Final Design
CB2-15	Freight (FEIS 5.3) Stage the construction to minimize disruption in service to railroads.	Coordinate construction activities with FWWR, BNSF, DGNO and KCS railroads. Construct new tracks, bridges, etc., before removing old. Temporarily provide alternatives such as trucking if necessary.	DART/FRA	Final Design Construction
CB2-16	Station Area Access (FEIS 5.4) Facilitate pedestrian connections to Addison Station	Coordinate station design with the Town of Addison. Coordinate trail development with Addison and NCTCOG.	DART with Town of Addison	Final Design
	CB3 — Dallas North Tollway to Shiloh Road			
CB3-1	School Safety (FEIS 4.3) Provide safe crossings at locations where school children cross tracks. Enhanced safety will be considered at crossings near Brentfield Elementary, Parkhill Junior High and Frankford Middle schools	DART will consult with affected schools and appropriate cities. Flashing signals, pedestrian gates, enhanced signage or striping, and/or tactile strips will be evaluated for feasibility and reasonableness as the project advances.	DART, school district, and local jurisdiction	Final Design
CB3-2	Community Facilities (FEIS 4.3 and 4.21) Avoid or minimize impacts to the North Dallas Eruv, its markers and places of worship. (Eruv markers at Hillcrest Road, McCallum Boulevard, and Coit Road may require relocation). DART will attempt minimize disruption to vehicular and pedestrian traffic along Hillcrest Road, McCallum Boulevard and Coit Road during construction. DART will maintain	DART will coordinate with the City of Dallas and the North Dallas Eruv community to minimize any effects and avoid any disruptions to the Eruv boundary. The affected community will be engaged during project design and construction to avoid and minimize impacts and to assist	DART	Final Design Construction

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	existing access or provide alternative access to Congregation Ohev Shalom on McCallum Boulevard during construction.	with proposed solutions. During construction, attempts will be made to avoid disruption on Sabbath days.		
CB3-3	Parks and Recreation Facilities (FEIS 4.5) The new White Rock Creek bridge structure will span the Clubs of Prestonwood golf cart path to avoid impact to the recreational facility. The relocated bridge will be used as a pedestrian trail and placed to accommodate the existing golf path. Some minor modifications to the golf path may be necessary.	Coordinate with the Clubs of Prestonwood.	DART	Final Design
CB3-4	Parks and Recreational Resources/Section 4(f) Spring Creek Trail Relocation (FEIS 4.5 and 4.22) Minimize disruption to, and closure of Spring Creek Trail. Construction will be staged to maintain access to the Spring Creek Trail.	Coordination between DART and the City of Richardson will be undertaken to develop detours and/or construction methods that limit or minimize temporary closures to Spring Creek Trail.	DART with Richardson	Final Design Construction
CB3-5	Cultural Resources (FEIS 4.6) If buried cultural materials are encountered at the 12th Street Station during construction, work will cease in the immediate area.	DART will coordinate any discoveries with Texas Historical Commission (THC) per the Memorandum of Agreement (MOA) included in the FEIS Appendix I.	DART	Construction
CB3-6	Cultural Resources/Section 106/ Section 4(f) (FEIS 4.6 and 4.22) White Rock Creek Bridge will be shifted approximately 30 feet north within DART ROW to use as part of a future proposed pedestrian/bike trail. DART will prepare documentation of the Bridge to meet modified Historic American Engineering Record (HAER) Level III standards. DART will repair the bridge in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68).	DART will adhere to the MOA developed between FTA, THC and DART (See FEIS Appendix I).	DART	Final Design
CB3-7	Visual and Aesthetic Conditions (FEIS 4.7) Corridor landscaping will be continued along Preston Green Park to soften views of the proposed safety fencing/barriers and be consistent with adjacent residential areas.	DART will coordinate landscape planning with community and City of Dallas.	DART	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
CB3-8	Visual and Aesthetic Conditions (FEIS 4.7) Corridor landscaping will be continued along Fairhill School to soften views of the proposed safety fencing and be consistent with adjacent residential areas	DART will coordinate landscape plan with school and City of Dallas.	DART	Final Design
CB3-9	Visual and Aesthetic Conditions (FEIS 4.7) Landscaping will be provided as part of the Knoll Trail station design where residential uses are immediately adjacent to the platform, unless residential construction at this location includes a wall or other landscaping barrier.	DART will coordinate with property owner and develop appropriate landscaping as part of station design if appropriate.	DART	Final Design
CB3-10	Station Area Safety and Access (FEIS 4.8, 5.4 and 5.5) At the 12th Street Station in Plano, a walkway will be located north of the freight tracks to channel pedestrians to the new LRT aerial platform. In order to further enhance pedestrian movements in the station area, DART will also install pedestrian crossings with pedestrian gates at two locations across the Cotton Belt.	Coordinate pedestrian improvements with City of Plano and their Transit Veloweb plans. Adhere to all FRA guidelines regarding pedestrian crossings of railroad tracks.	DART with City of Plano	Final Design
CB3-11	Noise Impacts (FEIS 4.14) Thirteen (13) quiet zone crossings will be installed in CB3: 1. Knoll Trail Drive, Dallas 2. Davenport Road, Dallas 3. Campbell Road, Dallas 4. Davenport Road, Dallas 5. McCallum Boulevard, Dallas 6. Meandering Way, Dallas 7. Dickerson Street, Dallas 8. Rutford Drive, Richardson 9. West CityLine Drive, Richardson 10. President. George Bush Turnpike (EB), Richardson 11. President George Bush Turnpike (WB), Plano 12. K Avenue, Plano 13. Municipal Avenue, Plano	DART will coordinate with the appropriate City to apply for new Quiet Zones per FRA rules. Will follow FRA guidance for implementation.	DART and local jurisdictions	Final Design
CB3-12	Noise Impacts (FEIS 4.14) Crossing Bell Mitigation will be implemented at five (5) crossings: 1. SE Quadrant Knoll Trail Drive	Follow FTA guidance and DART policy for implementing noise mitigation. Consider adjusting bell volume to minimum industry standards of 75 dBA at 10 feet or by	DART	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	2. NW/SE Quadrants Campbell Road 3. NE/SW Quadrants Davenport Road 4. SE Quadrant MacCallum Boulevard 5. SW Quadrant Meandering Way	installing acoustic shrouds.		
CB3-13	Noise Impacts (FEIS 4.14) Install a total of 17,500 lineal feet noise barriers in 17 sections adjacent to the tracks at noise impact locations. Noise Barriers: 1. WB Civil Station 3038+00 to 3044+00 (600 ft.) 2. EB Civil Station 3055+00 to 3067+00 (1,200 ft.) 3. WB Civil Station 3082+00 to 3097+50 (1,550 ft.) 4. WB Civil Station 3099+50 to 3106+00 (650 ft.) 5. EB Civil Station 3100+00 to 3109+50 (950 ft.) 6. WB Civil Station 3111+00 to 3118+00 (700 ft.) 7. EB Civil Station 3111+00 to 3126+00 (1,500 ft.) 8. EB Civil Station 3127+50 to 3143+50 (1,600 ft.) 9. EB Civil Station 3148+50 to 3161+50 (1,300 ft.) 10. WB Civil Station 3130+00 to 3148+00 (1,800 ft.) 11. WB Civil Station 3155+00 to 3162+00 (700 ft.) 12. EB Civil Station 3163+00 to 3170+00 (700 ft.) 13. EB Civil Station 3172+00 to 3179+00 (700 ft.) 14. WB Civil Station 3171+00 to 3179+00 (800 ft.) 15. EB Civil Station 3180+00 to 3186+00 (600 ft.) 16. EB Civil Station 3217+00 to 3227+50 (1,050 ft.) 17. EB Civil Station 3232+00 to 3245+00 (1,300 ft.)	Follow FTA guidance and DART policy for implementing noise mitigation. Base wall height will be extended from 12-feet to 15-feet to also provide visual screening. (See COR-7 and FEIS 4.7)	DART	Final Design
CB3-14	Vibration (FEIS 4.15) Tire Derived Aggregate (TDA) will be installed at all locations where the projected vibration is 65 VdB or greater at vibration sensitive receptors. TDA locations in CB3: 1. Civil Station 3056+00 to 3066+00 (1,000 ft.) 2. Civil Station 3092+00 to 3096+00 (400 ft.) 3. Civil Station 3103+00 to 3109+50 (650 ft.) 4. Civil Station 3111+00 to 3118+00 (700 ft.) 5. Civil Station 3124+00 to 3126+50 (250 ft.) 6. Civil Station 3131+00 to 3148+50 (1,750 ft.) 7. Civil Station 3158+00 to 3162+00 (400 ft.) 8. Civil Station 3171+00 to 3178 (700 ft.) 9. Civil Station 3180+00 to 3185+50 (550 ft.)	Follow FTA vibration guidance and DART policy. FTA threshold for Cotton Belt Project was adjusted from 72 VdB to 65 VdB by DART Board of Directors (See FEIS 4.15.3).	DART	Final Design Construction

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	10. Civil Station 3232+50 to 3245+50 (1,300 ft.) 11. Civil Station 3327+00 to 3346+00 (1,900 ft.) 12. Civil Station 37438+00 to 3440+00 (200 ft.)			
CB3-15	Vibration (FEIS 4.15) Conduct detailed, site-specific vibration studies at three FTA Cat.1 facilities to determine impact and potential mitigation: • UT Southwestern Clinical Center • Qorvo semiconductor facility • Texas Instruments semiconductor	Follow FTA guidance and DART policy for identifying and mitigating vibration impacts. Coordinate with property owners to gain access for studies.	DART	Final Design
CB3-16	Hazardous/Regulated Materials (FEIS 4.16) Within the Plano Municipal Settings District (MSD), the Project construction contractor will enact precautions to restrict human exposure to the contaminated groundwater. Any subsurface soils being excavated from the MSD zone will be segregated for laboratory analysis and may require special handling and disposal.	DART Environmental Compliance Division will ensure compliance with MSD requirements	DART	Construction
CB3-17	Cultural Resources (FEIS 4.16) The White Rock Creek Bridge will be mitigated for lead-based paint and abated for the asbestos containing materials prior to any work on relocation.	DART Environmental Compliance Division will oversee abatement and remediation efforts.	DART	Final Design Construction
CB3-18	Traffic Impacts/Grade Separation (FEIS 5.2) A new grade separation will be constructed at Hillcrest Road; the rail will remain at existing grade and Hillcrest Road will be slightly depressed.	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB3-19	Traffic Impacts/Grade Separation (FEIS 5.2) A new grade separation will be constructed at Coit Road; the rail will be slightly depressed, and Coit Road will be elevated over the rail line.	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB3-20	Traffic Impacts/Grade Separation (FEIS 5.2) A new grade separation will be constructed at Custer Parkway to elevate the rail over the roadway.	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB3-21	Traffic Impacts/Grade Separation (FEIS 5.2) A new grade separation will be constructed at Plano Parkway to elevate the rail over the roadway.	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB3-22	Traffic Impacts/Grade Separation (FEIS 5.2) A new at-grade crossing will be constructed at Rutford	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
	Avenue.			
CB3-23	Traffic Impacts/Grade Separation (FEIS 5.2) A new grade separation will be constructed at Jupiter Road to elevate the rail over the roadway.	Included in 10% PE plans per approved DART Board Service Plan Amendment.	DART	Final Design
CB3-24	Traffic Impacts/Intersection Improvements (FEIS 5.2) Signal timing and signal phasing improvements will be implemented at Alma Road and SH 190 frontage roads.	DART will coordinate with the appropriate jurisdictions to determine if intersection capacity improvements may be necessary to achieve maximum efficiency and improve the overall LOS.	DART with Richardson	Final Design
CB3-25	Traffic Impacts/Intersection Improvements (FEIS 5.2) Signal timing and signal phasing improvements will be implemented along K Avenue near the 12th Street Station.	DART will coordinate with the appropriate jurisdictions to determine if intersection capacity improvements may be necessary to achieve maximum efficiency and improve the overall LOS.	DART with Plano	Final Design
CB3-26	Traffic Impacts/Intersection Improvements (FEIS 5.2) Signal timing and signal phasing improvements will be implemented at Municipal Avenue.	DART will coordinate with the appropriate jurisdictions to determine if intersection capacity improvements may be necessary to achieve maximum efficiency and improve the overall LOS.	DART with Plano	Final Design
CB3-27	Traffic Impacts/Intersection Improvements (FEIS 5.2) At stations (Knoll Trail, UT-Dallas, CityLine/Bush, 12th Street, and Shiloh Road) directly adjacent to an at-grade street crossing, DART will design the system to avoid unnecessary downtime for crossing gates. Crossing signals will be coordinated with train operations to accommodate railroad safety and facilitate crossings of automobiles and pedestrians without unnecessary delays.	Internal coordination with DART Train Operations	DART	Operation
CB3-28	Traffic Impacts/Intersection Improvements (FEIS 5.2) The driveway to Dallas Water Utilities (DWU) northeast of Coit Road intersection will be relocated to extend north parallel to the Coit Road aerial structure before entering the roadway at ground level.	Coordination with City of Dallas and DWU. The easement granting access to the current driveway will be required to be modified to accommodate the relocated driveway.	DART with City of Dallas/DWU	Final Design
CB3-29	Traffic Impacts/Intersection Improvements (FEIS 5.2) One of two driveways to an apartment complex located northwest of the Cotton Belt intersection with Coit Road will be eliminated due to the Coit Road structure.	DART will work with the complex and the City of Dallas to provide alternate access if necessary.	DART with City of Dallas	Final Design

No.	Impact/Mitigation Measure *(See FEIS for complete descriptions)*	Implementation and Monitoring	Responsible Party	Timing
CB3-30	Traffic Impacts/Intersection Improvements (FEIS 5.2) Minimize access impacts at Sugar Cane Way. Reconstruction of the Sugar Cane Way intersection with Coit Road will require raising the profile of the driveway to Adventure Landing and the entrance into University Place to meet the new profile of Coit Road.	DART will work with the community and the City of Dallas on the design and to maintain access to the greatest extent possible during construction.	DART with City of Dallas	Final Design Construction
CB3-31	Traffic Impacts/Intersection Improvements (FEIS 5.2) Changes to the Hillcrest Road/McCallum Boulevard intersection will affect several driveways. During final design, DART will work with the City of Dallas and the affected businesses and residences to relocate, modify or otherwise mitigate these changes in access.	DART will work with the City of Dallas on the final design, and coordinate with the City of Dallas and community to maintain access to the greatest extent possible during construction. See CB3-18	DART with City of Dallas	Final Design Construction
CB3-32	Station Area Access (FEIS 5.4) Guard against hide-and-ride activities at Knoll Trail Station	Monitor parking with adjacent property owners and develop mitigation plan such as signage or increased enforcement if an issue is identified.	DART	Operation
CB3-33	Station Area Access (FEIS 5.4) At the 12th Street Station in Plano, a walkway will be located north of the freight tracks to channel pedestrians to the new LRT aerial platform. DART will also install pedestrian crossings with pedestrian gates at two locations.	DART will coordinate with the city of Plano to determine needs for pedestrian crossing features to address localized concerns for school children activity and special events.	DART	Final Design

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Executive Summary

The subject of this combined Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) is the Cotton Belt Corridor Regional Rail Project (Cotton Belt Project or Project) from Terminal B at Dallas/Fort Worth International Airport (DFW Airport) to Shiloh Road in Plano, Texas. The 26-mile double-track alignment is identified in the current Dallas Area Rapid Transit (DART) Transit System Plan (TSP) and the North Central Texas Council of Governments (NCTCOG) Mobility 2040 Metropolitan Transportation Plan (MTP). The Project traverses through three Texas counties: Tarrant, Dallas, and Collin; and seven cities: Grapevine, Coppell, Dallas, Carrollton, Addison, Richardson and Plano.

The National Environmental Policy Act of 1969 (NEPA) (42 USC § 4321 et seq.) requires that federal agencies prepare an EIS for any major federal action that may have a significant impact on the environment. The FEIS was prepared by DART under its responsibilities as the local lead agency to implement the Project. This FEIS/ROD documents all comments received during the DEIS public comment period and reflects key decisions made by the DART Board of Directors. This document has been submitted in coordination with the Federal Transit Administration (FTA), the lead federal agency, and in cooperation with the Federal Aviation Administration (FAA). The Federal Railroad Administration (FRA) has elected to be a participating agency.

The EIS serves as documentation for the NEPA process and thoroughly analyzes the Build Alternative for potential impacts on the human and natural environment as compared to a No-Build Alternative. The Build Alternative was identified during alternatives development and evaluation to be the preferred from among the other Build Alternatives studied (see **Section 2.5** in **Chapter 2** for more details on other alternatives considered). The EIS is the primary document to facilitate review of the Project by federal, state and local agencies, and the public.

The DEIS document was circulated for public and agency comment over a 45-day review period beginning April 20, 2018 to June 4, 2018. During this time, public hearings were held on May 14, 2018, May 15, 2018, and May 16, 2018, to present the results of the DEIS and formally record all comments received. In order to complete the environmental review process, this combined FEIS and ROD was prepared by FTA, FAA and DART. The combined FEIS/ROD responds to the substantive comments received on the DEIS, and states the selected alternative, environmental findings, and mitigation requirements. In accordance with the Fixing America's Surface Transportation (FAST) Act and 23 United States Code (USC) § 139(n), the FTA has issued a single document that consists of the FEIS and ROD because the FTA determined that unless it is determined that circumstances, such as changes to the proposed action, anticipated impacts, or other new information, do not preclude issuance of such a combined document. After circulation of the DEIS, preliminary engineering and environmental analyses were completed. Additional analyses were conducted in response to some DEIS comments. Mitigation commitments have been developed and responses to comments received during the comment period were prepared and incorporated as appropriate.

With completion of this FEIS/ROD, DART can continue advancing the Project. The FEIS/ROD includes a commitment for DART to prepare a Mitigation Monitoring Program (MMP) to ensure that mitigation commitments are carried through final design and construction.

This Executive Summary describes the purpose and need of the Project, alternatives considered in the FEIS, the affected environment, potential impacts and recommended mitigation measures, public and agency involvement, and key issues resolved.

Purpose and Need

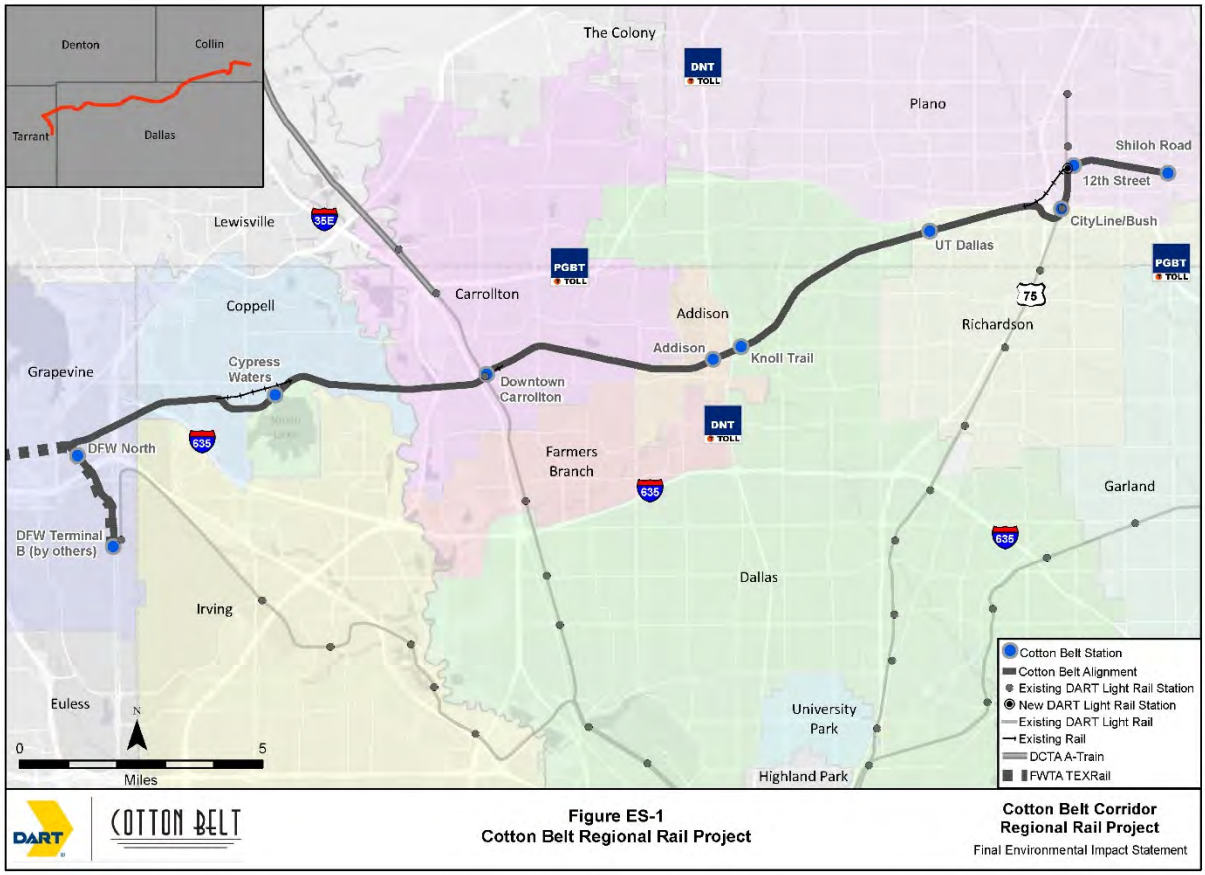
The Cotton Belt Project lies within the North Crosstown Corridor, which has long been identified as a heavily congested area in need of additional capacity and mobility solutions. Congestion has reduced mobility and the quality of life in the northern portions of Tarrant, Dallas, and Collin counties and surrounding communities. Interstate Highway (IH) 635 is one of Texas' most congested highway corridors. The Project is needed because population growth in the area has increased roadway congestion, which causes a decreased level of service and an increase in travel time throughout the North Crosstown Corridor. The primary purpose of the Project is to provide passenger rail connections that will improve mobility, accessibility and system linkages to major employment, population and activity centers in the northern part of the DART Service Area, and support sustainable growth, local and regional land-use visions, and economic development. Over the next 20 years, the Cotton Belt Project is projected to attract new employment and population that will continue to impact and strain the transportation network. The accessibility of the corridor will decline as congestion and travel delay increases.

The following goals for the Cotton Belt Project have been identified:

- Enhance corridor mobility and accessibility
- Reduce Vehicle Miles of Travel (VMT)
- Promote economic development and sustainable land use patterns
- Provide an environmentally-sensitive transit investment

See **Section 1.0** in the FEIS for a more detailed discussion of the Project's purpose and need. **Figure ES-1** shows the Cotton Belt Project location.

Figure ES-1 Cotton Belt Project Location



Alternatives Considered in this FEIS

Two alternatives were considered in the DEIS, a No-Build Alternative and a Regional Rail Build Alternative (Build Alternative). After circulation of the DEIS, the DART Board of Directors selected the Build Alternative (Cotton Belt Project) as the Preferred Alternative. The No-Build Alternative included transportation and transit projects that have a reasonable expectation of funding and are programmed for implementation. The Preferred Alternative would not be in operation and the existing freight service conditions would continue to exist as it does today and will continue to have standard, routine maintenance over the next 30 years. Travel times would increase over what they are today as congestion increases, and safety and mobility would continue to decline in the area as population increases. Although it does not meet the need and purpose of the Project, the No-Build Alternative allows for the environmental impact analysis to assess the impacts of no action as a comparison to the Preferred Alternative.

The Preferred Alternative, also referred to as the "Cotton Belt Project" or "Project," includes all the programmed transportation and transit projects contained in the No-Build Alternative, plus the Preferred Alternative. The Project consists of a 26-mile regional rail corridor from Terminal B at DFW Airport to Shiloh Road in Plano. A passenger rail corridor concept from the DART Red Line in the Richardson/Plano area to the Green Line in Carrollton was included in the original 1983 DART Service Plan. In 1989, the DART TSP recommended the purchase and preservation of the Cotton Belt Corridor right-of-way (ROW) from Wylie, Texas, to north Fort Worth, Texas; the 52-mile corridor purchase was completed in 1990. In addition to being in the NCTCOG MTP, the Project is included in the DART Transit System Plan. In 2010, a notice of intent (NOI) was published in both the Texas and Federal Registers announcing the FTA's and DART's intent to prepare an EIS for the Cotton Belt Project.

The Preferred Alternative is located primarily within the existing DART-owned Cotton Belt Corridor railroad right-of-way. There are four areas where the Preferred Alternative alignment deviates from the railroad corridor: 1) at DFW Airport where the rail will connect to DFW Terminal B and share right-of-way and stations with the Fort Worth Transportation Authority (FWTA, now known as Trinity Metro) TEXRail Project, which is under construction (DFW Airport Connection); 2) in the Coppell/Dallas area near North Lake to serve the growing Cypress Waters development (Cypress Waters Alignment); 3) near downtown Carrollton, where portions of the existing Cotton Belt Corridor, the existing Madill Sub, and the Dallas Garland Northeastern (DGNO) track are realigned to facilitate grade separation of the two rail corridors and maintain connections through this area for freight operations (Downtown Carrollton Reconfiguration); and 4) near the President George Bush Turnpike (PGBT) in Richardson and Plano to serve the growing mixed-use CityLine development (CityLine/Bush Alignment).

At DFW Airport, DART has coordinated the Project with the Trinity Metro TEXRail Project and DFW Airport. Portions of the Project corridor will be co-located with the TEXRail track in a corridor that has previously been environmentally cleared. On September 29, 2014, both FTA and FAA issued a ROD for the TEXRail Project. On April 16, 2015, FTA issued an amended ROD for project changes off airport property. Each agency is constructing tracks within this corridor and the two projects will share infrastructure currently being constructed. This infrastructure includes: portions of two stations, a culvert over a creek, a bridge over a creek, two roadway bridges over the tracks, and a railroad bridge over a freeway.

Ten new station locations have been identified for the Preferred Alternative including DFW Airport (under construction as part of TEXRail), DFW North (under construction as part of TEXRail), including a future "through" platform that will allow direct east-west movements across the corridor, Cypress Waters, Downtown Carrollton, Addison, Knoll Trail, University of Texas (UT) Dallas, CityLine/Bush, 12th Street (which includes a new infill LRT Station on the existing DART Red Line), and Shiloh Road.

The Preferred Alternative will operate on tracks that are shared with freight for nearly the entire route. FRA-compliant diesel multiple unit (DMU) technology will be used for the corridor, and a fleet of eight vehicles will be procured. The new fleet will require an Equipment Maintenance Facility (EMF) to be constructed as part the Cotton Belt Project to store and maintain vehicles. The existing Trinity Railway Express (TRE) Irving Yard at 4801 Rock Island Road in Irving was selected for the EMF. The Project also includes the relocation of Mercer Yard, a small freight yard in downtown Carrollton, to a new location to the east near Kelly Boulevard in Carrollton.

The 2022 operating plan (initial year of operations) assumes that the Project will operate seven days a week with 30-minute peak headways and 60-minute off-peak headways. The 2040 operating plan assumes service level increases to 20-minute peak headways.

Cotton Belt Regional Trail

The Preferred Alternative includes identification of a 12-foot wide envelope for the proposed Cotton Belt Regional Trail, a multi-use trail identified in the NCTCOG Regional Veloweb Plan. This trail envelope is identified within the DART right-of-way along approximately 16 miles of the project corridor where it is feasible. Cities and counties within the region are responsible for the planning and implementation of bicycle and pedestrian infrastructure and amenities. While the trail envelope is included in this FEIS, additional environmental clearance may be required depending on the project funding source and final trail design. In areas where DART right-of-way is not sufficient for a trail, connectivity recommendations will be developed by the local municipality.

Affected Environment

Existing conditions of the social, natural and built environment were documented as part of this FEIS for a range of impact assessment categories. The existing conditions formed the basis of impact evaluations within each category. Detailed information on the affected environment is contained in **Chapter 3** and in **Appendix B**.

Environmental Consequences and Mitigation

The following is a summary of environmental consequences and mitigation for the No-Build Alternative and the Preferred Alternative. Detailed information is contained in **Chapter 4**. Surface Transportation and Airports and Aviation impacts are also summarized below and contained in **Chapters 5** and **6**. The Study Area referenced in the following sections refers to a 0.25-mile buffer of the alignment and a 0.5-mile buffer around the station locations.

No-Build Alternative

Under the No-Build Alternative, growth in this part of the DART Service Area would continue to occur in a manner that primarily responds to automobile access. The No-Build Alternative would not be consistent with local and regional land use plans, which have been developed over the years to take advantage of the Preferred Alternative to support sustainable growth patterns and achieve transit-oriented development plans. The No-Build Alternative pattern of growth would not support a decrease in overall vehicle miles of travel (VMT) and congestion delay, thus exacerbating the region's air quality issues.

The No-Build Alternative would not require the acquisition or displacement of any property. There would be no changes or impacts to existing neighborhoods. However, neighborhoods and community facilities within the Study Area could be negatively affected over time. As the region continues to grow, more modes of transportation may be necessary to help mitigate congestion and aide in mobility for those who live and work within the Study Area, as well as those commuting through it. DART implemented service improvements to improve headways and restructure some routes in March 2018, of which a limited number enhanced services in the corridor. Transit and

transportation improvements would continue to be made incrementally. Increasing traffic congestion would result in more delay and impacts to travel and transit reliability. The No-Build Alternative would not offer any new direct east-west routes to enhance access to employment and activity centers in the Study Area, and would not enhance access for residents, including environmental justice populations, of the Study Area to access other parts of the region.

Preferred Alternative

Table ES-1 provides a summary of the potential impacts and mitigation for environmental resources under the Preferred Alternative. Since the majority of the Preferred Alternative is located within an existing railroad right-of-way, there are limited environmental impacts along much of the corridor. The exception to this is where there are sensitive land uses or where the project deviates from the existing corridor on new alignment.

The Preferred Alternative is not expected to increase growth or development within the larger DFW region. Rather, the Preferred Alternative will serve to redistribute future land use growth patterns by supporting sustainable development around stations, which is consistent with local and regional land use plans. Providing an alternative mode for direct and reliable east-west access to corridor activity and employment centers is forecasted to reduce VMT and congestion delay, which in turn benefits air quality.

The Preferred Alternative will require acquisition of property for alignment deviations, stations and facilities. One trail (Spring Creek Trail) will be realigned as part of the Preferred Alternative. The Preferred Alternative will also accommodate implementation of the Cotton Belt Regional Trail along some sections and will shift the historic White Rock Creek Bridge by 30 feet.

The Preferred Alternative will result in some noise and vibration impacts and introduce new physical features through the Study Area in neighborhoods. These impacts will be mitigated through a variety of measures including quiet zones, noise barrier walls, crossing bell mitigation, and visual landscaping enhancements. To address safety concerns, fencing will be provided in residential areas, near schools and other high activity areas.

Table ES-1. Summary of Preferred Alternative Environmental Impacts and Mitigation

Impact Category	Impacts	Mitigation Measure(s)
Land Use	No Impacts. The Project is consistent with regional and local land use plans.	Not Applicable
Socioeconomic Characteristics and Cohesion	Potential safety and access impacts adjacent to Fairhill School.	DART will provide safety fencing along corridor adjacent to Fairhill School.
	Potential impacts to North Dallas Eruv.	DART will coordinate with City of Dallas to minimize effects on the Eruv and existing city ordinance.
	Potential safety impacts at street crossings near school attendance zones.	DART will provide enhanced safety features near nine schools where attendance zones are crossed by the Project; conduct DART Transit Education sessions with schools and organizations prior to revenue service.
Acquisitions and Displacements	Alignment Deviations (up to 73 acres). One residential displacement on commercial property. Seven business displacements.	DART will follow federal policies and procedures related to acquisition and relocation assistance. DART will obtain Mass Transit Easement from DFW Airport for use of airport land.
	Stations (up to 22 acres) One business displacement.	DART will follow federal policies and procedures related to acquisition and relocation assistance.

Table ES-1. Summary of Preferred Alternative Environmental Impacts and Mitigation (cont'd)

Impact Category	Impacts	Mitigation Measure(s)
	Mercer Yard Relocation (up to 2 acres). No displacements.	
Parks and Recreation Facilities	Partial relocation of Spring Creek Trail.	DART will reconstruct a portion of Spring Creek Trail (see Section 4(f) evaluation). Trail will remain open during construction to the greatest extent possible.
	Potential visual and safety impacts to Preston Green Park.	DART will provide safety fencing and continuation of residential landscaping adjacent to Preston Green Park. During final design, a wall will be considered at this location (see Section 8.6.1).
Cultural Resources (Historic)	"Adverse effect" to White Rock Creek Bridge. "No effect" on other resources.	DART will relocate the bridge within the DART right-of-way for use as part of Cotton Belt Regional Trail; continued coordination with Texas Historical Commission (THC) through Memorandum of Agreement (MOA) to outline mitigation.
Cultural Resources (Archeological)	No Impact.	DART will continue coordination with THC if alignment or design changes occur.
Visual and Aesthetic Resources	Potential impacts of new bridge adjacent to Wheeler Bridge at Midway Road.	DART will construct a complementary structure for Wheeler Bridge.
	Potential visual impacts at station areas where sensitive land uses are present.	DART Station Art & Design Program will be used to blend station into community context; and will use indirect lighting to reduce glare at adjacent properties; DART will coordinate with local authorities and the community to plan landscaping at Knoll Trail Station for adjacent residential units.
	Potential visual impacts along the alignment where sensitive land uses are present.	DART will landscape at 120 to 150 foot intervals along residential areas in corridor cities where no natural buffer exists, as well as at Fairhill School and Preston Green Park; preserve existing vegetation to greatest extent possible; coordination with DFW Airport to ensure compliance with DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects*, DFW Airport guidelines, and FAA orders.
Public Safety and Security	Potential impacts to emergency vehicle response times at rail crossings.	DART will coordinate with municipalities potential emergency vehicle routes with Fire/Life Safety Committee during final design; new at-grade crossing for DFW Airport Fire Station 6; Positive Train Control (PTC) will also enhance operational safety of system.
	Potential pedestrian safety impacts at street crossings near school attendance zones.	DART will design pedestrian crossings to occur at designated street crossings (see also Section 4.3 Socioeconomic for schools); corridor safety fencing will be installed along the project corridor near residential areas, schools, and high pedestrian activity areas.
	Potential vehicle conflicts at street crossings.	DART will design and construct eight new grade separations and 34 quiet zones with enhanced safety features.
	Potential for increased conflicts between rail vehicles, automobiles, bicycles, passengers, and pedestrians in station areas.	DART will design and construct pedestrian connection enhancements between platforms at Downtown Carrollton and 12th Street Stations.
	Potential for crime at stations and associated parking facilities.	DART will use Crime Prevention through Environmental Design (CPTED) to enhance station safety and security.

Table ES-1. Summary of Preferred Alternative Environmental Impacts and Mitigation (cont'd)

Impact Category	Impacts	Mitigation Measure(s)
Environmental Justice (EJ)	No disproportionately high and adverse effect to EJ populations as project impacts will be experienced by both EJ and non-EJ population groups.	Not Applicable
Soils and Geology	Potential impacts to soil due to vegetation removal or increased erosion during construction.	DART will establish protective vegetation and use of Best Management Practices (BMP) during construction.
Hydrology/ Floodplains	Minor fill amounts will be required for bridges at nine floodplain locations.	DART will conduct detailed hydrologic/hydraulic analysis during final design to determine impacts; obtain Trinity River Corridor Development Certificate (CDC); coordinate with US Army Corps of Engineers (USACE), DFW Airport, and corridor cities during final design to determine and obtain permits and complete associated mitigation.
Water/Wetland Resources	Approximately 1.32 acres of potential waters of the US will be impacted by addition of fill at 17 locations.	DART will determine exact fill types and amounts will once design is finalized and, if necessary, DART will be obtain permit with a nationwide permit from USACE in coordination with NCTCOG and the Section 214 Program.
Air Quality	No impact; the Project is projected to reduce Vehicles Miles of Travel (VMT) and congestion delay.	Not Applicable
Noise	5,366 residential impacts.	DART will coordinate with FRA to implement quiet zones to eliminate 95 percent of the residential impacts due to train horn noise; DART will install a total of 22,250 feet of noise barrier walls at 20 different locations; crossing bell mitigation at seven locations. DART will employ enhanced maintenance and vehicle treatments to further reduce noise levels.
	17 institutional impacts.	DART will coordinate with FRA to implement quiet zones to eliminate all institutional impacts due to train horn noise.
Vibration	Nine residential impacts.	DART will install a total of 2,850 feet of tire-derived aggregate (TDA) at five different locations. An additional 8,600 feet of TDA will be installed at 10 locations based on a more conservative threshold of 65 VdB, for a total of 11,450 feet.
	Potential impacts at three institutional sites.	DART will complete detailed vibration studies at institutional sites during final design (UT Southwestern Medical Center Clinic, the Qorvo semiconductor facility and the Texas Instruments semiconductor facility).
Hazardous and Regulated Materials	Potential impacts associated with nine high risk, 19 moderate risk, and 18 indeterminate risks sites along the corridor. Potential to uncover or disturb existing hazardous and toxic materials, as well as fill from unknown sources.	If unanticipated sources of hazardous or regulated materials are suspected or encountered during construction, DART Environmental Compliance division shall be notified immediately. Further investigation is recommended at previously identified sites based on their proximity to subsurface construction; DART will comply with all applicable federal and state regulations; Phase I Environmental Site Assessments (ESA) are recommended for all property acquired for Project.
	Potential hazardous materials present at existing Mercer Yard.	Phase I ESA will be conducted during final design.
	One high risk site in Plano near 12th Street Station is proposed as Municipal Settings District (MSD).	Enact precautions in the Plano MSD zone.

Table ES-1. Summary of Preferred Alternative Environmental Impacts and Mitigation (cont'd)

Impact Category	Impacts	Mitigation Measure(s)
Biological and Natural Resources	Potential vegetation impacts at stations and along rail right-of-way for construction.	Compliance with local tree and landscaping ordinances, including tree replacement, if needed; conduct tree survey during final design; site planning and construction techniques will be designed to avoid and preserve existing mature native trees and shrubs; use of native vegetation; avoid soil disturbances by using nearby roadways and bridges when crossing drainages, wetlands, and creeks.
	Removal of vegetation will have minimal effect on wildlife species. Threatened and endangered species or subspecies have a low to moderate potential of occurring within the Study Area.	Ongoing coordination with the Texas Parks and Wildlife Department (TPWD) and US Fish and Wildlife Service during construction; replacement vegetation will utilize native species; use recommended vegetation on DFW Airport to avoid attracting hazardous wildlife.
Construction Impacts	Temporary construction impacts will occur for a limited duration.	A variety of environmental protection measures will be used to minimize construction impacts to the natural environment, traffic, access, and sensitive land uses. See Section 4.21 for impacts and typical mitigation.
	Subsurface utilities may be impacted during construction.	Verify utility information during final design and coordinate relocations with utilities.
	Two ONCOR towers will be relocated for the Cypress Waters alignment.	Finalize ONCOR tower relocation plan and conduct additional archeological testing in coordination with THC at new sites.
Section 4(f) Use	4(f) Exception under 23 CFR 774.13 (g) for White Rock Creek Bridge.	Reuse White Rock Creek Bridge within DART right-of-way for future Cotton Belt Regional Trail at White Rock Creek. Ongoing coordination with THC to relocate bridge through MOA.
	de minimis impact to Spring Creek Trail	Spring Creek Trail will be relocated south of alignment. Ongoing coordination with TPWD under Chapter 26.

Source: GPC6; DART Capital Planning

Surface Transportation Impacts

Travel conditions through the corridor are projected to improve under the Preferred Alternative. Bus routes in the corridor will be restructured when Cotton Belt service begins. Since there is no competing express bus service, route modifications will be minor to reroute buses to serve new stations.

During final design, DART will conduct a detailed traffic study based on final configuration of roadways and feeder bus plans for stations if required by the local jurisdiction. These studies may recommend turn lanes, traffic control, signal improvements, pedestrian markings/signals, bus stop relocations, or other improvements to ensure safe access for autos, buses and pedestrians. DART will coordinate with each city during final design to conduct these analyses and develop appropriate mitigation.

The Preferred Alternative includes opportunities for bicycle and pedestrian facilities within the right-of-way. This is consistent with planning entities in the Study Area, which are anticipating additional growth and are planning for it in terms of multimodal transportation improvements.

Table ES-2 provides a summary of the potential impacts and mitigation for surface transportation.

Table ES-2. Summary of Preferred Alternative Surface Transportation Impacts and Mitigation

Impact Category	Impacts	Mitigation Measure(s)
Transit Facilities and Services	Overall benefit: capacity, service levels, ridership, reliability and geographic coverage will be improved.	None required
Highway and Roadway	Benefit: will reduce Vehicle Miles Traveled (VMT) and hours of congestion delay.	None required
	Fourteen street crossings will experience queuing or Level Of Service (LOS) impacts.	Grade Separations: South Belt Line Road, Josey Lane, Midway Road, Hillcrest Road, Coit Road, Custer Parkway, Plano Parkway, and Jupiter Road. Signal timing, signal phasing and/or intersection improvements: MacArthur Boulevard and Belt Line Road, Luna Road and East Belt Line Road, Marsh Lane, Addison Road and Arapaho Road, McCallum, Alma Road, SH 190 Frontage Roads, K Avenue, and Municipal Avenue. Signal systems at grade crossings will include all signs, signals, and warning devices.
	Three at-grade crossings at DFW Airport will experience queuing or LOS impacts.	Continue coordination with DFW Airport, including signal timing improvements at North Employee Road/International Service Road.
	Traffic re-routings and detours will be required along discrete alignment sections during construction.	Coordination with DFW Airport and cities; Provide notifications of road and sidewalk closures and detours during construction.
	Driveway impacts: • Dallas Water Utilities (DWU) facility near Coit Road • Apartment complex near Coit Road. • Entrance to Adventure Landing and University Place entrance. (Sugar Cane Way at Coit Road) • Driveways near Hillcrest Road and McCallum Boulevard	• Relocation of DWU driveway, including modified access easement. • Provide alternate apartment access if necessary • Modify driveways to meet new grade of Coit Road • Relocate, modify or otherwise mitigate these changes in access
Freight Rail	Limited windows of opportunities for freight providers to operate.	Existing single-track rail corridor will be double-tracked and upgraded to Class 4 track standards.
	Potential conflicts with railroad crossings of Madill Subdivision.	Project will be grade-separated over the Madill Subdivision to avoid any conflicts between freight activity and passenger rail.
	Impact to Mercer Yard in Downtown Carrollton.	Mercer Yard will be relocated for local freight service providers. DART will dispatch trains and coordinate service opportunities.
Station Access and Parking	Potential for additional parking demand.	Preserve opportunities for parking expansion where available.
	Potential pedestrian access impacts.	Include pedestrian access with traffic studies.
	Potential traffic impacts associated with park-and-ride traffic and bus operations with combined traffic from proposed development.	Conduct traffic studies based on final configuration of roadways and feeder bus plans for stations (if required by the local jurisdiction). Studies may recommend turn lanes, traffic control, signal improvements, pedestrian markings/signals, bus stop relocations, or other improvements to ensure safe access for autos, buses and pedestrians.

Table ES-2. Summary of Preferred Alternative Surface Transportation Impacts and Mitigation (cont'd)

Impact Category	Impacts	Mitigation Measure(s)
	Potential impacts to business and residential areas from hide-and-ride overflow parking near Knoll Trail Station.	Monitor parking demand and potential overflow, and develop mitigation plan if issues arise.
Non-Motorized Transportation	Potential temporary impacts to pedestrian and on-street bicycle facilities that cross the corridor.	Minimize closures as crossings are rebuilt; where warranted, install safety equipment (enhanced traffic signals, crosswalks, and striping, and signage); provide notifications of road and sidewalk closures and detours during construction; and coordinate with NCTCOG and cities on future facilities to not preclude them.

Source: GPC6; DART Capital Planning

Airport and Aviation Impacts

The Preferred Alternative crosses northern portions of DFW Airport and will join with the TEXRail Project at a shared station. The existing Cotton Belt railroad right-of-way and the Preferred Alternative traverses south of the southern property line of Addison Airport. Because portions of the Preferred Alternative are located on DFW Airport and near Addison Airport properties, the FAA has an interest in the Project. Therefore, the FAA was invited to participate in the EIS process as a Cooperating Agency. With joint approval authority, the FAA has approved this FEIS. An Airspace Study (FAA Form 7460-1, Notice of Proposed Construction or Alteration) will be completed and provided for FAA approval during the Design-Build phase of the Project at a minimum of 60 days prior to construction for FAA to process.

DFW Airport

Due to the sensitivity of equipment located at the Airfield Surveillance Radar (ASR) site at DFW Airport, the ASR has been added as a vibration-sensitive receptor for the Cotton Belt Project.

Due to FAA concerns, DART will participate in vibration testing when TEXRail begins testing in October 2018. As part of its study and evaluation, the FAA will utilize the Radar Analysis Support System tool to measure the vibration or “jitter” in the antenna pedestal group. The FAA will also study and evaluate the operational system software and perform data recordings to ensure the radar is performing within its operational tolerance and at an operational capability equal to or better than before the installation of TEXRail and the operations thereon. DART will coordinate with FAA to conduct similar analysis on the Cotton Belt operations. DART will also coordinate with FAA to study, evaluate, and as necessary, conduct further vibration testing once test rail operations have commenced on the Cotton Belt Project.

A determination of potential mitigation measures that may be required will be made during the regional rail testing period (as requested by the FAA). DART will participate with the testing to determine if an additional track and increased frequency will result in impacts.

Addison Airport

As the rail line will remain within the existing rail right-of-way south of Addison Airport, revisions to the Addison Airport Layout Plan (ALP) will not be required. The FAA made a final determination on October 18, 2017, that a Runway Protection Zone (RPZ) alternative analysis is not required at Addison Airport since the majority of the alignment will not be altered and a land use change was not occurring. No additional mitigation is necessary for Addison Airport.

Cost and Financial Analysis

In 2016, DART advanced implementation of the Cotton Belt Corridor to the year 2022 and reflected this new revenue service date in its FY2017 Twenty-Year Financial Plan. The Cotton Belt Project is proposed to be financed through a federal loan program called Railroad Rehabilitation and Improvement Financing (RRIF), along with a combination of other federal, regional and local sources. Proposed funding sources total $1,135.0 million in the FY18 20-Year Financial Plan. The preliminary cost estimate is in line with the current FY18 Financial Plan budget. Annual operating and maintenance costs are estimated to be $17.2 million per year.

The RRIF program provides direct loans and loan guarantees to finance development of railroad infrastructure. DART submitted a pre-application to the FRA with project information and the anticipated loan request amount of $908 million. A complete application will be submitted concurrent with the completion of the NEPA process and issuance of this FEIS/ROD. More detailed information on project cost estimates and funding sources is in **Chapter 7**.

Public and Agency Coordination and Consultation

The Project has included a comprehensive public participation and agency consultation program. A Public Involvement Plan (PIP) was developed to proactively and effectively communicate the project scope, issues, and potential impacts and benefits while collecting valuable public, agency and stakeholder input for the project, the DEIS, and this FEIS.

Public and agency involvement activities officially started with the publication of the NOI to prepare an EIS for the Cotton Belt Project. The NOI was issued in the Federal Register by the FTA on July 8, 2010. Early planning on alternatives and environmental considerations was conducted through 2013. In August 2016, DART re-launched the Project and EIS documentation efforts. There have been four rounds of public meetings, and several Area Focus Group (AFG) meetings. The AFGs, which consist of residents, property owners, schools, and other community leaders representing a variety of interests, reviewed the recommendations relative to the environmental analysis and preliminary design of the Project. Numerous other briefings and meetings were held and are documented in **Chapter 8**. Both the initial scoping effort and more recent activities provided the basis for identification of issues important to project definition and the DEIS.

In addition, DART has coordinated with agencies to ensure the review of potential environmental impacts and obtain comments or concurrence on proposed approach to mitigate impacts.

The DEIS document, prepared in accordance with applicable state and federal regulations, presented the anticipated environmental consequences of the Preferred and No-Build Alternatives with appropriate mitigation measures. The DEIS was approved for public circulation by the FTA and cooperating agency, FAA. Copies were made available to the public, stakeholder organizations, and local, regional, state and federal agencies for their review and comment. Its availability for review and comment was officially advertised in the Federal Register, as well as through the local media and press.

Formal public hearings were held to give interested parties the opportunity to formally submit comments on the DEIS. Additional or subsequent written comments were received at DART headquarters via written or email form.

Public hearing transcripts and all correspondence were reviewed at the close of the DEIS public and agency review period. Substantive comments were catalogued and recorded into appropriate subject areas. All comments were reviewed, received responses, and are documented in **Section 8.6** of this FEIS/ROD.

Evaluation of Alternatives

As described in **Section 1.4**, the Project's primary purpose is to provide passenger rail connections that will improve mobility, accessibility and system linkages to major employment, population and activity centers in the northern part of the DART Service Area and support sustainable growth, local and regional land use visions, and economic development. Specific transportation needs identified for the Cotton Belt Corridor are to improve transit travel times by providing an alternative to congested roadway networks, provide reliable connections between the existing and proposed transit systems, improve accessibility to employment, activity centers and residential areas in the corridor, and promote sustainable development patterns in the Study Area.

In addition to the above purpose and need, the following goals for the Cotton Belt Project have been identified:

- Enhance corridor mobility and accessibility
- Reduce Vehicle Miles of Travel (VMT)
- Promote economic development and sustainable land use patterns
- Provide an environmentally-sensitive transit investment

No-Build Alternative

The No-Build Alternative would not achieve the purpose or needs identified in the corridor, and would not fulfill the project goals. The No-Build Alternative would not provide a reliable transit alternative to congested roadway travel, and scheduled transit connections may not be met due to worsening traffic conditions. Corridor mobility and accessibility would not be enhanced through connectivity with existing and future transit facilities or improved access to Study Area activity centers, employment hubs, and DFW Airport. Transit ridership would not increase under the No-Build, and VMT would not be reduced. Existing travel and transit modes would continue to be subject to increasing congestion and less reliable travel times. The No-Build Alternative is also not consistent with the goal to promote economic development and sustainable land use patterns, and is not consistent with land use and station area transit-oriented development plans that were created around a future rail project. It would not enhance access to employment centers in this part of the Service Area or enhance mobility for EJ populations. Lastly, the No-Build Alternative would not implement transit investment in the Study Area. Rather, the communities along the Study Area would continue to be subject to continued growth and congestion that could affect overall long-term natural, social and economic health of the area.

Preferred Alternative

The Preferred Alternative will meet the Purpose and Needs identified in the corridor. The Preferred Alternative will be designed to provide a high-speed, reliable transit option for residents and commuters in the corridor with convenient connections to existing and planned transit systems. The Preferred Alternative will create an east-west connection of three LRT lines, a major bus transit center, and one regional rail line (TEXRail), thus enhancing regional connectivity and providing an improvement over east-west transit travel times in the corridor. These connections will improve mobility, accessibility and system linkages to major employment, population and activity centers in this part of the DART Service Area. The Preferred Alternative will also offer opportunities to connect with the proposed future BNSF regional rail corridor between Frisco and Irving, and a potential southern extension of the DCTA A-Train with connections in downtown Carrollton. The Preferred Alternative will support sustainable growth, local and regional land use visions, and economic development opportunities around station areas which is consistent with local and station area land use plans.

The Preferred Alternative will fulfill each of the Project goals. Corridor mobility and accessibility will be improved through direct connections to key transit facilities, including the Orange Line and future TEXRail at DFW Airport, the Green Line in downtown Carrollton and the Addison Transit Center, and the Red/Orange Lines at both CityLine/Bush and 12th Street. These connections will enhance mobility options for residents of the region to access activity and employment centers with the Study Area, and will provide more direct linkages for Study Area residents to access other areas for entertainment, education or jobs. DFW Airport will have a direct connection for this growing area of the region. More than 11,000 riders per day will use the Preferred Alternative. Transit ridership will increase on both the bus and rail system, with 7,400 added trips regionally. Numerous special events held in the Study Area will have the Project as a transit service option to reduce parking and event congestion.

Compared to a No-Build Alternative, the Preferred Alternative will also reduce VMT by nearly 80,000 miles per day within the DART Service Area. Hours of congestion delay will be reduced by 3,800 hours per day. Both factors contribute positively to air quality. Transit capacity will be improved by adding regular service seven days a week. Compared to auto and bus travel, the Preferred Alternative will operate on an exclusive guideway that will not be subject to incidents and traffic congestion.

The Preferred Alternative will promote economic development and sustainable land use patterns. The Preferred Alternative will be consistent with both local and regional station area and comprehensive plans, which focus on new development around stations to enhance access to jobs, a more sustainable development pattern, and livable communities. The Preferred Alternative will continue to provide opportunities for DART and local and regional agencies to coordinate economic and transit-oriented development.

Lastly, the Preferred Alternative will support the goal of providing an environmentally-sensitive transit investment. The Preferred Alternative will be designed, constructed and operated to minimize negative impacts to the community through sensitive design. Where impacts are identified, mitigation will be implemented to ensure the Preferred Alternative will be implemented in a manner sensitive to the neighborhoods. The Preferred Alternative will also have minimal impacts to the natural environment, as it will be located primarily within an existing, developed rail right-of-way. There will be some vegetation removal for construction and limited amounts of fill for bridges.

Issues Resolved Following the DEIS and Other Project Changes

This FEIS identifies the Build Alternative as the Preferred Alternative. FTA and DART examined the public and agency comments received during the DEIS public circulation period. The comments and public and agency input assisted with the resolution of several issues identified in the DEIS, including:

- Location of the EMF site –Two site options were identified in the DEIS. The preferred site (TRE Irving Yard) has been identified in this FEIS/ROD.
- Mitigation Measures – Proposed mitigation measures were identified in the DEIS. Mitigation commitments were determined following the public circulation period. Final mitigation commitments are included in this FEIS/ROD and documented in Attachment A of the ROD. Some mitigation measures may not be finalized until final design pending additional studies.

In addition to the above resolved issues, public and agency input also resulted in a number of project changes, primarily related to the addition of three grade separations and the elimination of two stations. These project changes are discussed in detail in **Section 2.2;** the benefits and impacts of these changes are described in this FEIS.

1. Purpose and Need

1.1 Introduction

The Cotton Belt Corridor Regional Rail Project (Cotton Belt Project or Project) is a 26-mile passenger rail alignment extending from Dallas-Fort Worth International Airport (DFW Airport) eastward to Shiloh Road in Plano, connecting with the existing Dallas Area Rapid Transit (DART) Orange Line at DFW Airport, the Green Line in Carrollton, and the Red Line in the Plano/Richardson area (**Figure 1-1**). The Project traverses through three Texas counties: Tarrant, Dallas, and Collin; and seven cities: Grapevine, Coppell, Dallas, Carrollton, Addison, Richardson and Plano.

1.2 Project Background and Regional Context

A passenger rail corridor concept from the DART Red Line in the Richardson/Plano area to the Green Line in Carrollton was included in the original 1983 DART Service Plan. In 1989, the DART Transit System Plan (TSP) recommended the purchase and preservation of the Cotton Belt Corridor right-of-way from Wylie, Texas, to north Fort Worth, Texas, and the 52-mile corridor purchase was completed in 1990. During the development of the 1995 DART TSP, this corridor was combined with others as alternatives for further study to serve an expanded North Crosstown Corridor.

DART conducted a high-level alternatives analysis and completed an existing conditions report on the North Crosstown Corridor as part of its 2030 TSP. The 2030 TSP identified the Cotton Belt Corridor as a focus area and concluded that by 2030, the North Crosstown Corridor area would experience notable insufficient roadway capacity equivalent to more than 10 freeway lanes. The report indicated that “express” passenger rail service on the Cotton Belt Corridor (from DFW Airport to the DART Red Line), using 20-minute peak and 60-minute off-peak service, was the most cost-effective and direct route to serve this east-west crosstown corridor. The 2030 TSP identified an implementation timeframe of 2025-2030 when the TSP was adopted in 2006. Following the recession of 2008-2009, the Cotton Belt, as well as several other projects, were deferred to post-2035.

The Cotton Belt Corridor has also been recognized on a regional level, and has been included in the Dallas-Fort Worth Metropolitan Planning Organization (MPO) and the North Central Texas Council of Government’s (NCTCOG) Metropolitan Transportation Plan (MTP) since 1986.

In October 2008, the Fort Worth Transportation Authority (FWTA, recently renamed as Trinity Metro) completed a Draft Environmental Impact Statement (DEIS) for the section of the Cotton Belt from DFW Airport to Fort Worth as part of their Southwest-to-Northwest (SW2NE) project (now known as TEXRail). The FEIS was completed in September 2014. Construction began in August 2016 and the project is scheduled for operation in late 2018.

In May 2010, a Memorandum of Understanding (MOU) between DART and the Regional Transportation Council (RTC) was executed concerning the identification of funding sources to implement rail service on the Cotton Belt Corridor. The MOU established DART’s role to advance the preliminary engineering and conduct an EIS for the Project, and the NCTCOG was to develop a financial plan sufficient to design, build, and implement regional rail service on the Cotton Belt Corridor.

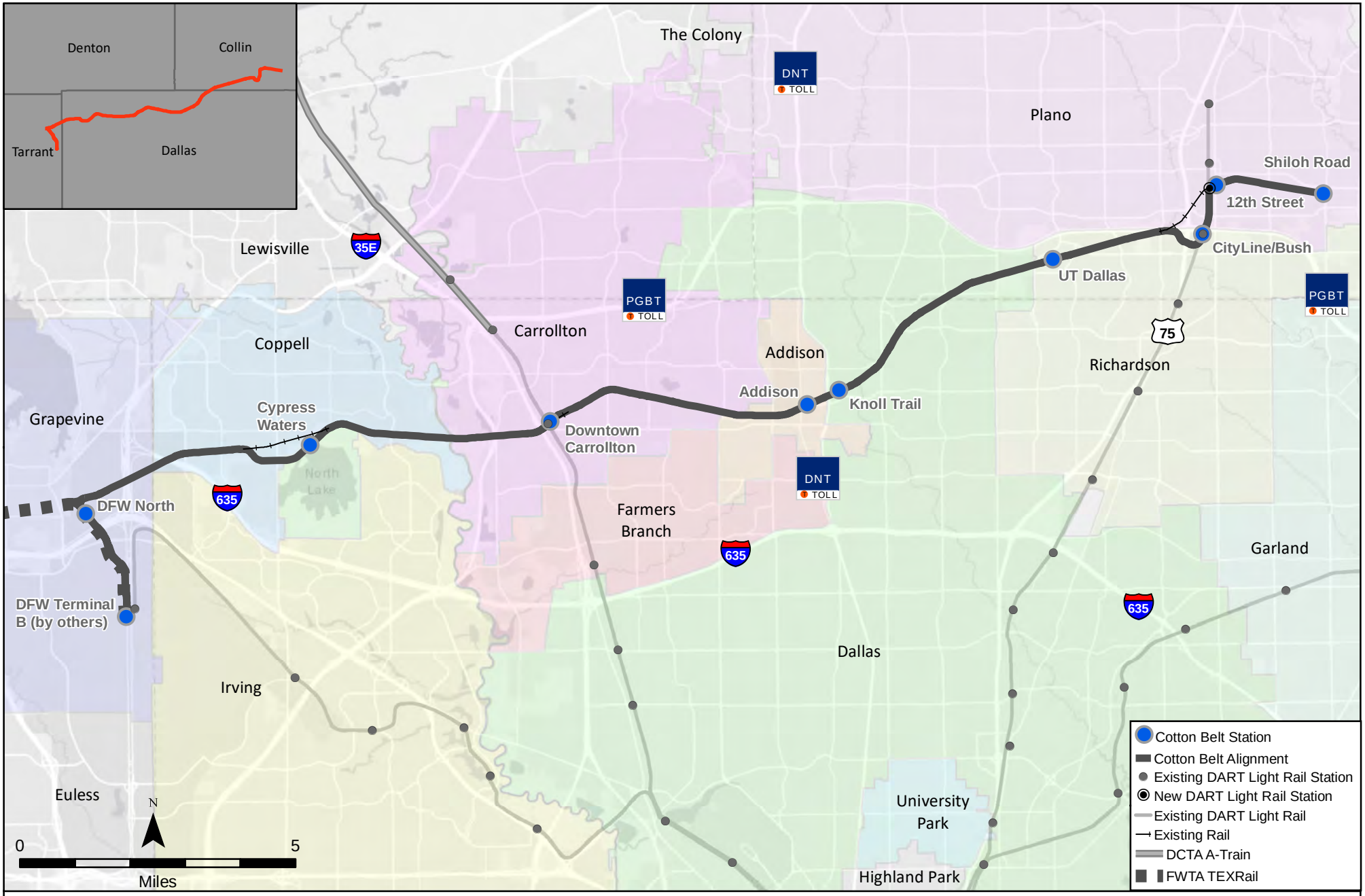


Figure 1-1
Cotton Belt Regional Rail Project

Cotton Belt Corridor
Regional Rail Project
Final Environmental Impact Statement

On July 8, 2010, a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the Cotton Belt Project was published in the Federal Register. The Federal Transit Agency (FTA) was identified as the lead agency and the Federal Railroad Agency (FRA) and the Federal Aviation Agency (FAA) were invited to be cooperating agencies. Scoping meetings were held in July 2010. DART continued to advance the EIS effort while the RTC finance initiative was underway.

The funding MOU with the RTC expired on September 30, 2012, without a substantive financial plan. The RTC/NCTCOG efforts to identify funding did not result in any financial proposals. As a result, DART suspended the NEPA process in late 2012.

In April 2014, DART compiled the data collected and analysis completed during the EIS effort and assembled this information into an *Alternatives and Environmental Considerations Repor*t (AECR). The AECR documented the 5 percent design for the Cotton Belt Regional Rail Project and identified existing environmental conditions and potential impacts along the length of the corridor.

In 2015, DART included the Cotton Belt Corridor in the FY2016 DART Twenty-Year Financial Plan for implementation in year 2035. DART and regional stakeholders continued to discuss methods to accelerate or phase the Project earlier than 2035.

In 2016, DART moved the project schedule forward by more than 10 years as part of its FY2017 Twenty-Year Financial Plan by proposing a phased approach to implementation that would initially include a mostly single-track project and by taking advantage of a new federal loan program called Railroad Rehabilitation and Improvement Financing (RRIF). Under this program, DART plans to obtain a low-interest federal loan that is specific for regional rail and freight projects. The DART 2045 TSP, which is under development, will reflect this change to the project schedule and outline plans to enhance corridor infrastructure and service in the future.

To support the new project schedule, DART has re-started the preliminary engineering and is preparing an EIS under the original NOI, which includes the identification of environmental impacts, design considerations and cost estimates. DART and the FTA, in cooperation with the FAA, and participation with the FRA, are conducting the EIS in accordance with the National Environmental Policy Act (NEPA: 42 USC 4321 et seq.) of 1969 and the regulations implementing NEPA set forth in 40 CFR Parts 1500-1508 and 23 CFR Parts 771 and 774; and FAA Orders 1050.1F and 5050.4B.

Relevant System Planning Activities

The Cotton Belt Corridor has been studied and included in numerous transportation improvement plans since 1983. **Table 1-1** summarizes the plans that have included the Cotton Belt Corridor.

1.3 Corridor Study Area

The Study Area for the Cotton Belt Project (herein after referred to as "Study Area") is generally a 0.25-mile buffer on either side of the alignment and a 0.5-mile buffer around station locations. In certain sections of the FEIS, the Study Area is different depending on the type of resource and the extent of potential impacts. The Study Area is served by or intersects a variety of transportation systems including: DFW International Airport, Addison Airport, roadways, rail and bus transit facilities, and freight corridors. The Cotton Belt Corridor intersects several major freeways including, State Highway (SH) 121, IH 635, the President George Bush Turnpike (PGBT), IH 35E, the Dallas North Tollway (DNT) and US 75 (North Central Expressway).

Table 1-1. Cotton Belt Corridor Regional System Planning Documents

Document	Key Information
DART Final Service Plan, 1983	Identified at-grade passenger rail service from downtown Carrollton (Green Line) to the North Central Corridor (Red Line).
Mobility 2000 – The Regional Transportation Plan for North Central Texas, May 1986	Preserved right-of-way for the Cotton Belt Corridor from downtown Fort Worth to Plano.
DART Transit System Plan, June 1989	Cotton Belt Corridor right-of-way preservation and purchase. Completed purchase of 52 miles of right-of-way from Wylie, Texas, to north Fort Worth, Texas, in 1990.
2010 DART Transit System Plan, November 1995	Identified North Crosstown Corridor [Cotton Belt, Kansas City Southern (KCS), IH 635 and Burlington Northern Santa Fe (BNSF) railroad corridor alignments].
Mobility 2020 – The Metropolitan Transportation Plan, December 1996	Identified commuter rail on the Cotton Belt Corridor from Parker Road or Addison Transit Center to DFW Airport and light rail from Addison Transit Center to IH 635/US 75.
Mobility 2025 – The Metropolitan Transportation Plan, January 2000	Evaluated options for the North Crosstown Study Area: passenger rail along KCS/BNSF, Cotton Belt Corridor from Parker Road to DFW Airport, Addison Transit Center to DFW Airport, and light rail from Addison Transit Center to IH 635/US 75.
Mobility 2025 Update – The Metropolitan Transportation Plan, May 2001	Updated the MTP identifying an eastern transition to light rail along IH 635 near Addison Transit Center.
Mobility 2025 – The Metropolitan Transportation Plan – 2004 Update, January 2004	Updated the MTP including options for light rail from Addison Transit Center to Forest Lane Station on the DART Red Line.
Mobility 2025 – The Metropolitan Transportation Plan – April 2005 Amendment, April 2005	Updated the MTP including options for passenger rail service along BNSF and KCS corridors from Carrollton to Richardson.
DART 2030 Transit System Plan, October 2006	Evaluated and recommended express rail on the Cotton Belt Corridor from the DART Red Line to DFW Airport.
Mobility 2030 – The Metropolitan Transportation Plan, June 2007	Updated MTP with light rail/new technology for the Cotton Belt Corridor from DFW Airport to downtown Plano or Bush Turnpike Station.
Mobility 2030 – The Metropolitan Transportation Plan – 2009 Amendment, April 2009	Updated MTP.
Cotton Belt Corridor Conceptual Engineering and Funding Study, April 2010	NCTCOG study provided background information on the existing environment and compared various combinations of interlining with the western portion of the corridor, Red Line termini, minor alignment deviations, and station locations on the Cotton Belt Corridor.
Mobility 2035 – The Metropolitan Transportation Plan March 10, 2011	Updated MTP with light rail/new technology for the Cotton Belt Corridor from DFW Airport to downtown Plano or Bush Turnpike Station.
Alternatives and Environmental Considerations Report (AECR), April 2014	Advanced a 5 percent design for the Cotton Belt Regional Rail Project and identified existing environmental conditions and potential impacts along the length of the Cotton Belt Corridor.
Mobility 2040 – The Metropolitan Transportation Plan for North Central Texas, March 2016	Latest iteration of the MTP, which is consistent with Mobility 2030's position on transit implementation in the Cotton Belt Corridor.
DART 2045 Transit System Plan, in development	TSP includes DART's plans for developing the Cotton Belt Corridor.

Source: DART Capital Planning

A combination of local, express, suburban, crosstown and shuttle buses serve the corridor. There are currently 33 DART bus routes operating in the Study Area and the Addison Transit Center is directly on the corridor.

As an east-west corridor, the Project will connect with several existing and future rail lines, including the existing Orange Line and future Trinity Metro TEXRail Project at DFW Airport Terminals A and B, the Green Line at the Downtown Carrollton station, the Red/Orange Lines at the CityLine/Bush Station in Richardson, and the infill 12th Street light rail station in Plano. **Figure 1-2** illustrates the Cotton Belt Corridor in relation to the existing and committed transit network in the DART Service Area.

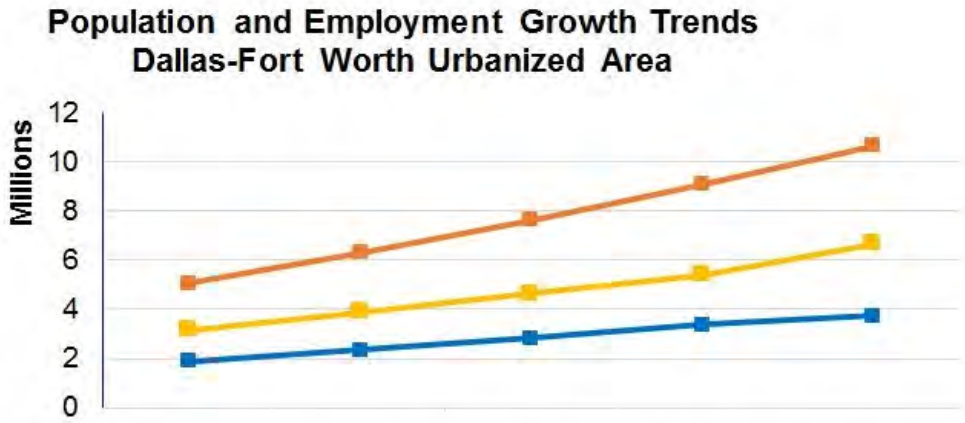
Two future transit corridors have been identified in the NCTCOG Mobility 2040 MTP that could connect to the Cotton Belt Corridor but they do not have funding. These include the Frisco Corridor, a potential alignment using an existing railroad corridor between Irving and Frisco that would connect in downtown Carrollton, and a potential transit corridor (bus or rail) north to McKinney within the DART-owned railroad corridor north of Parker Road.

Three freight companies operate on sections of the Cotton Belt tracks through agreements with DART: The Fort Worth and Western Railroad (FWWR), the KCS Railroad, and the Dallas Garland Northeastern (DGNO) short-line freight rail service. The Union Pacific (UP) Railroad has overhead rights but does not currently operate within the corridor. On January 22, 2010, the Surface Transportation Board (STB) approved freight abandonment in the north Dallas area from Knoll Trail in Dallas to Renner Junction in Richardson. In addition, the BNSF operates freight on the Madill subdivision line from the north through downtown Carrollton toward Irving.

Population and Employment

Population has increased considerably in the Dallas-Fort Worth region over the past two decades. Population increased by 25 percent to 6,328,200 between 2000 and 2010. By 2040, the region's population is expected to increase by approximately four million persons. **Table 1-2** provides the NCTCOG regional projections for population, households, and employment for the Dallas-Fort Worth urbanized area which includes: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties. However, the majority of growth in population within the Study Area is projected in the Dallas, Collin and Tarrant Counties.

Table 1-2. Population and Employment Growth Trends



Year	2000	2010	2020	2030	2040
Population	5,067,400	6,328,200	7,646,600	9,107,900	10,676,844
Households	1,886,700	2,350,300	2,851,400	3,396,100	3,729,184
Employment	3,158,200	3,897,000	4,658,700	5,416,700	6,691,449

Source: NCTCOG Demographic 2030 and 2040 Forecasts (Jan. 24, 2007; Jan. 22, 2015); US Census Bureau

DART Current and Future Rail Services

Figure 1-2
Existing and Committed Transit Network
Data Source: DART

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The Dallas-Fort Worth region has also experienced considerable growth in employment over the past several decades which can be attributed to a favorable business climate, attractive tax policies and plenty of available land.

The Study Area hosts a number of large employers including 34 with 500 or more employees and over 90 employment centers with more than 250 people. The largest employment center within the Study Area is DFW Airport where approximately 60,000 airport, airline, cargo and additional employees are located. Additional major employers include State Farm Insurance and Raytheon at CityLine with approximately 12,800 employees. The University of Texas at Dallas (UTD) has 3,592 employees (2,406 staff and 1,186 faculty) in addition to an enrollment of 26,797 students. The Town of Addison is one of several communities along the corridor that has more employment than population. This 4.4 square-mile community located near the mid-point of the Cotton Belt Corridor had employment of 45,649 in 2010. By 2040, this is expected to increase to 70,847.

Table 1-3 provides the projected population and employment for municipalities along the Cotton Belt Corridor between 2010 and 2040. The Study Area is projected to increase 35 percent in both population and employment.

Table 1-3. Year 2010 to 2040 Projected Population and Employment Change

Location	Population			Employment		
	2010	2040	Percent Change	2010	2040	Percent Change
Addison	14,454	16,871	14%	45,649	70,847	36%
Carrollton	109,364	127,163	14%	68,199	138,093	51%
Coppell	36,191	42,697	15%	18,401	52,616	65%
Dallas	1,202,592	1,646,773	26%	1,038,314	1,791,041	42%
Farmers Branch	28,028	29,711	6%	75,013	139,964	46%
Grapevine	41,909	51,786	19%	49,565	107,791	54%
Irving	196,632	394,876	50%	165,435	420,456	60%
Plano	222,498	302,086	26%	115,048	321,911	64%
Richardson	92,577	132,083	30%	94,792	199,993	53%
Total	1,944,245	2,744, 006	29%	1,670,416	2,514,472	34%
Study Area	118,960	184,055	35%	208,134	281,094	35%

Source: DART and NCTCOG 2040 Demographic Forecast

This increase in employment and population has negatively impacted the region's transportation network and created a need for a more developed and efficient transportation system.

Travel Patterns and Congestion

The Study Area's employment and population centers are primarily accessible by automobile, and also by the radially-oriented DART Rail system and bus connections. While much of the corridor is characterized by suburban, low-density, auto-oriented land use patterns, there are increasingly dense, mixed use developments occurring around existing rail and Cotton Belt station areas. The Dallas-Fort Worth area, like many areas around the country, has experienced the decentralization of the urban core. Employment centers have largely shifted away from the region's core and developed along major freeways and arterials in the northern part of the DART Service Area. This trend has produced a strain on the region's transportation network and inability for the region to build sufficient roadway capacity.

The Study Area includes numerous roadway facilities that intersect the corridor both north-south and east-west. The north-south roadways include IH 35E, Dallas North Tollway (DNT) and US 75 (North Central Expressway). The east-west facilities include IH 635, Belt Line Road and President George Bush Turnpike (PGBT).

- IH 635 is the seventh most congested highway in the State of Texas.[1] The highway was recently reconstructed, and the improvements included two travel lanes and six managed lanes that replaced the two existing HOV lanes.
- Belt Line Road is a six-lane regional arterial running east-west through the Study Area. In 2017, traffic was over 38,000 vehicles per day (vpd) and is projected to increase to over 45,000 vpd by 2040.
- The PGBT is a six-lane roadway that carried 84,590 vehicles per day in 2017 and is projected to carry over 90,000 vehicles per day by 2040 in the Study Area.

The roadway network within the Study Area currently has moderate to severe traffic congestion. Congestion levels are measured by level of service (LOS). LOS is a rating system used to evaluate roadway performance. Performance is ranked "A" through "F", with "A" operating at free flow acceptable conditions and "F" operating with breakdown flows or unacceptable conditions. The evaluation is based on a combination of speed, delay and roadway design. **Table 1-4** indicates that vehicle miles of travel (VMT) per day, vehicle hours traveled (VHT) per day, and vehicle hours of congestion delay per day are all projected to increase by 2040 within the 0.5-mile Study Area. Hours of congestion delay are forecasted to increase by approximately twice the rate of VMT and VHT.

In addition, **Table 1-4** shows that 23 percent of the roadway network in the Study Area operates at a LOS D or E and 37 percent operates at a LOS F as of 2017. Conditions are projected to worsen by 2040 with 23 percent operating at LOS D or E and 41 percent operating at LOS F. This would begin to shift traffic away from the congested arterials onto the minor arterials and collector road system.

Table 1-4. Existing and Future Transportation Conditions Within 0.5-mile of Corridor

Performance Measure	2017	2040	Percent Change
Vehicle Miles of Travel per Day	6,377,069	7,733,452	17.5%
Vehicle Hours of Travel per Day	197,800	261,812	24.4%
Vehicle Hours of Congestion Delay per Day	46,658	78,632	41%
Lane Miles in Study Area	2,434	2,618	7%
Percent Lane Miles at LOS D, E	**2017**	**2040**	**Percent Change**
Freeway/Toll Road	31%	40%	23%
Principal Arterial	9%	8%	-10%
Minor Arterial	27%	18%	-47%
Collectors	12%	14%	17%
Freeway Ramps	6%	4%	-34%
Frontage Roads	10%	11%	8%
HOV	5%	3%	-52%
Total Roadway Network	23%	23%	0.0%
Percent Lane Miles at LOS F	**2017**	**2040**	**Percent Change**
Freeway/Toll Road	22%	20%	-9%
Principal Arterial	18%	16%	-16%
Minor Arterial	37%	40%	6%
Collectors	8%	11%	26%
Freeway Ramps	5%	5.4%	7.4%
Frontage Roads	5%	7%	29%
HOV	1.8%	1%	-82%
Total Roadway Network	37%	41%	9%

Source: NCTCOG, DART, 2017

[1] http://www.txdot.gov/inside-txdot/projects/100-congested-roadways.html

Existing Transit Conditions

The Study Area is served by light rail and local and express bus service that spans three transit service areas including DART, Denton County Transportation Authority (DCTA) and Trinity Metro.

Figure 1-3 illustrates the existing transit network in this part of the DART Service Area. As shown, DART provides the majority of transit service to the corridor with both bus and light rail. Most of the service consists of north-south and radial service with east-west services mostly limited to shorter local and feeder bus routes. The Red, Orange and Green Lines are radial in nature and all interface with the corridor, operating at 15/20 peak/off-peak headways. During FY2016, weekly average ridership ranged from 22,400 to 26,800 on the three lines. The Cotton Belt Project will interface with light rail at three existing stations, DFW Airport, Downtown Carrollton, and CityLine/Bush. FY2016 average daily station ridership ranged from 640 at Downtown Carrollton to 1,350 at CityLine/Bush. Ridership is expected to increase with new developments and connections to the Cotton Belt Project.

DART also operates 33 bus routes in the Study Area including five local routes, three express routes, 10 feeder routes, six cross-town routes, and nine special or shuttle routes, including those that serve DFW Airport. Route 400 (split into Routes 402 and 403 on March 26, 2018) is the only east-west route through the northern portion of the DART Service Area, serving a similar pattern as the Cotton Belt Project, but terminating in the Irving/Las Colinas area. This route runs east-west through the northern portion of the DART Service Area, and has the highest average weekday ridership of buses in the corridor with approximately 2,000 passenger trips. Routes 463 and 488 also average approximately 1,800 weekday passenger boardings. There is no direct east-west transit service to DFW Airport.

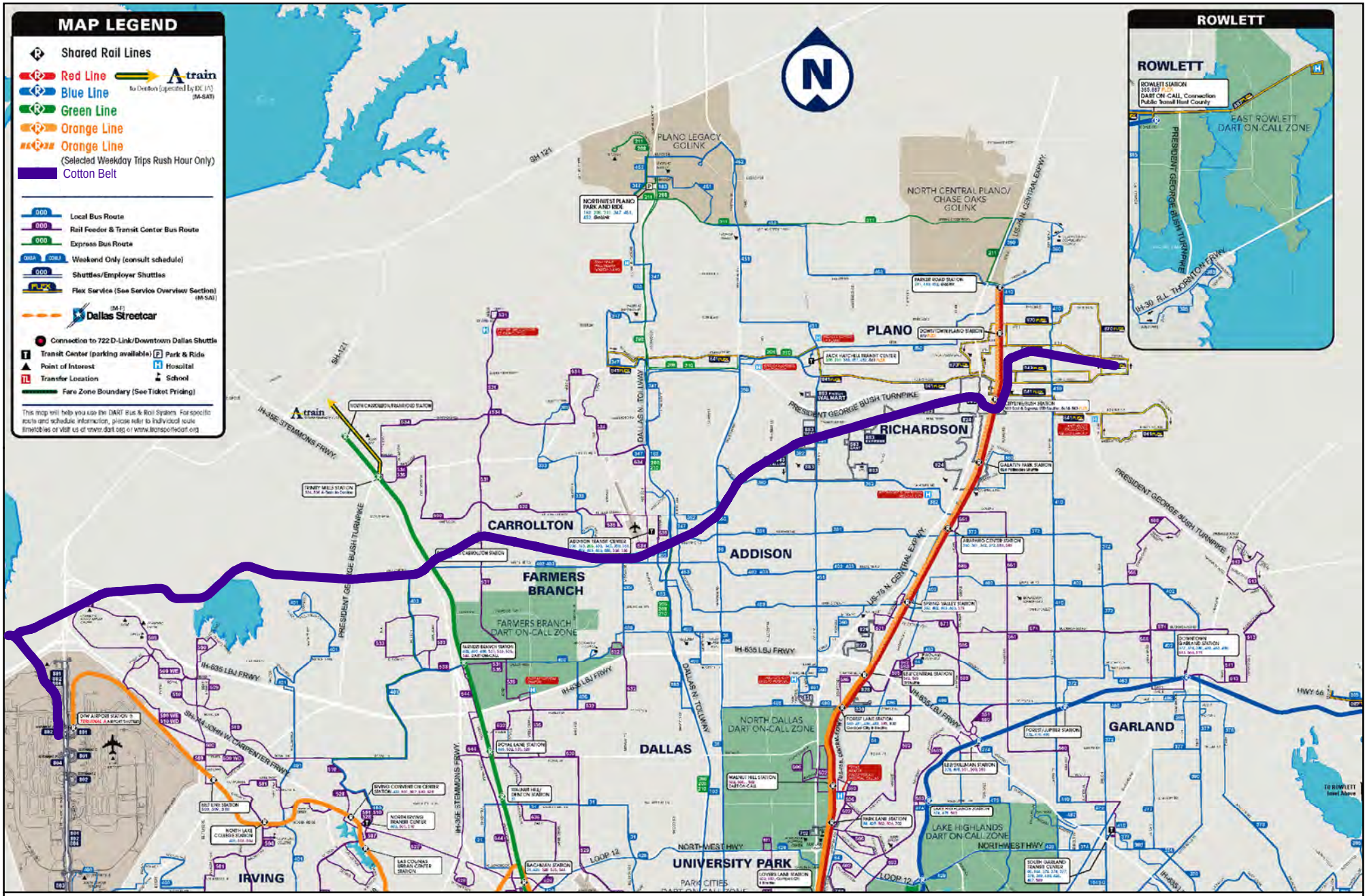
The Addison Transit Center is a Cotton Belt station location, and provides 300 parking spaces and connections for 14 local and express routes. The Addison Transit Center is the most heavily utilized of DART's bus transit facilities serving between 2,000 and 2,500 passengers a day with most passengers transferring among routes to access area employment centers. The corridor is also served by DCTA which provides regional rail service between Denton County and the DART Green Line Trinity Mills Station. DART and Trinity Metro jointly own and operate the TRE Commuter Rail service between downtown Fort Worth and downtown Dallas. TRE serves DFW Airport at the Centre Port/DFW Airport Station with a shuttle service that runs between the station and DFW Airport terminals.

1.4 Purpose and Need for the Project

Purpose of the Project

The Project's primary purpose is to provide passenger rail connections that will improve mobility, accessibility and system linkages to major employment, population and activity centers in the northern part of the DART Service Area and support sustainable growth, local and regional land use visions, and economic development. Travel patterns within the Cotton Belt Corridor are largely east to west, suburb to suburb and longer distance than the traditional suburb to central business district trip.

The Cotton Belt Project will be designed to provide a high-speed, reliable transit option for residents and commuters with connections to the existing and planned transit systems. The implementation of passenger rail within the Cotton Belt Corridor will provide an alternative mode of transportation within the Study Area. The connection of three LRT lines, a major bus transit center, and one regional rail line (TEXRail) makes regional connectivity a key component of the Project. The Project also offers opportunities to connect with the proposed future BNSF regional rail corridor between Frisco and Irving and a potential southern extension of the DCTA A-Train with connections in downtown Carrollton.



DART

COTTON BELT

Figure 1-3
DART System Map

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Need for the Project

The Cotton Belt Study Area (Study Area) encompasses a number of employment centers, major corporate headquarters and jobs. As a result, traffic within the Study Area has been increasing. Congestion and travel delays on the existing roadway network are at moderate to severe levels. Current land use patterns in many parts of the corridor lack direct connectivity to high capacity transit. However, some areas, such as Addison and CityLine in Richardson, have medium to high density developments focused on existing transit facilities and future regional rail stations. Over the next twenty years, the Study Area is projected to attract new employment and population, continuing to impact and strain the transportation network. The accessibility of the corridor would decline as congestion and travel delay increases. Even with the planned transportation improvements for the corridor, congestion and travel delays are expected to worsen. There is no route providing east-west transit service through the length of the corridor or to DFW Airport. Surveys done in 2016 as part of the Transit System Plan indicate that east-west transit improvements in this part of the DART Service Area are the highest priority for the public.

In order to meet the growing demands of the corridor, transportation improvements are needed to improve accessibility and connectivity. The following transportation needs have been identified for the Cotton Belt Corridor.

- Improve transit travel times by providing an alternative to congested roadway networks.
- Provide reliable connections between the existing and proposed local and regional transit systems.
- Improve accessibility to employment, activity centers and residential areas in the corridor.
- Promote sustainable development patterns in the Study Area.

Regional demand for travel in the Study Area is projected to increase along with congestion. Implementation of the Project will improve transit performance in the Study Area by offering a new, more reliable service. **Chapter 5** provides information on the transit service and coverage benefits of the Cotton Belt Project.

Goals and Objectives

The Project's primary purpose is to provide passenger rail connections that would improve mobility, accessibility and system linkages to major employment, population and activity centers in the northern portion of the DART Service Area, and support sustainable growth, local and regional land use visions, and economic development. Goals and objectives have been identified as follows:

- Enhance corridor mobility and accessibility
  - Provide connectivity to existing and planned passenger rail facilities
  - Provide transportation investments serving future population and employment growth
  - Improve access to existing and emerging major activity centers, including connectivity to DFW Airport
  - Increase transit usage for existing and new riders
  - Improve access to transit
  - Provide cost-effective options
- Reduce VMT
  - Increase transit capacity and improve travel times through more reliable transit
  - Reduce air quality impacts
- Promote economic development and sustainable land use patterns
  - Enhance employment opportunities
  - Encourage economic development opportunities
  - Promote sustainable and livable development opportunities

  - Promote consistency with regional and local transportation and comprehensive plans
  - Coordinate initiatives for land use development and redevelopment
- Provide an environmentally-sensitive transit investment
  - Minimize negative impacts to the community
  - Minimize negative impacts to the environment
  - Minimize negative impacts to natural, social and economic environments

1.5 Planning Context

Decision Framework

Since 1983, the Cotton Belt Corridor has been included in several transportation service plans and the NCTCOG MTP. In 1995, DART identified a broad North Crosstown Corridor which included the Cotton Belt line as a key transportation corridor. NCTCOG also included the Cotton Belt Corridor in the region's long-range transportation plans. Without a firm financing plan, DART documented the efforts to date in the AECR and advanced a 5 percent design for the Cotton Belt Project which identified existing environmental conditions and potential impacts along the length of the Cotton Belt Corridor. The AECR and 5 percent design were the starting point for completing the DEIS.

The Role of the EIS in Project Development

The DEIS and this FEIS/ROD were prepared by DART, in cooperation with FTA, and followed the legislation set forth in the National Environmental Policy Act (NEPA) of 1969 and FTA regulations set in 23 CFR 771. In addition, the FAA is a cooperating agency as it has jurisdiction of DFW International Airport and Addison Airport located within the Study Area. FRA is a participating agency due to the proposed RRIF funding.

The Project will require FAA approval of a revision to the DFW Airport's *Airport Layout Plan (ALP)* (see **Appendix C**). Pursuant to 49 USC Section 47107(a)(16), the FAA Administrator, under authority delegated from the Secretary of Transportation, must review any revision or modification to an ALP and ensure that the alteration does not adversely affect the safety, utility, or efficiency of the airport. Any FAA determination to approve revision of the ALP to accommodate the Project must take these factors into consideration. As the regional rail line will remain within the existing rail right-of-way south of Addison Airport, revisions to the Addison Airport ALP will not be required (see **Appendix D**).

The EIS informs the public of potential environmental, social and economic impacts associated with the Project compared to a No-Build Alternative. The No-Build Alternative provides a baseline condition for identifying changes that would occur with the Project in place.

A comprehensive Public Involvement Program (PIP) was developed and has been implemented as part of the EIS development. The PIP builds on the 2010 scoping effort and includes: agency meetings; community-wide public information meetings; public hearings; informational briefings to stakeholder groups, elected officials, and other local and regional officials; area focus groups; and information dissemination via a project website and newsletters.

Public and area focus group meetings have provided the public an opportunity to comment on the scope of the EIS, specifically on the Project's purpose and need, and on the elements of the regional rail project.

The DEIS was available for a 45-day public and agency review and comment period. During this time, public hearings were held to present the findings of the DEIS and formally receive comments. Written comments were submitted throughout the full comment period as well. After circulation of the DEIS, preliminary engineering and environmental analyses were completed. Additional analyses were conducted in response to some of the DEIS comments. Mitigation

commitments have been developed and responses to comments received during the comment period have been prepared and incorporated as appropriate.

This combined FEIS and ROD has been prepared by FTA, FAA, and DART to complete the environmental review process, and reflects Project elements approved by the DART Board on August 28, 2018. The FEIS/ROD has incorporated the above elements, states the selected Preferred Alternative, and has been made available to the public. Issuance of this FEIS/ROD provides the clearance to begin final design and construction. The FEIS/ROD includes a Mitigation Monitoring Program to ensure that mitigation commitments are carried through final design and construction.

2. Alternatives Considered

This chapter focuses on the definition of the No-Build Alternative and Preferred Alternative. These two alternatives are evaluated and compared in subsequent sections of this document in accordance with NEPA. The Federal Highway Administration (FHWA) and FTA regulations dictate that "The DEIS shall evaluate all reasonable alternatives to the action and discuss the reason why other alternatives which may have been considered were eliminated from detailed study" (23 CFR 771.123). The Council on Environmental Quality (CEQ), the federal commission responsible for coordinating federal environmental efforts, further addresses reasonable alternatives as "those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant" (46 Fed. Reg. 18026, question 2a). Background information on decision-making supporting the Preferred Alternative as the selected alternative is discussed in **Section 2.1** and **Appendix F**. **Section 2.5** of this FEIS documents alternatives considered but eliminated from further consideration.

2.1 Planning History

The Cotton Belt Project has been included in various DART and NCTCOG planning documents since 1983 as an alignment alternative for passenger rail. The Cotton Belt Project was initially included in the 1983 Service Plan from IH 35E to US 75. This Service Plan was the basis of the vote which created DART. DART designated the Cotton Belt Corridor for right-of-way preservation in the 1989 TSP, and purchased the corridor in 1990. In 2006, the DART 2030 TSP identified the corridor as the most direct and cost-effective route to provide an east-west connection in the northern part of the DART Service Area and connect with DFW Airport. At that time, it was added to the DART 20-Year Financial Plan for implementation during the 2025-2030 timeframe. While the 2008-2009 recession deferred the project schedule, subsequent economic growth and the RRIF loan program allowed the DART Board to advance the Project with a year 2022 service date in the FY2017 20-Year Financial Plan.

Since 2006, several additional studies and actions have occurred to continue to advance the Project to this phase. The Build Alternative was identified during alternatives development and evaluation to be the preferred from among the other Build Alternatives studied.

2.2 Project Changes Based on DEIS Comments

Comments provided during the 45-day comment period have resulted in several changes to the Preferred Alternative. The primary changes include the selection of an Equipment Maintenance Facility (EMF) location, the addition of three new grade separations, the modification of a grade separation design, and the elimination of two stations.

The City of Carrollton requested that EMF Site Option 1 (Luna Road), located in the City of Carrollton, not be selected as the preferred EMF option. In consideration of this request, DART has identified Site Option 2 (Irving Yard) as the preferred EMF location. See **Section 2.3.3** for additional details.

Many of the DEIS comments focused on traffic impacts. In their review of the DEIS and ongoing coordination with DART, three cities raised concern over some of the assumptions used in determining future traffic impacts. In coordination with these cities, DART reevaluated the traffic analysis for three streets and determined that grade separations were warranted at the following locations: Josey Lane in Carrollton, Hillcrest Road in Dallas, and Jupiter Road in Plano. The City of Dallas also raised concern over the steep roadway grades in the design of the Coit Road grade separation. This structure has been redesigned to reduce the roadway grades. The redesign of the roadway results in additional roadway and access impacts. **Section 5.2** describes the traffic reevaluation and design change impacts.

Many Dallas residents and the City of Dallas did not support the Preston Road Station or the Coit Road Station. In response to this opposition, DART has eliminated both stations. As such, impacts and benefits of the Preston Road Station and the Coit Road Station have been removed from the FEIS. See **Section 2.5.2** for further discussion.

On August 28, 2018, the DART Board of Directors approved a Service Plan Amendment that established the alignment, grade separations, station locations, and facilities locations for the Preferred Alternative. These elements for the Preferred Alternative that are analyzed in the FEIS. **Section 2.3** fully describes the Preferred Alternative which includes the project changes based on DEIS comments. Any additional environmental impacts associated with these project changes have been identified and incorporated into this FEIS/ROD as appropriate.

2.3 Preferred Alternative

After circulation of the DEIS, the DART Board of Directors selected the Cotton Belt Project as the Preferred Alternative, including project changes described in **Section 2.2**.

The Cotton Belt Project is defined as the Preferred Alternative (see **Figure 1-1**). The Preferred Alternative will be located primarily within the existing Cotton Belt Corridor railroad right-of-way. There will be four areas where the Preferred Alternativealignment deviates from the railroad corridor: 1) at DFW Airport where the rail will connect to DFW Terminal B and share right-of-way and stations with the Trinity Metro TEXRail Project, which is under construction (DFW Airport Connection); 2) in the Coppell/Dallas area near North Lake to serve the growing Cypress Waters development (Cypress Waters Alignment); 3) near downtown Carrollton, where portions of the existing Cotton Belt Corridor, the existing Madill Sub, and the Dallas Garland Northeastern (DGNO) track are realigned to facilitate grade separation of the two rail corridors and maintain connections through this area for freight operations (Downtown Carrollton Reconfiguration); and 4) near the President George Bush Turnpike (PGBT) in Richardson and Plano to serve the growing mixed-use CityLine development (CityLine/Bush Alignment). The alignment is described below from west to east starting on DFW Airport property to the end of the line at Shiloh Road in Plano. The 10 percent design plans are located in **Appendix A**.

2.3.1 Alignment

The Preferred Alternative begins at its connection with the future TEXRail Project which is under construction. TEXRail will extend from Fort Worth to Terminal B at DFW Airport. The Preferred Alternative will utilize the portion of the TEXRail Project that extends northwest, on new right-of-way, from the DFW Terminal B Station to the DFW North Station located just south of the Cotton Belt Corridor. DART has coordinated the Preferred Alternative with the TEXRail Project and DFW Airport. Portions of the Preferred Alternative will be co-located with the TEXRail track in a corridor that has previously been environmentally cleared. On September 29, 2014, both FTA and FAA issued a ROD for the TEXRail Project. On April 16, 2015, FTA issued an amended ROD for project changes off airport property. DFW Airport is currently constructing the DFW Terminal B Station, a dual-track station that will be shared by both transit agencies, north of the Terminal B Station. Trinity Metro is constructing a single-track rail alignment extending 10,000 feet to the TEXRail DFW North Platform. DART will construct a second track and a 1,900-foot siding in this corridor. Much of the infrastructure being constructed by TEXRail will accommodate the TEXRail and Cotton Belt tracks. This infrastructure includes: a culvert over Grapevine Creek, a bridge over Cottonwood Branch, two roadway bridges over the tracks (Southbound International Parkway frontage road and North Airfield Drive), and a railroad bridge over SH 121/SH 114. The two tracks will also share two at-grade roadway crossings (Crossunder # 2 and North Employee Road).

At the DFW North Station, the two projects diverge. DART will construct separate platforms and dual tracks in new right-of-way to spur to the northeast and rejoin the existing Cotton Belt railroad

right-of-way. The two projects will share the DFW Station parking, bus lanes and station access being constructed for the TEXRail Project. DART will add additional pedestrian connections. At the DFW North Station, the TEXRail Project turns west onto the existing railroad corridor right-of-way, while the Preferred Alternative turns east. As described below, almost all major road crossings within the corridor are at-grade crossings, with exceptions noted below and detailed in **Chapter 5**. **Section 5.2** discusses roadway crossings of the Preferred Alternative. **Table 5-7** lists the configuration of all roadways and other crossings of the Preferred Alternative. **Figures 5-2** through **5-5** show the location of these crossings.

The Preferred Alternative proceeds northeast and will connect to the existing Cotton Belt railroad track. It then will head east and cross the Cottonwood Branch and its floodplain on an aerial structure and continues under International Parkway, under IH 635 and then cross Royal Lane and Freeport Parkway at grade. It will continue east and cross South Coppell Road at grade. As the Preferred Alternative passes through the City of Coppell, the Cypress Waters alignment will deviate from the existing railroad and veer to the southeast in a new location to serve the Cypress Waters mixed-use development. It will then cross over Grapevine Creek and be grade separated over South Belt Line Road. The alignment then will descend to an at-grade profile and turn northeast to the Cypress Waters Station. The alignment will continue northeast crossing East Belt Line Road at grade before rejoining the existing Cotton Belt Corridor right-of-way at Moore Road. **Figure 2-1** shows the existing railroad corridor and alignment deviation for Cypress Waters. Existing freight rail service will continue to operate on the existing corridor and only passenger service will run through Cypress Waters.

After rejoining the Cotton Belt, the alignment will run parallel to Belt Line Road and cross Moore Road, Mockingbird Lane, MacArthur Boulevard and Fairway Drive at grade. The profile will gradually ascend on retained fill to a low aerial structure over two floodplain areas just west of the Elm Fork Branch of the Trinity River.

This portion includes the DFW Terminal B Station (under construction by DFW Airport and shared by TEXRail and the Cotton Belt Project), DFW North Station (portions of which will be constructed by both transit agencies) and the Cypress Waters Station.

After the alignment crosses the Elm Fork Branch of the Trinity River, it will continue just north of Belt Line Road and under the PGBT crossing Luna Road at grade. The alignment will continue east, cross the Hutton Branch of the Trinity River, then travel under IH 35E aerial bridges and the existing elevated DART Green Line. A station in downtown Carrollton will serve as the interface with the DART Green Line. East of the station, the alignment will rise to cross over BNSF freight tracks (Madill Sub). In downtown Carrollton, portions of the existing Cotton Belt Corridor and the existing Madill Sub will be realigned to facilitate grade separation of the two rail corridors. The Preferred Alternative will operate on the aerial alignment to avoid service delays associated with freight operations. Freight will continue to operate at-grade. Mercer Yard, currently located southeast of the station will be relocated (see **Section 2.3.4**). TxDOT is currently completing the rebuild of IH 35E, its frontage roads and Belt Line Road in downtown Carrollton. The Preferred Alignment design has been coordinated with these projects.

The double track alignment, carrying both passenger and freight traffic will be placed on aerial structure over Josey Lane. The alignment will then continue east toward Addison crossing the intersecting streets at grade except for Midway Road, which will be grade separated along with the freight service on an elevated structure. In Addison, the station will be located at the Addison Transit Center. The alignment will remain grade separated over the DNT main lanes and continue as double track. The alignment will cross Knoll Trail Drive at grade, and cross over White Rock Creek on a new structure as it traverses slightly to the northeast at grade through the North Dallas area.

Figure 2-1
Cypress Waters Alignment

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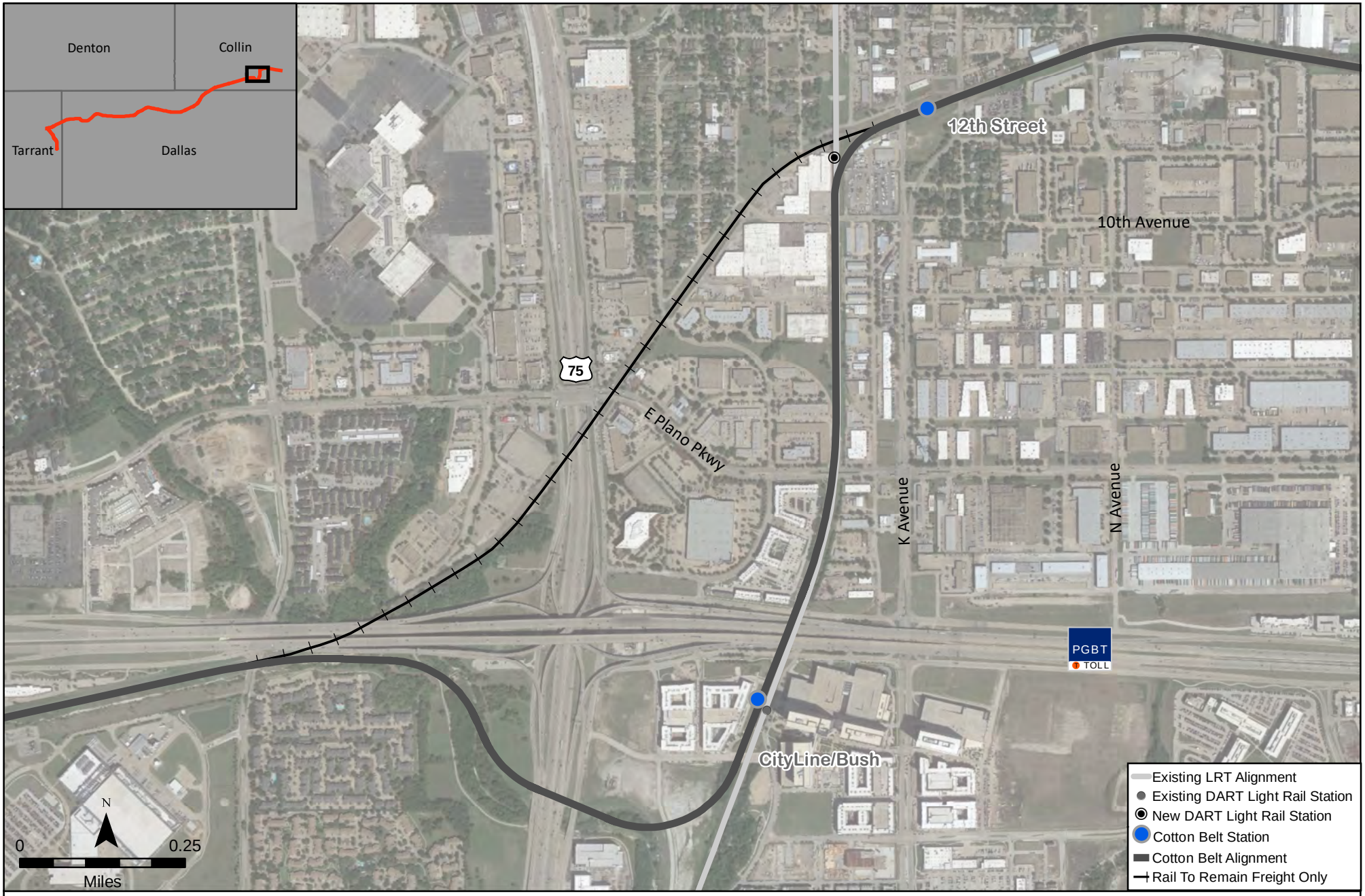
The alignment will operate mostly at grade through North Dallas and will include new bridges at the three creek crossings locally known as McKamy Branch, Osage Branch Crossing #1 and Osage Branch Crossing #2. The alignment will cross the roadways of Davenport Road (twice), Campbell Road, McCallum Boulevard and Meandering Way at grade. At Hillcrest Road, the alignment will be maintained at grade and Hillcrest Road will be depressed to pass under the rail profile.

The alignment will pass under grade-separated Coit Road by lowering the rail profile slightly and rebuilding Coit Road on a bridge structure. The alignment continues east and will cross Waterview Parkway at grade and then cross under already grade-separated KCS Railway, Synergy Park Boulevard, and Renner Road, and then over a new grade separation at Custer Parkway. The section includes the Knoll Trail Station and UT Dallas Station.

At Alma Road, the alignment will cross Alma at grade and deviate from the existing railroad alignment, veering southerly away from the PGBT for the CityLine/Bush alignment. It will cross the floodplain of Spring Creek and US 75 on an aerial structure, then turn north and descend to the CityLine/Bush Station to provide a side-by-side platform transfer with existing DART light rail service. From this station, the alignment will travel north and parallel to the DART light rail corridor. The alignment will pass under PGBT then cross Plano Parkway on a grade-separated structure and 10th Street at grade. Near 12th Street, the alignment will turn right at grade under the LRT structure and into the 12th Street Station. The 12th Street Station will include a pedestrian connection to an infill LRT station on the elevated LRT guideway. In this area, the existing freight track will be at grade. **Figure 2-2** shows the existing freight alignment and the CityLine/Bush alignment. The remainder of the alignment will travel east on the existing Cotton Belt Corridor and cross N Avenue and Shiloh Road at grade before terminating just past Shiloh Road. The double track alignment, carrying both passenger and freight traffic will be placed on aerial structure over Jupiter Road.

To accommodate freight and transit rail operations in both directions, one track will primarily be dedicated to passenger operations, while the other track will share both passenger and freight services. There may be opportunities for some sections to have a single shared track to minimize construction costs and impacts.

As shown in **Figure 2-3,** the current freight service providers are: the FWWR, the DGNO, and the KCS. Freight operates on the Cotton Belt Corridor except for the area between the DNT and the KCS Crossing at Renner Junction. There are typically 27 freight-rail train trips per week along various sections of the Cotton Belt Corridor and typically 12 trains per week on any section. The FWWR, which provides local freight service from Fort Worth to west of downtown Carrollton, operates three trains per week with switching activity within the corridor. The DGNO provides local freight service from the UP in downtown Carrollton east to Addison. The DGNO operates Mercer Yard in downtown Carrollton. The DGNO currently operates 12 trains per week, with extensive switching operations at Mercer Yard. The KCS provides local freight service from Renner Junction east to Plano. The KCS typically operates 12 trains per week. The Madill Subdivision intersects the Cotton Belt Corridor at grade in downtown Carrollton. BNSF operates several trains per day with train lengths as long as 8,000 feet and conducts limited switching in downtown Carrollton.



DART COTTON BELT

Figure 2-2
CityLine/Bush Alignment

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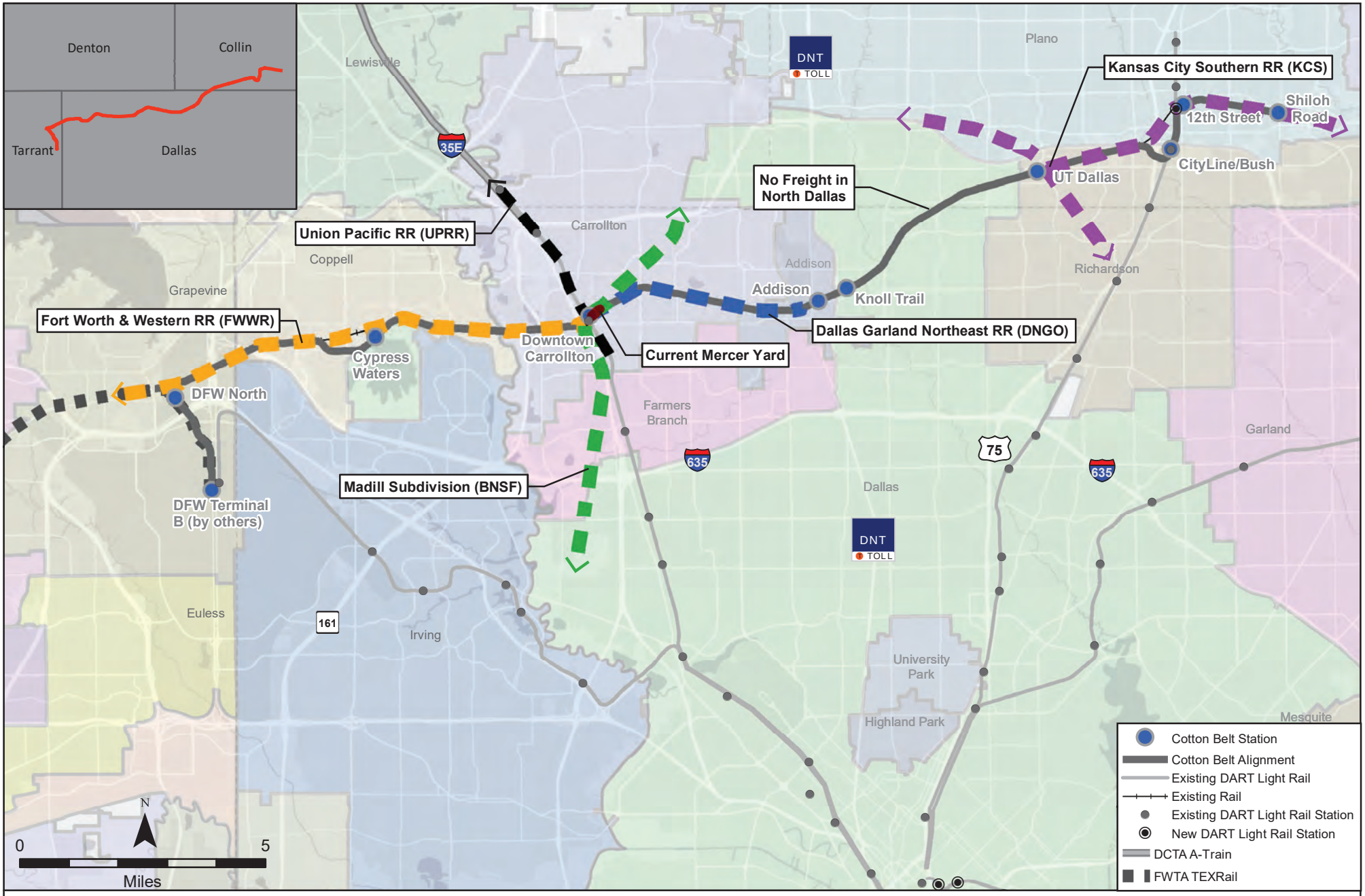

Figure 2-3
Freight Operations Within and Across Cotton Belt Corridor

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Ten new stations locations have been identified within the Preferred Alternative and are shown on **Figures 2-4** through **2-12**. Stations will be designed to include components essential for safety and security, as well as amenities for passenger comfort and convenience, and compliance with the Americans with Disabilities Act (ADA). Primary elements include platform, shelter, wheelchair ramps and station amenities such as lighting, benches, security systems and informational displays. The platforms will be compatible with low-floor DMU vehicles that typically require a 23-inch station platform height (see **Section 2.3.2** for vehicle information). Platform length will be approximately 350 feet based on vehicle length and space available for each transit station. Platform width will typically range from 18 feet for single-sided platforms to 27 feet for double-sided platforms. Accommodation will need to be made for loading space at the ramp ends and access ramps. Station shelters will be designed to protect passengers from the elements and to fit visually within each station's setting.

Brief descriptions of each station are provided below. Planning-level station layouts for each of the stations are provided in the *Final 10% Design Plan*s in **Appendix A**.

DFW Terminal B Station

DFW Airport is currently constructing the DFW Airport Station for the TEXRail Project at Terminal B. This station will be shared with the Preferred Alternative. The station will include side platforms for each of the two rail lines. It serves as the connection between the Preferred Alternative and DFW Airport via the DFW Airport's Skylink people-mover system in the Terminal A/B area. It also provides a pedestrian connection to DART's Orange Line DFW Station at Terminal A.

DFW North Station

Trinity Metro is currently constructing the rail platforms that will serve the TEXRail Project at DFW North. DART will construct additional platforms to serve the Preferred Alternative. The station will include a center platform, a shared parking area with TEXRail, bus bays and a new access road from the station to State Highway 26 (Texan Trail), located west of the station. The complex will also include a future pass-through platform to allow for east-west "through" service to Fort Worth via the TEXRail Corridor (see **Figure 2-4**).

Cypress Waters Station

The Cypress Waters Station will be located on the south side of East Belt Line Road between South Belt Line Road and Moore Road, just north of North Lake (see **Figure 2-5**). Cypress Waters is a planned, mixed-use development presently under phased construction. When completed, Cypress Waters will contain 4.5 million square feet of retail and commercial space and 10,000 residential units. This station will be integrated into the development. It will include side platforms for the Preferred Alternative, a parking area and bus bays. Access to the parking area will be provided by a double-access driveway onto Belt Line Road. The bus bay area will be accessed by a separate driveway and a one-way circulating drive with full movement access (left and right turn-outs) at the exit.

Downtown Carrollton Station

This station will be located north of Belt Line Road between Broadway Street and Denton Drive in downtown Carrollton, immediately adjacent to the existing DART Green Line Station (see **Figure 2-6**). The station will be located on realigned section of the Cotton Belt Corridor. This station will include side platforms for the Preferred Alternative and a pedestrian connection via stairs and an elevator to the Green Line Station at the end of the Preferred Alternative platforms.

Two additional parking areas will be added with two full-access driveways onto Denton Drive. An area for a potential future platform for regional rail on the BNSF corridor will also be preserved as part of the station layout.

Addison Station

This station will be placed on the north side of the existing Addison Transit Center currently located on the north side of Arapaho Road between Addison Road and Quorum Drive in Addison (see **Figure 2-7**). The station will include side platforms for the Cotton Belt Project and a pedestrian connection to the Addison Transit Center facilities at the west end of the platforms. No new parking or site circulation driveways will be constructed as part of the Preferred Alternative as new traffic and rail users will be accommodated by the existing facilities at the Addison Transit Center. The station will eventually be incorporated into Addison's station area plan that may include a shared garage with the Town of Addison.

Knoll Trail Station

This station will be located less than one-quarter mile north of Arapaho Road just east of Knoll Trail Drive in Dallas (see **Figure 2-8**). The station will include side platforms for the Preferred Alternative, but dedicated parking or drop-off areas are not currently planned given space constraints. Riders will access this station on foot, by bicycle, or from existing transit services in the area.

UT Dallas Station

This station will be located south of Waterview Parkway between the Frankford Road and Renner Road intersections, on the north side of the UTD campus in Richardson (see **Figure 2-9**). The station will include side platforms and bus bays. DART will construct temporary parking until the area north of the platform is developed by the University. Future development may include a shared parking structure to be developed by the University. Access to the parking area and the bus bays will be provided by new access driveways onto Waterview Parkway. DART will extend Rutford Avenue across the rail line from the south to provide additional access.

CityLine/Bush Station (Red Line Interface)

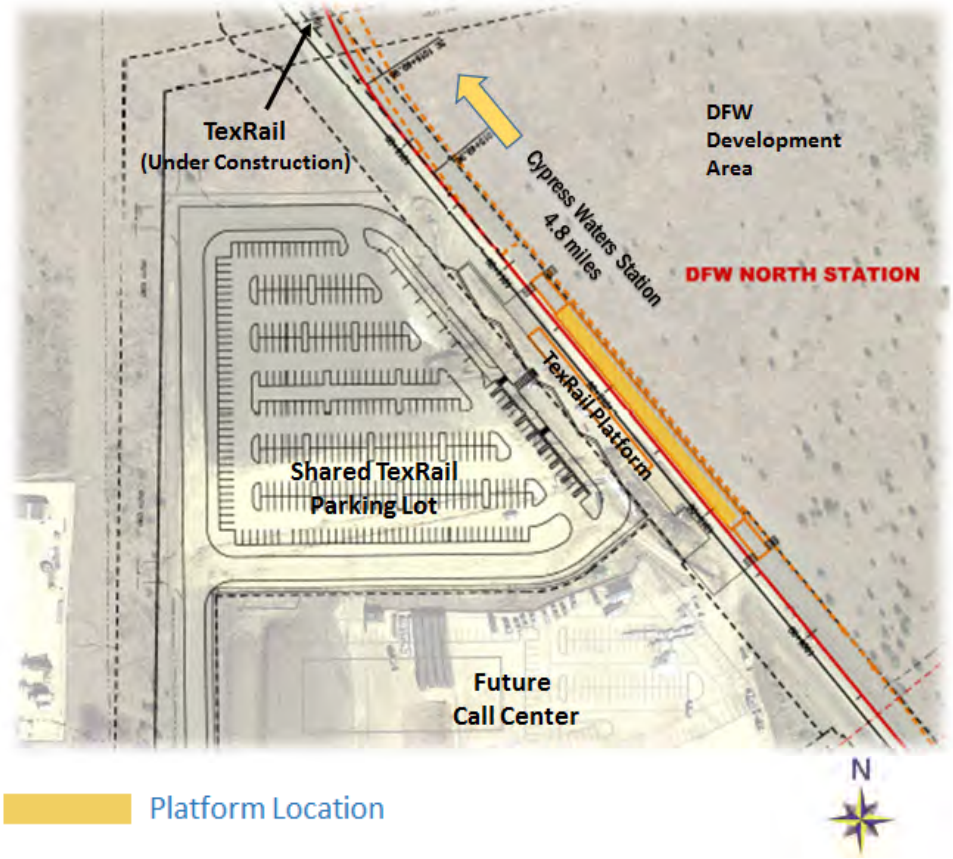
This station will be located immediately adjacent to the existing DART CityLine/Bush LRT station, which is south of PGBT and east of US 75 in Richardson (see **Figure 2-10**). This station will include side platforms for the Preferred Alternative and will require reconfiguration of the PGBT circulation area, but will not add any additional parking for the CityLine/Bush Station. This station will provide a connection between the Preferred Alternative and the DART Red and Orange (peak only) Lines.

12th Street Station

This station will be at 12th Street in Plano, between K Avenue and Municipal Avenue (see **Figure 2-11**). The at-grade station will include side platforms, bus bays, a kiss-and-ride area on the north side of the Cotton Belt alignment, and a new parking area on the south side of the alignment. Access to the parking area and the bus bays will be provided by two driveways on K Avenue. The complex will provide an alternative connection to the DART Red and Orange Lines via a new aerial infill LRT station on the Red Line at this location.

Shiloh Road Station

This station will be located on the west side of Shiloh Road between Plano Parkway and 14th Street in Plano (see **Figure 2-12**). This station will include a center platform for the Preferred Alternative, a parking area and bus bays. The parking area will be accessible by a full-access driveway and a right-in/right-out driveway onto Shiloh Road. Bus stops will remain on the street with pedestrian connections to the platform.



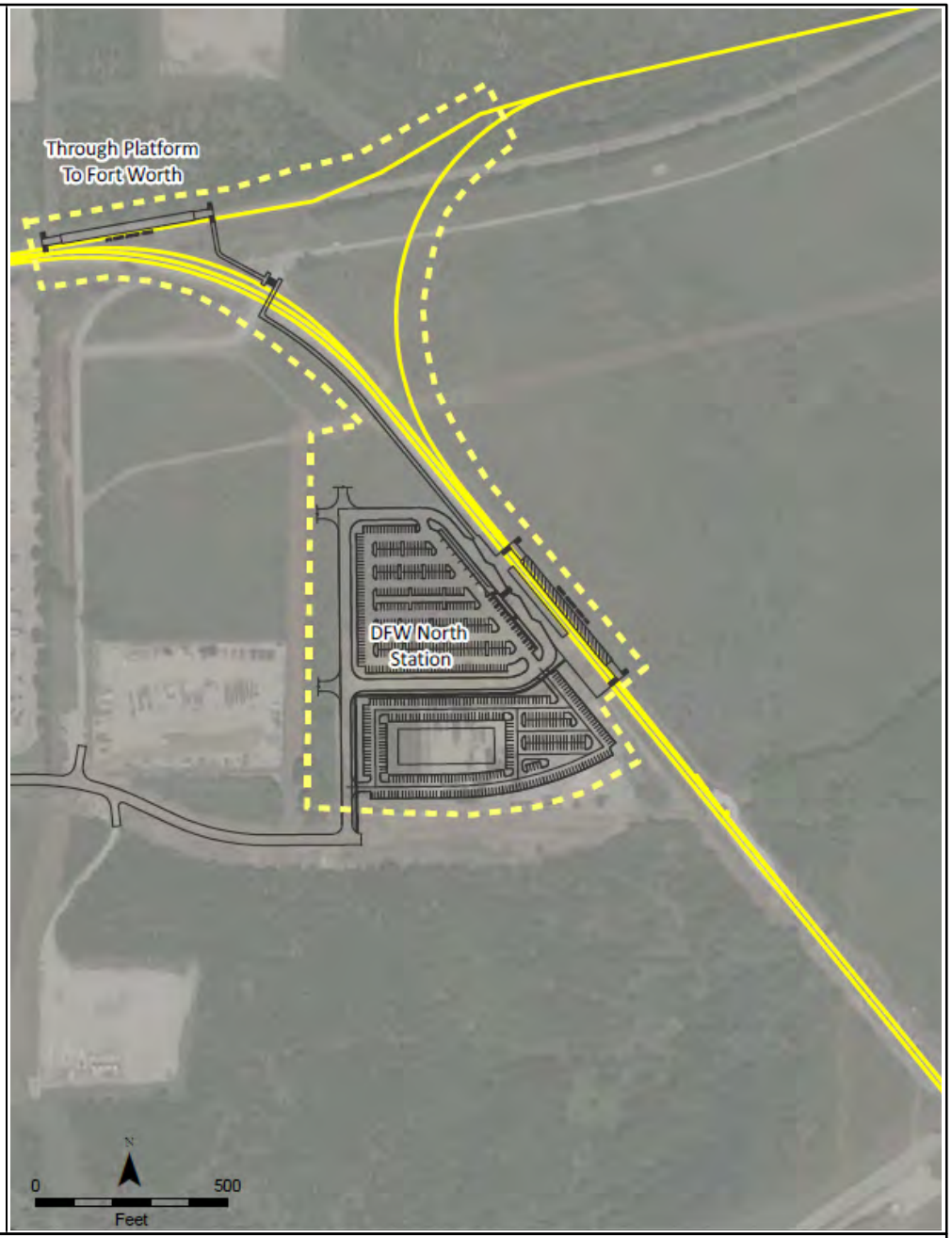
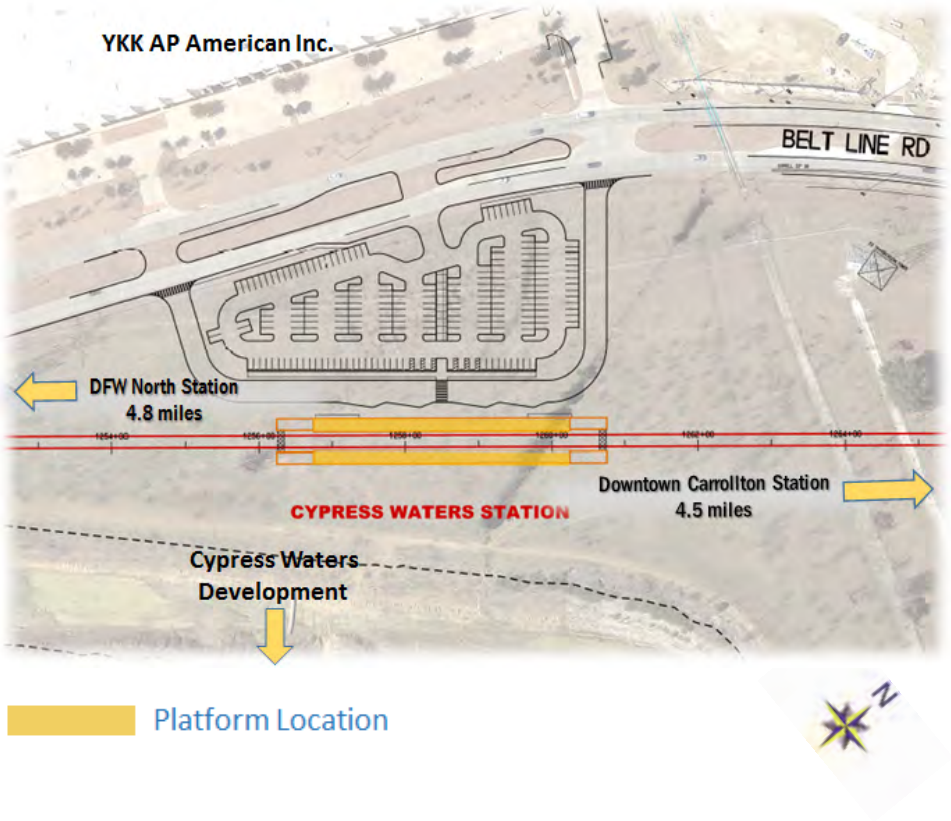


Figure 2-4
DFW North Station



DART COTTON BELT

Figure 2-5
Cypress Waters Station

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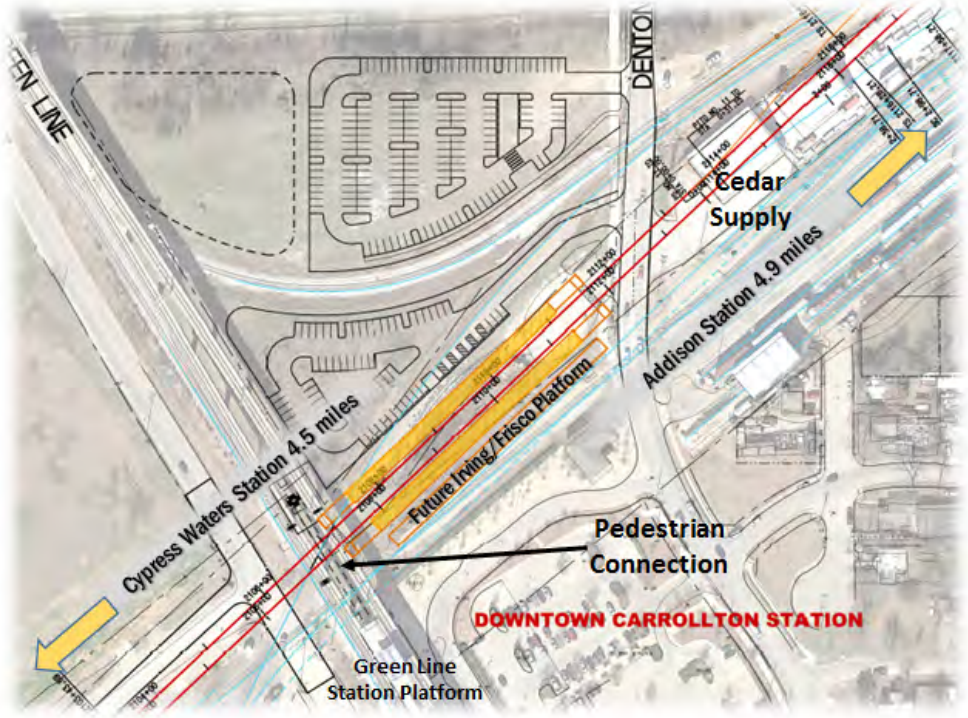


Figure 2-6
Downtown Carrollton Station

Cotton Belt Corridor Regional Rail Project
Draft Environmental Impact Statement

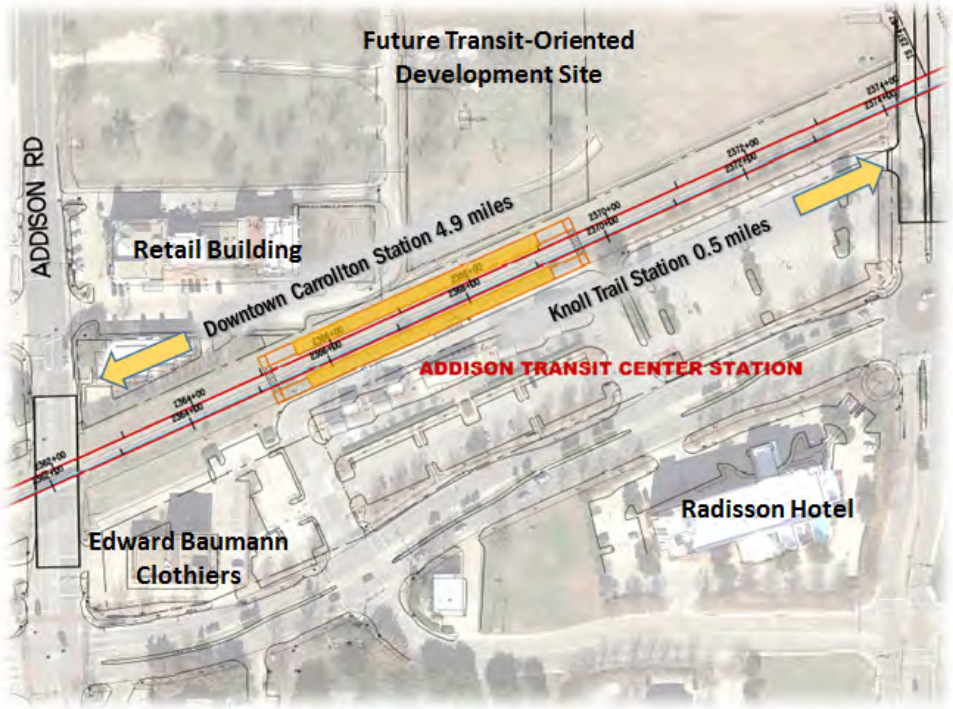
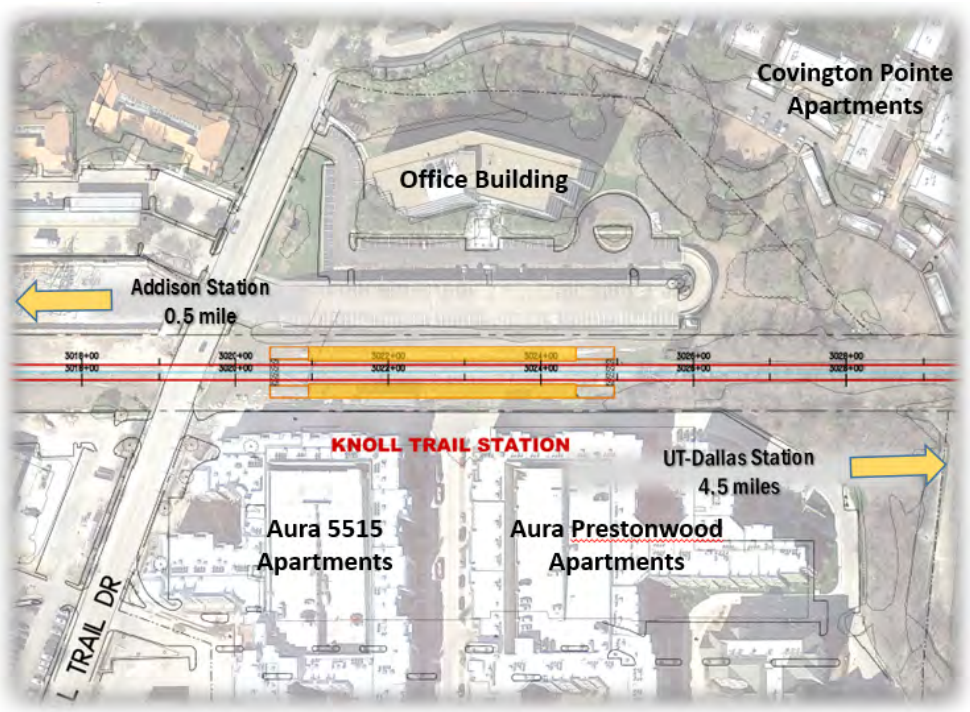


Figure 2-7
Addison Station

Cotton Belt Corridor
Regional Rail Project
Draft Environmental Impact Statement



DART COTTON BELT

Figure 2-8
Knoll Trail Station

Cotton Belt Corridor Regional Rail Project
Draft Environmental Impact Statement

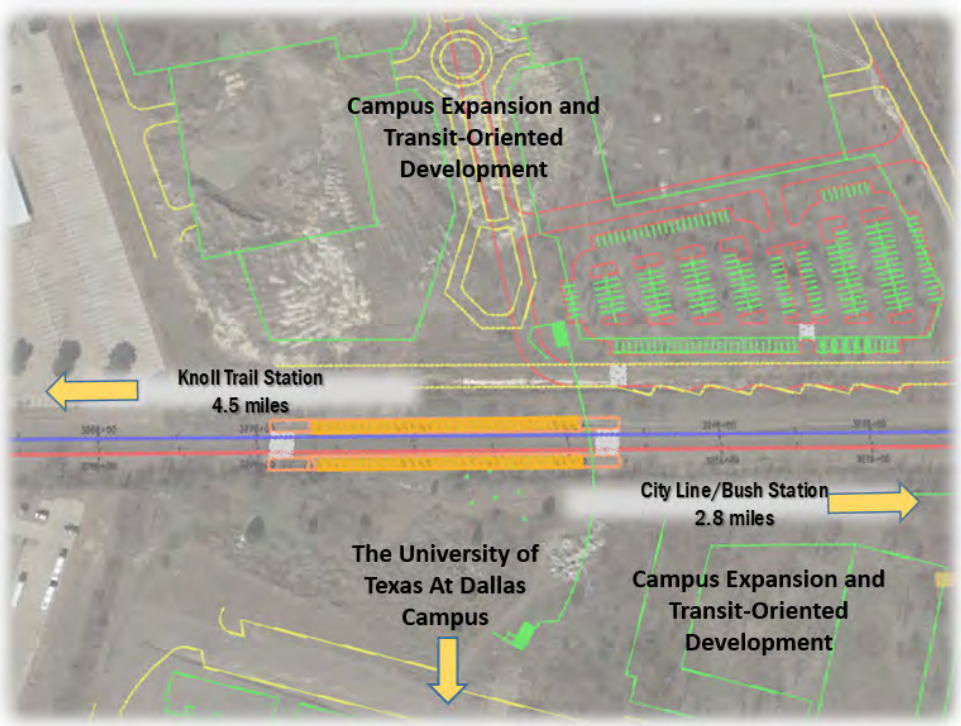


Figure 2-9
UT Dallas Station

Cotton Belt Corridor Regional Rail Project
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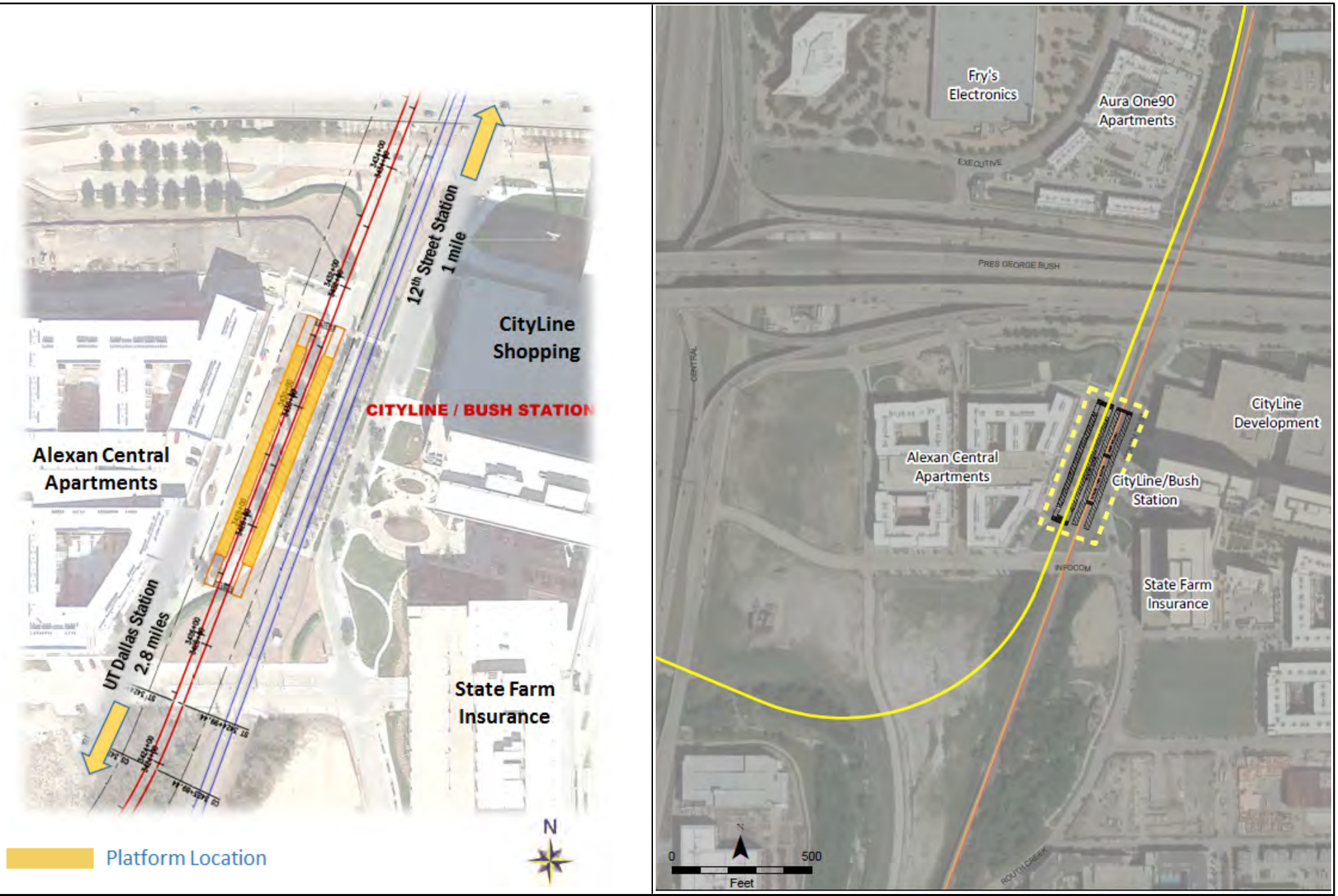
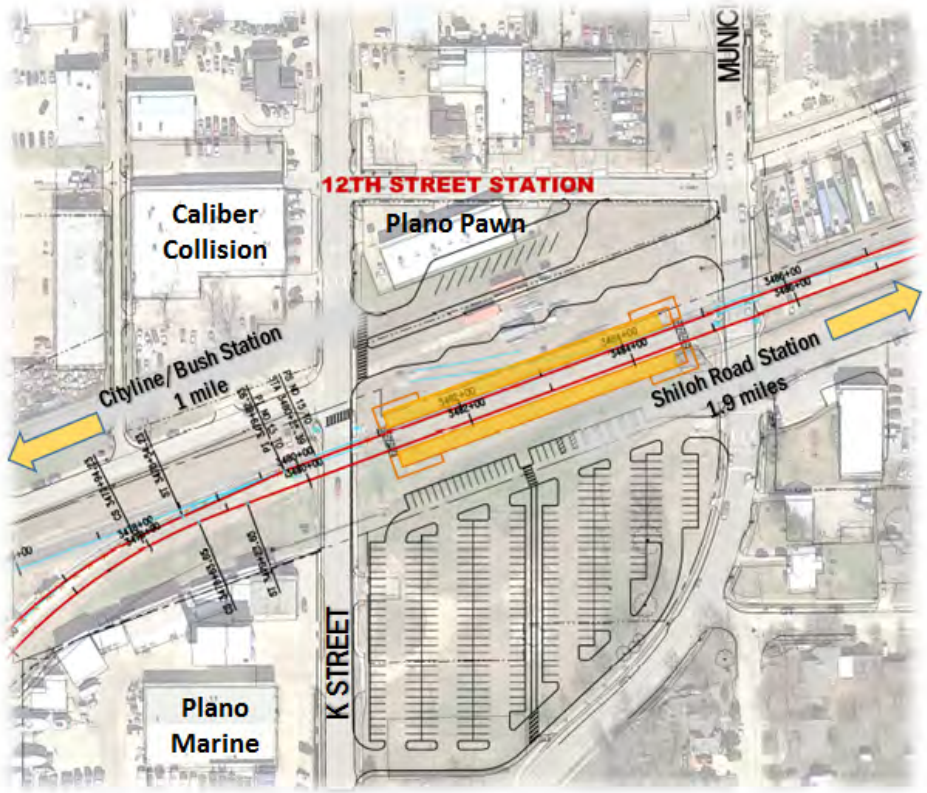
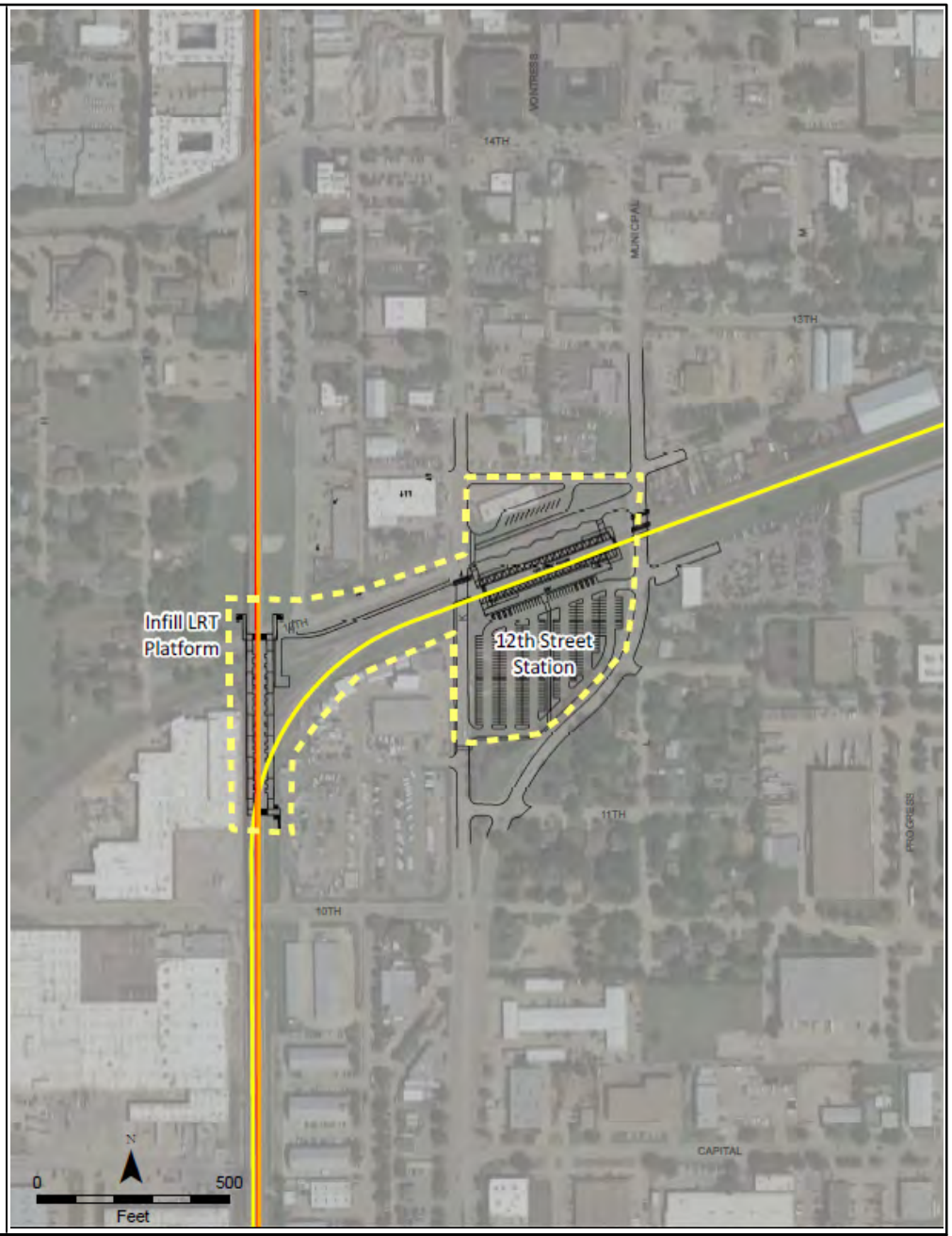


DART COTTON BELT

Figure 2-10
CityLine/Bush Station

Cotton Belt Corridor
Regional Rail Project
Draft Environmental Impact Statement





DART COTTON BELT

Figure 2-11
12th Street Station

Cotton Belt Corridor Regional Rail Project
Draft Environmental Impact Statement

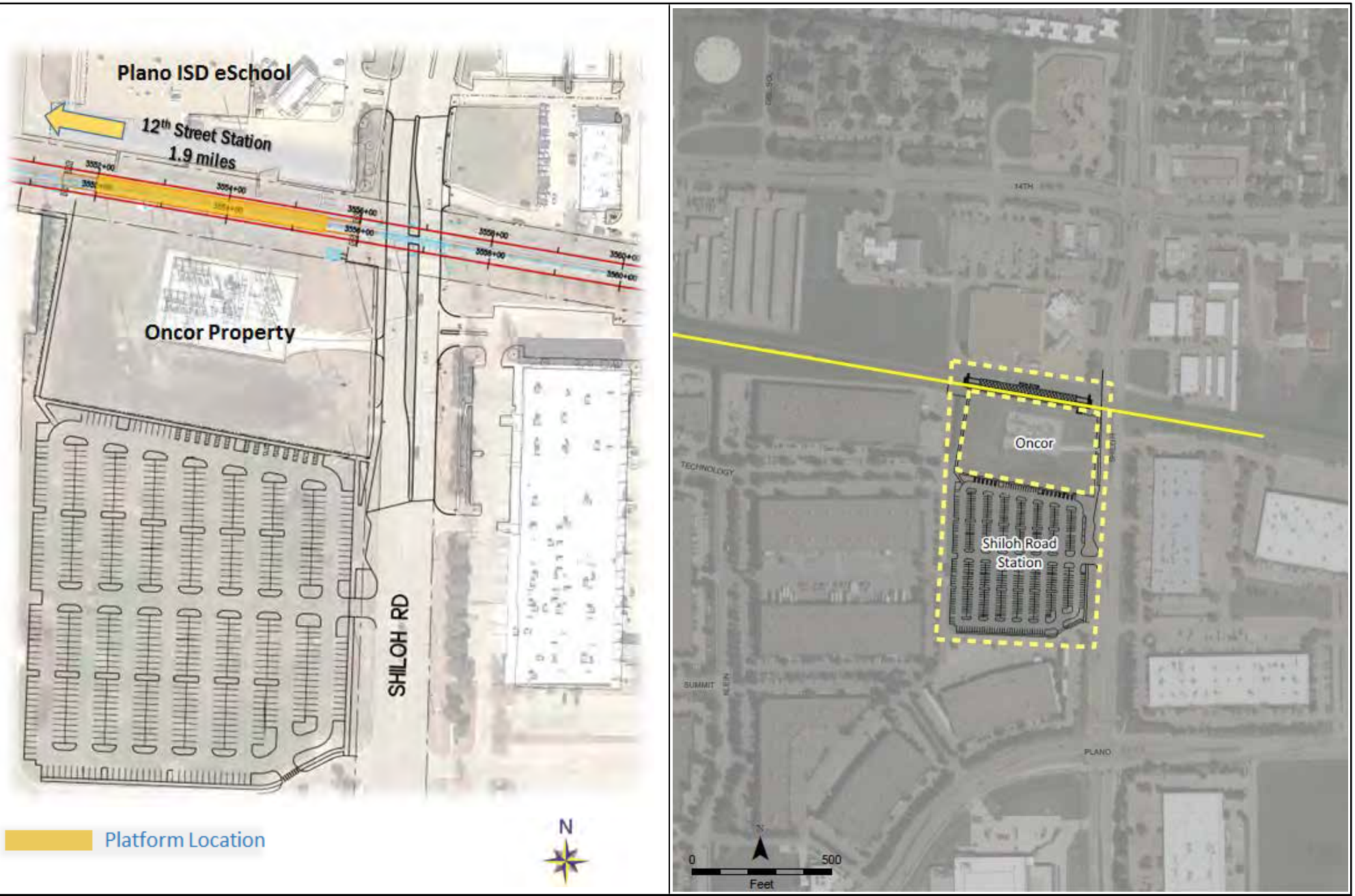


Figure 2-12
Shiloh Road Station

A summary of the station characteristics, including platform types and available parking, is provided in **Table 2-1**. **Chapter 5** discusses station access and major transit interface including bus and rail transfers.

Table 2-1. Summary of Station Characteristics

Station	City	Platform Type	Bus Bays	Kiss-and-Ride	Estimated Parking Spaces
DFW Terminal B (by others)	Grapevine	Side	Existing	No	0
DFW North	Grapevine	Center	4	Yes	362 (shared with TEXRail)
Cypress Waters	Dallas	Side	4	Yes	192
Downtown Carrollton	Carrollton	Side	Existing	Existing	230 additional
Addison	Addison	Side	Existing	Existing	Existing
Knoll Trail	Dallas	Side	No (on-street)	No	0
UT-Dallas	Richardson	Side	5	Yes	249
CityLine/Bush	Richardson	Side	Existing	Existing	Existing
12th Street	Plano	Side	5	Yes	313
Shiloh Road	Plano	Center	2	Yes	672

Source: GPC6, DART; 10% Engineering (**Appendix A**)

2.3.2 New Technology Rail Vehicle

Proposed Cotton Belt Vehicle

The DART Board Resolution dictates that the vehicle to be used for the Preferred Alternative will be Environmental Protection Agency (EPA) Tier IV compliant and look similar to light rail vehicles. In addition, the vehicles operated in the Cotton Belt Corridor must be compliant with FRA requirements since the Preferred Alternative will share the corridor with freight service. DART has developed vehicle specifications to be used within the design criteria for the Preferred Alternative. The vehicle procurement process has been initiated with specifications based on the Stadler FLIRT vehicle being manufactured for Trinity Metro. Matching these specifications will allow for potential cross corridor operations with one common vehicle type.

DART proposes using one train consisting of four coach cars with a central power pack including four powered axles and eight unpowered axles. The train would be approximately 267 feet long with 224 seats and room for up to 254 standees. Ultimately, it is anticipated that an additional coach section would be added to the train, extending the total train length to 318 feet. For DART light rail vehicles, the DART peak hour load factor is 1.75. This translates to 392 seated and standing passengers per regional rail vehicle if the same policy is applied; however, for longer regional rail trips, the policy goal may be to provide a seat for every passenger.

The draft specifications for the vehicle include wheel skirts that may dampen noise generated by the train. Additionally, the specifications address enclosures, baffles, seals, acoustical absorption, body panels with adequate sound transmission loss, vibration isolators, or other appropriate

methods that will be incorporated into the vehicle design to lessen noise and vibration generated by wheels, rails, engines, motors, and all equipment elements.

2.3.3 Equipment Maintenance Facility

An Equipment Maintenance Facility (EMF) will be constructed as part the Preferred Alternative to store and maintain vehicles. Several potential sites were identified along the corridor. Key criteria include approximately 30 acres of available land to store and maintain Cotton Belt vehicles and additional fleet as Cotton Belt and other proposed regional rail services increase. The site layout will also accommodate associated facilities such as office space, vehicle wash, materials storage, inspection/maintenance building and equipment, and parking/site improvements. The site criteria also called for a location in a commercial/industrial zoned area, central to the corridor to minimize deadhead operations and cost, and proximity to potential future regional rail corridor such as the BNSF for shared operations.

Other regional rail projects that may use this facility have not been defined in detail and are not funded; thus, their potential impacts are not addressed in this FEIS. If future regional rail projects use the EMF, the environmental review of those projects would be done at that time.

This FEIS includes the selection of the EMF at the existing TRE Irving Yard which is accessible by the DART-owned Madill Subdivision Corridor (see **Figure 2-13**). A conceptual track layout for the EMF is included in **Appendix A.** Refinements to the EMF layout will be made during final design. The Preferred Alternative vehicles will use the BNSF Madill Subdivision line as a non-revenue “yard lead.” No physical improvements are associated with the connection along the Madill Subdivision and TRE alignment.

To avoid returning trains to the yard during the midday, two layover tracks will be provided along the Cotton Belt. One will be in the relocated Mercer Yard site and the second will be on the tail track east of the Shiloh Road Station. The two layover sites were not specified in the DEIS; however, no additional environmental impacts are anticipated. Both are located on track that was included in the original 10% Design included in **Appendix A,** and neither are located in residential areas.

The DEIS identified potential environmental impacts associated with the EMF and its connection to the Preferred Alternative. The FEIS includes additional analysis that confirms no significant impacts associated with the EMF, yard lead and layover sites. Noise impacts are discussed in **Section 4.14**. Traffic is discussed in **Section 5.2**. Cultural Resources are discussed in **Section 4.6**.

2.3.4 Relocation of Mercer Yard

The Preferred Alternative will include the relocation of Mercer Yard, a small freight yard located just east of the Green Line/Union Pacific and Cotton Belt intersection in downtown Carrollton. Mercer Yard serves as a hub for the DGNO operations and local service in the northwest part of Dallas County. The Preferred Alternative will include significant track alignment and operational modifications at Mercer Yard, which supports the need for relocation. Operational functions will be relocated to the east near Kelly Boulevard in Carrollton (see **Figure 2-14**). This new yard will be built as part of the Preferred Alternative and will add three track sidings to the existing storage track at this location, as well as include operational facilities. Maintenance functions will be relocated to the existing DGNO Mockingbird Yard in Dallas near the SH 183/IH 35E junction.

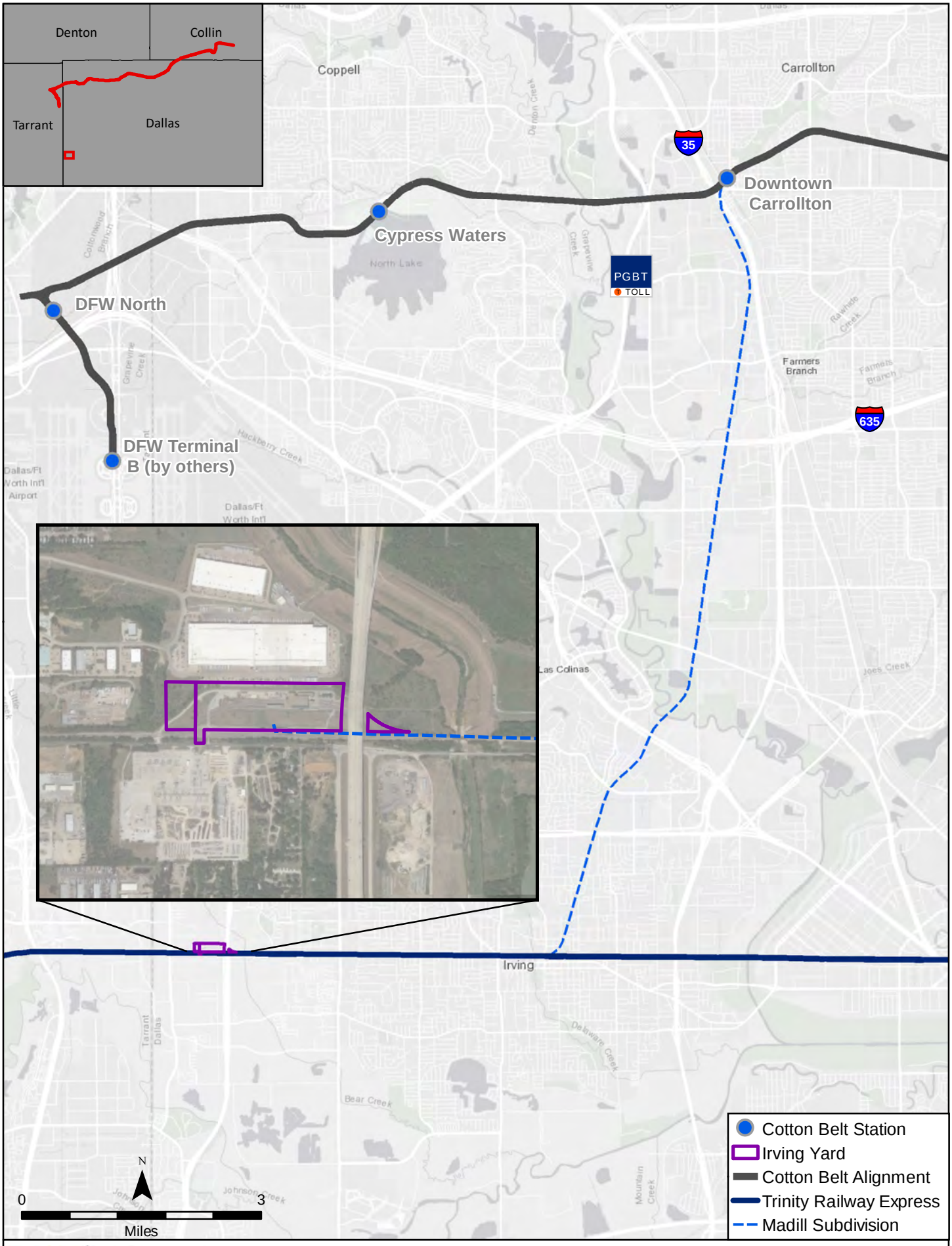


Figure 2-13
EMF Site Option 2- Existing Irving Yard

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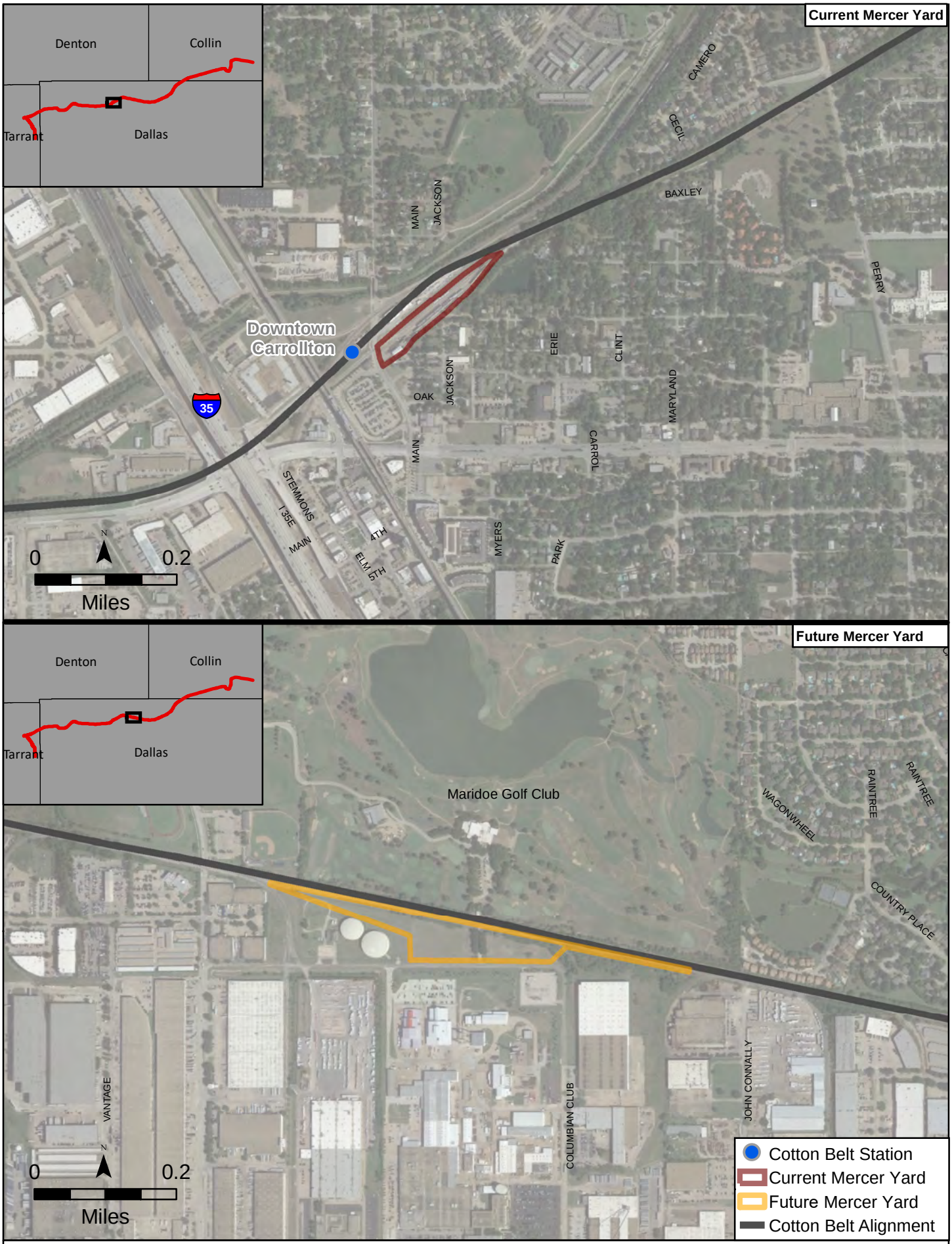

Figure 2-14
Current and Future Mercer Yard

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2.3.5 DFW Airport Proposed Action

As stated in **Section 2.3.1**, new tracks will be constructed in the vicinity of the junction with TEXRail on DFW Airport property. Coming from the east in existing right-of-way, the line will veer north of the current alignment before turning south in new right-of-way before joining the TEXRail alignment at the DFW Airport-North Station. Within the existing TEXRail right-of-way, the alignment will cross over SH 121/SH 114 and parallel International Parkway, terminating at Terminal B of the DFW Airport-Terminal B Station. At DFW Airport Fire Station 6 (711 Regent Boulevard) on the existing railroad right-of-way, DART will construct a new at-grade crossing to allow fire access to the north side of the right-of-way. DFW Airport is also planning two additional aerial roadway crossings of the rail line. One will cross the existing railroad right-of-way east of the DFW North Station to connect to future airport developments across the tracks. The second is Dallas Road which crosses the new right-way south of the DFW North Station. This will facilitate east-west circulation.

The portion of the Preferred Alternative on airport property will require FAA approval of DFW Airport's proposed changes to the ALP. This connected federal action is referred to as the DFW Airport Proposed Action. The DFW Airport Proposed Action will allow the proposed construction of the Preferred Alternative on DFW Airport property. A station platform will be constructed directly adjacent to the TEXRail platform to accommodate transfers. A second platform will be constructed within existing right-of-way north of the junction to accommodate east-west movements. South of the station area, the rail line will be constructed along the TEXRail Project using a single-track alignment, with one passing siding south of North Airfield Drive. Also, south of the station area, the Preferred Alternative will utilize the bridges, culverts, underpasses and at-grade crossings being constructed for the TEXRail Project.

An Airspace Study (FAA Form 7460-1, Notice of Proposed Construction or Alteration) will be completed and provided for FAA approval during the Design-Build phase of the Project at a minimum of 60 days prior to construction for FAA to process.

DART will coordinate with the FAA to evaluate and monitor the impact of vibrations on navigational aids in the vicinity of the DFW Proposed Action. This ongoing evaluation will ensure the continuing safety and efficiency of aircraft operations. **Chapter 6** provides additional information on potential impacts and mitigation of the Preferred Alternative related to FAA environmental impact assessment guidance.

2.4 Operating Plan

This section summarizes the proposed operating plan for the Preferred Alternative.

2.4.1 Service Levels

Service will be offered seven days per week, with more frequent service during weekday morning and evening peak periods.

- During initial operations, weekday span of service will generally be from 6:00 am to 9:00 pm. The service hours for some stations could be as early as 5:15 am or as late as 10:15 pm as trains come in and out of revenue service from the EMF.
- Trains will operate in both directions every 30 minutes during the peak travel periods of 6:00 am - 9:00 am and 3:00 pm - 7:00 pm.
- Trains will operate in both directions every 60 minutes during the non-peak travel periods of 9:00 am - 3:00 pm and after 7:00 pm.
- Initial operations will include approximately 60 trains per day.
- Service on Saturday, Sunday, and major holidays will be from 8:00 am to 8:00 pm operating in both directions every 60 minutes throughout the day.

- In the future (date to be determined), trains will operate during the peak periods at an increased service level of every 20 minutes in both directions, and service hours may be extended to 12:15 am.
- In the future, approximately 90 trains will operate per day.

The ridership forecasts and the impact analyses documented in this FEIS assume the higher service levels of every 20/60-minutes to reflect the long-term operating scenario.

The operating plan indicates five DMU trains are needed to provide 30-minute service frequencies in the peak period. Fewer trains are required when operating at 60-minute service frequencies in the midday, evening and weekend time periods. The overall fleet, including spares, would be eight trains. The *DART Cotton Belt Operations and Maintenance Plan* is located in **Appendix B**.

2.4.2 Train Control and Communications

The Preferred Alternative train control system will consist of two coordinated but distinct components:

- A Positive Train Control (PTC) system; and
- A Centralized Traffic Control (CTC) system, which remotely sets powered track switches and way signals governing them, either automatically or through action taken by the dispatcher.

Passenger and freight movements on the Cotton Belt, TRE, and TEXRail lines will be monitored, authorized and controlled by dispatchers located at the TEXRail yard or the Irving Yard/Cotton Belt EMF with TRE having a dedicated desk and Cotton Belt/TEXRail sharing a desk.

Train operations on the Cotton Belt are currently and will continue to be governed by the General Code of Operating Rules (GCOR) and the DART System Employees' Timetable and Special Instructions, to be prepared by DART. The timetable and special instructions, as well as GCOR, govern the operations of freight operators when using Cotton Belt tracks. These will be revised and amplified by staff as required to accommodate regional rail service staff.

All passenger and freight trains operating along the corridor will be dispatched by a DART operations contractor on DART's behalf. DART's current operations contractor provides dispatch services for the TRE and the future TEXRail line. On the Cotton Belt's mainline, all tracks will be signaled for bi-directional running utilizing CTC. In general, the CTC system will be designed to function automatically, with pre-programmed scheduled meets occurring at specified passing locations when trains leave originating terminals on time. Dispatchers will constantly monitor system operations and intervene on an exception basis when delays require dispatcher intervention and the application of recovery strategies. During normal operational windows, the dispatcher will control train movements at terminal locations to ensure on-time departures. During freight operational windows, the DART Dispatcher will control all traffic flow, including work trains and other on-track equipment such as hi-rail vehicles and maintenance equipment.

To meet the PTC requirements of the Railroad Safety Improvement Act of 2008, the Preferred Alternative will employ PTC based on I-ETMS (Interoperable Electronic Train Management System) technology, consistent with the system used by BNSF and UPRR (as well as TEXRail and TRE). All signals and switches at control points can be controlled remotely by the dispatcher, with auto-routing employed at control points to optimize efficiency and alleviate the burden on the dispatcher.

A two-way radio system will provide voice communication between the dispatcher, train crews and other personnel on the right-of-way. Separate channels will be available for each of the major operation and maintenance (O&M) functions: operations control, vehicle maintenance, maintenance-of-way, security, and emergency backup.

2.4.3 Fare Collection System

Regional fare integration is a vital part of providing a seamless and understandable transit system to passengers. DART is in the process of implementing a Comprehensive Payment System (CPS). The mobile ticketing application, *GoPass,* was the first phase and is widely used. The second phase of the CPS will introduce a new state-of-the-art, integrated, electronic fare payment system. The Preferred Alternative will be part of this system. This new system is being accomplished by creating an electronic payment infrastructure for transportation and other services that is ultimately capable of being deployed region-wide, using prepaid cards and contactless devices. This system is scheduled to be in place when the Preferred Alternative opens in December 2022. The Preferred Alternative fare has yet to be determined; however, it is likely that local and regional fare options would be available similar to the existing TRE fare structure.

It is anticipated that conductors and/or fare enforcement personnel would be empowered to check for valid tickets, although currently only DART police and fare enforcement officers may issue citations. Conductors and fare enforcement officers can use radios to communicate to DART staff to inform them of non-compliant or unruly passengers and request a police presence at the next station.

Fare collection equipment will be maintained in an electronics shop at the EMF or at a shared site with DART for increased efficiency if all the equipment is interchangeable.

2.4.4 Travel Time

The estimated one-direction travel time for the Preferred Alternative from Shiloh Road to the DFW Terminal B Station is 59 minutes (and 58 minutes in the opposite direction). These run times include station dwell times of 30 seconds at all stations except for Downtown Carrollton, Addison Transit Center, CityLine/Bush, and 12th Street Station, where dwell times will be one minute.

During peak travel times, comparable automobile travel time ranges from 35 to 55 minutes, or more if there is an incident. Use of PGBT or LBJ TEXpress Lanes also requires tolls. Use of the current DART Rail system from CityLine/Bush Station to DFW Terminal A via the Orange Line is approximately 1.75 hours as it requires travel through downtown Dallas. Travel time on DART's bus travel system from Shiloh Road and Plano Parkway to DFW Airport South Remote Parking Lot (with transfers) is almost three hours.

2.4.5 Terminal Times

At terminals, under normal, planned operation, no train will be scheduled to depart for its next trip less than 10 minutes after arriving. This minimum turn time allows for the discharge/boarding of passengers, operator and conductor rest, and performance of a federally-mandated brake test. If the turn time is less than 15 minutes, a "drop-back crew" will be assumed to be in place.

DART policy calls for a drop-back crew whenever turns are shorter than 15 minutes, so a drop-back crew would be in place at DFW Terminal B during peak periods. This allows for the absorption of short delays and for engineers to change cabs, perform brake tests, obtain dispatch authority, and leave on time. During initial operations, layovers of 14 minutes at the DFW Terminal B Station and 17 minutes at the Shiloh Road Station will be provided. Layover times fall as they do (skewed initially to the Shiloh Road Station) to allow for a consistent 6-minute TEXRail transfer in both directions at the DFW North station.

2.4.6 Bus Service Modifications

The Preferred Alternative will result in some bus route modifications, such as extending existing routes to new stations, creating new routes to a station, or modifying headways to better match rail service. **Table 2-2** provides a summary of bus service modifications and reflects recent March

2018 bus service changes that are now in place, as well as future bus changes planned by DART. The March 2018 and future bus route modifications are based on a 2015 Comprehensive Operations Analysis (COA) completed by DART. Future COA bus service plan recommendations will be refined and phased in over time and may not be in place at Preferred Alternative opening. The recent March 2018 service changes focused on off-peak and weekend frequency improvements, along with some route modifications. New Rapid Ride and Airport Express routes shown in **Table 2-2** are longer term recommendations that are not yet funded and may be further refined after Preferred Alternative service is initiated.

Several stations including Downtown Carrollton, Addison Transit Center, and CityLine/Bush are already served by bus and changes will be minimal at these locations with the Preferred Alternative in operation. At other stations such as Knoll Trail and Shiloh Road, routes in the area will stop near station platforms using existing or relocated bus stops. Where there is an off-street facility, buses will be rerouted into the station area bus bays. Bus service changes will be refined prior to revenue service through the development of a detailed feeder bus plan. This plan will be subject to the DART Service Change process, which includes public hearings on proposed route changes prior to DART Board review, approval and implementation.

Table 2-2. Proposed Bus Routes to Stations

Station	Currently Serves Area or Existing Facility?	Proposed Bus Routes to Preferred Alternative Station	Proposed Weekday Headway	Bus Service Modifications
DFW Airport	Yes	DFW Shuttles 801,802, 804		
	No	500	30/30	Proposed route modification per COA Bus Plan
DFW North	No	None; Trinity Metro routes would serve station	N/A	N/A
Cypress Waters	No	401	30/30	Route 400 was split into Routes 402 and 403 in March 2018; Proposed modification to service station
	No	511	30/60	Extended route to serve station
Downtown Carrollton	Yes - 400	402	30/30	Route 400 was split into Routes 402 and 403 in March 2018
	Yes - 400	403	30/30	Route 400 was split into Routes 402 and 403 in March 2018
	No	525	30/30	Proposed new route per COA Bus Plan
	No	Rapid Ride 900 Belt Line	30/30	Proposed new route per COA Bus Plan
	No	Rapid Ride 901 Belt Line	30/30	Proposed new route per COA Bus Plan
Addison	Yes	36	30/30	Improved off-peak headways per COA Bus Plan
	Yes	350	30/30	Improved off-peak headways per COA Bus Plan and northern route modified to connect with Legacy Business Area in Plano
	Yes	361	30/30	Improved midday headways per COA Bus Plan
	Yes	362	30/30	Improved midday headways per COA Bus Plan
	Yes - 400	402	30/30	Route 400 was split into Routes 402 and 403 in March 2018
	No	403	30/30	Route 400 was split into Routes 402 and 403 in March 2018
	Yes	488	30/30	Improved midday headways per COA Bus Plan
	Yes	534	30/30	None - Existing/planned
	No	900	30/30	Proposed new route per COA Bus Plan
	No	901	30/30	Proposed new route per COA Bus Plan
	Yes	183	30/45	Improved midday headways per COA Bus Plan
	Yes	205	15/30	None; COA bus plan modifies downtown/uptown Dallas routing
	Yes	463	15/30	Improved peak/off-peak headways per COA Bus Plan
	No	290 Airport Express from Northwest Plano park-and-ride	60/60	New route per COA Bus Plan
	Yes	347	30/60	Minor route changes per COA Bus Plan
	Yes	536	30/60	Addition of midday and evening service per COA Bus Plan

Table 2-2. Proposed Bus Routes to Stations (cont'd)

Station	Currently Serves Area or Existing Facility?	Proposed Bus Routes to Preferred Alternative Station	Proposed Weekday Headway	Bus Service Modifications
	No	Rapid Ride 936 Preston Road	15/20	Proposed new route per COA Bus Plan
Knoll Trail	Yes	347	30/60	None; potential On-Street bus stop location modifications
UT Dallas	No	434	30/30	Proposed new route per COA Bus Plan
	No	802	15/30	New route for this station
	No	803	15/30	New route for this station
	Yes	883 UTD Comet Cruiser	20-30 all day	Proposed route deviation to serve station
CityLine/Bush	No	371	30/60	Proposed new route per COA Bus Plan
	Yes	883 UTD Comet Cruiser	20-30 all day	None
	Yes	841	60/--	Minor route modifications per COA Bus Plan
	Yes	843	30/--	Minor route modifications per COA Bus Plan
	No	434	30/30	Proposed new route per COA Bus Plan
	No	551	30/60	Route extended to this station per COA Bus Plan
12th Street	Yes	410	30/60	Route deviated to feed station
Shiloh Road	Yes	843	30/--	Minor route modifications per COA Bus Plan
	Yes	870	30/30	Route deviation to serve station; new On-Street bus stops

Source: DART Capital Planning; Service Planning

2.5 Alternatives Considered but Eliminated from Further Consideration

Other alignment and profile alternatives, station location and EMF locations were considered in studies during the planning phase and during the EIS process, but were eliminated from further consideration for a variety of factors. Several alternatives had technical problems or resulted in additional impacts to the community and natural environment, including drainage issues related to trenching or tunneling through the White Rock Creek Watershed. Two alignment alternatives bypassed mixed-use developments and would not connect activity centers which is one of the purposes of the Project. Others were not cost-effective mitigation options. A discussion of the other alternatives considered is provided below.

2.5.1 No-Build Alternative

The DEIS evaluated a No-Build Alternative that was not selected as the Preferred Alternative. A comparison of the No-Build Alternative to the Preferred Alternative is maintained in this document for comparative purposes.

The No-Build Alternative assumed a 2040 condition of land use and demographics. It included transit capital and service improvements that are programmed to be implemented by DART and other transit providers in the Study Area, as well as all other planned, programmed, and funded transportation projects for the planning year 2040. This includes projects contained in the *2017-2020 Transportation Improvement Plan* (TIP). The No-Build Alternative was not a no impact alternative, as it included actions by DART or other agencies that have been or will be addressed in separate environmental reviews. The No-Build Alternative is included in the FEIS as a benchmark against which the potentially significant environmental benefits and impacts of the selected Preferred Alternative were measured. A summary of substantial projects programmed and funded and part of the No-Build Alternative definition were documented in the DEIS and included: DART March 2018 Transit Service Improvements, DART Red/Blue Line Platform Extensions, DART D2 Subway, Trinity Metro TEXRail Project, and programmed roadway projects.

2.5.2 Elimination of Preston Road Station and Coit Road Station

The DEIS included a Preston Road Station and a Coit Road Station. The Service Plan Amendment approved by the DART Board on August 28, 2018 removed both stations.

The Preston Road Station would have been located south of Keller Springs Road just east of the Preston Road grade separation in Dallas. The station would have a rail platform but would not have any dedicated parking or drop-off areas due to space constraints. Riders would have accessed this station on foot, by bicycle, or from existing transit services along Preston Road. The Coit Road Station would have been located just west of Coit Road approximately one-half mile south of PGBT in Dallas. The station would have included side platforms, a new parking area and bus bays with a single full-access driveway onto Coit Road. As described in **Section 2.2**, the City of Dallas did not support either station, and many Dallas residents requested elimination of the stations. Concerns cited for the Preston Road Station included low ridership, school adjacency, safety, traffic impacts, access, and neighborhood parking. Concerns for the Coit Road Station focused on the elimination of a small amusement park.

2.5.3 Railroad Corridor Only Options

As described in **Section 2.3.1**, the Project alignment will deviate from the existing Cotton Belt Railroad Corridor to serve DFW Airport, Cypress Waters and CityLine/Bush. The DFW Airport connection will utilize a new connection being advanced by the TEXRail Project, and no other alternatives were considered for this location as direct access to DFW Airport is a key project element. “Railroad only” options were considered for the locations near Cypress Waters and

CityLine/Bush, in which the Project would have remained on the Cotton Belt Corridor and would not have deviated outside of the existing right-of-way. Although these options would shorten the length of the Project, they would eliminate stations that would serve mixed-use developments as described below.

Railroad Alignment North of Cypress Waters

Remaining on the existing railroad corridor north of Cypress Waters would prohibit placing a station in this vicinity since the rail corridor traverses Coppell, which is not a DART Service Area city. Diverting to the Cypress Waters development in the city of Dallas allows the placement of a station within the DART Service Area and at the midpoint of an approximately 10-mile section that otherwise would not have a station. It also avoids residential adjacency in Coppell, minimizing potential impacts. Remaining on the railroad corridor was not supported by the City of Dallas, the City of Coppell, or the Cypress Waters development. Cypress Waters will eventually contain 4.5 million square feet of retail and commercial space and 10,000 residential units, and is focusing higher density transit-oriented development around the station area.

Railroad Alignment North of CityLine/Bush

Remaining on the existing railroad corridor north of CityLine/Bush would prohibit placing a regional rail station directly adjacent to the CityLine/Bush Station and directly serving the CityLine development. The CityLine development includes State Farm Headquarters and will ultimately include up to three million square feet of office space and 4,000 residential units. The railroad corridor only option in this area also has the potential to impact a cemetery adjacent to the existing rail corridor. A recent discovery indicates that the cemetery encroaches into the Cotton Belt right-of-way. The CityLine/Bush alternative, which is supported by the cities of Richardson and Plano, avoids any potential impact to this cemetery.

2.5.4 North Dallas Profile Options

During the development of the *DART 2030 TSP*, the Dallas City Council passed a resolution with their plan recommendations. In the resolution, the City recommended the Cotton Belt Project be below grade from at least 1,500 feet east of Meandering Way to 2,000 feet west of Preston Road in North Dallas. In adopting the *DART 2030 TSP* in October 2006, the DART Board of Directors acknowledged the City's preference for a trench, but approved an at-grade concept. Based on this input, three below-grade profile options were examined for this portion of the alignment during early planning efforts: deep trench, shallow trench, and tunnel. The desire for a below-grade option was based on public perception that an at-grade alignment would have environmental and quality of life impacts.

DART policy requires that the potential impacts of any proposed project be assessed, and if adverse effects are found, that these impacts be avoided or minimized and mitigated. Proposed mitigations are required to be consistent with DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects.* Generally, below-grade options are considered only in areas where right-of-way availability is limited or identified impacts cannot be mitigated with a surface alignment.

In North Dallas, there is sufficient right-of-way for surface running rail since DART owns the generally 100-foot wide Cotton Belt Corridor that is unencumbered by freight activity. DART facilitated a January 22, 2010, action by the Surface Transportation Board (STB) to abandon freight in the North Dallas section of the Cotton Belt Corridor.

Potential impacts in North Dallas include traffic, safety, noise, vibration, community cohesion and visual intrusion. As outlined in this DEIS, these potential impacts can be mitigated by means consistent with DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects* without constructing an approximately 2.5-mile below-grade section. Below-grade

concepts may introduce additional environmental impacts that could not be adequately mitigated and are also more expensive. A discussion of each profile concept is provided below.

Deep Trench Profile

A deep trench concept that would depress the rail alignment at least 15 feet below grade and cross three waterways was originally suggested as a below-grade profile option. One of the essential requirements of the deep trench profile option was to conserve the 100-year floodplain water surface elevations in order to avoid adding new inundation areas or structures to the existing floodplain. Stormwater velocities within the creeks must also be controlled to avoid erosion and prevent compromising the integrity of the creek banks. Because of these environmental constraints, implementation of the deep trench option would require that water in three creeks be pumped past the trench. The three creek crossings between Hillcrest Road on the east and Preston Road on the west that would be affected are as follows:

- Osage Branch Crossing 1, located just east of Davenport Drive
- Osage Branch Crossing 2, located just south of Duffield Drive
- McKamy Branch Crossing, approximately 300 feet north of Davenport Drive

The drainage concept developed for the deep trench profile option consisted of capturing the water upstream of the alignment and pumping it under the tracks, to the downstream side of the tracks. The assessment of the deep trench profile option included options for pumping stations, types of pumps, and use of submersible electric motors. It also included an analysis of each creek crossing, including design considerations, power needs, probable annual operating costs, and a summary of estimated capital costs.

It was estimated that three pump stations for the deep trench profile option would cost over $280 million in capital costs and over $2.5 million in annual operating costs. These estimates did not include construction of the alignment in the trench or annual operating costs of the rail service. In addition to the substantial costs associated with the pump stations, adverse impacts to several resources would occur. Potential impacts would include loss of vegetation and wildlife habitat, displacement of residents, the use of public parkland, increased noise levels, and impacts to water resources.

Of primary concern was the liability associated with the three pump stations. Pumps could fail to function due to power outages, which typically occur during major storm events. Failure of the pumps could result in flooding of upstream properties and DART infrastructure. Public safety and life protection could be undermined. DART cannot assume the liability associated with a catastrophic failure of the pump stations.

DART determined that the deep trench profile option was cost-prohibitive, would result in adverse environmental impacts and could be a threat to public safety.

Shallow Trench Profile

The shallow trench profile option was developed as an alternative to the deep trench profile option because the shallow trench would not require the use of pumping stations. This option combined a maximum trench depth with walls and berms to maintain a top of wall height of 15 feet over the rail with the use of culverts instead of bridges at the creek crossings of McKamy Branch, Osage Branch Crossing #1 and Osage Branch Crossing #2. The roadways of Davenport Road (two locations), Campbell Road, Hillcrest Road, McCallum Boulevard and Meandering Way would be elevated over the rail alignment. This alternative profile met the spirit of the City of Dallas resolution without the creek impacts of the deep trench option; however, the construction of roadway grade separations over the trench would require the purchase of additional right-of-way including publicly-owned parcels. The shallow trench option would add $123 million to the cost of

the Project. It would also require modifying the access to several single family and multi-family residential units. At least one single family home would potentially be displaced.

DART determined that the shallow trench profile option would not sufficiently address public concerns and only represented a minimal improvement in traffic, safety and noise. The six elevated roadways would increase visual concerns and create property access issues. Additional environmental concerns associated the trench profile option include potential impacts to adjacent water resources/floodplains and increased property acquisitions including residential property and publicly owned recreational property. The added Project cost and impacts, with only minimal benefits, did not justify the shallow trench.

Tunnel Profile

This option proposed a 2.6-mile tunnel section that starts west of Preston Road and ends west of Coit Road. It includes a 0.7-mile west portal, a 0.3-mile east portal and a 1.6-mile tunnel. The tunnel would be located entirely within the limestone rock formation. Generally, the tunnel would run parallel to and below an unnamed tributary to White Rock Creek, which splits into the McKamy Branch and the Osage Branch. The tunnel crosses under the creek three times at McKamy Branch, Osage Branch Crossing #1 and Osage Branch Crossing #2. The depth of overburden above the tunnel crown would be between 20 and 40 feet. The shallow cover areas are near the portal structures and below the creek crossings.

DART determined that the tunnel profile option, which added $511 million to the cost of the project was cost-prohibitive. Potential impacts can be mitigated through less expensive means that are consistent with DART guidelines and policies.

2.5.5 LRT (Orange Line) Phase II

During the planning of the Orange Line into DFW, a two-phased approach to the LRT alignment into DFW Airport was advanced. Phase I was constructed and currently operates as the Orange Line. Phase II would have been implemented with the Cotton Belt Project, with the assumption that the Cotton Belt Project would terminate at a DFW North Station instead of at DFW Airport Terminal B. Under this concept, Phase II of the LRT alignment would spur from the existing Orange Line near Freeport Parkway to extend north along SH 114 and SH 121 to the Cotton Belt Corridor. It would then extend west to a DFW North Station and then turn south along the TEXRail right-of-way before rejoining the Phase I LRT alignment north of the DFW Airport terminals. Cotton Belt passengers would have been required to transfer to LRT at the DFW North Station to continue their trip into the airport.

Since the conceptual development of the phased approach, several projects have been constructed that severely restrict implementation of the Phase II alignment. The TxDOT DFW Connector Project greatly expanded SH 114 and SH 121. This eliminated much of the right-of-way envisioned for the Phase II LRT alignment. This right-of-way was further constrained by new development within the DFW International Commerce Park adjacent to the highways. South of the DFW North Station, the TEXRail design was modified from its original concept to avoid impacts to sensitive equipment and to accommodate new and future DFW Airport infrastructure. The TEXRail tracks are being constructed in a narrow corridor that will accommodate a second track for the Cotton Belt Project. LRT has different infrastructure requirements and would be precluded from operating in this narrow corridor.

The envisioned LRT Phase II Orange Line is infeasible due to right-of-way constraints. As such, the Cotton Belt Project is being advanced to DFW Airport Terminal B.

2.5.6 CityLine/Avenue F Spur

In September 2001, the City of Richardson purchased property adjacent to F Avenue in Plano that formerly contained a railroad spur connecting the Cotton Belt to the railroad corridor now occupied by DART's Red Line. This was considered an alternative route to access the CityLine/Bush Station from the Cotton Belt. With the development of the CityLine/Bush Alignment, this concept was not advanced. During the DEIS comment period, the City of Plano requested reconsideration of use of this property as an alternative route to the 12th Street Station from the CityLine/Bush Station. DART reviewed this concept and determined that route would require a significant amount of additional property acquisition as well as create potential traffic impacts and other impacts that were not included in the DEIS. As a result, this concept is no longer being considered.

2.5.7 Luna Road EMF (Option 1)

The DEIS included two possible EMF location options. The Luna Road Site (Option 1) was located on West Belt Line Road and Luna Road in Carrollton. The TRE Irving Yard Site (Option 2) is located in Irving and is accessible by the DART-owned Madill Subdivision Corridor. The City of Carrollton requested that the Luna Road EMF (Option 1) not be selected as the preferred EMF option. In consideration of this request, DART has identified Site Option 2 (Irving Yard) as the preferred EMF location. See **Section 2.3.3** for additional details.

2.6 Cotton Belt Regional Trail

The NCTCOG has a Regional Veloweb Plan that identifies a network of off-street trails in the region to enhance mobility and access. A key trail corridor in this plan is the Cotton Belt Regional Trail. The Cotton Belt Regional Trail currently exists within DART-owned right-of-way in several locations west of DFW Airport. Expansion of the Cotton Belt Regional Trail system within the DART Cotton Belt Project Corridor is part of the plan. According to NCTCOG, corridors identified on the Veloweb as "planned" may be prioritized for future funding.

The DART Hike and Bike Trail Policy III.09 states that DART-owned rights-of-way may be available to other governmental entities for utilization as hike, bike transportation, or recreational use. Trails have been implemented within DART right-of-way in several locations in accordance with this policy and under license agreements with local jurisdictions.

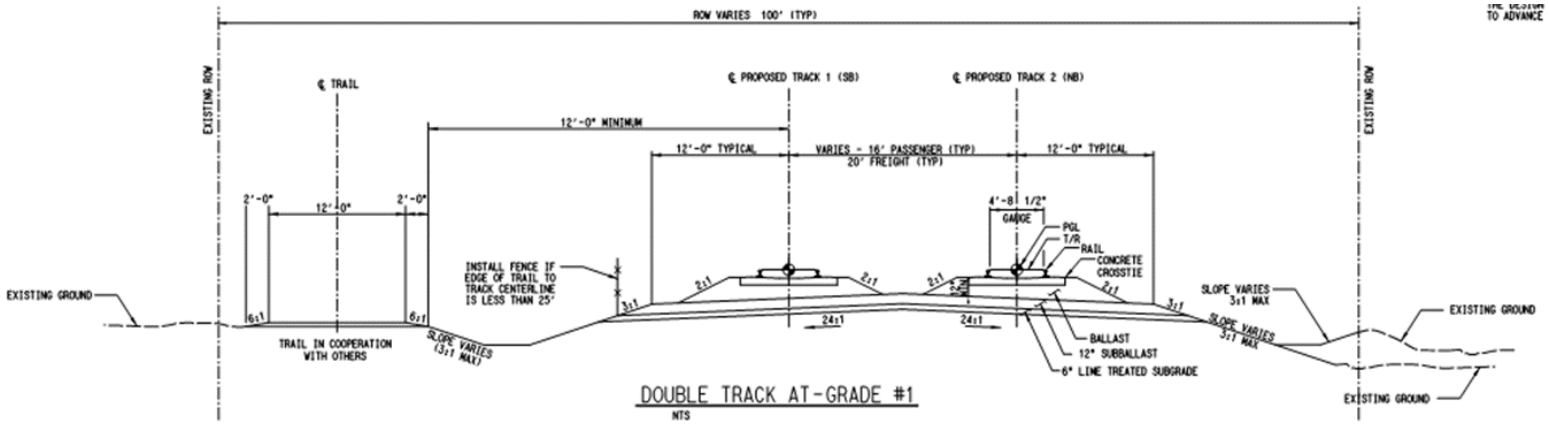
As part of the Preferred Alternative, DART is coordinating with the NCTCOG and communities along the corridor to preserve an envelope for the Cotton Belt Trail within the DART right-of-way, where feasible. The following objectives were used to develop the preliminary trail alignment along the Preferred Alternative:

1. Pedestrian bridges would be used as required at creeks, but not at grade separations.
2. Trails can and would go off DART right-of-way onto an adjacent path or sidewalks, existing or proposed, especially where right-of-way constraints are present or where transition to nearby trails is convenient and feasible.
3. Crossings of industrial spurs should be limited as much as possible.
4. The Cotton Belt Trail will tie into the DFW North Station but will not extend further south into DFW Airport.

The guideway plan and profile drawings in **Appendix A** identify the trail envelope for the portions within the DART right-of-way, which is labeled as "In cooperation with others". The trail would only be located on one side of the track. In locations where there are planned or existing nearby trail facilities, or where right-of-way constraints are present, the Cotton Belt Trail would transition out of the DART right-of-way and into street right-of-way or connect with another trail. The trail is primarily located north of the tracks but does transition to the south side in some areas.

Typical sections were also developed to illustrate the 12-foot trail within the cross section (see **Figure 2-15**). The trail would be located as close to the outside edge of DART right-of-way as possible, but with a minimum distance of 12 feet from the closest track center to the edge of the trail. The preferred distance is 25 feet from the edge of trail to track center. A fence would be required to separate pedestrians and tracks if a trail is less than 20 feet from the track centerline to the edge of the trail shoulder. In general, a fence would be provided between the trail and tracks to ensure trails users do not enter the operating corridor. All trails are assumed to be at-grade along the adjacent mainline track alignment unless otherwise noted on the plans. The only pedestrian bridges shown are to enable crossing of defined channels. There are no pedestrian bridges over roadways. Mid-block crossings would be parallel and adjacent to the railroad crossing of roadways.

Figure 2-15 Cotton Belt Typical Cross Section with Trail



The cross-sections are conceptual only and do not delineate the trail at this time as no trail design has been completed. The trail would likely be outside of the drainage ditches in most situations. As planned, the trail envelope crosses only two industry track leads at PPG Paints, in Carrollton, and Kuehne & Nagel, in Coppell.

Since this FEIS includes the trail envelope in the design plans and the environmental analysis was conducted for the corridor, which includes the trail concept, it can be used as a basis for future environmental clearance of the trail. Once detailed trail design is completed and funding source and agency requirements are known, additional environmental analysis may be required. Construction of the trail is assumed to be done by local jurisdictions. Each jurisdiction would operate and maintain the trail within their jurisdictional boundary.

2.6.1 Trail Cost Estimate and Funding

DART will develop a rough order of magnitude cost for the trail sections located within the DART right-of-way as identified in the design plans. The trail cost is not part of the Preferred Alternative costs. The only trail costs included in the project are those associated with a direct impact of the Preferred Alternative which is at Spring Creek Trail in Richardson. The Cotton Belt Trail cost estimate will be provided to NCTCOG so that a funding and implementation plan can be developed in cooperation with other governmental entities. DART would cooperate with other public and private entities to find funding per DART policy but is not obligated to provide funding unless the DART Board of Directors chooses to allocate funding to it separate from the Preferred Alternative. Should funding be identified at the time of final design and construction of the Preferred Alternative, it may be feasible to conduct design and construction concurrently.

3. Affected Environment

3.1 Introduction and Study Area

This chapter documents the existing natural and built environmental conditions within the Preferred Alternative. This affected environment is the baseline against which the potential impacts of the project can be measured. As shown in **Figure 3-1**, the Study Area is generally a 0.25-mile buffer of the alignment and a 0.5-mile buffer around station locations. Some resource areas have different Study Areas and are documented where appropriate. The methodology for each resource area analysis is summarized in the following sections and is discussed in **Appendix B**.

This document has been prepared in accordance with FTA guidance but includes elements required for compliance with *FAA Order 1050.1F* and *FAA Order 5050.4B*. As a cooperating agency, the FAA assumes responsibility to independently review the environmental documents prepared for the project. FAA focuses its efforts on those issues and subject areas pertaining to airport planning and potential effects on airports. The impact evaluation and mitigation measures in accordance with FTA guidance are summarized in **Chapter 4**. **Chapter 6** focuses on the impacts to the airports and utilizes the FAA resource categories.

3.2 Land Use and Zoning

Introduction and Regulatory Setting

An assessment of the existing and future land use along the mostly DART-owned Preferred Alternative provides insight into development trends in the Study Area. Land use types include, but are not limited to, residential, office, light industrial, industrial, commercial/retail, transportation, and institutional. Examining existing land use provides a sense of the general character of the areas through which the alignment passes.

Zoning ordinances of local municipal jurisdictions form the framework for regulating land uses within city limits. The basis for this regulatory power at the local level comes from Chapter 211, Municipal Zoning Authority, of the Texas Local Government Code.

Methodology

For the purposes of the land use review, the Study Area for land use includes 0.25-mile on either side of the Preferred Alternative alignment and 0.5-mile radius around each station location. The most recent land use data from North Central Texas Council of Governments (NCTCOG) (2015) was used for the existing land use. Municipalities were utilized as primary sources for future land use plans and zoning.

Affected Environment

The majority of the Preferred Alternative will follow the existing railroad corridor. The Cotton Belt corridor predates much of the surrounding development and freight operations that have been in existence for decades, such that the introduction of transit service as envisioned for the Preferred Alternative will be a similar and compatible transportation use.

Since most development along the Preferred Alternative occurred after the existing rail was constructed, several industrial and warehouse areas have direct access to the rail for the transportation of goods. This history is apparent in the many rail spurs extending from the main line to connect nearby businesses.

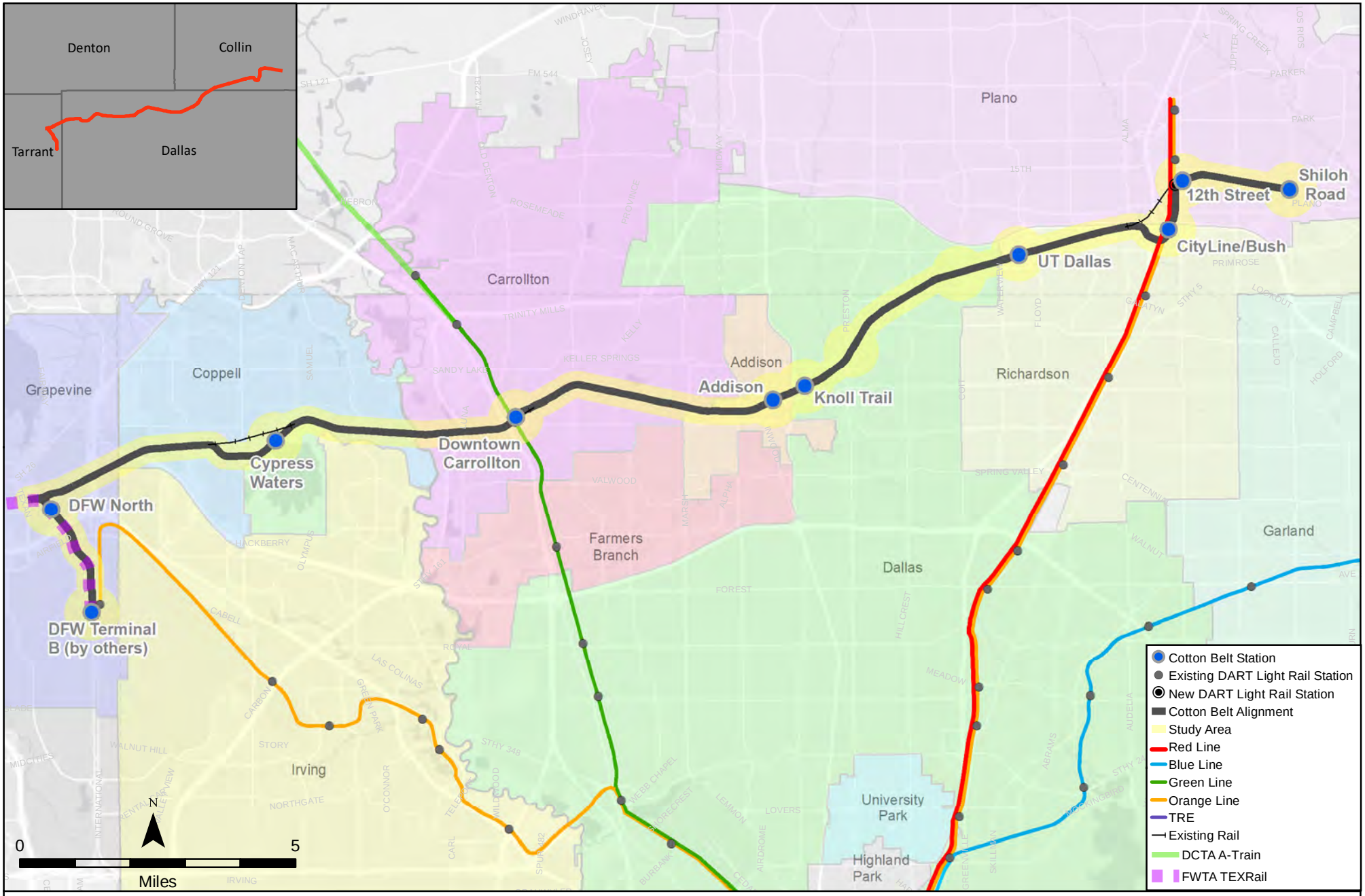


Figure 3-1
Study Area Location

Cotton Belt Corridor Regional Rail Project
Final Environmental Impact Statement

Table 3-1 lists the existing land use types within the Study Area, while **Figures 3-2** through **3-5** illustrate the land use types. In addition to industrial uses, other primary land uses include residential, commercial and mixed-use developments, and undeveloped park/open space. The *Land Use Existing Conditions Technical Memorandum* in **Appendix B** provides additional details on the land use types within the Preferred Alternative.

Table 3-1. Cotton Belt Corridor Regional Rail Existing Land Use

Land Use Type	Acres Within Corridor*	Percent of Corridor
Vacant	1,832.8	19.5%
Industrial	1,291.38	13.8%
Single family	1,242.7	13.2%
Commercial	1,204.7	12.8%
Parks/recreation	965.55	10.3%
Multi-family	784.	8.4%
Runway	318.8	3.4%
Railroad	216.9	2.3%
Airport	185.7	2%
Institutional/semi-public	184.8	2%
Education	174.2	1.9%
Utilities	158.2	1.7%
Transit	147.7	1.6%
Retail	116.6	1.2%
Water	79.9	0.9%
Small water bodies	54.5	0.6%
Office	47.6	0.5%
Hotel/motel	47.4	0.5%
Cemeteries	13.7	0.2%
Flood control	5.0	0.1%
Other (Group quarters, farmland, ranch land, under construction, timberland, parking, residential acreage, improved acreage, communication, mobile home)	313.2	3.3%
TOTAL	9,385.2	100.00%

Source: NCTCOG Land Use Data, 2015

While there is a large amount of industrial and vacant land, the Preferred Alternative stations will primarily be located near or within well-developed areas that serve as population and employment centers. **Table 3-2** summarizes existing land use around each station location as well as highlights local land use plans, policies, and codes that will influence future development around the station. As shown in **Table 3-2**, every station area has an associated land use plan and/or station specific plan to support land use decisions and promote transit-oriented development.

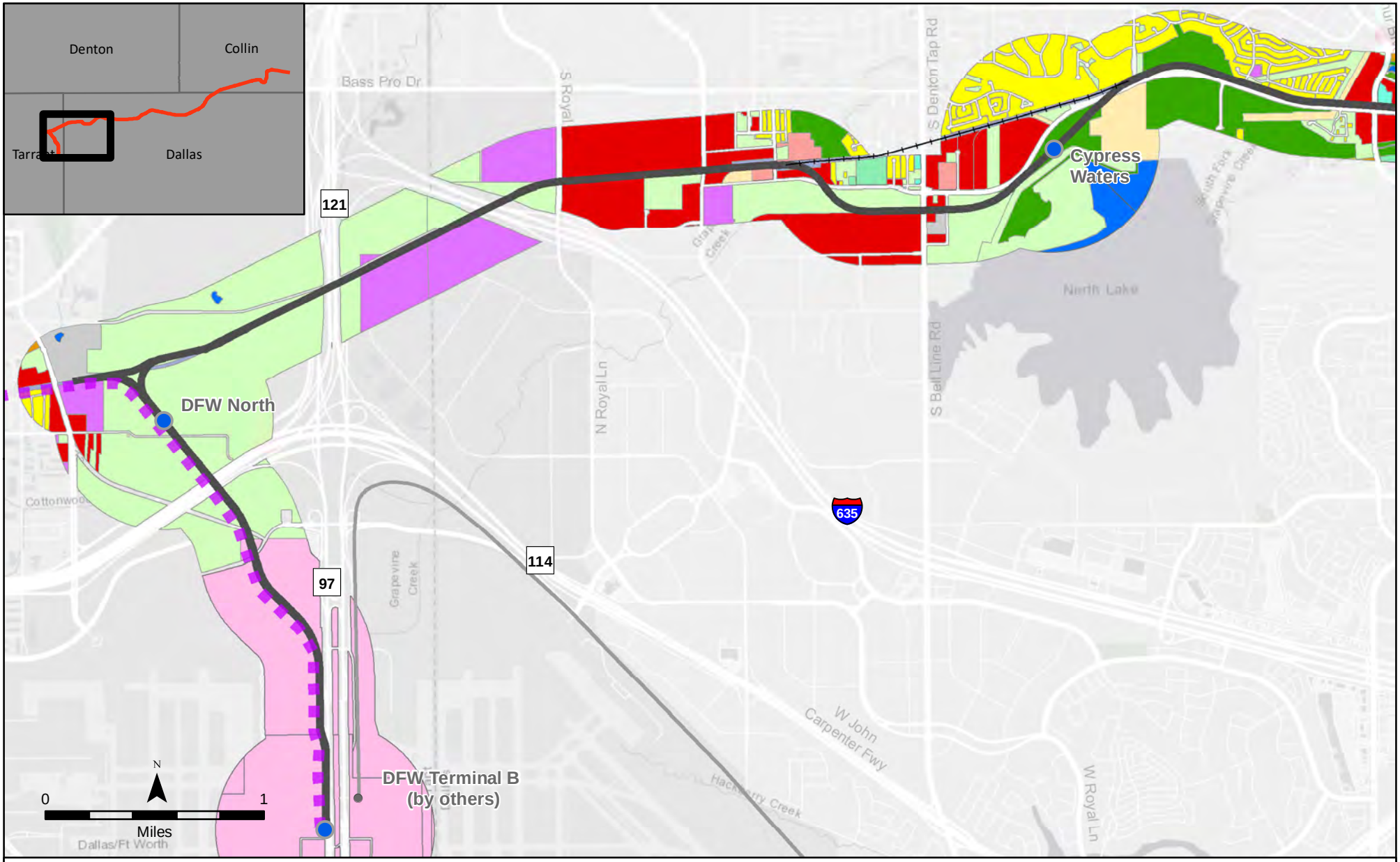


Figure 3-2
Existing Land Use
Data Source: North Central Texas Council of Governments, 2015

Cotton Belt Corridor Regional Rail Project
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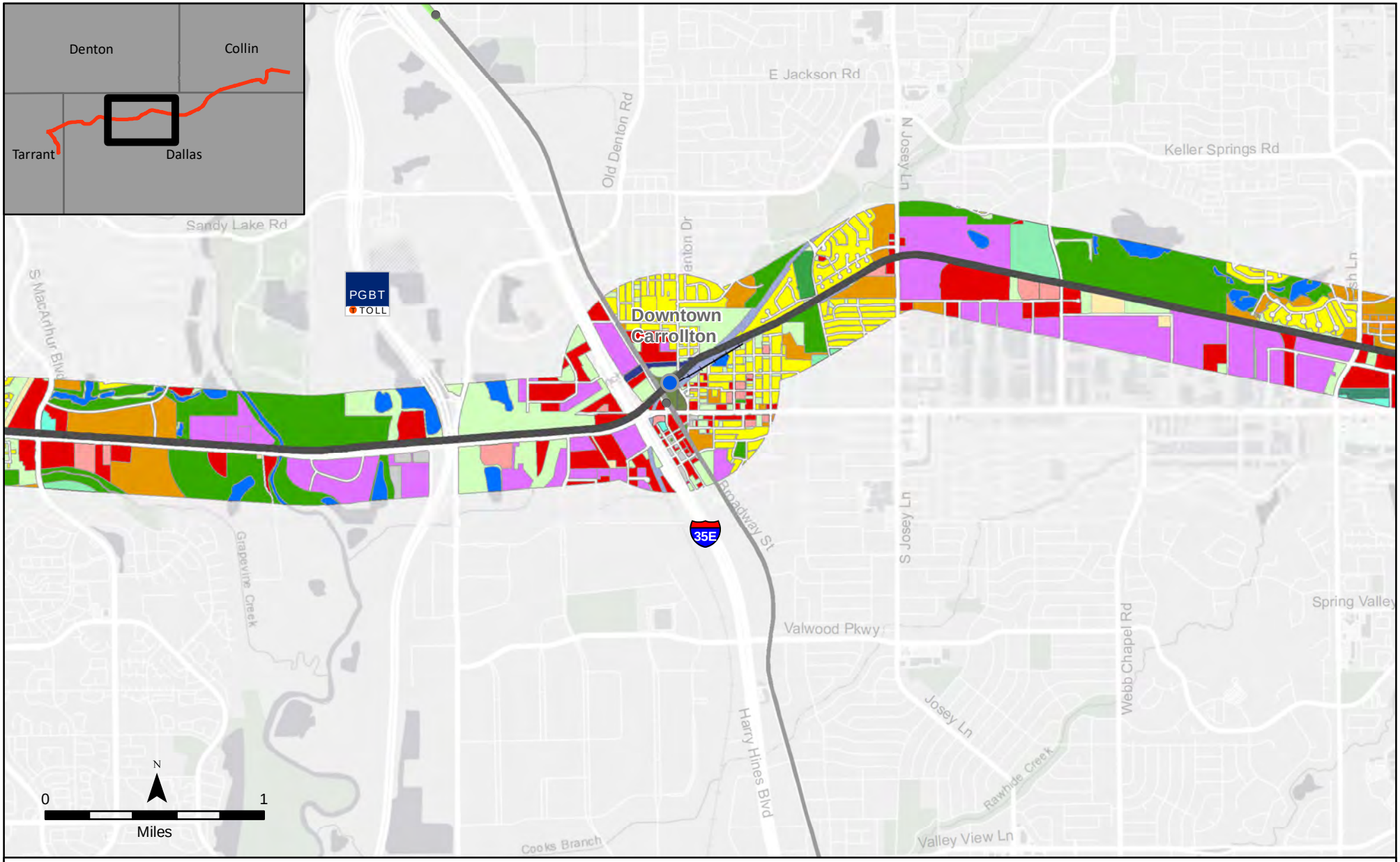

Figure 3-3
Existing Land Use
Data Source: North Central Texas Council of Governments, 2015

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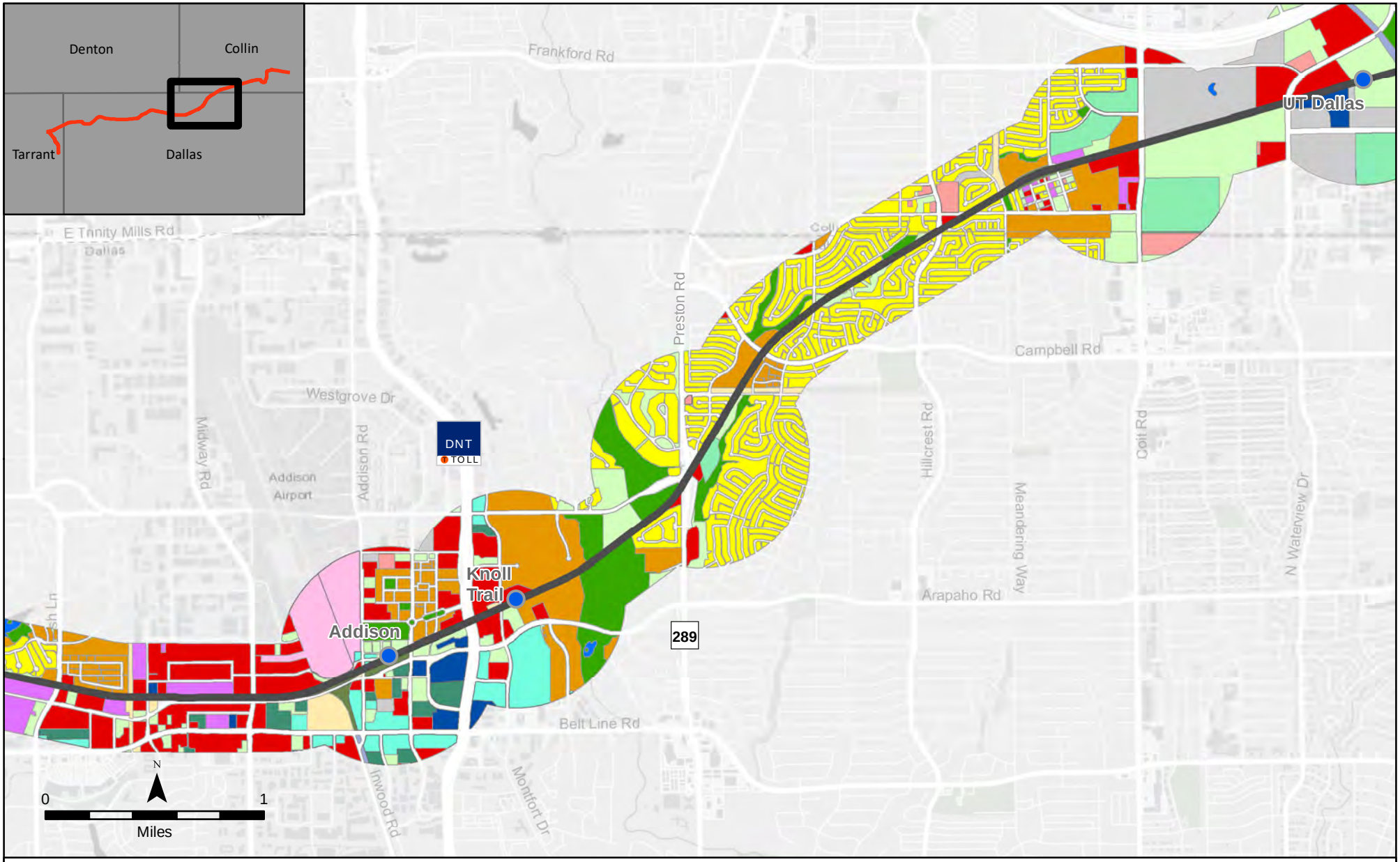


Figure 3-4
Existing Land Use
Data Source: North Central Texas Council of Governments, 2015

Cotton Belt Corridor Regional Rail Project
Final Environmental Impact Statement

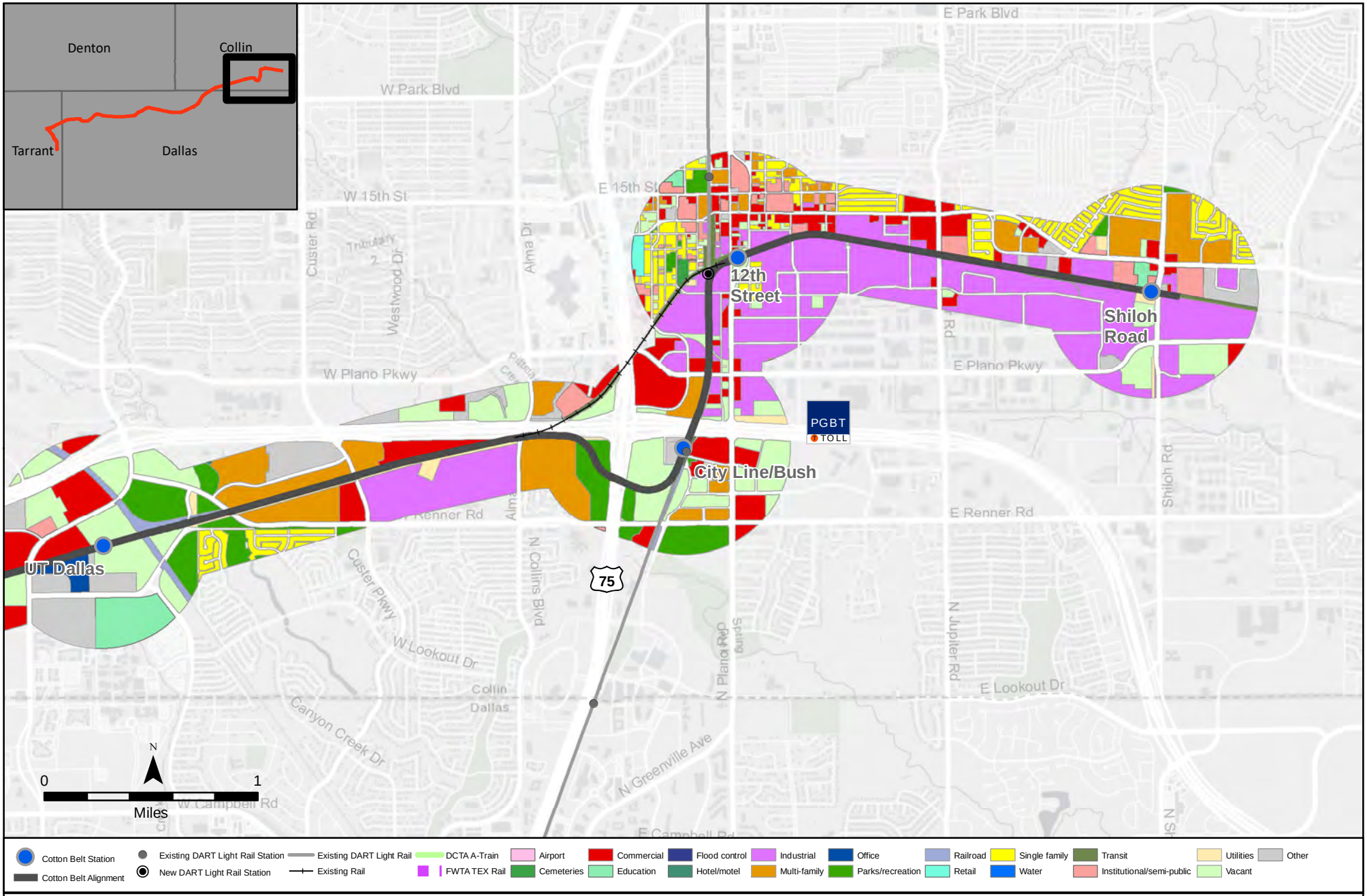


Figure 3-5
Existing Land Use
Data Source: North Central Texas Council of Governments, 2015

Cotton Belt Corridor Regional Rail Project
Final Environmental Impact Statement

Table 3-2. Station Area Land Use and Land Use Plans

Station	Predominant Land Use	Local Land Use Plans and Policies
DFW Terminal B	Airport uses	DFW Land Use Plan (2014)
DFW North	Vacant, industrial	DFW Land Use Plan (future mixed-use commercial)
Cypress Waters	Residential, commercial, industrial, vacant (development in progress)	*ForwardDallas!* Comprehensive Plan (2006) Cypress Waters Master Developer Agreement (2010) City of Dallas Cypress Waters TIF District Coppell 2030 – A Comprehensive Master Plan
Downtown Carrollton	Residential, industrial, office, retail	City of Carrollton Comprehensive Plan Downtown Carrollton TOD Plan (2008)
Addison	Mixed-use TOD, MF residential, office, medical, retail, aviation	Town of Addison Comprehensive Plan (2013) Master Transportation Plan (2016)
Knoll Trail	Office, MF residential, Retail	*ForwardDallas!* Comprehensive Plan (2006) designated as transit center/urban neighborhood
UT Dallas	Institutional (education), undeveloped, office, SF residential	UTD Master Plan 2013 (future mixed-use development) UTD North Campus TOD Plan (2009) City of Richardson Comprehensive Plan (2009)
CityLine/Bush	Mixed-use TOD, office, MF residential, retail, vacant (development in progress)	Caruth Properties Transit Oriented Planned Development Code (2011)
12th Street	SF residential, vacant, industrial, government, office, and retail	Downtown Plano Vision and Strategy Update (2017)
Shiloh Road	Industrial, SF and MF residential, and vacant	Plano Tomorrow Comprehensive Plan (2015)
Key: MF- Multi-family, SF- Single Family, TOD- Transit Oriented Development, UTD- University of Texas, Dallas		

Source: GPC6, 2017

The following provides more details and summarizes the development plans for the Study Area.

DFW Airport - The *Dallas/Ft.Worth International Airport Land Use Plan*, last updated in 2014, calls for mixed-use development along the Preferred Alternative and within 0.5-mile of the DFW North station location. The mix of uses desired in these areas includes local retail, garden office, and restaurant. To the north of the alignment, DFW Airport is planning for hospitality, entertainment, and related commercial uses.

City of Coppell - The City of Coppell has created two redevelopment concepts for the Denton Tap Road/Belt Line Road area, which is near the Cypress Waters Station along the Preferred Alternative. One scenario proposes high-quality office space, parks, open space, and a cohesive architectural design throughout the area to complement the Cypress Waters development plans laid out by the Billingsley Company for a portion of land adjacent to North Lake in the City of Dallas. The Cypress Waters development plan encompasses 1,000 acres and will include approximately 10,000 single- and multi-family residential units, a workplace/office campus, and some mixed-use areas.

City of Carrollton – The City of Carrollton plans have established a vision for this hub of future rail service. The plans outline recommendations encompassing the downtown area, which would also be home to the Downtown Carrollton Station. The City of Carrollton's future land use map (as

amended by the City Council on December 6, 2007) depicts a large area of transit land use that encompasses the entire downtown area, as well as extending west of IH 35E. New zoning facilitates the re-development of the area into transit-oriented development (TOD) land uses. New developments include the Union at Carrollton Square apartments south of the Cotton Belt and the Switchyard Apartments, just north of the Cotton Belt.

Town of Addison - The Town of Addison currently has three capital improvement projects planned in the Study Area. *The Town of Addison Comprehensive Plan (2013)* identifies city-owned property on the north side of the Addison Station as well as 5.6 acres northeast of Quorum Drive and Arapaho Road that is being held for TOD. The Town of Addison also has a Belt Line Road redevelopment plan called *The Blueprint* (2006). A portion of Belt Line Road, from just east of Surveyor Boulevard to just east of Inwood Road, falls within 0.5 mile of the Addison Station location.

City of Dallas - The City of Dallas has documented their interest in fostering TOD and revitalization opportunities that could be realized if Preferred Alternative stations were to be constructed in the far North Dallas area. The *ForwardDallas!* Comprehensive Plan adopted in June 2006, shows the Knoll Trail Station as a transit center.

City of Richardson - The City of Richardson's comprehensive plan, adopted by the City Council in January 2009, recommends that future land use along the City of Richardson portion of the alignment include regional employment, transit village, public/semi-public/school, parks and open space, neighborhood residential, multi-family residential, neighborhood service, community commercial, and office/industry. The City, in collaboration with UTD and DART, also published a master plan for the UTD North Campus area (Land Use Technical Memorandum 14) including a UTD Station along the Preferred Alternative in June 2009. The station area master plan includes a mixture of land uses, higher-density development, and pedestrian-friendly design concepts to create a TOD around a UTD Station.

City of Plano - The City of Plano's comprehensive plan was adopted in October 2015. The plan includes TOD aspects to proactively encourage development within walking distance of existing and future rail stations or bus transit centers to create an integrated mix of uses including residential, employment, retail, and civic spaces. Also included is a commitment to develop plans to address redevelopment of retail and multifamily sites and to encourage new development around transit stations. The City of Plano published a vision and strategy update for encompassing the 12th Street Station in January 2017. This document acknowledges the 12th Street Station as an important feature for the south side of downtown Plano that will act as a magnet for new development. The 12th Street Station area is described as offering many development opportunities and is well suited for infill projects, including townhomes, live/work space and small offices and studios. The City has purchased approximately three acres of land for 12th Street Station parking.

3.3 Socioeconomic Characteristics and Cohesion

Legal Requirements and Regulatory Setting

Adverse effects on environmental resources from a proposed federally funded project must be identified and avoided or minimized, including potential impacts to the human environment and social interactions. Executive Order (EO) 13045, Protection of Children from Environmental Health and Safety Risks mandates that federal agencies identify and assess environmental safety risks that may disproportionately affect children as a result of implementation of federal policies, programs, activities and standards.

DART policies also require that the potential impacts of any proposed project (whether federally or locally funded) be assessed, and if adverse effects are found, that these impacts be avoided,

or minimized and mitigated. As described in DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects*, DART's three main objectives regarding a proposed transit project's impact on the human environment, particularly on community character and cohesion, are as follows:

- contribute to community cohesion
- contribute to the local economy, where possible, and avoid negative economic impacts
- provide for an equitable distribution of costs and benefits and ensure that the project does not have a disproportionately high and adverse impact on low-income or minority populations

Methodology

The socioeconomic Study Area consists of approximately 0.25-mile on either side of the alignment and a 0.5-mile radius around each rail station. The following socioeconomic characteristics were documented: community facilities; community cohesion, including neighborhoods and schools; population demographics; and employment and economic conditions. The most recent community data for each city and independent school district (ISD) was used as a basis for the existing socioeconomic characteristics and supplemented with data acquired during field reconnaissance and information gathered throughout the planning process.

The socioeconomic analysis methodology for the project is consistent with DART, FTA, and FHWA guidance regarding social resources and community impact assessments.

Affected Environment

Population Demographics

Demographic data was gathered for the U.S. Census Bureau (USCB) 2010 Census geographies, city and county limits either wholly or partially within the Study Area, using the USCB's 2011-2015 American Community Survey (ACS) 5-year estimates data. Demographic data analyzed include total population, total number of households, and population percentages by age, gender, disability status, income, vehicle access, race and ethnicity. **Table 3-3** provides existing demographic data within 0.5 mile of the stations.

More detailed project-area information regarding race, ethnicity, income and English language proficiency can be found in the *Environmental Justice Existing Conditions Technical Memorandum* in **Appendix B**, as well as in **Section 4.9** of this document.

Table 3-3. Existing Demographic Profile Within 0.5-Mile of Stations

Station	Employment	Population	Households	Population Below Poverty	Minority Population	Population Over 65	Population 19 & Under
DFW North	500	421	176	19%	66%	11%	21%
Cypress Waters	1,128	5,359	2,122	7%	77%	8%	26%
Downtown Carrollton	12,108	4,479	1,388	17%	66%	19%	25%
Addison	48,636	9,041	5,636	7%	61%	11%	11%
Knoll Trail	32,579	12,786	7,765	7%	59%	15%	9%
UT Dallas	20,823	6,485	2,897	15%	68%	29%	16%
CityLine	20,586	4,981	2,089	14%	70%	27%	22%
12th Street	10,074	2,953	1,329	27%	73%	37%	24%
Shiloh	23,172	9,218	3,061	16%	75%	53%	26%

Source: NCTCOG, 2015

Table 3-4 presents population information relative to median household income and the percent of households with no vehicle available for the counties, cities, and Study Area. Overall, the Study Area has a total number of 71,853 households; the median household income is $70,366; and 5 percent of the households have no vehicle available. The City of Dallas has the lowest median household income of the cities located within the Study Area and has the highest percentage of households with no vehicle available that rely on transit services for their mobility. According to the 2010 Census, almost 10 percent of all occupied housing units in Dallas had no vehicle available in their household.

Table 3-4. Median Household Income and Households Without Vehicles

Census Unit	Total Number of Households	Median Household Income	Percent Households with No Vehicle Available
Collin County	305,827	$84,735	3%
Dallas County	881,279	$50,270	7%
Tarrant County	673,737	$58,711	5%
Cities and Towns			
Town of Addison	8,353	$67,695	2%
City of Carrollton	45,263	$69,368	2%
City of Coppell	14,620	$111,817	2%
City of Dallas	477,249	$43,781	10%
City of Grapevine	19,366	$79,083	2%
City of Irving	83,649	$52,154	5%
City of Plano	103,937	$83,793	3%
City of Richardson	40,020	$72,427	4%
Corridor Study Area			
Corridor Study Area	71,853	$70,366	5%

Source: USCB 2011-2015 ACS 5-Year Estimates, Tables S1903 and B25044

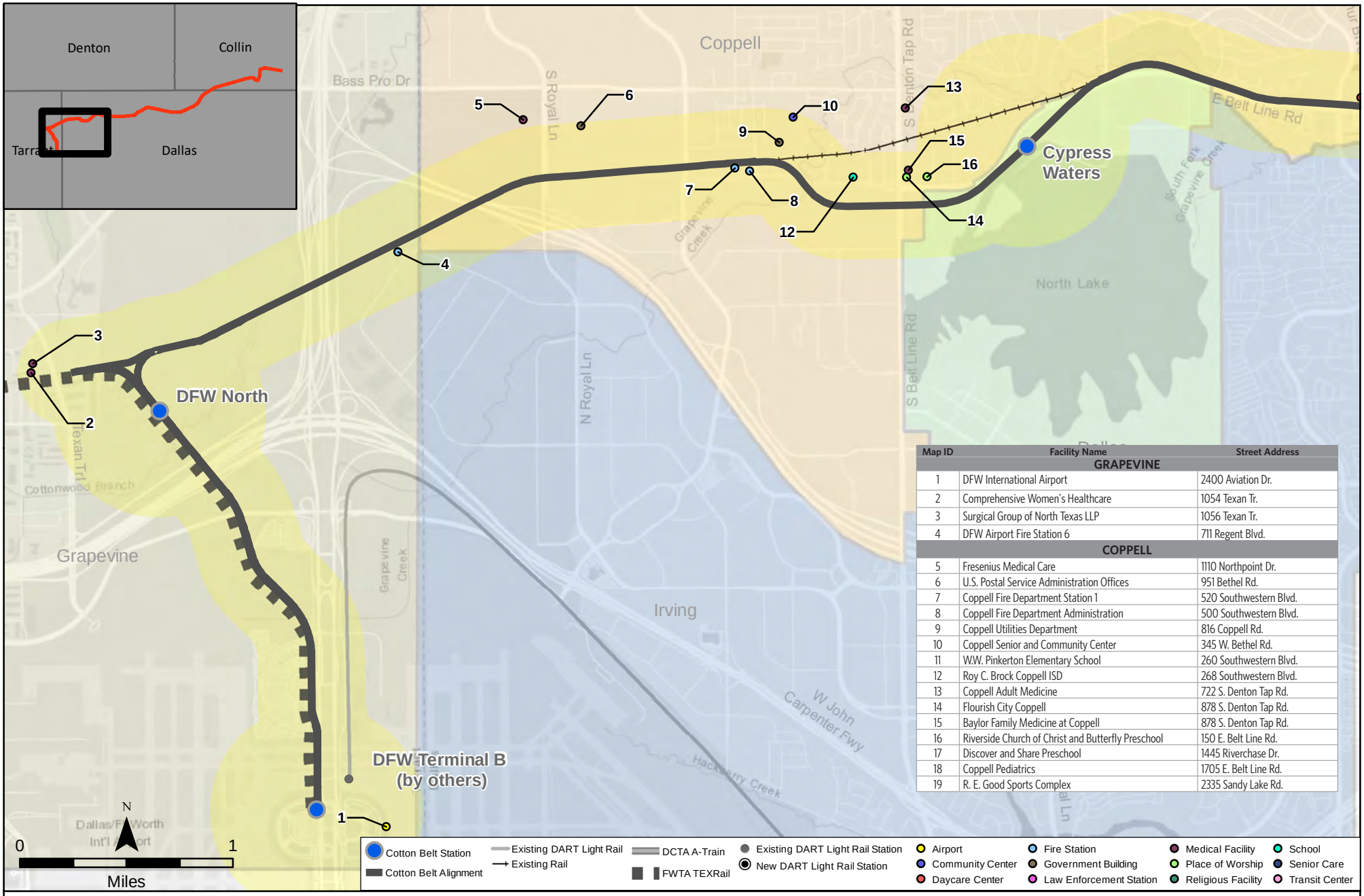
Additional demographics, including the racial and ethnic breakdown of the counties, cities and census tracts (CT); the median household income and proportion of household without vehicles for the counties, cities and CTs; and the percentages for gender, age distribution and disability status for the counties, cities and CTs in the Study Area are also included in the *Socioeconomics Existing Conditions Technical Memorandum* in **Appendix B**.

Community Facilities

Existing community facilities assessed within the Study Area include community centers, places of worship, daycare centers, public service and government locations, medical facilities, and other areas of community importance. Field reconnaissance to verify sites and locations was performed in April and May 2017. One hundred and ten community facilities were identified within the Study Area. **Figures 3-6** through **3-9** illustrate the location of community facilities within the Study Area. Each map includes a list and address with map ID number.

Community Cohesion and Neighborhoods

Community cohesion refers to the level of social interaction experienced within and across neighborhoods. There are many registered neighborhood associations and homeowners' associations (HOAs) in the Study Area. **Figure 3-10** illustrates the neighborhood and HOAs along the Study Area. These and similar organizations serve to bind neighbors to one another under a common identity or set of ideals, and create more meaningful social interactions.



Map ID	Facility Name	Street Address
	GRAPEVINE	
1	DFW International Airport	2400 Aviation Dr.
2	Comprehensive Women's Healthcare	1054 Texan Tr.
3	Surgical Group of North Texas LLP	1056 Texan Tr.
4	DFW Airport Fire Station 6	711 Regent Blvd.
	COPPELL	
5	Fresenius Medical Care	1110 Northpoint Dr.
6	U.S. Postal Service Administration Offices	951 Bethel Rd.
7	Coppell Fire Department Station 1	520 Southwestern Blvd.
8	Coppell Fire Department Administration	500 Southwestern Blvd.
9	Coppell Utilities Department	816 Coppell Rd.
10	Coppell Senior and Community Center	345 W. Bethel Rd.
11	W.W. Pinkerton Elementary School	260 Southwestern Blvd.
12	Roy C. Brock Coppell ISD	268 Southwestern Blvd.
13	Coppell Adult Medicine	722 S. Denton Tap Rd.
14	Flourish City Coppell	878 S. Denton Tap Rd.
15	Baylor Family Medicine at Coppell	878 S. Denton Tap Rd.
16	Riverside Church of Christ and Butterfly Preschool	150 E. Belt Line Rd.
17	Discover and Share Preschool	1445 Riverchase Dr.
18	Coppell Pediatrics	1705 E. Belt Line Rd.
19	R. E. Good Sports Complex	2335 Sandy Lake Rd.

Figure 3-6
Community Facilities
Data Source: North Central Texas Council of Governments

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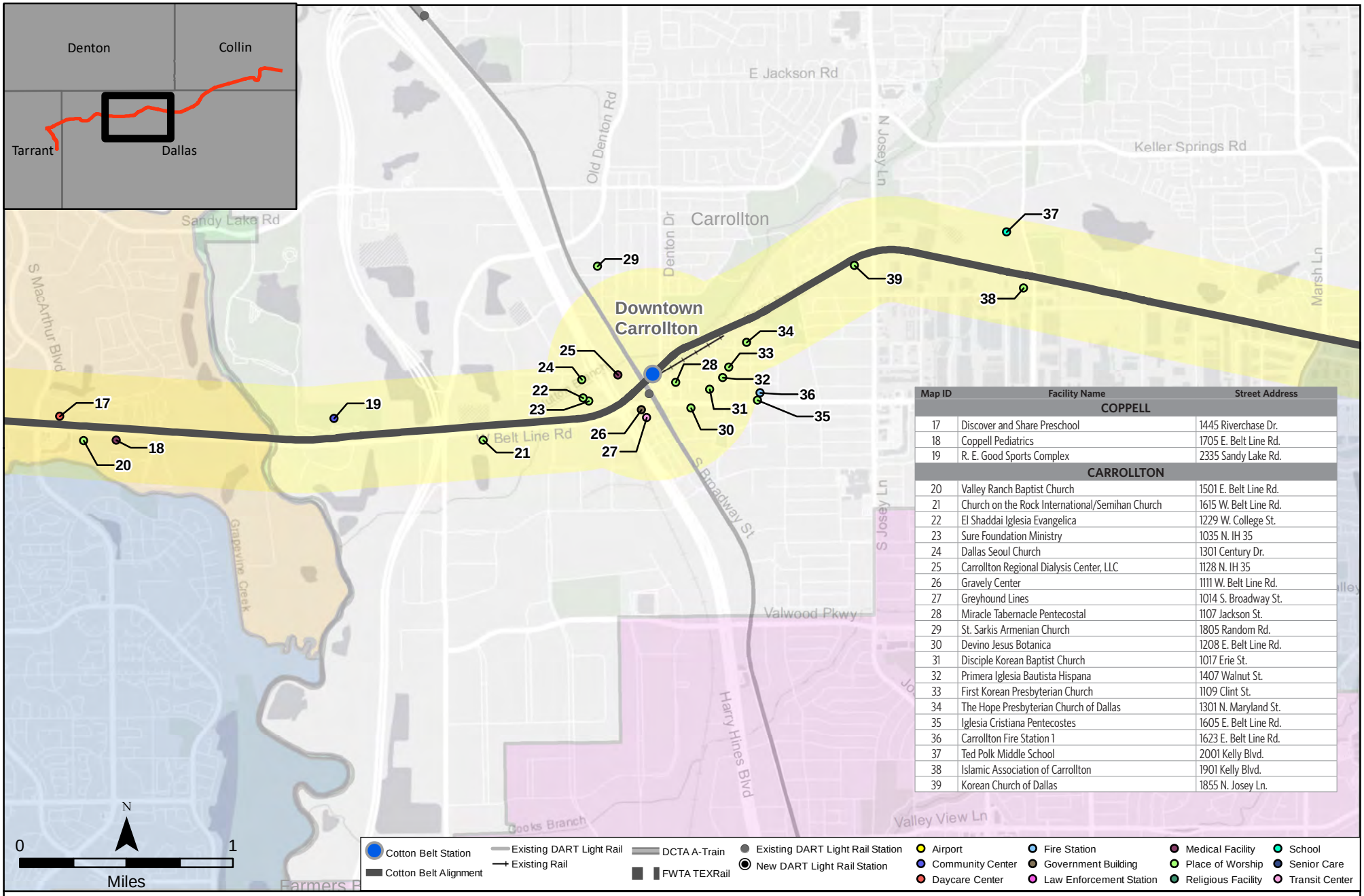

Map ID	Facility Name	Street Address
	COPPELL	
17	Discover and Share Preschool	1445 Riverchase Dr.
18	Coppell Pediatrics	1705 E. Belt Line Rd.
19	R. E. Good Sports Complex	2335 Sandy Lake Rd.
	CARROLLTON	
20	Valley Ranch Baptist Church	1501 E. Belt Line Rd.
21	Church on the Rock International/Semihan Church	1615 W. Belt Line Rd.
22	El Shaddai Iglesia Evangelica	1229 W. College St.
23	Sure Foundation Ministry	1035 N. IH 35
24	Dallas Seoul Church	1301 Century Dr.
25	Carrollton Regional Dialysis Center, LLC	1128 N. IH 35
26	Gravely Center	1111 W. Belt Line Rd.
27	Greyhound Lines	1014 S. Broadway St.
28	Miracle Tabernacle Pentecostal	1107 Jackson St.
29	St. Sarkis Armenian Church	1805 Random Rd.
30	Devino Jesus Botanica	1208 E. Belt Line Rd.
31	Disciple Korean Baptist Church	1017 Erie St.
32	Primera Iglesia Bautista Hispana	1407 Walnut St.
33	First Korean Presbyterian Church	1109 Clint St.
34	The Hope Presbyterian Church of Dallas	1301 N. Maryland St.
35	Iglesia Cristiana Pentecostes	1605 E. Belt Line Rd.
36	Carrollton Fire Station 1	1623 E. Belt Line Rd.
37	Ted Polk Middle School	2001 Kelly Blvd.
38	Islamic Association of Carrollton	1901 Kelly Blvd.
39	Korean Church of Dallas	1855 N. Josey Ln.

Figure 3-7
Community Facilities
Data Source: North Central Texas Council of Governments

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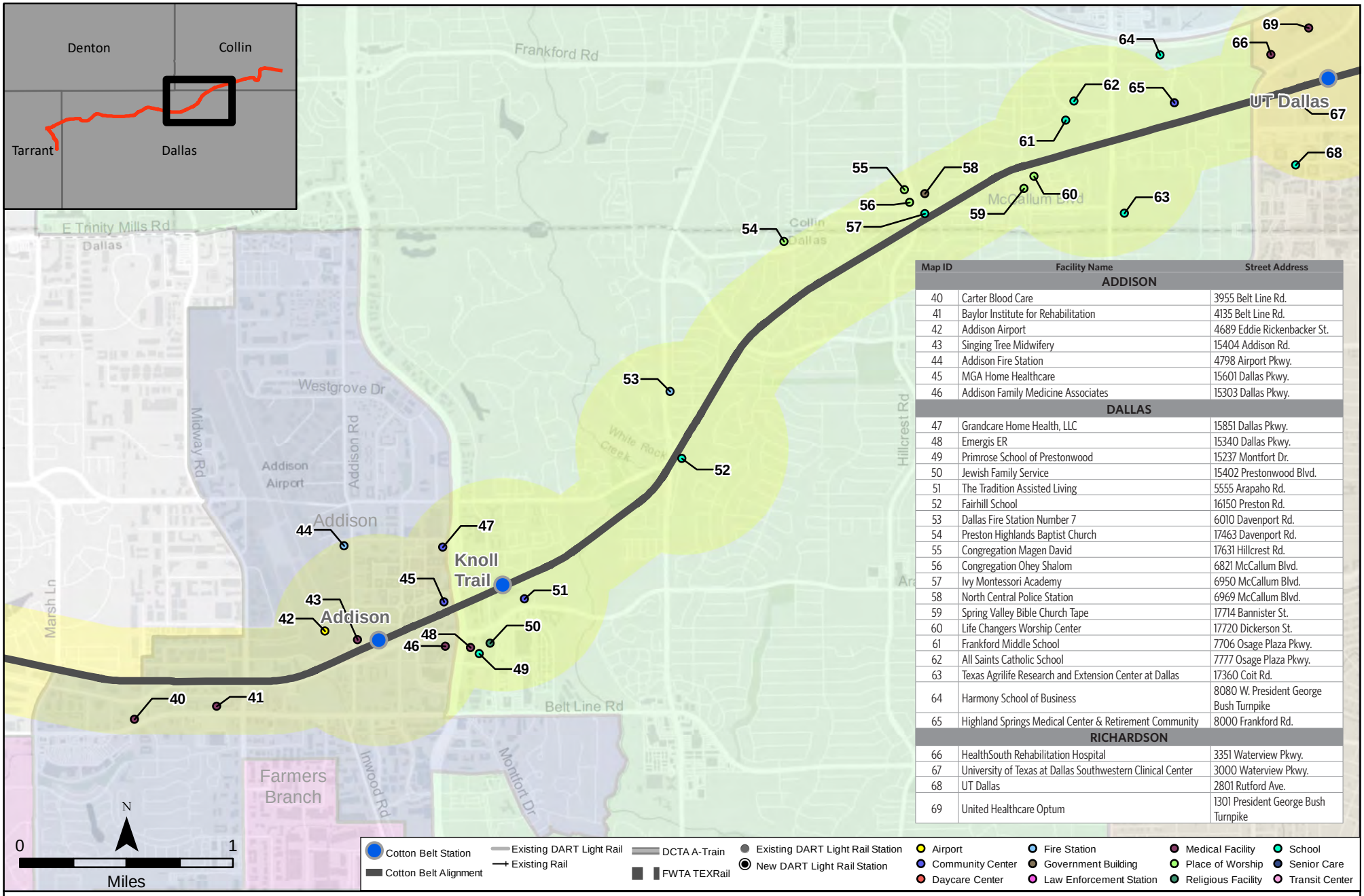

Map ID	Facility Name	Street Address
	ADDISON	
40	Carter Blood Care	3955 Belt Line Rd.
41	Baylor Institute for Rehabilitation	4135 Belt Line Rd.
42	Addison Airport	4689 Eddie Rickenbacker St.
43	Singing Tree Midwifery	15404 Addison Rd.
44	Addison Fire Station	4798 Airport Pkwy.
45	MGA Home Healthcare	15601 Dallas Pkwy.
46	Addison Family Medicine Associates	15303 Dallas Pkwy.
	DALLAS	
47	Grandcare Home Health, LLC	15851 Dallas Pkwy.
48	Emergis ER	15340 Dallas Pkwy.
49	Primrose School of Prestonwood	15237 Montfort Dr.
50	Jewish Family Service	15402 Prestonwood Blvd.
51	The Tradition Assisted Living	5555 Arapaho Rd.
52	Fairhill School	16150 Preston Rd.
53	Dallas Fire Station Number 7	6010 Davenport Rd.
54	Preston Highlands Baptist Church	17463 Davenport Rd.
55	Congregation Magen David	17631 Hillcrest Rd.
56	Congregation Ohey Shalom	6821 McCallum Blvd.
57	Ivy Montessori Academy	6950 McCallum Blvd.
58	North Central Police Station	6969 McCallum Blvd.
59	Spring Valley Bible Church Tape	17714 Bannister St.
60	Life Changers Worship Center	17720 Dickerson St.
61	Frankford Middle School	7706 Osage Plaza Pkwy.
62	All Saints Catholic School	7777 Osage Plaza Pkwy.
63	Texas Agrilife Research and Extension Center at Dallas	17360 Coit Rd.
64	Harmony School of Business	8080 W. President George Bush Turnpike
65	Highland Springs Medical Center & Retirement Community	8000 Frankford Rd.
	RICHARDSON	
66	HealthSouth Rehabilitation Hospital	3351 Waterview Pkwy.
67	University of Texas at Dallas Southwestern Clinical Center	3000 Waterview Pkwy.
68	UT Dallas	2801 Rutford Ave.
69	United Healthcare Optum	1301 President George Bush Turnpike

Figure 3-8
Community Facilities
Data Source: North Central Texas Council of Governments

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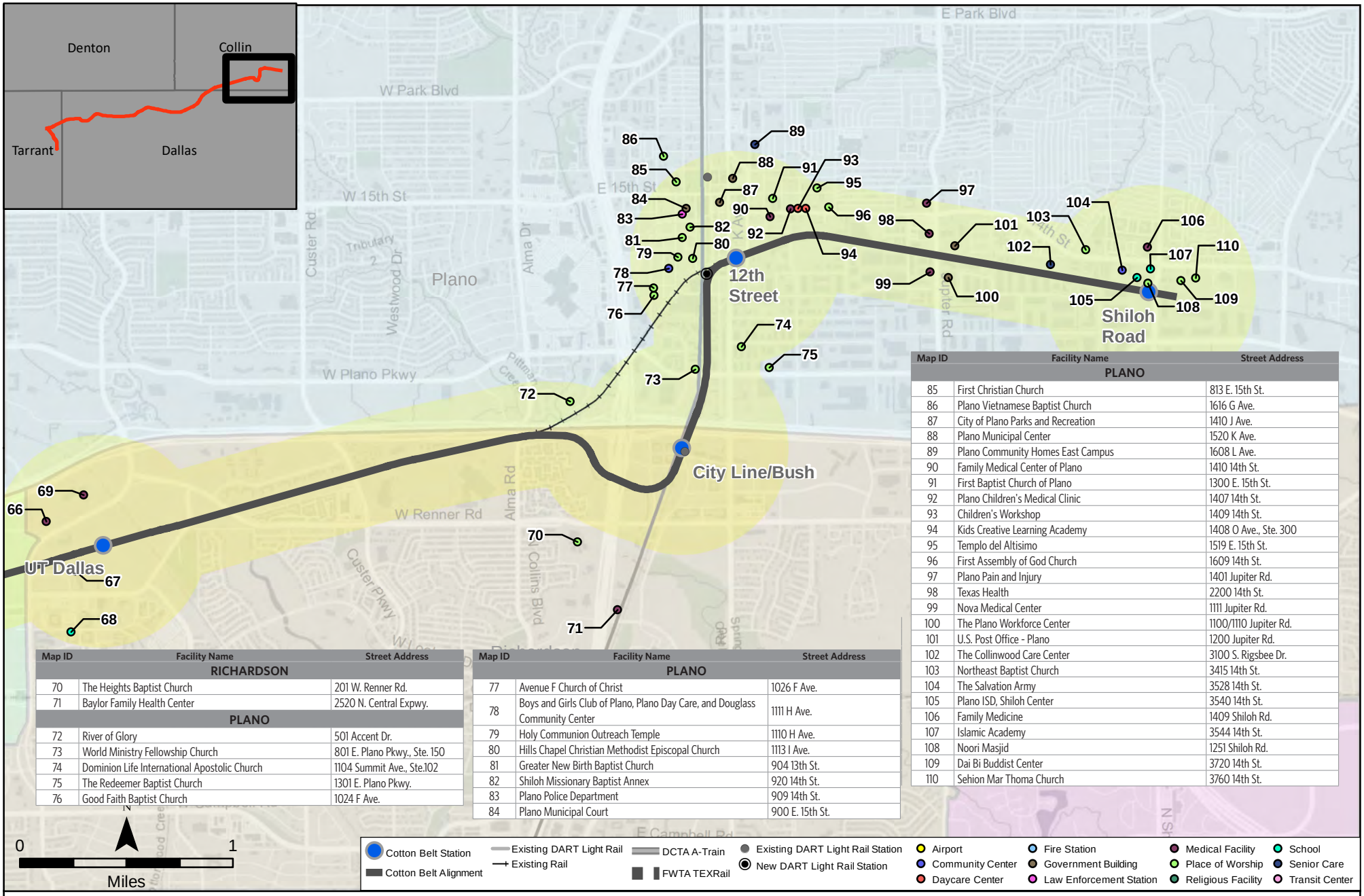

Map ID	Facility Name	Street Address
	RICHARDSON	
70	The Heights Baptist Church	201 W. Renner Rd.
71	Baylor Family Health Center	2520 N. Central Expwy.
	PLANO	
72	River of Glory	501 Accent Dr.
73	World Ministry Fellowship Church	801 E. Plano Pkwy., Ste. 150
74	Dominion Life International Apostolic Church	1104 Summit Ave., Ste.102
75	The Redeemer Baptist Church	1301 E. Plano Pkwy.
76	Good Faith Baptist Church	1024 F Ave.

Map ID	Facility Name	Street Address
	PLANO	
77	Avenue F Church of Christ	1026 F Ave.
78	Boys and Girls Club of Plano, Plano Day Care, and Douglass Community Center	1111 H Ave.
79	Holy Communion Outreach Temple	1110 H Ave.
80	Hills Chapel Christian Methodist Episcopal Church	1113 I Ave.
81	Greater New Birth Baptist Church	904 13th St.
82	Shiloh Missionary Baptist Annex	920 14th St.
83	Plano Police Department	909 14th St.
84	Plano Municipal Court	900 E. 15th St.

Map ID	Facility Name	Street Address
	PLANO	
85	First Christian Church	813 E. 15th St.
86	Plano Vietnamese Baptist Church	1616 G Ave.
87	City of Plano Parks and Recreation	1410 J Ave.
88	Plano Municipal Center	1520 K Ave.
89	Plano Community Homes East Campus	1608 L Ave.
90	Family Medical Center of Plano	1410 14th St.
91	First Baptist Church of Plano	1300 E. 15th St.
92	Plano Children's Medical Clinic	1407 14th St.
93	Children's Workshop	1409 14th St.
94	Kids Creative Learning Academy	1408 O Ave., Ste. 300
95	Templo del Altisimo	1519 E. 15th St.
96	First Assembly of God Church	1609 14th St.
97	Plano Pain and Injury	1401 Jupiter Rd.
98	Texas Health	2200 14th St.
99	Nova Medical Center	1111 Jupiter Rd.
100	The Plano Workforce Center	1100/1110 Jupiter Rd.
101	U.S. Post Office - Plano	1200 Jupiter Rd.
102	The Collinwood Care Center	3100 S. Rigsbee Dr.
103	Northeast Baptist Church	3415 14th St.
104	The Salvation Army	3528 14th St.
105	Plano ISD, Shiloh Center	3540 14th St.
106	Family Medicine	1409 Shiloh Rd.
107	Islamic Academy	3544 14th St.
108	Noori Masjid	1251 Shiloh Rd.
109	Dai Bi Buddist Center	3720 14th St.
110	Sehion Mar Thoma Church	3760 14th St.

Figure 3-9
Community Facilities
Data Source: North Central Texas Council of Governments

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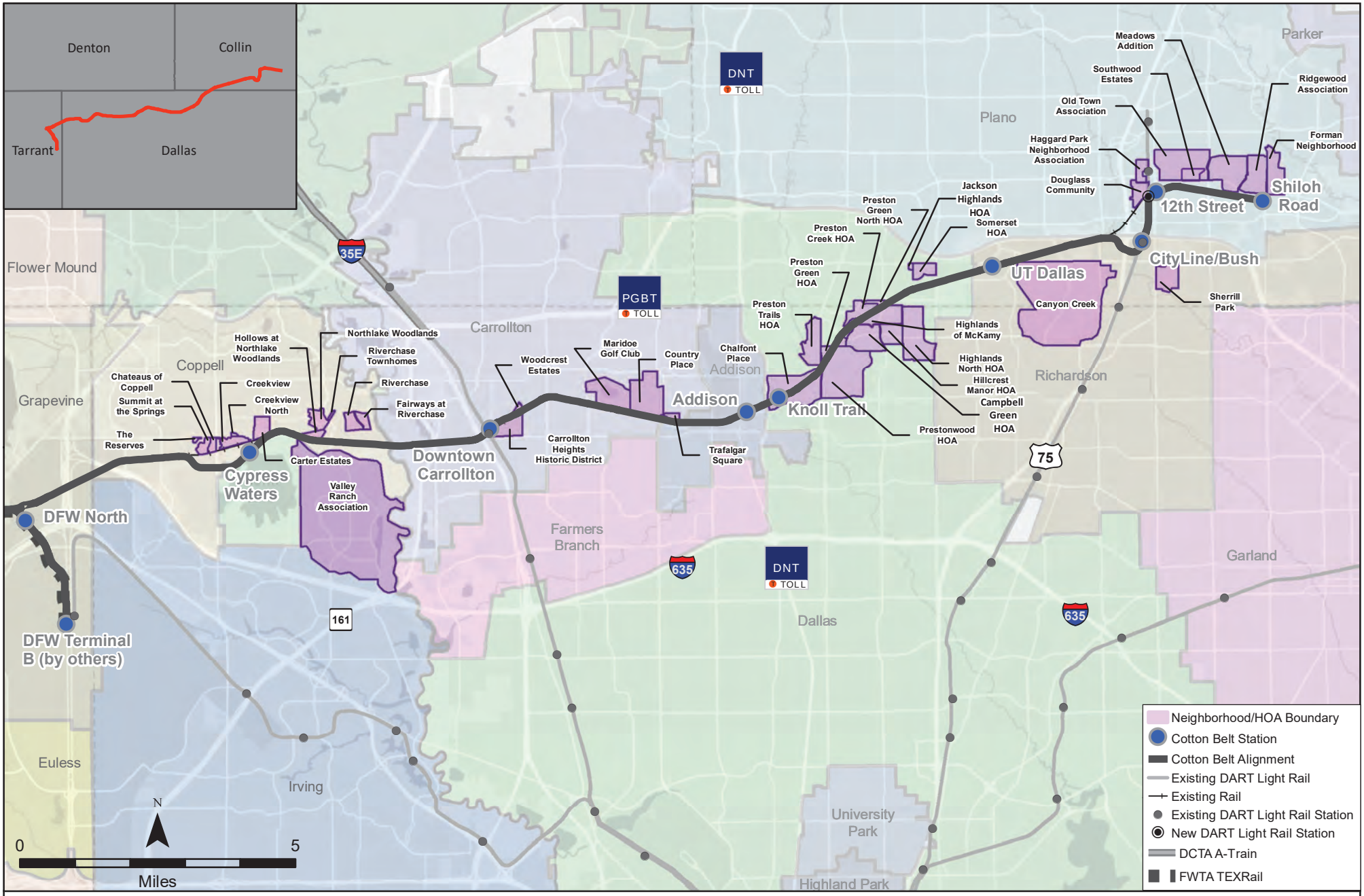

Figure 3-10
Neighborhood and Home Owners Association
Data Source: Local Municipalities and Neighborhood Websites

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The majority of neighborhoods surrounding the Preferred Alternative developed around the railroad, since the corridor pre-dates modern residential developments. As a result, the corridor serves as a logical physical boundary line for many neighborhoods.

DART has identified several registered or formally-organized homeowners' and neighborhood associations along the corridor, as well as other identified subdivisions and neighborhoods lacking a formal association. Several of these groups have provided important feedback on the Preferred Alternative. General characterizations of the neighborhoods and communities within the Study Area are included in the *Socioeconomic Characteristics Existing Conditions Technical Memorandum* in **Appendix B**.

Schools

When a new transportation corridor is under consideration, whether along an existing corridor or in a new location, it is important to not only inventory the locations of schools, but also their respective attendance zones. By examining the relationship of the location of the schools to the residential areas within each attendance zone, it can be determined whether school children would have to cross the Preferred Alternative to reach their school on foot or by bicycle. The Project aims to preserve or improve upon the existing levels of safety for school children crossing the Preferred Alternative. There are 26 schools and one university within the Study Area (**Figure 3-11**). School attendance zones within the Study Area and their proximity to the Preferred Alternative are identified and described in the *Socioeconomic Existing Conditions Technical Memorandum* in **Appendix B**.

Police Stations

There are seven police stations with jurisdictions near or inside the Study Area. These facilities represent the primary police response capabilities along the Preferred Alternative. Police stations in Addison (4799 Airport Parkway), Dallas (6969 McCallum Boulevard B), and Plano (909 14th Street and 1520 Avenue K, Suite 010) are physically located inside the Study Area, and are shown in **Figure 3-6** through **Figure 3-9**. Police facilities and patrols located outside of the Study Area could respond to a large incident within the Study Area if additional support was necessary.

Each of the seven cities along the Preferred Alternative has their own police and fire departments. In all seven cities, the fire departments provide both fire and emergency medical services. In addition to local police departments, DFW Airport has a police department responsible for maintaining security at the airport in conjunction with the Transportation Security Administration (TSA). Additionally, UTD has an internal police department.

The DART Police Department is an independent police department with responsibilities for ensuring security and safety on DART property and vehicles. DART police officers are vested with all the rights, privileges, obligations, and duties of peace officers in the state of Texas. DART Police works in coordination with local law enforcement agencies in investigations and ensuring a safe transit system.

Fire and Emergency Services Stations

There are 14 fire stations with jurisdiction nearby or within the Study Area. Fire Station No. 1 in Coppell (520 Southwestern Blvd), Fire Station No. 1 in Addison (4798 Airport Parkway), and Fire Station No. 7 in Dallas (6010 Davenport Road) are physically located in the Study Area. The locations are shown in **Figure 3-6** through **Figure 3-9**.

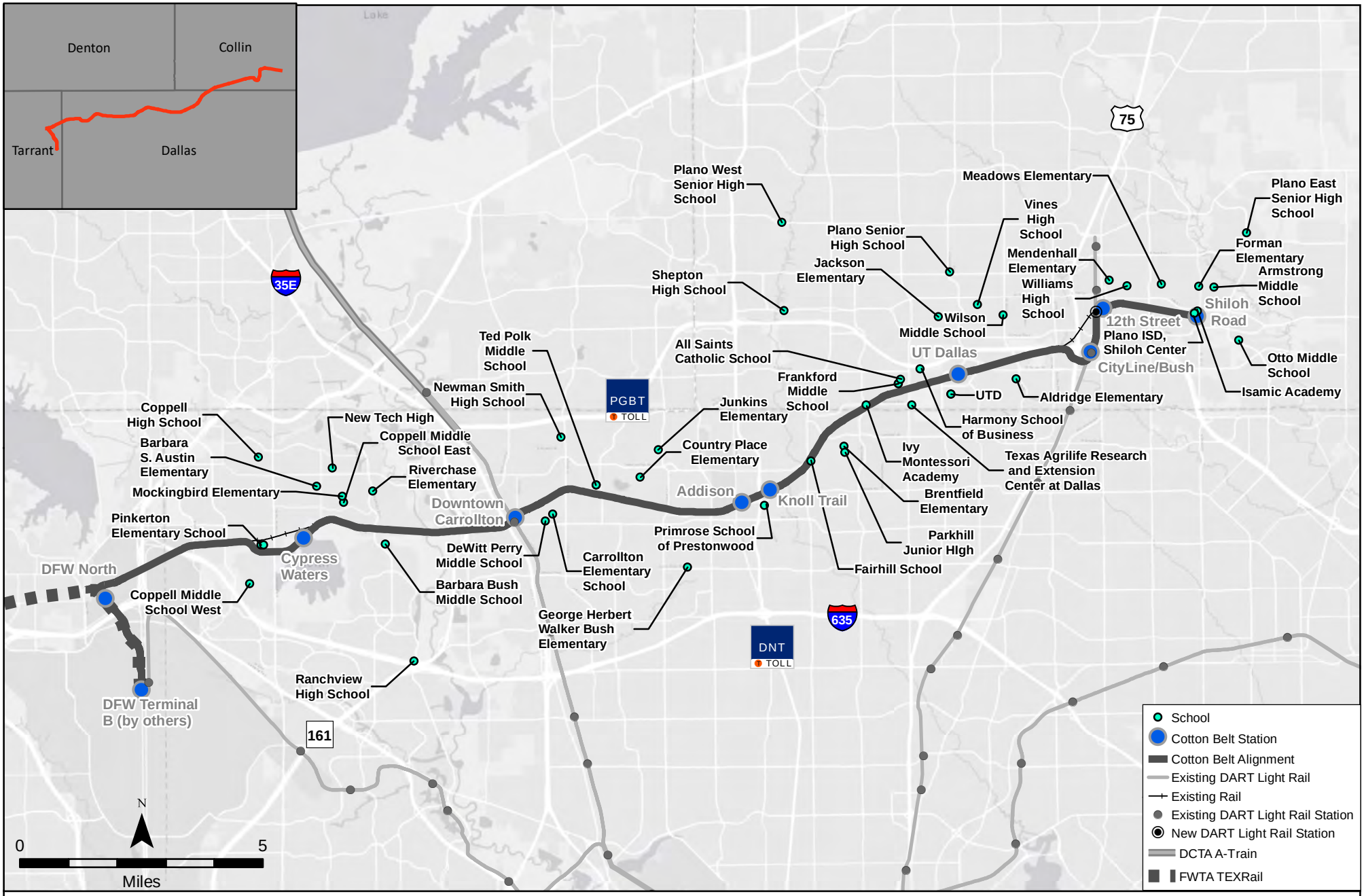

Figure 3-11
Schools Along the Cotton Belt Corridor
Data Source:North Central Texas Council of Governments, Texas Education Agency Public Open Data Site

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Hospital Medical Services

There are seven major hospitals close to the Study Area; however, none of the hospitals are within the Study Area. **Table 3-5** lists the hospitals with service areas located near the Study Area. The listed hospitals represent the locations where emergency medical services could be provided to residents or workers in the Study Area and vehicles could deliver patients.

Table 3-5. Hospitals Near the Study Area

Name	Address	City
Baylor Scott & White Medical Center	1650 West College Street	Grapevine
Legacy ER & Urgent Care	330 South Denton Tap Road	Coppell
Texas Health Hospital	1401 East Trinity Mills Road	Carrollton
Methodist Hospital for Surgery	17101 Dallas Parkway	Addison
Baylor Scott & White Medical Center	4700 Alliance Boulevard	Plano
Texas Presbyterian Hospital	2800 West 15th Street	Plano
Plano Children's Medical Clinic	7601 Preston Road	Plano

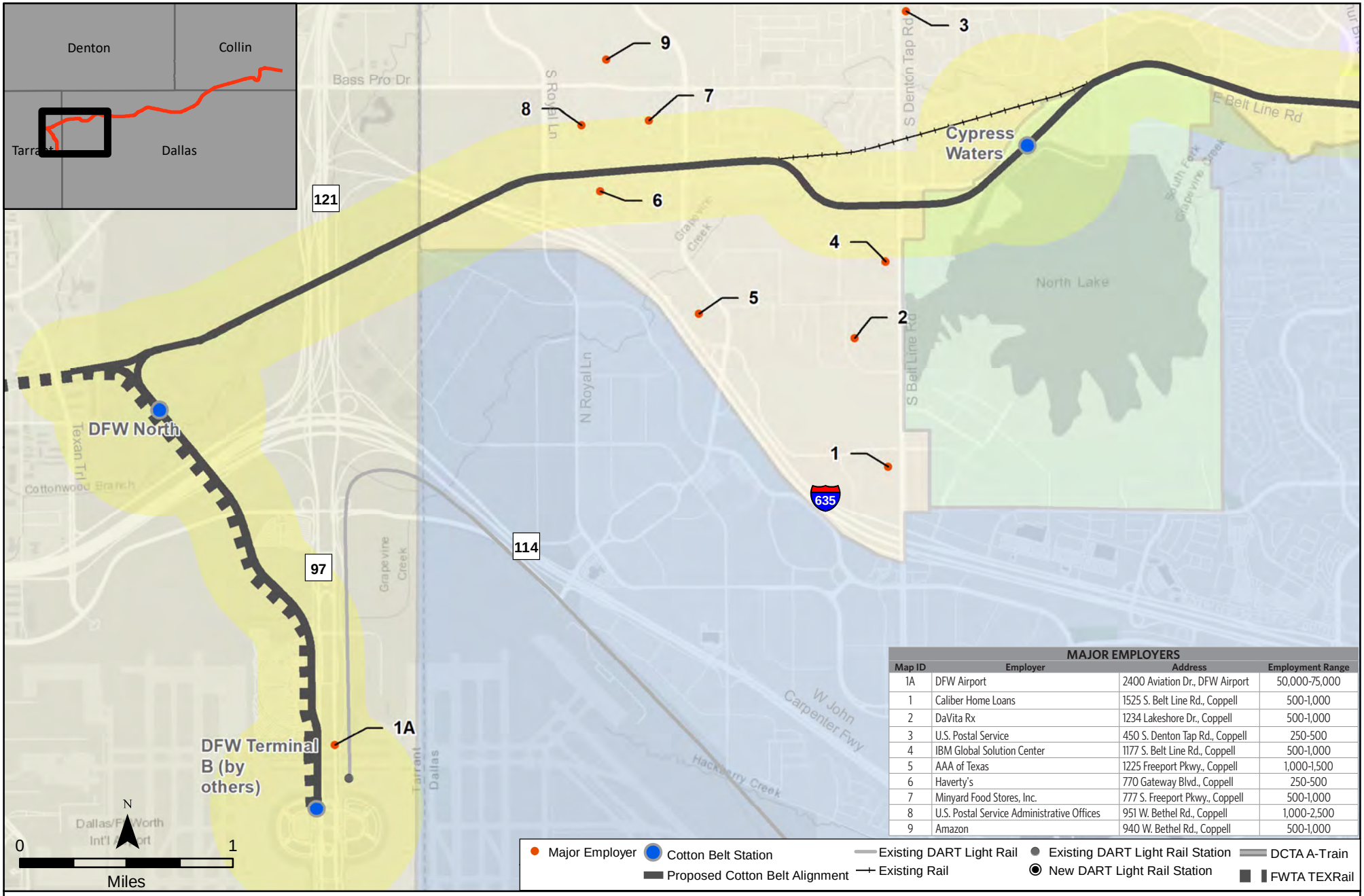
Source: GPC6, 2017

Employment

The NCTCOG defines "major employer" as a single location of a business, which employs 250 or more individuals. Major employers near the Preferred Alternative and station locations would likely generate considerable activity in those areas; thus, it is important to identify major employment centers in addition to residential populations. Sixty-five major employers were identified within the Study Area. Additionally, State Farm Insurance has its headquarters currently located in Richardson, a 1.5-million square foot facility adjacent to the existing City Line/Bush Station. Major employers contained in the NCTCOG database and/or identified by city staff within their city limits, and their locations are shown in **Figures 3-12** through **3-15**.

The Study Area also hosts a number of large employers including 34 with 500 or more employees, and over 90 employment centers, which employ more than 250 people. The largest employment center within the Study Area is DFW Airport where approximately 60,000 airport, airline, cargo and ancillary employees are located. Additional major employers include State Farm Insurance and Raytheon at CityLine with approximately 12,800 employees, and UTD, which hosts nearly 27,000 students. Several communities along the corridor have more employment than population. The Dallas-Fort Worth region has experienced considerable growth in employment over the past several decades which can be attributed to a favorable business climate, attractive tax policies and plenty of available land.

Employment projections show continued strong growth in the region and in this part of the DART Service Area. National forecasts of population and economic growth indicate that this region will continue to add residents and jobs well into the future (NCTCOG, 2017). The *Socioeconomic Existing Conditions Technical Memorandum* provides additional information and is located in **Appendix B**.



MAJOR EMPLOYERS			
Map ID	Employer	Address	Employment Range
1A	DFW Airport	2400 Aviation Dr., DFW Airport	50,000-75,000
1	Caliber Home Loans	1525 S. Belt Line Rd., Coppell	500-1,000
2	DaVita Rx	1234 Lakeshore Dr., Coppell	500-1,000
3	U.S. Postal Service	450 S. Denton Tap Rd., Coppell	250-500
4	IBM Global Solution Center	1177 S. Belt Line Rd., Coppell	500-1,000
5	AAA of Texas	1225 Freeport Pkwy., Coppell	1,000-1,500
6	Haverty's	770 Gateway Blvd., Coppell	250-500
7	Minyard Food Stores, Inc.	777 S. Freeport Pkwy., Coppell	500-1,000
8	U.S. Postal Service Administrative Offices	951 W. Bethel Rd., Coppell	1,000-2,500
9	Amazon	940 W. Bethel Rd., Coppell	500-1,000

Major Employer | Cotton Belt Station | Proposed Cotton Belt Alignment | Existing DART Light Rail | Existing Rail | Existing DART Light Rail Station | New DART Light Rail Station | DCTA A-Train | FWTA TEXRail

DART COTTON BELT

Figure 3-12
Major Employers
Data Source:North Central Texas Council of Governments, Texas Education Agency Public Open Data Site

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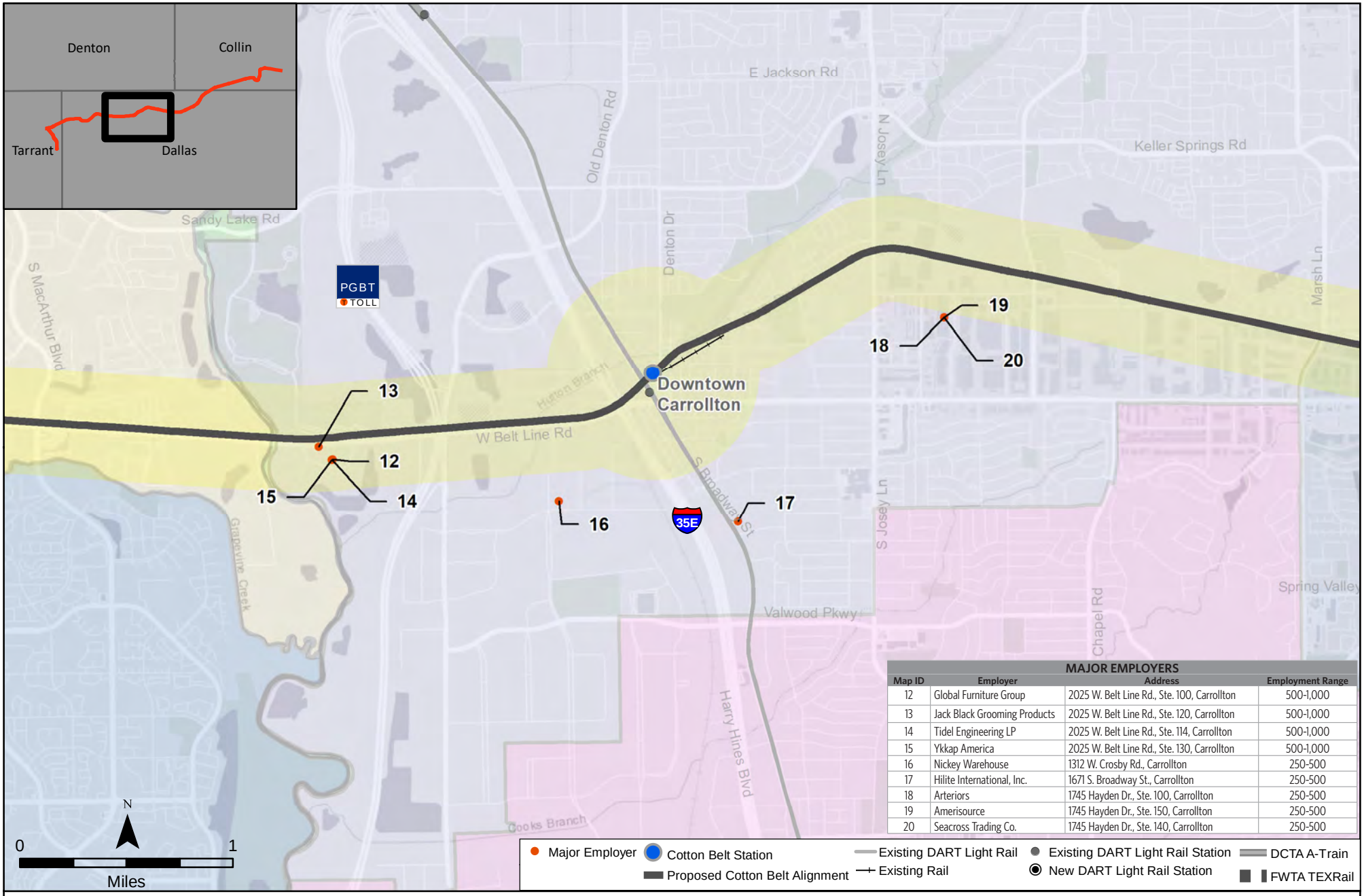
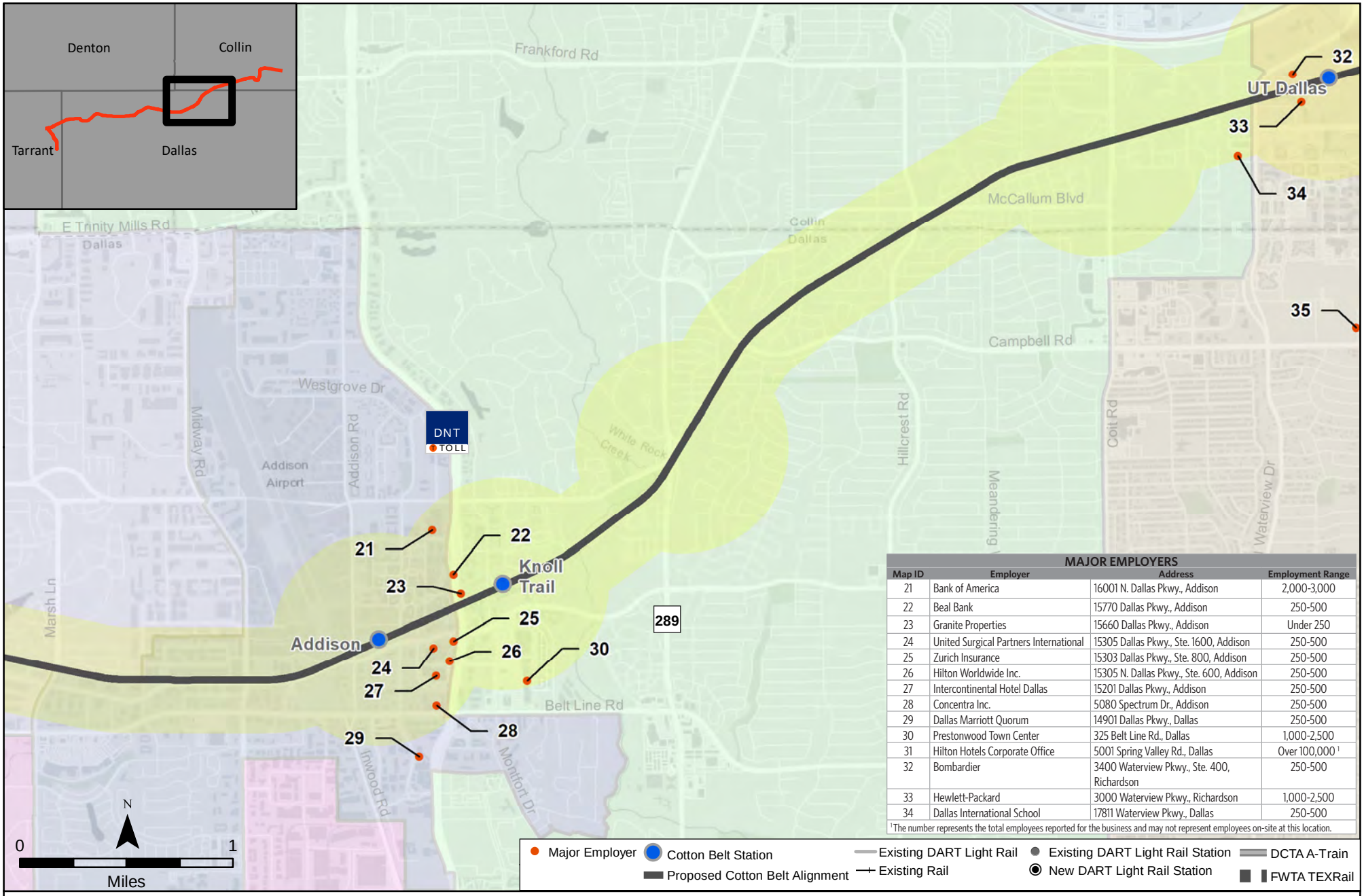


MAJOR EMPLOYERS

Map ID	Employer	Address	Employment Range
12	Global Furniture Group	2025 W. Belt Line Rd., Ste. 100, Carrollton	500-1,000
13	Jack Black Grooming Products	2025 W. Belt Line Rd., Ste. 120, Carrollton	500-1,000
14	Tidel Engineering LP	2025 W. Belt Line Rd., Ste. 114, Carrollton	500-1,000
15	Ykkap America	2025 W. Belt Line Rd., Ste. 130, Carrollton	500-1,000
16	Nickey Warehouse	1312 W. Crosby Rd., Carrollton	250-500
17	Hilite International, Inc.	1671 S. Broadway St., Carrollton	250-500
18	Arteriors	1745 Hayden Dr., Ste. 100, Carrollton	250-500
19	Amerisource	1745 Hayden Dr., Ste. 150, Carrollton	250-500
20	Seacross Trading Co.	1745 Hayden Dr., Ste. 140, Carrollton	250-500

Figure 3-13
Major Employers
Data Source:North Central Texas Council of Governments, Texas Education Agency Public Open Data Site



MAJOR EMPLOYERS

Map ID	Employer	Address	Employment Range
21	Bank of America	16001 N. Dallas Pkwy., Addison	2,000-3,000
22	Beal Bank	15770 Dallas Pkwy., Addison	250-500
23	Granite Properties	15660 Dallas Pkwy., Addison	Under 250
24	United Surgical Partners International	15305 Dallas Pkwy., Ste. 1600, Addison	250-500
25	Zurich Insurance	15303 Dallas Pkwy., Ste. 800, Addison	250-500
26	Hilton Worldwide Inc.	15305 N. Dallas Pkwy., Ste. 600, Addison	250-500
27	Intercontinental Hotel Dallas	15201 Dallas Pkwy., Addison	250-500
28	Concentra Inc.	5080 Spectrum Dr., Addison	250-500
29	Dallas Marriott Quorum	14901 Dallas Pkwy., Dallas	250-500
30	Prestonwood Town Center	325 Belt Line Rd., Dallas	1,000-2,500
31	Hilton Hotels Corporate Office	5001 Spring Valley Rd., Dallas	Over 100,000 [1]
32	Bombardier	3400 Waterview Pkwy., Ste. 400, Richardson	250-500
33	Hewlett-Packard	3000 Waterview Pkwy., Richardson	1,000-2,500
34	Dallas International School	17811 Waterview Pkwy., Dallas	250-500

[1] The number represents the total employees reported for the business and may not represent employees on-site at this location.

Figure 3-14
Major Employers
Data Source:North Central Texas Council of Governments, Texas Education Agency Public Open Data Site

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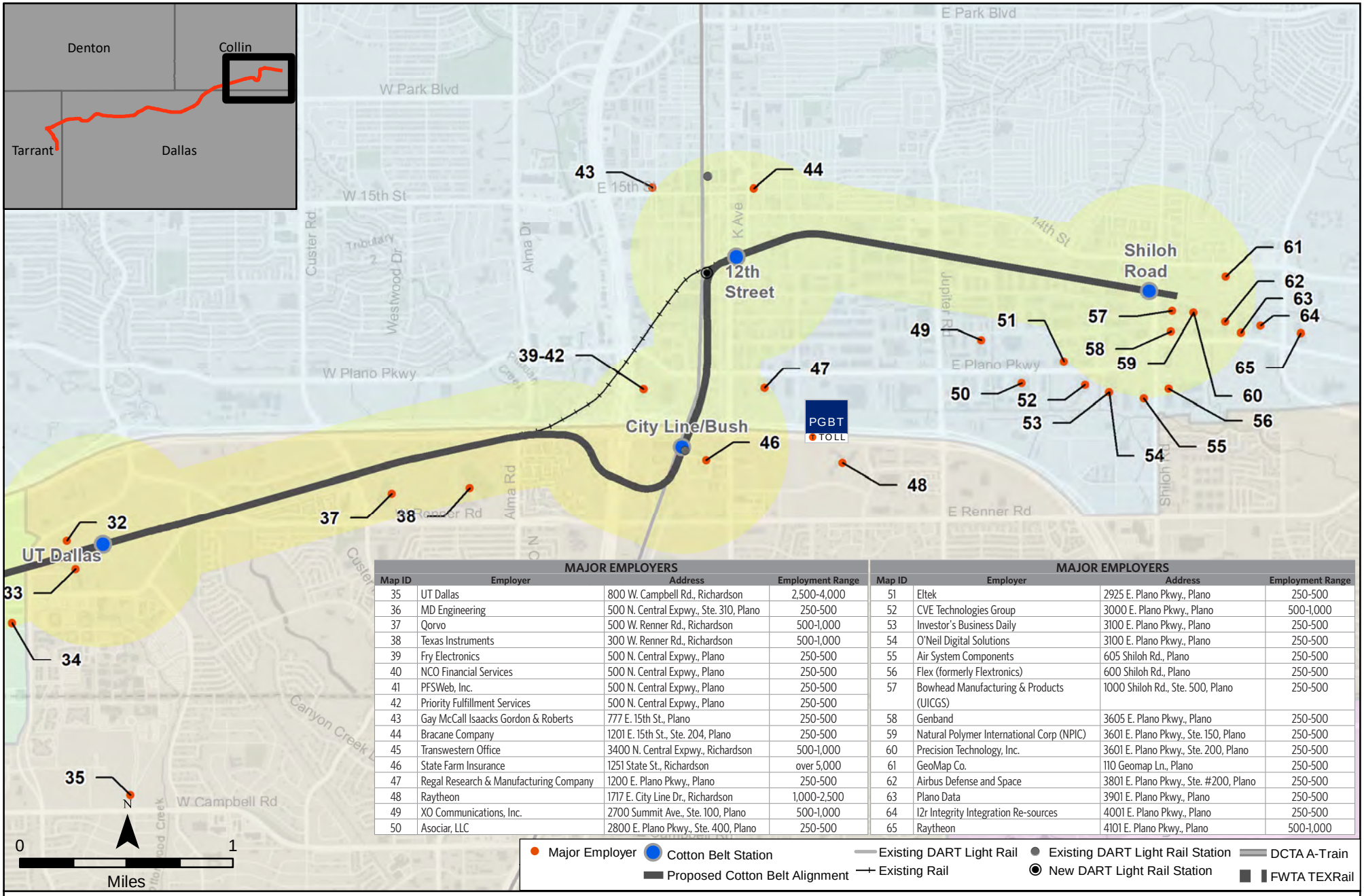

MAJOR EMPLOYERS			
Map ID	Employer	Address	Employment Range
35	UT Dallas	800 W. Campbell Rd., Richardson	2,500-4,000
36	MD Engineering	500 N. Central Expwy., Ste. 310, Plano	250-500
37	Qorvo	500 W. Renner Rd., Richardson	500-1,000
38	Texas Instruments	300 W. Renner Rd., Richardson	500-1,000
39	Fry Electronics	500 N. Central Expwy., Plano	250-500
40	NCO Financial Services	500 N. Central Expwy., Plano	250-500
41	PFSWeb, Inc.	500 N. Central Expwy., Plano	250-500
42	Priority Fulfillment Services	500 N. Central Expwy., Plano	250-500
43	Gay McCall Isaacks Gordon & Roberts	777 E. 15th St., Plano	250-500
44	Bracane Company	1201 E. 15th St., Ste. 204, Plano	250-500
45	Transwestern Office	3400 N. Central Expwy., Richardson	500-1,000
46	State Farm Insurance	1251 State St., Richardson	over 5,000
47	Regal Research & Manufacturing Company	1200 E. Plano Pkwy., Plano	250-500
48	Raytheon	1717 E. City Line Dr., Richardson	1,000-2,500
49	XO Communications, Inc.	2700 Summit Ave., Ste. 100, Plano	500-1,000
50	Asociar, LLC	2800 E. Plano Pkwy., Ste. 400, Plano	250-500

MAJOR EMPLOYERS			
Map ID	Employer	Address	Employment Range
51	Eltek	2925 E. Plano Pkwy., Plano	250-500
52	CVE Technologies Group	3000 E. Plano Pkwy., Plano	500-1,000
53	Investor's Business Daily	3100 E. Plano Pkwy., Plano	250-500
54	O'Neil Digital Solutions	3100 E. Plano Pkwy., Plano	250-500
55	Air System Components	605 Shiloh Rd., Plano	250-500
56	Flex (formerly Flextronics)	600 Shiloh Rd., Plano	250-500
57	Bowhead Manufacturing & Products (UICGS)	1000 Shiloh Rd., Ste. 500, Plano	250-500
58	Genband	3605 E. Plano Pkwy., Plano	250-500
59	Natural Polymer International Corp (NPIC)	3601 E. Plano Pkwy., Ste. 150, Plano	250-500
60	Precision Technology, Inc.	3601 E. Plano Pkwy., Ste. 200, Plano	250-500
61	GeoMap Co.	110 Geomap Ln., Plano	250-500
62	Airbus Defense and Space	3801 E. Plano Pkwy., Ste. #200, Plano	250-500
63	Plano Data	3901 E. Plano Pkwy., Plano	250-500
64	I2r Integrity Integration Re-sources	4001 E. Plano Pkwy., Plano	250-500
65	Raytheon	4101 E. Plano Pkwy., Plano	500-1,000

Major Employer
Cotton Belt Station
Proposed Cotton Belt Alignment
Existing DART Light Rail
Existing Rail
Existing DART Light Rail Station
New DART Light Rail Station
DCTA A-Train
FWTA TEXRail

DART
COTTON BELT

Figure 3-15
Major Employers
Data Source:North Central Texas Council of Governments, Texas Education Agency Public Open Data Site

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Economic Conditions

Employment and economic conditions were evaluated using data gathered from the U.S. Bureau of Economic Analysis (BEA) and the Bureau of Labor Statistics (BLS). According to data released by the BLS for November 2017, the largest over-the-year employment increases occurred in the Dallas-Fort Worth-Arlington, Texas Metropolitan Statistical Area (MSA) compared to other MSAs in the U.S. In addition, the largest over-the-year increase in employment among the metropolitan divisions occurred in the Dallas-Plano-Irving, Texas division that consisted of a 2.9 percent increase.

The BEA produces information for the state, county and MSA levels[2]. BEA data for the U.S., the State of Texas, the counties, and MSA within the Study Area are included in the *Socioeconomic Existing Conditions Technical Memorandum* in **Appendix B**. Data summarized include the Per Capita Personal Income (PCPI), the latest unemployment rate available (March 2017), and the 2005-2015 compound annual growth of the PCPI.

3.4 Parks and Recreation Facilities

Legal Requirements and Regulatory Setting

This section inventories the parks and recreational facilities within the Study Area. Identifying these important community resources will help ensure that adverse impacts are avoided or minimized and efforts are made to integrate the Preferred Alternative into the surrounding environment in a manner sensitive to the natural setting.

Several regulations pertain to the use of parks and recreational facilities. Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966, as amended (49 USC 303), declares it a national policy to make a special effort to preserve the national beauty of the countryside, including parks, recreation land, wildlife and waterfowl refuges, and historic sites, and that the use of Section 4(f) protected resources should be avoided when planning transportation projects, unless no other feasible and prudent alternatives exist. Section 6(f) of the Land and Water Conservation Fund (LWCF) Act states that parks developed or improved using LWCF grant monies cannot be acquired unless no other reasonable and feasible alternatives exist and any acquisition must be in coordination with the National Park Service (NPS). Chapter 26 of the Texas Parks and Wildlife Department (TPWD) Code states that a state agency, county, or municipality cannot approve a project that would require the use or taking of a public park or recreational land unless it is determined that no feasible or prudent alternative exists, adverse impacts have been minimized through the planning process, and a public hearing is held regarding the proposed use.

Methodology

For the environmental review, the Study Area for park and recreational facilities includes 0.25-mile on either side of the Preferred Alternative and a 0.5-mile radius around each station location. Park and recreational trails data was gathered through coordination with affected municipalities in conjunction with a review of city maps, parks and trails master plans, and GIS shapefiles from NCTCOG. Any park or trail within the Study Area buffer was included in the analysis.

Affected Environment

There are 64 parks, trails, and recreational facilities within the Study Area. **Table 3-6** lists publicly-owned parks and recreational facilities that may be subject to Section 4(f) regulations. **Table 3-7** lists privately-owned recreational facilities within the Study Area. **Figures 3-16** through **3-19** show the location of each inventoried facility along the Preferred Alternative. The figures also show a green-shaded overlay of the NCTCOG 2015 land use category “Dedicated, Parks.” As defined by

[2] Source: https://bea.gov/regional/bearfacts/action.cfm?geoType=5&fips=19100&areatype=MSA.

the NCTCOG, land use examples in this category could include public and private parks, golf courses, cemeteries, public and private tennis courts and swimming pools, and amusement parks.

For the environmental review, all publicly-owned and privately-owned parks and recreational areas have been identified. Dependent on the significance of public use, not all publicly-owned parks and recreational facilities qualify as Section 4(f) protected resources. Publicly-owned properties that do not qualify include school properties and floodways.

Table 3-6. Publicly-Owned Parks and Recreational Facilities Inventory

Facility Name	Description
Future Cotton Belt Trail	Parallel to existing Cotton Belt corridor (exact location unknown at this time); Regional Veloweb Plan
Grapevine Springs Park Preserve and Trail	Nature preserve, passive use green space and trail
Grapevine Creek Park	Passive use green space
R. J. McInnish Park Sports Complex	Active park with sports fields (27 sports fields located inside of McInnish Park, with 12 soccer fields, 10 baseball fields, and 5 adult softball fields)
R. J. McInnish Park Trail	Trail
R.E. Good Sports Complex	Active park with sports fields
Dimension Tract	Passive use park
Elm Fork Nature Preserve	Passive use green space
Elm Fork Nature Preserve Trail	Trail
Downtown City Square Park and Gazebo	Active use park with historical features
Pioneer Park	Active use park in downtown Carrollton with historical features
Francis Perry Park	Tennis court and playground
Gravley Park	Adjacent to the A.W. Perry Museum; passive use
Gravley Park Loop	Adjacent to the A.W. Perry Museum; Trail
A.W. Perry Homestead Museum	Park/museum
W. J. Thomas Park Sports Fields, and Municipal Pool	Active use park with sports fields and pool
Josey Ranch Greenbelt	Greenbelt park/trail
Keller Springs Park	Passive use green space
Hutton Branch Green Trail and Purple Trail	Trail
Addison Circle Park	Active use park
Beckert Park	Passive green space
Bosque Park	Passive green space
Parkview Park	Passive green space
Spruill Park	Passive green space
Wagging Tail Dog Park	Dog park
Preston Green Park	Active use, playground
Community Pool	Public pool
City of Dallas Public Use Area	Public use area
Preston Ridge Trail and Expansion	Trail at Haymeadow Drive/Coit Road north to Frankford Road. Parallel to Meandering Way at Cotton Belt crossing; Regional Veloweb Plan
Douglass Playground	Community Park
Haggard Park	Gazebo, playground and restrooms; home of Interurban Railway Museum
Haggard Park Trail	Trail; Regional Veloweb Plan
Shoshoni Park	Playground with open sports fields
Boys and Girls Club of Collin County	Community center/park
15th Street Station	Trail along Avenue I from Haggard Park to near 18th Street

Table 3-6. Publicly-Owned Parks and Recreational Facilities Inventory (cont'd)

Facility Name	Description
Plano Central Link	Trail from 12th Street to 18th Street through Haggard Park; Regional Veloweb Plan
CityLine Park	Park
City Park	Adjacent to Spring Creek Nature Area
Bush Central Barkway Dog Park	Dog park
Spring Creek Nature Area	Park/trail between Routh Creek Parkway and North Plano Road; south of East Renner Road
Spring Creek Nature Trail (Phase 2)	Trail from East Renner Road (near Central Expressway) to Routh Creek Parkway
Point North Park and Trail	Public green space with trail/play areas plus fields for baseball and other sports
Custer Park and Trail	Picnic and playground equipment, shelter, one baseball field, athletic field, and two lighted tennis courts
University of Texas At Dallas Trail	Trail follows the property boundary of UTD and connects with Renner Trail on Renner Road
Unknown Existing Off-Street	Trail extends from Woods Park to Shiloh Road
Unknown Existing Off-Street	Trail extends from Springbranch Drive to Global Lane and Parallel to Shiloh Road
Renner West Linear Park	Trail from Renner Road at Point North Parkway to Central Expressway

Source: NCTCOG, GPC6

Table 3-7. Privately-Owned Recreational Facilities

Facility Name	Open to Public or Private
Carter Phase III Addition common area	HOA Common Area
Riverchase Golf Club	Open to Public
Sports Garden DFW	Open to Public
Dallas Pistol Club	Members Only
Honors Golf Club (Maridoe Golf Club)	Members Only
Trafalgar Square Park	HOA Common Area
Hilltop Memorial Park	Open to Public
The Clubs of Prestonwood (Golf Club)	Open to Public
Preston Trails Homeowners Association	Residential Common Areas
Fairhill School	Green Space Associated with Private School
Adventure Landing	Open to Public
Somerset Amenity Center	HOA Common Area
The Practice Tee Golf Center	Open to Public
Canyon Creek Country Club	Open to Public

Source: NCTCOG, GPC6

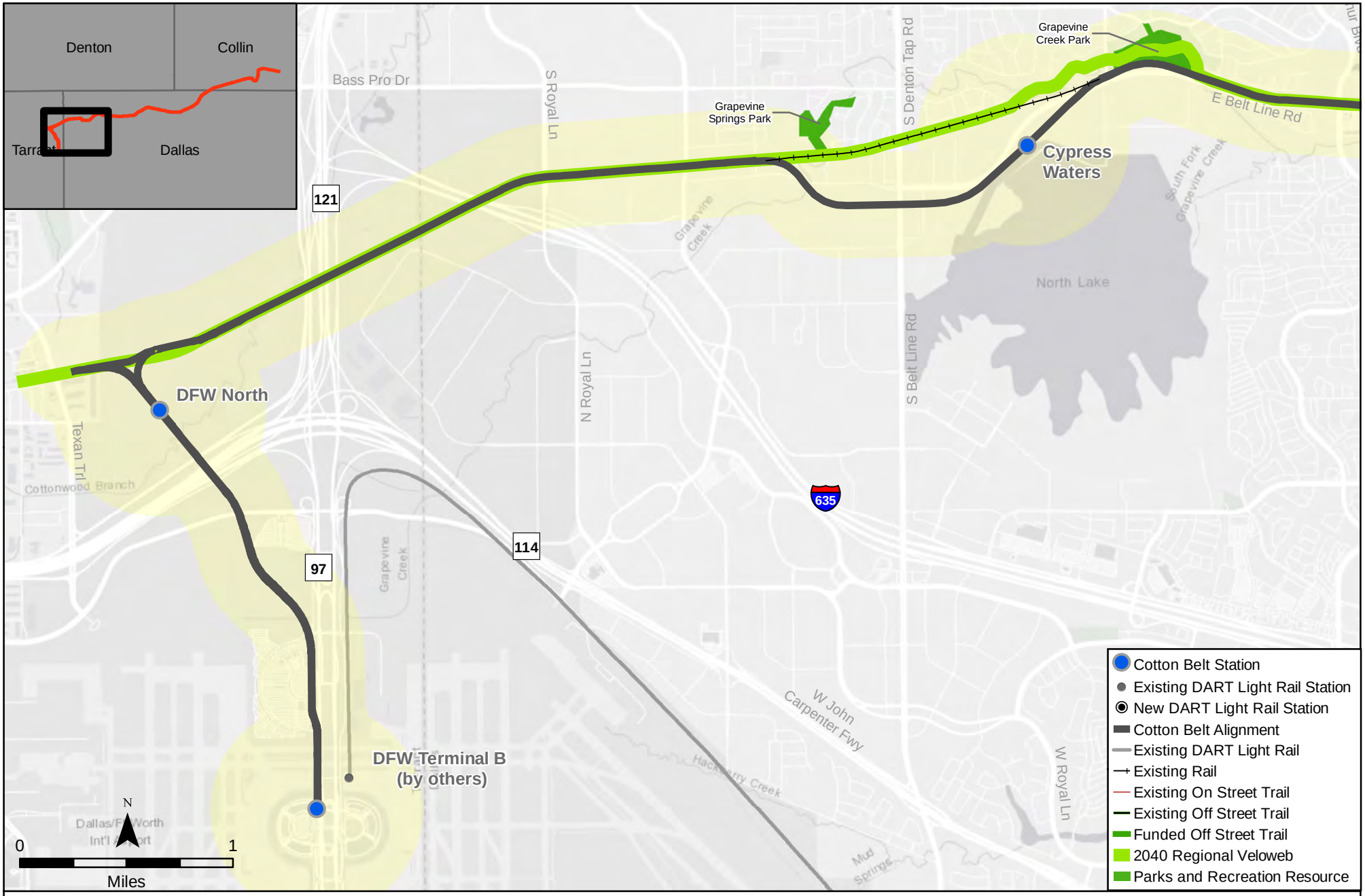

Figure 3-16
Parks and Recreational Facilities

Data Source: North Central Texas Council of Governments, Local Municipalities

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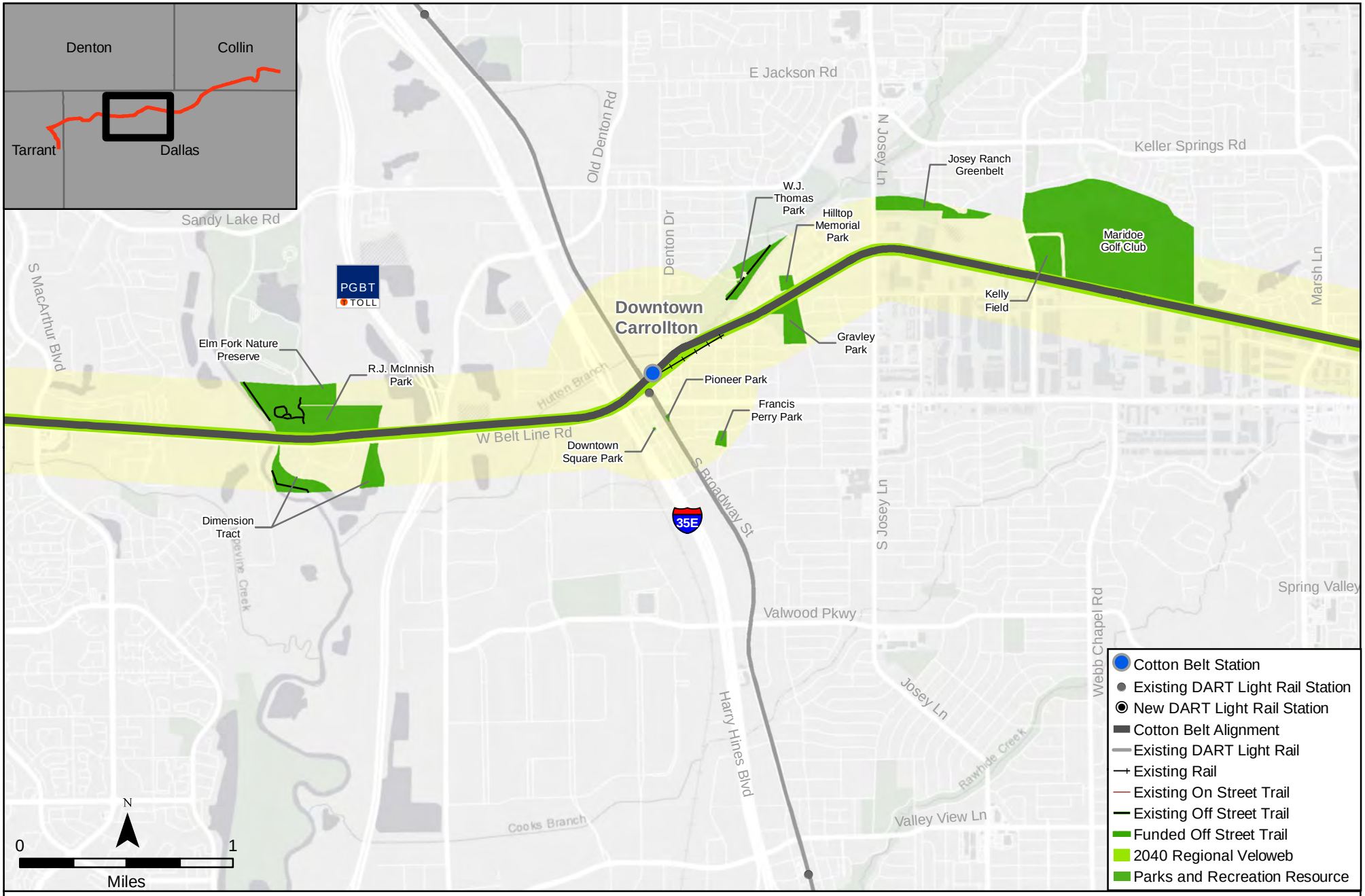

Figure 3-17
Parks and Recreational Facilities

Data Source: North Central Texas Council of Governments, Local Municipalities

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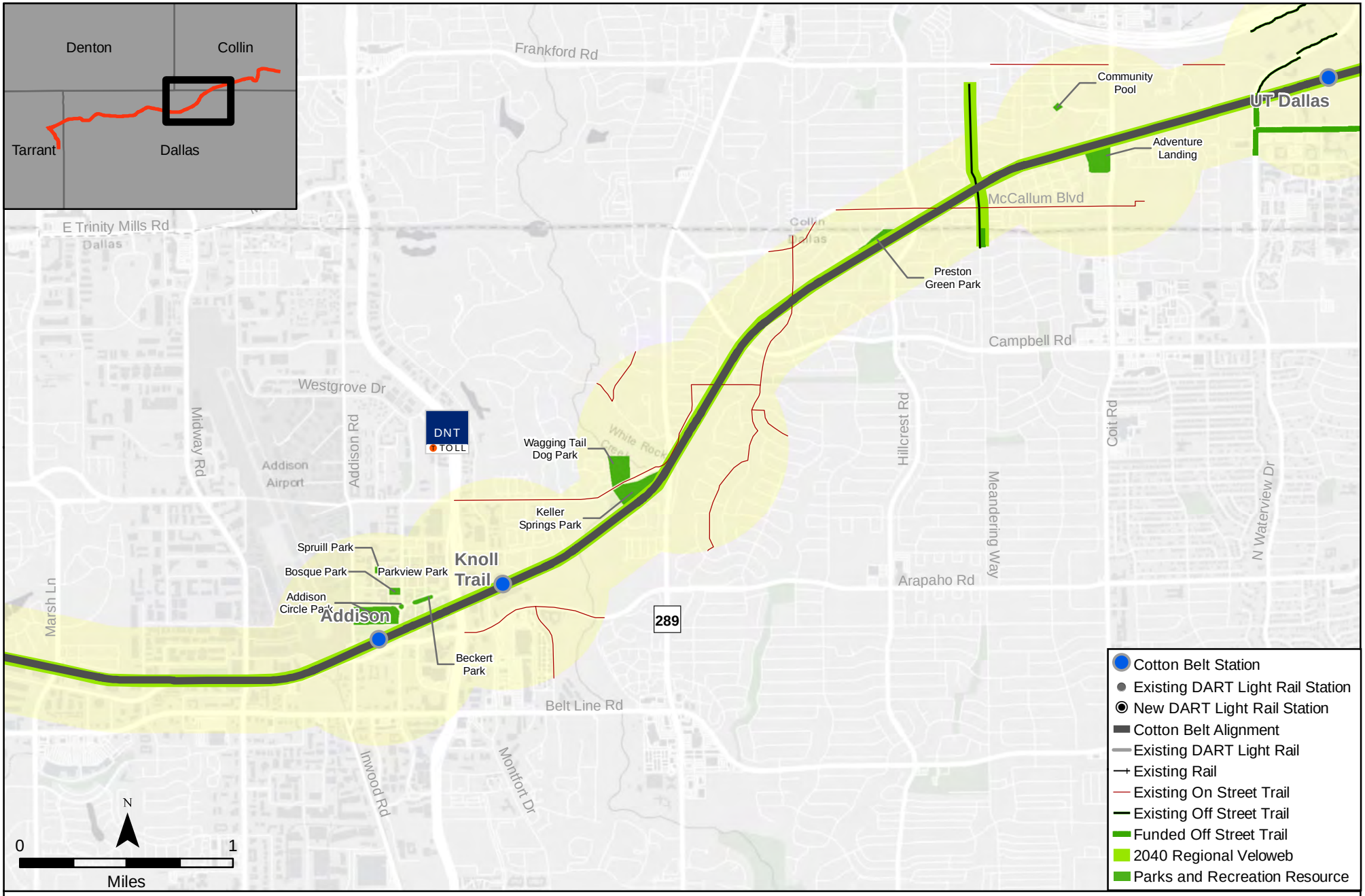

Figure 3-18
Parks and Recreational Facilities

Data Source: North Central Texas Council of Governments, Local Municipalities

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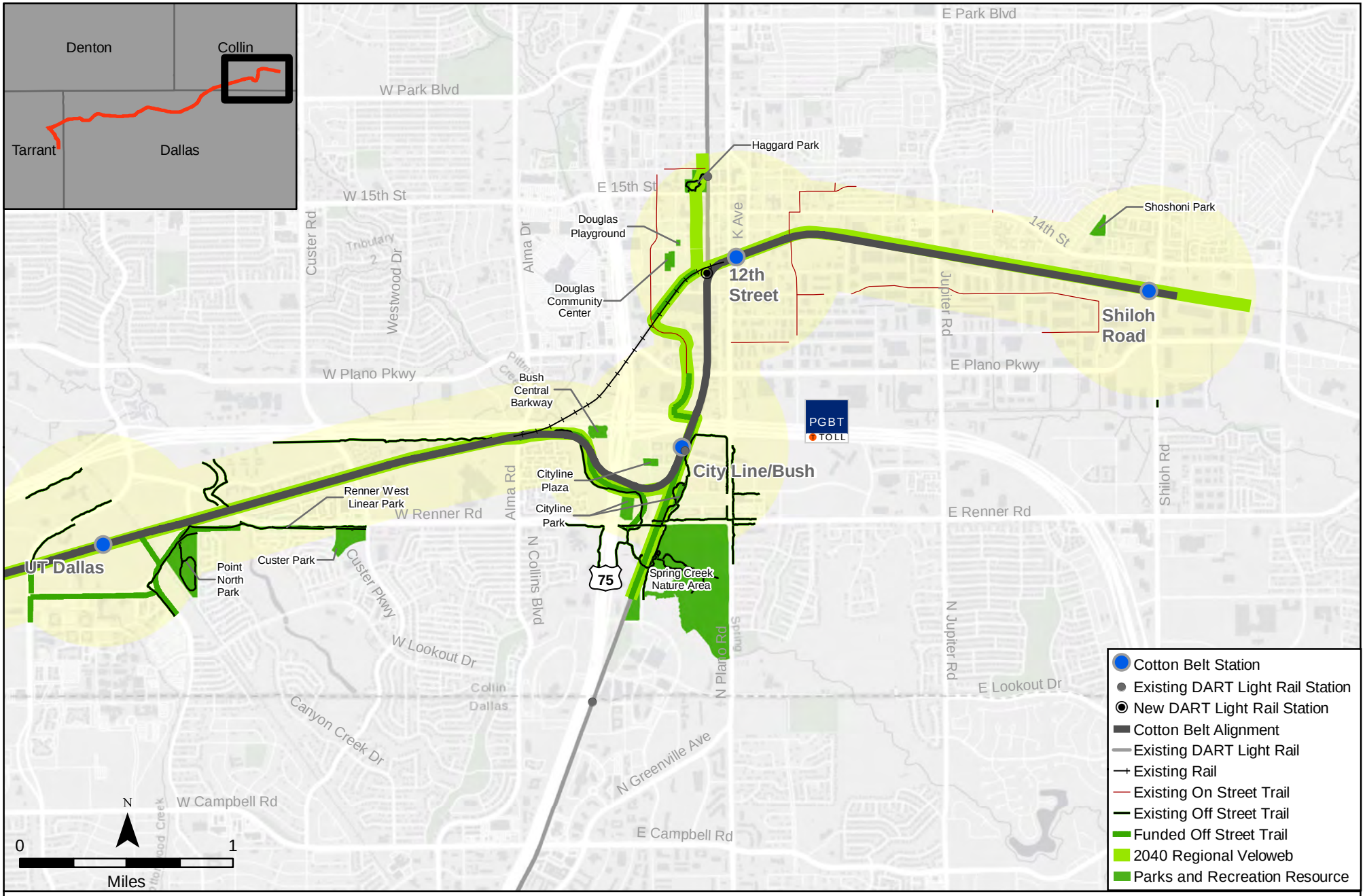

Figure 3-19
Parks and Recreational Facilities

Data Source: North Central Texas Council of Governments, Local Municipalities

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3.5 Cultural Resources

Legal Requirements and Regulatory Setting

The Cotton Belt Project is subject to compliance with the National Historic Preservation Act (NHPA) of 1966, as amended (54 USC § 300101 et seq.) and it's implementing regulations (36 CFR 800). Specifically, Section 106 of the NHPA requires that the responsible federal agency consider the effects of its actions on historic properties, which are properties listed in or determined eligible for listing in the National Register of Historic Places (NRHP), and provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking.

Methodology

Per Section 106 requirements, the lead federal agency, in consultation with the State Historic Preservation Officer (SHPO), develops the area of potential effects (APE), identifies historic properties (i.e., NRHP-listed and NRHP-eligible properties) in the APE, and makes determinations of the project's effects on historic properties in the APE. Section 106 regulations require that the lead federal agency consult with the SHPO and identified parties with an interest in historic resources during planning and development of the Project.

FTA, in consultation with the SHPO, determined the APE for identification of built resources. The SHPO concurred with the APE in February 2017. Route deviations where the Preferred Alternative leaves the existing right-of-way, and areas where the APE was adjusted later are also included in SHPO concurrence (SHPO correspondence is included in the *Historic-age Resource Reconnaissance Survey – Station Locations* in **Appendix B**). The APE is 175 feet on each side of the track centerline. It includes where the Preferred Alternative would be located, properties adjacent to the Preferred Alternative and in the areas where the alignment will deviate from the corridor. The potential for proximity effects was evaluated for properties near but not adjacent to the alignment and for which the properties were determined to be significant. These properties were typically within 250 feet of the deviation from the alignment, stations, and the new Mercer Yard. The selected EMF Site (Irving Yard) was added to the original APE. It is an existing facility and contains no significant historic properties. Additional coordination on the APE was conducted with the SHPO. Prior research documented in the *Cultural Resources Assessment for the Trinity Railway Express Valley View Bridge and Double Track Project* (October 2015) encompassed the existing TRE Irving Yard site. This information was summarized and provided to SHPO on July 10, 2018 (see **Appendix G**). SHPO concurred on July 14, 2018, that there are no known, listed, or previously determined eligible archaeological or historic resources in the area that would be affected by the yard improvements.

Historic Resources in the APE

The 2013 and 2017 field surveys identified a total of 68 historic resources (building, structure, or object built in 1971 or earlier) that were recorded within 175 feet from the centerline of the Preferred Alternative and 250 feet from the centerline of new right-of-way for the alignment deviations, stations, and rail facilities. In addition, one NRHP district, the Plano Downtown Historic District, was identified within or near the Study Area. Five resources were recommended eligible or were previously found to be eligible for listing in the NRHP: Carrollton Depot, Addison State Bank, White Rock Creek Bridge, Hayes Dam and Old City Cemetery/LA Davis Cemetery. The cemetery was removed from the APE during further assessment because the Preferred Alternative will follow the CityLine route deviation alignment south of the existing corridor which avoids the cemetery. See **Figure 3-20** for the four historic resources located within the APE of the Preferred Alternative.

The Carrollton Depot is located on Denton Drive at the railroad tracks in the DART station parking area (**Figure 3-20**). The Carrollton Crossing Depot was constructed in 1925 and served the three railroads that came through Carrollton (City of Carrollton, 2017). The building is an L-shaped structure with wood siding and a hipped roof with deep overhanging eaves and 6/6 windows. As part of a Memorandum of Agreement (MOA) between DART and the THC, the Carrollton Depot was relocated to its current site and rehabilitated by DART (DART, 2013).

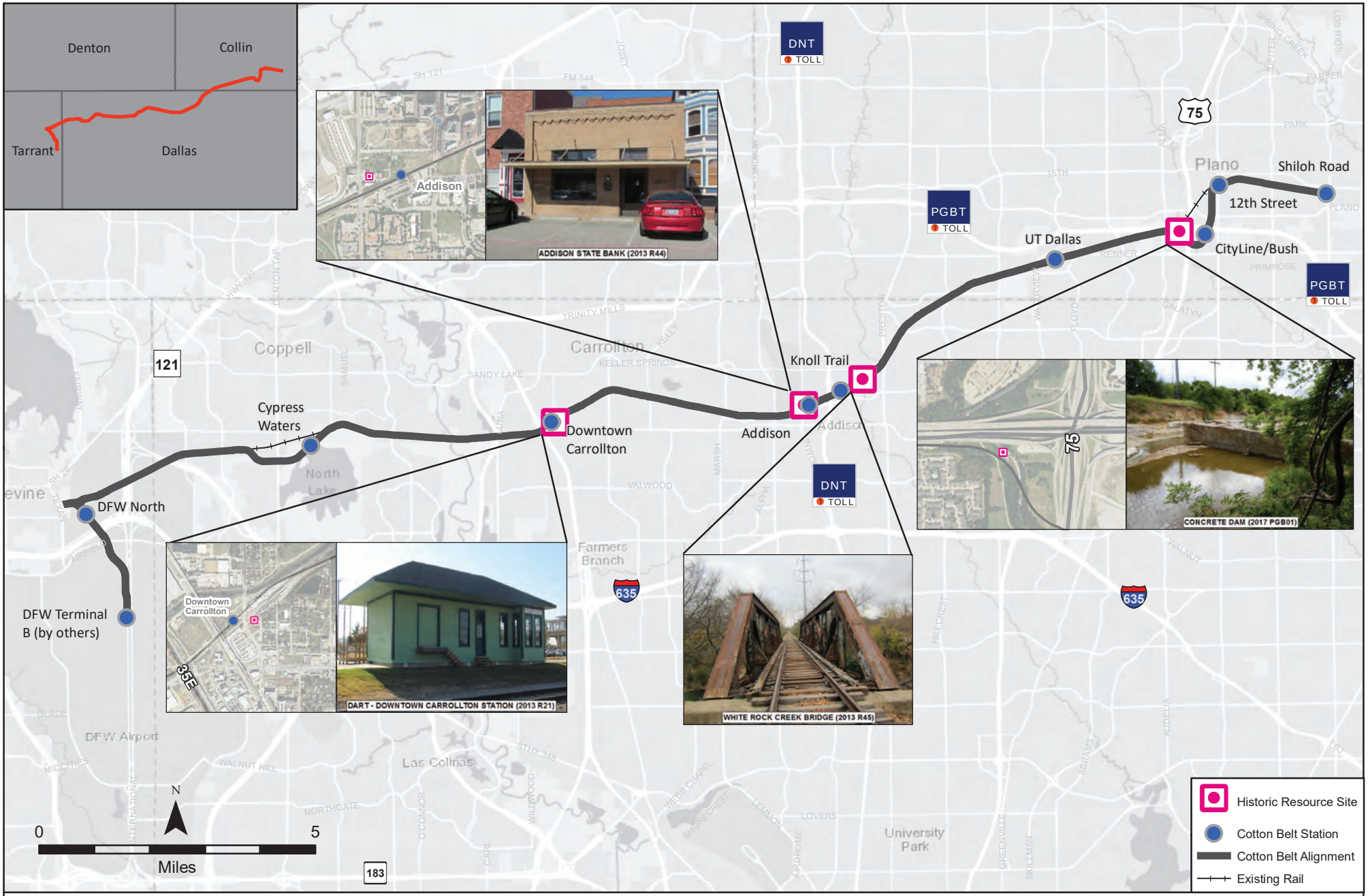

Figure 3-20
Cultural Resources
Data Source: North Central Texas Council of Governments

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The Addison State Bank, located at 4803 Broadway in Addison, Texas, was previously designated a Registered Texas Historical Landmark (RTHL) in 1984 (**Figure 3-20**). The building was constructed in 1913 to house the Addison State Bank, which had been organized the previous year to serve the new railroad community of Addison. The Addison State Bank is one of the few remaining structures from the original town (THC, 1984).

White Rock Creek Bridge is located northeast of the station at Knoll Trail. It was constructed in 1917 (**Figure 3-20**). The bridge is a single span Warren with vertical pony truss manufactured by the American Bridge Company. The American Bridge Company was organized by J.P. Morgan and Company and was incorporated in New Jersey in 1900.

The Hayes Dam is in Richardson at Spring Creek (**Figure 3-20**). The function of the dam is unknown, but it is mentioned in several deeds as a parcel boundary and transferred property. While the dam is heavily eroded, it once had two eight-feet tall wing walls on either side of an eight-foot spill way.

These eligibility determinations were submitted to the SHPO for review and concurrence. SHPO concurred with the determinations on December 21, 2017.

Detailed documentation and evaluation of historic properties for NRHP eligibility are provided in the *Historic-age Resource Reconnaissance Survey – Station Locations* in **Appendix B**. Agency coordination and consultation are provided in **Appendix G**.

Archeological Resources in the APE

The Preferred Alternative is located entirely within the Northern Blackland Prairie ecoregion, an area defined by deep expansive clay soils, level to gently rolling land dominated by grasses, and punctuated by hardwood forests along stream valleys and floodplains (EPA, 2013). Prior to Anglo-American settlement, this region was a tallgrass prairie, which supported herds of bison, pronghorn antelope, and elk (Weniger, 1997). However, intensive farming, livestock grazing, and urbanization has altered nearly all the blackland prairies throughout Texas. Elevation within the APE ranges from 410 feet at the Elm Fork of the Trinity River to 730 feet between Coit Road and Waterview Parkway.

Archeological investigations, conducted under Texas Antiquities Permit No. 7996, consisted of a pedestrian survey, manual excavation of 154 shovel tests, and excavation of eight backhoe trenches within the APE. The existing rail right-of-way was found to be entirely disturbed and bridge replacements are unlikely to impact undocumented archeological sites. Therefore, only new rail alignment locations, stations, and support facility rights-of-way were subject to intensive survey.

Three newly documented archeological sites were discovered during field investigations. Site 41COL291, a railroad section foreman house most likely constructed by the St. Louis, Arkansas, and Texas Railway in the late 1880s, was discovered adjacent to the 12th Street Station footprint in Plano. The site consists of apparently intact deposits along with stacked creosote plank footings for the building. Site 41COL299, is an early to mid-20th Century historic site containing scattered remnants of houses within the three-acre parking facility associated with the Plano 12th Street Station. While several features were located during trenching at the site, there is very little remaining, and it is likely that nearly all structural remains and most artifacts were scraped from the site during clearing of the parcel in the early 1990s. In addition, Site 41DL535, an historic-age farmstead site is located in the vicinity of the Cypress Waters alignment. This site consisted of three features, displaced concrete pads, and an infilled trash dump containing debris dating to the early twentieth century. Archival research found that the site was most likely the family farm of J. B Harrison, a prominent local businessman in Coppell during the late 1800s. However, the

site is minor to the original farmhouse location and was likely not used as part of the farm's operation until the 1940s or 50s.

The survey encountered and unintentionally removed human remains within existing DART right-of-way south of the L.A. Davis Cemetery in East Plano where additional rail was proposed north of the existing tracks. Immediately after the removal, the archeologists followed the Inadvertent Human Remains Discovery Protocol as part of the Antiquities Permit for this survey. The L.A. Davis Cemetery is adjacent to the existing Cotton Belt line. As noted previously, this resource was removed from the APE as the cemetery area would be bypassed by the CityLine route deviation alignment to the south. No modification to the rail south of the L.A. Davis Cemetery is proposed. Detailed documentation and evaluation of archeological properties for NRHP eligibility are provided in the *Archeological Resource Survey* in **Appendix B**.

3.6 Visual and Aesthetic Conditions

Legal Requirements and Regulatory Setting

NEPA states the need to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings." While there are no specific regulations, major transportation projects take into consideration visual and aesthetics resources in defining and evaluating projects to determine if mitigation may be needed.

Methodology

Guidelines established by the American Association of State Highway Officials (1991) were followed to define the Study Area's visual setting, identify areas of differing visual character, and define landscape units and visual quality. Visual resources were inventoried during site visits and field observations of the Study Area, along with photographs, and online aerial imagery. Visual resources are components of the natural and built environment that are capable of being seen. Viewers are neighbors who could see the Project and travelers who would use the transit facility. Neighbors are defined as civic neighbors and adjacent land uses including: residential, retail, commercial, industrial, agricultural, and recreational. Travelers are defined as transit system users, commuters, haulers, tourists, and pedestrians.

For visual analyses, the width of the Study Area extends approximately 300 feet (the nominal length of a common city block) on either side of the Preferred Alternative. To accommodate freight and transit rail operations in both directions, one track would primarily be dedicated to passenger operations, while the other track would share both passenger and freight services. There may be opportunities for sections to have a single shared track to minimize construction costs and impacts. For this analysis, a double-track configuration is assumed along the entire corridor.

Each visual assessment unit has its own visual character and visual quality. The units are typically defined by the limits of a particular viewshed with perceivable boundaries. These boundaries are generally created by landforms, edges defined by vegetation, buildings, and fencing. They typically have similar form, scale, materials, and character and visual quality that help define these boundaries. Decisions about low, moderate and high visual quality and sensitivity were determined by distinguishing the units into three categories: high, where introduction of new elements could significantly impact the aesthetic quality of the inventory unit as observed by the primary viewers (for example, a new bridge next to a signature bridge structure); moderate, where introduction of new elements may impact the aesthetic quality of the inventory unit or a portion thereof as observed by the primary viewers (for example, introduction of new rail or aerial structure); or low, where introduction of new elements is not likely to have an impact on the aesthetic quality of the inventory unit as observed by the primary viewers (for example, change in frequency of passing trains).

For the purpose of describing the visual resources of the existing rail alignment, the Study Area has been divided into three main units (Units 1, 2, and 3) and then further subdivided and identified as “A” and “B” within each unit. The limits of each unit are shown in **Figure 3-21.**

Affected Environment

The foremost visual element in the Study Area is the existing freight rail corridor itself with many of the features associated with freight rail operations, such as railroad crossings and signals. Almost all major road crossings within the corridor are at-grade crossings, with exceptions noted in **Chapter 5**. **Section 5.2** discusses roadway crossings of the Preferred Alternative. **Table 5-7** lists the configuration of all roadways and other crossings of the Preferred Alternative. **Figures 5-2** through **5-5** show the location of these crossings. Though the composition of the scenes along the Preferred Alternative may change in terms of vista and panorama, most views, framed by existing developments on both sides of the Preferred Alternative, are linear views along the railroad tracks. Many of the areas along the Preferred Alternativeare industrial in nature, and there are major visual features such as electrical power station and towers, elevated freeway systems, and DART light facilities.

Developments along the Preferred Alternative range from parks and recreational facilities such as golf courses to low-density single-family residences and small commercial/retail malls; high-density, multi-storied, housing, commercial, and institutional buildings, many in urban park-like settings; and airports. Pockets of light and heavy industry, as well as vacant and underutilized parcels can be seen. Proposed developments include most notably an expanded university campus master plan near the UT Dallas Station area; a mixed-use project, including office and corporate research facilities and entertainment/retail facilities surrounding the DFW North Station area; and the Cypress Waters Master Plan, including low and medium-density neighborhoods, a community center, commercial/retail areas, and office “campuses” surrounding North Lake and near the Cypress Waters Station area. The CityLine/State Farm mixed-use development continues to grow around the CityLine/Bush Station.

Following is a description of the general visual character of the corridor from west to east, including station locations or new facilities within each section. Each section was assessed as to the existing nature of the visual quality and visual sensitivity to the dominant or highly sensitive type of land uses within the section. An inventory of the sensitive receptors and visual assets, if any, was also collected. **Table 3-8** provides a general rating of each section of the Preferred Alternative and **Table 3-9** provides the evaluation definitions.

Unit 1 – DFW North Station to Elm Fork (Coppell/Carrolton City Limits)

Section 1A, extending from the DFW Airport to South Belt Line Tap Road in the City of Coppell, begins as primarily agricultural in character, becoming more developed with single-story light industrial developments as the track alignment continues east under SH 121 and then IH 635. The DFW North Station would be located in this section, and can be seen from SH 114 to the south, SH 121/International Parkway to the east, and the existing freight rail line to the north. Given the industrial nature and lack of sensitive receptors, overall visual quality and sensitivity is low.

Section 1B, extending from South Belt Line Road to the Coppell and Carrollton city limits, is characterized as primarily low to medium-density residential, with large single-family residential developments, followed by multi-story, multi-family developments which are located along the north side of the track alignment.

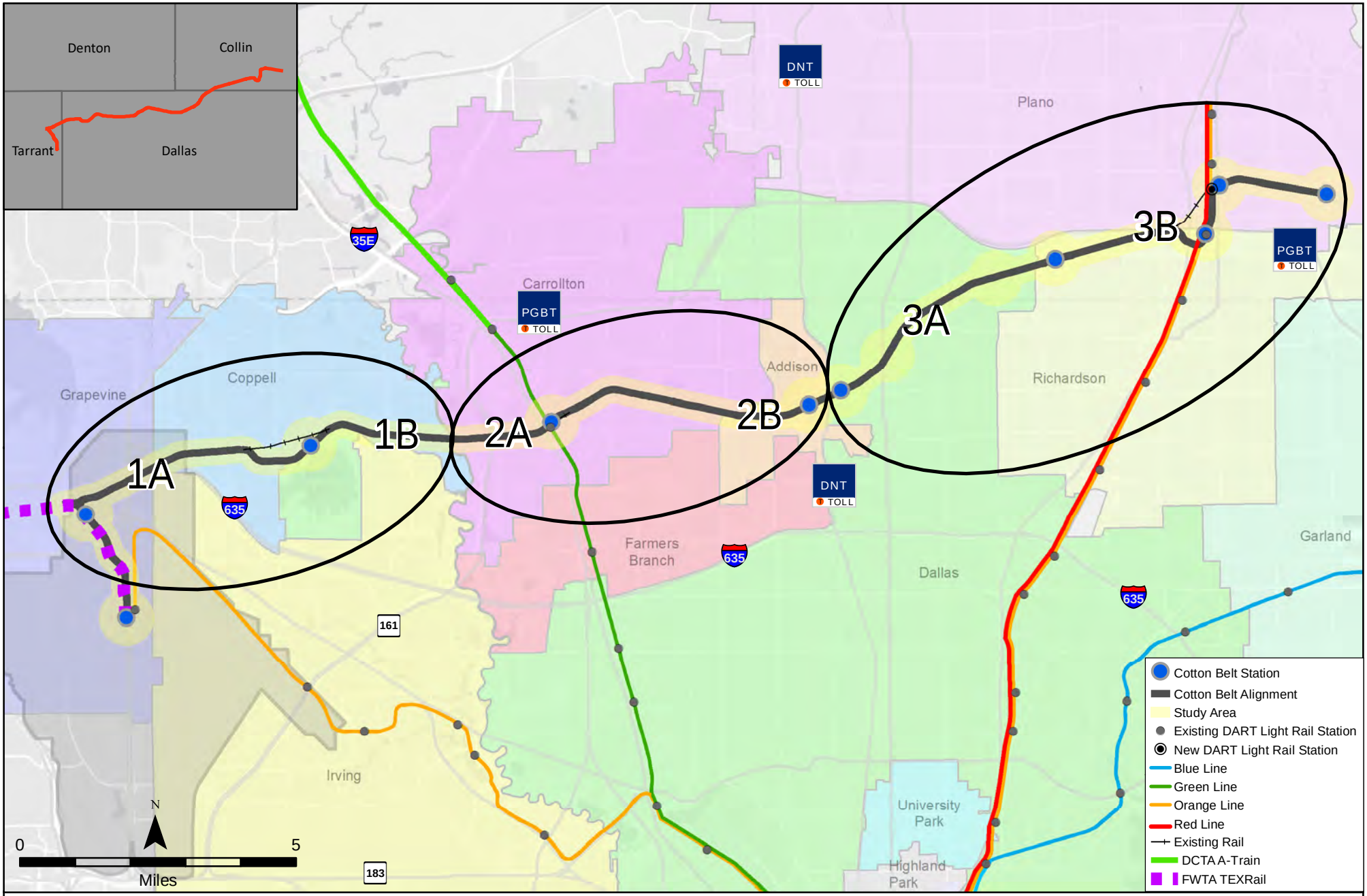

Figure 3-21
Visual Assesment Sections

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Table 3-8. General Rating of Corridor Visual Assessment

Unit	Name	Primary Viewers*	Visual Quality*	Visual Sensitivity*	Sensitive Receptors/Assets
1A	DFW Airport to South Belt Line Road	A, E, H	Low	Low	None
1B	South Belt Line Road to Coppell/ Carrollton city limits	A, C, D, F	Low	Low	Riverchase Golf Course, RJ McInnish Park, and residences
2A	Coppell/Carrollton city limits to Kelly Boulevard	A, B, C, E, F, G	Moderate	Low	Carrollton Heights Historic District and residences
2B	Kelly Road to Dallas North Tollway	A, B, C, D, E, G	Moderate to High	Low to Moderate	Addison Circle Park, Wheeler Bridge, and residences
3A	Dallas North Tollway to Dallas/Richardson city limits	A, B, C, D, E, G	Moderate to High	Moderate to High	Keller Springs Park and Prestonwood County Club, Fairhill School/playgrounds, and residences
3B	Dallas/Richardson city limits to Shiloh Road	A, C, E, F, G, H	Low to Moderate	Moderate	Spring Creek, green space, and residences

*Refer to Table 3-9 for the definitions of the primary viewers, visual quality and visual sensitivity.
Source: GPC6, 2017.

Table 3-9. Evaluation Rating Definitions

Primary Viewers	Visual Quality	Visual Sensitivity
A = Motorist B = Single-Family Resident C = Multi-Family Resident D = Recreational Users E = Commercial/Office Tenants F = Industrial Tenants G = Pedestrians H = Others	**High** = section or portions thereof is of significant visual quality to the primary viewers **Moderate** = section is of average visual quality to the primary viewers **Low** = section is of low visual quality to the primary viewers	**High** = Introduction of new elements could significantly impact the aesthetic quality of the section as observed by the primary viewers **Moderate** = Introduction of new elements may impact the aesthetic quality of the section or a portion thereof as observed by the primary viewers **Low** = Introduction of new elements is not likely to have an impact on the aesthetic quality of the section as observed by the primary viewers

Source: GPC6, 2017.

The Cypress Waters Station will be located along new track between the northwest shore of North Lake and East Belt Line Road at the Beltline Trade Center, within the City of Dallas (**Figure 3-22**). The environs of Grapevine Creek and East Belt Line Road, primarily north of the track alignment, are heavily wooded and the trees block from view the single-family residences to the north. This area is comparatively flat, with little natural spatial and visual variation, and the prominent features are utility lines and power poles. While there is some residential and parkland in this section, overall visual quality and sensitivity is low given the existing rail corridor and major arterials adjacent to those sensitive receptors.

Unit 2 – Elm Fork to Dallas North Tollway

Unit 2 encompasses downtown Carrollton and the Addison Circle area.

Section 2A generally features light industrial development as it passes under PGBT, IH 35E, and the DART Green Line to the Downtown Carrollton Station (**Figure 3-22**). Downtown Carrollton is transitioning into transit-oriented development with multi-family residences, restaurants, and retail. East of the station consists of single-family residential developments, including the Carrollton Heights Historic District. To the north are Thomas Park and the Hutton Branch Creek. The residential developments extend to Josey Lane where they transition to medium-scale industrial developments south of the alignment.

Unit 1B- Mockingbird Lane/Belt Line Road

Unit 2A- Area Surrounding Downtown Carrollton

Unit 2B- Wheeler Bridge Over Midway Road

Unit 3A- Multi-Family Complex at Knoll Trail Drive

Unit 3A- Area near Fairhill School

Unit 3B- Area near CityLine/Bush Station

Unit 3B- Area near 12th Street Station

Unit 3B- Area near Shiloh Road Station

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Figure 3-22
Visual Assesment Units
Existing Conditions Photos

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North of the section are several light industrial developments, a large green space, and a high school abutting the west side of Kelly Boulevard. The City of Carrollton has a “small town” atmosphere with a discernible downtown district. Given the historic district and its associated architecture, as well as nearby green space, visual quality is moderate. Visual sensitivity is low given the existing rail corridor and nearby elevated transportation infrastructure.

Section 2B, extending from Kelly Boulevard to the DNT, primarily features large-scale industry along the south side of the track alignment to the Carrollton and Addison city limits. Along the north side of the track alignment, east of Kelly Boulevard, are the Maridoe Golf Club and single-family and multi-family residential developments. The landscape changes abruptly east of the Addison Airport and Addison Road with a dense urban center comprised of upscale, high-rise, residential, commercial, and office buildings, as well as hotels, eateries, entertainment venues and parks. A signature arch bridge on Arapaho Road over Midway Road (Wheeler Bridge, shown in **Figure 3-22**) is a local landmark immediately to the south of the track alignment and viewed by DNT, as the area transitions visually to multi-story office buildings.

The Addison Station will be located adjacent to the existing Addison Transit Center, between Addison Road and Quorum Drive. The station area is surrounded by mixed-use developments—notably Addison Circle and Addison Circle Park, immediately north of the track alignment. This area is characterized by an extensive plaza, walking trails, interactive water features (**Figure 3-22**), streetscaping, the Water Tower Theatre, as well as high-rise, red brick residential buildings, office buildings, and hotels. Both Addison Circle and the signature Wheeler Bridge contribute to the moderate to high visual quality, although sensitivity is lower given the existing rail corridor.

Unit 3 – Dallas North Tollway to Shiloh Road

Unit 3 encompasses north Dallas residential areas, UTD, the CityLine area, transitioning areas south of downtown Plano and industrial/commercial areas further east.

Section 3A extends from the DNT to the Dallas and Richardson city limits transitions from multi-story office and commercial buildings and an electrical substation near the DNT, to multi-family residential developments north and south of the track. This area is urban in nature with lower visual quality and sensitivity as compared to areas to the east described below.

The Knoll Trail Station will be in this area (**Figure 3-22**). There is dense vegetation until the Preferred Alternative reaches Keller Springs Park and the Prestonwood Country Club (and crosses White Rock Creek) where vistas open to broad panoramas on both sides.

From this point, the corridor is primarily bordered by single-family residences and/or dense vegetation associated with creeks, as well as Preston Green Park and the Fairhill School buildings and grounds (**Figure 3-22**). The proximity of parks, schools and sensitive residential receptors contributes to moderate to high visual quality and sensitivity.

As the Preferred Alternative nears Coit Road, the visual character changes and includes commercial uses, Adventure Landing, an assisted living facility, multi-family residential developments, and developing single family areas southeast of the Coit Road intersection (**Figure 3-22**).

Section 3B visual features are dominated by the freeways, the elevated DART Red Line LRT guideway, power lines, multi-story office and industrial buildings, and the KCS Railway. East of Waterview Parkway consists of office and industrial park developments alternating with large tracts of vacant space to Alma Drive. The vacant land will be developed as part of the UTD Master Plan. The UTD Station will be located near Waterview office development and the existing Kansas City Southern (KCS) Railway. The station area is north of the UTD campus, in Richardson. Because of the open, flat terrain surrounding the station, it may be readily visible from as far away

as Synergy Park Boulevard to the south and the PGBT to the north (until redevelopment occurs) (**Figure 3-22**).

From West Renner Road to Alma Road, the Preferred Alternative is between a cluster of multi-family residential units, while east of Custer Parkway are several large-scale industrial facilities and a large electrical power station. South of the Preferred Alternative and west of US 75, is a large multi-family residential development. The Preferred Alternative roughly follows the Spring Creek 100-year floodplain through vacant open space and riparian over story vegetation along the creek, crossing over US 75 on a new bridge structure to the new platform area adjacent to the LRT station. Multi-family and large-scale office development surrounds this area (**Figure 3-22**).

Near 12th Street, the existing LRT guideway is a dominant visual feature (**Figure 3-22**), and an aerial side platform infill LRT station will be constructed. Immediately west of the 12th Street Station in Plano, development changes to higher density mixed uses with smaller office parks, multi-family residences, and then large industrial buildings. Primarily medium-scale industrial developments are visible along both sides from the 12th Street Station area to Shiloh Road. The Shiloh Station is largely light industrial/commercial with open space and a large City of Dallas electrical substation adjacent to the existing track (**Figure 3-22**). To the north of the Shiloh Road Station is a mosque and various commercial buildings.

While there are pockets of sensitive receptors and assets in Section 3B, the overall visual quality is low to moderate given the urban development and transportation infrastructure. Visual sensitivity is moderate given the creeks, trails and new developments.

More detailed information regarding the existing conditions of each section is available in the *Visual Assessment Existing Conditions Technical Memorandum* in **Appendix B**.

3.7 Soils and Geology

Legal Requirements and Regulatory Setting

The Farmland Protection Policy Act (FPPA), as detailed in Subtitle I of Title XV of the Agricultural and Food Act of 1981, provides protection to the following: 1) prime farmland; 2) unique farmland; and 3) farmland of local or statewide importance. FPPA defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management (irrigation), according to acceptable farming methods. Unique farmland is farmland that is used for production of specific high value food, feed, and fiber crops. Farmland of local or statewide importance is determined by the appropriate state or local government agency or agencies.

Methodology

The Study Area used for the assessment of potential impacts includes a 0.25-mile corridor from the Preferred Alternative centerline and 0.5 mile around the station locations. Existing literature and mapping were reviewed for the Study Area to assess geology and soils. Maps examined include Aerials Express Dallas 2010 Aerial Imagery, the Geologic Atlas of Texas Dallas Sheet (UT-BEG, 1987), and U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) Soil Surveys for Dallas County (NRCS, 1980), Collin County (NRCS, 1969) and Tarrant County (NRCS, 1981).

Affected Environment

Geology

Four geologic rock units underlie the Study Area – the Eagle Ford Formation, alluvium, fluviatile terrace deposits, and Austin Chalk. These are discussed in more detail in the *Geology and Soils Existing Conditions Technical Memorandum* in **Appendix B**.

Soils

Seven soil associations are found within the Study Area. These include (from west to east):

- Houston Black-Navo-Heiden association – gently sloping, deep, clayey and loamy soils of uplands
- Houston Black-Heiden association – deep, nearly level to strongly sloping, clayey soils of uplands
- Wilson-Rader-Axtell association – deep, nearly level to gently sloping, loamy soils of uplands
- Trinity-Frio association – deep, nearly level, clayey soils of floodplains
- Eddy-Stephen-Austin association – very shallow, shallow, and moderately deep, gently sloping to moderately steep, loamy and clayey soils of uplands
- Austin-Houston Black association – moderately deep and deep, nearly level to sloping, clayey soils of uplands
- Houston Black-Austin associations – gently sloping to sloping, clayey soils of uplands that are over deep marl and chalk

Detailed descriptions and locations of each of these are available in the *Geology and Soils Existing Conditions Technical Memorandum* in **Appendix B**. Fourteen prime farmland soil series, comprising approximately 1,550 acres were identified in the Study Area. No unique farmlands or farmlands of local or statewide importance were found within the Study Area.

3.8 Hydrology and Floodplain

This section provides an introduction and regulatory setting for water resources, including surface water quality, waters of the U.S., groundwater, and floodplains within and adjacent to the Study Area. The applicability of the various laws and regulations cited in this section is assessed prior to determining potential project impacts and mitigation strategies.

Legal Requirements and Regulatory Setting

The Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) permit program, authorized by the Clean Water Act (CWA) (33 USC § 1251 et seq.), controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. In Texas, the NPDES program is administered by the Texas Commission on Environmental Quality (TCEQ), as part of the Texas Pollutant Discharge Elimination System (TPDES). Stormwater runoff resulting from the Project will be addressed through compliance with the TPDES Construction General Permit (CGP).

Impacts to waters of the U.S. resulting from the discharge of dredged or fill material are regulated by the United States Army Corps of Engineers (USACE) under Section 404 of the CWA. If a linear transportation project places less than 0.5 acre of fill into waters of the U.S., it would typically be authorized under Nationwide Permit (NWP) 14; impacts of more than 0.5 acre require an Individual Permit. Impacts authorized under a NWP for Linear Transportation Projects which equal or exceed 0.1 acre require Pre-Construction Notification (PCN) to the USACE; impacts to wetlands (of any amount) would also require a PCN.

EO 11990 Protection of Wetlands (issued in 1977) requires federal agencies to minimize the destruction or modification of wetlands.

The *Rivers and Harbors Act of 1899* sets forth regulations related to navigable waters of the U.S., which are defined as "waters subject to the ebb and flow of the tide and/or are presently being used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 CFR 329.4).

EO 11988, Floodplain Management, requires federal agencies to avoid actions, to the extent practicable, which will result in the location of facilities in floodplains and/or affect floodplain values.

A Trinity River Corridor Development Certificate (CDC) is required for projects located within the Trinity River Regulatory Zone and is intended to minimize flood risk by regulating development within the Trinity River Corridor in North Central Texas. The Trinity River Regulatory Zone is consistent with the 100-year floodplain for the Trinity River, of which the Elm Fork of the Trinity River is crossed by the Project. Under the CDC process, local governments retain ultimate control over floodplain permitting decisions, but other communities along the Trinity River Corridor are given the opportunity to review and comment on projects in their neighbor's jurisdiction.

Section 408 of the CWA requires that projects which would take possession of, use, or cause injury to harbor or river improvements be reviewed and approved by the USACE.

Methodology

The Study Area for water resources used for the assessment of potential impacts includes a 0.25-mile corridor from the Preferred Alternative centerline and 0.5 mile around the stations. Existing literature and mapping were reviewed for the Study Area to assess groundwater, surface waters, floodplains, and soils. Maps examined include: Aerials Express Dallas 2010 Aerial Imagery; United States Geological Survey (USGS) topographic maps (USGS, 1981); FEMA floodplain maps (FEMA, 2001); Texas Water Development Board (TWDB) Groundwater Database (TWDB, 2009); Rail Road Commission (RRC) Public Map Viewer for Oil, Gas, and Pipeline Data (RRC, 2011); United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (USGS, 1989); USGS National Hydrography Dataset (NHD) (USGS, 2009); and U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) Soil Survey for Dallas County (NRCS, 1980), Collin County (NRCS, 1969) and Tarrant County (NRCS, 1981).

Affected Environment

FEMA floodplain maps were consulted for the Study Area (Map ID 48439C0115K, 48439C0120K, 48439C0110K, 48113C0135J and 48113C0345J, 48113C0155J, 48113C0160J, 48113C0180J, 48113C0185J, 48085C0485J, 48085C0505J, 48113C0065J, 48085C0390J, and 48085C0395J). According to the maps, there are four 100-year floodplains within the Study Area. They are associated with Cottonwood Branch, Grapevine Creek, Elm Fork of the Trinity River and White Rock Creek. According to the floodplain maps, the Preferred Alternative crosses the floodplain of several of the streams. There are 1,344 acres of 100-year floodplain, 387 acres of 500-year floodplain, and 33 acres of 0.2 percent chance flood hazard within the Study Area. See **Figure 3-23** for the floodplains, streams and creeks within the Study Area.

The Study Area does not contain sole source aquifers or wild and scenic rivers.

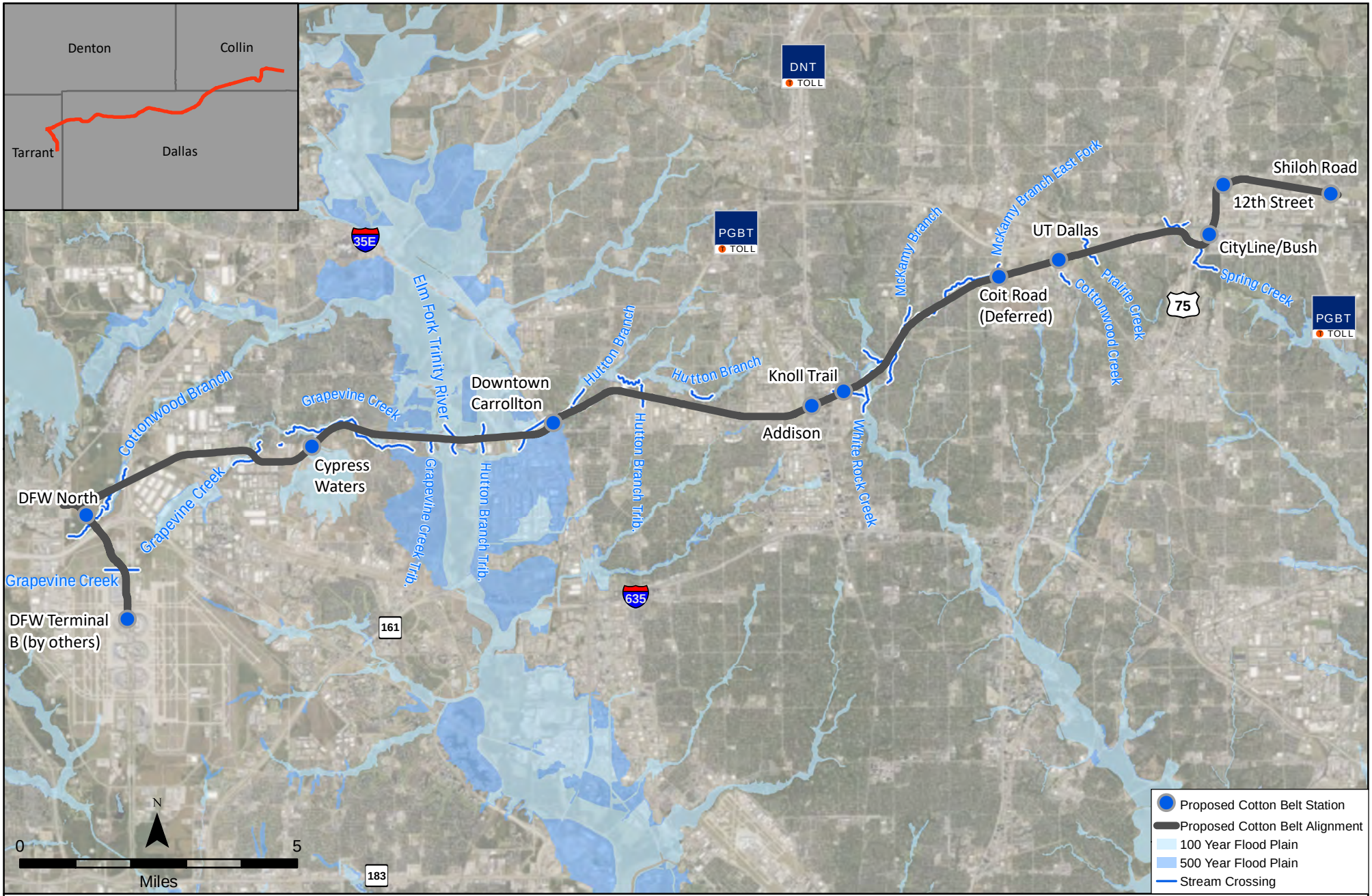

Figure 3-23
Water Resources
Data Source: Local Municipalities and Neighborhood Websites

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3.9 Wetlands and Other Waters of the US

Legal Requirements and Regulatory Setting

EO 11990 Protection of Wetlands (issued in 1977) requires federal agencies to minimize the destruction or modification of wetlands. Impacts to waters of the U.S. resulting from the discharge of dredged or fill material are regulated by the USACE under Section 404 of the CWA.

A jurisdictional wetland is defined as having all the following three criteria: hydrophilic vegetation, hydric soils, and wetland hydrology. Ditches were classified as being potentially jurisdictional if they were constructed within existing jurisdictional waters of the US, which would extend the ordinary high-water mark (OHWM), or are connected to existing jurisdictional waters. An OHWM is the normal full bank flow usually where vegetation stops growing and a bed/bank are delineated. The OHWM is the lateral extent for the USACE jurisdiction.

Methodology

Recent aerial photography, U.S. Geological Survey (USGS) National Hydrography Dataset (NHD), US Fish and Wildlife Service (USFWS) National Wetlands Inventory, and USGS topographic maps (7.5-minute series) of the Study Area were used to identify potential locations for waters of the US and areas prone to wetland development before going into the field. Potential waters of the US identified, including wetlands, were delineated and evaluated using routine on-site methods on May 25 and 26, 2017, by GPC6 environmental scientists. The surveys were conducted in accordance with the USACE 1987 Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement for the Great Plains Region (USACE, 2010). The delineations were also performed to reflect current guidance, Rapanos Guidance, from the USACE and EPA on jurisdictional determination in accordance with U.S. Supreme Court rulings.

The delineations were recorded using a Trimble® sub-meter Geo XT Global Positioning System unit and mapped as a data layer using ArcGIS 10.4. GPC6 biologists collected GPS data or verified previous data collected for the OHWM of all streams, boundaries of all wetlands, and data points in wetlands and uplands.

Affected Environment

Data obtained from the NHD and NWI reflects the Study Area crossing the Cottonwood Branch, Grapevine Creek, Elm Fork Trinity River, Hutton Branch, two unnamed tributaries to Hutton Branch, Perry Branch, White Rock Creek, an unnamed tributary to White Rock Creek, Pittman Creek, and Spring Creek. In addition, North Lake is approximately 0.25 mile south of the Cotton Belt Project centerline and immediately adjacent to the location of the Cypress Waters Station. See **Figure 3-23** for a map of these locations and **Table 3-10** for a summary of the potential waters of the US within the Preferred Alternative.

3.10 Water Quality

Legal Requirements and Regulatory Setting

Under Section 401 of the CWA, certification of compliance with water quality standards issued by the state water quality agency is required for any discharge of pollutants into waters subject to regulation under Section 404. In Texas, state water quality certification under Section 401 is carried out by the TCEQ. With regard to projects with impacts to waters of the US that meet the criteria for a NWP, TCEQ has provided conditional Section 401 certification. For transportation projects with impacts to water features covered by NWP 14, such as the Preferred Alternative, TCEQ's Section 401 conditional certification requires implementation of the Soil Erosion and Sedimentation Controls under NWP General Condition (GC) 12 and the Post-construction Total

Table 3-10. Summary of Potential Waters of the US Within the Right-of-Way

Label	Name	Type	Average OHWM	Linear Feet w/in ROW	Acres within ROW
S-1a	Grapevine Creek Crossing 1	Perennial Stream	30	212	0.15
S-1b	Grapevine Creek Crossing 2	Perennial Stream	15	115	0.04
S-1c	Grapevine Creek Crossing 3	Perennial Stream	15	103	0.04
S-2a	Cottonwood Branch Crossing 1	Perennial Stream	10	167	0.04
S-2b	Cottonwood Branch Crossing 2	Perennial Stream	10	348	0.08
S-3	Unnamed tributary to Cottonwood Branch	Ephemeral Stream	3	50	0.0003
S-4	Elm Fork Trinity River	Perennial Stream	80	101	0.19
S-5	Unnamed tributary to Hutton Branch	Intermittent Stream	30	152	0.10
S-6	Hutton Branch	Perennial Stream	40	151	0.14
S-7	Perry Branch	Intermittent Stream	14	141	0.05
S-8	Unnamed tributary to Hutton Branch	Intermittent Stream	12	100	0.03
S-9	Unnamed tributary to White Rock Creek	Intermittent Stream	15	121	0.04
S-10	White Rock Creek	Perennial Stream	50	108	0.12
S-11	McKamy Branch	Perennial Stream	40	131	0.12
S-12a	McKamy Branch East Fork Crossing 1	Perennial Stream	20	100	0.05
S-12b	McKamy Branch East Fork Crossing 2	Perennial Stream	20	278	0.13
S-13	Prairie Creek	Perennial Stream	40	122	0.11
S-14	Unnamed tributary to Spring Creek	Intermittent Stream	15	690	0.24
S-15	Spring Creek	Perennial Stream	50	490	0.56
W-1	Wetland on Unnamed Tributary to Grapevine Creek	Emergent Wetland	n/a	0	0.59
W-3	Wetland on P-1	Forested/Scrub shrub wetland	n/a	n/a	6.06
W-4	Wetland on P-1	Emergent wetland	n/a	n/a	0.22
W-5	Wetland adjacent to Hutton Branch	Forested Wetland	n/a	n/a	0.95
W-6	Wetland adjacent to Hutton Branch	Scrub/Shrub Wetland	n/a	n/a	2.54
P-1	Pond adjacent to Hutton Branch	Open Water	n/a	n/a	6.77
Total				3,680	19.36

Source: NCTCOG, 2015; GPC6, 2017

Suspended Solids (TSS) Controls under NWP GC 25. In essence, these GCs require the use of best management practices (BMPs) to manage water quality on construction sites.

Methodology

The Study Area for water resources used for the assessment of potential impacts includes a 0.25-mile corridor centered on the project centerline and 0.5 mile around the stations. Existing literature and mapping were reviewed for the Study Area to assess groundwater, surface waters, floodplains, soils, and potential wetland areas.

Affected Environment

The Study Area is located within the Trinity River basin, which drains approximately 17,969 square miles (TCEQ, 2004). For the purposes of monitoring water quality, the TCEQ has divided the Trinity River basin into 41 discrete segments. The Preferred Alternative is located within Segment 0822 – Elm Fork Trinity River below Lewisville Lake, Segment 0822B – Grapevine Creek, and Segment 0827A – White Rock Creek. Defined uses of Segments 0822 and 0822B include aquatic life use, contact recreation use, general use, and public water supply. Defined

uses of Segment 0827A include aquatic life use and contact recreation use. According to the 2012 Section 303(d) list, none of the segments are listed as impaired.

3.11 Air Quality

Legal Requirements and Regulatory Setting

The federal Clean Air Act (CAA)(42 USC § 7401 et seq.) and Clean Air Act Amendments (CAAA) require that states adopt ambient air quality standards. The standards have been established, through the TCEQ, to protect the public from potentially harmful amounts of pollutants. The EPA has set national ambient air quality standards (NAAQS) for the following six criteria pollutants: ozone (O_3), particulate pollution (PM_{10}, $PM_{2.5}$), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2) and lead (Pb). **Table 3-11** lists the NAAQS for these six pollutants. The CAA established two types of standards for these major air pollutants: primary and secondary. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation and buildings.

The CAAA requires all states to submit a list identifying those air quality regions, or portions thereof, which meet or exceed the NAAQS or cannot be classified because of insufficient data. Portions of air quality control regions that are shown by monitored data or air quality modeling to exceed the NAAQS for any criteria pollutant are designated “nonattainment” areas for that pollutant. The CAAA also establishes time schedules for the states to attain the NAAQS.

Methodology

Air monitoring station locations were identified using the NCTCOG Geographic Information System (GIS) database and determining the nearest active federal air monitoring stations (see *Air Quality Existing Conditions Technical Memorandum* in **Appendix B**). Specific monitor readings were obtained through the TCEQ air monitoring data website. The NCTCOG website for air quality identified specific programs implemented by the region to improve air quality.

Affected Environment

Air quality is a regional concern, not a localized condition. The Study Area is located in Tarrant, Dallas and Collin counties, which have been designated as moderate nonattainment areas for eight-hour ozone and Pb in Frisco, TX (Collin County) by the EPA. The NCTCOG eight-hour ozone nonattainment region includes Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise counties (NCTCOG, 2017). The formation of ozone is directly related to emissions from motor vehicles and point sources (AIRNow, 2017). The primary pollutants from motor vehicles are VOCs, CO, and NO_x. VOCs and NO_x can combine under the right conditions in a series of photochemical reactions to form ozone. The Dallas-Fort Worth region is in attainment for CO, sulfur dioxide, nitrogen dioxide and PM.

Meteorology plays a critical role in ozone formation, as wind and temperature dictate if this pollutant forms, and if so, how long it remains in the atmosphere. Calm weather days with low wind speeds and warm temperatures are favorable conditions for ozone formation. As expected, daily ozone concentrations are highest during the summer months, which is why the period between March 1 and October 31 is designated as “Ozone Season” in North Central Texas. The intensity of sunlight necessary for photochemically initiated reactions is highest during this time period (NCTCOG, 2016a).

Table 3-11. Air Pollution Concentrations Required to Exceed the NAAQS

Pollutant	Averaging Period	Standard	Primary NAAQS*	Secondary NAAQS**
Ozone (O3)	8-hour	The average of the annual fourth highest daily eight-hour maximum over a three-year period is not to be at or above this level.	0.070 ppm	0.070 ppm
Carbon Monoxide (CO)	1-hour	Not to be exceeded more than once per calendar year.	35 ppm	--
	8-hour	Not to be exceeded more than once per year calendar year.	9 ppm	--
Sulfur Dioxide (SO_2)	1-hour	Three year average of the annual 99th percentile of the daily maximum 1-hour average is not to be at or above this level.	75 ppb	--
	3-hour	Not to be at or above this level more than once per calendar year.	--	0.05 ppm
Nitrogen Dioxide (NO_2)	1-hour	Three year average of the annual 98th percentile of the daily maximum 1-hour average is not to be at or above this level.	100 ppb	--
	Annual	Not to be at or above this level.	53 ppb	53 ppb
Particulate Pollution (10 microns or less) (PM_{10})	24-hour	Not to be at or above this level on more than three days over three years with daily sampling.	150 µg/m^3	150 µg/m^3
Particulate Pollution (2.5 microns or less) ($PM_{2.5}$)	24-hour	The three-year average of the annual 98th percentile for each population-oriented monitor within an area is not to be at or above this level.	35 µg/m^3	36 µg/m^3
	Annual	The three-year average of annual arithmetic mean concentrations from single or multiple community-oriented monitors is not to be at or above this level.	12 µg/m^3	15.0 µg/m^3
Lead (Pb)	3-Month	Three-month rolling average not to be at or above this level.	0.15 µg/m^3	0.15 µg/m^3

Source: USEPA, April 2017 (USEPA, 2017)

*Primary NAAQS: the levels of air quality that the EPA judges necessary with an adequate margin of safety to provide public health protection.

**Secondary NAAQS: the levels of air quality that the EPA judges necessary to protect the public welfare from any known or anticipated adverse effects including protection against decreased visibility and damage to animals, crops, vegetation and buildings.

Notes: ppb = parts per billion, ppm = parts per million, µg/m^3 = microgram per cubic meter

The modeling procedures for ozone require long-term meteorological data, detailed area-wide emission rates and activity levels for all emission sources (on-road, non-road, point and area). Accordingly, concentrations of ozone are modeled by the regional air quality planning agency for the State Implementation Plan (SIP). The TCEQ monitors airborne pollutants in the Dallas-Fort Worth region on a continuous basis. Ozone is monitored 24 hours a day. Two Continuous Air Monitoring Stations (CAMs) are the closest active monitoring stations to the Study Area. Recorded measurements have shown that ozone has been decreasing from 2005 to 2017.

3.12 Noise

Legal Requirements and Regulatory Setting

Noise is typically defined as unwanted or undesirable sound, where sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human subjective response are (1) intensity or

level, (2) frequency content and (3) variation with time. The first parameter is determined by how greatly the sound pressure fluctuates above and below the atmospheric pressure, and is expressed on a compressed scale in units of decibels. By using this scale, the range of normally encountered sound can be expressed by values between 0 and 120 decibels. On a relative basis, a 3-decibel change in sound level generally represents a barely-noticeable change outside the laboratory, whereas a 10-decibel change in sound level would typically be perceived as a doubling (or halving) in the loudness of a sound.

The frequency content of noise is related to the tone or pitch of the sound, and is expressed based on the rate of the air pressure fluctuation in terms of cycles per second (called Hertz and abbreviated as Hz). The human ear can detect a wide range of frequencies from about 20 Hz to 17,000 Hz. However, because the sensitivity of human hearing varies with frequency, the "A-weighting" system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with human subjective response. Sound levels measured using this weighting system are called "A-weighted" sound levels, and are expressed in decibel notation as "dBA." The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental noise.

Because environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number, called the "equivalent" sound level (Leq). Leq can be thought of as the steady sound level that represents the same sound energy as the varying sound levels over a specified period (typically 1 hour or 24 hours). Often the Leq values over a 24-hour period are used to calculate cumulative noise exposure in terms of the Day-Night Sound Level (Ldn). Ldn is the A-weighed Leq for a 24-hour period with an added 10-decibel penalty imposed on noise that occurs during the nighttime hours (between 10 p.m. and 7 a.m.).

Methodology

This section describes the methodology used to characterize the existing noise conditions along the Preferred Alternative, and provides background information on airborne noise issues related to the transit project. Noise impact assessment and mitigation development have been carried out in accordance with the guidelines specified in the US Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment* guidance manual (FTA, 2006) and in the DART policy document *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects* (August 2017).

Based on the screening distances provided in Chapter 4 of the FTA guidance manual, the noise Study Area for the Preferred Alternative was typically within 375-750 feet of the alignment, except for areas near grade crossings where land uses within 1,200 feet from the alignment were considered. This extended distance takes into account the train horn sounding required at these crossings.

Existing noise sources along the Preferred Alternative include roadway traffic, aircraft overflights and local community activities as well as occasional freight train operations. The existing ambient sound levels vary by location, depending on the proximity to major roads and other noise sources, and are generally typical of a suburban environment. Existing ambient noise levels were originally characterized through direct measurements at selected sites in the Study Area during December 2010 for a previous Cotton Belt study. Supplementary noise measurements were conducted during March and April of 2017 to update the existing noise conditions. The *Noise and Vibration Technical Report* is in **Appendix B**.

FTA categorizes noise sensitive land uses into three groups as shown in **Table 3-12**.

Table 3-12. Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor Leq(h) [a]	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor Ldn	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor Leq(h) [a]	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds and recreational facilities can also be considered in this category. Certain historical sites and parks are also included.

Source: FTA, 2006
[a]Leq for the noisiest hour of transit-related activity during hours of noise sensitivity

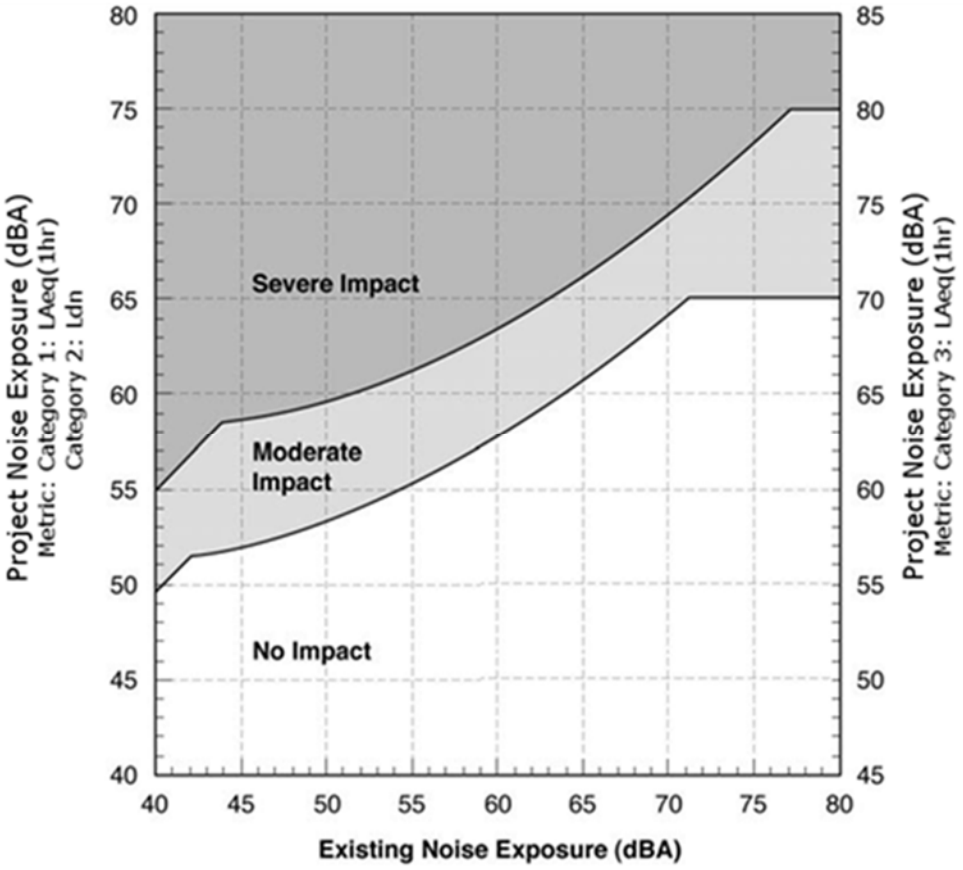
The FTA noise impact criteria include three levels of impact, as shown on **Figure 3-24**. The three levels of impact include:

- **No Impact:** In this range, the project is considered to have no impact since on average, the introduction of the project would result in an insignificant increase in the number of people highly annoyed by the new project noise.
- **Moderate Impact:** At the moderate impact range, changes in the cumulative noise level are noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation, such as the existing noise level, predicted level of increase over existing noise levels and the types and numbers of noise-sensitive land uses affected.
- **Severe Impact:** At the severe impact range, a significant percentage of people would be highly annoyed by the new project noise. Severe noise impacts are “significant” under NEPA, and should be avoided if possible. Noise mitigation should be applied for severe impacts where feasible.

Affected Environment

Land use in the Study Area includes a combination of residential, institutional, commercial and industrial zones. Noise-sensitive and vibration-sensitive land uses in the Study Area were identified based on alignment drawings, aerial photographs, visual surveys, and land use information. Sensitive receptors located along the Preferred Alternative include single-family and multi-family residences, hotels, schools, places of worship, museums, medical facilities and parks. Summary descriptions of noise and vibration sensitive land use along sections of the project alignment are provided below.

Figure 3-24 FTA Noise Impact Criteria



Source: FTA, 2006

DFW Airport to Freeport Parkway

Land use along this western-most section of the Preferred Alternative is airport-related and industrial, and there are no noise-sensitive receptors. The only potentially vibration-sensitive receptor is the ASR-9 radar tower at the north end of DFW Airport (previously assessed for the TEXRail Project).

Coppell

The land use along the Preferred Alternative in Coppell is primarily residential, with single-family residential neighborhoods located between Freeport Parkway and MacArthur Boulevard and multi-family apartment complexes located east of MacArthur Boulevard. Other sensitive receptors along this section of the Preferred Alternative include the Pinkerton Elementary School, the Riverside Church of Christ and the Valley Ranch Baptist Church.

Carrollton

The area adjacent to the Preferred Alternative between the PGBT and IH-35E in Carrollton is primarily commercial and industrial; the only sensitive receptor in this area is the Semihan Church located along West Belt Line Road. Between IH 35E and North Josey Lane, the Preferred Alternative passes through downtown Carrollton with single-family residential land use as well as multi-family residential land use. This includes the Union at Carrollton Square apartments south of the Preferred Alternative (currently undergoing their third expansion), and the new construction along Broadway for the Switchyard Apartments, just north of the Cotton Belt, and a large apartment complex just west of North Josey Lane. Other sensitive receptors in this area include

the Miracle Tabernacle Pentecostal Church, the Korean Church of Dallas, and the W. Perry Homestead Museum. Between Josey Lane and John Connally Drive, the land use along the Preferred Alternative is primarily industrial, and sensitive receptors are limited to the Polk Middle School and the Islamic Association of Carrollton along Kelly Boulevard. At the eastern end of Carrollton, the land use along the alignment between John Connally Drive and Surveyor Boulevard includes single-family residential neighborhoods on the north side and industrial complexes on the south side.

Addison

The land use along the Preferred Alternative in Addison is primarily commercial. Sensitive receptors include several hotels as well as Addison Church and Addison Circle Park.

North Dallas

The land use along the Preferred Alternative in North Dallas includes heavy concentrations of single-family residences. There is also a large residential complex (Highland Springs Retirement Community) and new residential development located east of Coit Road. Other sensitive receptors in North Dallas include Preston Green Park, The Fairhill School, Frankford Middle School, Ivy Montessori Academy, Congregation Ohev Shalom, Spring Valley Bible Church, and the New Life in Jesus Christ Church.

Richardson

Land use along the Preferred Alternative in Richardson includes a mixture of commercial and residential. The residential land use is primarily multi-family, except for one single-family neighborhood adjacent to Point North Park.

Plano

The land use along the Preferred Alternative in Plano is primarily commercial and industrial, with single-family and multi-family areas. In addition to residences, other sensitive receptors include the Small Miracles Academy, the Darul Uloom School, the River of Glory Church, the Good Faith Baptist Church, the Sehion Mar Thoma Church, and the Collinwood Nursing and Rehabilitation Center.

Existing Noise Conditions

The noise measurement programs consisted of both long-term (24-hour) and short-term (1-hour) monitoring of the A-weighted sound level. All the measurement sites were located in noise-sensitive areas, and were selected to represent a range of existing noise conditions along the Preferred Alternative. For prior planning efforts in 2010, long-term noise measurements were made at 19 sites (designated as LT-1 through LT-19) and short-term noise measurements were made at five sites (designated ST-1 through ST-5). For the FEIS, updated noise measurements were conducted at or near the original sites and the original site designations have been retained. In addition, supplementary long-term noise measurements were made at an additional 10 sites (designated as LT-A through LT-J) and supplementary short-term noise measurements were made at an additional eight sites (designated as ST-A through ST-H). After circulation of the DEIS, twelve new noise measurements were collected. Ten (EMF-1 through EMF-10) were along the Madill Subdivision and TRE alignment to the selected EMF location. Two measurements (ST-G and ST-H) were collected in downtown Carrollton to address new developments. In addition, site LT-4 in Coppell was re-measured in June 2018 due to equipment malfunction during the initial 2017 measurement. The 2017 and 2018 noise measurement locations are shown in **Figure 3-25**.

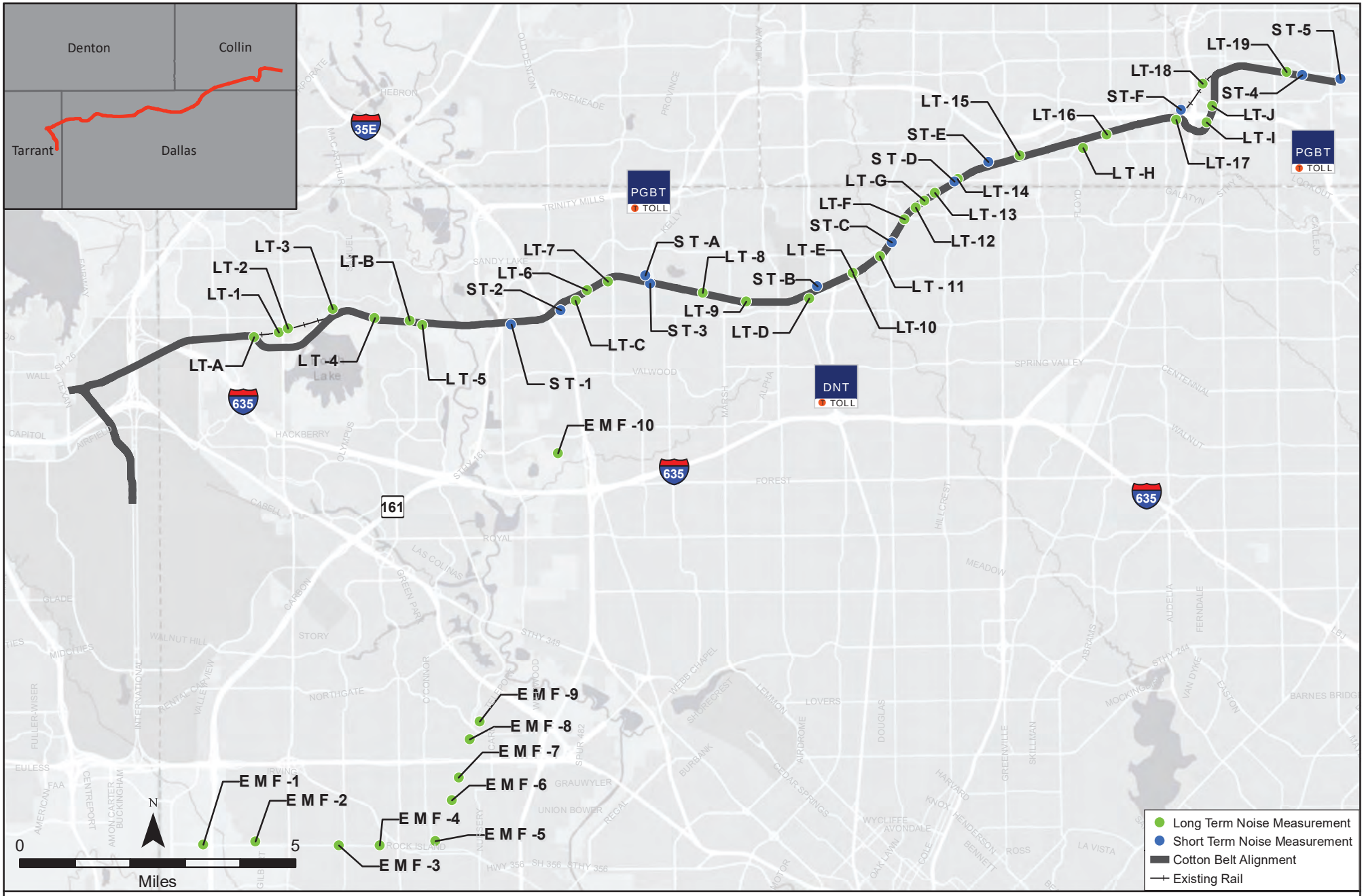


Figure 3-25
Noise Measurement Site Locations
Data Source: Cross-Spectrum Acoustics, 2017

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The results of the existing ambient noise measurements are summarized in **Table 3-13** for the long-term sites and in **Table 3-14** for the short-term sites. In each case, results are given for the 2017 and 2018 measurements as well as for the 2010 measurements for comparison, where applicable. In addition, Ldn values for the 2017 and 2018 long-term measurements in **Table 3-13** are provided both with and without freight train noise. Because freight train operations are infrequent and do not occur on a daily basis along the Preferred Alternative, the results without freight train noise will provide a lower noise exposure level. **Section 2.3.1** and **Section 5.3** provide information on freight operations. Overall, the results in **Table 3-13** and **Table 3-14** serve as the basis for determining the existing noise conditions at all noise-sensitive receptors along the Preferred Alternative.

3.13 Vibration

Legal Requirements and Regulatory Setting

FTA impact criteria for ground-borne vibration and ground-borne noise from transit operations relate to maximum vibration and ground-borne noise levels associated with a single event, such as the passing of a light rail vehicle or train. This approach is unlike the previously discussed criteria for air-borne noise levels (**Section 3.12**), which are associated with cumulative air-borne noise levels over a one-hour or 24-hour period.

Methodology

The operational vibration impact criteria used for the Preferred Alternative are based on the information contained in Chapter 8 of the FTA noise and vibration guidance manual. The criteria for a general vibration assessment are based on land use and train frequency, as shown in **Table 3-15**. Buildings, such as concert halls, recording studios and theaters, can have a higher sensitivity to vibration (or ground-borne noise) but do not fit into the three categories listed in **Table 3-15**. Because of the sensitivity of these buildings, special attention is paid to these buildings during the environmental assessment of a project. **Table 3-16** shows the FTA criteria for acceptable levels of vibration for several types of special buildings.

Vibration-sensitive land use along the project alignment is essentially the same as the noise-sensitive land use, except for parks and other outdoor sites which are not considered vibration-sensitive. Existing vibration sources along the project alignment include auto, bus and truck traffic on local streets. However, vibrations from street traffic are not generally perceptible at receivers in the Study Area unless streets have significant bumps, potholes, or other uneven surfaces. The only significant sources of existing ground vibration along the Preferred Alternative are infrequent freight train movements over limited sections of the corridor.

Section 2.3.1 and **Section 5.3** provide information on freight operations. Furthermore, the FTA vibration impact criteria are not ambient-based; that is, future project vibrations are not compared with existing vibrations to assess impact. Therefore, the vibration measurements for the Preferred Alternative focused on characterizing the soil conditions along the alignment rather than on characterizing the existing vibration levels. The *Noise and Vibration Technical Report* is in **Appendix B**.

The objective of the vibration measurements for the Preferred Alternative was to obtain data on ground-borne vibration propagation through the soil in the Study Area that could be used to project future vibration from commuter rail operations using the FTA procedures for a detailed vibration analysis (FTA, 2006). The tests were conducted by impacting the ground with an instrumented weight and measuring the vibration response of the soil at various distances. The results of the vibration propagation tests are combined with previously documented input force data for the proposed DMU vehicles to project vibration levels from DMU operations at locations along the alignment.

Table 3-13. Summary of Existing Ambient Long-Term Noise Measurement Results

Site No.	Measurement Location Description	Start of Measurement		Meas. Duration (hrs.)	Noise Exposure Ldn (dBA)		
		Date	Time		2017/2018 (with train noise)	2017/2018 (w/o train noise)	2010[1]
LT-1	800 Bullock Street – Coppell (SF Res.)	4/3/2017	10:00	24	66	59	60
LT-2	145 Glendale Drive – Coppell (SF Res.)	4/3/2017	11:00	24	57	56	56
LT-3	525 Carter Drive – Coppell (SF Res.)	4/3/2017	12:00	24	62	56	61
LT-4	857 Crestview Drive – Coppell (SF Res.)	6/20/2018	13:00	24	60	60	65
LT-5	1717 E Belt Line Road – Coppell (Apartments)	3/30/2017	11:00	24	67	67	66
LT-6	1608 Cecil Drive – Carrollton (SF Res.)	3/29/2017	15:00	24	60	57	62
LT-7	1853 N Josey Lane – Carrollton (Apartments)	3/29/2017	16:00	24	60	60	59
LT-8	2610 Lakehill Lane – Carrollton (MF Res.)	3/28/2017	14:00	24	59	59	57
LT-9	3232 San Sebastian Drive – Carrollton (SF Res.)	3/28/2017	14:00	24	57	57	55
LT-10	5665 Arapaho Road – Addison (Apartments)	3/27/2017	10:00	24	56	56	54
LT-11	16144 Chalfont Circle – Dallas (SF Res.)	3/28/2017	18:00	24	59	59	57
LT-12	16957 Davenport Court – Dallas (SF Res.)	4/3/2017	13:00	24	55	55	52
LT-13	6802 Duffield Drive – Dallas (SF Res.)	3/27/2017	10:00	24	57	57	57
LT-14	6906 Rocky Top Circle – Dallas (SF Res.)	3/27/2017	10:00	24	52	52	55
LT-15	8000 Frankford Road – Dallas (MF Res.)	3/27/2017	12:00	24	55	55	54
LT-16	800 W Renner Road – Richardson (Apartments)	3/30/2017	15:00	24	61	60	55
LT-17	3560 Alma Road – Richardson (Apts.)	3/30/2017	15:00	24	69	69	68
LT-18	1005 G Avenue – Plano (SF Residence)	3/28/2017	12:00	24	65	63	65
LT-19	2644 Ezekial Way – Plano (SF Res.)	3/28/2017	11:00	24	59	58	63
LT-A	400 Southwestern Blvd. – Coppell (SF Residence)	4/4/2017	13:00	24	62	62	--
LT-B	1315 Riverchase Drive – Coppell (Apts.)	4/4/2017	12:00	24	61	61	--
LT-C	1301 Clint Street – Carrollton (SF Res.)	3/30/2017	10:00	24	56	56	--
LT-D	Hawthorn Suites – Addison (Hotel)	3/29/2017	12:00	24	61	61	--
LT-E	5398 Bend Tree Forest Dr. – Dallas (MF Residence)	3/27/2017	11:00	24	55	55	--
LT-F	6341 Southpoint Drive – Dallas (SF Residence)	3/27/2017	10:00	24	52	52	--
LT-G	7010 Spanky Branch Court – Dallas (SF Residence)	3/27/2017	19:00	24	52	52	--
LT-H	1111 Timberview Lane – Richardson (SF Residence)	3/28/2017	10:00	24	58	58	--
LT-I	110 W CityLine Drive-Richardson (Apts.)	9/26/2017	10:00	24	65	65	--
LT-J	680 Executive Drive – Plano (Apts.)	9/25/2017	15:00	24	70	70	--
EMF-1	3560 Hardrock Road – Irving (SF Res.)	3/6/2018	16:00	24	72[3]	--	--

Table 3-13. Summary of Existing Ambient Long-Term Noise Measurement Results (cont'd)

Site No.	Measurement Location Description	Start of Measurement		Meas. Duration (hrs.)	Noise Exposure Ldn (dBA)		
		Date	Time		2017/2018 (with train noise)	2017/2018 (w/o train noise)	2010[1]
EMF-2	4110 Jackson Street - Irving (SF Res.)	3/7/2018	15:00	24	64	--	--
EMF-3	100 Andrea Street – Irving (SF Res.)	3/5/2018	15:00	24	73[4]	--	--
EMF-4	103 Nichols Street – Irving (SF Res.)	3/5/2018	15:00	24	74[4]	--	--
EMF-5	303 Ada Street – Irving (SF Res.)	3/5/2018	16:00	24	60	--	--
EMF-6	320 Familia Court – Irving (SF Res.)	3/6/2018	17:00	24	66	--	--
EMF-7	1804 Carolyn Street – Irving (SF Res.)	3/5/2018	17:00	24	64	--	--
EMF-8	618 Lakeside Drive – Irving (SF Res.)	3/5/2018	18:00	24	64	--	--
EMF-9	University Park – Irving (SF Res.)	3/6/2018	18:00	24	57	--	--
EMF-10	The Brickyard – Farmers Branch (Apartments)	3/6/2018	19:00	24	63	--	--

[1] Measurement results obtained in December 2010 at the same or nearby location for a previous study.

[2] Data at this site were not recorded in 2017 due to a noise monitor programming error. New measurements were recorded in June 2018.

[3] The total Ldn represents the existing noise exposure at the residence closest to the TRE maintenance facility.

[4] The total existing noise exposure is dominated by traffic on Rock Island Road

Source: HMMH., 2013 and Cross-Spectrum Acoustics Inc., 2017, 2018

Table 3-14. Summary of Existing Ambient Short-Term Noise Measurement Results

Site No.	Measurement Location Description	Start of Measurement		Meas. Duration (hrs.)	Noise Exposure Leq (dBA)	
		Date	Time		2017	2010[1]
ST-1	1615 W Belt Line Road – Carrollton (Church)	3/30/2017	11:01	1	66	64
ST-2	1107 Jackson Street – Carrollton (Church)	3/31/2017	09:42	1	61	61
ST-3	1901 Kelly Blvd. – Carrollton (Islamic Assoc.)	3/29/2017	16:00	1	56	55
ST-4	3100 S Rigsbee Drive – Plano (Nursing Home)	3/27/2017	14:46	1	55	52
ST-5	3760 14th Street – Plano (Church)	3/29/2017	11:13	1	54	53
ST-A	2001 Kelly Blvd. – Carrollton (School)	4/4/2017	09:15	1	54	--
ST-B	4970 Addison Circle – Addison (Park)	3/28/2017	14:09	1	60	--
ST-C	16150 Preston Road – Dallas (School)	3/28/2017	16:04	1	56	--
ST-D	6950 McCallum Blvd. – Dallas (School)	3/27/2017	16:55	1	56	--
ST-E	7706 Osage Plaza Parkway – Dallas (School)	3/29/2017	09:17	1	61	--
ST-F	501 Accent Drive – Plano (Church)	3/27/2017	13:05	1	60	--
ST-G	1199 N Broadway – Carrollton (Switchyard Apts.)	6/20/2018	15:50	1	68	--
ST-H	Pioneer Park – Carrollton (Park and Adjacent Apts.)	6/21/2018	13:56	1	64	--

[1]Measurement results obtained in December 2010 at the same or nearby location for a previous study.

Source: HMMH., 2013 and Cross-Spectrum Acoustics Inc., 2017, 2018

Table 3-15. Ground-Borne Vibration and Noise Impact Criteria for General Assessment

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch /sec)			Ground-Borne Noise Impact Levels (dBA re 20 micro Pascals)		
	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations.	65[d]	65[d]	65[d]	N/A[e]	N/A[e]	N/A[e]
Category 2: Residences and buildings where people normally sleep.	72	75	80	35	38	43
Category 3: Institutional land uses with primarily daytime use.	75	78	83	40	43	48

Source: FTA, 2006

a. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

b. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

c. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

d. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

e. Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

Table 3-16. Ground-Borne Vibration and Noise Criteria for Special Buildings

Type of Building or Room	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch /sec)		Ground-Borne Noise Impact Levels (dBA re 20 micro Pascals)	
	Frequent Events[a]	Occasional or Infrequent Events[b]	Frequent Events[a]	Occasional or Infrequent Events[b]
Concert Halls	65	65	25	25
TV Studios	65	65	25	25
Recording Studios	65	65	25	25
Auditoriums	72	80	30	38
Theaters	72	80	35	43

Source: FTA, 2006

a. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

b. "Occasional or Infrequent Events" are defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

If the building will rarely be occupied when the trains are operating, there is no need to consider impact. As an example, consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 pm, it should be rare that the trains interfere with the use of the hall.

Affected Environment

Twelve representative vibration propagation test sites were selected for the 2017 measurements. These included nine sites at or near locations where testing was conducted in 2010 (designated as VP-2 through VP-10) as well as three new sites (designated as VP-A through VP-C) (see **Figure 3-26**). The vibration measurements for the Preferred Alternative focused on characterizing the soil conditions along the alignment rather than on characterizing the existing vibration levels. Projected ground-borne vibration impacts are summarized in **Section 4.15**.

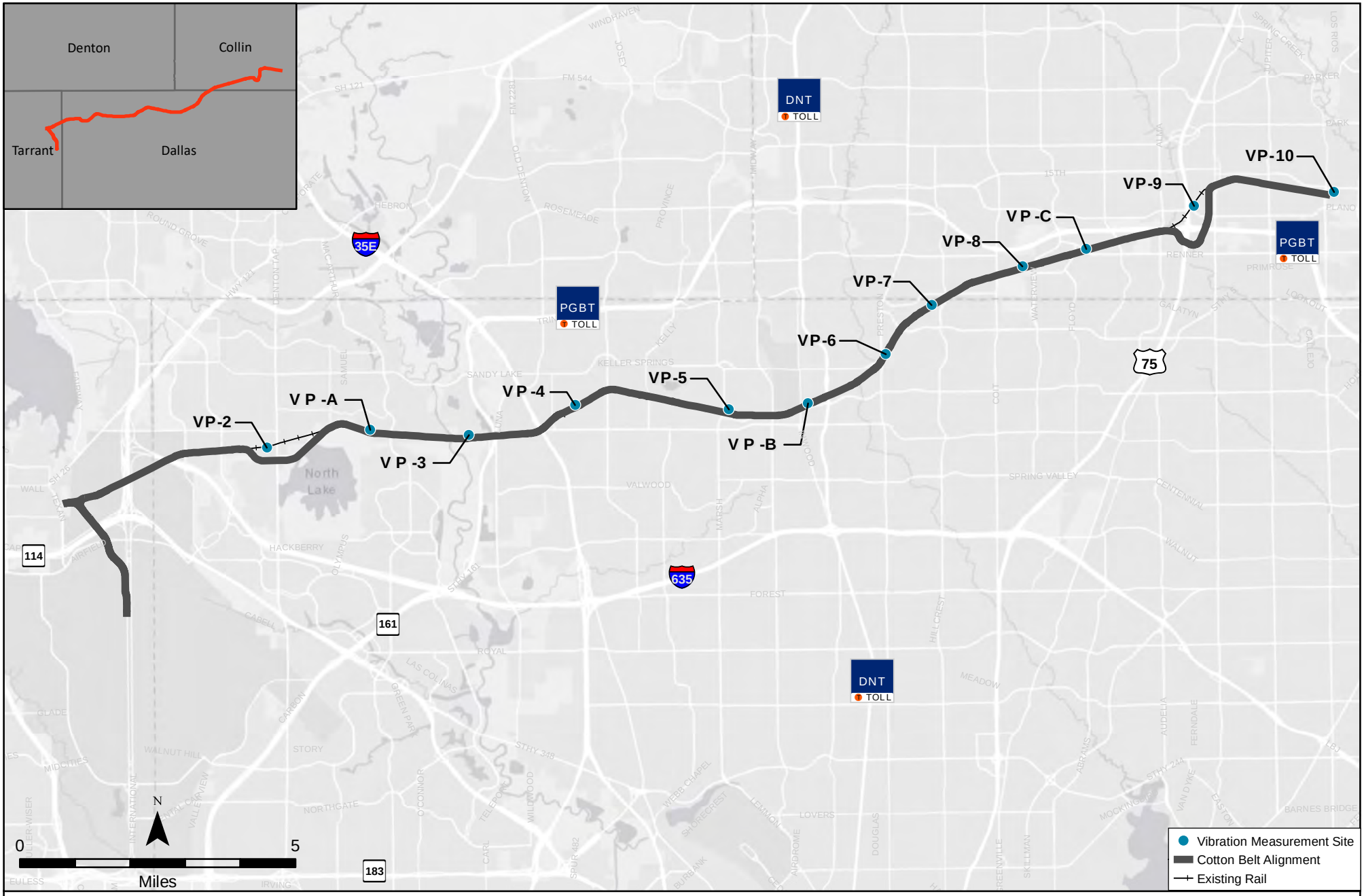

Figure 3-26
Vibration Measurement Site Locations

Data Source: Cross-Spectrum Acoustics, 2017

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3.14 Hazardous and Regulated Materials

Legal Requirements and Regulatory Setting

A hazardous material is any substance or mixture of substances capable of having adverse effects on human health and safety or the environment. Hazardous material issues are considered throughout project development to address compliance with NEPA and FTA regulations and guidelines. The primary federal laws regulating hazardous waste and materials are the Resource Conservation and Recovery Act of 1976 (RCRA) (42 USC §6901 et seq.) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) (42 USC §9601 et seq.). The National Priority List (NPL) is a listing of the most polluted sites in the nation that are eligible for cleanup funding (Superfund) under CERCLA. The EPA is the primary agency responsible for administering RCRA and CERCLA. Other regulatory acts address contaminants and hazardous materials including the Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), CAA, and CWA. Federal, state, and local databases have been developed to keep track of sites which handle, generate, transport, store, or dispose of hazardous and/or regulated materials, in accordance with applicable environmental laws.

Methodology

This section analyzes potential contaminant sources that may be present within the Study Area. It assesses the potential of encountering hazardous waste and impacted soil and/or groundwater during project construction activities.

The Study Area was evaluated by reviewing available regulatory agency databases and topographic maps, and by performing a limited site reconnaissance in May 2017.

The regulatory databases were searched for sites within the American Society for Testing Materials (ASTM)-specified search distances (as listed in the ASTM E 1527-13 guidance) from the Project centerline (EDR, 2017). Also included in the search were sites that have sustained a known release of contaminants to soil or groundwater. These documents and site visits were intended to serve as an overall environmental screening method for the Preferred Alternative and to identify sites with potential hazardous waste issues that are known to regulatory authorities. This environmental screening does not consider historical sites or sites with no recorded regulatory history (but with potential issues). Therefore, it does not constitute an ASTM-conforming Phase I Environmental Site Assessment (ESA). In addition, sites may be missed or not considered if they existed prior to modern environmental recordkeeping (generally pre-1990).

A potential hazardous waste site that was not listed in the database is Mercer Yard. No on-site reconnaissance was conducted of the yard since DART owns the property.

Affected Environment

The database identified 674 sites that were located within the Study Area. The sites were narrowed down based on the nature of each database listing, leaving over 150 potential risk sites. The site reconnaissance was conducted May 10-12, 2017. The proximity of the site to the Preferred Alternative, surface topography, and the information provided in the EDR database search helped to determine risk sites. Low, moderate, high, and indeterminate risks sites in the Study Area are shown in the *Hazardous Materials Existing Conditions Technical Memorandum* in **Appendix B**.

Of these sites, eight sites are ranked as high risk, 19 as moderate risk, and 16 as indeterminate risks. The remainder of the sites were ranked as having low risk to impact the Preferred Alternative. As stated, this risk classification is based on the nature of the site contamination, proximity to the Preferred Alternative, and groundwater gradient. It is important to note, that this risk ranking would be applicable to the Preferred Alternativeonly if the ground is disturbed during

construction activities. If subsurface soils will not be disturbed during construction, then these sites would not pose a risk to the Preferred Alternative.

The White Rock Creek Bridge was tested in June 2018 for lead and asbestos containing materials. The bridge tested positive for both lead-based paints and asbestos. The asbestos-containing materials consist of tie plates and pads and a tar-like material located on the both wooden railroad ties and the steel trusses making up the bridge.

3.15 Biological and Natural Resources

Legal Requirements and Regulatory Setting

The Preferred Alternative crosses the communities of Grapevine, Coppell, Dallas, Carrollton, Addison, Plano, and Richardson. These municipalities have tree protection ordinances in place. The ordinances provide protection against unnecessary removal of trees and may require replacement. Existing DART-owned right-of-way is exempt from the City of Dallas tree ordinance; however, the ordinance would apply to new right-of-way and station areas.

Federally-listed species and their habitats are protected under the Endangered Species Act of 1973 (16 USC § 1531 et seq.) as amended. The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §668 et seq.) prohibits harm to all migratory birds, their nests, eggs, and nestlings. The Bald and Golden Eagle Protection Act further provides protection for Bald Eagles and Golden Eagles.

State law prohibits direct harm for state-listed species, but does not currently provide for habitat protection.

Methodology

The biological resource Study Area used for the assessment of impacts generally includes the 0.5-mile Study Area. However, a much larger search radius of 10 miles was used in the examination of threatened or endangered species occurrence data. Existing literature and mapping were reviewed for the larger Study Area to identify potential vegetative communities, potential wildlife assemblages, and threatened or endangered species of potential occurrence. Maps examined include aerial imagery for the Study Area; USGS topographic maps for the Garland, Grapevine, Carrolton, Plano, and Addison, Texas quadrangles (USGS, 1973; USGS, 1981); GIS shapefiles obtained from the TPWD's Ecological Systems Classification and Mapping Project (EMST); and the TCEQ's *Ecoregions of Texas (2007).*

This assessment was built upon detailed field investigations conducted by project biologists in 2011 and 2013 for the Preferred Alternative, and additional field reconnaissance in May 2017 to verify vegetative communities, wildlife habitat, migratory bird use, and potential habitat for rare, threatened and endangered species within the Study Area.

Affected Environment

The Study Area occurs within the Northern Blackland Prairie Ecoregion (Griffith et al, 2007). This ecoregion includes rolling to nearly level plains which stretch from Sherman in the north to San Antonio in the south. Historically this area was distinguished by a vast expanse of tallgrass prairie vegetation. This vegetation was supported by frequent fire events which suppressed invading woody species and stimulated the growth of grass and non-woody flowering plants. In addition, the grazing of bison within this area resulted in the production of organic matter and the spreading of seeds within the disturbed soil of the area, helping to sustain it. The majority of the Northern Blackland Prairie has since been converted to agricultural or urban uses.

The Study Area is also located within the Texan Biotic Province (Blair, 1950). The Texan Biotic Province is a region which trends from north to south, extending from the Red River to the Gulf Coast. This province includes sandy soils which support the growth of post oak-blackjack oak-hickory savannahs scattered among tallgrass prairies (Werler and Dixon, 2000). It also contains numerous wetland areas including freshwater marshes, peat bogs, and major river systems.

Vegetation

According to *The Vegetation Types of Texas (1984)*, three vegetation types are mapped within the Study Area: “Urban”, “Crops”, and “Other Native and/or Introduced Grasses” (McMahan et al., 1984). Urban vegetation occurs within approximately 36 percent of the Study Area, and generally consists of maintained grasses in yards and transportation right-of-way, along with various ornamental plantings. Crops occur within approximately 49 percent of the Study Area, and include cultivated cover crops or row crops used for the purpose of producing food and/or fiber for either man or domestic animals. This type also includes grassland associated with crop rotations. The remaining areas within the Study Area, or approximately 15 percent, include Other Native and/or Introduced Grasses which consists of mixed native or introduced grasses and non-woody flowering plants on grassland sites or mixed herbaceous communities resulting from the clearing of woody vegetation.

Within the Study Area, vegetation found in association with residential areas and commercial developments is generally comprised of turf grasses, such as bermudagrass or St. Augustine grass, and ornamental plantings which can include a variety of types of trees, shrubs, or herbaceous plants.

Undeveloped land, including parks and stream corridors, may include vegetation types such as grasslands, savannahs, or woodlands. Stream corridors often have riparian woodland vegetation growing along their banks. Grasslands may include a variety of native and nonnative grasses and non-woody flowering plants. Savannahs have grassland vegetation along with invading woody shrubs and trees. Woodlands in the Study Area are likely to be dominated by a variety of deciduous and evergreen tree species with an understory consisting of grasses, non-woody flowering plants, and small shrubs or vines.

A more detailed vegetation analysis was also performed within the Study Area using EMST which were used to estimate vegetation areas and unique habitat types within the Study Area. The EMST data set provides an updated ecological system classification for Texas which includes more land cover classes than were previously identified for the state (TPWD, 2016).

Maps and a detailed description of these natural regions and vegetation types are available in the *Biological Resources Existing Conditions Technical Memorandum* in **Appendix B**.

Wildlife

Approximately 49 species of mammals, 57 species of reptiles, and 23 species of amphibians occur in the Texan Biotic Province (Blair, 1950). In addition, approximately 471 avian species, including both residents and migrants, have been reported in the Oaks and Prairies and Osage Plains of Texas (Freeman, 2003), an area that is roughly analogous to the Texan Biotic Province.

The Study Area is mostly urban and suburban in nature. Most wildlife species inhabiting the Study Area would be anticipated to be those which are generally associated with these types of areas.

No designated critical habitat or preferred habitat for any federally-listed species was identified within or near the Study Area. Fourteen state-listed threatened species could occur in the Study Area, including the American peregrine falcon (*Falco peregrinus anatum*), peregrine falcon (*Falco peregrinus*), piping plover (*Charadrius melodus*), alligator snapping turtle (*Macrochelys temminckii*), Texas horned lizard (*Phrynosoma cornutum*), timber rattlesnake (*Crotalus horridus*), bald eagle (*Haliaeetus leucocephalus*), white-faced Ibis (*Plegadis chihi*), wood stork (*Mycteria Americana*), shovelnose sturgeon (*Scaphirhynchus platorynchus*), Louisiana pigtoe (*Pleurobema riddellii*), sandbank pocketbook (*Lampsilis satura*), Texas pigtoe (*Fusconaia askewi*) and Texas heelsplitter (*Potamilus amphichaenus*). The Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter all have recorded TXNDD elements of occurrence within 0.7 – 7 miles from the project area. Twenty state-listed species of concern could occur within the Study Area counties, but only one of these, the Texas garter snake (*Thamnophis sirtalis annectens*) has a TXNDD element of occurrence record located approximately 7 miles north of the Study Area.

Maps and a detailed description of wildlife are available in the *Biological Resources Existing Conditions Technical Memorandum* in **Appendix B**.

4. Environmental Consequences and Mitigation

4.1 Introduction

This chapter describes the potential environmental impacts, both positive and negative, that will occur with the Preferred Alternative. Information for the No Build Alternative is included for comparison purposes. Unless otherwise stated for a given environmental category, the No-Build Alternative would have no impact. Detailed data and information are provided in technical reports and memoranda, as referenced in this chapter. Identified mitigation measures for the Preferred Alternative are also included in each section.

Each section in this chapter is organized as follows:

- Impact Evaluation: a summary of the impact findings for each of the resource areas as a result of the implementation of the Preferred Alterative; and,
- Mitigation Measures: the measures that will be implemented to avoid, minimize, or mitigate impacts as appropriate for the Preferred Alternative.

Chapter 5 describes potential transportation impacts, while **Chapter 6** analyzes potential impacts of the Preferred Alternative related to FAA environmental impact assessment guidance.

The Preferred Alternative's effects on the existing social, environmental, economic, and transportation environment in the Study Area are assessed in this FEIS. The mitigation measures and other project features that avoid or reduce adverse impacts have been incorporated into the Preferred Alternative and are described throughout this FEIS. Attachment A of the ROD provides a summary of these mitigation measures.

FTA will ensure that DART designs and builds the Preferred Alternative in accordance with the mitigation measures contained in the FEIS. Upon completion of the environmental process, DART will establish a mitigation monitoring program (MMP) to ensure communication of mitigation and design commitments to the Design-Build team, and to provide a means for DART and FTA to track the progress in accomplishing the mitigation commitments. The MMP will be implemented and monitored by DART through quarterly updates of the MMP.

4.2 Land Use

4.2.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and would not have any impacts to existing land use in the Study Area. However, the No-Build Alternative is not consistent with local and regional long-range plans, which have identified regional passenger rail in the Study Area. As such, the No-Build Alternative would not facilitate the continued implementation of transit-oriented development plans along the corridor and could have potentially negative impacts relative to each city's ability to achieve those plans and shape a more sustainable development pattern in the area. This No-Build or status quo land use pattern could lead to additional traffic congestion and a decline in the desirability of this part of the region as an employment center by limiting mobility options.

Preferred Alternative

With the exception of direct impacts caused by property acquisitions and displacements, no other adverse impacts to land use are anticipated with the construction of the Preferred Alternative, as regional and local planning activities have attempted to encourage more intensified growth in the

region, especially around future transit stations. Mitigation for impacts caused by property acquisitions and displacements are addressed in **Section 4.4**.

The Preferred Alternative is not expected to increase growth or development within the larger DFW region. Instead, the Preferred Alternative could serve to redistribute future regional land use growth patterns by supporting sustainable land use development patterns around existing residential and business centers within the Study Area and would thus influence growth on a local, station area level. At a regional level, NCTCOG has an established Sustainable Development Program. This program encourages land use and transportation practices that promote economic development while efficiently using limited resources.

The Preferred Alternative could potentially be a catalyst for encouraging higher density, mixed-use development that is more transit efficient. To encourage this development, DART coordinated with corridor city planning officials to plan for future project implementation.

Along most of the corridor, cities are seeking a more walkable and pedestrian-friendly environment with denser, mixed-use development. Various cities have also begun infrastructure improvements in advance of the Preferred Alternative. Surrounding streets are being constructed or reconstructed to make them more walkable and "complete", and cities are working with developers on potential transit-oriented developments (TOD) within the station areas. If and when such development occurs depends upon the continued support and actions of the cities governing development in the Study Area and on local real estate market conditions.

Cities within the Study Area also have a variety of plans and policies aimed at promoting increased development within the Study Area as described in **Section 3.2**. These plans and policies range from Comprehensive Plans and Master Plans to specific station area plans, such as the Cypress Waters mixed-use development master plan, the UT Dallas Master Plan, and continuing development in the CityLine/Bush and 12th Street Station areas. Based on an assessment of these plans, the Preferred Alternative is consistent with the DFW Airport and cities' comprehensive plans and site-specific plans. Refer to **Section 4.20** for additional discussion on indirect land use impacts.

4.2.2 Mitigation Measures

As described above, many communities are developing station area plans along the Preferred Alternative, which encourages transitioning to land uses that are more conducive to transit. As the project design progresses, DART will continue working with both corridor cities and private developers to coordinate the project design with their land use planning efforts.

Passenger and freight movements on the Cotton Belt, TRE, and TEXRail lines will be monitored, authorized and controlled by dispatchers located at the TEXRail yard with TRE having a dedicated desk and Cotton Belt/TEXRail sharing a desk.

4.3 Socioeconomic Characteristics and Cohesion

4.3.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternativewould not be built and no impacts to socioeconomic characteristics in the Study Area would occur. Physical boundaries of neighborhoods will remain unchanged and social interactions, including school access, will not be altered. The No-Build Alternative would not provide benefits of enhanced access to residents and facilities, and could adversely impact overall job growth within the corridor.

Preferred Alternative

The evaluation of potential impacts to socioeconomic resources resulting from the Preferred Alternative is discussed in terms of potential permanent impacts. Potential effects were evaluated for community facilities, community cohesion, schools, demographics, employment and economic development.

Community Facilities

The Preferred Alternative will enhance mobility options for transport to and from community facilities both within and outside of the Study Area. These options will especially benefit students, the elderly, and economically disadvantaged individuals accessing community facilities as these are populations that are sometimes transit-dependent and may have no alternative form of transportation to access community facilities.

Existing community facilities assessed within the Study Area include community centers, places of worship, daycare centers, public service and government locations, medical facilities, and other areas of community importance. **Section 3.3** provides a list and map of 110 community facilities inventoried and observed within the Study Area. Of the 110 facilities, 82 are not adjacent to the right-of-way and are unlikely to be affected by noise impacts or access changes. The remaining 28 are adjacent to the Preferred Alternative. Many of these facilities are already adjacent to the existing rail tracks and will not be impacted by the addition of regional rail operations. **Table 4-1** lists the community facilities which are adjacent to the Preferred Alternative and describes any potential impacts anticipated for each facility. The Map ID number listed in **Table 4-1** corresponds to the number previously associated with each facility shown on **Figures 3-6** through **3-9** in **Chapter 3**. Two fire departments are adjacent to the corridor at DFW Airport and in Coppell. A detailed discussion of potential impacts associated with emergency services such as police and fire is provided in **Section 4.8**.

As shown in **Table 4-1**, the primary potential impacts to adjacent facilities is noise. Without mitigation, the major source of potential noise impacts for the Preferred Alternative is from train horns that will be sounded at the numerous at-grade crossings along the rail alignment. Thus, the primary recommended mitigation measure is the implementation of 36 quiet zones for the Preferred Alternative. Impacts due to noise are described in more detail in **Section 4.14**. The potential for vibration impacts was identified at three highly vibration-sensitive facilities located along the Preferred Alternative in Richardson, including the UT Southwestern Medical Center Clinic, the Qorvo semiconductor facility and the Texas Instruments semiconductor facility. DART will conduct detailed, site-specific vibration studies at these facilities during project design to make a final determination regarding potential vibration impacts and any required mitigation. Such studies will include ground-to-building vibration propagation testing as well as evaluations of the buildings and any sensitive equipment they may contain. Additional impacts due to vibration are described in **Section 4.15** and in the *Noise and Vibration Technical Report* in **Appendix B**.

Adjacent community facilities that could potentially be affected by the Preferred Alternative include the Fairhill School and the UT Dallas Southwestern Clinical Center. The Fairhill School and its facilities will be adjacent to the Preferred Alternative. There is an existing private access driveway and vegetation that serves as a buffer between school buildings and the railroad right-of-way, and athletic fields are located immediately to the east. The primary concerns identified by the community are access, safety, noise and vibration. Given the adjacency, there will be safety fencing installed along the Cotton Belt Corridor right-of-way to separate uses. No noise or vibration impacts were projected at this location with quiet zones.

Table 4-1. Community Facilities Adjacent to Preferred Alternative

Map ID	Facility Name	Potential Impact
1	DFW Airport/Terminal B	None; access improvements with Terminal B Station
2	Comprehensive Women's Healthcare	None
3	Surgical Group of North Texas LLP	None
4	DFW Airport Fire Station 6	None; access improvements
6	US Postal Service Administration Offices	None
7	Coppell Fire Department Station 1	None
8	Coppell Fire Department Administration	None
9	Coppell Utilities Department	None
11	W.W. Pinkerton Elementary School	Possible noise impact*
12	Roy C. Brock Center-Coppell ISD	None
17	Discover and Share Preschool	Possible noise impact*
20	Valley Ranch Baptist Church	Possible noise impact*
21	Church on the Rock International	Possible noise impact*
37	Polk Middle School	Possible noise impact*
38	Islamic Association of Carrollton	Possible noise impact*
42	Addison Airport	None
45	MGA Home Healthcare	None
52	Fairhill School	Safety
57	Ivy Montessori Academy	Possible noise impact*
65	Highland Springs Medical Center and Retirement Community	Possible noise impact*
67	UT Dallas Southwestern Clinical Center	Access improvements with UT Dallas Station; Possible noise/vibration impact*
68	UT Dallas	Access improvements with UT Dallas Station; Possible noise impact*
73	World Ministry Fellowship Church	Possible noise impact*
101	US Post Office	None
102	The Collinwood Care Center	Possible noise impact*
105	Plano ISD, Shiloh Center	None
107	Islamic Academy	Possible noise impact*
108	Noori Masjid	Possible noise impact*
109	Dai Bi Buddhist Center	Possible noise impact*
110	Sehion Mar Thoma Church	Possible noise impact*

Source: GPC6 Team, August 2017

*Quiet zones will mitigate the noise impacts at these community facilities and no additional noise mitigation is required. See **Section 4.14** for additional information.

The primary concern identified at UT Dallas Southwestern Clinical Center is a potential vibration impact. The clinic is directly adjacent to the alignment near the UT Dallas Station, which is located approximately 600 feet to the east. As situated, the increased foot and vehicular traffic will not directly affect the clinic. The station will enhance access to the clinic by providing new pedestrian and automobile crossings of the rail. The station will also provide rail and bus access to the clinic. As noted above, site-specific vibration testing will be done during final design for this facility.

Community Cohesion

Community cohesion refers to the level of social interaction experienced within and across neighborhoods. There are many registered neighborhood associations and homeowners' associations (HOAs) in the Study Area. These and similar organizations serve to bind neighbors

to one another under a common identity or set of ideals and create more meaningful social interactions.

The existing railroad corridor already serves as a physical separation in the Study Area, creating boundaries and defining neighborhoods. The addition of passenger rail in this existing corridor will not create new boundaries or divisions. In addition, the four alignment deviations will create or modify the corridor alignment (the DFW Airport Connection, the Cypress Waters Alignment, Downtown Carrollton Reconfiguration, and the CityLine/Bush Alignment). However, these alignment deviations will not cause further divisions or adverse impacts to community cohesion because they will not divide any existing neighborhoods. The Cypress Waters Alignment will result in one residential displacement; however, the residence to be displaced is disconnected from any neighborhood associations or groups. The CityLine/Bush Alignment is located along a largely undeveloped area across US Highway 75; therefore, this alignment is not anticipated to affect the community cohesion of any neighborhoods.

The cities of Grapevine, Irving, Richardson, Plano and the Town of Addison do not have subdivisions or neighborhoods that are divided by the Preferred Alternative and will not have community cohesion effects. One neighborhood association in Carrollton (Old Downtown Carrollton Association) and several neighborhood associations belonging to the North Dallas Neighborhood Alliance (NDNA) span the Preferred Alternative. Effects to community cohesion are not anticipated because these neighborhoods formed around and are already separated by the existing rail tracks. Access across the existing rail corridor will continue at designated street crossings as it does today.

In Carrollton, the Old Downtown Carrollton Association acknowledges that the downtown area will see an increase in passenger rail traffic based on the master plan for the area, and the relocation of Mercer Yard will result in a decrease in freight railroad switching activity. Positive effects could also result from increased customer traffic to this area from the Preferred Alternative due to the new passenger rail station and projected ridership.

In Dallas, only one specific neighborhood, Highlands of McKamy, traverses both sides of the Preferred Alternative. The Highlands of McKamy I, II and III neighborhood is located south of the alignment, and the Highlands of McKamy IV and V neighborhood is located to the north. These two neighborhood subdivisions are separated by Hillcrest Road and McCallum Boulevard. Thus, the Preferred Alternative will not affect community cohesion. For the broader north Dallas neighborhood area, there is potential for impacts resulting from increased rail traffic since freight service was abandoned in 2010. Potential impacts primarily relate to noise, vibration, traffic, safety, and visual which are addressed in separate sections of this document. While no freight service and pedestrian crossings of the corridor between neighborhoods could occur, the corridor remains private right-of-way and is not designated for such access. From a community and neighborhood cohesion perspective, no effects are anticipated and access between neighborhoods will continue as it does today at designated public street crossings.

The North Dallas Eruv, a designated area for the local Jewish community, is centered around McCallum Boulevard and Hillcrest Road and within an approximate 2-mile radius of several synagogues and day schools. An Eruv is a symbolic boundary delineated with markers, utility wires and cables on utility poles that encircle the area. A City of Dallas ordinance was passed to symbolically allow the Eruv, and an agreement with Oncor exists to allow markers on utility poles. The Preferred Alternative may necessitate changes in the configuration of utility poles that delineate the Eruv near Coit Road. In addition, street modifications at Hillcrest Road and McCallum Boulevard may affect utility poles and markers as well. Disruptions or modifications to the markers would invalidate Eruv until it is reestablished.

Schools

The Cotton Belt Corridor predates the development of most schools in the Study Area. As a result, many school attendance zones along the Cotton Belt Corridor use it as a logical boundary. However, thirty-seven school attendance zones are intersected by the Preferred Alternative, resulting in increased frequency of train operations or modified alignment that results in the tracks being located in proximity to a school and requiring crossing of the alignment. The primary concern is the safety of school-aged children at these crossings. **Table 4-2** lists schools which have attendance zones that traverse the Preferred Alternative. The table also includes a summary of the walkability characteristics for affected neighborhoods (those located across the alignment from their designated schools). Schools located less than 0.5-mile from the alignment have moderate impact potential due to a higher probability of children crossing the alignment. Locations of these schools are shown on **Figure 3-11** in **Section 3.3**.

For many schools along the corridor, the neighborhoods separated by the Preferred Alternative are also separated from their schools by long distances or other barriers, making non-motorized school access unlikely. Neighborhoods more than one mile from a school, separated by a major transportation facility (see **Section 5.2** for information on the roadway network), or disconnected by neighborhood design were not considered walkable.

For this reason, most schools in **Table 4-2** have a low impact potential and a low safety concern for school-aged children traveling to or from school as a result of the Preferred Alternative. If the affected school is in an area where the alignment will deviate from the existing rail corridor or is less than one mile, there is an increased potential for children to cross the tracks and a potential for a moderate impact related to safety at these crossings. Preferred Alternative fencing will restrict where crossings can occur and will not affect school access.

Conversely, one school in Coppell ISD, five schools in Carrollton/Farmers Branch ISD, two schools in Richardson ISD, and two schools in Plano ISD have students who are likely to cross the Preferred Alternative to walk or bike to school and have the potential to be affected by the Preferred Alternative. Because freight rail currently operates along the Cotton Belt in most of these school districts, school children presently crossing the tracks are already aware of trains crossing their path and the security measures at the at-grade intersections. Only the north Dallas area within Richardson ISD does not have active freight, so families and children may be unfamiliar with safety practices.

Coppell ISD

Coppell ISD has one school likely to have students crossing the Preferred Alternative and is anticipated to have a moderate impact potential related to safety at these crossings. W.W. Pinkerton Elementary is located south of the existing railroad corridor and west of Denton Tap Road. Its attendance zone extends both north and south of the existing railroad. However, the Cypress Waters Alignment shifts the Preferred Alternative approximately 600 feet south of the school. The new alignment will rejoin the existing railroad corridor west of the school. Several neighborhoods north of the school are close enough that walking or biking to school is likely to occur, especially where no major roadways create barriers to non-motorized travel between these neighborhoods and W.W. Pinkerton Elementary. Students walking along Denton Tap Road would not cross the Preferred Alternative. Students walking from one neighborhood northwest of the school would cross the Preferred Alternative line twice, once at Coppell Road and once at Southwestern Boulevard. Although the school attendance zone extends south of the Cypress Waters Alignment, no residential neighborhoods are located to the south.

No other Coppell schools that have attendance zones that cross the Preferred Alternative are likely to be affected by the Preferred Alternative because students are not likely to walk or bike to school. A future middle school site was identified off Van Zandt Drive south of the corridor, but its attendance zone has not yet been determined to assess potential effects resulting from the Preferred Alternative.

Table 4-2. School Attendance Zones Crossing the Preferred Alternative

School Name	Impact Potential	Neighborhood Distance from School
Coppell ISD		
W.W. Pinkerton Elementary	Moderate	Less than 0.5 mile from school
Barbara S. Austin Elementary	Low	Over 2 miles from school
Mockingbird Elementary	Low	Over 2 miles from school
Coppell Middle West	Low	Approximately 1.5 miles from school
Coppell Middle East	Low	Over 2 miles from school
Coppell High	Low	Approximately 1.5 mile north of alignment
New Tech High	Low	Approximately 1.5 mile north of alignment
Carrollton/Farmers Branch ISD		
Riverchase Elementary	Low	Approximately 1 to 1.5 mile from school
Carrollton Elementary	Moderate	Less than 0.5 mile from school
Country Place Elementary	Low	No residences south of the corridor; students not likely to cross tracks
Barbara Bush Middle	Moderate	Less than 1 mile from school
Ted Polk Middle	Moderate	Less than 1 mile from school
DeWitt Perry Middle	Moderate	Less than 1 mile from school
Newman Smith High	Low	Approximately 1 mile from school
Ranchview High	Low	Approximately 3 miles south of alignment
Dallas ISD		
Junkins Elementary	Low	No residences in areas across the corridor
Walker Bush Elementary	Low	No direct access and over 3 miles from school
Walker Middle	Low	Over 2 miles from school
White High	Low	Over 2 miles from school
Richardson ISD		
Brentfield Elementary	Moderate	Approximately 0.5 mile from school
Parkhill Junior High	Moderate	Approximately 0.5 mile from school
J.J. Pearce High	Low	Approximately 2 miles from school
Plano ISD		
Aldridge Elementary	Moderate	Approximately 0.5 mile from school but no at-grade crossings
Mendenhall Elementary	Low	Over 2 miles from school
Forman Elementary	Low	Over 2 miles from school
Jackson Elementary	Low	Over 2 miles from school
Frankford Middle	Moderate	Less than 1 mile from school
Wilson Middle	Low	Approximately 1 mile from school but separated by PGBT
Armstrong Middle	Low	Over 2 miles from school
Otto Middle	Low	Over 2 miles from school
Shepton High	Low	Over 2 miles from school
Vines High	Low	Over 2 miles from school
Williams High	Low	Over 2 miles from school
McMillen High	Low	Over 2 miles from school
Plano West Senior High	Low	Over 2 miles from school
Plano East Senior High	Low	Over 2 miles from school
Plano Senior High	Low	Over 2 miles from school

Source: GPC6 Team, August 2017

The Fairhill School in north Dallas was assessed in **Section 3.3** as it draws from a wider area of the region and is not bound by an attendance zone.

No Dallas ISD schools are likely to have students cross the Preferred Alternative to walk or bike to school; therefore, Dallas ISD schools will not be affected by the Preferred Alternative.

Carrollton/Farmers Branch ISD

Only one of the three elementary schools with a school zone that traverses the Preferred Alternative is likely to have students walk or bike to school and is anticipated to have moderate impact potential related to safety at these crossings. Carrollton Elementary is located just south of the Cotton Belt Project on the east side of Perry Road. The attendance zone for Carrollton Elementary largely extends to the area south of the Project, with one exception: students must cross the Preferred Alternative to walk or bike to school if they live in the Woodcrest Estates neighborhood, which is nestled to the north between the Cotton Belt and BNSF corridors. The school is located approximately 0.4 mile from the nearest entrance to the neighborhood on Cecil Drive off Perry Road North, and the only formal crossing near this neighborhood is located at Perry Road North.

All three middle schools have moderate impact potential related to safety at railroad crossings. DeWitt Perry Middle School is just across Perry Road from Carrollton Elementary and has the same access conditions as described above. Barbara Bush Middle School, in the city of Irving, is part of the Carrollton/Farmers Branch ISD and located south of the Preferred Alternative on Cowboys Parkway at MacArthur Boulevard. The school's attendance zone encompasses areas both north and south of the Preferred Alternative. Two large apartment complexes lie just north of Belt Line Road and the Preferred Alternative, and are within one mile of the school, making it common for students to walk or bike at this crossing. Ted Polk Middle School is located north of the alignment and west of Kelly Boulevard. The attendance zone for this school extends south to Belt Line Road and west to Josey Lane. Most properties south of the Preferred Alternative are industrial or commercial; however, a few single-family and multi-family residences south of the corridor and Country Club Drive fall within the attendance zone. These properties are approximately 0.8 mile from Ted Polk Middle School, by way of Country Club Drive and the rail crossing at Kelly Boulevard.

One high school, Newman Smith High School, is located less than one mile north of the Preferred Alternative along Josey Lane and is anticipated to have a low potential for safety effects at Project railroad crossings, particularly because the Preferred Alternative will now be grade separated over Josey Lane. Students living in the neighborhood south of the alignment and east of Josey Lane could cross under the Preferred Alternative along Josey Lane, but will continue to cross Keller Springs Road to access the school. Because these are older students, and the walking and biking distance will be approximately one mile, non-motorized travel is possible.

Richardson ISD

Two Richardson ISD schools are located in the North Dallas area with attendance zones that traverse the Preferred Alternative and are likely to have students crossing the alignment. It is anticipated that the Preferred Alternative will have a moderate impact potential related to safety at railroad crossings of access routes for these schools. Brentfield Elementary and Parkhill Junior High are located southeast of the Preferred Alternative on Brentfield Drive and Shadybank Road, respectively. The distance from Brentfield Elementary to the nearest neighborhood west of the Preferred Alternative is approximately 0.6 mile along Davenport Road/Brentfield Drive. The distance from Parkhill Junior High across the street on Shadybank Road is approximately 0.7 mile. Apartments are located on the west side of the Davenport Road at-grade crossing, so it is likely that this route is used for walking and biking to the elementary and junior high schools serving the area. Along St. Anne Street and Campbell Road, the schools are also approximately 0.6 mile from another apartment complex, located just west of the Campbell Road grade crossing. This is also a likely pedestrian and bicycle route to school. The second Davenport Road crossing (north of Campbell Road) is approximately 0.8 mile from the schools and is in a single-family residential area. The route to the schools will require crossing both the Preferred Alternative and

Campbell Road. All walking/biking routes will occur along existing streets with new controlled crossings at the project alignment.

Prior to year 2010 when there was active freight, families and students were likely more aware of safety practices along the railroad corridor. Since freight has been abandoned, there will need to be renewed emphasis on rail corridor safety education for this area.

Plano ISD

Plano ISD schools with students likely walking or biking to school across the Preferred Alternative are Aldridge Elementary and Frankford Middle School. Although the attendance zone for Aldridge Elementary in Richardson crosses the alignment, it is anticipated that the Preferred Alternative will have low potential to affect safety along routes to this school (see **Table 4-2**). Students will not have to cross at-grade railroad crossings and will freely cross the alignment at grade-separated crossings at Custer Road or Renner Road to walk or bike to the school.

Frankford Middle School is located in Dallas just north of the Preferred Alternative on Osage Plaza Parkway. A small portion of its attendance zone extends south of the Preferred Alternative. This area consists primarily of multi-family residences, so it is likely that middle school students may walk or bike to school. On the eastern edge of the zone, Coit Road will be grade separated allowing an unrestricted crossing of the alignment. Two at-grade rail crossings will provide access to the school from the south. The distance is 0.5 mile from the middle of the neighborhood by way of Dickerson Street. The distance to the school is 0.7 mile for residences on the western side of the neighborhood, crossing at Meandering Way and using the pedestrian and bicycle path. The southwestern portion of this neighborhood also borders the Hillcrest Road and McCallum Boulevard crossings, of which Hillcrest Road will be grade separated under the Project alignment; however, it is not likely these crossings will be used to access the school. It is anticipated that the Preferred Alternative will have moderate potential for effects related to safety at access routes to Frankford Middle School.

Population Demographics

No effects to demographics are anticipated from the Preferred Alternative. Potential changes in existing demographics may occur; however, additional passenger rail service will not alone cause substantial changes to the demographics of any communities along the Preferred Alternative corridor as population changes depend on various economic and social factors independent of the Preferred Alternative. Although direct effects to population demographics are not anticipated, potential indirect and cumulative impacts are further discussed in **Section 4.20** of the FEIS/ROD and in the *Indirect and Cumulative Impacts Assessment and Mitigation Technical Memorandum* in **Appendix B**.

The Study Area also has areas of transportation-disadvantaged population, which are generally those without automobiles, minority, or low-income persons. Dallas County and Collin County have 29 percent and 24 percent minority populations, respectively. Dallas has 7 percent households with no vehicle available, while Collin County is lower, at 3 percent. In general, the Study Area has five pockets of transportation-disadvantaged populations. These are primarily in the Downtown Carrollton area, around Coit Road, northeast of UT Dallas, around 12th Street and near Shiloh Road. While the Environmental Justice discussion in **Section 4.9** provides a detailed assessment of potential effects on these populations, the Preferred Alternative will improve overall mobility for transportation-disadvantaged populations by providing another mobility option to the numerous employment centers along the corridor. According to NCTCOG, Study Area employment is anticipated to grow from 208,134 to 281,094 by year 2040. With transfers available from rail and bus at key locations along the corridor, overall access to jobs will be improved for people around the region.

Employment

Overall, employment will benefit from an additional method of transportation that the Preferred Alternative will provide for nearby businesses. Commercial displacements may result from the new alignment sections and stations; however, no substantial adverse effects to employment are anticipated from the Preferred Alternative. The Preferred Alternative is anticipated to benefit employment by making locations along the corridor more desirable for businesses to locate.

A total of 65 major employers were identified, as shown on **Figures 3-12** through **3-15** in **Chapter 3**. Of these, approximately 10 are adjacent to the Preferred Alternative and several major employers will be within walking distance of a station (one mile or less) and will benefit from having access to a rail station. None of these major employers will be displaced by the Preferred Alternative. In addition, access to their facilities will not be affected. Therefore, these major employers are not expected to be affected by the Preferred Alternative.

Construction of the Preferred Alternativewill have direct and indirect employment effects in the local economy. Direct effects will result from construction labor; employment related to production of goods and materials for the project; and design, engineering and architectural services employment. Indirect (supplier) and induced effects will result from the “multipler effect” of these expenditures in the local ecomony. There are several models or methodologies that can be used to estimate employment effects based on using multipliers and the project cost. The American Public Transportation Association (APTA) estimates approximately 24,000 jobs created per $1 billion of capital spending. The current working estimate for the Preferred Alternative (excluding real estate, vehicles and unallocated contingency) is approximately $1 billion; therefore, about 24,000 jobs are estimated. Based on APTA’s estimate, this can be expected to be split at about 8,200 direct, 7,900 indirect, and 7,700 induced jobs. As with all projects, duration of jobs will vary with some lasting months and others lasting years. After construction is complete, there will be permanent jobs created to operate and maintain the service, which will in turn have a multiplier effect on the local economy.

Economic Development

No adverse effects to economic development are anticipated from the Preferred Alternative. Economic development will likely benefit from the Preferred Alternative in accordance with local plans and policies. Potential development is anticipated at the DFW North, Cypress Waters, Downtown Carrollton, Addison, UT Dallas, and 12th Street stations. New alignment sections and new station locations may result in commercial displacements which are discussed in **Section 4.4**. However, these displacements will not result in a substantial effect to the overall economy and economic development of the areas along the corridor.

4.3.2 Mitigation Measures

Potential impacts to the function of two community facilities (the Fairhill School and the UT Dallas Southwestern Clinical Center) were evaluated. Safety fencing will be provided to separate the corridor from the Fairhill School property to mitigate potential access and safety impacts. Potential noise impacts to UT Southwestern Clinical Center will be mitigated through the implementation of quiet zones. A detailed vibration analysis will be done for the UT Southwestern Clinical Center, the Qorvo semiconductor facility and the Texas Instruments semiconductor facility during final design to determine if mitigation is required.

Two areas (Old Downtown Carrollton and North Dallas) were evaluated for potential impacts to community cohesion as a result of the Preferred Alternative. These impacts are not considered to be significant and will not require mitigation. DART will provide safe crossings at all existing streets currently crossing the Preferred Alternative in these areas. Although not specifically a mitigation measure, DART’s action to abandon freight traffic through the north Dallas part of the

corridor in 2010 permanently removed freight traffic from North Dallas, thus reducing the possibility of increased train movements above proposed Cotton Belt operations and eliminating crossing events of longer durations.

The North Dallas Eruv could experience temporary adverse impacts as a result of the Preferred Alternative at Coit Road (due to the road being reconstructed to pass over the Project) and at the Hillcrest Road/McCallum Boulevard intersection (which will be modified to allow Hillcrest Road to pass under the Preferred Alternative). As design progresses, utility poles and Eruv markers at these locations may be relocated. Additional design and siting of any relocations may be necessary. DART will coordinate with the City of Dallas to minimize any effects and avoid any disruptions to the existing city ordinance. In addition, the affected community will be engaged during project design and construction to avoid and minimize impacts and to assist with proposed solutions. During construction, attempts will be made to avoid disruption on Sabbath days.

The following schools have been identified as having moderate potential for impacts related to safety at access routes to the school because their attendance zones cross the Project and offer pedestrian access between residential areas and the schools:

- W.W. Pinkerton Elementary
- Carrollton Elementary
- Barbara Bush Middle
- Ted Polk Middle
- DeWitt Perry Middle
- Newman Smith High
- Brentfield Elementary
- Parkhill Junior High
- Frankford Middle

Potential impacts to these schools will be mitigated through the addition of enhanced safety features in addition to the standard at-grade crossing elements. DART will provide mitigation and is considering such strategies as flashing signals, pedestrian gates, enhanced signage or striping, and/or tactile strips which will be evaluated for feasibility and reasonableness as the project advances. Use of these additional features will be determined during final design in consultation with school districts.

In addition, DART has a comprehensive transit education program used at schools and other community organizations. DART will coordinate with schools and neighborhoods in the corridor to provide these education sessions prior to operations.

No impacts to demographics, employment, or economic development are anticipated; therefore, no mitigation is proposed. **Section 4.8** provides an assessment of public safety services.

4.4 Acquisitions and Displacements

This section describes the potential acquisitions and displacements associated with the No-Build and the Preferred Alternative. This assessment is based on the draft 10 percent level of preliminary engineering. As such, it may be refined with additions or deletions as project design advances.

4.4.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and no acquisitions or displacements would be necessary.

Preferred Alternative

Purchased in 1990, DART owns the existing Cotton Belt railroad corridor right-of-way, which is generally 100 feet in width. However, additional acquisition of land will be necessary at several points adjacent to the alignment. Acquisitions and displacements are impacts of the Preferred Alternative requiring mitigation in the form of compensation and in some cases relocation. **Table 4-3** summarizes the acquisitions and displacements that are anticipated for the Preferred Alternative including alignment deviations, stations, and facilities. Some parcels to be acquired are owned by the cities and were purchased by the cities to accommodate the project.

Table 4-3. Summary of Cotton Belt Acquisitions and Displacements

Alignment, Station, or Facility	Parcel Acres	Current Use	Partial Acquisition	Whole Acquisition	Potential Displacements
Alignment Deviations					
DFW Airport TEXRail Alignment	30 Acres	Commercial, Vacant, TEXRail	None; Public Mass Transit Easement	None; Public Mass Transit Easement	None
DFW Airport North	10 Acres	Commercial, Vacant Commercial, TEXRail	1 Parcel; Public Mass Transit Easement	None; Public Mass Transit Easement	None
Cypress Waters Alignment	22 Acres	Commercial, Vacant	14 Parcels	3 Parcels	5 Businesses, 1 Residence, 1 Vacant Building; Relocation of two Oncor towers
Downtown Carrollton Reconfiguration	2 Acres	Commercial, Residential, Vacant	5 Parcels	1 Parcel	1 Business
CityLine/Bush Alignment	9 Acres	Commercial, Highway, Industrial, Residential Multi-Family, Vacant	14 Parcels	1 Parcel	1 Business (Multi-Lease Building)
Alignment Deviation Totals	73 Acres	See Above	34 Parcels	5 Parcels	7 Bus.; 1 Res.; 1 Vacant Bldg.
Stations					
DFW Airport-North	Included in Alignment Deviation Section above				
Cypress Waters	Included in Alignment Deviation Section above				
Downtown Carrollton	2 Acres	Vacant	None	4 Parcels	None
Addison	None	DART property	None	None	None
Knoll Trail	None	DART property	None	None	None
UT-Dallas	9 Acres	Vacant – UTD owned	None; Easement Agreement	None; Easement Agreement	None
CityLine/Bush	0.3 Acres	Vacant	None	1 Parcel	None
12th Street	3 Acres	Commercial, Vacant	None	6 Parcels	1 Business
Shiloh	7 Acres	Electric Substation, Vacant	1 Parcel	1 Parcel	None
Station Totals	21.3 Acres	See Above	1 Parcel	12 Parcels	1 Business
Facilities					
Mercer Yard	2 Acres	Commercial	4 Parcels	None	None
Facilities Total	2 Acres	See Above	4 Parcels	None	None
Other Real Estate Needs					
Marsh Lane Improvement	1.4 Acre	Commercial, Vacant	1 parcel	None	None
Royal Lane Alignment	0.5 Acre	Commercial, Vacant Commercial	2 Parcels	None	None
Coit Road Grade Separation	0.07 Acres	Commercial	None; Easement Agreement	None; Easement Agreement	None
White Rock Creek Bridge Alignment	0.2 Acres	Commercial	None; Easement Agreement	None; Easement Agreement	None
Other Totals	2.17 Acres	See Above	3 Parcels	None	None
Totals					
Total Area	98.47 Acres		42 Parcels	17 Parcels	8 Businesses 1 Residence 1 Vacant Building

Source: Tarrant Appraisal District (TAD), Dallas Central Appraisal District (DCAD), Collin Central Appraisal District (CCAD); Geographical Information Analysis

For partial acquisitions, only the portion of the parcel falling within the right-of-way footprint is assumed to be acquired. In cases where a parcel falls completely within the right-of-way footprint, or where the parcel remainder will be substantially small (such that the remaining portion of the parcel will have little to no value or use), a whole acquisition is assumed to occur. For whole acquisitions, the total parcel acres will be acquired. Refer to **Appendix B** for *Property Acquisitions and Displacements Technical Memorandum*. A discussion of the key acquisitions and displacements associated with the Preferred Alternative follows. Final determinations of partial or whole acquisitions are subject to negotiation and will be finalized during final design.

DFW Airport Connection

New track will be constructed next to the TEXRail alignment from DFW Airport Terminal B Station to the DFW Airport North Station. In order to extend the rail alignment from the DFW Airport Terminal B Station to the DFW Airport North Station, an additional 30 acres will be required. From DFW Airport North Station to realignment with the existing Cotton Belt rail line, approximately 10 acres will be required. An easement agreement with DFW Airport and TEXRail will be executed for the Cotton Belt alignment needs. Additional easement may be required for a parcel located west of the thru-platform. All affected parcels are owned by the City of Dallas and the City of Fort Worth as part of DFW Airport.

Cypress Waters Alignment

There will be several partial and whole parcel acquisitions for the Cypress Waters alignment, which also encompass the Cypress Waters Station (22 acres).

- As currently designed, three commercial properties on the north side of Southwestern Boulevard will require full acquisition due to new track placement through the properties. These include the acquisition of the northeastern portion of one business (Deep Forest Gallery) which may constitute an adverse effect to the business. Impacts to the two other parcels include the displacement of a rental residence and Soto Automotive. These acquisitions are due to displacement of buildings, loss of property, and loss of property access.
- Five partial acquisitions of non-developed commercial properties on the south side of Southwestern Boulevard will be required for new track placement.
- Two commercial properties (north of the alignment and east of South Belt Line Road and west of Sanders Loop) will be acquired for new track placement. While building displacements are not anticipated, as the Preferred Alternative is on an aerial structure along the southern boundary of the parcels, more detailed design is needed to determine how fire lane and rear building access will be altered and if that affects the operation of the properties. Partial acquisitions will be necessary on the rear access area for retaining walls of the new track.
- Two commercial properties (south of the alignment and east of South Belt Line Road and west of Sanders Loop) will be affected by the Preferred Alternative due to new track placement through the properties. One commercial building that is currently vacant will be displaced and the full parcel will be acquired. A partial acquisition of a non-developed commercial property will also be necessary.
- Four commercial properties, all located south of East Belt Line Road and east of Sanders Loop, will require partial acquisition of non-developed properties.
- Up to two Oncor transmission towers will be repositioned within the station area.

Downtown Carrollton Reconfiguration

The reconfiguration of track in Downtown Carrollton will require partial or full acquisition of seven parcels (two acres). One of the parcels is owned by the BNSF with a small area needed for realignment of the BNSF and Cotton Belt rail. One business, Cedar Supply, will be displaced.

There is one residential parcel in Woodcrest Estates that extends between the two railroad corridors. While a section of this parcel will be required, there will be no displacement of the residence.

CityLine/Bush Alignment

CityLine/Bush Alignment will require acquisition of nine acres. At Alma Road, a small area of Oncor property will be needed. East of Alma Road and west of US 75, four parcels will be affected requiring partial acquisitions. Of these four, two are multi-family properties. The Project alignment will be located along the northern undeveloped boundary of these properties. No adverse impacts will occur. A third undeveloped property is owned by Oncor and a small corner is required. No adverse effects will occur. The fourth property, also undeveloped, was previously purchased by the City of Richardson for the Project. East of US 75 and south of PGBT, one vacant parcel will be acquired from the City of Richardson. North of PGBT, the alignment will be located parallel to and west of the existing LRT line. Given right-of-way constraints, slivers of property will be required from several property owners. One apartment complex, Aura One 190, has an on-site walking path and sitting area that will be affected by track placement. DART will work with the property owner to reconfigure this area. Just north of this point, five parcels will be affected by track placement. One multi-leased building may be displaced due to effects to rear building access. More detailed design is needed to determine how rear building access and fire access will be altered and if that affects the operation of the properties. Based on preliminary design, only partial acquisition is assumed. At this level of design, it is assumed that most partial acquisitions will not affect businesses.

Stations

Several stations will require property acquisition with limited displacements. Two stations, Addison and Knoll Trail will be located within the existing DART-owned railroad corridor and will not require additional property. Property for the DFW North Station and Cypress Waters Station is included in the alignment deviations discussed above. Total acquisitions for stations will be approximately 21 acres with displacements or special conditions at the following locations:

- Most of Downtown Carrollton real estate is included in the alignment deviation discussed above; however, four full parcels will be needed.
- CityLine Station – One parcel will be acquired from the City of Richardson.
- 12th Street Station – Six parcels will be required for this station, four of which are owned by the City of Plano. One parcel acquisition will result in the displacement of a business.
- Shiloh Road Station – The City of Plano owns the parcel identified for the park-and-ride lot. DART will need to negotiate an easement with Oncor to provide access from the parking lot to the platform. Oncor Electric Delivery Company LLC is a regulated electric transmission and distribution service provider that serves the region.

Facilities

Mercer Yard will be relocated to property currently owned by DART but will require use of four additional parcels (two acres). Partial acquisition of the parcels will be required to accommodate alignment for the yard. Three of the properties are commercial and are located along an industrial rail spur. The City of Carrollton owns the fourth property which houses their public water storage tanks.

Other Real Estate Needs

For improvements to Marsh Lane, a partial (1.4 acre) acquisition of a vacant commercial property will be needed to add turn lanes.

East at Royal Lane, portions of two additional parcels will be needed for a slight revision to the alignment to accommodate freight connections and the crossing under IH 635. One of these properties is vacant and the other is a Park and Fly lot; however, no displacements are anticipated.

Approximately 0.20 acres of the southeastern edge of the Clubs of Prestonwood golf course may be required for construction of retaining walls for the relocated White Rock Creek Bridge for use as a pedestrian trail (see **Sections 4.5** and **4.22** for additional information). Additional design refinement may allow all construction to occur within the existing right-of-way. This land is not used for recreational purposes.

Construction of the Coit Road overpass will affect an access road to a Dallas Water Utilities property in the northeast corner. A modified easement with the Highland Springs Retirement Community will be needed to modify access to this site.

No impacts to additional properties have been identified. If design refinement results in the need of additional property acquisition, additional environmental evaluation may be necessary and will be conducted prior to construction.

4.4.2 Mitigation Measures

DART's intent is to refine the design as the Preferred Alternative advances, with one focus being to reduce or eliminate property acquisitions and displacements to the extent reasonably feasible.

DART will work with affected property owners and businesses as the Preferred Alternative advances in regard to business and property impacts.

All acquisition of property will adhere to the DART Board of Directors' Real Estate Policy and Procedures, adopted August 25, 1987, and modified in October 2000. These policies and procedures adhere to all federal guidelines regarding acquisition and relocation assistance including the Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA) of 1970 (42 USC § 4601 et seq.). For all real property acquired, DART compensates the property owner for the fair market value of their property and for damages to any remaining parcel(s). Any real estate donations will be appraised by an independent appraiser to determine the fair market value of the property. This fair market value will be made available to the property owners per federal regulation.

Relocation benefits are provided for all businesses and residents (owner occupants and tenants) that are displaced by acquisition. The Preferred Alternative will displace one residence on a commercial lease property. Prior to the relocation of businesses, DART staff will prepare a relocation analysis that determines the availability of suitable locations or facilities for displaced businesses. The relocation benefits and services provided to those displaced are determined by eligibility guidelines based on Federal policies. For businesses, these generally include reimbursement of moving expenses and advisory assistance in locating a replacement site.

The URA, as amended, provides benefits to homeowners, businesses, community facilities, and farm operators resulting from acquisition. According to 49 CFR Part 24.205(A)-(F), relocation planning and services will be provided to businesses. These relocation services include the following:

- site requirements, current lease terms, and other contractual obligations
- providing outside specialists to assist in planning and moving, assistance for the actual move, and the reinstallation of machinery and other personal property
- identification and resolution of personal property/real property issues
- an estimate of time required for the business to vacate the site
- an estimate of the anticipated difficulty in locating replacement property

- an identification of any advance relocation payments required for the move

DART has also established guidance for acquisitions and displacements in the *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects*, 2016.

The use of DFW Airport land needed to build and operate the Preferred Alternative will be gained through a Public Mass Transit Easement agreement between DART and DFW Airport. DFW Airport will be compensated fair market value for the use. A release from federal obligations and land use requirements is not anticipated.

4.5 Parks and Recreation Facilities

4.5.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and no direct or proximity impacts to parks or recreation facilities would occur.

Preferred Alternative

With implementation of the Preferred Alternative, there could be impacts to parks and recreational facilities. There are two types of impacts that can affect parkland:

- Direct impacts are those that will occur from acquisition of park property or the location of a transportation system element on park property; and
- Proximity impacts are those which arise from some feature or operation of a transportation system element.

Examples of proximity impacts are noise or vibration, changes in the visual environment, or changes in access. Where proximity impacts occur, an evaluation must be made as to whether the impact is of sufficient magnitude to substantially impair the activities of the resource.

There are 39 public parks, trails, and recreation areas within the Study Area. These parks are discussed and shown on **Figures 3-16** through **3-19** in **Section 3.4**, as well as in the Existing *Parks and Recreational Facilities Technical Memorandum* in **Appendix B**. Seven are adjacent to the Preferred Alternative and four are nearby that were determined to be impacted by train horns (see **Section 4.14** for institutional noise impacts). **Section 4.22** (Section 4(f) and 6(f) Evaluation) provides evaluations of the assessment of two 4(f) properties used by the Preferred Alternative, which include the historic White Rock Creek Bridge, and one recreational facility, the Spring Creek Trail in Richardson. The following is a summary of the results of the direct and proximity impacts analysis for the remaining eleven park and recreation facilities. An assessment of potential impacts is listed below.

Although a small area (approximately 8,000 square feet) of Clubs of Prestonwood property will be required, impacts to the private recreational facility have been avoided. DART will obtain an easement for the area needed for bridge placement. The required property is not used for recreational purposes. The club currently has a license agreement to operate a golf cart path under the existing White Rock Creek Bridge. This path will be maintained with the new bridge structure for the Project. The relocated White Rock Creek Bridge will also span this path.

Grapevine Creek Park

This City of Coppell-owned park is located at 600 Moore Road. Currently, this parkland is undeveloped. Approximately 2,290 feet of the park's southern boundary is adjacent to the Cotton Belt alignment.

- Land Acquisition – There will be no land acquisition from Grapevine Creek Park.

- Access – Entry to the park will not be restricted.
- Noise and Vibration – There are no noise or vibration impacts projected for this park.
- Visual – This undeveloped park is adjacent to an active freight rail alignment. The Preferred Alternative will not change the use of the area. There will be an increase in frequency of passing railcars, but the railcars will be expected to travel faster than the existing freight trains. Since there is existing rail activity adjacent to Grapevine Creek Park, and the exposure time of additional railcars to recreational users is short, impacts to visual and aesthetic resources are expected to be minimal.

McInnish Park Sports Complex

This City of Carrollton-owned facility is located at 2340 Sandy Lake Road. Approximately 2,485 feet of the southern edge of this park borders the Preferred Alternative. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from McInnish Park Sports Complex.
- Access – Entry to the park will not be restricted.
- Noise and Vibration – There are no noise or vibration impacts projected for this park.
- Visual – The visual and aesthetic resources at the park include sports fields and trails. Sports fields are currently adjacent to the active freight rail alignment in this area. The visual impact will be related to the increase in train frequency over what is experienced now. As the duration of exposure to railcars will be short, no significant impacts to visual resources are expected by the Preferred Alternative.

Gravely Park

The City of Carrollton's Gravely Park is located at 1508 North Perry Road. Approximately 980 feet of the northern edge of the park is adjacent to the Preferred Alternative. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from Gravely Park.
- Access – Entry to the park will not be restricted.
- Noise and Vibration – There is a severe noise impact projected for this park due to train horn noise. No vibration impacts are projected.
- Visual – The visual and aesthetic resources at this park include walking paths. With the Preferred Alternative in operation, park users will be exposed to more frequent railcars on the tracks over the existing condition. The railcars for the Preferred Alternative will travel at a faster speed than the freight rail cars, so the duration of exposure to passenger railcars will be shorter than the existing condition. The visual impact will be related to the increase in train frequency over what is experienced now. As the duration of exposure to railcars will be shorter than the existing condition, no significant impacts to visual resources are expected with the Preferred Alternative.

Hutton Branch Green Trail

A portion of the Green Trail is located in Downtown Carrollton and crosses the Cotton Belt right-of-way. The trail follows a creek and active rail corridor through Carrollton. The trail, portions of which are also known as the Purple Trail and Green Trail, connects residents with parks and the city's DART Green Line LRT station.

- Land Acquisition – There will be no land acquisition from the trail.
- Access – Entry to the trail will not be restricted. Temporary access may be restricted during construction.
- Noise and Vibration – There are no noise or vibration impacts projected for this trail.
- Visual – The visual and aesthetic resources at this trail include walking paths. With the Preferred Alternative, trail users will be exposed to more frequent railcars on the tracks over

the existing condition. Duration of exposure to passenger railcars will be shorter than the existing condition than the freight railcars. The visual impact will be related to the increase in train frequency over what is experienced now. As the duration of exposure to railcars will be shorter than the existing condition, no significant impacts to visual resources will be expected with the Preferred Alternative.

Keller Springs Park

Keller Springs Park is a City of Dallas-owned park located at 5710 Keller Springs Road. Approximately 1,280 feet of the southeastern edge of this park borders the Preferred Alternative. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from Keller Springs Park.
- Access – Entry to the park will not be restricted.
- Noise and Vibration – There are no noise or vibration impacts projected for this park.
- Visual – White Rock Creek and a community park are the primary visual and aesthetic resources. This park is adjacent to an existing, inactive freight rail alignment in this area. The visual impact will be related to the increase in train frequency. As the duration of exposure to railcars will be shorter than the existing condition, no significant impacts to visual resources or park users will be expected with the Preferred Alternative. Furthermore, this park is heavily wooded with a creek paralleling the corridor. Existing vegetation will be retained to the greatest extent feasible to retain existing visual screening.

Trafalgar Square Park

This private park is located within the Trafalgar Square residential development in Carrollton on the border with the Town of Addison on San Sebastian Drive. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from Trafalgar Square Park.
- Access – Entry to the park will not be restricted.
- Noise and Vibration – A severe noise impact is projected at this park due to train horns at Marsh Lane. Due to the short duration of the train passing by the park, a substantial negative effect on the park, park function or park characteristic is not anticipated. No vibration impacts are projected for this park.
- Visual – This park is in a fenced area and is adjacent to an existing freight rail alignment. No significant impacts to visual resources or park users are expected with the Preferred Alternative.

Beckert Park

This Town of Addison-owned park is located at 5044 Addison Circle Drive. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from Beckert Park.
- Access – Entry to the park will not be restricted.
- Noise and Vibration – A severe noise impact is projected at this park due to train horns at Quorum Drive. No vibration impacts are projected for this park.
- Visual – The park features a lighted walkway, park benches, and landscaping. The park is located within an urban area approximately 500 feet from the Addison Transit Center and the Preferred Alternative. No significant impacts to visual resources or park users are expected with the Preferred Alternative.

Addison Circle Park

This Town of Addison-owned park is located at 4970 Addison Circle Drive. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from Addison Circle Park.

- Access – Entry to the park will not be restricted.
- Noise and Vibration – A severe noise impact is projected at this park due to train horns at Quorum Drive. No vibration impacts are projected for this park.
- Visual – The park features a pavilion, restrooms, public display fountains, water features, two stages, and benches. The park is located within an urban area approximately 500 feet from the Addison Transit Center and the Preferred Alternative. No significant impacts to visual resources or park users will be expected with the Project.

Preston Green Park

This City of Dallas-owned park is located at 6900 Duffield Court. Over 840 feet of the southeastern edge of Preston Green Park is adjacent to the Preferred Alternative. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from Preston Green Park.
- Access – Entry to the park will not be restricted.
- Noise and Vibration – A severe noise impact was projected at this park due to train horns at the at-grade crossing of Hillcrest Road. Based on DEIS comments, Hillcrest Road was redesigned to be grade separated which eliminated the noise impact. No vibration impacts are projected for this park.
- Visual – This park contains a playground, basketball court, walking trails and benches and is adjacent to an existing, inactive freight rail alignment. The visual impact will be related to placement of new safety fencing along the park boundary, as well as a noise wall on the other (south) side of the alignment. In addition, there will be train operations, which do not occur now as freight is abandoned in this area. As the duration of exposure to railcars will be minimal, no significant impacts to visual resources will be expected with the Preferred Alternative.

CityLine Park

This City of Richardson park is within the CityLine mixed-use development. Approximately 260 feet of the northwestern edge of this park will border the Preferred Alternative. This park is adjacent to the DART's Light Rail Red Line and near the CityLine/Bush Station. The addition of regional rail service will not change transit use of the adjacent area, but the frequency of service will increase. An assessment of potential impacts is listed below:

- Land Acquisition – There will be no land acquisition from CityLine Park.
- Access – Entry to the park will not be restricted.
- Noise and Vibration – There are no noise or vibration impacts projected for this park.
- Visual – The visual and aesthetic resources at this park includes trails. This park is within a mixed-use development adjacent to an existing light rail corridor and station. The park is within an urban area and the addition of regional rail service is not expected to cause a significant impact to visual resources.

Spring Creek Trail

One trail (Spring Creek Trail) will require partial relocation within the right-of-way DART will be acquiring for the CityLine/Bush alignment. Compliance with Section 4(f) and Chapter 26 of the Texas Parks and Wildlife Code will be followed. Additional information on this trail can be found in **Section 4.22**.

4.5.2 Mitigation Measures

A new bridge structure and the relocated White Rock Creek Bridge will span the Clubs of Prestonwood golf cart path to avoid impact to the recreational facility. Noise impacts projected for Gravely Park, Trafalgar Square Park, Beckert Park, and Addison Circle Park will be mitigated by

implementation of quiet zones. Corridor landscaping will be continued along Preston Green Park to soften views of the safety fencing and be consistent with adjacent residential areas. During final design, a wall may be considered at this location (See **Section 8.6.1**). Mitigation for direct impacts to Spring Creek Trail are addressed in **Section 4.22**. No other impacts are anticipated which could result in constructive use of features and attributes to parkland or recreational facilities along the Preferred Alternative. No other mitigation is necessary.

4.6 Cultural Resources

4.6.1 Impact Evaluation

The Preferred Alternative is subject to compliance with the National Historic Preservation Act (NHPA) of 1966, Section 106 (54 USC § 306108 et seq.) and its implementing regulations (36 CFR 800). Specifically, Section 106 of the NHPA requires that the responsible Federal agency to take into account the effects of its actions on historic properties, which are properties listed in or determined eligible for listing in the National Register of Historic Places (NRHP), and provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking.

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and no impacts to historic or archeological resources in the Study Area would occur.

Preferred Alternative

Archeological Resources

According to the Texas Archeological Sites Atlas (Atlas), 45 previous surveys have been conducted within one kilometer (0.62 mile) of the alignment. None of these sites will be disturbed by the Preferred Alternative.

Three newly recorded archeological sites were discovered in the DART right-of-way:

- Site 41DL535, a historic-age domestic and agricultural site is located near the Cypress Waters Alignment. Within the current APE, the site is recommended as not eligible for listing in the NRHP and no further archeological work is necessary. The resource will not be disturbed by construction activities and will not be affected by the Preferred Alternative.
- Site 41COL299, an early- to mid-20th Century historic site containing scattered remnants of houses is located the vicinity of the 12th Street Station. Although several features were identified within the site, artifacts are sparsely scattered and the bulk of material was scraped and removed from the site during demolition in the mid-1990s. The site was recommended as not eligible for listing in the NRHP and no further potential work is recommended at this site.
- Site 41COL291, a railroad section foreman's house (most likely constructed by the St. Louis, Arkansas, and Texas Railway in the 1880s) was discovered in the vicinity of the 12th Street Station. The resource will not be disturbed by construction activities and will not be affected by the Preferred Alternative.

Based on prior cultural resources research done in 2015, SHPO concurred on July 14, 2018, that there are no known, listed, or previously determined eligible archaeological resources in the area that will be affected by the selected EMF site (Irving Yard) improvements.

If archeological resources are discovered during construction, all construction activities will cease in the area and be monitored by a certified historian or archeologist. Work will not proceed until additional review and clearance by the THC has been completed.

One area that will require additional testing prior to construction is where there will be relocation of Oncor towers. Relocation of two towers is required for the Cypress Waters alignment. Additional design and siting of the relocated towers is necessary before additional archeological efforts can begin. This will occur during final design efforts. Detailed documentation and evaluation of archeological properties are provided in the *Archeological Resource Survey* in **Appendix B** for additional information.

Non-archeological Historic Resources

Historic resources that are within the APE, but outside the current railroad right-of-way, will not be affected by the Preferred Alternative (see **Appendix B** for *Historic-age Resource Reconnaissance Survey – Station Locations).* Furthermore, historic resources within the right-of-way and adjacent to the tracks will not be affected by the Preferred Alternative, except for one resource, White Rock Creek Bridge, which, is recommended eligible for listing in the NRHP and located on the corridor. Review of the proposed actions for this Preferred Alternative has determined that there will be an adverse effect per the 106 regulations to this resource. FTA determined and the SHPO concurred that the current proposal of relocating and reusing the White Rock Creek Railroad Bridge has an adverse effect to this eligible historic resource and requested a draft Memorandum of Agreement (MOA) or any revised proposal be submitted to continue the Section 106 review and consultation process (**Appendix G**). THC concurrence was received on December 21, 2017 for the *Historic-Age Resources Determination of Effects Report of the Cotton Belt Corridor*, Tarrant, Dallas, and Collin Counties (FTA/106/THC Tracking #201708924). A MOA identifying steps to minimize harm to historic and archeological resources has been prepared between the SHPO, FTA and DART to document the measures and review process for the White Rock Creek Bridge. The MOA also details the actions to be taken by DART if an unanticipated discovery of resources is made during construction. The MOA is included in **Appendix I**. On February 26, 2018, the FTA informed the Advisory Council on Historic Preservation (ACHP) of the adverse effect on White Rock Creek Bridge and invited them to participate in the MOA. The ACHP declined to participate in a letter to FTA on March 5, 2018.

White Rock Creek Bridge is located northeast of the station at Knoll Trail and spans White Rock Creek and a golf course cart path for the Clubs of Prestonwood. It was constructed in 1917. The bridge is a single span Warren with vertical pony truss manufactured by the American Bridge Company, organized by J.P. Morgan and Company in 1900. The bridge, which is currently part of the Cotton Belt Rail Line, will be removed and relocated to an area approximately 30 feet northeast of its current location within the Preferred Alternative right-of-way (see **Section 4.22**). Currently, the bridge is a single-track truss bridge which has been in disuse, unmaintained for approximately 30 years and showing signs of deterioration.

Maintaining the bridge in its current location will introduce new constraints for the Preferred Alternative. In order to bypass the eligible bridge, track geometry on the Preferred Alternative will need to be altered which could introduce new issues such as alteration of the flood plain with fill material and creation of drainage flow and stabilization issues to the existing earthen berms. Moreover, leaving the bridge in its existing location and not using the structure, provides the potential for continued degradation and vandalism. Relocation of the bridge within the DART right-of-way for continued transportation use as part of the proposed Cotton Belt Regional Trail provides an opportunity to optimize the project design and rehabilitate and reuse this resource.

Consultation with the THC and consulting parties has occurred to identify additional measures to minimize and mitigate the effects to the White Rock Creek Railroad Bridge, and are included in the MOA (see **Appendix I**). Consultation will be ongoing to implement the stipulations of the MOA.

Four additional resources were recommended eligible or were previously found to be eligible for listing in the NRHP: Carrollton Depot, Addison State Bank, Hayes Dam and Old City Cemetery/LA

Davis Cemetery (see **Table 4-4**). The cemetery was removed from the APE during further assessment because the Preferred Alternative will follow the CityLine route deviation alignment south of the existing corridor which avoids the cemetery. No effects were determined for these resources.

These eligibility determinations were submitted to the SHPO for review and concurrence. SHPO concurred with the determinations on December 21, 2017. Detailed documentation and evaluation of historic properties for NRHP eligibility are provided in the *Historic-age Resource Reconnaissance Survey* in **Appendix B**. Agency coordination and consultation are provided in **Appendix G**.

The Carrollton Crossing Depot is located on Denton Drive at the railroad tracks in the DART station parking area in downtown Carrollton. The depot was constructed in 1925 and served the three railroads that came through Carrollton (City of Carrollton, 2017) and was recommended eligible under Criterion A for its association with early railroads and the development of Carrollton, and Criterion C as an example of a 1920s railroad depot in the 2013 survey effort. In addition, the depot was recommended as a contributing resource to a potential Cotton Belt Historic Railroad Thematic Corridor. As part of a MOA between DART and the THC in 2013, the Carrollton Depot was relocated to its current site and rehabilitated by DART (DART, 2013).

The Addison State Bank is located at 4803 Broadway in Addison, Texas, north of the Cotton Belt right-of-way. The bank was previously designated a Registered Texas Historical Landmark (RTHL) in 1984 (**Figure 3-20**) and was recommended eligible for the NRHP under Criterion A, as a building associated with a pattern of early community development in Addison. The building was constructed in 1913 to house the Addison State Bank, which had been organized the previous year to serve the new railroad community of Addison. The Addison State Bank is one of the few remaining structures from the original town (THC, 1984).

The Hayes Dam is in Richardson at Spring Creek along the CityLine alignment. The function of the dam is unknown, but it is mentioned in several deeds as a parcel boundary and transferred property. While the dam is heavily eroded, it once had two eight-feet tall wing walls on either side of an eight-foot spill way. It was recommended NRHP eligible under Criterion C.

4.6.2 Mitigation Measures

Table 4-4 provides a summary of the historic and archeological resources impacts and mitigation measures. The Section 106 process requires that efforts be made to resolve any adverse effects which include visual impacts to historic or archeological resources. Coordination with the Texas Historical Commission (THC) will be ongoing throughout the process.

DART will replace the existing NRHP eligible White Rock Creek Railroad Bridge with a new bridge which will accommodate a double track structure in order to provide a safe and reliable operation for the passenger train. The NRHP eligible bridge will be relocated over the same creek to an area approximately 30 feet northeast of its current location within the Preferred Alternative right-of-way, thus allowing the existing structure to be reused as a pedestrian/bike trail bridge for the proposed Cotton Belt Regional Trail. Converting the bridge from a rail transit resource to a pedestrian transportation resource will extend its life and could provide further opportunities for interpretation of the history of the bridge.

Alterations to the White Rock Creek Railroad Bridge will consist of replacing the rail tracks with wooden timber decking which will provide a safe platform for pedestrians to cross. Additionally, steel handrails will be installed along the length of the bridge providing safety for pedestrians. The Warren Truss element will be preserved.

Table 4-4. Summary of Historic and Archeological Resources Impacts and Mitigation Measures

Resource	Project Effect	Mitigation Measure
White Rock Creek Bridge	Adverse Effect	Bridge will be shifted approximately 30 feet north within DART right-of-way to use as part of a future proposed pedestrian/bike trail. See Section 4.22 for additional mitigation measures. A MOA has been developed between FTA, THC and DART (see Appendix I).
Hayes Dam, Carrollton Depot, Addison State Bank, Farmstead site in Cypress Water alignment	No Effect	No mitigation is necessary as the Project will have no effect on the resources.
Old City Cemetery/L.A. Davis Cemetery (Removed from APE)	No Effect	No mitigation is necessary as the Project will have no effect on the resource. The SHPO concurred that the Cotton Belt Rail Project will have no effect on the cemetery. As a result of SHPO concurrence, DART has executed a deed transfer from the current DART right-of way next to the cemetery to the Old City Cemetery/L.A. Davis Cemetery in order to protect and avoid potential ground disturbance, which may uncover the presence of any unrecorded burials (see Appendix G for SHPO concurrence).
Foreman's house (near 12th Street Station)	No Effect	No mitigation is necessary as the Project will have no effect on the resource. The SHPO concurred that the Cotton Belt Project and 12th Street Station development will have no effect on the foreman's house. Additionally, the foreman's house was removed from the APE (see Appendix G for SHPO concurrence).
Early- to mid-20th Century historic site (at 12th Street Station)	No Effect	Although several features were identified within the site, artifacts are sparsely scattered. The bulk of material was scraped and removed from the site during demolition in the mid-1990s. However, if buried cultural materials are encountered during construction or disturbance activities, work will cease in the immediate area.
Archeological Resources	No impact	Archeological testing is recommended for the Oncor transmission tower relocations at the Cypress Waters alignment. Additionally, archeological testing is recommended if any changes to the right-of-way will occur.

Source: GPC6 Team, THC

No other alterations are anticipated for the existing bridge structure. New concrete abutments and piers will be constructed for the relocated bridge support foundation and new retaining walls will also be constructed from the abutments along the creek for earth retainage. Final designs for the alterations will be coordinated with the SHPO prior to any movement to relocate the bridge in its new location. All alterations will adhere to the Secretary of the Interior's Standards for the Treatment of Historic Properties (Weeks and Grimmer 1995). DART will coordinate all bridge activities (relocation process, and bridge maintenance) with the SHPO.

The relocation and minor alterations of the White Rock Creek Railroad Bridge will not adversely affect the historic integrity of the resource because the NRHP eligible bridge will retain its design, setting, workmanship, feeling and association, and the majority of its materials. The White Rock Creek Railroad Bridge will also retain its use as part of a transportation corridor. **Section 4.22** provides evaluation under Section 4(f) and additional information on the relocation of White Rock Creek Bridge.

Coordination and Consultation

FTA initiated cultural resources consultation in June 2010 and held an Agency Scoping Meeting in July 2010. The THC was consulted and letters were sent to representatives of four Native

American tribes (The Caddo Nation, The Comanche Nation, The Tonkawa Tribe, and The Wichita and Affiliated Tribes). When the Project was reinitiated in 2017, this coordination was also reinitiated. In February 2017, letters seeking consultation on cultural resource were sent to THC and the four tribes noted above. The Native American tribes have not responded to the letters and coordination with THC is ongoing. Copies of these letters are included in **Appendix G.**

4.7 Visual and Aesthetic Conditions

4.7.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and no impacts to visual and aesthetic conditions in the Study Area would occur.

Preferred Alternative

Because the Preferred Alternative is consistent with the current and historical use of the Cotton Belt right-of-way as a transportation corridor, and because visual elements associated with the railroad contribute to the overall visual quality and affect the visual sensitivity of the corridor, minimal visual impacts will occur from the Preferred Alternative as the alignment already exists in most cases.

To assess the potential visual and aesthetic impacts of the Preferred Alternative, each of the visual units described in **Section 3.6** were analyzed. Visual receptors and assets were assessed to determine which project characteristics will potentially have an impact, including:

- Station areas, including platforms, bus transfer areas, and parking lots
- Elevated structures or bridges
- Other vertical elements, such as poles, light standards, walls, and safety fencing
- Rail facilities such as the EMF and relocated Mercer Yard

Design and construction of the Preferred Alternative will result in some visual impact with the introduction of new visual elements. Where impacts are identified, mitigation measures are included. These measures are intended to be consistent with those used in other parts of the DART system and will be consistent with design criteria related to landscaping and lighting for new visual elements at the Cypress Waters, Knoll Trail, UT Dallas, 12th Street, and Shiloh Road stations. In addition, each station will utilize an Art and Design program that will include community input and selection of colors, finishes, and materials complementary to the setting.

Design elements of the Preferred Alternative (materials, brands of vehicles, colors, etc.) have yet to be determined; therefore, the following assessment of effects is based on typical design features. The Preferred Alternative will be generally compatible with the character of the roadways, commercial/industrial, and residential areas within the Study Area. The majority of the Preferred Alternative will occur within the existing freight rail corridor. The visual character of the area will not change; however, the frequency of trains will increase. The speed of the passenger train will minimize the duration of exposure by a single train and will limit potential privacy impacts.

Table 4-5 presents the assessment of the visual units and indicates whether the impacts are potentially significant. Following the table, a discussion is provided with more information on the potential impacts for each section.

Table 4-5. General Rating of Corridor Visual Assessment Sections

Unit	Name	Primary Viewers*	Sensitive Receptors/Assets	Vertical Elements	Impacts
1A	DFW Airport to South Belt Line Road	A, E, H	None	Aerial structure over SH 114	Not Significant
	DFW North Station	A, E, H	None	N/A	Not Significant
1B	South Belt Line Road to Coppell/ Carrollton city limits	A, C, D, F	Riverchase Golf Course, RJ McInnish Park, and residences	Aerial structure over South Belt Line Road	Not Significant
	Cypress Waters Station	A, F	None	N/A	Not Significant
2A	Coppell/Carrollton city limits to Kelly Boulevard	A, B, C, E, F, G	Carrollton Heights Historic District and residences, Old Downtown Carrollton, Historic Depot	Elevated crossing over Elm Fork; elevated structure over BNSF; grade separation over Josey Lane	Not Significant
	Downtown Carrollton Station	A, E, F, G	Carrollton Heights Historic District and residences, Old Downtown Carrollton, Historic Depot	N/A	Not Significant
	New Mercer Yard	D	Maridoe Golf Club	N/A	Not Significant
2B	Kelly Road to Dallas North Tollway	A, B, C, D, E, G	Wheeler Bridge and residences	Grade separation over Midway Road	Potentially Significant
	Addison Station	A, C, D, E, G	Addison Circle Park	N/A	Not significant
3A	Dallas North Tollway to Dallas/Richardson city limits	A, B, C, D, E, G	Keller Springs Park and Prestonwood County Club, Preston Green Park, Fairhill School/playgrounds, and residences	Grade separation at Custer Road, Coit Road bridge over Cotton Belt, noise walls	Potentially Significant
	Knoll Trail Station	A, C, E	Residences	N/A	Not significant
3B	Dallas/Richardson city limits to Shiloh Road in Plano	A, C, E, F, G, H	Spring Creek, green space, and residences	Grade separation over Spring Creek and US 75; elevated structure at Plano Pkwy.	Potentially Significant
	UT Dallas Station	A, C, D, G, H	Residences	N/A	Not significant
	CityLine/Bush Station	C, E, G	Residences	N/A	Not significant
	12th Street Station	A, B, F	Residences	DART Red Line elevated LRT Station	Potentially significant
	Shiloh Station	A, E, F	Residences	N/A	Not significant

*Primary Viewers: A= Motorist; B= Single-Family Resident; C= Multi-Family Resident; D= Recreational Users; E= Commercial/Office Tenants; F= Industrial Tenants; G= Pedestrians; H= Others

Source: GPC6, 2017

Unit 1 – DFW Airport to Coppell/Carrollton City Limits

The majority of track alignment through Unit 1 will utilize the existing freight rail alignment. Double tracking or areas of new track (at the Cypress Waters alignment deviation) will typically be at ground level except for grade separations.

Section 1A

Section 1A extends from the DFW Airport to South Belt Line Road in the City of Coppell. As it crosses SH 114, the vertical alignment will be elevated on an aerial structure that is currently under construction as part of the TEXRail Project. The profile will gradually descend as it approaches the DFW North Station. Visual impacts will not be significant due to low visual quality and low visual sensitivity.

DFW North Station

The center platform station will be located north of the existing DFW Airport in a currently undeveloped location. Elevated highways are visible in the distance. The area is primarily industrial and visual impacts at this area will be viewed primarily by travelers. Visual impacts are not significant.

Section 1B

Section 1B extends from South Belt Line Road to the Coppell and Carrollton city limits. The vertical alignment in this section will be at grade until it crosses over South Belt Line Road, where the commuter tracks will be on a grade-separated bridge that resumes at grade before the Cypress Waters Station. The visual quality of this area is low overall, although it contains parks and adjacent residential areas north of the right-of-way. Visual sensitivity is low due to the current freight railroad and traffic. Visual impacts of the elevated structure are not significant to motorists and commercial and office tenants due to low visual quality and low visual sensitivity.

Cypress Waters Station

The side platforms for this station will be located on newly constructed tracks between North Lake and East Belt Line Road at the Belt Line Trade Center. Views of residential areas are obstructed here from dense tree cover provided by Grapevine Creek, utility lines, and the industrial property northwest of the station. Visual impacts due to construction of the station are not expected to be significant due to the otherwise industrial character of the area.

Unit 2 – Coppell/Carrollton City Limits to the Dallas North Tollway

The majority of track alignment through this section will utilize the existing freight rail alignment. Double tracking will typically be at ground level with minimal visual impact except for where grade separations will be located over the BNSF and at Josey Lane.

Section 2A

Section 2A extends from the Coppell and Carrollton city limits to Kelly Boulevard in the City of Carrollton. The vertical alignment is elevated over the second crossing of Elm Fork. The profile is also elevated at its crossing of the BNSF Madill Subdivision tracks. Here, the existing IH 35E frontage roads and Belt Line Road are elevated to grade separate from the Cotton Belt and BNSF tracks, which allows the tracks to remain at grade. The alignment will be elevated at Josey Lane. Residential neighborhoods are adjacent to the right-of-way. A noise wall will be placed along a significant stretch of this corridor (see **Section 4.14**), introducing a new visual element. The area northwest of the Josey Lane grade separation includes residential uses and a noise barrier will be part of the bridge design. This historical use of the Cotton Belt right-of-way as a transportation corridor and the visual elements associated with the current freight operations contribute to the overall moderate visual quality within the unit. Visual impacts will not be significant due to moderate visual quality and low visual sensitivity.

Equipment Maintenance Facility (EMF)

TRE Irving Yard is an existing facility in a largely industrial area and no impacts are expected.

Downtown Carrollton Station

Visual impacts at this station are expected to be limited because the center platform will be located along the existing freight rail alignment immediately north of the existing park-and-ride lot and east of the aerial Green Line and Downtown Carrollton LRT Station. The Carrollton Heights Historic District and the historic Carrollton Depot are located east and north of the station, respectively. Additional land use includes the Union at Carrollton Square apartments south of the Cotton Belt, which is currently undergoing its third expansion, and the new construction along Broadway for the Switchyard Apartments north of the Cotton Belt. This station will become an integral part of the area and continuity of the existing and proposed land uses will not result in visual impacts.

Mercer Yard

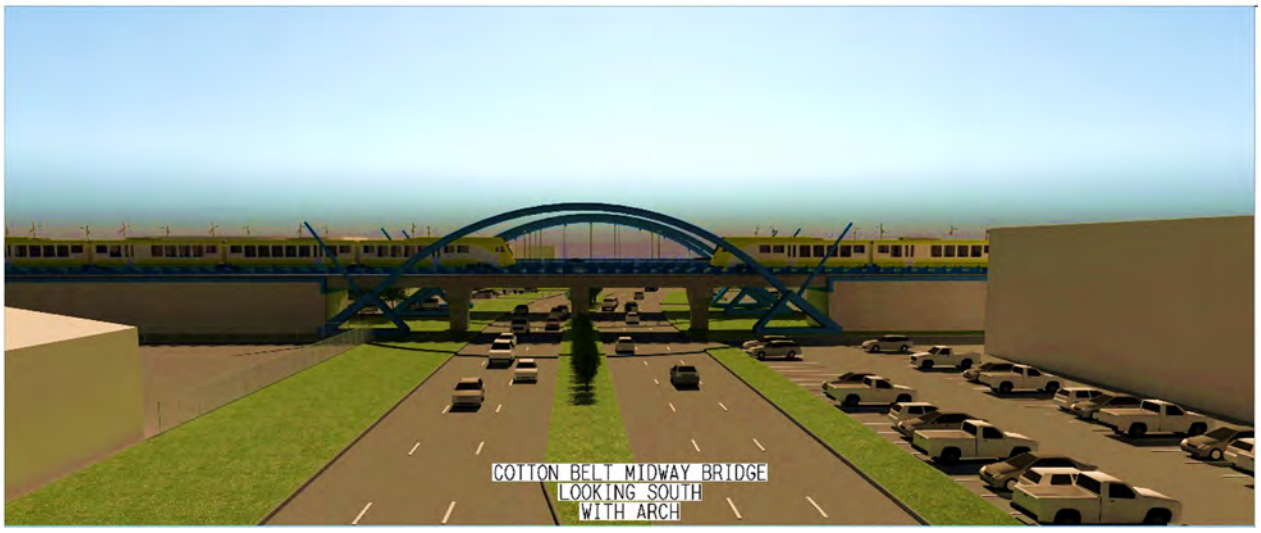
Visual impacts at this facility will not be significant due to the industrial setting. The Maridoe Golf Course is located to the north of the facility and there is existing vegetation that serves as a buffer from the Preferred Alternative.

Section 2B

Unit 2B extends from Kelly Boulevard to the Dallas North Tollway. The profile in this section will be elevated at its crossing over the unnamed tributary of the Hutton Branch as well as at Midway Road, before returning at grade as it approaches the Addison Station. Single-family and multi-family residential developments are located north of the Preferred Alternative.

The Wheeler Bridge on Arapaho Road over Midway Road in Addison, a local landmark and award-winning bridge, is visible to motorists and surrounding offices and residences. The elevated rail alignment in this area will alter views of this bridge, possibly resulting in visual impacts which has been a noted concern of the Town of Addison. **Figure 4-1** illustrates a conceptual design of a complementary structure which consists of a similar arch on the north side of the bridge.

Figure 4-1 Complementary Designed Structure Adjacent to Wheeler Bridge over Midway



Addison Station

The Addison Station side platforms will be located adjacent to the existing Addison Transit Center. The station area is surrounded by mixed-use developments and Addison Circle Park. It is not expected to have any significant visual impacts as it will be an integral part of the urban fabric of this area.

Unit 3 – Dallas North Tollway to Shiloh Road

The majority of the alignment through Section 3 will utilize the existing freight rail alignment except for the CityLine/Bush route deviation, which entails a long bridge structure. The alignment will typically be at ground level with minimal visual impact except for areas of grade separations at Custer Parkway, Coit Road, US 75, and Plano Parkway.

Section 3A

Section 3A extends from the Dallas North Tollway to the Dallas and Richardson city limits. The alignment is primarily at grade through this section. Coit Road will be raised by about 13 feet on a new bridge structure and the project alignment will be lowered by about seven feet. Hillcrest Road will also be grade separated by lowering the roadway under the Preferred Alternative corridor which will remain at grade. This will result in visual changes but no new vertical elements as the roadway will be below grade. Freight operations ceased within this section of the corridor in 2010. Re-introduction of train operations will be a new visual element but will not be out of character with the historical transportation use of the corridor. The visual quality and visual sensitivity of this area is moderate to high as it contains parks, the Clubs of Prestonwood, adjacent residential development along one or both sides of the Preferred Alternative, Fairhill School, and areas of dense and natural vegetation associated with creek crossings and adjacent parks.

The area around Coit Road is primarily surrounded by multi-family residences and a residential assisted living center. The most visible change in this area will be raising Coit Road as a bridge over the existing rail. Visual impacts are not expected to be significant given the length and low profile of the bridge along with existing trees along Coit Road that will screen views from adjacent uses. New residential development east of Coit Road is set back from the roadway and separated by retention ponds and will not be affected.

Knoll Trail Station

This station is not expected to create a negative visual impact and will be compatible with the visual character of the surrounding urban area. Visual impacts are expected to be minimal. There is the potential for visual privacy impacts to the adjacent residential units recently constructed given their proximity to the platform.

Section 3B

Section 3B extends from the Dallas/Richardson city limits to Shiloh Road. The vertical alignment for this section will be grade separated at Custer Parkway with a new railroad overpass. The profile in this section is at grade up to its crossing of Spring Creek, where a long, aerial overpass will cross the creek, its floodplain, and US 75. It then again resumes an at-grade profile before ascending to cross Plano Parkway on another aerial structure. Although this will introduce a new bridge, it will be consistent with the existing character of the area and nearby US 75/PGBT interchange. The Preferred Alternative bridge design over US 75 will be standard and compatible with existing highway structures in the area. Any signature treatments or enhancements could be pursued by the City through other funding sources. Jupiter Road will also be grade separated which is consistent with the industrial nature of the area.

UT Dallas Station

This station will be visible at a distance until planned development in the area occurs. Although this will change the visual character of the area, the station will be integral to future development and impacts are expected to be minimal.

CityLine/Bush Station

This station will be adjacent to the existing, at-grade CityLine/Bush LRT Station, in an existing mixed-use transit station environment. No visual impacts are anticipated.

12th Street Station

Only limited visual impacts will be expected at the 12th Street Station which includes a new at-grade Cotton Belt platform and parking area and an infill LRT 12th Street Station on the elevated guideway just to the west. The surface parking lot to the south will be a new visual element for residences. The new elevated LRT station will represent a new visual element for the Douglass Community to the northwest by adding structure elements, vertical circulation and lighting to the elevated LRT guideway. The station will not change the visual character of this mixed-use area.

Shiloh Road Station

This station will be adjacent to an electrical substation. The terrain is flat and open and the station may be visible; however, the station will be compatible with the surrounding industrial/commercial land uses and visual impacts are not expected to be significant.

4.7.2 Mitigation Measures

The historical use of the Cotton Belt right-of-way as a transportation corridor and visual elements associated with the former and current railroad use contribute to the overall visual quality and affect the visual sensitivity of the corridor. The Preferred Alternative is consistent with the former use of the railroad. While certain project elements (grade separation structures, stations, noise wall, and facilities) will introduce new visual features to the corridor, most visual units do not support regionally or locally significant views except for the Wheeler Bridge in Addison. DART is working with the Town of Addison to design a complementary structure for the Cotton Belt bridge at this location. One arch will be located on the north side of the bridge along the westbound track to be visible from southbound motorists. This will complement the existing signature bridge arch that is visible on the other side and seen by northbound motorists.

To minimize visual impacts, DART will provide mitigation using strategies listed below:

- The DART Station Art & Design Program will be implemented for stations. Project engineers, architects, artists and neighborhood advisory committees will collaborate from station concept to completion. This includes specific architectural design, color, and landscaping that are within project guidelines and construction budgets.
- All lighting sources will be indirect, diffused, or covered by shielded type fixtures, and installed to reduce glare at adjacent properties.
- Existing vegetation will be preserved to the greatest extent possible for the adjacent residential areas.
- Landscaping will be installed at intervals of approximately 120 to 150 feet along residential areas for visual screening and to soften views of sound walls and corridor fencing. Where sound barriers are identified (see **Section 4.14**, **Table 4-12**), visual screening will also be achieved by extending the height of the noise barrier from 12 up to 15 feet. Vegetation types will be native and low maintenance to be selected in cooperation with city staff and residents. Landscaping intervals will be provided at the following locations:
  - Residential areas that are directly adjacent to the alignment and where no natural buffer exists
  - Preston Green Park (during final design, a wall may be considered at this location)
  - Fairhill School
- Corridor landscaping will also break up the view from the train and limit potential privacy impacts.
- Landscaping will be provided as part of the Knoll Trail station design where residential is immediately adjacent to the platform unless residential construction at this location includes a wall or other landscaping barrier.

- Coordination to ensure compliance with DFW Airport development guidelines will continue as design progresses. Any project lighting will be designed to ensure compliance with DFW Airport development guidelines and will be compatible with approved and installed developments of similar elevation and distance from the airfield.
- During final design, DART will conduct a visual screening location assessment for the above listed areas using final design plans. This assessment will document 1) where existing vegetation will be preserved and maintained during construction and will continue to serve as a visual screening barrier, 2) where no natural vegetation buffer exists, and 3) final locations of walls and safety fencing. This information will be provided to the Design-Build contractor to develop a corridor landscape plan.

4.8 Public Safety and Security

4.8.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and no impacts to safety or security in the area of the Preferred Alternative will occur. Public safety services would continue to be provided as they are today and as planned to keep up with growth.

Preferred Alternative

The construction and operation of public transit projects increases multi-modal traffic and the potential for conflicts with automobiles and pedestrians. The ensuing safety and security issues center around avoiding accidents between competing travel modes and ensuring the daily safety of transit patrons at and near station areas, as well as persons and automobiles that must cross the alignment. Consequently, transit projects can place additional demands on police and fire protection services in the communities they serve. While the Cotton Belt is an active freight corridor, freight operations are intermittent compared to regular passenger rail operations and freight has been abandoned through north Dallas since 2010. The impacts on safety and security with the Preferred Alternative in place are described below. The potential safety and security impacts address considerations including:

- Police protection and community safety services;
- Fire protection and emergency services;
- Pedestrian and vehicle activity; and
- Station area activity.

Police Protection and Community Safety Services

The Preferred Alternative is not expected to cause any increased demand for municipal police protection or community services. Police protection will be required during construction and operation of the Preferred Alternative, but DART police will take responsibility for those services. Both uniformed and undercover DART police will monitor the facilities and vehicles. If necessary, DART police will partner with local police to apprehend any criminals. The presence of DART police and other personnel will help to maintain a secure environment and reduce opportunities for crime on vehicles and at stations. Three police facilities are located within the Study Area: the Dallas North Central Patrol Division in north Dallas, Addison Town Police Department and Plano Police Department. No project related impacts are anticipated for these facilities.

Fire Protection and Emergency Services

There are five fire stations located within the Study Area: DFW Airport Fire Station 6, Coppell Fire Station 1, Carrollton Fire Station 1, Addison Fire Station, and Dallas Fire Station 7. With any new project or development, there may be a need for fire protection services if a fire occurs on vehicles

or at a facility. Vehicles and facilities will be constructed with fire resistant materials. Vehicles will be equipped with on board fire suppression systems and have exterior emergency door releases. As the potential for fire is low, it is not anticipated that the Preferred Alternative will necessitate the hiring of additional fire protection personnel in any of the affected communities.

The concentration of passengers at rail stations could create the potential for increased demands for emergency medical services. However, this is not expected to necessitate the need for additional emergency medical services in the area.

A key concern of the community is related to potential impacts on emergency vehicle response times, whether for police, fire or other emergency services. It is possible that these services could be slightly delayed at rail crossings when a passenger rail vehicle passes by for approximately 35 to 50 seconds which is the typical crossing gate down-time for the Preferred Alternative.

Pedestrian and Vehicle Activity

The addition of regular passenger service to the existing freight rail corridor presents concerns for both residents and businesses. Both types of rail operations have the potential to impact pedestrian and vehicle safety where there are at-grade crossings or where there may be informal crossings. The potential for these conflicts is greatest around schools, especially where a school zones traverses the corridor, or where high concentrations of pedestrians or vehicles may occur, such as during special events. School aged students have a higher probability for conflicts at at-grade crossings when an at-grade crossing, a school attendance zone, and a residential neighborhood are close together.

Because freight rail currently operates along the Preferred Alternative except for where freight has been abandoned in North Dallas, school children presently crossing the tracks are already aware of trains crossing their path and the associated safety measures; however, DART Cotton Belt train operations will be more frequent. **Section 4.3** provides a more detailed discussion of schools and locations where there may be potential issues due to school zone boundaries. Eight schools along the Preferred Alternative were identified as having moderate potential for safety impacts based on walkability between residential areas and the school location.

All public at-grade crossings along the Preferred Alternative will be protected by standard safety features including flashing lights, bells, and gate arms alerting vehicles, bicyclists, and pedestrians of approaching trains. The higher speeds and increased frequency of passenger trains compared to existing freight trains will require increased awareness at grade crossings on the part of drivers, pedestrians and cyclists.

Station Area Activity

The Preferred Alternative will increase the potential for conflicts between rail vehicles, automobiles, bicycles, passengers, and pedestrians in and around station areas. The potential for crime will also exist due to the regular gathering of waiting passengers at predictable times in and around stations. With stations offering parking, motor vehicle theft and theft of vehicle accessories could also be of concern. DART has policies in place to prohibit and deter this activity.

4.8.2 Mitigation Measures

Several mitigation measures can be implemented to enhance safety and security. Many of these measures will be implemented project-wide and are specific to certain areas where specific concerns or issues exist. Mitigation is consistent with those in DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects*.

The new DART *Say Something Safety and Security App* offers riders a quick and discreet method for reporting concerns directly to DART Police. App users can send photos, six second videos, text descriptions, and locations of suspicious people or activities.

Police Protection and Community Safety Mitigation

Police coverage will be provided by DART Police. The officers operate on regular schedules and patrol the trains providing fare enforcement personnel support to the conductors as well as a visible deterrent to crime. During construction and before service start-up, DART will host sessions with police, fire, schools, emergency response teams, employers, and other interested parties to discuss regional rail operations, potential safety or security issues, and agency or public responsibilities.

In addition, Positive Train Control (PTC) is a required system for the Preferred Alternative and will enhance community safety through items such as train separation or collision avoidance, speed enforcement, temporary speed restrictions, and rail worker wayside safety.

Fire Protection and Emergency Medical Services Mitigation

Alternate routes for fire and emergency service vehicles operating near at-grade crossings will be evaluated as part of the final design phase of the Preferred Alternative through the Fire/Life Safety Committee. This committee was established in 1992 and provides a forum for regular communication and action plans with emergency service providers. Furthermore, final design of the project will be done in accordance with National Fire Protection Association NFPA-130 (Standard for Fixed Guideway Transit and Passenger Railway Systems), as well as the applicable fire and building codes of local jurisdictions.

As part of a prior agreement, a new at-grade crossing for DFW Airport Fire Station 6 will be constructed to provide a new access point for airport property north of the Cotton Belt rail alignment. This will enhance access and improve response times for this fire station.

Pedestrian and Vehicle Activity Mitigation

All federal, state, and municipal laws regulating safety, design and operating procedures will be followed for the Project. General and specific mitigation measures are outlined below.

To address pedestrian activity, final design will include the installation of special signage, designated street crossings, and adequate lighting, as required, to mitigate the potential for accidents involving pedestrians and cyclists. In addition, corridor safety fencing will be used to control informal pedestrian crossings and secure the project at select locations, including those areas where there are adjacent residential land uses, schools, or other high pedestrian activity centers such as Addison Circle where large special events are held. In 20 residential areas, particularly north Dallas, noise barriers will serve as the safety barrier and additional fencing will not be needed except for gap locations. Given that this is an existing rail corridor with active freight on most sections, all current pedestrian crossings should be occurring at designated crossings. Fencing will formalize these crossings. In industrial areas where freight activity is higher and pedestrian activity is low, safety fencing may not be needed.

During final design, DART will coordinate with local jurisdictions to determine needs for enhanced pedestrian crossing features such as additional signage, tactile strips, safety lights or pedestrian crossing gates to address localized concerns for school children activity and special events. DART will also coordinate with local schools and interested parties to provide outreach events through the Transit Education Program to educate children, residents, businesses, and others about the project and best safety practices.

Regarding vehicle activity, the Preferred Alternative includes eight new grade separations to address projected vehicle traffic volumes or queuing impacts, thus eliminating conflicts (see **Section 5.2**). In addition, 34 at-grade crossings will be established as quiet zones and will incorporate additional safety features. All public crossing approaches will be protected with warning signs, lights, bells, and gates to warn drivers, pedestrians, and cyclists of an approaching

train. Most private crossings will be protected in the same manner as public crossings. Gated crossings will have either two or four gates, depending on the characteristics of each crossing. Quiet zone crossings will incorporate either four gates or non-mountable barriers to enhance safety. During the approach of any rail vehicle (passenger rail or freight), the gates will lower and automobile traffic will be stopped until the rail vehicles have cleared the intersection. Adjacent traffic signals and at-grade crossings will be coordinated to improve traffic flow and clear intersections prior to train arrival.

To mitigate potential on board vehicle accidents, safety features on rail vehicles will include: emergency manual door releases, a public address system inside and outside the car, an automatic feature that stops the train if operators release the control lever, safety mirrors, sight and sound warning systems, impact resistant windows and windshields, “sensitive edges” on passenger doors to detect possible obstructions, and two brake systems (dynamic brakes and disc brakes) per rail car.

Station Area Activity Mitigation

Crime Prevention through Environmental Design (CPTED) principles will be followed to enhance safety and security at stations. This includes design elements, adequate lighting, clear pedestrian access points at dedicated crossings, and good visibility and sight lines. In addition, station cameras will be located on platforms and in parking lots, and monitored 24 hours per day. Stations will be regularly patrolled by police to deter crime.

Five stations will have intermittent freight trains through the platform area. Pedestrians will be channeled to platform crossing locations to avoid conflicts. In downtown Carrollton, there are three active freight lines that could create safety issues for passengers. The Preferred Alternative runs east-west, the Madill Subdivision (BNSF Line) operates from southwest to northeast, and the Union Pacific (UP) corridor runs north-south. The DART Light Rail Green Line also operates on aerial structure along the UP corridor. The new Cotton Belt Regional Rail station platform will allow for pedestrian movements across the Cotton Belt tracks. At the western edge of the Cotton Belt platform, DART will provide a crossing of the Madill Subdivision to connect the light rail and regional rail station areas. A crossing of the UP corridor will be provided near the intersection of Broadway Street and College Street to provide station access for new development to the east. DART will also construct accessible vertical circulation to a new an aerial pedestrian walkway that will extend from the Cotton Belt platform to the Green Line aerial light rail platform. This will avoid at-grade crossing of the freight line.

At the 12th Street Station in Plano, a walkway will be located north of the freight tracks to channel pedestrians to the new LRT aerial platform. This connection will allow transfers to/from the Preferred Alternative and Red Line. In order to further enhance pedestrian movements in the station area, DART will also install pedestrian crossings with pedestrian gates at two locations.

4.9 Environmental Justice

This section assesses the potential impacts to minority and low-income populations along the Preferred Alternative. The purpose is to determine whether and where populations experience disproportionately high and adverse effects as a result of the Project. Executive Order 12898, “Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations” was signed in February 1994. It requires Federal agencies to ensure that disproportionately high and adverse human health or environmental effects of proposed Federal projects on minority and low-income communities are identified and addressed. In addition, the Department of Transportation is committed to Title VI of the Civil Rights Act, which provides that no person in the United States shall, on grounds of race, color or national origin, be excluded from

participation, be denied the benefits of, or be subject of discrimination under any program or activity receiving Federal financial assistance.

The primary source of data for the Study Area is the 2011-2015 American Community Survey (ACS). The Study Area is made up of EJ and non-EJ populations. ACS estimates are not available at the census block level. The 2010 Decennial Census was used for block level data for race and ethnicity. For this study, DART established local thresholds for determining EJ populations, based off of CEQ guidance. A block was considered to have a minority population if the block had twice the percentage of minority individuals as the county in which the block fell, or if the percentage of individuals identifying themselves in a minority group in that block was over 50 percent. A census block group was determined to contain a low-income population if the percentage of people below the poverty level was more than twice the county comparison area, or if the median household income of the block group was below the poverty level for a family of four. An impact to a minority or low-income population is determined to be disproportionately high and adverse by comparing the design elements and impacts with those in non-minority and non-low-income populations. The determination is made after taking into consideration mitigation and enhancement measures and offsetting benefits to each population. Refer to the *Socioeconomic and Environmental Justice Existing Conditions Technical Memoranda* in **Appendix B** for more details on data used for the EJ analysis.

4.9.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and no impacts relative to EJ populations will occur. Study Area-wide mobility and access benefits identified in the Project purpose and need would also not occur as described in **Section 5.1**. However, these populations would also need to be provided the enhanced mobility and access benefits that will occur under the Preferred Alternative. Over time as congestion increases, mobility will continue to be degraded for residents in the Study Area.

Preferred Alternative

Public Participation

In August 2016, DART relaunched the public process for the Cotton Belt Project that began in 2010. A series of nine public meetings were held in April, May, August, September and December 2017. A summary of the Public and Area Focus Group (AFG) Meetings is provided in **Chapter 8**. As DART sought meaningful public input specific to the EJ communities, a special effort was made to involve these communities. EJ involvement efforts included bilingual advertisements and publications, outreach to minority organizations, and material distribution within EJ communities. The following specific notifications were issued for the Project for each of the public community meetings:

- 20,000 brochures printed in both English and Spanish with a comment card attached;
- Bilingual meeting brochures placed on all DART vehicles including bus routes, LRT, and TRE;
- Windshield distribution at six DART facilities located near the Cotton Belt Project, including the Downtown Carrollton Station, Addison Transit Center, CityLine/Bush Station, Arapaho Station, Jack Hatchell Transit Center, and Parker Road Station;
- Door hanger notices along the Cotton Belt Project within 500 ft. from the center of the tracks on both sides of the alignment;
- Newspaper ads placed in the following publications: *Dallas Morning News, Al Dia* (Hispanic), *Dallas Weekly* (African American), *Dallas Chinese News* (Asian);
- Emailed/texted invitations of DART meetings to Cotton Belt subscribers (5,290);

- Posted on DART.org, Twitter and Facebook page;
- Posted to 38 Nextdoor neighborhoods along the corridor (12,384);
- Email to all media outlets and to AFGs, all previous meeting attendees and any other appropriate contact;
- Email to Chambers of Commerce including the Hispanic, African American and Asian Chambers; and
- Email to DART's congressional delegation, councilmembers, mayors and city managers and appropriate city staff.

In general, EJ community input and concerns with the Project mirrored those expressed by the community as whole. These were primarily associated with adjacent single-family neighborhoods along the Project corridor. These concerns focused on potential noise, vibration, visual, safety, and traffic concerns. In Plano, additional outreach was required in an EJ community near the 12th Street Station. Extensive coordination was conducted with the Douglass Community after archeological investigations along the existing railroad corridor encountered and unintentionally removed human remains within existing DART right-of-way south of the L.A. Davis Cemetery. During this coordination effort with the Douglass Community, DART eliminated plans to modify this portion of the existing railroad corridor. A portion of the right-of-way was turned over to the cemetery and the body was reinterred at its original location. This area of potential impact was removed from the Cotton Belt Project and the Douglas Community will be unaffected.

Demographic Analysis

There are 83 US Census block groups within the Study Area with a total population of approximately 118,900. Census block groups were used to calculate minority populations. Based on US Census American Community Survey (ACS) 5-year estimates; 58,105 persons identified themselves as a minority, as defined by EO 12898. In all, 34 of the block groups met the threshold for containing a minority population as identified in **Table 4-6** and **Figure 4-2**. Minority populations are spread throughout the Study Area, with concentrations around Downtown Carrollton, Coit Road, 12th Street, and Shiloh Road, and between the UT Dallas and City Line/Bush stations.

Table 4-6 also includes the demographic data for Dallas, Collin and Tarrant County, which were used as the thresholds for comparison relative to the census block groups that fall within those counties. Comparisons focused on those block groups with minority populations at twice level of the county or over 50 percent of the total population.

Census block groups were also used to calculate low-income EJ populations. Based on the 2015 ACS data, of 83 Census block groups in the Study Area, with a total population of approximately 114,500 (this is a slightly lower number than the total number reporting demographic data as a result of differences in Census sampling techniques), there are 15 which met the threshold for a low-income population. This includes those where the percentage of those with income below the poverty level are twice or more the county average. All 15 of these block groups are located within Collin County based on that county's relatively low threshold compared to Dallas or Tarrant counties. There are three Census block groups where the median household income is lower than the Department of Health and Human Services poverty level for a family of four. Within the Study Area, low-income populations are located primarily west of Coit Road and around the UT Dallas Station to east of Shiloh Road. There are Census block groups which contain no population (including areas within DFW Airport and other industrial or commercial areas); these geographic units are not considered for this analysis. In all, the 27 Census blocks which contain a minority population, and 15 Census block groups met the threshold for a low-income population are considered EJ populations as shown in **Table 4-6** and **Figure 4-2**.

Table 4-6. EJ Populations Within the Study Area

Census Geography	Percent Minority (Including Racial and Ethnic Minorities)	Percent Below Poverty	Median Household Income*	No Vehicle Available (%)
Collin County	39.9%	7.6%	$84,735	2.7%
Dallas County	69.2%	19.3%	$50,270	7.4%
Tarrant County	50.8%	15.0%	$58,711	4.7%
Collin County				
Block Group 1, Census Tract 317.09	67.3%	30.0%	$54,811	2.9%
Block Group 1, Census Tract 317.18	20.5%	0%	$100,179	2.0%
Block Group 2, Census Tract 317.18	25.5%	3.5%	$92,788	0.8%
Block Group 1, Census Tract 317.19	70.7%	19.0%	$41,984	18.7%
Block Group 2, Census Tract 317.19	16.5%	1.3%	$91,042	3.7%
Block Group 1, Census Tract 317.20	92.1%	50.6%	$21,711	33.4%
Block Group 2, Census Tract 317.20	87.8%	41.0%	$17,560	15.7%
Block Group 3, Census Tract 317.20	78.5%	43.8%	$25,625	9.8%
Block Group 2, Census Tract 318.02	53.7%	8.7%	$76,920	1.2%
Block Group 3, Census Tract 318.02	35.3%	8.2%	$61,467	5.7%
Block Group 5, Census Tract 318.02	56.6%	16.3%	$42,228	1.5%
Block Group 1, Census Tract 318.04	34.7%	15.3%	$54,886	10.8%
Block Group 2, Census Tract 318.04	15.9%	1.8%	$118,214	0%
Block Group 3, Census Tract 318.04	12.5%	9.2%	$56,595	17.0%
Block Group 4, Census Tract 318.04	51.9%	79.7%	$10,964	23.0%
Block Group 1, Census Tract 318.05	23.5%	5.5%	$100,847	3.1%
Block Group 2, Census Tract 318.05	18.3%	4.4%	$106,964	3.7%
Block Group 3, Census Tract 318.05	22.6%	10.9%	$96,111	3.3%
Block Group 1, Census Tract 318.06	86.0%	9.3%	$75,504	6.5%
Block Group 2, Census Tract 318.06	67.0%	16.7%	$63,082	4.5%
Block Group 1, Census Tract 318.07	31.5%	11.1%	$73,629	26.3%
Block Group 4, Census Tract 318.07	17.4%	0%	$104,265	0%
Block Group 1, Census Tract 319	59.8%	29.6%	$49,226	9.2%
Block Group 3, Census Tract 319	88.1%	29.6%	$43,935	11.3%
Block Group 3, Census Tract 320.03	39.2%	21.6%	$42,008	18.5%
Block Group 4, Census Tract 320.03	86.9%	39.6%	$35,717	8.9%
Block Group 3, Census Tract 320.04	71.8%	10.1%	$58,776	4.5%
Block Group 4, Census Tract 320.04	67.4%	1.2%	$48,892	4.3%
Block Group 5, Census Tract 320.04	46.7%	9.6%	$74,773	2.5%
Block Group 6, Census Tract 320.04	80.7%	40.4%	$27,121	12.0%
Block Group 2, Census Tract 320.10	66.3%	26.5%	$31,331	1.0%
Block Group 3, Census Tract 320.10	49.3%	1.0%	$54,069	0%
Block Group 1, Census Tract 320.11	53.2%	4.5%	$136,313	0%
Dallas County				
Block Group 1, Census Tract 136.11	10.8%	2.2%	$133,219	0%
Block Group 2, Census Tract 136.11	24.4%	5.8%	$115,625	0%
Block Group 1, Census Tract 136.16	34.9%	10.5%	$72,500	3.6%
Block Group 2, Census Tract 136.16	39.9%	7.6%	$73,125	0%
Block Group 3, Census Tract 136.16	71.1%	20.3%	$44,559	9.8%
Block Group 1, Census Tract 136.17	20.4%	6.3%	$106,957	1.3%
Block Group 2, Census Tract 136.17	10.2%	1.1%	$81,607	0%
Block Group 3, Census Tract 136.17	41.3%	22.3%	$38,542	0%
Block Group 1, Census Tract 136.18	37.5%	9.8%	$76,000	2.4%
Block Group 2, Census Tract 136.18	18.7%	0.7%	$151,500	5.5%
Block Group 2, Census Tract 136.19	18.5%	4.5%	$149,464	2.0%
Block Group 3, Census Tract 136.19	9.6%	0%	$134,583	0%
Block Group 1, Census Tract 136.20	43.6%	4.3%	$75,786	2.7%

Table 4-6. EJ Populations Within the Study Area (cont'd)

Census Geography	Percent Minority (Including Racial and Ethnic Minorities)	Percent Below Poverty	Median Household Income*	No Vehicle Available (%)
Block Group 2, Census Tract 136.20	43.3%	2.6%	$39,910	6.3%
Block Group 3, Census Tract 136.20	37.8%	4.4%	$47,574	3.2%
Block Group 1, Census Tract 136.21	38.8%	16.7%	$42,568	1.7%
Block Group 2, Census Tract 136.21	46.8%	3.0%	$34,580	16.0%
Block Group 1, Census Tract 136.24	79.1%	13.3%	$35,611	2.8%
Block Group 1, Census Tract 137.14	57.3%	12.6%	$53,357	7.2%
Block Group 1, Census Tract 137.16	71.2%	22.7%	$66,793	4.7%
Block Group 3, Census Tract 137.16	52.2%	4.6%	$57,981	6.6%
Block Group 1, Census Tract 137.18	91.9%	30.4%	$36,250	5.4%
Block Group 2, Census Tract 137.18	67.5%	26.3%	$37,321	2.5%
Block Group 3, Census Tract 137.18	96.4%	15.6%	$50,906	8.6%
Block Group 1, Census Tract 137.25	65.2%	25.0%	$49,693	2.7%
Block Group 2, Census Tract 137.25	86.4%	17.3%	$32,583	17.9%
Block Group 1, Census Tract 137.26	31.9%	2.9%	$126,602	0%
Block Group 1, Census Tract 137.27	58.1%	3.4%	$51,360	4.0%
Block Group 2, Census Tract 137.27	31.4%	7.5%	$91,404	1.8%
Block Group 2, Census Tract 138.06	66.9%	2.2%	$75,455	0%
Block Group 2, Census Tract 140.02	22.5%	22.5%	$37,031	0%
Block Group 3, Census Tract 141.19	14.8%	3.4%	$145,455	1.1%
Block Group 1, Census Tract 141.20	37.3%	1.3%	$134,583	2.1%
Block Group 3, Census Tract 141.20	10.3%	0%	$131,250	0%
Block Group 2, Census Tract 141.21	48.2%	3.2%	$73,000	0%
Block Group 3, Census Tract 141.21	52.3%	3.3%	$71,007	6.4%
Block Group 4, Census Tract 141.21	36.1%	13.7%	$94,417	1.6%
Block Group 2, Census Tract 141.24	46.5%	1.2%	$187,900	1.4%
Block Group 1, Census Tract 141.26	30.5%	1.8%	$131,325	0.4%
Block Group 2, Census Tract 141.26	55.3%	14.7%	$83,068	3.6%
Block Group 1, Census Tract 141.27	75.9%	5.8%	$104,290	2.9%
Block Group 1, Census Tract 141.32	70.7%	33.0%	$51,188	5.7%
Block Group 1, Census Tract 192.05	11.4%	3.0%	$105,625	1.5%
Block Group 1, Census Tract 207	37.8%	0%	$63,750	0%
Block Group 2, Census Tract 207	39.8%	4.9%	$51,031	2.3%
Block Group 3, Census Tract 207	20.1%	1.2%	$85,549	0%
Tarrant County				
Block Group 2, Census Tract 1137.05	46.0%	16.6%	$56,771	3.6%
Block Group 4, Census Tract 1137.05	47.9%	4.1%	$37,390	0%

Source: USCB, 2015; GPC, 2018
Note: Bold indicates data is twice the county level or greater than 50%

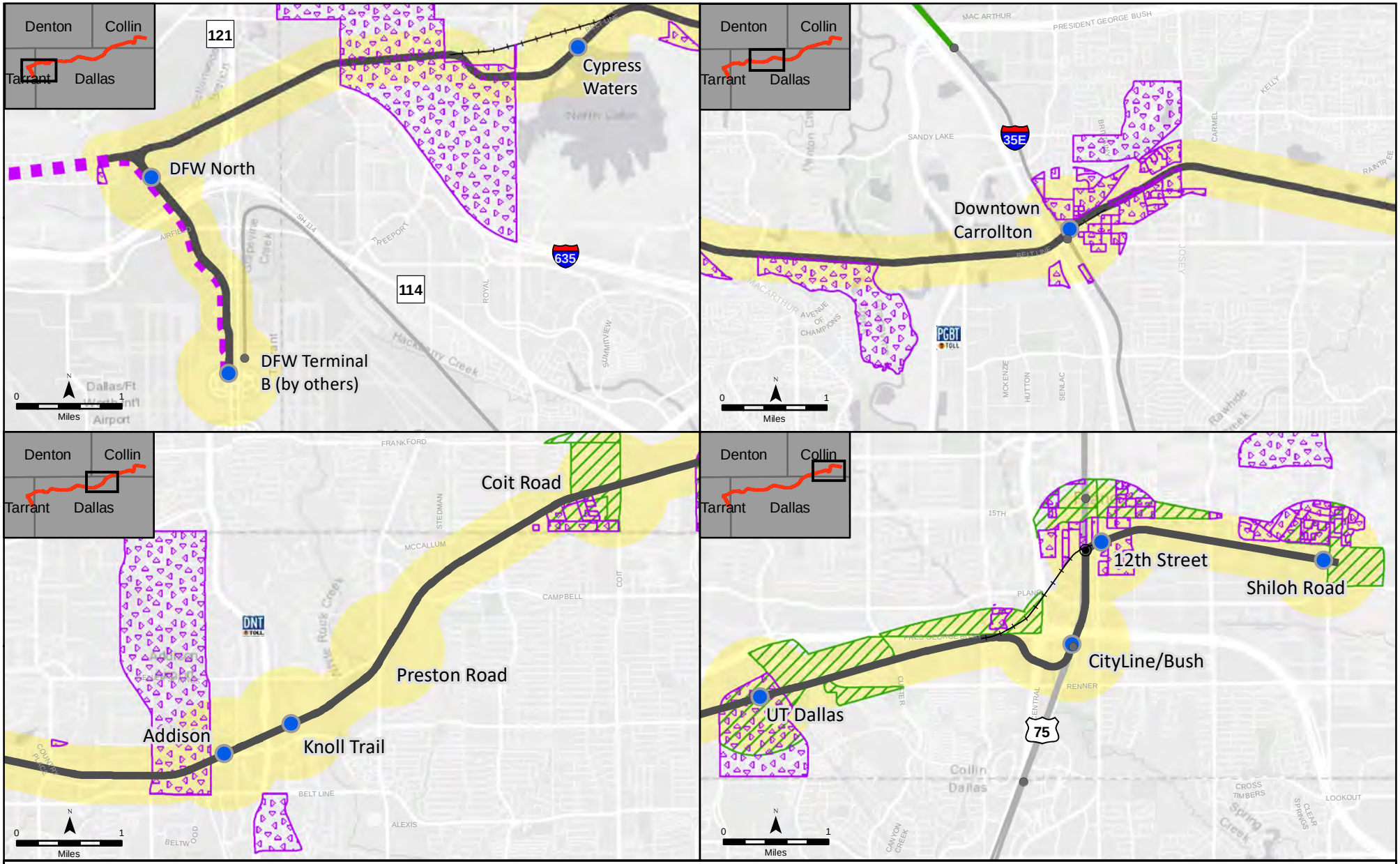


Figure: 4-2
Environmental Justice
Data Source: U.S. Census Bureau, 2010

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Based on the 2015 ACS, 17,358 persons in the Study Area identify themselves as having limited English proficiency (LEP), representing 15.5 percent of the total Study Area population. Block groups with the highest LEP populations are located in Carrollton, near the Downtown Carrollton Station; Dallas near Coit Road; Richardson near the UT Dallas Station; and Plano, near the 12th Street and Shiloh Road stations.

Minority populations are scattered throughout the Study Area, with concentrations east of Cypress Waters, around and east of Downtown Carrollton, at Coit Road, around the 12th Street and Shiloh Road stations and between the UT Dallas and City Line/Bush stations. Low-income populations are concentrated west of Coit Road and around the four eastern station sites: UT Dallas, City Line/Bush, 12th Street, and Shiloh Road. LEP populations are identified at Coit Road, and the UT Dallas, 12th Street and Shiloh Road stations. A discussion of impacts and benefits by EJ area follows.

Effects Assessment

Each resource area was reviewed to determine how potential impacts will affect EJ populations. Resource areas that could potentially impact EJ populations include Acquisitions and Displacements, Land Use and Economics, Visual and Aesthetic Resources, Noise and Vibration, Public Safety and Security, Traffic and Circulation, Community Facilities, Air Quality, and Parks and Trails. **Section 4.20** discusses Indirect and Cumulative Impacts on EJ communities. The analysis considered the nature and magnitude of the anticipated adverse impacts after mitigation that were identified for each resource area, and determined the nature and magnitude of the impact on the EJ populations in each station area and along the alignment as described below.

East of Downtown Carrollton

Impacts

The Preferred Alternative will acquire and relocate the Cedar Supply, Inc. business east of the station. There are several other commercial locations within the area where the business could relocate. Relocation of the business will preserve the business and its employees. For these reasons, no disproportionately high and adverse impacts due to the displacement were identified in this tract.

Visual impacts to EJ populations east of the Downtown Carrollton Station are expected to be limited because the center platform will be located along the existing freight rail alignment immediately north of the Downtown Carrollton park-and-ride lot and east of the aerial Green Line LRT Station. The alignment will be elevated at its crossing of the BNSF Madill Subdivision tracks allowing the Preferred Alternative to operate without delay on the aerial alignment and freight operations to continue at grade. While the elevated alignment over the BNSF will introduce a visual element, it will not change the visual character due to the nearby elevated highways. The Preferred Alternative will be grade separated over Josey Lane, introducing a new visual element near EJ populations. However, existing vegetation will be preserved to the greatest extent feasible and the structure is consistent with the industrial nature of the area.

The Carrollton Heights Historic District and the NRHP eligible Carrollton Depot are located east and north of the station, respectively. The Art and Design program will include community input and the selection of colors, finishes, and materials complementary to the area. The station will become an integral part of the area and continuity of the existing and proposed land uses will result in minimal visual impacts (see **Section 4.7**).

As detailed in **Section 4.14**, severe noise impacts were projected around the Downtown Carrollton Station including in the EJ areas. Noise impacts will be mitigated with the establishment of quiet zones for at-grade crossings near impacted noise-sensitive receptors at S. Broadway Street, N. Denton Drive, and Perry Road, in cooperation with local municipalities. Noise barriers

will be installed where warranted by FTA guidance and DART policy. Together, noise barriers and quiet zone crossings will eliminate noise impacts to EJ communities. No EJ populations in this area are anticipated to be impacted by vibration from the Preferred Alternative.

Benefits

The Downtown Carrollton Station will benefit EJ populations by providing access to jobs, schools and transportation. The Preferred Alternative will provide transit access to several major employment centers including DFW Airport, CityLine and others in corridor cities. Connections to three LRT lines and the DCTA A-Train and TEXRail regional lines will further enhance access. The elevation of the alignment over the BNSF tracks will allow the Preferred Alternative to operate safely and without delay on the aerial alignment while allowing freight operations to continue at grade.

Coit Road/UT Dallas Area

Impacts

Visual impacts to EJ populations near Coit Road and UT Dallas are expected to be minimal. The Coit Road area is primarily surrounded by multi-family and single-family residences and a residential assisted living center. The alignment will be grade separated from Coit Road. Coit Road will be raised on a new bridge structure and the rail alignment lowered slightly underneath Coit Road. The EJ populations west of Coit Road are set back from the roadway and have existing vegetation that will screen views of the Coit Road low bridge structure. The UT Dallas Station will be located in an open area with flat terrain. This station will be visible at a distance until planned development in the area occurs. Although this will change the visual character of the area, the station will be integral to future development and impacts are expected to be minimal. The alignment will also be elevated over Custer Parkway. EJ populations are to the north of the Preferred Alternative in this area. These areas are set back from the alignment. DART will install visual screening to minimize views of the structure.

As detailed in **Section 4.14,** severe and moderate noise impacts were projected to occur around Coit Road, including in the EJ areas west of Coit Road. Noise barriers will be installed where warranted by FTA guidance and DART policy. Noise impacts in this area will be mitigated with the establishment of quiet zones (some with bell mitigation) for at-grade crossings near impacted noise-sensitive receptors at McCallum Boulevard, Meandering Way, and Dickerson Street in cooperation with local municipalities. The installation of noise barriers is recommended in sections of alignment from Preston Road to near Synergy Park Boulevard. Together, noise barriers and quiet zone crossings will eliminate the noise impacts to EJ communities.

It is estimated that the vibration impacts at residences between Hillcrest Road and Coit Road can be substantially mitigated by installing tire derived aggregate (TDA) beneath both tracks along the alignment (see **Section 4.15**). The assessment of vibration impacts at residential locations in this area will remain after mitigation at one residence within the EJ area west of Coit Road. However, this impact is minimal; with a predicted vibration level just at the FTA impact threshold. Additional mitigation would not be feasible for this single residence.

Benefits

The UT Dallas Station will benefit EJ populations by providing access to jobs, schools and transportation. The Preferred Alternative will provide transit access to several major employment centers including DFW Airport, CityLine and others in corridor cities. Connections to three LRT lines and the DCTA A-Train and TEXRail regional lines will further enhance access. The grade separations at Coit Road and Custer Parkway will benefit traffic and mobility along the roadways. The UT Dallas Station will be located on the UT Dallas campus thus improving access throughout the region to this university.

CityLine/Bush and 12th Street Area

Impacts

Visual impacts to EJ populations surrounding the 12th Street Station are expected to be minimal. The station platform will be located along the existing at-grade freight rail alignment, just east of the infill DART Red Line LRT Station which will be located on the existing elevated guideway. The 12th Street Station will include a pedestrian connection to the LRT station. The stations will not change the visual character of this transitioning, dense, mixed-use area. South of 12th Street, the CityLine/Bush Station will be adjacent to the existing at-grade CityLine/Bush LRT Station, in an existing and visually complex transit station environment. The alignment approaching the station will be a large aerial overpass crossing Spring Creek and US 75. The bridge design will be coordinated with the City of Richardson and compatible with existing highway structures in the area. Visual impacts to EJ populations are expected to be minimal, as the aerial overpass will not be visible from nearby EJ areas.

Severe and moderate noise impacts were projected within the EJ areas surrounding the 12th Street Station. Noise impacts will be mitigated with the establishment of additional quiet zones for at-grade crossings near impacted noise-sensitive receptors at K Avenue and Municipal Avenue in cooperation with local municipalities. Quiet zone crossings will eliminate noise impacts in this area (see **Section 4.14**). No EJ populations in this vicinity are anticipated to be impacted by vibration from the Preferred Alternative.

Benefits

The new stations will benefit environmental justice populations by providing access to jobs, schools and transportation. The Preferred Alternative will provide transit access to several major employment centers including DFW Airport, CityLine and others in corridor cities. Connections to three LRT lines and the DCTA A-Train and TEXRail regional lines will further enhance access. The Preferred Alternative which deviates from the existing rail will reduce potential impacts to the Douglass Community.

Shiloh Road Area

Impacts

This station will be located adjacent to an electrical substation. The terrain is flat and open and the station may be visible from nearby businesses; however, the station will be compatible with the surrounding industrial/commercial land uses and visual impacts will be minimal.

There is a quiet zone crossing currently in place at Shiloh Road and no noise impacts are anticipated from the Preferred Alternative in this area. No EJ areas in this vicinity are anticipated to be impacted by vibration from the Preferred Alternative.

Benefits

The new station will benefit EJ populations by providing access to jobs, schools and transportation. The Preferred Alternative will provide transit access to several major employment centers including DFW Airport, CityLine and others in corridor cities. Connections to three LRT lines and the DCTA A-Train and TEXRail regional lines will further enhance access.

Overall Environmental Justice Findings

A comparative analysis was undertaken to evaluate the design elements, impacts, mitigation and enhancement measures, and offsetting benefits to minority and low-income populations as well as non-minority and non-low-income populations in the Study Area.

As discussed throughout the FEIS, all community (EJ and non-EJ) impacts are being mitigated. Therefore, the Preferred Alternative will not constitute a disproportionately high and adverse

impact to EJ populations relative to non-EJ populations within the Study Area. With the planned mitigation measures, project effects will not predominantly be borne by an EJ population, or will not be suffered by an EJ population.

DART will apply mitigation measures where such mitigation is determined to be reasonably feasible to address impacts from the Preferred Alternative on minority and low-income populations as well as non-minority and non-low-income populations in the Study Area. Based on this analysis, impacts to minority and low-income populations will not be predominantly borne by an EJ population. Neither will the impacts to minority and low-income populations be appreciably more severe or greater in magnitude than the impacts to non-minority and non-low-income populations. For these reasons, the Preferred Alternative will not have a disproportionately high and adverse effect on minority and/or low-income populations.

Additionally, the EJ communities along the corridor will stand to benefit from the enhanced mobility that the Preferred Alternative will provide, since EJ populations tend to have a higher rate of transit-dependency than non-EJ populations. Enhanced mobility through increased access to public transit will afford EJ populations the opportunity to seek and accept employment in a wider geographical area, thus providing more employment options.

4.9.2 Mitigation Measures

The EJ communities within the Study Area are generally located around stations; therefore, these communities will have the benefit of improved access to the regional transit system and major employment/activity centers. While there are limited impacts in the EJ areas, they will be mitigated consistently with other areas along the corridor. Impacts are not disproportionate compared to non-EJ areas: minimal visual impacts and noise and vibration impacts are anticipated to occur along the alignment both in and outside of EJ population areas.

Stations in EJ areas have the potential to indirectly impact housing prices, neighborhood character, and other aspects to which EJ populations can be particularly sensitive. Indirect effects are discussed in **Section 4.20**.

In addition, DART staff has documented public participation efforts to ensure full and fair participation by all potentially affected communities in the transportation decision making process. Therefore, no mitigation is needed or required to address EJ concerns.

4.10 Soils and Geology

4.10.1 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and would not have any impacts to soils and geology due to construction or excavation.

Preferred Alternative

For most of the alignment, the Preferred Alternative is not designed to be below grade and will not impact geological resources. There are two areas where Preferred Alternative changes will be below grade. At Coit Road, the alignment will be depressed by approximately seven feet to accommodate a grade separation of Coit Road. At Hillcrest Road, the road will be lowered approximately 22 feet under the Preferred Alternative. In addition, support structures associated with the station platforms and bridge crossings over roadways and identified water features will be secured into the underlying bedrock, therefore displacing bedrock material. The displaced bedrock from drilling to place bridge support structures will not change or alter the geologic formation and therefore is not considered an impact to underlying geological resources.

No Farmland Protection Policy Act of 1981 (FPPA)-regulated farmlands will be affected by the Preferred Alternative.

Along the Preferred Alternative, the majority of soils have moderately to severely restrictive soil conditions with respect to site development. These soils, where present along the rail alignment and at station locations, have the potential to cause differential movements and loss in foundation integrity. The restrictive soil conditions could impact vertical alignment of track and track support and cause differential movements of station foundations and platform slabs. There are no anticipated long-term impacts to the soils from the Preferred Alternative.

4.10.2 Mitigation Measures

The Preferred Alternative is within an existing railroad corridor and will not be below grade except for one short section of depressed track at Coit Road. Hillcrest Road will be depressed under the at-grade alignment. All other proposed construction will be at or above grade. Mitigation is not warranted.

Geology

Since the rail alignment and associated stations are not going to be built below grade, there are no measurable short- or long-term impacts to the geological resources within the Study Area and no mitigation is warranted.

Soils

The effect of restrictive soils will be mitigated by improving the track and station subgrade soils. Mitigation for the track will include chemical stabilization of active clays to improve the track subgrade where necessary or the use of synthetic geogrid reinforcement. For station structures, the effect of these soils will be mitigated by either conditioning the on-site soils or replacing the soils with non-expansive soils to limit soil movements to acceptable levels. The potential for station foundation movements will be mitigated by placing the foundations below the active soil depth with the addition of potential foundation anchors.

4.11 Hydrology and Floodplain

This section describes several hydrologic and water quality issues that must be addressed prior to construction: floodplain impacts, surface water quality impacts, and groundwater resources impacts. The following sections provide information relating to minimizing impacts to these resources.

4.11.1 Floodplains Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the Preferred Alternative would not be built and would not have any impacts to hydrology and floodplains within the Study Area.

Preferred Alternative

The Preferred Alternative spans or borders the following flood zones: Cottonwood Branch, Grapevine Creek, Elm Fork of the Trinity River, Hutton Branch, Perry Branch, White Rock Creek, McKamy Branch, Cottonwood Branch, Prairie Creek and Spring Creek as described in **Section 3.8**. There are 1,344 acres of 100-year floodplain, 387 acres of 500-year floodplain, and 33 acres of 0.2 percent chance flood hazard within the Study Area. None of the station locations lie within the 100-year floodplain.

The Federal Emergency Management Agency (FEMA) has regulations governing alterations or development within floodplains shown on Flood Insurance Rate Maps (FIRM). Under FEMA

regulations, no alterations of flood zones can result in an increase in the 100-year base flood elevation or cause an increase in the velocity of floodwaters. In addition, the cities have their own floodplain ordinances, and DFW Airport is responsible for issuance of construction permits on airport property. It will also be necessary to coordinate with the U.S. Army Corps of Engineers (USACE) on the issue of fill in any floodplains, streams, or wetlands. While a Nationwide Permit might suffice for the construction of an aerial structure above the floodplain, an Individual Permit may be required if permanent or short-term construction impacts occur in associated streams or wetlands. This will be determined with the development of engineering details during final design (see **Section 4.12** for more information on wetlands).

Consultation with the appropriate local, state, and federal representatives, including DFW Airport, will be conducted prior to construction across floodplain areas. Federal law requires municipalities that participate in the National Flood Insurance Program (NFIP) to adopt floodplain ordinances that prohibit development in the existing 100-year floodplain. Cities along the alignment and DFW Airport require all development to meet not only the FEMA NFIP criteria, but also the ultimate condition flow rate floodplains. Each city has specific ordinances governing land alteration within a floodplain, as does the federal government. **Table 4-7** identifies the designated floodplains that will be impacted by placement of fill materials that has the potential to alter floodplain characteristics and the ordinance that must be followed for development in the floodplain.

Table 4-7. Designated and Suspected Floodplains Crossed or Bordered by Alignment

Name of Floodplain	City	Ordinance/Resolution Number
Cottonwood Branch	Grapevine, DFW Airport	Grapevine: 2009-33, § 2 (Exh. A), 9-1-09
Grapevine Creek	Coppell	Ord. No. 2001-952, § 1, 6-26-01
Elm Fork of the Trinity River	Carrollton, Dallas	Carrollton: Ord. No. 2581; Dallas: Reg. No. 51A-5.101
Hutton Branch	Carrollton	
Perry Branch	Carrollton	
White Rock Creek	Dallas	Reg. 51A-5.101
McKamy Branch	Dallas	
Prairie Creek	Richardson	Ord. No. 4221
Spring Creek	Richardson	

Source: GPC6; Municode

As preliminary and final design progresses, the impacts at these locations will be quantified. Current design proposes that all floodplain crossings be bridged, limiting direct impacts to the floodplain to minor amounts of fill associated with retaining walls and structures associated with the Preferred Alternative.

4.11.2 Floodplain and Hydrology Mitigation Measures

DART and its contractors will comply with all federal, state, and local regulations regarding construction and operation within floodplains. The Preferred Alternative is being designed to be above any 100-year floodplain that will be crossed. Impacts to floodplains will be minimized, when practical, to replacing existing piers located in the flood zone or minor amounts of fill associated with retaining walls, culverts, and other improvements to existing bridges. Future design phases will include a detailed hydrologic/hydraulic analysis to determine if the structures placed in floodplains will adversely impact existing buildings or other structures within the zone of influence of the structures. The final designer will evaluate corridor drainage and provide design for open ditches and underdrains as needed. In general, fill sections will have open ditches and cut sections will have open ditches or underdrains depending on placement of retaining walls. Preliminary engineering guideway typical sections and drainage area maps can be seen in **Appendix A** for more information. Final design will also include erosion and runoff controls and

include measures to restore beneficial natural functions of the floodplain including water circulation.

A Trinity River Corridor Development Certificate (CDC) is required for projects located within the Trinity River Regulatory Zone and is intended to minimize flood risk by regulating development within the Trinity River Corridor in North Central Texas. The Trinity River Regulatory Zone is consistent with the 100-year floodplain for the Trinity River, of which the Elm Fork of the Trinity River is crossed by the Project. Under the CDC process, local governments retain ultimate control over floodplain permitting decisions, but other communities along the Trinity River Corridor are given the opportunity to review and comment on projects in their neighbor's jurisdiction.

Section 408 of the Clean Water Act requires that projects which will take possession of, use, or cause injury to harbor or river improvements be reviewed and approved by the USACE. No facilities subject to Section 408 have been identified within the Study Area.

With regard to floodplain impacts, DART will continue to coordinate with the USACE, DFW Airport, and the cities of Dallas, Fort Worth, Carrollton, Grapevine, Richardson, Plano and the Town of Addison during final design. The Preferred Alternative design will require review and approval, and any mitigation measures that may be required will be included. Preliminary coordination with the USACE has been initiated to document the expected permits and mitigation needs. Due to possible design changes, the coordination efforts will continue until a permit has been authorized. Permit authorization may occur after the FEIS/ROD and into final design as more design details are known, but will be available for public review. DART followed the public involvement process as outlined in Section 2(d) of E.O. 11988 Floodplain Management. In compliance with E.O. 11988, public notice was included as part of the local advertisements for the DEIS public hearings. No individuals commented on the floodplain encroachment at DFW Airport or if the Preferred Alternative will affect human life, safe airport operations, aircraft services, or the natural and beneficial floodplain values.

4.11.3 Surface Water Quality Impact Evaluation

No-Build Alternative

Automobile traffic would not be reduced under the No-Build Alternative; therefore, adverse impacts to surface water quality as a result of non-point source contaminants (petroleum products, rubber, etc.) generated by automobiles and deposited on roadways may continue to increase. During storm events, this material is washed into local drainages, affecting surface water quality. In addition, chemicals associated with railroad activities, such as oil, grease, hydraulic fluid, and rail ties containing minor amounts of creosote have previously impacted surface water quality in the Study Area due to storm water runoff. Creosote would continue to degrade water quality under the No-Build Alternative.

Preferred Alternative

As described in **Section 3.8** and shown in **Figure 3-23**, the Preferred Alternative crosses one major river channel and 13 smaller streams. Construction has the potential to cause both short-term and long-term impacts to these water bodies due to runoff from grading activities, removal or additions of fill materials, and incidental/accidental spills of mechanical fluids.

Operation of the Preferred Alternative will result in minimal impacts to surface water quality. Potential impacts to water quality could result from the impervious surfaces of station platforms and parking areas associated with the project. Storm water run-off from platforms could contribute to erosion and sedimentation problems adjacent to station sites. Runoff from parking areas could contain anti-freeze, lubricating fluids, gasoline, and other petroleum hydrocarbons associated with automobiles.

The amount of non-point source contaminants that automobiles contribute to the surface water in the Study Area should be reduced since implementation of the Preferred Alternative will reduce the number of automobiles on area roadways. Water quality and runoff during construction is discussed in more detail in **Section 4.21**.

The equipment storage and maintenance functions will take place at an EMF; therefore, the potential impact to water quality will be associated with maintenance of trains at the existing Irving Yard EMF location and will be mitigated by following the measures presented in **Section 4.11.4**.

The Preferred Alternative will also eliminate long term impacts by rehabilitating or rebuilding most of the existing bridges. Most of the existing bridges are constructed with creosote treated lumber, which leaches over time to the surface water bodies. The rehabilitated, rebuilt, or new bridges will be constructed of non-leaching materials such as concrete or steel.

4.11.4 Surface Quality Mitigation Measures

The EPA's National Pollutant Discharge Elimination System (NPDES) permit program, authorized by the Clean Water Act, controls water pollution by regulating point sources that discharge pollutants into Waters of the US in Texas. The NPDES program is administered by the Texas Commission on Environmental Quality (TCEQ), as part of the Texas Pollutant Discharge Elimination System (TPDES). Storm water runoff resulting from the Preferred Alternative will be addressed through compliance with the TPDES Construction General Permit.

Construction activities must comply with the TCEQ Storm Water Construction General Permit (CGP) TX150000. The 2018 CGP became effective March 5, 2018, and will expire in five years. Compliance with this permit will consist of the preparation of a complete storm water pollution protection plan (SWPPP) which will include an identification of BMPs for water quality. See **Section 4.21** for additional construction mitigation measures.

4.11.5 Groundwater Resources Impact Evaluation

Potential impacts to groundwater resources are expected to be minor. Due to over-development in the Dallas/Fort Worth Metroplex, the Study Area is not located within a significant groundwater recharge area. The water table is low in the Study Area, dropping at times to as much as 1,200 feet below the surface.

Construction of the Preferred Alternative will not impact aquifer resources. The Trinity Group, the primary source of groundwater for the upper Trinity River Basin, and the Woodbine Aquifer, a minor aquifer also producing water in this basin, are the two major components of the area's groundwater resources. Both aquifers outcrop west of Dallas County. Construction of below-grade sections of the alignment near Coit Road, as well as the depression of Hillcrest Road under the alignment, is not expected to contact groundwater resources.

4.11.6 Mitigation of Impacts to Groundwater Resources

Implementation of the mitigation measures provided in **Section 4.11.4**, Surface Water Quality Impacts, and **Section 4.21**, Construction Impacts, will similarly mitigate impacts to shallow groundwater.

4.12 Wetlands Resources

All waters of the U.S. were delineated on May 25 and 26, 2017 by GPC6 environmental scientists and in August 2017 by wetland biologists. The *Water Resources and Water Quality Technical Memorandum* in **Appendix B** identifies the waters of the U.S. present within the Study Area. A summary of this information is presented in **Section 3.9** of this FEIS. The following impact

evaluation for these waters of the U.S. is quantified based on the acreage or linear distance of each water feature that could be impacted.

4.12.1 Impact Evaluation

No-Build Alternative

The No-Build Alternative would not impact any wetlands or other potentially jurisdictional waters of the US because this alternative would not have any ground disturbance. The waters of the U.S. would remain as they are today.

Preferred Alternative

The Preferred Alternative will cross from west to east: Grapevine Creek (three crossings), Cottonwood Branch (two crossings), Elm Fork Trinity River, two unnamed tributaries to Hutton Branch, Hutton Branch, Perry Branch, unnamed tributary to White Rock Creek, White Rock Creek, McKamy Branch, McKamy Branch East Fork, Prairie Creek, Spring Creek, and an unnamed tributary to Spring Creek. In addition, North Lake is immediately adjacent to the centerline at the Cypress Waters alignment. Three wetlands are crossed by the centerline (west of Elm Fork Floodplain, near Luna Road, and west of downtown Carrollton). Several of these water resources lie adjacent to the Preferred Alternative, but will be avoided. To minimize filling of the water resources, the preliminary designs indicate that all potential jurisdictional waters of the US will be bridged.

Table 4-8 lists the potential waters of the U.S. and wetland areas anticipated to be impacted due to construction of the Preferred Alternative within the Study Area, including the potential acres of impact. **Figures 4-3** through **4-6** illustrates the impact locations.

Table 4-8. Potential Impacts to Waters of the U.S.

Crossing	Name	Acres of Potential Impacts
S-1b	Grapevine Creek Crossing 2	0.03
S-1c	Grapevine Creek Crossing 3	0.03
S-2b	Cottonwood Branch Crossing 2	0.01
S-3	Unnamed tributary to Cottonwood Branch	0.007
S-4	Elm Fork Trinity River	0.04
S-5	Unnamed tributary to Hutton Branch	0.03
S-6	Hutton Branch	0.06
S-7	Perry Branch	0.006
S-8	Unnamed Tributary to Hutton Branch	0.05
S-9	Unnamed Tributary to White Rock Creek	0.06
S-10	White Rock Creek	0.04
S-11	McKamy Branch	0.04
S-12a	McKamy Branch East Fork Crossing 1	0.02
S-12b	McKamy Branch East Fork Crossing 2	0.008
S-13	Prairie Creek	0.02
S-14	Unnamed tributary to Spring Creek	0.02
S-15	Spring Creek	0.14
W-1	Isolated Wetland	0.27
W-6	Wetland adjacent to Hutton Branch	0.43
W-7	Isolated Wetland	0.008
	TOTAL	1.32

Source: GPC6

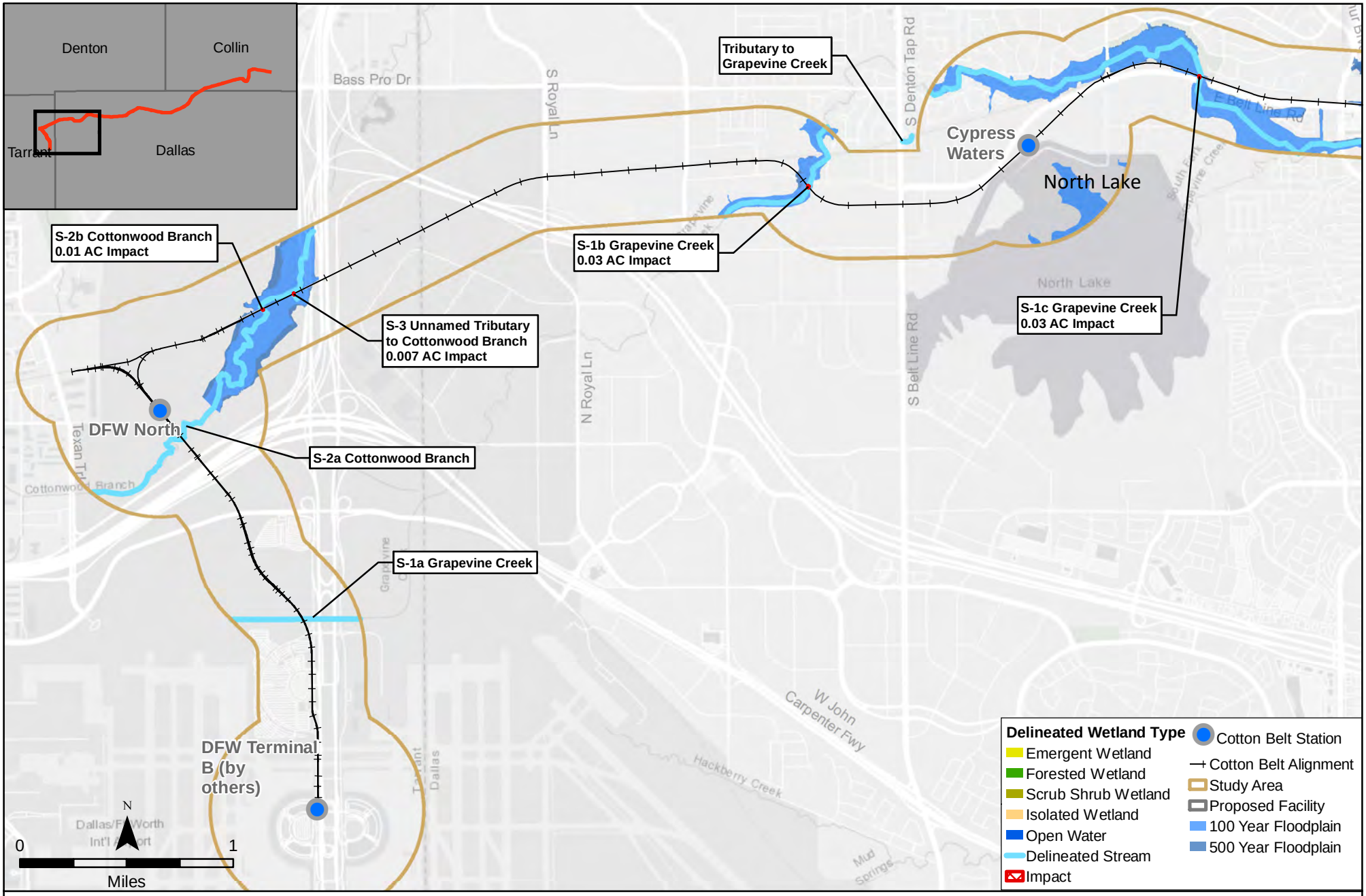

Figure 4-3
Impacted Water Resources
Data Source: FEMA, 2012, HDR, 2017

Cotton Belt Corridor Regional Rail Project
Final Environmental Impact Statement

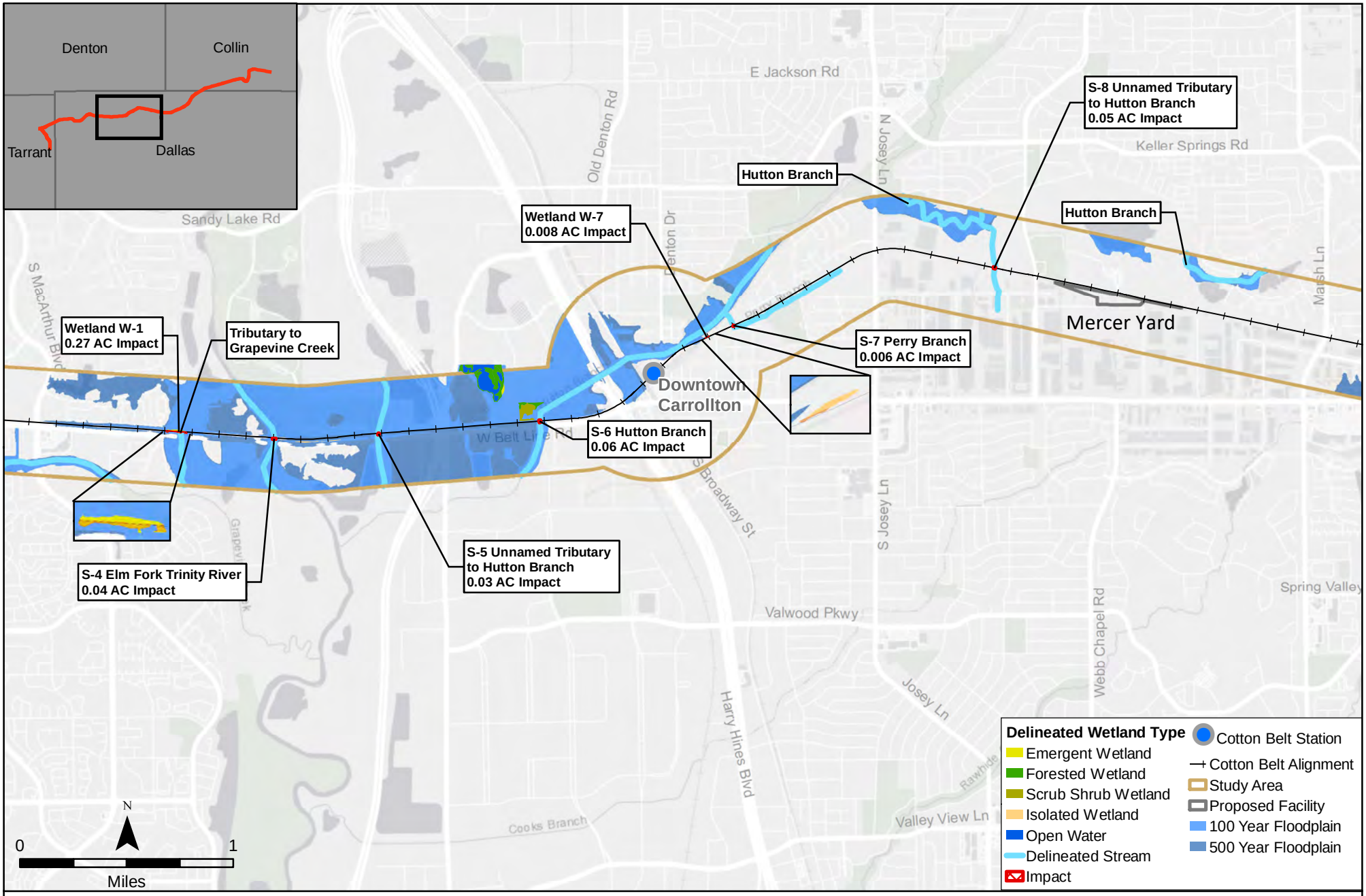

Figure 4-4
Impacted Water Resources
Data Source: FEMA, 2012, HDR, 2017

Cotton Belt Corridor Regional Rail Project
Final Environmental Impact Statement

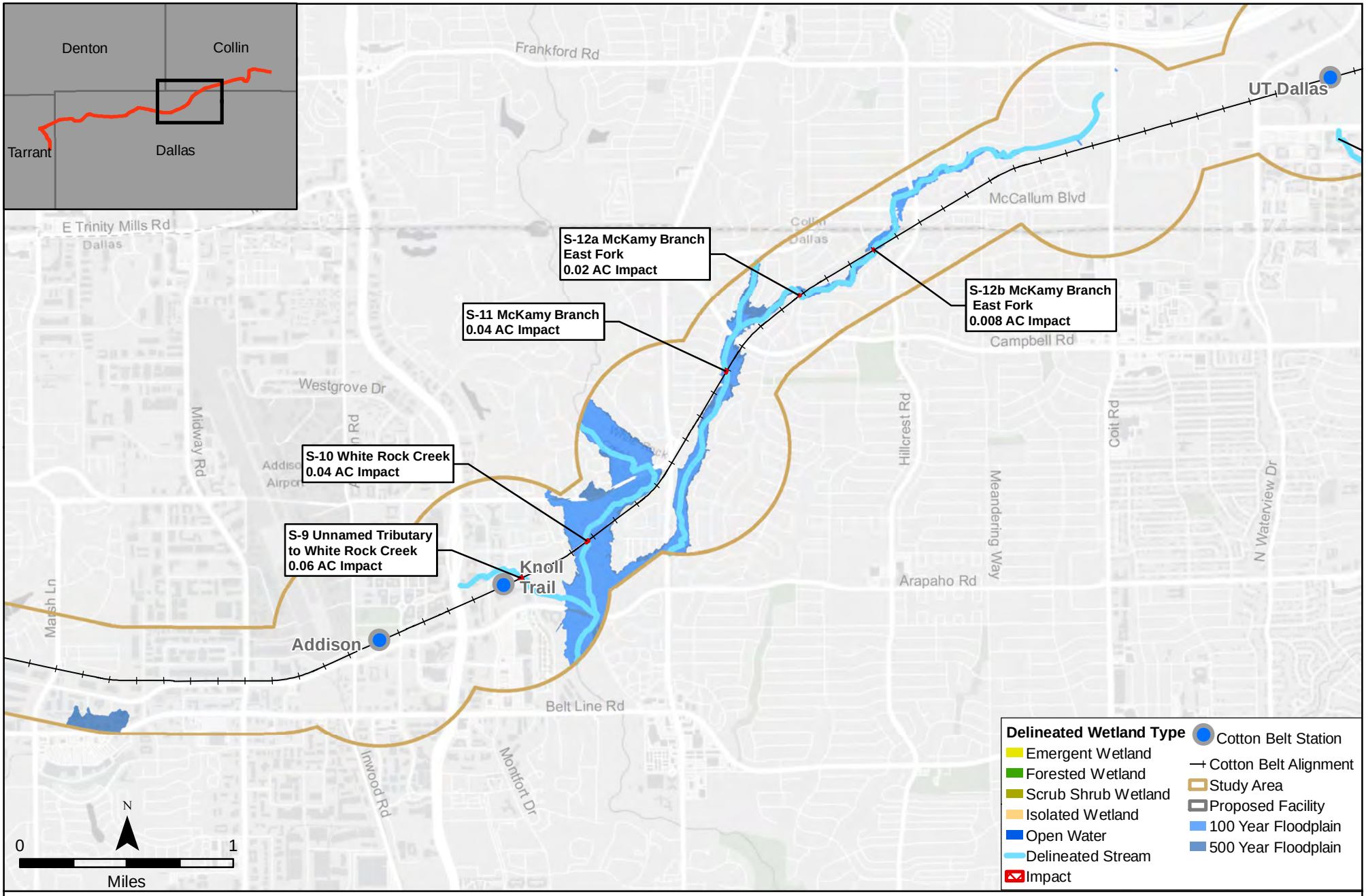

Figure 4-5
Impacted Water Resources
Data Source: FEMA, 2012, HDR, 2017

Cotton Belt Corridor
Regional Rail Project
Final Environmental Impact Statement

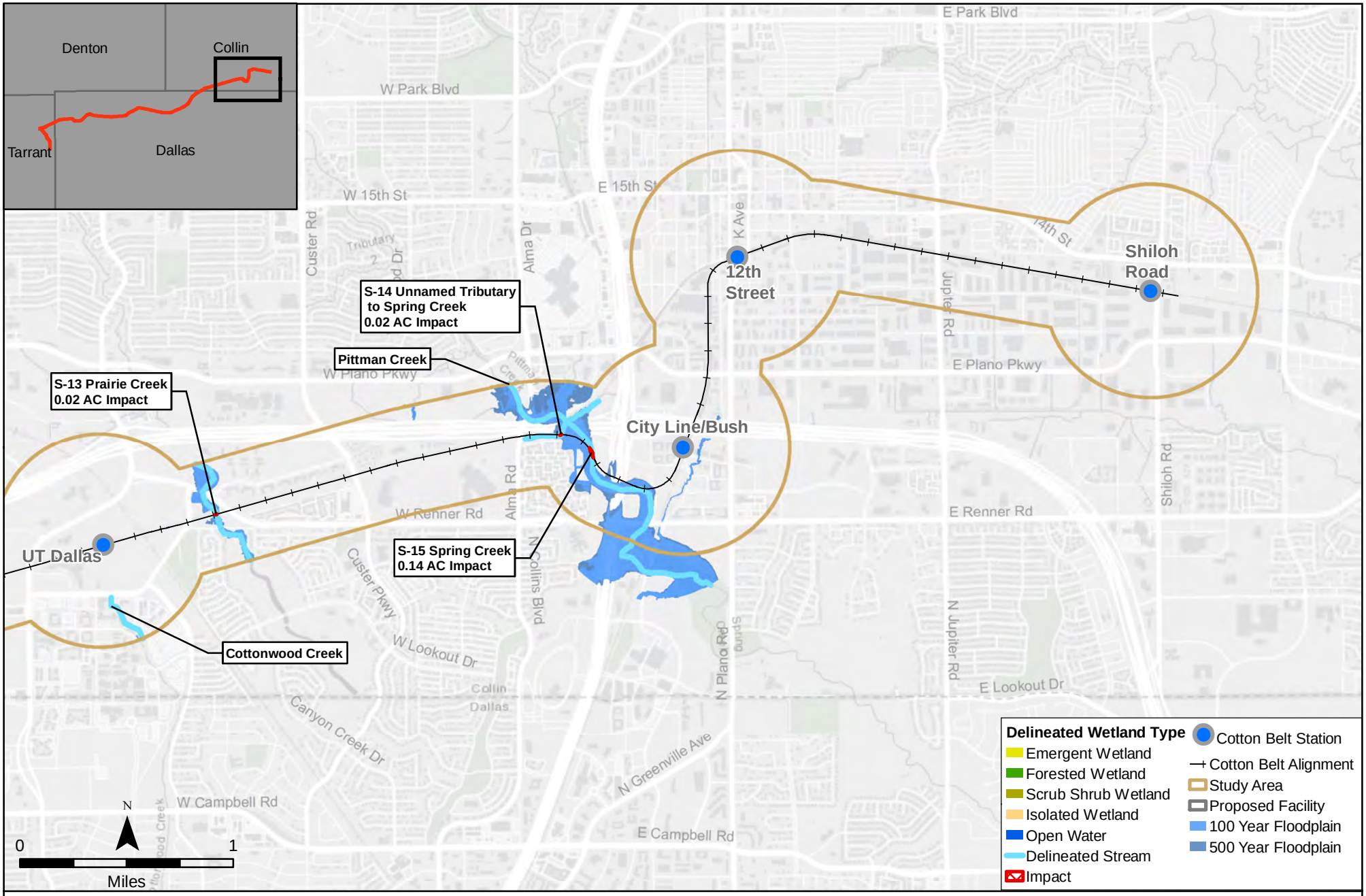

Figure 4-6
Impacted Water Resources
Data Source: FEMA, 2012, HDR, 2017

Cotton Belt Corridor Regional Rail Project
Final Environmental Impact Statement

Impacts from the Preferred Alternative to water resources will primarily be the result of placing support columns for structures crossing water resources within the ordinary high water mark (OHWM) of each water body. The quantities of impacts are estimated by the size and number of support columns in each location. These bridge column impacts will total approximately 1.32 acres.

The remaining bodies of water lie adjacent to the Preferred Alternative and will not receive any direct impacts. However, indirect impacts could occur via surface water runoff, which may transport sediment into these water bodies.

Stations, Mercer Yard and EMF

No wetlands were identified in the station areas, at Mercer Yard, or at the selected EMF site at TRE Irving Yard.

4.12.2 Mitigation Measures

During final design, DART will continue to investigate reducing both the direct and indirect impacts to wetlands. DART will coordinate with USACE on all waters of the US and wetlands issues. Any changes developed during final design can be tracked and adjusted through DART's *Mitigation Monitoring Program*. Consultation with the USACE has been initiated to document the expected permits and mitigation needs. Additionally, the Preferred Alternative is identified as a regionally significant project that can benefit from expedited review under the Section 214 program of the Water Resources Development Act (WRDA) Program which includes a Memorandum of Agreement (MOA) between NCTCOG and USACE to support expedited review and cost savings to major projects. The program was extended in the fall of 2016 to December 31, 2019. DART participates in the program and will inform NCTCOG when project permitting is initiated to take advantage of the program.

4.13 Air Quality

This section provides an assessment of the potential air quality impacts of the Preferred Alternative. This was conducted by assessing existing air quality conditions in the region, the potential for regional or localized impacts with the Preferred Alternative in operation, and a conformity assessment. **Section 3.11** provides an overview of the current air quality status in the Study Area and applicable air quality standards.

4.13.1 Impact Evaluation

No-Build Alternative

No new violations of the NAAQS and no adverse regional or local air quality impacts are expected. However, the No-Build Alternative maintains the status quo for automobile travel in this part of the region and would not provide alternative forms of transportation or support continued land use changes that create a more sustainable development pattern less dependent on automobile use. Furthermore, the No-Build Alternative would not create benefits associated with reduced VMT or reduced hours of congestion delay, therefore not contributing to air quality improvements in the region.

Preferred Alternative

The Project was assessed at a regional level and a local level relative to potential air quality and emission impacts related to:

- Emissions from the operation of regional rail vehicles
- Potential changes in emissions from automobiles traveling to park-and-ride locations, or based on changes in travel with commuters using the regional rail line rather than driving

Vehicle Technology

The Preferred Alternative intends to procure new regional rail vehicles for operations. The vehicles will be self-propelled diesel multiple units (DMUs). These diesel-electric vehicles are different from current DART TRE or LRT operations in that they are not locomotive-hauled like the TRE or do not rely on an overhead catenary system and electric substations for power like LRT. The vehicle specifications state they will have diesel engines compliant with EPA Tier 4 ultra-low emission standards. These engines are housed inside the vehicle which power all systems. The Tier 4 standards are the latest standards and require that emissions of PM and NO_x be further reduced by about 90 percent beyond prior standards.

Regional Emissions

In addition to vehicle emissions advancements, a comparison of future vehicles miles of travel (VMT) and hours of congestion delay in year 2040 with and without the Preferred Alternative in operation was done. Vehicle emissions are a major contributor to ozone formation due to the presence of two key “precursors,” or ingredients, to ozone formation in automobile emissions: nitrous oxides (NO_x) and volatile organic compounds (VOCs). Despite improvements in technology that lead to cleaner-burning vehicles, the volume of traffic on our highways today continues to produce a significant amount of pollution that contributes to ozone formation. Forecast VMT with the Preferred Alternative in operation results in a reduction of nearly 80,000 daily (nearly 24,000,000 annual) VMT in the DART Service Area. In terms of hours of congestion delay within the DART Service Area, the Preferred Alternative will save nearly 3,800 daily hours of congestion, or 1,123,000 hours of congestion delay per year. Thus, it is unlikely the O_3 levels will increase as a result of construction of the Preferred Alternative due to overall decrease in VMT and congestion delay.

Localized Emissions Assessment

Based on TxDOT air quality procedures, a “CO” hot spot analysis of specific intersections is necessary if the region is in non-attainment or maintenance for CO or PM. Currently, the region is in attainment for these, so a micro-scale analysis was not conducted for the Preferred Alternative. Based on project drive access volumes from the NCTCOG regional travel demand model, localized traffic at station park-and-rides is not anticipated to be substantial. Shiloh Road as an end-of-line station may have the most station automobile traffic and is the largest parking lot. In many cases, the Preferred Alternative has higher transfer activity (bus to rail, or rail to rail) than drive access at stations due to the connectivity to the rest of the transit system.

Project Conformity Assessment

The Study Area is in Tarrant, Dallas and Collin counties, which have been designated as a “moderate” nonattainment area for eight-hour ozone by the EPA. Therefore, the transportation air quality conformity rule applies to the region and the Preferred Alternative is subject to a regional air quality analysis. Transportation conformity ensures that federal funding and approval goes to projects which are consistent with the region’s air quality goals. Under Section 176(c) of the CAA [42 USC Section 7670(c)], federal agencies such as the FTA and FHWA are prohibited from engaging in, supporting in any way, providing financial assistance for, licensing or permitting or approving any activity that does not conform to an approved State Implementation Plan (SIP). Because this Preferred Alternative is in a nonattainment area for ozone, the federal implementing agency will be responsible for ensuring that projects conform to the SIP. A conforming project definition is one that conforms to the SIP objectives of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of those standards.

Under Section 176(c)(4) of the CAAA of 1990, Metropolitan Planning Organizations (MPOs) must conduct an air quality conformity analysis to ensure Metropolitan Transportation Plans (MTP) and

Transportation Improvement Programs (TIP) are consistent with the region's air quality goals, for areas that are in nonattainment for ozone (NCTCOG, 2016a). Conformity measures the amount of two pollutants which are precursors to the formation of ground-level ozone, NO_x and VOCs. The SIP establishes a Motor Vehicle Emissions Budget (MVEB) for those two pollutants to limit the formation of ozone. On January 11, 2016, the EPA published the Adequacy Status of the Dallas-Fort Worth, TX Reasonable Further Progress 8-Hour Ozone Motor Vehicle Emission Budgets for Transportation Conformity Purposes (NCTCOG, 2016a), establishing the use of NCTCOG's developed MVEB for 2017. If a project is included in the emissions analysis of the MTP or TIP, and the plan or program has been approved as confirming to the SIP, then the project is presumed to conform. If the project's emissions are not analyzed in the MTP or TIP, then a separate project-level conformity determination is required. Showing that emissions under the Preferred Alternative are less than the No-Build Alternative demonstrates project level conformity. Projects included in the region's approved MTP and TIP are projected to be below the set MVEB.

In March 2016, the Regional Transportation Council of NCTCOG adopted *Mobility 2040: The Metropolitan Transportation Plan for North Central Texas* and approved the results of the *2016 Transportation Conformity* (NCTCOG, 2016b; NCTCOG, 2016a). The Preferred Alternative is included in Mobility 2040, and is part of the approved 2016 Transportation Conformity. Mobility 2040 meets all transportation air quality conformity requirements of the CAAA, the air quality plan, the transportation conformity rule, and the transportation conformity-related provisions contained in the United States Code, Title 42 §7506 (NCTCOG, 2016a). Currently, there are no federal or state regulations, or executive orders, specifically requiring GHG emissions or resiliency of project features to climate change be determined for planning of federal projects.

Based on this assessment, no new air quality violations of the NAAQS will be anticipated as a result of the Preferred Alternative; therefore, no mitigation measures will be required.

4.14 Noise

This section presents the analysis of potential noise impacts due to the operation of the Preferred Alternative and discusses mitigation measures to minimize adverse impacts.

4.14.1 Noise Impact Assessment Methodology

The affected noise and vibration environment along the Study Area was investigated based on a review of current project and land use information, data from previous work summarized in the *Cotton Belt Corridor Regional Rail Noise and Vibration Existing Conditions Technical Memorandum* (December 2013), and measurements conducted during March, April and September of 2017. **Section 3.12** describes existing noise conditions.

Noise levels were projected based on the DART DMU vehicle noise specification, the Preferred Alternative Operating Plan and the prediction model specified in the FTA guidance manual.

The primary components of wayside noise from the train operations are engine/exhaust and cooling fan noise from the DMU power units and wheel/rail noise from the steel wheels rolling on steel rails. Secondary sources, such as vehicle air-conditioning and other ancillary equipment, will sometimes be audible, but are not expected to be significant factors. The projection of wayside noise from train operations was carried out using the model specified in the FTA guidance manual, supplemented by DMU noise measurement data, with the following assumptions:

- Initially, the trains will consist of vehicles similar to one Stadler diesel-electric FLIRT3 vehicle, including four powered axles and eight unpowered axles, with a total length of 267 feet. Ultimately, it is anticipated that an additional coach section will be added to the train, extending the total train length to 318 feet.

- DMU noise is predicted as a function of speed and throttle setting based on noise measurements of a set of Stadler diesel-electric GTW 2/6 articulated DMU rail vehicles on the Denton County Transportation Authority (DCTA) A-Train system. Because the DCTA vehicle has only two powered axles and four unpowered axles, it has been assumed that the FLIRT3 vehicle will be equivalent to two (2) DCTA vehicles in terms of noise emission, with a 3-decibel increase in the sound exposure level (SEL). It has also been assumed that the increased train length for the ultimate configuration will result in an additional SEL increase of 0.76 decibels.
- Based on measurement data, a minimum speed of 35 miles per hour (mph) was used to predict noise from DMU vehicles decelerating to a stop at train stations to account for additional noise caused by regenerative braking.
- As described in **Section 2.4**, service will be offered seven days per week, with more frequent service during weekday morning and evening peak periods. During initial operations, weekday service will generally be from 6:00 am to 9:00 pm (approximately 30 passenger trains each way; about 60 daily passenger trains). The service hours for some stations could be as early as 5:15 am or as late as 10:15 pm as trains come in and out of revenue service from the EMF. However, the noise analysis assumes the potential for future operations to extend until 12:15 am. Although initial peak period service levels will be every 30 minutes, the noise analysis assumes more frequent service levels where trains will operate in both directions every 20 minutes during the peak travel periods of 6:00 am - 9:00 am and 3:00 pm - 7:00 pm. Trains will operate in both directions every 60 minutes during the non-peak travel periods of 9:00 am - 3:00 pm and after 7:00 pm. Service on Saturday, Sunday, and major holidays will be from 8:00 am to 8:00 pm operating in both directions every 60 minutes throughout the day.
- Vehicle operating speeds are based on speed profiles generated for the Preferred Alternative with speeds of up to 79 mph.
- The DMU throttle settings (i.e. the percent of full throttle) are based on acceleration profiles generated for the Preferred Alternative, assuming that an acceleration of 2 mph/sec represents a full throttle condition.
- DMU horns are assumed to generate a sound level of 104.5 dBA at 100 feet, corresponding to a SEL of 113.5 dBA at 50 feet. The high horn noise level is based on compliance measurements conducted on the Stadler DMU rail vehicles on the DCTA A-Train system summarized in the test report Acoustic Warning Devices (Document No. TR: 0487, July 12, 2011). It is assumed that the horns will begin to be sounded 20 seconds, but not more than 0.25 mile, in advance of grade crossings in accordance with FRA regulations.
- Warning bells on the trains are activated as trains enter and leave passenger stations. This potential noise source was not included in this analysis because it will not be expected to be a major contributor to the overall noise exposure.
- Stationary warning bells, generating a sound level of 73 dBA at 50 feet, will be sounded at all gated crossings before and after each train for a total of 30 seconds.
- Wheel impacts at track crossovers and turnouts are assumed to cause localized noise increases of 6 dBA up to a distance of 50 feet, dropping off linearly to zero increase at a distance of 300 feet.
- It was assumed that there will be no change in freight rail operations due to the implementation of the Preferred Alternative. Small shifts in the location of freight rail tracks were not considered in this analysis.

4.14.2 Impact Evaluation

No-Build Alternative

No-Build noise levels in the Study Area will continue to be generated principally from motor vehicles traveling on Study Area roadways. In the absence of planned roadway improvements or other major developments that would alter traffic patterns to a great degree, future No-Build noise levels can be expected to increase slightly due to projected traffic growth. However, the increase in noise would not be perceptibly different from existing noise levels.

Preferred Alternative

The results of the noise impact assessment with the Preferred Alternative in operation identified impacts at a total of 5,366 residential receptors, including 3,071 severe impacts and 2,295 moderate impacts. The figures illustrating the locations of the residential noise impacts are located in **Appendix B** (*Noise and Vibration Technical Report*).

In addition, noise impacts were identified at 17 institutional receptors, including eight severe impacts and nine moderate impacts. **Table 4-9** lists the affected institutional receptors, which include four schools, six churches, four parks, a museum, an art gallery and a cemetery.

Table 4-9. Summary of FTA Category 3 (Institutional) Noise Impacts Without Mitigation

Moderate	Severe
Valley Ranch Baptist Church, Coppell	Deep Forest Gallery, Coppell
Church on the Rock, Carrollton	Discover Share Pre-School, Coppell
Miracle Tabernacle Pentecostal Church, Carrollton	Hilltop Memorial Park, Carrollton
A. W. Perry Homestead Museum, Carrollton	Gravley Park, Carrollton
Polk Middle School, Carrollton	Islamic Association of Carrollton, Carrollton
Trafalgar Square Park, Carrollton	Addison Circle Park, Addison
Beckert Park, Addison	Ivy Montessori Academy, Dallas
Congregation Ohev Shalom, Dallas	New Life in Jesus Christ Church, Dallas
Frankford Middle School, Dallas	

Source: GPC 6

The major source of potential noise impacts for the Preferred Alternative is noise from train horns that will be sounded at the numerous at-grade crossings along the rail alignment.

Quiet zones will be established to eliminate the noise from the train horns near grade crossings in accordance with FRA regulations. In quiet zones, because of safety improvements at the at-grade crossings, train operators will sound horns only in emergency situations rather than as a standard operating procedure. Establishing quiet zones will require cooperative action among the municipalities along the Project, FRA, the freight railroads and DART. The municipalities are key participants in the process as they must initiate the request to establish the zones through application to the FRA. To meet safety criteria, the municipalities may also be required to provide improvements at grade crossings such as modifications to the streets, raised medians, warning lights, and other devices. The FRA regulation also authorizes the use of automated wayside horns at crossings along with flashing lights and gates as a substitute for the train horn. While activated by the approach of trains, these devices are pole-mounted at the grade crossing, thereby limiting the horn noise exposure area to the immediate vicinity of the crossing.

With quiet zones, it is estimated that approximately 95 percent of the 5,366 residential noise impacts will be eliminated and all 17 institutional impacts will be eliminated. New quiet zones will be implemented in cooperation with local municipalities at 34 of the 41 at-grade crossings listed

in **Table 4-10**. Seven of the 41 crossings are existing quiet zones. Two existing quiet zones (Custer Parkway and Jupiter Road) will be replaced with grade separations.

Table 4-10. Quiet Zone Crossings

Street	City	Street	City
Coppell Road	Coppell	Knoll Trail Drive	Dallas
Southwestern Boulevard	Coppell	Davenport Road	Dallas
East Belt Line Road	Coppell	Campbell Road	Dallas
Moore Road	Coppell	Davenport Road	Dallas
Mockingbird Lane	Coppell	McCallum Boulevard	Dallas
S MacArthur Boulevard	Coppell	Meandering Way	Dallas
Fairway Drive	Coppell	Dickerson Street	Dallas
Luna Road	Carrollton	Waterview Parkway (Existing)	Richardson
I-35E Access Road (SB)	Carrollton	Rutford Drive	Richardson
I-35E Access Road (NB)	Carrollton	Custer Parkway (Existing)	Richardson
N Broadway Street	Carrollton	Alma Road (Existing)	Richardson
N Denton Drive	Carrollton	West CityLine Drive	Richardson
Perry Road	Carrollton	President. George Bush Turnpike (EB)	Richardson
Kelly Boulevard	Carrollton	President George Bush Turnpike (WB)	Plano
Marsh Lane	Addison	10th Street (Existing)	Plano
Surveyor Boulevard	Addison	K Avenue	Plano
Addison Road	Addison	Municipal Avenue	Plano
Quorum Drive	Addison	N Avenue (Existing)	Plano
Spectrum Drive	Addison	Jupiter Road (Existing)	Plano
Dallas Parkway (SB)	Addison	Shiloh Road (Existing)	Plano
Dallas Parkway (NB)	Addison		

Source: DART, 2017

Note: At proposed quiet zone grade crossings, cities must apply for new Quiet Zones per FRA rules. DART will include Quiet Zone mitigation costs as part of the Project. There are seven existing Quiet Zones.

Table 4-11 summarizes the number of remaining noise impacts at residential locations assuming the implementation of quiet zones. There is a total of 245 moderate noise impacts that will remain to be addressed, all at residential receptors. The next section provides information on mitigation to address these impacts.

4.14.3 Mitigation Measures

FTA states that, in determining the need for noise mitigation, severe impacts should be mitigated unless there are no practical means to do so. At the moderate impact level, more discretion should be used, and other project-specific factors should be included in the consideration of mitigation. These other factors can include the predicted increase over existing noise levels, the types and number of noise-sensitive land uses affected, existing outdoor-to-indoor sound insulation, and the cost-effectiveness of mitigating noise to more acceptable levels. Consistent with DART policy, noise mitigation for moderate noise impacts is warranted at locations where a noise exposure increase of three (3) decibels or more is projected. Other moderate impacts will be evaluated on a case-by-case basis, depending on proximity to other mitigation measures.

As previously explained, most of the noise impacts from the Preferred Alternative are due to the sounding of train horns at the numerous at-grade crossings along the alignment. The most practical way to mitigate these noise impacts is with the establishment of quiet zones for at-grade crossings near impacted noise-sensitive receptors. After quiet zones, 245 residential moderate impacts remain.

As shown in **Table 4-11**, a noise increase of 3 dB or greater is projected at 184 of these 245 receptors. Consistent with DART policy, the 184 impacts over 3 dB will be required to be mitigated. Mitigation of the remaining impacts is considered on a case-by-case basis, taking into consideration factors such as:

- Is the property within a cluster of residences where residences are impacted and require mitigation?
- Is the noise level increase near the moderate level and combined with significant community input regarding noise concerns?

The range of typical mitigation measures for reducing noise impacts are described below:

- **Noise Barriers:** Installation of noise barriers beside the tracks is commonly used to reduce noise from surface transportation sources. Depending on the height and location relative to the tracks, noise barriers can achieve between 5 and 15 dBA of noise reduction. The primary requirements for an effective noise barrier are that (1) the barrier must be high enough and long enough to break the line-of-sight between the sound source and the receiver; (2) the barrier must be of an impervious material with a minimum surface density of 4 lb./sq. ft.; and (3) the barrier must not have any gaps or holes between the panels or at the bottom. Because many materials meet these requirements, the selection of materials for noise barriers is usually dictated by aesthetics, durability, cost, and maintenance considerations. Noise barriers for transit projects typically range in height from 8 to 12 feet.
- **Building Sound Insulation:** Sound insulation of residences and institutional buildings to improve the outdoor-to-indoor noise reduction has been widely applied around airports and has seen limited application for rail and transit projects. Although this approach has no effect on noise in exterior areas, it may be the best choice for sites where noise barriers are not feasible or desirable and for buildings where indoor sensitivity is of most concern. Substantial improvements in building sound insulation (on the order of 5 to 10 dBA) can often be achieved by adding an extra layer of glazing to the windows, by sealing holes in exterior surfaces that act as sound leaks, and by providing forced ventilation and air-conditioning so that windows do not need to be opened.
- **Wheel/Rail Lubrication:** There are several options to mitigate potential wheel squeal from small-radius curves including on-board solid-stick rail lubrication and wayside rail lubrication. Automated wayside top-of-rail friction modifier systems put a small amount of lubricant onto the top of the rail, which maintains a constant coefficient of friction. This type of lubricant has been shown to reduce or eliminate the potential for wheel squeal.
- **Special Trackwork:** Because the impacts of rail vehicle wheels over rail gaps at track turnout locations increase airborne noise by about six dBA close to the track, turnouts are a major source of noise impact when they are located in sensitive areas. If turnouts cannot be relocated away from sensitive areas, other noise control measures can be used such as the use of spring-rail, flange-bearing, or moveable-point frogs in place of standard rigid frogs at turnouts. These devices allow the flangeway gap to remain closed in the main traffic direction for revenue service trains.
- **Grade Crossing Bells:** Industry standards for warning devices at railroad crossings have been established by the American Railway Engineering and Maintenance of Way Association (AREMA, 2017) and by the American Public Transit Association (APTA, 2007). The AREMA standard states that grade crossing bells should generate a peak sound level between 75 dBA and 105 dBA at a distance of 10 feet from the bell, and should operate at a rate of between 100 and 325 strikes per minute. The APTA standard generally refers to AREMA for design specifications, but allows flexibility in the development of alternative practices. Thus, the noise exposure from the grade crossing bells could be minimized by adjusting the bell volume and ring rate to near the minimum values. In addition, simple acoustic shrouds covering the back half of the bells could direct bell noise away from noise-

sensitive areas and focus it in areas where it is needed. These measures have the potential to reduce noise from grade crossing bells by about 10 dBA.

- **Vehicle Wheel Skirts:** Vehicle wheel skirts may also lessen noise and vibration generated by wheels, rails, engines, and motors.
- **Rail Grinding:** Noise generated by the Preferred Alternative may progressively increase over time due to rail wear. Rail grinding is used to restore the track profile and remove irregularities from worn rail. A maintenance program of regular rail grinding may prevent noise increases due to wear.
- **Property Acquisitions or Easements:** Additional options for avoiding noise impacts are for the agency to purchase residences likely to be impacted by train operations or to acquire easements for such residences by paying the homeowners to accept the future train noise conditions. These approaches are usually taken only in isolated cases where other mitigation options are infeasible, impractical, or too costly.

DART will eliminate the impacts using the following mitigation techniques:

- Installing a total of 22,250 lineal feet (4.21 miles) of approximately 15-foot high noise barriers (from top of rail) in 20 sections adjacent to the tracks near locations with noise impacts. While a 12-foot noise barrier is sufficient to mitigate noise, walls will be 15 feet to also serve as a visual screening where both noise barrier walls and visual mitigations are required (see **Section 4.7.2**).
- DART will reevaluate noise analysis during final design to determine if additional sound absorption treatments may be necessary along any portion of the wall.
- Reducing the noise from grade crossing bells near locations with impacts either by adjusting the bell volume to the minimum industry standard level of 75 dBA at 10 feet or by installing acoustic shrouds covering the back half of the bells.
- The draft specifications for the vehicle include wheel skirts that may dampen noise generated by the train. Additionally, the specifications address enclosures, baffles, seals, acoustical absorption, body panels with adequate sound transmission loss, vibration isolators, or other appropriate methods that will be incorporated into the vehicle design to lessen noise and vibration generated by wheels, rails, engines, motors, and all elements and equipment. DART will monitor wear of the tracks and implement a maintenance program that will be established to include rail grinding at appropriate intervals to prevent the incremental increase in noise from the Preferred Alternative.

Table 4-12 provides the approximate location and extent for each recommended noise barrier. The noise impacts and the barrier locations are shown in **Figures 4-7** through **4-13**. The civil station references can be viewed in the guideway plan and profile drawings in **Appendix A.** These locations are approximate, and will need to be confirmed during final design. **Table 4-13** lists the eight at-grade crossings where bell noise mitigation is warranted. These crossing locations are also depicted on **Figures 4-7** through **4-13**.

Finally, **Table 4-14** summarizes the resulting noise levels and remaining impacts based on FTA impact criteria at residential locations with the implementation of all mitigation measures - quiet zones, noise barriers and crossing bell noise mitigation. The distances for the section in **Table 4-14** represent the distances for residences with residual noise impact after implementation of quiet zones. However, with implementation of all mitigation measures, there are no noise impacts for this section and the distances in **Table 4-14** represent the receiver with the highest project noise level (which may not be the closest receiver to the track as stated in Note 5). In many cases, noise barriers are warranted for the receivers closest to the track, resulting in lower Project noise levels after mitigation than at receivers further from the track that do not require a noise barrier.

Table 4-11. Summary of Residential Noise Impacts with Implementation of Quiet Zones

Corridor Description	Side of Track[1]	Distance from Near Track (feet)	Train Speed (mph)	Existing Noise Level[2]	Project Noise Level[2]			Total Noise Level[2]	Noise Level Increase[2]	Number of Residential Impacts		
					Predicted[3]	Impact Criteria				Moderate		Severe
						Moderate	Severe			<3 dB Incr.	≥3 dB Incr.	
Freeport Pkwy to S Denton Tap Rd[5]	WB	259	25	62	47	59	64	62	0.1	0	0	0
Freeport Pkwy to S Denton Tap Rd[5]	EB	193	25	62	46	59	64	62	0.1	0	0	0
S Denton Tap Rd to S Moore Rd[5]	WB	567	35	56	41	56	62	56	0.1	0	0	0
S Moore Rd to S MacArthur Blvd[5]	WB	97	79	60	57	58	63	62	1.6	0	0	0
S Moore Rd to S MacArthur Blvd[5]	EB	278	76	60	48	58	63	60	0.2	0	0	0
S MacArthur Blvd to Elm Fork Trinity River[5]	WB	128	72	67	57	62	67	67	0.5	0	0	0
S MacArthur Blvd to Elm Fork Trinity River[5]	EB	225	71	67	50	62	67	67	0.1	0	0	0
Elm Fork Trinity River to Pres. George Bush Turnpike[4]	WB	--	--	--	--	--	--	--	--	0	0	0
Pres. George Bush Turnpike to I-35E[4]	EB	--	--	--	--	--	--	--	--	0	0	0
I-35E to N Josey Ln	WB	56 to 108	35 to 53	57 to 60	56 to 58	58	63	60 to 62	2.2 to 3.5	18	3	0
I-35E to N Josey Ln[5]	EB	125	53	57	56	56	62	59	2.5	0	0	0
N Josey Ln to Kelley Blvd[4]	WB	--	--	--	--	--	--	--	--	0	0	0
N Josey Ln to Kelley Blvd[4]	EB	--	--	--	--	--	--	--	--	0	0	0
Kelley Blvd to Marsh Ln	WB	45 to 70	56 to 71	59	57 to 59	57	63	61 to 62	2.2 to 3.1	18	4	0
Marsh Ln to Midway Rd[5]	WB	76	68	57	56	56	62	60	2.5	0	0	0
Marsh Ln to Midway Rd[5]	EB	471	60	61	40	58	64	61	0.0	0	0	0
Midway Rd to Dallas Pkwy	WB	71	35	61	59 to 60	58	64	63	2.1 to 2.4	16	0	0
Midway Rd to Dallas Pkwy[5]	EB	195	50	61	49	58	64	61	0.2	0	0	0
Dallas Pkwy to Preston Rd	WB	67	50 to 58	55	56	55	61	59	3.5	0	6	0
Dallas Pkwy to Preston Rd	EB	45 to 84	35 to 55	56 to 59	56 to 58	56 to 57	62 to 63	59 to 62	2.2 to 3.2	9	8	0
Preston Rd to Campbell Rd	WB	47 to 117	37 to 40	52	54 to 57	54	60	56 to 58	4.2 to 6.1	0	21	0
Preston Rd to Campbell Rd	EB	39 to 128	40	52	55 to 59	54	60	56 to 60	4.5 to 8.1	0	23	0

Table 4-11. Summary of Residential Noise Impacts with Implementation of Quiet Zones (cont'd)

Corridor Description	Side of Track[1]	Distance from Near Track (feet)	Train Speed (mph)	Existing Noise Level[2]	Project Noise Level[2]			Total Noise Level[2]	Noise Level Increase[2]	Number of Residential Impacts		
					Predicted[3]	Impact Criteria				Moderate		Severe
						Moderate	Severe			<3 dB Incr.	≥3 dB Incr.	
Campbell Rd to Hillcrest Rd	WB	48 to 101	40 to 72	52	54 to 59	54	60	56 to 60	4.2 to 7.9	0	36	0
Campbell Rd to Hillcrest Rd	EB	47 to 115	40 to 74	52	54 to 59	54	60	56 to 60	4.2 to 7.9	0	26	0
Hillcrest Rd to Coit Rd	WB	80 to 133	58 to 63	52	54 to 58	54	60	56 to 59	4.3 to 7.2	0	10	0
Hillcrest Rd to Coit Rd	EB	40 to 124	54 to 67	52 to 55	54 to 60	54 to 55	60 to 61	56 to 61	3.8 to 6.1	0	25	0
Coit Rd to Synergy Park Blvd[5]	WB	148	61	55	50	55	61	56	1.3	0	0	0
Coit Rd to Synergy Park Blvd	EB	41 to 62	35 to 59	55	55 to 59	55	61	58 to 60	3.2 to 5.2	0	22	0
Synergy Park Blvd to Alma Rd[5]	WB	96	73	60	55	58	63	61	1.3	0	0	0
Synergy Park Blvd to Alma Rd[5]	EB	396	62	58	49	57	62	59	0.6	0	0	0
Alma Rd to E Plano Pkwy[5]	WB	39	41	70	62	64	69	71	0.7	0	0	0
Alma Rd to E Plano Pkwy[5]	EB	189	30	69	51	64	69	69	0.1	0	0	0
E Plano Pkwy to Jupiter Rd[5]	WB	300	36	63	43	59	65	63	0.0	0	0	0
E Plano Pkwy to Jupiter Rd[5]	EB	215	35	63	47	59	65	63	0.1	0	0	0
Jupiter Rd to end[5]	WB	94	65	58	54	57	62	59	1.5	0	0	0
TOTAL NUMBER OF NOISE IMPACTS:										**61**	**184**	**0**

Source: GPC6, 2017

[1] Eastbound (EB) or Westbound (WB)

[2] Noise levels are based on Ldn and measured in dBA (rounded to the nearest decibel). For better resolution, noise level increases are shown to the nearest 0.1 decibel.

[3] Predicted levels include bell noise, where applicable (rounded to the nearest decibel).

[4] There are no noise-sensitive receptors of this type in this section.

[5] There are no receptors with noise impact in this section. It should be noted that the data for this section represents the receiver with the highest Project noise level which may not be the closest receiver to the track due to differences in train speed, acceleration, or distance to special trackwork or track structure (aerial vs. at grade).

Table 4-12. Recommended Noise Barrier Locations

Noise Barrier Number	Barrier Location Description		Side of Track	Barrier Civil Station Location		Barrier Length (feet)
	Corridor Section	Street and Community		From	To	
1	I-35E to Josey Lane	Cecil Drive, Carrollton	WB	2134+00	2150+00	1,600
2		McKamy Drive, Carrollton	WB	2152+50	2172+00	1,950
3	Kelley Blvd to Marsh Lane	Lakehill Townhomes, Carrollton	WB	2252+00	2262+00	1,000
4	Dallas Pkwy to Preston Rd	Adair II Apartments, Dallas	WB	3038+00	3044+00	600
5		Chalfont Circle, Dallas	EB	3055+00	3067+00	1,200
6	Preston Rd to Campbell Rd	Prestonwood Trails, Dallas	WB	3082+00	3097+50	1,550
7		Prestonwood Trails Apartments, Dallas	WB	3099+50	3106+00	650
8		Southpoint Dr., Preston Green, Dallas	EB	3100+00	3109+50	950
9	Campbell Rd to Hillcrest Rd	Bent Creek North Condominiums, Dallas	WB	3111+00	3118+00	700
10		Davenport Ct, Pepperwood Estates, Dallas	EB	3111+00	3126+00	1,500
11		Brushfield/Spanky Branch/Wester Way, Highlands of McKamy, Dallas	EB	3127+50	3143+50	1,600
12			EB	3148+50	3161+50	1,300
13		Duffield Dr., Oakington Pt, Preston Green North, Dallas	WB	3130+00	3148+00	1,800
14			WB	3155+00	3162+00	700
15	Hillcrest Rd to Coit Rd	Highland Heather Lane, Highland Square, Dallas	EB	3163+00	3170+00	700
16		Nicole Place, Dallas	EB	3172+00	3179+00	700
17		Rocky Top Circle, Highlands of McKamy, Dallas	WB	3171+00	3179+00	800
18		Energy Lane, Dallas	EB	3180+00	3186+00	600
19	Coit Rd to Synergy Park Blvd	University Place #2, Dallas (Sunflower Lane)	EB	3217+00	3227+50	1,050
20		University Place #1, Dallas (Snapdragon Way)		3232+00	3245+00	1,300
TOTAL BARRIER LENGTH:						22,250

Source: GPC6, 2017

See Appendix A for civil station locations and approximate locations of noise barriers on the project design plans

Table 4-13. Crossing Bell Mitigation Locations

Crossing Number	Crossing Location Description		Bell Noise Impact Location	
	Corridor Section	Street/Community	Civil Station	Crossing Quadrant
1	Kelly Blvd to Marsh Lane	Marsh Lane / Willow Lane Condominium	2286+50	NW
2	Midway Road to Dallas Pkwy	Spectrum Drive / Addison Circle Apartments	2361+00	NW
3	Dallas Parkway to Preston Road	Knoll Trail Drive / Aura Prestonwood Apartments	3019+50	SE
4	Preston Road to Campbell Road	Campbell Road, Bent Creek North Condominiums (NE) and Southpoint Drive home (SW)	3110+50	NW/SE
5	Campbell Road to Hillcrest Road	Davenport Road, Davenport Road Home (NW) and Brushfield Drive home (SE)	3127+00	NE/SW
6	Hillcrest Road to Coit Road	McCallum Blvd, Rocky Top Circle home (NE) and Highland Heather Lane home (SW)	3170+50	NE/SW
7		Meandering Way, Nicole Place home	3179+50	SW

Source: GPC6, 2017

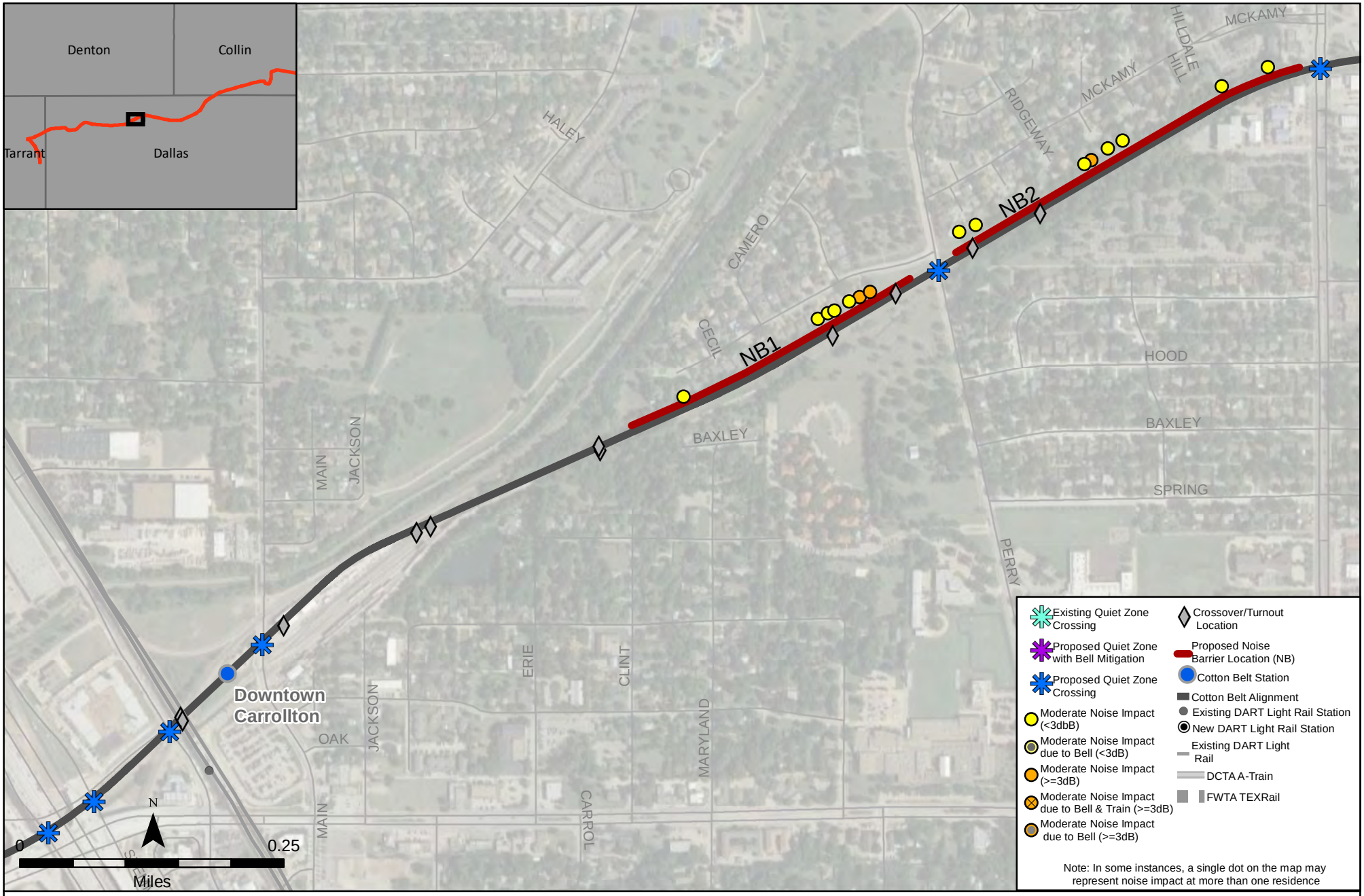

Figure 4-7
Noise Impacts and Proposed Mitigation Locations

Data Source: Cross-Spectrum Acoustics, 2017

Cotton Belt Corridor Regional Rail Project

Draft Environmental Impact Statement

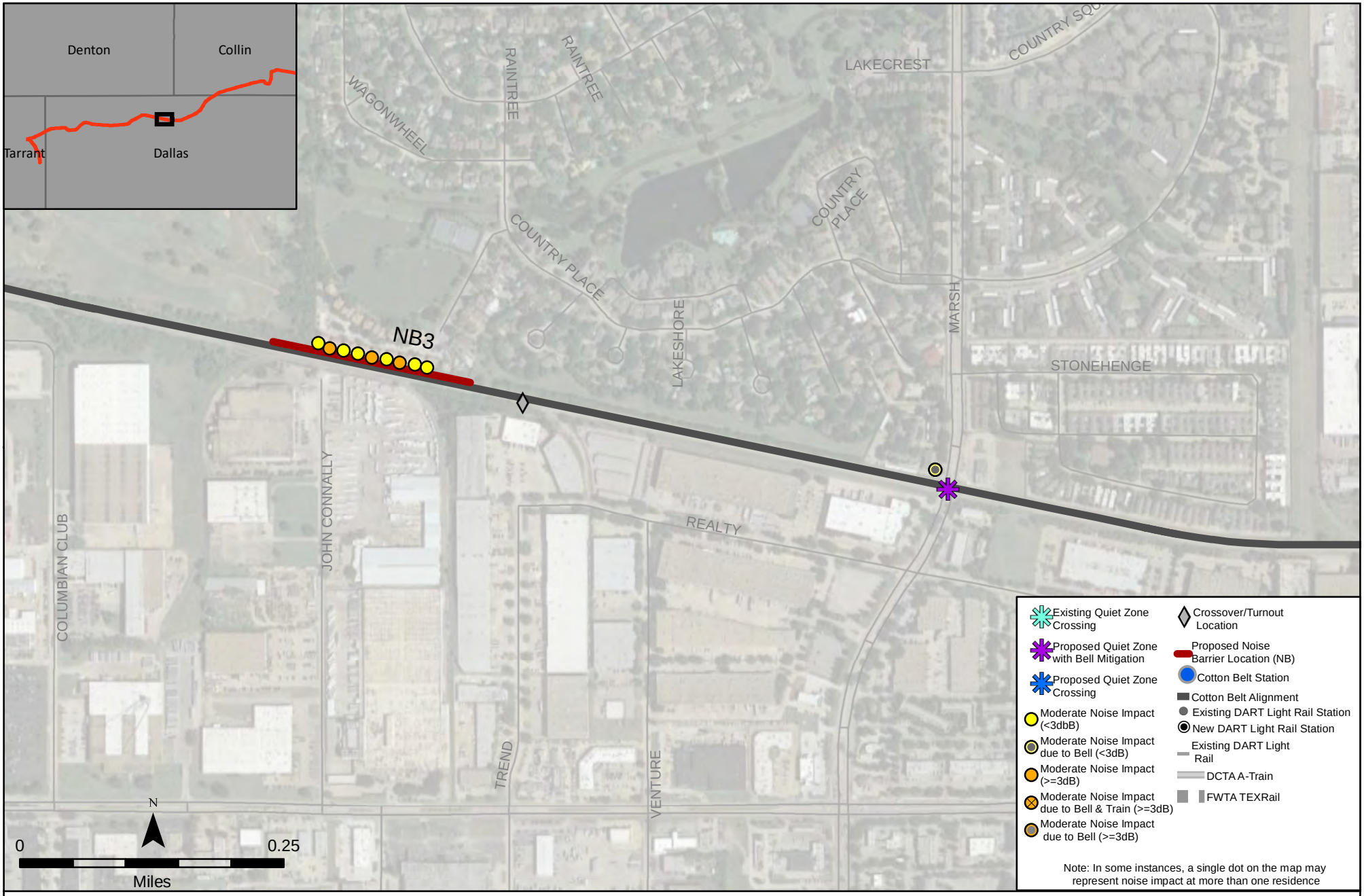

Figure 4-8
Noise Impacts and Proposed Mitigation Locations

Data Source: Cross-Spectrum Acoustics, 2017

Cotton Belt Corridor Regional Rail Project

Draft Environmental Impact Statement

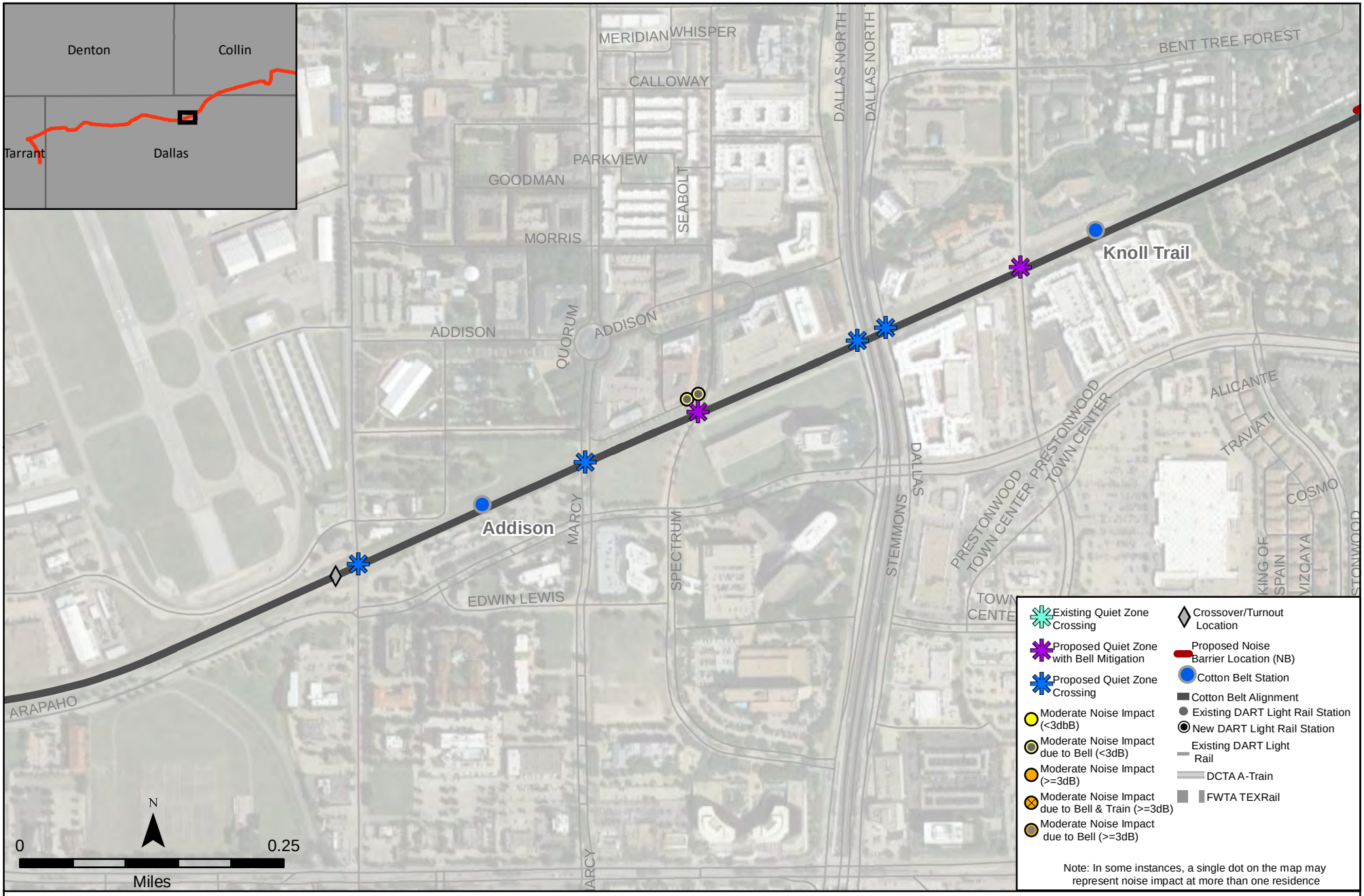

Figure 4-9
Noise Impacts and Proposed Mitigation Locations

Data Source: Cross-Spectrum Acoustics, 2017

Cotton Belt Corridor Regional Rail Project
Draft Environmental Impact Statement

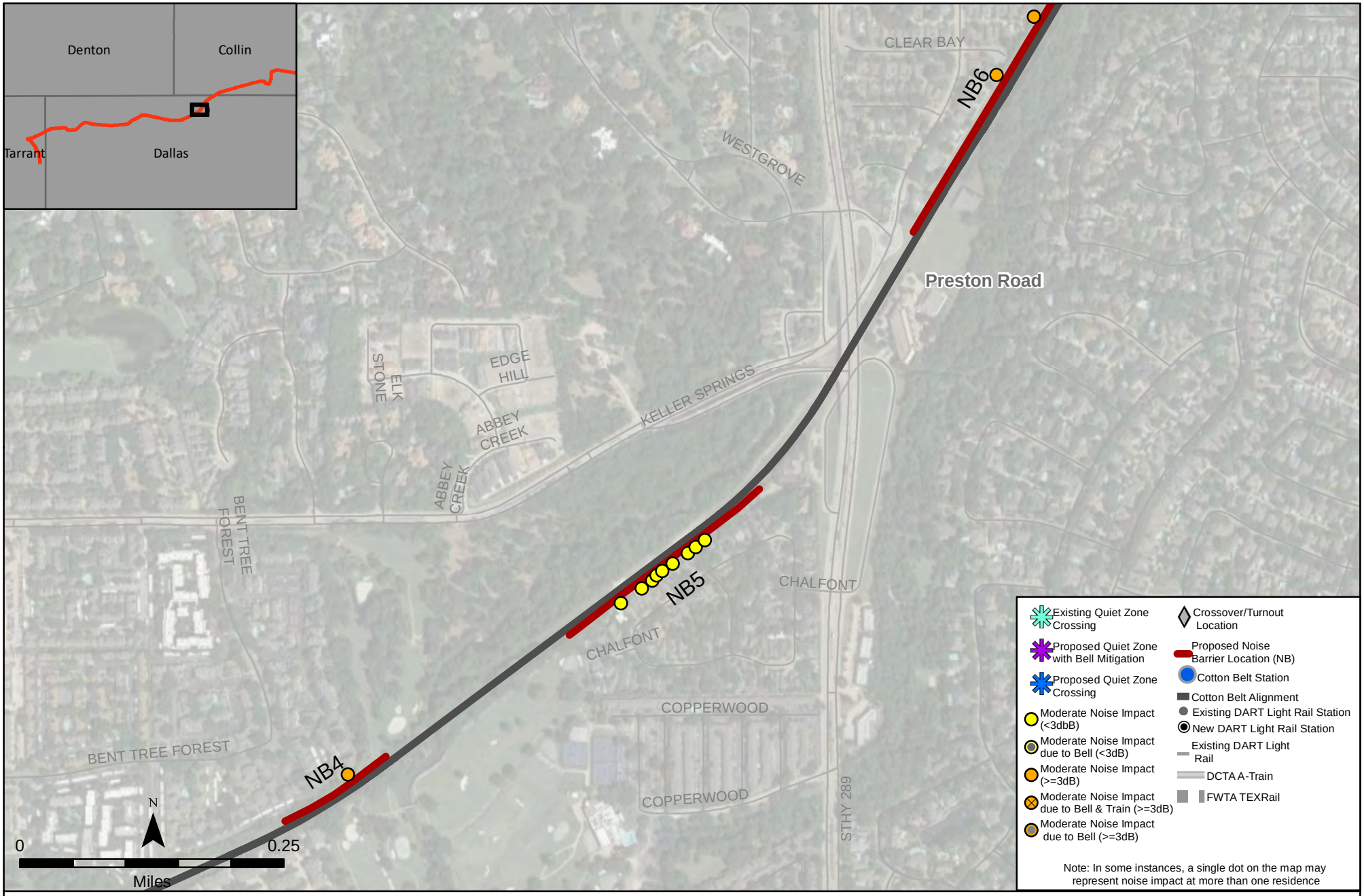

Figure 4-10
Noise Impacts and Proposed Mitigation Locations

Data Source: Cross-Spectrum Acoustics, 2017

Cotton Belt Corridor Regional Rail Project
Draft Environmental Impact Statement

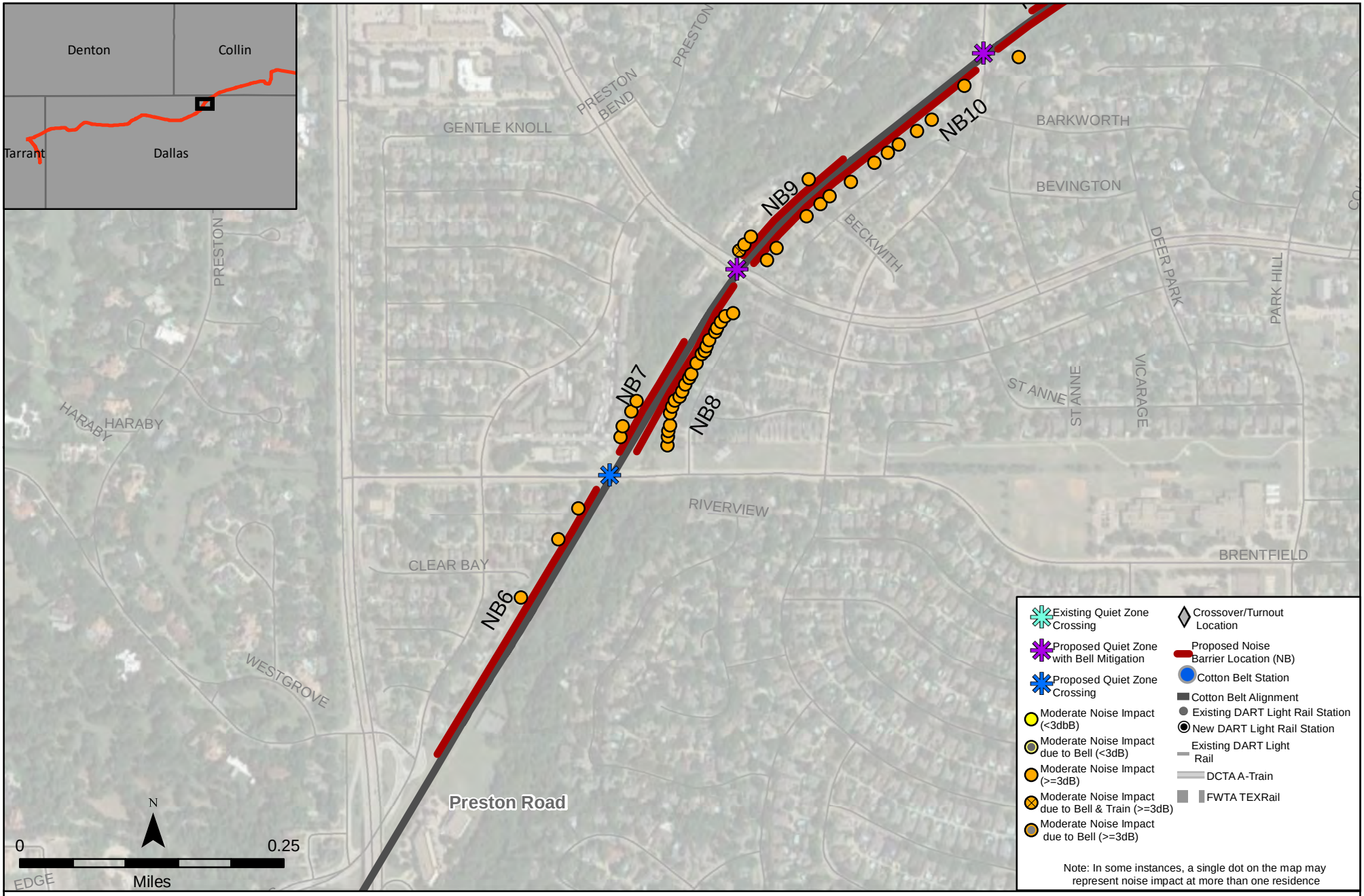

Figure 4-11
Noise Impacts and Proposed Mitigation Locations

Data Source: Cross-Spectrum Acoustics, 2017

Cotton Belt Corridor Regional Rail Project
Draft Environmental Impact Statement

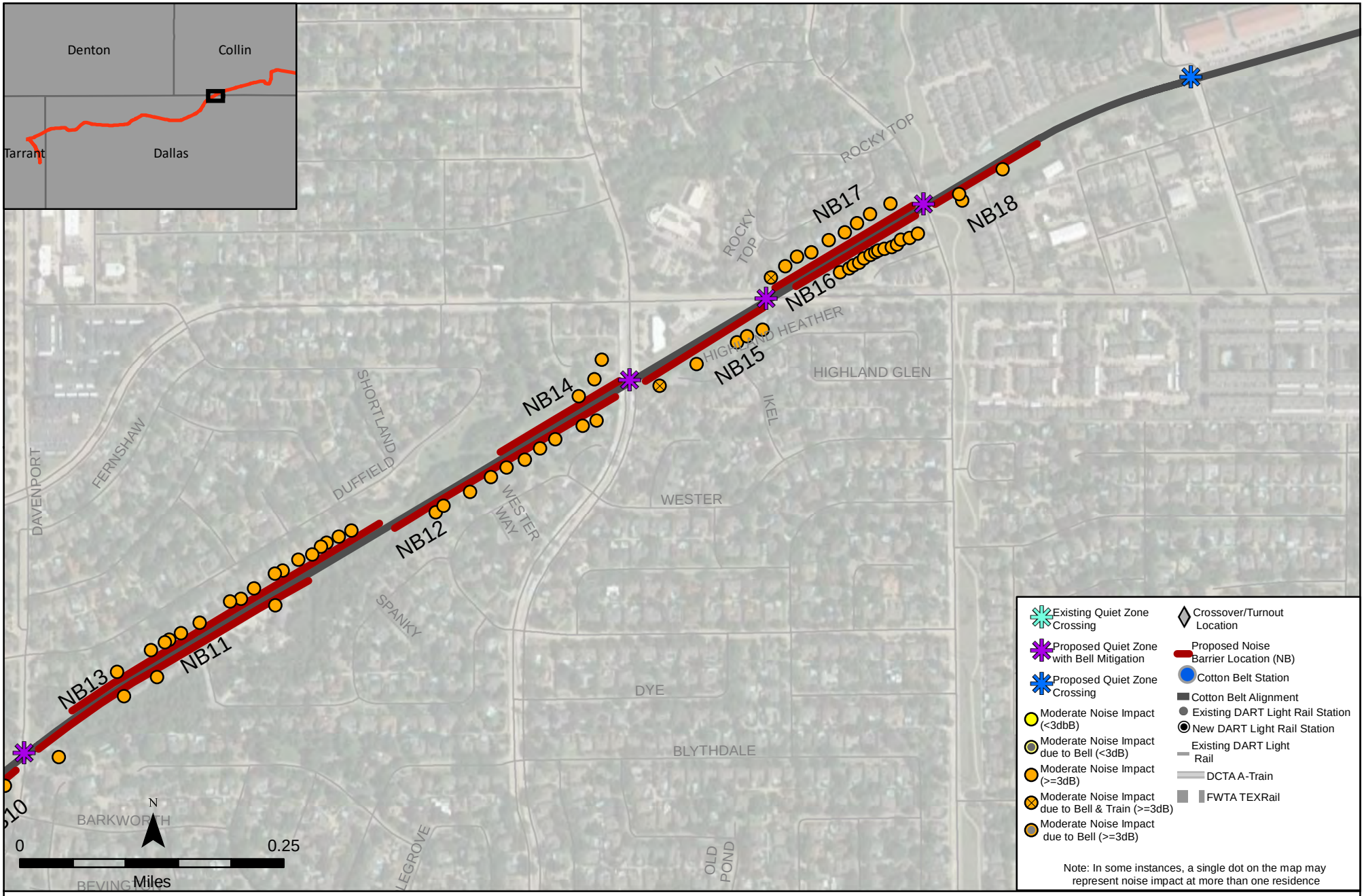

Figure 4-12
Noise Impacts and Proposed Mitigation Locations

Data Source: Cross-Spectrum Acoustics, 2017

Cotton Belt Corridor Regional Rail Project

Draft Environmental Impact Statement

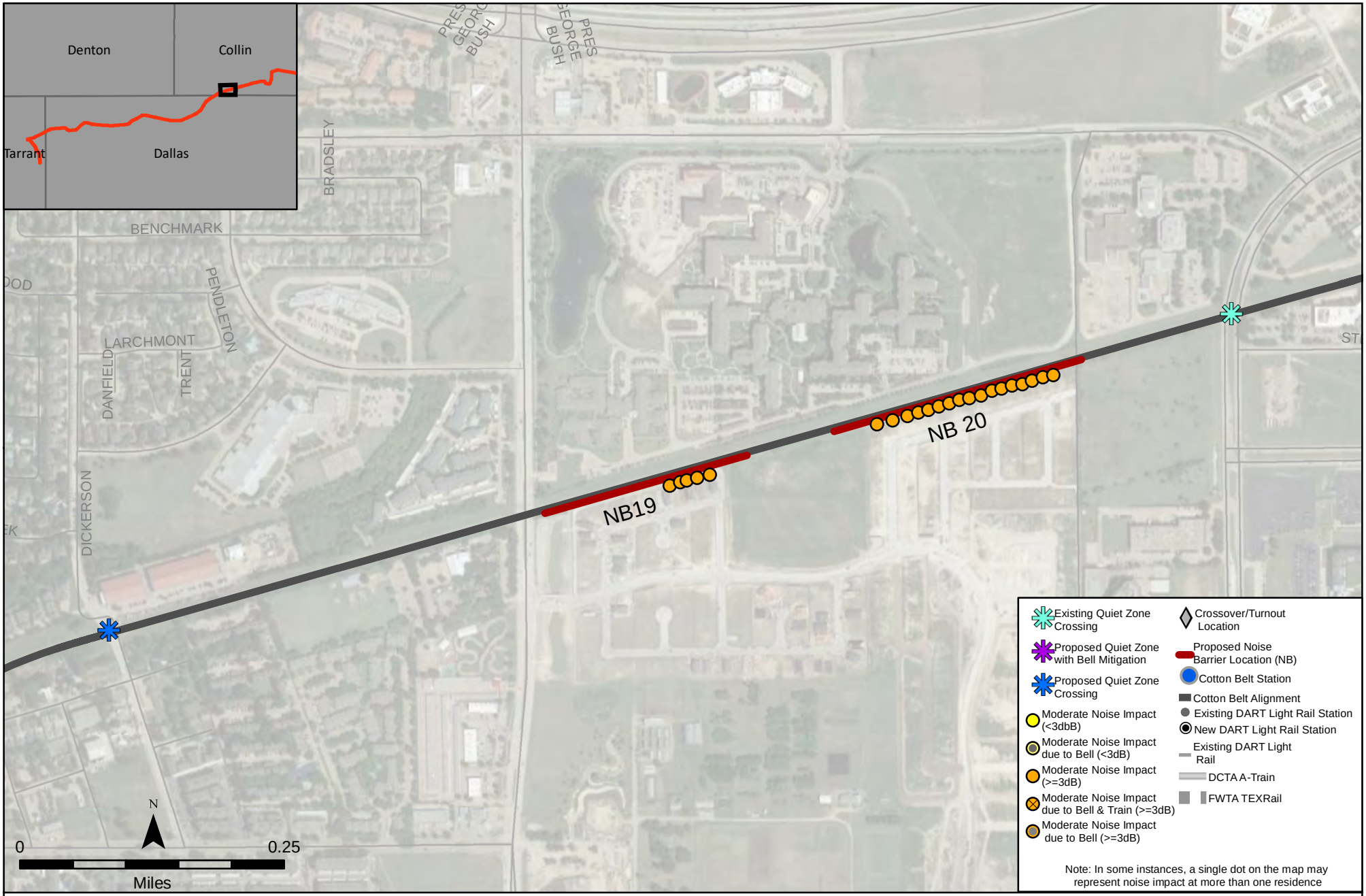

Figure 4-13
Noise Impacts and Proposed Mitigation Locations

Data Source: Cross-Spectrum Acoustics, 2017

Cotton Belt Corridor Regional Rail Project

Draft Environmental Impact Statement

Table 4-14. Summary of Post-Mitigation Noise Conditions

Corridor Section Description	Side of Track[1]	Distance from Near Track (feet)	Train Speed (mph)	Existing Noise Level[2]	Project Noise Level[2]			Total Noise Level[2]	Noise Level Increase[2]	Number of Residential Impacts		
					Predicted[3]	Impact Criteria				Moderate		Severe
						Moderate	Severe			<3 dB Incr.	>3 dB Incr.	
Freeport Pkwy to S Denton Tap Rd[5]	WB	259	25	62	47	59	64	62	0.1	0	0	0
Freeport Pkwy to S Denton Tap Rd[5]	EB	193	25	62	46	59	64	62	0.1	0	0	0
S Denton Tap Rd to S Moore Rd[5]	WB	567	35	56	41	56	62	56	0.1	0	0	0
S Moore Rd to S MacArthur Blvd[5]	WB	97	79	60	57	58	63	62	1.6	0	0	0
S Moore Rd to S MacArthur Blvd[5]	EB	278	76	60	48	58	63	60	0.2	0	0	0
S MacArthur Blvd to Elm Fork Trinity River[5]	WB	128	72	67	58	62	67	67	0.5	0	0	0
S MacArthur Blvd to Elm Fork Trinity River[5]	EB	225	71	67	50	62	67	67	0.1	0	0	0
Elm Fork Trinity River to Pres. George Bush Turnpike[4]	WB	--	--	--	--	--	--	--	--	0	0	0
Pres. George Bush Turnpike to I-35E[4]	EB	--	--	--	--	--	--	--	--	0	0	0
I-35E to N Josey Ln[5]	WB	81	35	66	60	61	67	60	0.9	0	0	0
I-35E to N Josey Ln[5]	EB	125	53	57	56	56	62	59	2.5	0	0	0
N Josey Ln to Kelley Blvd[4]	WB	--	--	--	--	--	--	--	--	0	0	0
N Josey Ln to Kelley Blvd[4]	EB	--	--	--	--	--	--	--	--	0	0	0
Kelley Blvd to Marsh Ln[5]	WB	70	71	59	57	57	63	61	2.1	0	0	0
Marsh Ln to Midway Rd[5]	WB	76	68	57	56	56	62	60	2.5	0	0	0
Marsh Ln to Midway Rd[5]	EB	471	60	61	40	58	64	61	0	0	0	0
Midway Rd to Dallas Pkwy[5]	WB	78	35	61	56	58	64	62	1.2	0	0	0
Midway Rd to Dallas Pkwy[5]	EB	195	50	61	49	58	64	61	0.2	0	0	0
Dallas Pkwy to Preston Rd[5]	WB	182	39	59	47	57	63	59	0.3	0	0	0
Dallas Pkwy to Preston Rd[5]	EB	62	55	56	56	56	62	59	2.8	0	0	0
Preston Rd to Campbell Rd[5]	WB	137	40	52	52	54	60	55	3.2	0	0	0
Preston Rd to Campbell Rd[5]	EB	146	40	52	52	54	60	55	3.1	0	0	0
Campbell Rd to Hillcrest Rd[5]	WB	52	40	52	54	54	60	56	4.1	0	0	0

Table 4-14. Summary of Post-Mitigation Noise Conditions (cont'd)

Corridor Section Description	Side of Track[1]	Distance from Near Track (feet)	Train Speed (mph)	Existing Noise Level[2]	Project Noise Level[2]			Total Noise Level[2]	Noise Level Increase[2]	Number of Residential Impacts		
					Predicted[3]	Impact Criteria				Moderate		Severe
						Moderate	Severe			<3 dB Incr.	>3 dB Incr.	
Campbell Rd to Hillcrest Rd[5]	EB	78	55	52	53	54	60	55	3.5	0	0	0
Hillcrest Rd to Coit Rd[5]	WB	93	60	55	54	55	61	58	2.7	0	0	0
Hillcrest Rd to Coit Rd[5]	EB	123	62	52	53	54	60	56	3.5	0	0	0
Coit Rd to Synergy Park Blvd[5]	WB	148	61	55	51	55	61	56	1.3	0	0	0
Coit Rd to Synergy Park Blvd[5]	EB	41	54	55	44	55	61	55	0.4	0	0	0
Synergy Park Blvd to Alma Rd[5]	WB	96	73	60	56	58	63	61	1.3	0	0	0
Synergy Park Blvd to Alma Rd[5]	EB	396	62	58	49	57	62	59	0.6	0	0	0
Alma Rd to E Plano Pkwy[5]	WB	39	41	70	63	64	69	71	0.7	0	0	0
Alma Rd to E Plano Pkwy[5]	EB	189	30	69	51	64	69	69	0.1	0	0	0
E Plano Pkwy to Jupiter Rd[5]	WB	300	36	63	43	60	65	63	0	0	0	0
E Plano Pkwy to Jupiter Rd[5]	EB	215	35	63	47	60	65	63	0.1	0	0	0
Jupiter Rd to end[5]	WB	94	65	58	54	57	62	59	1.5	0	0	0
TOTAL NUMBER OF NOISE IMPACTS:										0	0	0

Source: GPC6, 2018

[1] Eastbound (EB) or Westbound (WB)

[2] Noise levels are based on Ldn and measured in dBA (rounded to the nearest decibel). For better resolution, predicted project noise levels, moderate noise impact criteria, and noise level increases are shown to the nearest 0.1 decibel.

[3] Predicted levels include bell noise, where applicable (rounded to the nearest 0.1 decibel).

[4] There are no noise-sensitive receptors of this type in this section.

[5] There are no receptors with noise impact in this section. It should be noted that the data for this section represents the receiver with the highest Project noise level which may not be the closest receiver to the track due to differences in train speed, acceleration, or distance to special trackwork or track structure (aerial vs. at grade).

4.15 Vibration

4.15.1 Impact Evaluation

Vibration-sensitive land use along the Preferred Alternative is essentially the same as the noise-sensitive land use, except for parks and other outdoor sites, which are not considered vibration sensitive. Existing vibration sources along the Preferred Alternative include auto, bus and truck traffic on local streets. However, vibrations from street traffic are not generally perceptible at receivers in the Study Area unless streets have significant bumps, potholes, or other uneven surfaces. The only significant sources of existing ground vibration along the Preferred Alternative are infrequent freight train movements over limited sections of the corridor. Furthermore, the FTA vibration impact criteria are not ambient-based; that is, future project vibrations are not compared with existing vibrations to assess impact. Therefore, the vibration measurements for the Preferred Alternative focused on characterizing the soil conditions along the alignments rather than on characterizing the existing vibration levels.

The projection of ground-borne vibration and ground-borne noise from train operations was carried out using the model specified in the FTA guidance manual, supplemented by DMU vibration measurement data, with the following assumptions:

- Vibration source levels were based on test data for Stadler diesel-electric GTW 2/6 articulated DMU rail vehicles measured on the DCTA A-Train system. Because the suspension design is similar for the FLIRT3 vehicle, use of the DCTA vehicle vibration source levels is considered to be appropriate for the Preferred Alternative.
- Vibration propagation tests were conducted at representative sites along the Study Area near sensitive receptors, as described in **Section 3.13**. The results of these tests were combined with the Stadler DMU vibration source level measurement data to provide projections of vibration levels from trains operating on the Preferred Alternative.
- Vehicle operating speeds are based on speed profiles generated for the project with speeds of up to 79 mph along the Preferred Alternative.
- Wheel impacts at track crossovers and turnouts are assumed to cause localized vibration increases of 10 VdB up to a distance of 50 feet, dropping off linearly to zero increase at a distance of 300 feet.
- The ground-to-building coupling loss was assumed to be zero, except for large masonry buildings where a vibration coupling loss (i.e., reduction) of 10 VdB was applied.
- It was assumed that the Preferred Alternative is currently an infrequently used rail corridor, defined by FTA as typically having fewer than five existing trains per day. **Section 2.3.1** and **Section 5.3** provide information on freight operations. Therefore, the projected vibration levels from rail operations were compared directly to the FTA impact criteria.
- It was assumed that there will be no change in freight rail operations due to the implementation of the Preferred Alternative. Small shifts in the location of freight rail tracks were not included in this analysis.
- The potential for ground-borne noise impact from train operations was not assessed for this project due to the dominance of airborne noise from the at-grade diesel-powered trains.

The approach used for assessing vibration impacts generally follows the approach used for noise impacts, except that existing vibration is typically not considered when evaluating impacts. For a general assessment, the FTA impact threshold for “occasional events” (i.e. in the range of 30-70 trains per day) is 75 VdB for residential buildings (Category 2) and 78 VdB for institutional buildings (Category 3); park lands are not considered vibration sensitive. For a detailed analysis, as was used for Preferred Alternative, the corresponding FTA one-third octave band impact thresholds are 72 VdB for Category 2 land use and 78 VdB for Category 3 land use.

Table 4-15 provides a summary of the projected ground-borne vibration impacts at residential receptors. No ground-borne vibration impacts are predicted at Category 3 receptors. In sections where impacts are projected, the data provided in the table represent a range for the impacted receptors. In sections where no impacts are projected, the data are for the receptor with the highest projected project vibration level. The table includes the distance to the near track, maximum speed, the impact criteria, and the projected future ground-borne vibration levels.

As shown in **Table 4-15**, there are nine residences projected to have a vibration impact that will require mitigation.

Table 4-15. Summary of Residential Ground-Borne Vibration Impacts Without Mitigation

Corridor Section Description	Side of Track[1]	Distance from Near Track (ft.)	Train Speed (mph)	Vibration Level (VdB)[2]		Number of Impacts
				Predicted	Impact Criterion	
Freeport Pkwy to S Denton Tap Rd[4]	WB	658	40	61	72	0
Freeport Pkwy to S Denton Tap Rd[4]	EB	193	25	60	72	0
S Denton Tap Rd to S Moore Rd[4]	WB	1097	41	61	72	0
S Moore Rd to S MacArthur Blvd[4]	WB	89	79	64	72	0
S Moore Rd to S MacArthur Blvd[4]	EB	483	78	52	72	0
S MacArthur Blvd to Elm Fork Trinity River[4]	WB	115	70	58	72	0
S MacArthur Blvd to Elm Fork Trinity River[4]	EB	224	72	52	72	0
Elm Fork Trinity River to PGBT[3]	WB	--	--	--	--	0
PGBT to I-35E[3]	EB	--	--	--	--	0
I-35E to N Josey Ln[4]	WB	73	51	67	72	0
I-35E to N Josey Ln[4]	EB	122	54	60	72	0
N Josey Ln to Kelley Blvd[3]	WB	--	--	--	--	0
N Josey Ln to Kelley Blvd[3]	EB	--	--	--	--	0
Kelley Blvd to Marsh Ln	WB	45 to 46	67 to 68	72	72	4
Marsh Ln to Midway Rd[4]	WB	76	68	64	72	0
Marsh Ln to Midway Rd[4]	EB	368	60	52	72	0
Midway Rd to Dallas Pkwy[4]	WB	62	35	64	72	0
Midway Rd to Dallas Pkwy[4]	EB	195	50	57	72	0
Dallas Pkwy to Preston Rd[4]	WB	67	58	64	72	0
Dallas Pkwy to Preston Rd[4]	EB	45	55	70	72	0
Preston Rd to Campbell Rd[4]	WB	47	40	68	72	0
Preston Rd to Campbell Rd	EB	39	40	72	72	1
Campbell Rd to Hillcrest Rd	WB	48	69	76	72	1
Campbell Rd to Hillcrest Rd	EB	47	54	72	72	1
Hillcrest Rd to Coit Rd[4]	WB	80	62	65	72	0
Hillcrest Rd to Coit Rd	EB	40 to 46	60	76 to 78	72	2
Coit Rd to Synergy Park Blvd[4]	WB	148	61	52	72	0
Coit Rd to Synergy Park Blvd[4]	EB	41	55	68	72	0
Synergy Park Blvd to Alma Rd[4]	WB	94	74	66	72	0
Synergy Park Blvd to Alma Rd[4]	EB	284	69	65	72	0
Alma Rd to E Plano Pkwy[4]	WB	39	41	67	72	0
Alma Rd to E Plano Pkwy[4]	EB	216	35	55	72	0
E Plano Pkwy to Jupiter Rd[4]	WB	415	44	56	72	0
E Plano Pkwy to Jupiter Rd[4]	EB	1245	20	54	72	0
Jupiter Rd to end[4]	WB	94	65	54	72	0
TOTAL NUMBER OF VIBRATION IMPACTS:						9

Source: GPC6, 2018

[1] Eastbound (EB) or Westbound (WB)

[2] Maximum one-third octave frequency band ground-borne vibration velocity level, measured in VdB referenced to 1 µin/sec (rounded to the nearest dB).

[3] There are no residential receptors in this section.

[4] There are no receptors with vibration impact in this section. It should be noted that the data for this section represent the receiver with the highest Project vibration level which may not be the closest receiver to the track due to differences in train speed or distance to special trackwork or track structure (aerial vs. at grade).

4.15.2 Mitigation Measures

The vibration assessment assumes that the rail vehicle wheels and track are maintained in good condition with regular wheel truing and rail grinding. Beyond this, there are several approaches to reduce ground-borne vibration and ground-borne noise from train operation, as follows:

- **Ballast Mats:** A ballast mat consists of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties, and rail on top. The reduction in ground-borne vibration provided by a ballast mat is strongly dependent on the vibration frequency content and the design and support of the mat.
- **Tire Derived Aggregate (TDA):** A typical TDA installation consists of an underlayment of 12 inches of nominally 3-inch size tire shreds or chips wrapped with filter fabric, covered with 12 inches of sub-ballast and 12 inches of ballast above that to the base of the ties. Tests suggest that the vibration attenuation properties of this treatment are midway between that of ballast mats and floating slab track. This option has been installed on two US light rail transit systems (San Jose and Denver) and test results have shown this treatment to be effective at frequencies above about 25 Hz.
- **Floating Slabs:** Floating slabs consist of thick concrete slabs supported by resilient pads on a concrete foundation; the tracks are mounted on top of the floating slab. Most successful floating slab installations are in subways and their use for at-grade track is less common. Although floating slabs are designed to provide vibration reduction at lower frequencies than ballast mats, they are extremely expensive.
- **Resiliently Supported Concrete Ties (Under-Tie Pads):** This treatment involves a special soft rubber pad embedded in the base of a concrete tie. The pad serves two purposes: (1) it provides a pliable surface to help anchor the ties on ballast, and (2) it provides vibration isolation between the tie and the ballast. This relatively simple treatment has been used extensively in Europe. Test results have shown this treatment to be effective at frequencies above about 25 Hz and its cost is about 1.2 times the cost of a standard concrete tie.
- **Resilient Rail Fasteners:** Resilient fasteners can be used to provide vibration isolation between rails and ties, as well as on concrete slabs for direct fixation track on aerial structures or in tunnels. These fasteners include a soft, resilient element to provide greater vibration isolation than standard rail fasteners in the vertical direction. Resilient rail fasteners are effective at frequencies above about 40 Hz.
- **Special Trackwork:** Because the impacts of vehicle wheels over rail gaps at track turnout locations increases ground-borne vibration by about 10 VdB close to the track, turnouts are a major source of vibration impact when they are in sensitive areas. If turnouts cannot be relocated away from sensitive areas, another approach is to use spring-rail, flange-bearing or moveable-point frogs in place of standard rigid frogs at turnouts. These devices allow the flangeway gap to remain closed in the main traffic direction for revenue service trains.

Vibration impacts that exceed FTA criteria are significant and warrant mitigation, if reasonable and feasible. Therefore, the predicted ground-borne vibration impacts that have been identified above need to be considered for mitigation. It is estimated that the vibration impacts identified at nine residential locations can be mitigated by installing 2,850 lineal feet of TDA beneath both tracks at three locations along the alignment. At this time, TDA was chosen because its vibration-reduction properties will be sufficient to mitigate the projected vibration impacts in a cost-effective manner. Test results suggest that the vibration-reduction effectiveness of TDA is equal to or greater than that of ballast mats and, as opposed to ballast mats, that TDA can be modestly effective at frequencies as low as 16-20 Hz. Floating slab track may need to be considered for vibration-sensitive facilities in Richardson where the potential for vibration impact has been identified. DART will provide mitigation and is considering such strategies as described above, which will be evaluated for feasibility and reasonableness as the Preferred Alternative advances.

Table 4-16 summarizes the approximate locations and extents for the vibration mitigation treatment, and the TDA locations are shown in **Figures 4-14** through **4-16**. These locations are approximate, and will need to be confirmed during project design.

Table 4-16. Summary of Recommended Vibration Mitigation Locations

Vibration Mitigation Number	Vibration Mitigation Location			Tire Derived Aggregate (TDA) Civil Station Location		Length of TDA Installation (feet)
	Corridor Section	Street and Community	Side of Track	From	To	
1	Kelly Blvd to Marsh Lane	Lakehill Townhomes, Carrollton	WB	2253+00	2263+00	1,000
2	Preston Rd to Campbell Rd	South Point Dr., Dallas	EB	3103+00	3109+50	650
3	Campbell Rd to Hillcrest Rd	Davenport Road, Dallas	EB	3124+00	3126+50	250
4	Campbell Rd to Hillcrest Rd	Oakington Ct, Dallas	WB	3158+00	3162+00	400
5	Hillcrest Rd to Coit Rd	Energy Lane, Dallas	EB	3180+00	3185+50	550
TOTAL TDA LENGTH:						**2,850**

Source: Cross-Spectrum Acoustics, 2017

Table 4-17 summarizes the assessment of vibration impacts at residential locations with installation of the recommended mitigation, indicating residual impact at one residence on 17455 Energy Lane. However, the mitigation is projected to reduce vibration by six VdB. The impact is marginal and exceeds the threshold by only less than 0.1 VdB, so further mitigation is not recommended at this time.

Table 4-17. Summary of Residential Ground-Borne Vibration Impacts with Mitigation

Corridor Section Description	Side of Track[1]	Distance from Near Track (feet)	Train Speed (mph)	Vibration Level (VdB)[2]		Number of Impacts
				Predicted	Impact Criterion	
Hillcrest Rd to Coit Rd	EB	40	60	72	72	1
TOTAL NUMBER OF VIBRATION IMPACTS:						**1**

Source: Cross-Spectrum Acoustics, 2017

[1] Eastbound (EB) or Westbound (WB)

[2] Maximum one-third octave frequency band ground-borne vibration velocity level, measured in VdB referenced to 1 µin/sec (rounded to the nearest decibel).

Three community facilities were identified as potentially vibration sensitive. In view of the potential for ground-borne vibration impacts at the UT Southwestern Medical Center Clinic, the Qorvo facility, and the Texas Instruments facility in Richardson, DART will conduct detailed, site-specific vibration studies at these FTA Category 1 (high sensitivity) facilities during project design to make a final determination regarding impact and any required mitigation. Such studies will include ground-to-building vibration propagation testing as well as evaluations of the buildings and sensitive equipment.

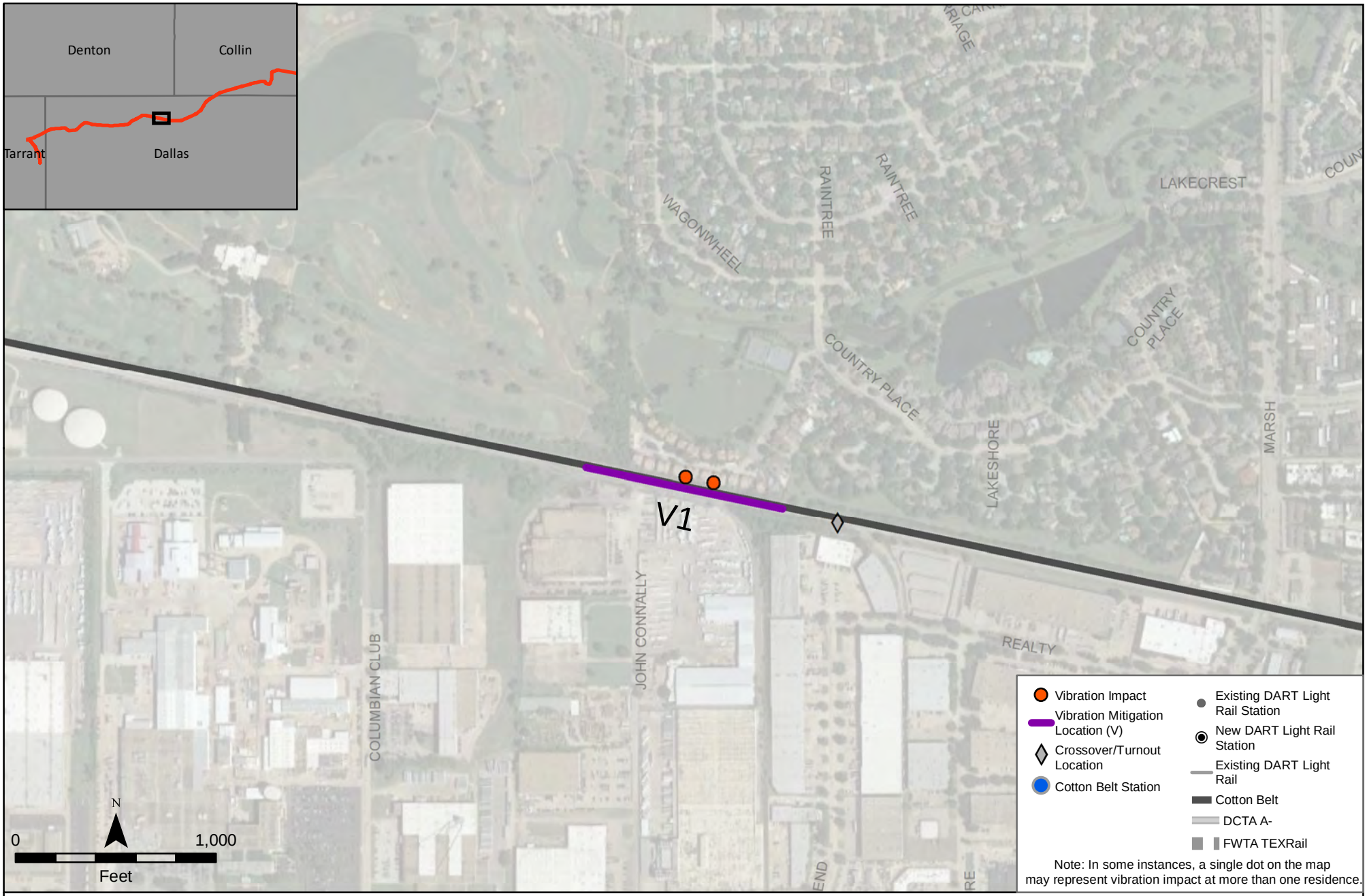

Figure 4-14
Vibration Impacts and Proposed Mitigation Locations
Data Source: Cross-Spectrum Acoustics, 2017

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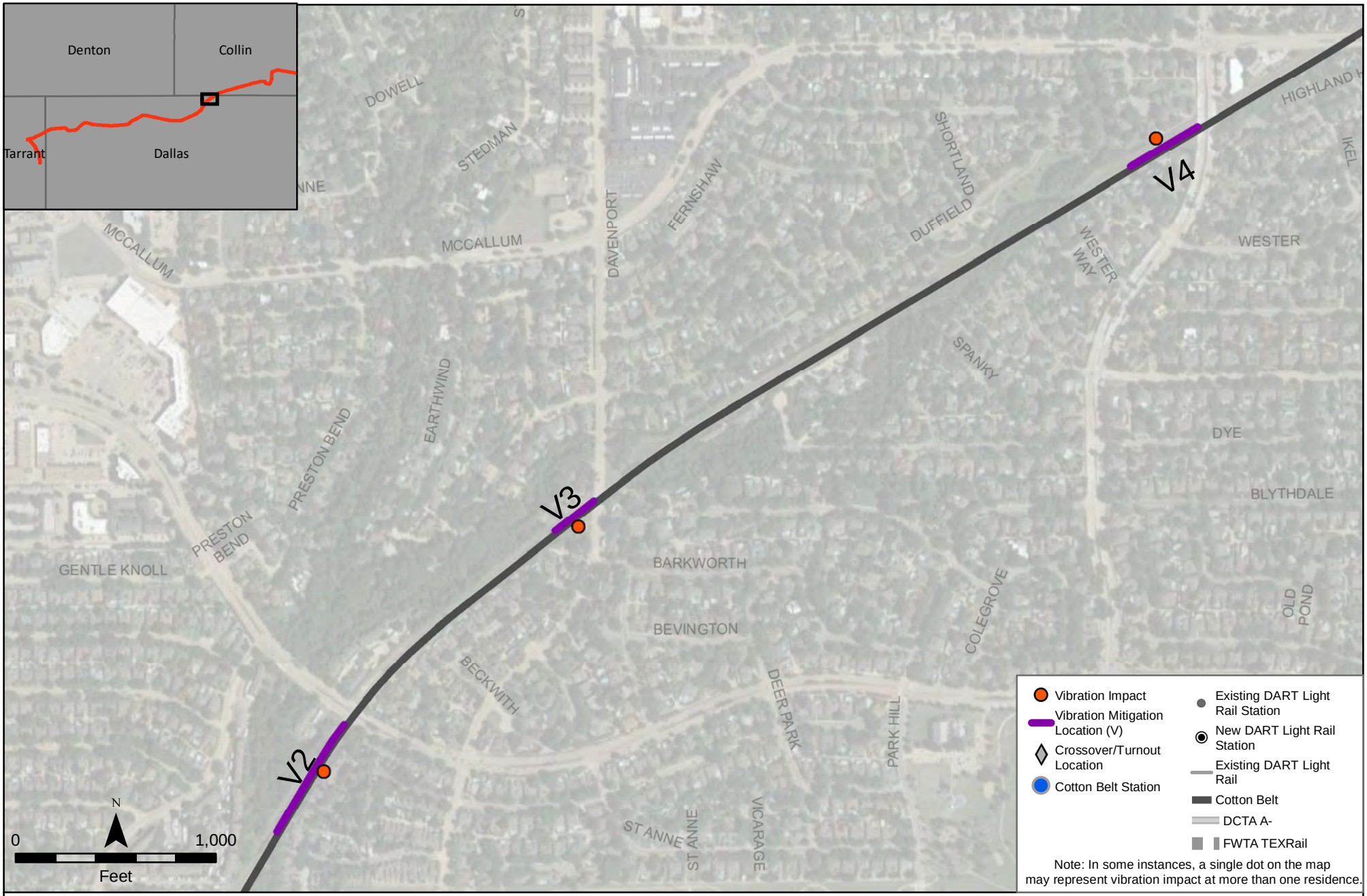

Figure 4-15
Vibration Impacts and Proposed Mitigation Locations
Data Source: Cross-Spectrum Acoustics, 2017

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Figure 4-16
Vibration Impacts and Proposed Mitigation Locations
Data Source: Cross-Spectrum Acoustics, 2017

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Additional TDA Locations

The FTA impact threshold for determining vibration impact is 72 VdB for Category 2 (residential) land use. All vibration impacts that exceed this threshold are being mitigated by installing TDA beneath the alignment (See **Section 4.15.2**). The City of Dallas, the City of Carrollton and residents along the corridor raised concern over the applicability of mitigating the 72 VdB standard in the Preferred Alternative given limited data available for the new technology vehicle that has been proposed for this corridor. It has been suggested that the precision of the measurements when considered with the new technology vehicle, variability of soil conditions, and variability in life cycle of track did not provide a conservative enough calculation. Furthermore, it is significantly more difficult to retrofit vibration mitigation on an active rail line. In consideration of this, the DART Board of Directors determined that a more conservative approach should be employed, setting a threshold of 65 VdB in determining locations where TDA will be installed. As a result, TDA will be installed beneath both tracks at 10 additional locations along the alignment resulting in additional 8,600 feet of TDA. **Table 4-18** identifies these locations.

Table 4-18. Summary of Recommended Additional TDA Locations

Additional TDA ID	Areas between 65 VdB and 72 VdB			Tire Derived Aggregate (TDA) Civil Station Location		Length of TDA Installation (feet)
	Corridor Segment	Street and Community	Side of Track	From	To	
A	I-35E to N Josey Lane	Cecil Drive, Carrollton Heights	WB	2146+00	2150+00	400
B	Kelly Blvd to Marsh Lane	Willow Lane Condominium Homes, Carrollton	WB	2283+50	2286+00	250
C	Dallas Pkwy to Preston Rd	Chalfont Circle, Dallas	EB	3056+00	3066+00	1,000
D	Preston Rd to Campbell Rd	Keller Springs Rd, Dallas	WB	3092+00	3096+00	400
E	Campbell Rd to Hillcrest Rd	Davenport Ct, Dallas	WB/EB	3111+00	3118+00	700
F	Campbell Rd to Hillcrest Rd	Duffield Dr./Spanky Branch Ct, Dallas	WB/EB	3131+00	3148+50	1,750
G	Hillcrest Rd to Coit Rd	Nicole Pl/Rocky Top Cir, Dallas	EB/WB	3171+00	3178+00	700
H	Coit Rd to Synergy Park Blvd	University Place, Dallas	EB	3232+50	3245+50	1,300
I	Synergy Park Blvd to Alma Rd	Greenside Dr./Renner Rd, Richardson	WB/EB	3327+00	3346+00	1,900
J	Alma Rd to E Plano Pkwy	Aura One90 Apartments, Plano	WB	3438+00	3440+00	200
TOTAL TDA LENGTH:						**8,600**

Source: Cross-Spectrum Acoustics, 2018

4.16 Hazardous and Regulated Materials

4.16.1 Impact Evaluation

No-Build Alternative

With no project-related construction or project-related property acquisition, there would be no anticipated hazardous materials impacts associated with the No-Build Alternative.

Preferred Alternative

Excavation and ground disturbing activities will occur with development of the Preferred Alternative, including guideway construction, station elements, utilities, retaining walls, structures for bridges and grade separations, and subsurface areas of construction such as at Coit Road and Hillcrest Road. As documented in **Section 3.14**, nine sites ranked as High Risk, 19 as Moderate Risk, and 18 as Indeterminate Risks in the Study Area. The remainder of the sites were ranked as having Low Risk to impact the Preferred Alternative. The risk classification is based on the nature of the site contamination, proximity to the Preferred Alternative, and groundwater gradient. It is important to note that this risk ranking will be applicable to Study Area only if the ground is disturbed during construction activities. If subsurface soils are not disturbed during construction, then these sites will not pose a risk to the Preferred Alternative. The approximate location and nature of contamination of the identified risk sites are summarized in **Figures 4-17** through **4-20** and **Table 4-19**. One high risk site (No. 52 U.S. Brass) at 10th Street in Plano is proposed as a Municipal Setting Designation (MSD). It is anticipated the City of Plano will enact a municipal ordinance that will define the MSD zone and restrictions at the property.

In addition, a potential hazardous waste site that was not listed in the database is Mercer Yard. No on-site reconnaissance was conducted of the yard since DART owns the property.

4.16.2 Mitigation Measures

Further investigation of at-risk areas will be done during final design. Investigations will focus on areas where construction activities involve soil excavation and/or dewatering operations.

During construction activities within the Plano MSD zone, the construction contractor must enact precautions to restrict human exposure to the contaminated groundwater. Additionally, any sub-surface soils being excavated from the MSD zone to facilitate construction will require segregation for laboratory analysis and may require special handling and disposal.

The White Rock Creek Bridge will be mitigated for lead-based paint and abated for the asbestos containing materials prior to any work on relocation.

Mitigation measures will be needed only in areas where construction activities encounter known or suspected contaminated soil or groundwater. Even where the alignment is located near or over part of a known contaminated site, the construction may not involve excavation to a depth that exposes contaminated soil. In addition, any existing structures will be surveyed for the presence of hazardous/regulated materials such as asbestos-containing materials, lead-based paint, chemical storage, etc., prior to their demolition of modification. These investigations will provide a basis for determining construction health and safety specifications, contaminated soil and groundwater remediation, disposal procedures and asbestos or lead based paint management or remediation practices. The design and preparation of required monitoring and remediation plans will be coordinated with the TCEQ.

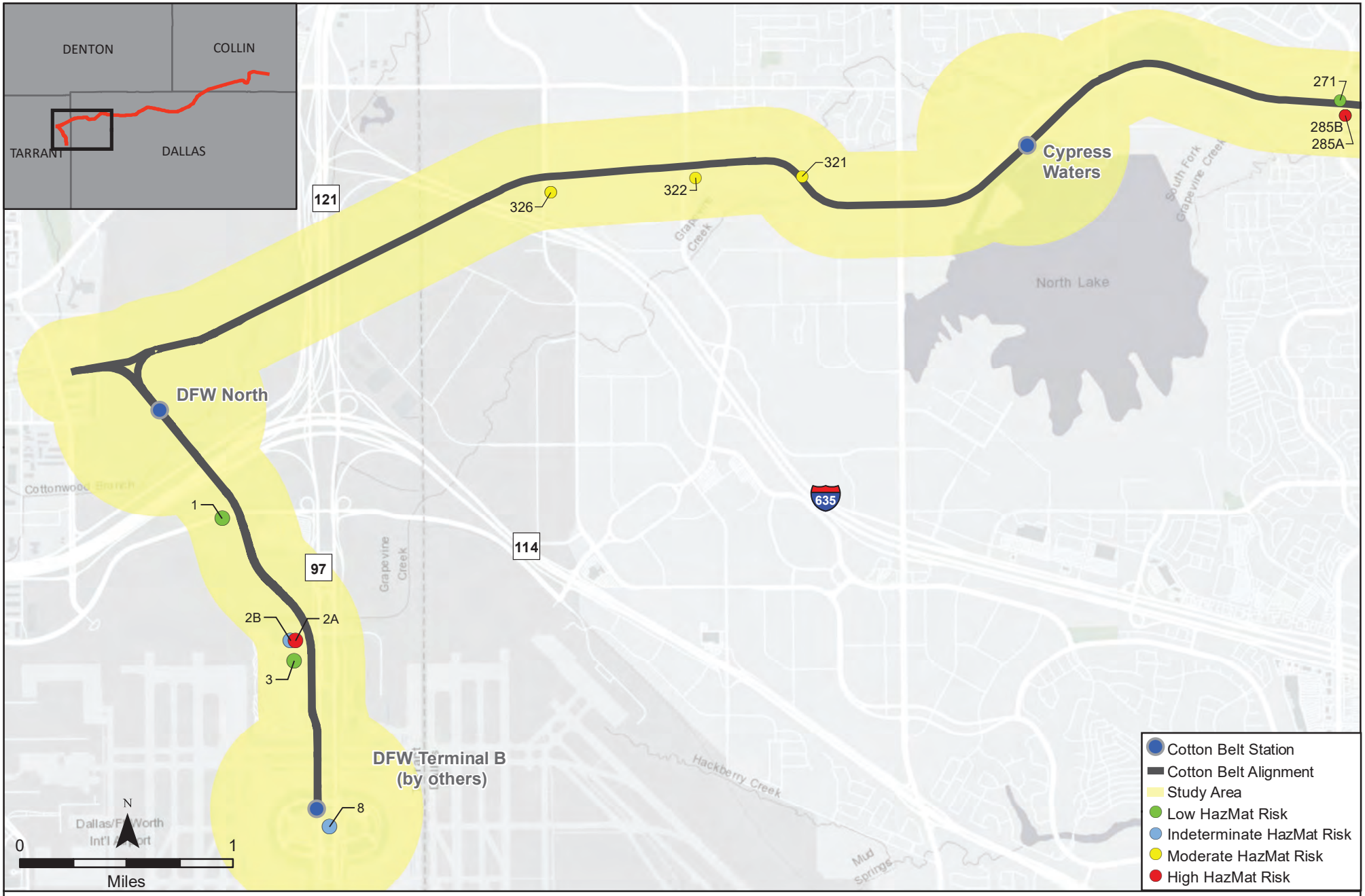

Figure 4-17
Hazardous Materials Risk Sites
Data Source: EDR, 2017

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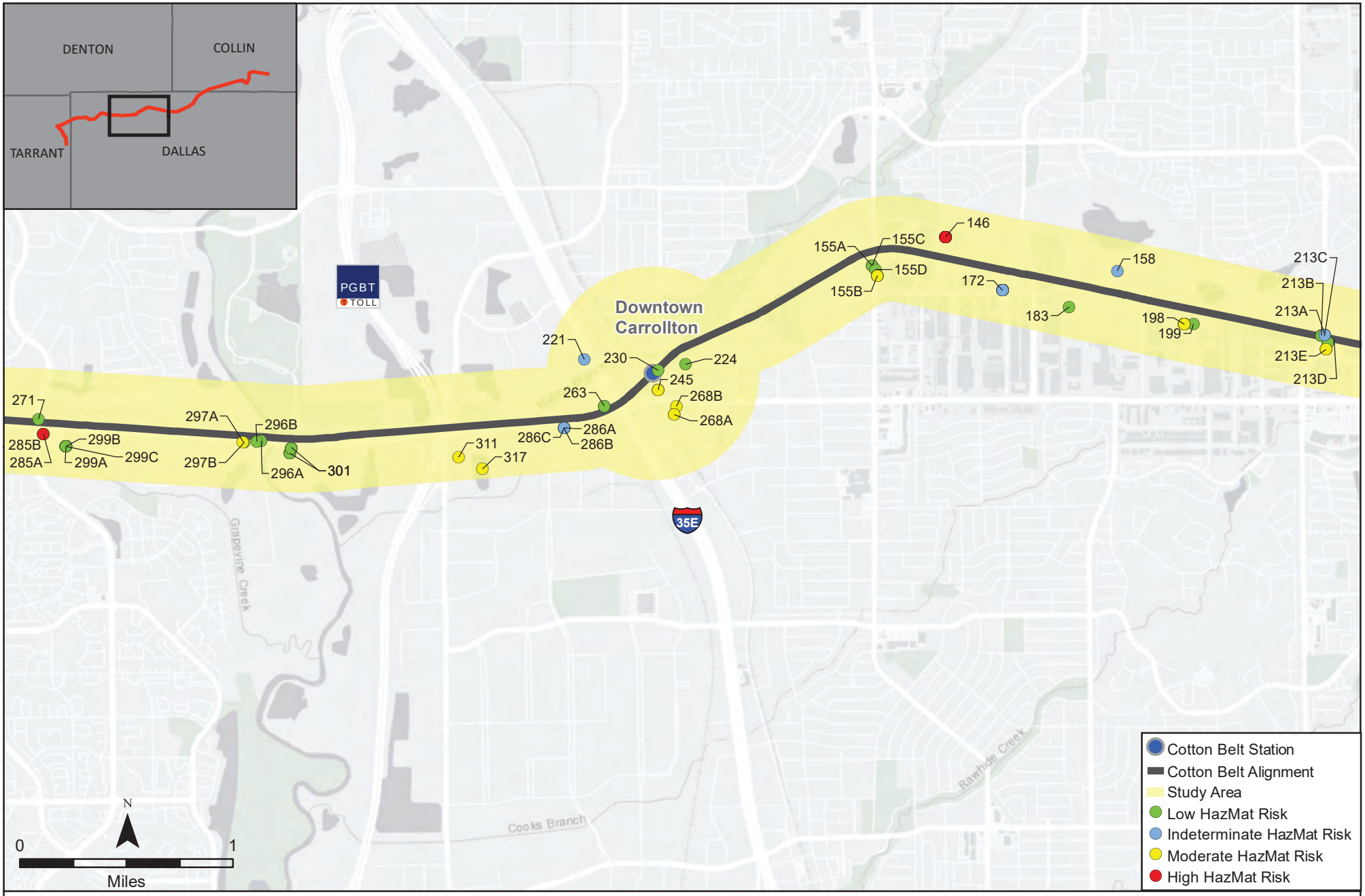

Figure 4-18
Hazardous Materials Risk Sites
Data Source: EDR, 2017

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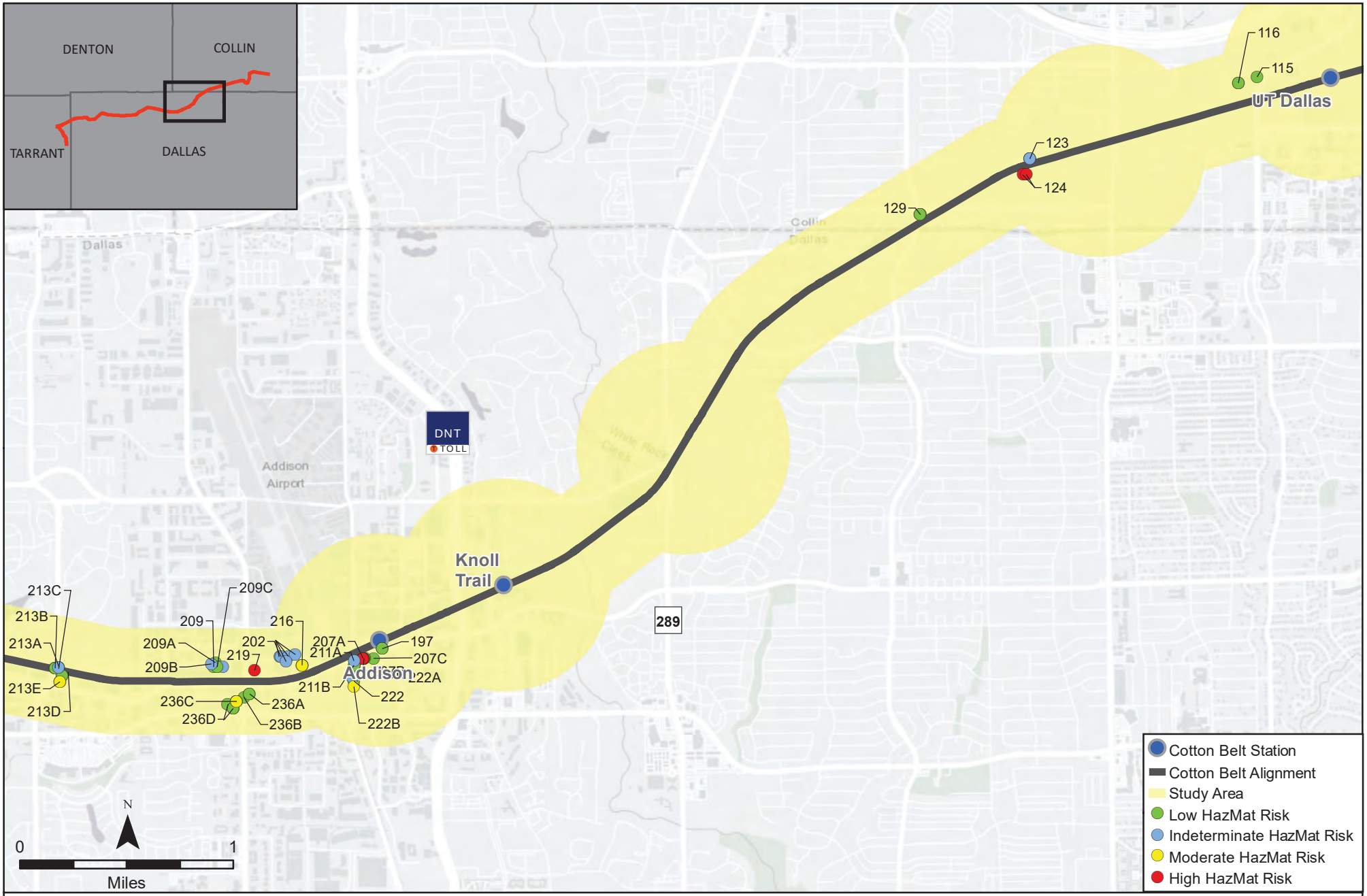

Figure 4-19
Hazardous Materials Risk Sites
Data Source: EDR, 2017

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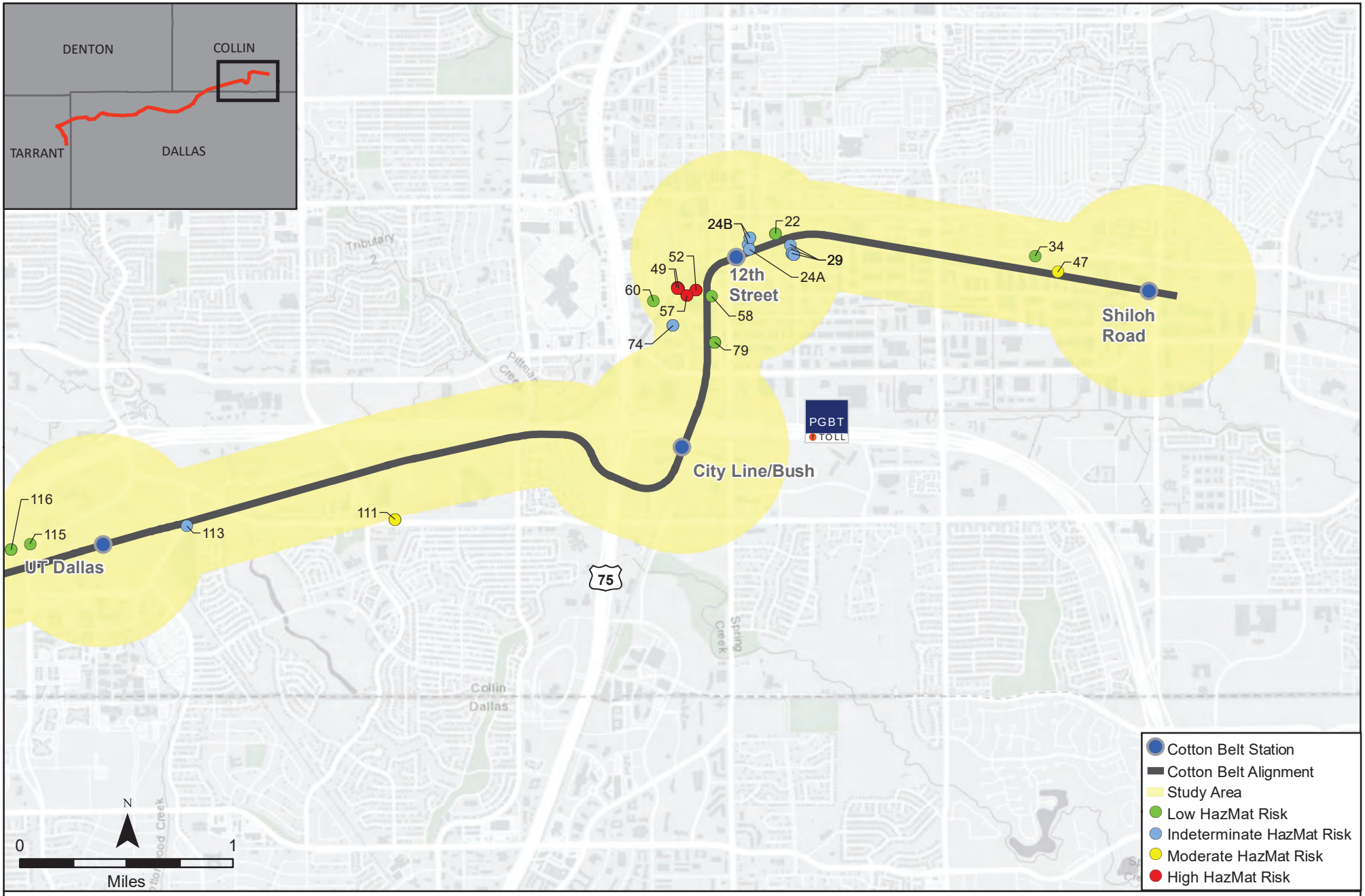

Figure 4-20
Hazardous Materials Risk Sites
Data Source: EDR, 2017

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Table 4-19. Hazardous Materials Risk Sites*

Map ID (EDR Site ID)	Site Name/Address	Approx. Distance / Direction	Databases of Concern/Comments
High Risk			
2A	Budget 5305 DFW APO N North Facility DFW Airport, TX	450' / West	Databases of Concern: LPST, UST. An LPST was reported at this facility in 1993. This case was listed as minor soil contamination which did not require a RAP. Final concurrence has been issued and the case is closed. Formerly used for fleet refueling, two 10,000 gallon and one 500 gallon USTs were reported as removed from the ground.
49	Industrial complex - Capital Cable and Wire 910 E. 10th St., Plano	737' / West	Databases of Concern: SPILLS, APAR, IHWCA, GCC, FINDS, ECHO, FTTS, Hist FTTS There is the potential for impacts during subsurface construction to the Project from soil and groundwater contamination at the site with metals and chlorinated solvents.
52	U.S. Brass 901 E. 10th St., Plano	265' / West	Databases of Concern: RCRA-SQG, ECHO (ICIS, US AIRS), Tier 2, GCC This site has the potential to impact the Project during subsurface construction due to soils and groundwater contaminated with VOCs, metals, chlorinated solvents, and TPH.
57	Cable Corp. / Saskaway Eight LP., 910 10th St., Plano	500' / West	Databases of Concern: ERNS, IOP This site has the potential to impact the Project during subsurface construction with groundwater contaminated with chlorinated solvents.
124	Empty lot 7721 Ronnie Dr., Dallas	207' / South	Databases of Concern: UST, Hist Auto Due to proximity to the Project, there will be potential for contamination from former USTs at the site to affect the Study Area during subsurface construction.
146	Akzonobel Paints LLC - The Glidden Company, ICI Paints, PPG Architectural, Glidden Coatings and Resin 1900 N. Josey Ln., Carrollton	520' / North	Databases of Concern: Tier 2, TRIS, SEMS-Archive, RCRA-SQG This site was listed in the SEMS-Archive database with NFRAP. More information about this property, which is near the Cotton Belt, will be necessary.
207A	Addison Transit Center 4801-4807 Arapaho Rd., Addison	199'/ Southeast	Databases of Concern: GCC, VCP This site on the Project has the potential to cause impacts during subsurface construction due to soils and groundwater contaminated with chlorinated solvents, metals and VOCs.
219	Coca Cola Bottling of North Texas 15200 Midway Rd., Addison	273' / North	Databases of Concern: LPST, UST This site has the potential to impact the Project, during subsurface construction, with soils and/or groundwater contaminated with TPH and petroleum due to a LPST. The LPST case is not closed.

Table 4-19. Hazardous Materials Risk Sites* (cont'd)

Map ID (EDR Site ID)	Site Name/Address	Approx. Distance / Direction	Databases of Concern/Comments
285A	Maple Mart, 1301 E. Belt Line Rd., Coppell	281' / South	Databases of Concern: LPST, UST This site has the potential to impact the Project with contaminated groundwater due to a LPST if groundwater is encountered during construction. The LPST case is not closed.
Moderate Risk			
24B	US Brass Trucking 1212 Municipal Ave., Plano	335'/ Northwest	Database of Concern: LPST This facility has the potential to affect the Project during subsurface construction with soils impacted by a former LPST. Final concurrence has been issued and the case is closed.
47	Heller Automotive, 3104 S. Rigsbee Dr., Plano	81' / North	Databases of Concern: EDR Hist Auto Automotive shop, which is adjacent to the Project, has the potential to have impacted soils and/or groundwater due to petroleum products used and accumulated during business activities. These impacted soils and/or groundwater could be encountered during subsurface construction.
111	Triquint / Qorvo, 500 W. Renner Rd., Richardson	1,351' / South	Databases of Concern: RCRA-LQG, IHW, IHW Corr Action, AST This site is a large manufacturing complex located adjacent to the Cotton Belt. Several waste streams were identified in the database report as well as several written informal notices of violation. There is a risk of contamination to be encountered along the Cotton Belt during subsurface construction.
155B	Merico, Inc., 1820 N. Josey Ln., Carrollton	633' / South	Database of Concern: LPST This site has potential to impact the Project if groundwater is encountered during construction due to groundwater contaminated with petroleum products from an LPST. As of 2000, final concurrence had been issued and the case is closed.
198	Cargill Steel and Wire (Currently Gerdau Carrollton-Wire) 1915 John Connally Dr., Carrollton	224' / South	Databases of Concern: Hist FTTS, FTTS, RCRA CESQG, ECHO, Tier 2, TRIS, HMIRS Spills impacting this site have been cleaned up. There will be the potential to encounter impacted soil during subsurface construction.
213E	Racetrac 64 15196 Marsh Ln., Addison	289' / South	Databases of Concern: UST, EDR Hist Auto This facility has active USTs which have the potential to impact soils and groundwater. There will be potential to encounter impacted soils and groundwater.
216	W.O. Bankston Body Shop – Nissan, 4300 Lindbergh Dr., Addison	247' / North	Databases of Concern: UST, ECHO, RCRA NonGen / NLR, EDR Hist Auto Due to proximity to the Project, there will be potential for contamination from former USTs at the site to affect the Project during subsurface construction.

Table 4-19. Hazardous Materials Risk Sites* (cont'd)

Map ID (EDR Site ID)	Site Name/Address	Approx. Distance / Direction	Databases of Concern/Comments
222B	Wash Depot 71, 15209 Addison Rd., Addison	749' / Southeast	Databases of Concern: LPST, UST This facility has the potential to affect the Project during subsurface construction with soils impacted by a former LPST. Final concurrence has been issued and the case is closed.
236C	Exxon 6 0275 4191 Belt Line Rd., Addison	491' / South	Databases of Concern: LPST, RCRA NonGen / NLR, ECHO This facility has the potential to affect the Project if groundwater is encountered during construction with groundwater impacted by a former LPST. Final concurrence has been issued and the case is closed.
236C	S T Food Mart Citgo 4191 Belt Line Rd., Addison	667' / South	Databases of Concern: LPST, GCC This facility has the potential to affect the Project with groundwater impacted by a former LPST. The status of the LPST case was showing as in the pre-assessment/release determination phase.
236C	Dixie Gas Station 4191 Belt Line Rd., Addison	491' / South	Databases of Concern: LPST, UST, GCC, EDR Hist Auto, ENF This facility has the potential to affect the Project with groundwater impacted by former LPST cases. Final concurrence has been issued and the cases were closed. This facility has received multiple notices of violation including in 2017 when the facility was cited for failure to maintain spill prevention equipment and failure to test the operability of the cathodic protection system.
245	One & Only Convenience Store, 1013 E. Belt Line Rd., Carrollton	383' / Southeast	Databases of Concern: UST, LPST, GCC This facility has the potential to affect the Project with soils and groundwater impacted by a former LPST. Final concurrence has been issued and the case is closed.
268A	Driveway Auto Parts 1103 Carroll Ave., Carrollton	1,105' / Southeast	Databases of Concern: UST, LPST This facility has the potential to affect the Project with soils and groundwater impacted by a former LPST. This case is open pending documentation of well plugging.
268B	DUB Thompson Site 1104 Belt Line Rd., Carrollton	997' / Southeast	Database of Concern: SEMS-Archive This site was listed in the SEMS-Archive database. More information about this property which is near the Carrollton Station will be necessary.
285B	Mobil Oil Corporation 1301 E. Belt Line Rd., Coppell	281' / South	Databases of Concern: RCRA NonGen / NLR, ECHO, EDR Hist Auto This service station which was located near the Project has the potential to have impacted soils and/or groundwater due to petroleum products used and accumulated during business activities.
297A	Beazer West Belt Line & Le, Coppell	154' / South	Database of Concern: UST USTs have the potential to leak and impact soils and groundwater with their contents.

Table 4-19. Hazardous Materials Risk Sites* (cont'd)

Map ID (EDR Site ID)	Site Name/Address	Approx. Distance / Direction	Databases of Concern/Comments
311	Carrollton Dump Carrollton – SE quadrant of Beltline and Luna	750' / South	Database of Concern: CLI A closed landfill site which previously accepted hazardous materials and industrial waste. This site may currently be in the VCP; more information on the location is needed.
317	DUB Thompson Landfill SWC Belt Line and Luna Rd., Carrollton	208' / South	Database of Concern: VCP It is unclear whether this site has been issued a certificate of completion, nor what the affected media or contaminants of concern were.
321	Soto's Automotive Incorporated 390 Southwestern Blvd., Coppell	55' / East	Database of Concern: EDR Hist Auto This service station which was located adjacent to the Cotton Belt Project has the potential to have impacted soils and/or groundwater due to petroleum products used and accumulated during business activities.
322	Texas Stock Tank Impreso Inc. 652 SW Blvd., Coppell	322' / South	Databases of Concern: RCRA NonGen/NLR, UST USTs have the potential to leak and contaminate soils and groundwater with their contents.
326	Park N Fly 800 S. Royal Ln., Coppell	Adjacent / South	Database of Concern: UST USTs have the potential to leak and impact soils and groundwater with their contents.
Indeterminate Risks			
2B	Budget DFW Airport	450'/West	Database of Concern: UST USTs have the potential to have leaked and impact soils and groundwater with their contents.
8	DFW Airport	471'/South east	Database of Concern: IHW More information is needed to determine whether the site will pose a risk to the project.
24A	John & Sharon Lewis (Owners) 1204 L Ave., Plano	65'/ Northwest	Database of Concern: UST USTs have the potential to have leaked and impact soils and groundwater with their contents.
24B	TXU Electric Maintenance Facility 1212 Municipal Ave., Plano	193'/ Northwest	Database of Concern: UST USTs have the potential to have leaked and impact soils and groundwater with their contents.
29	Lattimore Materials / - Plano Ready Mix 1200 Ave. N, Plano	402' / South	Databases of Concern: Tier 2, RCRA NonGen/NLR, TRIS, ECHO, UST, AST USTs have the potential to have leaked and impact soils and groundwater with their contents.
74	Collin Creek II Business Park 820-860 Ave. F, Plano	845' / West	Database of Concern: VCP More information regarding the cleanup of this VCP site will be necessary to determine risk.

Table 4-19. Hazardous Materials Risk Sites* (cont'd)

Map ID (EDR Site ID)	Site Name/Address	Approx. Distance / Direction	Databases of Concern/Comments
113	KCS Train Derailment Synergy Park & Point North, Richardson	On track	Database of Concern: SEMS More information regarding the derailment and cleanup will be necessary to determine risk to the Cotton Belt Project.
123	First City Texas Dallas 17800 Dickerson St., Dallas	131' / North	Databases of Concern: UST, LPST, EDR Hist Auto This facility has the potential to affect the Project with soils impacted by a former LPST. Final concurrence has been issued and the case is closed. Since only soils were impacted, more information regarding cleanup will be required to gauge the risk to the Project.
158	Columbian Country Club of Dallas, 2525 Country Club Dr., Carrollton	570' / North	Database of Concern: UST USTs have the potential to have leaked and impact soils and groundwater with their contents.
172	Not Reported - Currently Texas Lonestar Auto Auction, 2205 Country Club, Carrollton	500' / South	Databases of Concern: HMIRS, SPILLS USTs have the potential to have leaked and impact soils and groundwater with their contents.
202	Multiple - 4303, 4305, 4321, 4341, 4204 Lindbergh Dr., Addison	450'-586' / North	Databases of Concern: EDR Hist Auto, UST USTs have the potential to have leaked and impact soils and groundwater with their contents.
209B	A.J. Bart 4040-4130 Lindberg Dr., Addison	356' / North	Databases of Concern: AUL, VCP, ECHO More information regarding the cleanup for the VCP and institutional controls will be required to gauge this site's risk to the Cotton Belt Project.
211A	7 Eleven 1602 26769 15305 Addison Rd., Addison	178' / South	Database of Concern: UST USTs have the potential to have leaked and impact soils and groundwater with their contents.
213A	Jiffy Lube 1610 Marsh Ln., Carrollton	<30' / North	Databases of Concern: EDR Hist Auto, UST USTs have the potential to have leaked and impact soils and groundwater with their contents.
213D	AAMCO 15200 Marsh Ln., Addison	118' / South	Database of Concern: EDR Hist Auto This service station which was located nearby the Cotton Belt Project has the potential to have impacted soils and/or groundwater due to petroleum products used and accumulated during business activities.
221	Telenova, Inc. 1201 N. Stemmons Fwy., Carrollton	1,378' / North	Database of Concern: SEMS-Archive More information will be required on this SEMS-Archive site to determine whether the site poses a risk to the Cotton Belt Project.

Table 4-19. Hazardous Materials Risk Sites* (cont'd)

Map ID (EDR Site ID)	Site Name/Address	Approx. Distance / Direction	Databases of Concern/Comments
222A	Stanford Addison 15211 Addison Rd., Addison	542' / South	Databases of Concern: IHW Corr Action, EDR Hist Auto More information is needed on the IHW Corr Action for this site to determine what the risk to the Cotton Belt Project may be.
286C	K&D Investments 1445 W. Belt Line Rd., Carrollton	212' / South	Databases of Concern: UST, LPST More information will be required to determine whether this LPST which did not impact groundwater was cleaned up to where soils will not impact subsurface construction on the Cotton Belt Project.

Key: AUL: Activity and Use Limitation; APAR: Affected Property Assessment Report; AST: Aboveground Storage Tank; CESQG: Conditionally Exempt Small Quantity Generator; CLI: Closed and Abandoned Landfills; CORRACTS: RCRA Corrective Action; ECHO: EPA Enforcement and Compliance History Online; ENF: Enforcement Report; FTTS: FIFRA/TSCA Tracking System; GCC: Groundwater Contamination Cases; HMIRS: Hazardous Material Information Resource System; IHW: Industrial Hazardous Waste; LPST: Leaking Petroleum Storage Tank; RAP: Response Action Plan; RCRA: Resource Conservation and Recovery Act; NLR: No Longer Regulated; SEMS: Superfund Enterprise Management System; TRIS: Toxic Release Inventory System; UST: Underground Storage Tank; VCP: Voluntary Cleanup Program

Source: EDR, 2017a

*These are sites with listings of concern within 0.25 mile of the Cotton Belt Project.

DART will acquire real estate along the Preferred Alternative for the portions of the alignment, stations, and other facilities. Environmental due-diligence activities will be performed prior to property acquisition or other real estate transactions. According to ASTM 1527-13, "due diligence is the process of inquiring into the environmental characteristics of a parcel of commercial real estate or other conditions, usually in connection with a commercial real estate transaction. The degree and kind of due diligence vary for different properties and differing purposes." A compliant Phase I ESA will be conducted. If the Phase I ESA concludes that one or more recognized environmental conditions (RECs) exist, Phase II testing will be performed to help establish whether contamination is present and, if present, its nature and extent. Contractors will be prepared to encounter potentially hazardous conditions when working in proximity to high or moderate risk sites and will have proper equipment available to protect their workers and the environment if hazardous materials are encountered.

4.17 Biological and Natural Resources

4.17.1 Impact Evaluation

No-Build Alternative

Implementation of the No-Build Alternative would result in no impacts to biological or natural resources.

Preferred Alternative

Vegetation within the existing railroad right-of-way varies from mown urban grasses to wooded areas, although the majority of this area was previously disturbed from maintenance activities. Impacts to vegetation types within the Study Area will be minimal since approximately 74.3 percent of the Preferred Alternative occurs within areas defined as urban. As the current project design is not sufficiently advanced to accurately assess areas of impact, the impact analysis for the Preferred Alternative utilizes a conservative approach, assuming that all vegetation within the right-of-way and current station footprints will be affected by removal of vegetation for new track placement or realignment. Impacts to vegetation types located within the Preferred Alternative right-of-way (including the Cypress Waters Alignment and CityLine/Bush Alignment) will be approximately 351 acres. Impacts will occur in the four EMST vegetation types that make up one or more percent of the Study Area. These include Blackland Prairie: Disturbance or Tame Grassland, Native Invasive: Deciduous Woodland, Central Texas: Floodplain Hardwood Forest and row crops.

The vegetation types (in acres or percentage of the right-of-way) that will most likely be disturbed by the Preferred Alternative include:

- Urban Low Intensity (215.9 acres or 1.9 percent),
- Urban High Intensity (54.7 acres or 0.5 percent),
- Blackland Prairie: Disturbed or Tame Grassland (40.6 acres or 0.4 percent),
- Native Invasive: Deciduous Woodland (20.5 acres or 0.2 percent),
- Central Texas: Floodplain Hardwood Forest (7.7 acres or 0.07 percent),
- Row Crops (5.0 acres or 0.04 percent),
- Oak woodland and forest (4.2 acres or 0.04 percent),
- Floodplain Herbaceous Vegetation (0.8 acres or 0.007 percent),
- Savanna Grassland (0.7 acres or 0.006 percent),
- Riparian Hardwood Forest (0.6 acres or 0.006 percent), and
- Native Invasive: Mesquite Shrubland (0.4 acres or 0.003 percent).

There are several areas along the alignment through residential areas where parallel streams and wooded areas provide a buffer from the Preferred Alternative. Portions of these areas may extend into the right-of-way and those areas could be removed during construction activities.

Permanent fencing or walls identified for residential areas along the Preferred Alternative, and temporary construction fencing, could affect wildlife by destroying habitat and creating barriers that keep animals from accessing habitat. In areas where habitat will be affected, similar habitats are available in nearby areas. The majority of state- or federally-listed wildlife species within the Study Area are mobile species and will be able to shift to other suitable habitats in the area until construction is completed. However, five state-threatened species that utilize aquatic habitats, and are not mobile, may be affected by the Preferred Alternative, including: Alligator snapping turtle *(Macrochelys temminckii)*, Louisiana pigtoe *(Pleurobema riddellii)*, sandbank pocketbook *(Lampsilis satura)*, Texas heelsplitter *(Potamilus amphichaenus)*, and Texas pigtoe *(Fusconaia askewi)*. Of the terrestrial species listed, the state-threatened timber rattlesnake is more at risk for being affected by construction activities than any other due to its limited mobility and the likelihood of its suitable habitat occurring within the Study Area.

The Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter, all have recorded TXNDD element of occurrences within 0.7 to 7.0 miles from the Study Area and could be affected by the Project. One state-listed species of concern, the Texas garter snake (*Thamnophis sirtalis annectens*), has a TXNDD element of occurrence record located approximately 7.0 miles north of the Study Area, and could be affected by the Preferred Alternative.

Also within the Study Area, migratory birds could be affected during site preparation and grading activities by disturbing existing vegetation and bare ground that may harbor active bird nests. These include nests that may occur in grass, shrubs, trees, and on bare ground including gravel pads and roads.

4.17.2 Mitigation Measures

Vegetation/Habitat

Site planning and construction techniques will be designed to avoid and preserve existing mature native trees and shrubs to the greatest extent possible, especially through residential areas. To enhance the value of the Preferred Alternative to both wildlife and the community, and to aid in water conservation, native vegetation beneficial to fish and wildlife will be used by DART. To avoid soil disturbances, machinery and other vehicles will utilize nearby roadways and bridges when crossing drainages, wetlands, and creeks. DART will reduce or eliminate impacts to riparian hardwood forest as well as floodplain hardwood forest and adjacent upland woodlands.

Construction activities will temporarily disturb vegetated areas and animals' habitat; however, long-term impacts will be mitigated through re-vegetation. Re-vegetation within the existing and new right-of-way, where mainly infrastructure improvements are identified, will be undertaken to the extent that is reasonably feasible. Replacement vegetation will utilize native species that are generally useful to wildlife. The replacement vegetation can provide habitat for numerous wildlife species. Areas of re-vegetation will be monitored to ensure that plantings are established to their original condition.

Re-vegetation of affected areas will use durable, native, and non-native materials that require little maintenance. Within station areas and additional landscaping along the Preferred Alternative, plant materials will also be drought resistant and be supported by operating irrigation systems and a permanent commitment to on-going maintenance. On DFW Airport property, any new landscaping or replacement vegetation will use recommended vegetation that will not attract hazardous wildlife to comply with FAA and DFW Airport design criteria.

Vegetation affected by Preferred Alternative construction activities along the existing right-of-way will consist of removing the minimum amount of vegetation required to construct the Preferred Alternative. The Preferred Alternative crosses through seven municipalities which have some form of tree protection ordinances in place. Removal or alteration of trees on public or private property may require a permit from the city in question. Any tree removals associated with project activities will be done in accordance with city ordinances and permits will be obtained if necessary.

Migratory Birds

If clearing vegetation during the March 15th through September 15th nesting season is unavoidable, DART will survey the construction area to ensure that no nests with eggs or young will be disturbed by construction. Any vegetation or bare ground areas where occupied nests are located will not be disturbed until the eggs have hatched and the young have fledged. Removal of trees which contain colonial waterbird rookeries will be avoided through route adjustments to the extent reasonable and feasible.

Artificial nighttime lighting can attract and disorient night-migrating birds. Birds that circle the light's glare can cause collision with station structures or exhaustion mortality. DART will utilize the minimum amount of nighttime lighting needed for safety and security along the right-of-way, at passenger stations, and at maintenance/operation yards. DART will down-shield lighting to light the ground only and reduce glare.

Reptiles

DART will inform employees and contractors of the potential for the timber rattlesnake to occur in the Study Area. Contractors should be advised to avoid impacts to this and other snake species, and should avoid contact with the species if encountered. Any state-listed species encountered during construction will be reported to the TXNDD.

If the Preferred Alternative is found to contain unavoidable habitat of the timber rattlesnake, DART will provide a biologist to monitor during clearing and construction activities to assist in detecting state-listed species in the right-of-way. If trenching is involved, DART will cover the trenches or excavated areas overnight or inspect the areas every morning to ensure no reptiles or other wildlife have been trapped. Trenches left open for more than two daylight hours will be inspected for the presence of trapped reptiles prior to backfilling. If trenches cannot be backfilled the day of initial trenching, then escape ramps should be installed at least every 90 meters. Escape ramps can be short lateral trenches or wooden planks sloping less than 45 degrees to the surface.

For soil stabilization and/or revegetation of disturbed areas within the project area, DART will use erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. DART will use no till-drilling, hydromulching and/or hydroseeding rather than erosion control blankets or mats due to a reduced risk to wildlife.

Due to the abundance of available habitat within and adjacent to the Preferred Alternative, the potential impacts to the riparian areas within the Study Area are not anticipated to adversely impact the Texas garter snake. However, per BMPs, contractors will be advised of potential occurrence in the Study Area, and to avoid harming the species if encountered. BMPs will be included in the MMP.

Aquatic Species

The Preferred Alternative includes a number of river or stream crossings. In accordance with TPWD recommendations for the Preferred Alternative, all new crossings will, when feasible, span any riparian vegetation and be placed perpendicular to the stream to minimize loss of riparian habitat. Crossings will also utilize vertical and horizontal space beneath bridges for local terrestrial wildlife to comfortably cross under the facility. The majority of the bridges currently in place will

need to be replaced or modified; however, the use of BMPs will avoid or minimize water quality impacts to these water bodies, thus avoiding significant impacts to aquatic species.

As a precautionary measure, the Freshwater Mussel BMPs will be included in the MMP. These include:

- When work is in the water, survey project footprints for state listed species where appropriate habitat exists.
- When work is in the water and mussels are discovered during surveys; relocate state listed and SGCN mussels under TPWD permit and implement Water Quality BMPs.
- When work is adjacent to the water, Water Quality BMPs implemented as part of the SWPPP for a construction general permit or any conditions of the 401 water quality certification for the project will be implemented.

DART will avoid placement of temporary fills, culverts or structures into waters serving as suitable habitat for freshwater mussels. If construction should occur during times when water is present and dewatering, fill or trampling activities are involved, then DART will relocate potentially impacted native aquatic resources in conjunction with a *Permit to Introduce Fish, Shellfish or Aquatic plants into Public Waters* and an Aquatic Resource Relocation Plan (ARRP). DART will coordinate with TPWD Kills and Spills Team (KAST) for appropriate authorization if work is required within streams.

If equipment comes in contact with inland streams or waterbodies, such as during construction/demolition of temporary or permanent crossings, DART will prepare and follow an aquatic invasive species transfer prevention plan which outlines BMPs for preventing inadvertent transfer of aquatic invasive plants and animals on project equipment.

Permanent fencing or walls for residential areas, and temporary construction fencing for the Preferred Alternative will be placed in an effort to avoid as much as possible any riparian habitat, upland and bottomland woodlands, and wetland areas. The Preferred Alternative will be constructed to avoid or minimize adverse impacts and to mitigate any impacts when rare plant and animal species and their habitat are found within or near the Preferred Alternative.

State law prohibits direct harm for state-listed species, but does not currently provide for habitat protection. As the project advances, DART will examine ways to reduce or eliminate impacts to riparian habitat. If any state-listed species are encountered within the Study Area during construction, care should be taken to avoid harming them. Contractors will be advised of the potential for occurrence in the project area, and to avoid harming the species if encountered.

4.18 Relationship between the Short-term use of the Environment and the Maintenance and Enhancement of Long-term Productivity

4.18.1 Impact Evaluation

This section identifies short-term uses and long-term productivity of environmental resources as defined per 40 CFR 1502.16. Overall, operation of the Preferred Alternative will maintain and enhance productivity and general quality of life in the surrounding area. Short-term uses and impacts from the use of resources related to the Preferred Alternative will be consistent with the enhancement and maintenance of long-term productivity in the local area.

4.18.2 Mitigation Measures

The most disruptive short-term impact associated with the Preferred Alternative will occur during project construction (see **Section 4.21**). Any short-term uses of human, physical, socio-economic,

cultural and natural resources will contribute to the long-term benefits of improved access to employment centers; a transportation alternative that can easily respond to increased demand from a growing population; improvements in both transit accessibility and availability; and improved air quality in the region. The long-term benefits of implementing transit supportive land use policies could also be realized. The Preferred Alternative will contribute to the long-term productivity of the area by enhancing transportation options in the Study Area. In addition, the Preferred Alternative will meet the region's desires to implement long-range plans that integrate land use and transportation policies.

4.19 Irreversible or Irretrievable Commitment of Resources

Irreversible commitments will include undeveloped land acquired for construction of stations and maintenance facilities, as well as the irreversible and irretrievable resources from construction materials and the use of non-renewable fossil fuel resources that will be necessary to power construction equipment, electrical devices, vehicles, and trains. The general loss of vegetation in the area from construction of stations and other facilities along the rail right-of-way will also represent an irreversible commitment. Potential degradation to air quality that will result from construction activities will be temporary and reversible upon completion of project construction. Although BMPs will be incorporated to reduce soil erosion, the minor loss of soil during construction activities represents an irretrievable and irreversible commitment of resources.

4.20 Indirect and Cumulative Impacts

Impact Assessment

Indirect impacts (i.e., effects) are defined as impacts that are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" per the CEQ (40 CFR §1508.8) and 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." In addition, the CEQ (40 CFR §1508.7) defines cumulative impacts as "the impact on the environment which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions." The potential indirect and cumulative impacts of the Preferred Alternative are described below utilizing guidance from the 2016 American Association of State Highway and Transportation Officials (AASHTO) Practitioner's Handbook on *Assessing Indirect Effects and Cumulative Impacts Under NEPA*.

Indirect Impacts

In addition to direct impacts, major transportation projects may also have indirect impacts on land use and the environment. For this analysis, the evaluation of indirect impacts is focused on induced growth impacts. Induced growth impacts are defined by AASHTO as "changes in the location, magnitude or pace of future development that result from changes in accessibility caused by the project." An example of an induced growth impact is commercial development occurring around a new rail station and the environmental impacts associated with this development. The primary goal of the indirect impacts analysis is to understand the causal relationship between the Preferred Alternative, the induced growth, and the resources potentially affected from the induced growth.

The indirect impacts study area, also known as the Area of Influence (AOI), is the same as the Preferred Alternative Study Area, consisting of approximately 0.25-mile on either side of the alignment and a 0.5-mile radius around each rail station. This AOI was delineated in consideration of typical induced growth and development likely to occur around the stations and alignment. The AOI generally consists of highly developed, urban environments with a mixture of industrial, commercial and residential properties with intermittent pockets of undeveloped lands. The AOI

covers approximately 12,496 acres which includes approximately 285 acres of existing rail right-of-way and 158 acres of additional right-of-way for the Preferred Alternative. The temporal range for the indirect impacts analysis extends from 2017 to 2040, the horizon year of the current NCTCOG Mobility 2040 MTP.

The evaluation of potential indirect impacts resulting from the Preferred Alternative follows the four-step process outlined in the *Indirect and Cumulative Impacts Assessment and Mitigation Technical Memorandum* (**Appendix B**).

Step 1: Assess the potential for increased accessibility

Proposed access changes are evaluated to help assess the potential for increased accessibility within the AOI. Access changes within the project limits will result from the stations that will provide new access to the Cotton Belt rail line. All stations will be sources of new, added accessibility to other areas in the region through the Cotton Belt rail line or through connections to other existing rail lines. The Preferred Alternative will interface with three DART LRT lines: The Red Line in Richardson/Plano, the Green Line in Carrollton, and the Orange Line at DFW Airport. Also at DFW Airport, the Preferred Alternative connects to the TEXRail Project to Fort Worth and the DFW Airport Skylink People Mover. The accessibility potential of each station is summarized in the *Indirect and Cumulative Impacts Assessment and Mitigation Technical Memorandum* in **Appendix B**. Additional information on transportation and access in included in **Chapter 5.**

Although the connections to the other existing rail lines (DART LRT Green, Red and Orange lines, TEXRail, and potentially DCTA A-Train) are located at only four stations (DFW Terminal B, Downtown Carrollton, City Line/Bush and 12th Street), these existing rail lines could be accessed by any of the stations because they will all be connected by the Preferred Alternative.

Most of the stations have or will have parking areas available. One station (Knoll Trail) will not have any parking area. The Knoll Trail Station will have on-street bus stop access and will be accessible by pedestrians and bicyclists. The DFW Terminal B Station does not have a designated parking area, but is anticipated to be a destination station versus a boarding station as it shows more alightings than boardings in the 2040 ridership forecast. In other words, travelers are likely to board at a different station to get to this station and to DFW Airport.

All other stations have existing or new parking areas which will enable rail users to drive to the station and board at these locations. As mentioned above, all stations will be connected by the Preferred Alternative which will result in increased accessibility for rail users. Rail users can access areas along the Preferred Alternative from any of the stations, as well as areas along the other existing rail line corridors through connections at three stations. In addition, riders departing at the stations could connect to bus options to reach a farther distance than from walking or biking; however, it is more likely that riders are attempting to reach destinations within walking distance to the stations.

The 2040 ridership forecast also determines ridership potential of the Preferred Alternative. The following summarizes the Preferred Alternative ridership effects:

- Drive access, bus access and walk access are the highest modes of access (27 to 29 percent).
- The highest drive access is at DFW North, Cypress Waters, 12th Street and Shiloh stations (27 to 51 percent drive access).
- Transfers from the DART LRT lines are the highest boarding mode (29 percent) and will occur most often at the Downtown Carrollton and CityLine/Bush stations.
- The Downtown Carrollton Station will have high station ridership due to the transferring rail riders from the LRT line at this location.

- Transfers to the Cotton Belt Project from DART LRT lines will occur at the 12th Street Station and CityLine/Bush Station (from the Red Line), the Downtown Carrollton Station (from the Green Line) and the DFW Terminal B Station (from the Orange Line).
- The Addison Station will have the highest overall ridership, with 52 percent bus transfer activity and 44 percent walk activity. The Addison Transit Center is also one of the busiest transit centers in the DART system.
- The DFW North Station has substantial rail transfer activity from TexRail (57 percent).
- DFW Terminal B Station provides access to a major activity center and the rail ridership forecasted at this station reflects that – both for employees and passengers. It will primarily be a destination station (403 boardings versus 1,922 alightings).

Although all stations are interconnected through the Preferred Alternative, once reaching the desired station, additional transportation modes may be needed to reach ultimate destinations. Destinations near or within walking distance from the stations will receive the most benefit and result in an increase in accessibility. Conversely, destinations with distances greater than one mile from a station will not experience an increase in accessibility because of the additional transportation needs. In summary, the Preferred Alternative has the potential to increase accessibility at and near destinations within walking distance of the station locations.

Step 2: Assess the potential for induced growth

To assess the potential for induced growth, feedback was gathered from local planners in April and May 2017 to get their professional opinion on potential areas of development and redevelopment. Local planners and staff provided feedback and input on future developments planned or likely to occur, potential impacts of the Preferred Alternative, and induced growth within their jurisdiction. Input was received from the following municipalities: Town of Addison and the cities of Carrollton, Coppell, Dallas, Plano, and Richardson. The planners identified areas for development which are evaluated and included in this analysis. These areas are generally mixed-use developments near the stations or within the Study Area and are primarily TOD because most of the cities have anticipated the construction of the Preferred Alternative.

Using this feedback from local planners as well as information from the NCTCOG Regional Data Center, potential for induced growth was determined and areas of development and redevelopment identified. It is anticipated that the Preferred Alternative has the potential to induce development as well as increase the rate and intensity of potential development.

Step 3: Assess the potential for impacts on sensitive resources

As a result of the induced growth areas identified in Step 2, it is anticipated that socioeconomic resources and ecological resources will be the only sensitive resources impacted. No negative impacts are anticipated to socioeconomic resources; alternatively, positive effects to employment and businesses are anticipated along the Preferred Alternative because of the potential for TOD. Providing additional access opportunities for employees and customers will positively impact business surrounding stations. Providing services to accommodate the potential growing population and changing demographic in association with the TOD may impact local schools and community facilities. Emergency service providers in areas of high density development may also need to accommodate such increases of population and development. Generally, development and redevelopment near the stations will result in positive community effects and enhanced accessibility and job opportunities for transit-dependent populations from throughout the service area.

As discussed in **Section 3.2**, the Preferred Alternative stations will primarily be located near or within well-developed areas that serve as population and employment centers. Every station area has an associated local land use plan to support growth and redevelopment. This will result in

some property acquisition to support the redevelopment. In most cases station area redevelopment will occur with or without the Preferred Alternative.

DFW Airport controls all the property and development plans at the two airport stations. Similarly, UT-Dallas controls all property development at the UT-Dallas Station. Cypress Waters is a Master Planned Community that anticipated the station but does not rely on it. Existing transit facilities are located at Downtown Carrollton, Addison and CityLine/Bush stations. Each of these areas were experiencing growth and redevelopment prior to the Preferred Alternative. Growth in the 12th Street Station area is also in process and the result of redevelopment extending south from the Downtown Plano LRT Station and extending north from the CityLine/Bush LRT Station. Growth in this transit corridor anticipated the station but does not rely on it. Growth around the Knoll Trail Station and the Shiloh Road Station is also encouraged by their respective cities, but there are currently no development projects programmed.

As discussed in **Section 4.3.1**, the Preferred Alternative will not have a direct impact to socioeconomic resources for EJ and non-EJ communities. However, introducing stations to neighborhoods may have the potential to indirectly impact housing prices and neighborhood character. Ongoing redevelopment will also influence these potential impacts. Since housing prices are increasing throughout the Dallas/Fort Worth region and redevelopment is occurring with or without new stations, it is difficult to determine the Preferred Alternative's role in changing housing prices and neighborhood character. DART periodically analyzes the economic impacts of development near DART stations. In the past, these studies have focused on property values. Future studies are also planned to include housing prices.

As stated in **Section 4.9**, EJ populations can be particularly sensitive to potential impacts to housing prices and neighborhood character. EJ communities are located near the existing LRT stations in downtown Carrollton and 12th Street, which is just south of the 12th Street Station. These are areas are currently experiencing significant growth and will continue to grow with or without the planned Cotton Belt stations. Because of this growth, it is difficult to determine the Preferred Alternative's effect on housing prices or whether the growth is induced by the Preferred Alternative.

As discussed throughout the FEIS, all community (EJ and non-EJ) impacts are being mitigated. Therefore, the Preferred Alternative will not constitute a disproportionately high and adverse impact to EJ populations relative to non-EJ populations within the Study Area. With the planned mitigation measures, project effects will not predominantly be borne by an EJ population, or will not be suffered by the EJ population.

Sensitive ecological resources include water and vegetation. These resources have the potential to be affected from induced growth. Anticipated induced growth from redevelopment of existing structures and properties will not result in impacts to water and vegetation. For new development, conversion of undeveloped land will result in minimal water and vegetation impacts. Such areas are minor in the context of the 26-mile corridor where most of the area is already developed and converted to urbanized land use. Surface water runoff which may transport sediment into water bodies could have the potential to impact impaired waters, nearby streams, and water features. Structural columns within floodplain areas and construction of additional impervious surfaces could result in additional stormwater runoff which could contribute to erosion and sedimentation problems.

Step 4: Assess potential minimization and mitigation measures

As mentioned in Step 3, ecological and socioeconomic resources are sensitive resources that have the potential to be affected by induced growth from the Project. BMPs and Stormwater Pollution Prevention Plans (SWPPP) implemented in accordance with TCEQ requirements will alleviate any potential impacts resulting from activities that could result in erosion and

sedimentation. Furthermore, water resources impacts will be mitigated through coordination with the USACE (through permits) and the NCTCOG (under the Section 214 program of the Water Resources Development Act) and in accordance with DART's Mitigation Monitoring Program.

Impacts to socioeconomic resources could be minimized through DART's and local authorities' continued monitoring of safety, access, traffic volumes and parking demands at and near station locations. DART's experience is that cities or the communities are first to identify these potential issues or impacts. Should an issue arise either through ongoing community engagement or DART direct observation, DART will address the issue consistent with DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects*. Section 3.5 (Post Implementation Impact Assessment and Mitigation) of the guidelines outlines appropriate steps to be taken to address the issue or impact. In addition, impacts to community resources will be minimized and mitigated through existing land use development regulations which will govern induced development projects within the AOI. Indirect impacts from the project, particularly potential land use redevelopment effects, are consistent with local goals and trends.

Cumulative Impacts

The purpose of the cumulative impacts analysis is to assess the direct and indirect impacts of the Preferred Alternative within the larger context of past, present, and future activities that are independent of the Preferred Alternative, but which are likely to affect the same resources in the future. This approach evaluates the incremental impacts of the Preferred Alternative in respect to the overall health and abundance of selected resources.

Cumulative impacts are analyzed in terms of the specific resource being affected. Before initiating the cumulative impacts analysis, key resources/issues are identified and it is determined whether a cumulative analysis is warranted for each resource. The cumulative impacts analysis focuses on 1) those resources substantially impacted by the project (directly or indirectly) and 2) resources currently in poor or declining health or at risk even if project impacts (either direct or indirect) are relatively small.

It was determined that the following resources warrant a cumulative impacts analysis: land use and socioeconomic resources. The evaluation of cumulative impacts resulting from the Preferred Alternative follows the five-step process outlined in the *Indirect and Cumulative Impacts Analysis Methodology Technical Memorandum*. Each resource cumulative impacts analysis and findings followed this five-step process:

- Step 1: Describe resource conditions and trends;
- Step 2: Summarize effects of the proposed action on key resources;
- Step 3: Describe other actions and their effects on key resources;
- Step 4: Estimate combined effects on key resources; and
- Step 5: Consider minimization and mitigation.

The temporal boundary for the cumulative analyses extends from 1996 to 2040, the year DART opened its first rail line and the horizon year of the current NCTCOG Mobility 2040 MTP, respectively. The Resource Study Area (RSA) for land use and socioeconomic resources was determined to follow the general areas surrounding the stations and Preferred Alternative. Like the AOI for indirect impacts, the RSA for the cumulative impacts analyses also consists of approximately 0.25 mile on either side of the alignment and a 0.5-mile radius from the stations.

Land Use

Land uses within the RSA are stable and improving. Land use development and redevelopment has been occurring at a steady pace, reflecting local goals and trends.

No adverse impacts are anticipated to socioeconomic resources; alternatively, positive effects to employment and businesses are anticipated along the Preferred Alternative because of the potential for TOD. Providing additional access opportunities for employees and customers will positively impact business surrounding stations. Providing services to accommodate the potential growing population and changing demographic in association with the TOD may impact local schools and community facilities. Emergency service providers in areas of high density development may also need to accommodate such increases of population and development. Generally, development and redevelopment near the stations will result in positive community effects and greater access to transit for EJ populations.

As discussed above in Step 3 of Indirect Impacts, most of station area redevelopment is programmed, is advancing and is not reliant on the Preferred Alternative. Much of the redeployment property is already owned by DFW Airport, UT-Dallas, or private developers working with cities. No additional large scale property acquisition is anticipated. Therefore, no significant relocations of businesses or residents are anticipated.

Past and present actions include extensive development and redevelopment of land uses, as the Project traverses seven cities and towns within three growing counties: Tarrant, Dallas and Collin. There are several reasonably foreseeable development and transportation projects that will take place generally in the same timeframe as the Preferred Alternative's construction. Various local development plans are discussed in more detail on **Table 3-2** located in **Section 3.2**. In addition, there are 19 development projects, identified through the NCTCOG Regional Data Center, that are either announced, in the conceptual phase of planning or under construction within the RSA. These developments are mostly multi-family apartment complexes, but also include single-family residential, industrial and office commercial developments. Key transportation projects in progress within the RSA include highway, tollway and rail projects sponsored by TxDOT, the NTTA and Trinity Metro.

These reasonably foreseeable development and transportation projects will result in the continued development and redevelopment of land, as the cities along the Preferred Alternative proceed toward the goals articulated in their various land use plans. The Preferred Alternative may influence investment in redevelopment projects, such that redevelopment may occur at a somewhat accelerated pace. Utility service and infrastructure demands may increase. From a larger perspective, the Preferred Alternative, in addition to these other reasonably foreseeable transportation projects, supports the goals of the NCTCOG Mobility 2040 MTP: congestion relief, improved safety, air quality, quality of life, enhanced economic opportunities, and streamlined project delivery. These projects are also aligned with U.S. DOT Livability Principles, such as providing more transportation choices, improving economic competitiveness, supporting existing communities, and enhancing the unique characteristics of a community. Compact development that allows people to lead a transit-focused lifestyle, with shorter commutes between residences and workplaces, is ultimately a more environmentally friendly land use development pattern.

The Preferred Alternative has been developed in conjunction with planned public transportation and roadway improvements as well as regional and local land use plans and projects. It is anticipated that the Preferred Alternative will encourage TOD, which will support local land use plans and projects. Current land uses surrounding station locations are compatible with these objectives. The Preferred Alternative will not contribute to cumulative adverse local land use impacts that could result from development of the surrounding areas, but rather will benefit communities by supporting more efficient land use development. Therefore, the Preferred Alternative in addition to other development and transportation projects, implemented within existing land use development regulations and other environmental regulatory protections, will not result in substantial, adverse, cumulative impacts.

Socioeconomic Resources

Overall, the Study Area has a total number of 71,853 households; the median household income is $70,366; and 5 percent of the households have no vehicle available. The City of Dallas has the lowest median household income of the cities located within the Study Area and has the highest percentage of households with no vehicle available that rely on transit services for their mobility.

The Preferred Alternative will have long-term benefits for the communities it traverses as it will further goals and policies for revitalization and investment within the RSA and broader regional economies. The fiscal benefits of operation will have a long-term impact for the communities. It is anticipated that the possible loss of tax revenue will be offset by increased development near stations and along the alignment. Therefore, once operational, the Preferred Alternative will not result in any adverse cumulative impacts and will have an economically beneficial effect on the surrounding communities.

Construction activities associated with the Preferred Alternative could result in community disruptions. These disruptions may result in temporary, short-term economic impacts on local businesses. The construction activities will, however, result in overall beneficial impacts as increases in employment and spending will offset any short-term economic impacts. Community disruptions could also result from other development projects also occurring in the RSA as a result of TOD. This may result in a longer duration of noise and dust from construction and greater traffic delays and obstructions. The combined impact may heighten the perception of disruption experienced by the local communities. These impacts may be concentrated in locations at different times during construction, but will diminish as the Preferred Alternative concludes.

Property acquisitions (both full and partial) will result from implementation of the Preferred Alternative. These acquisitions will produce impacts across the RSA through the displacement of one local residence and nine businesses; however, relocation services will be provided in accordance with federal policies and guidelines. With the anticipated TOD, suitable employment could be found by affected employees in the general area. It is further anticipated that local residents will be relocated into houses that are decent, safe and sanitary, with adequate living space to accommodate the displaced household which will be within the household's financial limits. With the anticipated potential TOD and relocation assistance, the cumulative impact from displacements will not be substantial.

Traditionally, neighborhoods and communities within the RSA have been built around existing rail right-of-way and other major transportation corridors such as the DNT, US 75, IH 35 and the PGBT. It is anticipated that the Preferred Alternative, when considered in conjunction with other current and future projects, will increase neighborhood access to transit as an option for transport to and from community facilities. These community facilities include medical centers, places of worship, police and fire stations, libraries, schools, and universities. Therefore, the Preferred Alternative will have a role in a positive cumulative impact both within the RSA and the broader metropolitan context as accessibility will be enhanced, which benefits access to local businesses, improves potential for economic development, and supports planned development and redevelopment activities.

Conclusions

Indirect Impacts

It is anticipated that the Preferred Alternative could induce development as well as increase the rate and intensity of future development. The induced growth could result in impacts to socioeconomic and ecological resources. Impacts to community resources will be minimized and mitigated through existing land use development regulations. In addition, positive impacts to employment and businesses are anticipated along the Study Area because of TOD development

would be near Preferred Alternative station areas, providing additional access opportunities for employees and customers that will positively impact business surrounding stations of the Preferred Alternative. In the context of the 26-mile corridor, most of the Study Area is already developed and converted to urbanized land use; therefore, induced growth impacts will not be substantial and will be outweighed by the positive impacts to the community and economic development of the cities along the Preferred Alternative. As a result, no mitigation is proposed for induced growth impacts.

The City of Plano has created the Plano Housing Authority that offers assistance for affordable housing to EJ communities. Similarly, Dallas County and Denton County also offer housing assistance.

Cumulative Impacts

The incremental impact of the Preferred Alternative when added to past, present, and reasonably foreseeable future actions will be part of a positive cumulative impact as accessibility will be enhanced which benefits access to local businesses, improves potential for economic development, and supports planned development and redevelopment activities. In general, the implementation of the Preferred Alternative will have a positive impact on existing and proposed projects thus offsetting potential cumulative impacts. Direct benefits of transit include improved access, reduced parking requirements and reduced traffic congestion. The Preferred Alternative construction has also been demonstrated to have a positive impact on land use through TODs which align with local plans. Moreover, the Preferred Alternative has been developed in conjunction with planned public transportation and roadway improvements as well as regional and local land use plans and projects. Therefore, it is anticipated that the Preferred Alternative will encourage TOD that is compatible with these objectives.

No substantial environmental impacts have been identified for the Preferred Alternative. DART continues to work closely with local municipalities, agencies, developers, and businesses to develop a passenger rail line that fits well within the existing and future environment thereby reducing the potential for incremental impacts to other past, present, and reasonably foreseeable future actions. Additionally, the Preferred Alternative utilizes 2040 traffic projections and demographic forecasts, accounting for much of the foreseeable development and any associated impacts.

Based on the cumulative impacts assessment, adverse impacts will not result from any projected incremental impacts of the Preferred Alternative combined with other past, present and reasonably foreseeable future actions; therefore, no mitigation is proposed.

4.21 Construction Impacts

This section presents the short-term impacts and mitigations associated with constructing the Preferred Alternative. The construction scenario describes the construction process while the other sub-sections analyze short-term construction impacts by impact category.

4.21.1 Construction Scenario

The implementation of the Preferred Alternative will follow the traditional steps of project development successfully used by DART on prior projects, as well as recommended by FTA. These steps provide DART as the owner the needed opportunities for oversight and review, and to provide the greatest assurance of cost and schedule control. These implementation steps include:

1. Preliminary Engineering and Environmental Analysis / Preparation of NEPA Document / Record of Decision (FEIS/ROD)
2. Final Design

3. Construction
4. Testing of Project and Systems Elements / Opening for Revenue Service

Traditionally, each of these implementation steps is completed prior to the next step being initiated allowing review of project status, solicitation of public input, and confirmation of project budget. There are warranted occasions where some of these steps may be combined for cost efficiencies and expedited schedule. The Preferred Alternative will use the Design-Build implementation method where the Final Design and Construction steps are contracted simultaneously with the same contractor. The procurement process for this step has been initiated and an award is anticipated pending the FEIS/ROD. Concurrent with this Design-Build contract, DART will also award an Owner's Representative contract. This latter contract will help to ensure DART oversight of all Design-Build activities, including budget and schedule. More information on the Design-Build activities and construction approach is described below.

Construction of the Preferred Alternative will involve a number of activities. The construction scenario is assumed to follow the approach outlined below.

- **Preparation of Traffic Detour Plans** – Traffic detour plans will be developed and agreed upon by DART, the cities along the Project, and DFW Airport, and any other agencies during final design. The plans will include provisions for traffic, bus service, pedestrian and bicycle activity while delineating a construction area.
- **Clearing and Grubbing** – As required, site preparation within the right-of-way will occur to allow for the movement of construction equipment and construction operations.
- **National Pollutant Discharge Elimination System (NPDES)** – A NPDES SWPPP will be developed and implemented to address potential impacts related to pollutant discharge.
- **Utility Relocation** – This step will involve localized excavation and relocation of existing underground utilities. The work will generally be undertaken by local agency utility crews. Utility relocations may take place prior to construction of the rail line and stations.
- **Track Bed** – The regional rail track bed will be placed within DART-owned right-of-way on an approximate two-foot layer of ballast and sub-ballast. Aerial structures will be constructed of reinforced concrete or structural steel supported by single or dual columns or piers.
- **Guideway** – The rail will be continuously welded rail and be installed in sections.
- **Stations and Parking Facilities** – All station construction will be coordinated with the appropriate traffic detour plan.
- **Roadway Modifications** – Each of the at-grade street crossings will require reconstruction and modification due to the implementation of the double track along the Preferred Alternative which will be coordinated with each city jurisdiction.
- **Landscape Restoration** – Upon completion, disturbed elements such as landscaping, open storm drainage, and other disturbed areas will be restored.
- **Systems Construction** – Signaling and communication systems will be installed along the rail line.

Mitigation measures for construction-related impacts are outlined in *DART Light Rail Project – General Provisions, General Requirements, and Standard Specifications for Construction Project*, including DART standard specification 02270, Erosion and Sediment Control. Section 01560, titled Environmental Protection, includes environmental protections considerations related to, but not limited to the following:

- Natural resources including air, water, and land;
- Solid waste disposal;
- Noise and vibration;
- Control of toxic substances and hazardous materials;
- Chemical, physical, and biological elements that adverse effect ecological balances;

- Degradation of the aesthetic use of the environment, and;
- Historical, archeological and cultural resources.

It is anticipated that DART will award the construction contract for the Preferred Alternative as one primary Design-Build contract. An overview of the anticipated construction activities (Facilities, Trackwork, Systems, and Landscaping) follows. Discussion of necessary staging areas is also included.

Facilities Construction

The Preferred Alternative will contain aerial, at-grade, and cut construction components. **Table 4-20** outlines the summary of work for each type of construction by elevation.

The typical construction scenario will start with utility and storm sewer relocations, followed by construction of permanent and temporary facilities to support rerouting of vehicular and rail traffic. Once the utilities are cleared and the permanent/temporary facilities are constructed, the contractors will build long duration construction items such as cut and bridge sections. For bridge structures, the contractors will first construct the substructure/foundations, bridge piers, and abutments. Once these items are complete, the contractor will place beams, pour the bridge deck, and install parapet railing. Retained earth embankments can be constructed concurrently with the bridges. At-grade guideway construction can proceed concurrent with open cut and bridge construction, but will be phased to not impede progress on the tunnel and bridge work.

Station construction will commence with subsurface utility, drainage, and foundation work. This will be followed by platform, canopy, and ancillary construction, including architectural finishes.

Trackwork Installation

Trackwork installation will follow substantial completion of the line section. It will include the installation of the fixed guideway elements: ballast, ties, rail, concrete plinths on direct fixated bridges, and special trackwork. DART will provide the rails and ties to the trackwork installation contractor. These items will be strategically and temporarily placed throughout the Preferred Alternative to minimize haul distances and facilitate construction. It is anticipated that track installation will last approximately one year and overlap the facilities and systems construction

Table 4-20. Construction Activities and Equipment by Elevation

Construction Location and Activities	Typical Construction Equipment Used
At-Grade Regional Rail Construction	
Clearing and grubbing	dozer, motor grader, dump/haul truck, loader/backhoe
Storm water and erosion control	loader/backhoe, ditcher/trencher, tractor with hole auger
Utility and street relocation	motor grader, loader/backhoe, ditcher/trencher, compaction equipment, paving machine, excavator
Demolition of existing facilities	dozer, motor grader, dump/haul truck, loader/backhoe, jackhammer/ramjack, concrete saw
Drainage and storm water systems	loader/backhoe, ditcher/trencher, compaction equipment, rubber tire loader
Excavation, embankment, and subgrade preparation	dozer, motor grader, compaction equipment, tiller
Retaining walls and ballast walls	rubber tired crane, ditcher/trencher, concrete vibrator, bucket grading machine
Lime subgrade	motor grader, compaction equipment, tiller
Subballast	motor grader, compaction equipment
Chain link fencing	loader/backhoe, concrete vibrator, tractor with hole auger

Table 4-20. Construction Activities and Equipment by Elevation (cont'd)

Construction Location and Activities	Typical Construction Equipment Used
At-Grade Stations	
Station platform slab and special use platform	rubber tired crane, dump/haul truck, drilled pier rig, compaction equipment, concrete vibrator, bucket grading machine
Structural steel canopies and roofing systems	tracked crane, air compressor, welding machine, rubber tire loader, man lift
Electrical systems	rubber tired crane, ditcher/trencher, compaction equipment, man lift
Mechanical systems	rubber tired crane, ditcher/trencher, loader/backhoe, air compressor
Architectural finishes	rubber tired crane, welding machine, sand blaster
Painting	sand blaster, paint sprayer, man lift
Street, Driveway, and Parking Lot Construction	
Street pavement and street at-grade crossing headers	rubber tired crane, motor grader, loader/backhoe, compaction equipment, paving machine, concrete vibrator
Permanent street signage and pavement markings	air compressor, sand blaster, tractor with hole auger, street sweeper
Aerial Regional Rail Construction	
Drilled shaft construction	tracked crane, drilled pier rig, water pump, concrete vibrator
MSE wall construction at bridge approaches	dump/haul truck, loader/backhoe, compaction equipment, bucket grading machine
Bridge pier construction	tracked crane, rubber tired crane, concrete vibrator
Bridge deck and parapet	tracked crane, rubber tired crane, concrete pump, man lift, concrete vibrator
Grounding system	rubber tired crane, loader/backhoe
Open Cut Construction	
Backfill and final grading	motor grader, dump/haul truck, compaction equipment

Source: DART, GPC6

Systems Construction

Systems construction will follow substantial completion of trackwork installation. This will provide for the installation of wayside signals, communication, and fare collection elements. Systems construction and testing is anticipated to last one year, commencing after substantial completion of the facilities and trackwork elements.

Landscape Installation

The landscaping activities will include installing planting materials and irrigation systems where needed to stabilize the ground surface or mitigation has been determined necessary, as well as at other selected locations along the alignment. This work will be performed concurrent with, but towards the end of, the trackwork and systems contracts.

Construction Staging Areas

Several staging areas may be required for the storage of equipment and materials used for the construction of the project. All of these staging areas will be located adjacent to the Preferred Alternative. Their final size and location will be determined by the selected Design-Build contractor as the project progresses through final design. Where possible, construction staging areas will be located in DART-owned right-of-way and newly acquired right-of-way for route deviation and station areas.

Construction Staging Areas Impacts

If exposed to the weather, construction equipment and materials have the potential to release chemicals during storm events. The storage of construction equipment and materials on the ground also has the potential to disturb the soil and kill or prevent the growth of groundcover, which causes the soil to be susceptible to wind and water erosion. Construction equipment has the potential to leak oil and grease, hydraulic fluid, brake fluid, and other petroleum hydrocarbons. There is also the possibility of spillage during fueling operations.

Construction Staging Areas Mitigation

The *DART Facilities Standard Specifications Section 01560 Part 1.3* addresses environmental protection related to a wide range of construction activities. Regarding construction staging, the specifications state that:

- Contractor must store equipment and materials in conformance with applicable local regulations;
- Unnecessary materials and equipment are not allowed to be stored at the job site;
- No structure is allowed to be loaded with a weight that will endanger its structural integrity or the safety of persons;
- Materials are not allowed to be stored on private property without written authorization of the owners of the property; and
- Only use established roadways unless authorized by the contracting officer.

The *DART Facilities Standard Specifications Section 01560 Part 1.3E, Water Resources* states that a SWPPP will be developed for the Preferred Alternative (01560-2). It also states that the construction contractor is required to use BMPs as prescribed in the *Storm Water Quality Best Management Practices Manual for Construction*, prepared by the NCTCOG, to prevent stormwater runoff from construction materials and equipment by covering such materials and equipment with awnings, roofs, or tarps; storing materials on asphalt or concrete pads; surrounding material stockpiling areas with diversion dikes or curbs; and using secondary containment measures such as dikes or beams around fueling areas. The contractor is also required to mulch and reseed disturbed areas to prevent air and water erosion on the site after termination of construction operations.

Coordination with Other Scheduled Construction Projects

The construction of the Preferred Alternative will be coordinated with Dallas, Tarrant and Collin counties, the cities of Plano, Richardson, Dallas, Addison, Carrollton, and Coppell, TxDOT, North Texas Tollway Authority (NTTA) and DFW Airport. Coordination will need to occur with regards to electric cables, copper cables, and telephone conduit servicing FAA equipment and communications due to line disruptions, relocations, and general improvements during certain construction activities. Mitigation and plans for coordination with DFW Airport and FAA will be required during all stages of final design and construction and are addressed in the mitigation discussion included in **Section 4.21.2**.

4.21.2 Impact Evaluation

No-Build Alternative

No construction impacts are anticipated under the No-Build Alternative, because no rail construction would occur.

Preferred Alternative

Short-term impacts and mitigation associated with constructing the rail alignment will be anticipated to occur for noise, vibration, traffic flow, air quality, and water quality. Construction

activities will be carried out in accordance with *DART Facilities Standard Specifications*, *Dallas-Fort Worth International Airport Construction and Fire Prevention Standards Resolution and Amendments to the Codes, October 2007*, and any other applicable laws and ordinances. Also, construction activities will comply with all guidelines and requirements of DFW Airport's Soil Management Plan.

Construction Noise

Construction of the track, stations, and rail storage yard will result in the generation of noise from construction equipment. Construction noise varies greatly depending on the construction process, type and condition of equipment used, and the layout of the construction site. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately estimate levels of construction noise.

The potential for construction noise impact varies by location and land use. Given the ambient conditions, commercial and industrial land uses, which adjoin the majority of the alignment, should not be adversely impacted by construction noise. Residential areas along the alignment have the potential to be impacted by construction noise.

Construction Noise Mitigation

Construction activities will be carried out in compliance with all applicable local noise regulations. *DART Facilities Standard Specifications Section 01560 Part 1.11* states that construction activities must comply with the noise and vibration maximum limits set out in tables 01560-1 and 2. The guidelines also specify appropriate techniques to minimize and mitigate noise and vibration near sensitive land uses. In addition, specific residential property line noise limits will be developed during final design and included in the construction specifications for the project. Noise monitoring will be performed during construction to verify compliance with the limits. This approach allows the contractor flexibility to meet the noise limits in the most efficient and cost-effective manner. Noise control measures that will be applied as needed to meet the noise limits include the following:

- Avoiding nighttime construction in residential neighborhoods;
- Using specially quieted equipment with enclosed engines and/or high performance mufflers;
- Locating stationary construction equipment as far as possible from noise-sensitive sites;
- Constructing noise barriers, such as temporary walls or piles of excavated material between noisy activities and noise-sensitive receivers;
- Routing construction-related truck traffic along roadways which will cause the least disturbance to residents; and
- Avoiding impact pile driving near noise-sensitive areas, where possible. Drilled piles or the use of other non-impact piling methods are quieter alternatives where the geological conditions permit their use (DART Specification 01560-7, 8).

Construction Vibration

The most noteworthy source of construction vibration is pile driving. Pile driving will occur in the elevated sections of the alignment, which are primarily located in existing railroad, street, and highway right-of-way. Other construction activities that could cause intrusive vibration include vibratory compaction, jack hammering, and the use of tracked vehicles, such as bulldozers.

The potential for construction vibration impact varies by location and land use. Commercial and industrial land uses, which adjoin the majority of the alignment, should not be impacted by construction vibration. Residential areas along the alignment have the potential to be impacted by construction vibration.

Construction Vibration Mitigation

Per the *DART Facilities Standard Specifications Section 1.11,* vibration impacts during construction will be avoided through numeric limits and monitoring requirements that will be developed during final design and included in the construction specifications for the project (01560-7, 8). Measures that will be considered as requirements to meet the vibration limits include the use of alternative equipment or processes, such as the use of drilled piles in place of impact pile driving and avoiding the use of vibratory compactors near vibration-sensitive areas. Construction activities will be closely coordinated and developed with DFW Airport. Appropriate measures will be taken to avoid vibration impacts to sensitive airport equipment and facilities. During final design, DART will coordinate with FAA to examine potential vibration impacts associated with construction practices so as to limit any impacts to airport facilities (i.e., ASR9).

Three community facilities were identified as potentially vibration sensitive. In view of the potential for ground-borne vibration impacts at the UT Southwestern Medical Center Clinic, the Qorvo facility, and the Texas Instruments facility in Richardson. Detailed, site-specific vibration studies will be conducted at these FTA Category 1 (high sensitivity) facilities during project design to make a final determination regarding impact and any required mitigation. The analysis will consider construction vibration impacts and mitigation.

Traffic Flow

During the construction of any roadway or rail line project, road and traffic disruption is expected on minor and major roadways. The following sections address traffic impacts due to construction of the Preferred Alternative and mitigation measures to alleviate these problems.

Construction of the Preferred Alternative will affect several major and minor roadways in the cities of Plano, Richardson, Dallas, Addison, Carrollton, and Coppell, and within DFW Airport. When roadway or lane closures will be required during construction, DART and its contractors will coordinate with the traffic control divisions of the cities and DFW Airport to maintain reasonable and safe traffic operations at affected crossings.

Traffic Mitigation

The cities of Plano, Richardson, Dallas, Addison, Carrollton, and Coppell, and DFW Airport require notification of all construction activities within their jurisdictional boundaries. The construction contractors will identify the appropriate regulations and incorporate mitigation measures in the construction specifications as directed by DART guidelines (*DART Facilities Standard Specifications Section 01570, Maintenance and Control of Traffic 01570-1*). A Maintenance of Traffic/Transportation Plan will be developed and implemented during construction.

All construction specifications, traffic control plans, and mitigation measures must be approved by local traffic engineering authorities prior to initiation of construction. Barricading and flagging staff will be used when appropriate. Private business parking areas and driveways will not be used for equipment maneuvering or parking. Construction specifications will include provisions for a maximum number of lanes blocked during peak traffic hours, maintenance and removal of traffic control devices, efficient traffic rerouting measures, and scheduling of construction activities within the roadways for times other than during peak traffic periods.

Short-term disruptions to local business or residential access routes may occur requiring detours or development of temporary access. During construction, DART community engagement representatives will work closely with the contractor to provide advance notifications to property owners and the public.

For airport roads, coordination with DFW Airport will be required. Access to all FAA facilities will be maintained during construction activities. The contractors will follow the same DART Construction Guidelines.

Public Services, Safety, and Security

DFW Airport has jurisdiction for fire protection and emergency medical services on airport property. Outside of airport property, local municipalities have jurisdiction.

Public Services, Safety, and Security Mitigation

DFW Airport and DART are currently developing an MOA to govern any safety and security issues along the DART alignment and at the DFW North Station during construction and operation phases of the Preferred Alternative. Coordination with local jurisdictions will be conducted to address safety and security issues along the DART alignment.

Water Resources

Construction activities within the ordinary high water mark will have the potential to generate additional sediment loads in the drainage area if bare or unvegetated earth is exposed to rainfall for an extended period of time. Construction of retaining walls and bridge columns near any of the other streams or drainage channels crossed by the rail alignment will also create the potential to generate additional sediment loads.

Construction activities could increase storm runoff (and possibly erosion and surface water pollution) by disturbing ground cover and soils and increasing nonpermeable surface area.

Water Resource Mitigation

As identified in **Section 4.12.1**, bridge columns are anticipated to be placed in a water of the US; however, the area impacted by the columns will be less than the threshold set by the USACE for individual permitting process. DART and its contractors will follow the guidelines of the USACE Nationwide Permit 14 or 25, depending on construction methods chosen.

BMPs for erosion control, sedimentation control, and control of total suspended solids will be incorporated into the project design to minimize impacts to water quality.

Water resources will be protected from contamination by adherence to DART Facilities Standard Specifications and required SW3P (DART Facilities Standard Specifications Section 01562-1). Special attention will be focused on planning the necessary locations of disturbance and restricting construction traffic to those locations in order to reduce overall damage to native vegetation and reduce erosion. Promptly revegetating any disturbed area at the end of the construction sequence will also reduce erosion potential. To make this effective, construction and erosion control implementation activity will be planned to progress as rapidly and completely as possible to reduce the amount of time during which there is a high potential for erosion.

Air Quality

Air quality impacts during construction will be limited to short term, increased fugitive dust and mobile source emissions. These impacts will be short-term and cease once construction is complete.

As discussed in **Section 3.11**, the Preferred Alternative is located within the ten-county ozone nonattainment area for North Central Texas and has been included in current Transportation Improvement Plan (TIP) conformity analysis. Air quality impacts from transportation projects generally focus on changes in motor vehicle-related pollution caused by on road vehicles; however, during construction non-road equipment will be expected to generate exhaust emissions which could contribute to a localized area of degraded air quality. Non-road equipment typically

used for construction of transit projects and the types of tasks they perform is listed in **Table 4-20**.

Other impacts to air quality due to construction activities include dust generated from construction activities associated with concrete demolition, delivery trucks, and earth-moving operations throughout the Preferred Alternative.

Mitigation of Air Quality Impacts

For the Preferred Alternative, compliance with Clean Air Act legislation will require that DART or its designated Design-Build contractor submit FAA Form 7460-1, Notice of Proposed Construction or Alteration. For DFW Airport which is located within an ozone non-attainment area, an Airport Construction Emissions Inventory will accompany the FAA Form 7460-1 for the Preferred Alternative. This inventory will be completed by the Design-Build contractor once construction material quantity estimates are completed and construction staging planned.

The control of exhaust emissions emanating from non-road equipment and other construction related vehicles will be in accordance with EPA guidelines (https://www.epa.gov/emission-standards-reference-guide/epa-emission-standards-nonroad-engines-and-vehicles). To minimize exhaust emissions, contractors will be required to use emission control devices and limit the unnecessary idling of construction vehicles. Other measures to mitigate air quality include minimizing emissions through the use of clean fuels in construction equipment, deployment of clean diesel construction equipment (new, retrofit, rebuilt or repowered), and the implementation of anti-idling practices at construction sites.

There are no federal, state or local regulations concerning the generation of dust from construction activities except as a nuisance complaint; however, the *DART General Provisions, General Requirements and Standard Specifications for Construction Projects, Section 01560* (Part 1.8, Dust Control) provides dust control measures for construction activities. The regulations state that the contractor will be required to have sufficient equipment at the site to implement dust control measures. The measures will be implemented at all areas of construction at all times including non-working hours, weekends, and holidays. Common dust mitigation techniques on construction sites include applying water or other soluble moisture-retaining agents to dirt areas, cleaning construction equipment and adjacent paved areas that may be covered with dirt or dust, and covering haul trucks carrying loose materials to and from construction sites.

Soils Impacts

Construction-related activities for the alignment will include excavation for the development of: guideway (i.e., railbed preparation and track installation), retaining walls, support structures for aerial tracks, grade separations, culverts, and a cut section. These activities have the potential to increase soil erosion and decrease soil stability.

Soil Mitigation

Direct impacts to soil could include removal of vegetation, exposure of the soil, mixing soil, or loss of topsoil, and short-term increased susceptibility to wind and water erosion due to construction.

Concerns associated with short-term increased soil erosion potential will be reduced through the establishment and implementation of storm water BMPs as prescribed in the *Storm Water Quality Best Management Practices Manual for Construction*, prepared by the NCTCOG, during and following construction such as maintaining vegetative ground cover, the use of silt fences, mulch blankets, diversion ditches, rock dams, and related measures to prevent wind and water erosion.

Socioeconomic

The Preferred Alternative has the potential to affect the North Dallas Eruv by temporary construction impacts if markers are down, causing a break in what is to be a continuous boundary. The Eruv must remain in good repair and with no breaks to be effective. The reconstruction of primary roadways through the Eruv may impact access to synagogues in North Dallas.

Socioeconomic Mitigation

DART will coordinate with the City of Dallas to minimize any effects to markers and avoid any disruptions to the existing city ordinance and the Eruv boundary. In addition, the affected community will be engaged during project design and construction to avoid and minimize impacts and to assist with proposed solutions. DART will attempt minimize disruption to vehicular and pedestrian traffic along Hillcrest Road, McCallum Boulevard and Coit Road during construction. DART will maintain existing access or provide alternative access to Congregation Ohev Shalom on McCallum Boulevard. During construction, attempts will be made to avoid disruption on Sabbath days.

Wildlife and Threatened or Endangered Species

Most wildlife, including some threatened, endangered, and rare species, are mobile in nature and will most likely relocate away from disturbances during construction activities. Most of the state-listed species listed in **Section 4.17.1**, however, are freshwater mussels, which are not mobile. Avoidance of habitat destruction for these non-mobile species, especially in riparian areas, is an important consideration.

The timber rattlesnake is more at risk for being impacted by construction activities than any other terrestrial state-listed species, due to its limited mobility and the likelihood of its suitable habitat occurring within the Preferred Alternative.

In addition, within the Preferred Alternative, migratory birds could be impacted during site preparation and grading activities by disturbing existing vegetation and bare ground that may harbor active bird nests, including nests that may occur in grass, shrubs, trees, and on bare ground including gravel pads and roads.

Wildlife and Threatened or Endangered Species Mitigation

As prescribed in the DART General Provisions for LRT Construction contracts, Item 52 Protection of Existing Site Conditions, the contractor shall, “preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site which are not to be removed and which do not unreasonably interfere with the work required under this contract”. Methods to avoid destruction of native resources include a field survey by a qualified biologist to mark trees and shrubs to be avoided in construction areas. Highly visible construction fencing should be installed surrounding designated vegetation and construction equipment and personal vehicles should be restricted from the area to avoid soil compaction and root disturbance. If roots of large trees are exposed, they should be wrapped with heavy burlap for protection and to prevent excessive drying.

Construction techniques will be designed to avoid and preserve existing mature native trees and shrubs, and to prevent harm to non-mobile wildlife species by avoiding riparian areas when possible. To avoid soil disturbances to riparian areas, machinery and other vehicles will use nearby roadways and bridges when crossing drainages, wetlands, and creeks. BMPs will be employed. Re-vegetation of disturbed areas will be planned to avoid invasive species gaining footholds on disturbed soils as directed in Executive Order 13112. Where possible, re-vegetation will be achieved using native plant species.

As a precautionary measure, the Freshwater Mussel BMPs will be included in the MMP. These include:

- When work is in the water, survey project footprints for state listed species where appropriate habitat exists.
- When work is in the water and mussels are discovered during surveys, relocate state listed and SGCN mussels under TPWD permit and implement Water Quality BMPs.
- When work is adjacent to the water, Water Quality BMPs implemented as part of the SWPPP for a construction general permit or any conditions of the 401 water quality certification for the project will be implemented.

Due to the abundance of available habitat within and adjacent to the Preferred Alternative, the potential impacts to the riparian areas within the Study Area are not anticipated to adversely impact the Texas garter snake. However, per BMPs, contractors will be advised of potential occurrence in the Study Area to avoid harming the species if encountered. BMPs will be included in the MMP. As design of the Preferred Alternative advances, DART will examine ways to reduce or eliminate impacts to state-threatened species and state species of concern.

4.21.3 Utilities

No-Build Alternative

The No-Build Alternative would not impact utilities because this alternative would not have any ground disturbance.

Preferred Alternative

Various utilities within the project right-of-way include electric, natural gas, telephone, water and sanitary sewer. Existing utility composite drawings were prepared as part of the 10 percent design efforts using record drawings, investigation by the previous 5 percent design consultant team, and GIS data obtained from the cities of Coppell, Grapevine, Carrollton, Dallas, Richardson, Plano, Town of Addison, Explorer Pipeline Company, Atmos Energy, Chesapeake Energy, Verizon, Time Warner Cable, Oncor Electric, Sprint, CenturyLink and other identified utility owners.

The completeness and accuracy of all information obtained regarding existing utilities have not been fully verified. The final designer for the Preferred Alternative will need to verify and obtain accurate horizontal and vertical information for existing utilities using subsurface utility engineering or other methods.

A high-voltage electric transmission line bisects the parking lot at the Cypress Waters Station area and crosses the rail line on a skew. Oncor policy requires that crossings be greater than 45 degrees. They also have restrictions on development under the transmission line. DART will relocate one or two of the transmission towers to reconfigure the transmission lines crossing the station area. **Figure 4-21** illustrates one potential configuration of the towers. Ongoing and additional coordination with Oncor and adjacent property owners will be necessary to appropriately locate the towers and potentially modify the station plan. The reconfiguration of the towers may require additional environmental analysis and coordination.

The radio towers located at Cypress Waters are scheduled to be removed in 2019 by the tower owners.

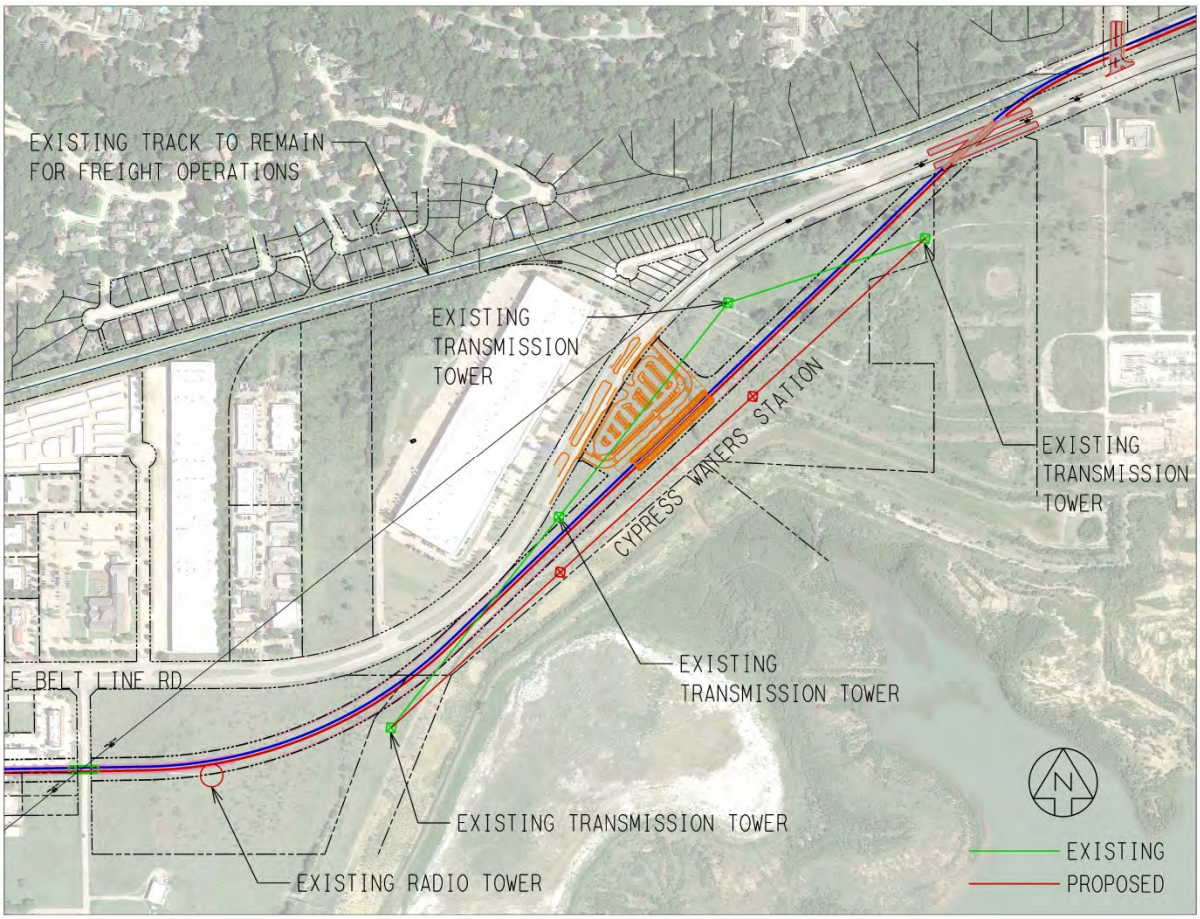
Other utility details have not been determined at this level of preliminary design so the assessment of potential impacts is qualitative. There are many utilities that cross or parallel the Preferred Alternative. Many existing utilities were not encased from right-of-way line to right-of-way line across the Preferred Alternative. Instead, they may have been encased for only a distance of 50

or 75 feet centered on the existing track. Since the Preferred Alternative will entail relocating or adding track to create a double-track corridor, utility encasement pipes will need to be lengthened.

Also, existing utility lines may have been constructed with adequate ground cover below the existing rail, but may no longer have sufficient cover in areas where the Preferred Alternative will modify the track profile lower than its exists today.

Finally, there are numerous at-grade utilities, predominantly at street crossings, that conflict with the alignment and will need to be relocated. Most of these utilities fall into the following categories: light posts, traffic signal posts, crossing gates, railroad control utilities, and in rare instances, water and sanitary sewer manholes.

Figure 4-21 Potential Transmission Towers Reconfiguration at Cypress Waters



Mitigation Measures

In the event utilities must be rebuilt or new construction is warranted, the Preferred Alternative will be designed in conformance with requirements of the owning/operating utility company and the jurisdictional agency. Locations and elevations of all existing utilities will be field verified during final design and improvements will be coordinated with all utility companies prior to construction to avoid conflicts.

Mitigation measures for potential utility impacts as a result of the Preferred Alternative will include, but may not be limited to, the following:

- Prior to construction, all area utility companies will be contacted through One Call and requested to provide line location measures.
- Businesses and residences affected by utility disruptions during construction of the Preferred Alternative will be notified of the disruption at least two weeks in advance, unless there is an emergency situation requiring immediate attention.
- Disruptions in service to businesses will be scheduled during off-business hours and never exceed a 24-hour period except during unusual circumstances.
- To the extent possible, businesses such as restaurants, grocery stores or food preparation/manufacturing facilities will be accommodated to protect food preparation and storage mechanisms.
- Should utilities be discovered during construction that were not previously identified, work will cease in that area and the appropriate utility companies and agencies will be contacted to identify the line(s). The newly identified utilities will not be disrupted until businesses and residences are notified and the utility owner/operator has approved or made the required adjustment.
- The reconfiguration of the transmission towers at the Cypress Waters Station may require additional environmental analysis and coordination, including archeological surveys (see **Section 4.6**).

In addition, an allowance will be included within the project budget to cover adjustment, protection and/or consolidation of all utilities along the alignment. Utility adjustment and protection will be closely coordinated with affected companies and designed to avoid any disruption in service.

4.22 Section 4(f)/6(f) Evaluation

Section 4(f) of the US Department of Transportation Act of 1966 (49 USC § 303 and 23 USC §138) protects publicly-owned parks and recreation areas, as well as wildlife and waterfowl refuges and historic sites, and directs the conditions under which such properties may be used. Properties may only be used if:

1) there is no prudent and feasible alternative to using that land; and,
2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

USDOT's Section 4(f) regulations (23 CFR Part 774) also require coordination with relevant state and local officials. For historic sites, consultation with the State Historic Preservation Office (SHPO) is required. For recreational resources, consultation with the agency responsible (official with jurisdiction) for the resources is also required. Several exceptions, and additional conditions that must be met for use of an exception, are set forth in the implementing regulations found in 23 CFR 774.13.

The Preferred Alternative intersects or is adjacent to eight Section 4(f) resources. These resources consist of a historic site, publicly-owned parks, recreation areas, and trails. The assessment for six facilities adjacent to the Preferred Alternative is provided in **Section 4.5**. There are no uses that will rise to a constructive use that will substantially impair the characteristics that qualify the resource for protection for these six facilities.

Table 4-21 summarizes the remaining two Section 4(f) properties within the Preferred Alternative Study Area. The descriptions of the undertakings and use determinations for these two resources are described below. Additional information on alternatives considered and the purpose and need of the Project can be found in **Chapters 1 and 2**.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965, as amended, (16 USC 4601-4 et seq.) protects recreational lands purchased or improved with LWCF program funds.

Table 4-21. Summary of Section 4(f) Properties

Name	Distance (ft.) from Alignment or Station Location	Address/Location	City	Size	4(f) Use
White Rock Creek Bridge historic resource	On alignment	North of Knoll Trail Station at Clubs of Prestonwood	Dallas	150 feet	4(f) Exception; Bridge will be moved 30 feet north of alignment for use in the Cotton Belt Regional Trail.
Spring Creek Trail*	Bisects alignment	East of Alma Road, south of PGBT	Richardson	1,500 feet	*De minimis* under 4(f). Trail will be realigned south of the existing trail.

Source: DART; GPC6
*Additional consultation with Texas Parks and Wildlife Department

4.22.1 Historic Resources

Impact Evaluation

The 4(f) use determination for the NRHP eligible resources in the APE were evaluated. On August 29, 2017, the SHPO concurred that the removal and/or demolition of the White Rock Creek Railroad Bridge will be an adverse effect on the historic resource. SHPO concurred that there were No Adverse Effects for the other historic resources. The relocation of the bridge requires the evaluation of the resource under Section 4(f).

Mitigation Measures

A *Determination of Effects (DOE) Report* for historic resources was prepared and is in **Appendix B**. Preliminary engineering has determined the location for the relocation of the White Rock Creek Railroad Bridge. Section 106 mitigation measures may include:

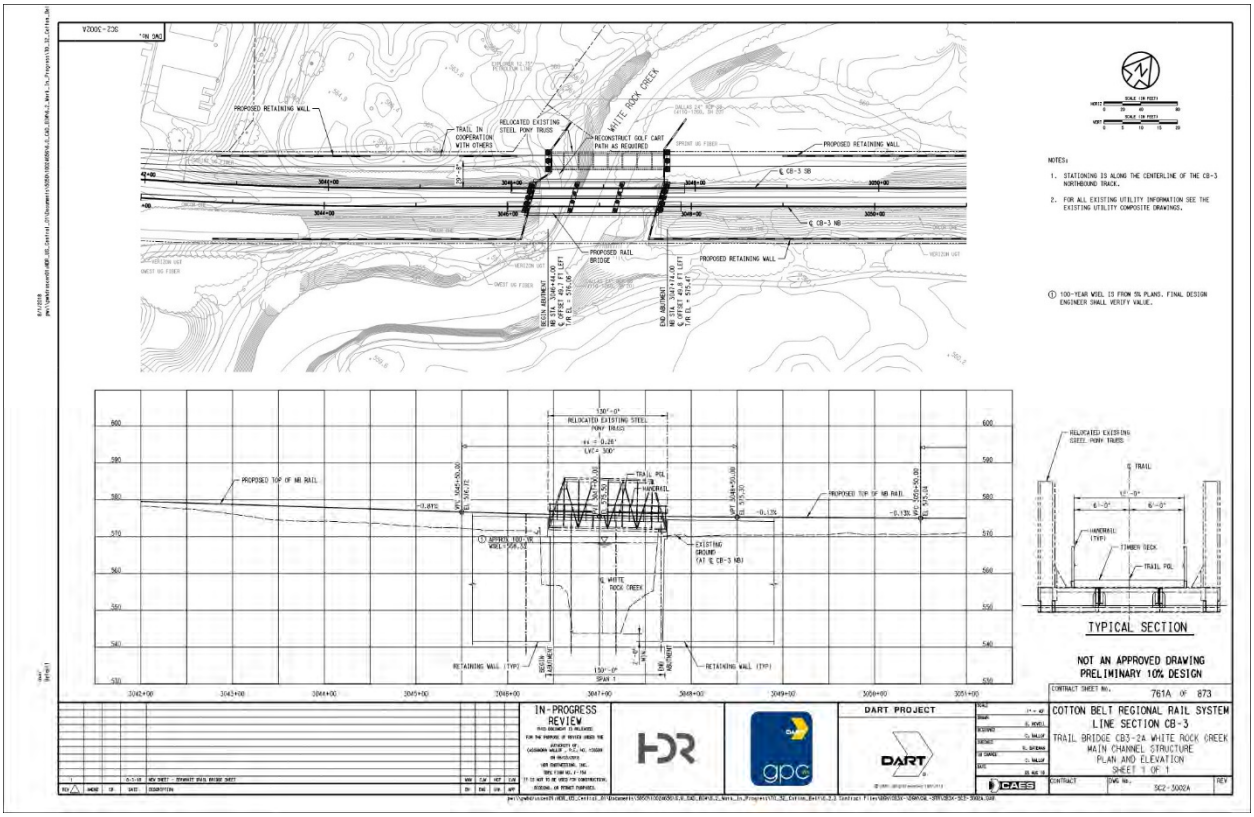
- Repair, rehabilitation or restoration of the White Rock Creek Railroad Bridge in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68).
- Preservation and maintenance operations in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.
- Documentation (drawings, photographs, histories) of the White Rock Creek Railroad Bridge due to relocation.
- Production of interpretive educational displays or exhibits describing the history of the area, including architectural drawings and/or photographs.

An MOA has been developed to establish measures to avoid, minimize, or mitigate any effects to the NRHP-eligible White Rock Creek Railroad Bridge with concurrence and consultation among DART, FTA, and SHPO. The MOA, identifying steps to minimize harm to historic resources, is included in **Appendix I**. On February 26, 2018, the FTA invited ACHP to review information and participate in the MOA if desired. On March 5, 2018, the ACHP indicated they would not participate in the MOA.

The White Rock Creek Railroad Bridge spans White Rock Creek and a golf course cart path for the Clubs of Prestonwood. The bridge, which is currently part of the Cotton Belt rail line, will be removed and relocated to an area approximately 30 feet northeast of its current location on the

Preferred Alternative as shown in **Figure 4-22** (drawing is also available in Appendix A) for use as an element of the future Cotton Belt Regional Trail within the DART-owned right-of-way. DART will fund the removal and placement of the bridge at the new location for use on the future Cotton Belt Regional Trail. The relocation and minor alterations of the White Rock Creek Railroad Bridge will not create an adverse effect on the historic integrity of the resource because the NRHP-eligible bridge will retain its design, setting, materials, workmanship, and feeling. The White Rock Creek Railroad Bridge will also retain its use as part of a transportation corridor.

Figure 4-22 White Rock Creek Bridge Relocation



The FTA has determined that Section 4(f) does not apply to this resource because the relocation of the bridge is a transportation enhancement that will result from mitigation as specified in 23 CFR 774.13(g). This exception states:

(1) The use of the Section 4(f) property is solely for the purpose of preserving or enhancing an activity, feature, or attribute that qualifies the property for Section 4(f) protection; and

(2) The official(s) with jurisdiction over the Section 4(f) resource agrees in writing to paragraph (g)(1) of this section.

On March 26, 2018, FTA consulted with the SHPO regarding the 4(f) exception. The SHPO, as the official with jurisdiction over the resource, concurred with FTA's determination to apply this exception. This consultation is documented in **Appendix G**.

4.22.2 Parks and Recreational Resources

Impact Assessment

The City of Richardson Spring Creek Trail is a 12-foot-wide multi-use hike and bike trail on the City's comprehensive transportation and open space parks plan that provides a significant route for transportation bike commuters to safely travel under US 75.

The northern leg of the Spring Creek Trail is a 1.28-mile-long, 12-foot wide hike and bike trail that was completed on October 14, 2011. This trail connects Alma Road to the Spring Creek Nature Center. It was funded from a variety of local and federal sources including Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) funds in 1997 that were later converted to American Recovery and Reinvestment Act of 2009 (ARRA) funds in 2009. The trail is not located on property that was purchased with federal funds nor is the property dedicated parkland. The trail was constructed with pre-existing easement agreements between the City of Richardson and private property owners.

Extending east from Alma Road, the route of the CityLine/Bush Alignment will intersect with the Spring Creek Trail at two locations. The Preferred Alternative will displace approximately 150 linear feet of the Spring Creek Trail near Alma Road and approximately 100 linear feet of trail approximately 1,500 feet east of Alma Road. As a result, another 1,500 feet of the trail will be severed by the project. The assessment of this resource is as follows:

- **Land Acquisition** – A permanent use due to land acquisition from the Spring Creek Trail will be required.
- **Access** – Entry to the trail will be restricted during construction and will require temporary use.
- **Noise and Vibration** – There is an existing quiet zone at Alma Road. No noise or vibration impacts are projected.
- **Visual** – The trail is located south of the existing freight line and south of elevated PGBT. The trail is within an urban area and the addition of regional rail service will not be expected to cause a significant impact to visual resources.

To avoid these crossings, DART proposes to realign the trail. DART prefers that all pedestrian crossings of the rail alignment occur at street intersections and at stations. DART will acquire new right-of-way, including the land occupied by the trail, for this portion of the Preferred Alternative.

Mitigation Measures

DART will rebuild the displaced portion of the trail within the new right-of-way, parallel to and south of the new tracks, reconnecting the trail connection at Alma Road to the untouched portion of the trail 1,500 feet to the east. This concept is shown in **Figure 4-23**. A new pedestrian structure over Spring Creek will be constructed to accommodate the relocated trail.

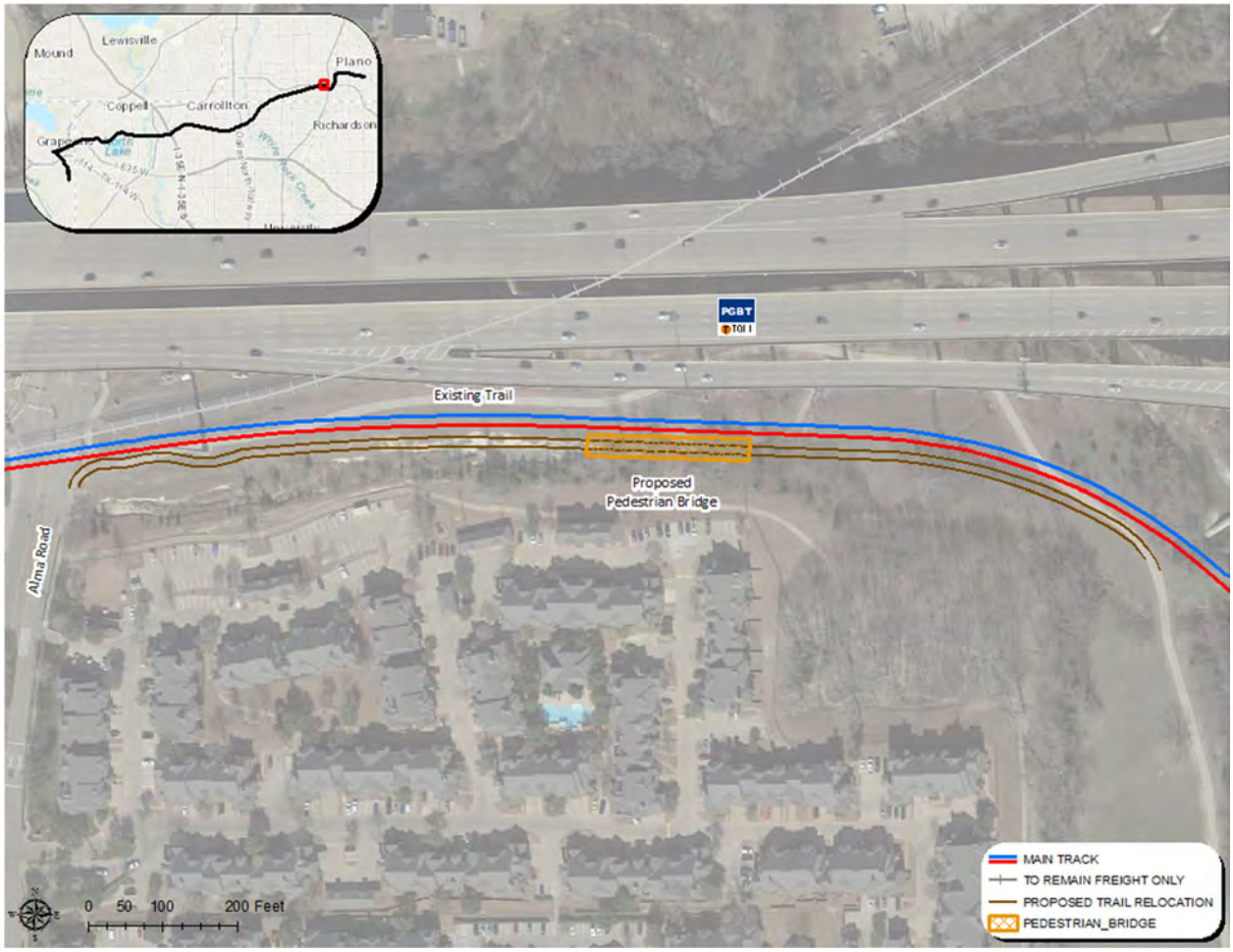
For publicly-owned parks and recreation facilities, *de minimis* impacts are defined as those that will not adversely affect the features, attributes or activities qualifying the property for protection under Section 4(f). The trail will be reconstructed with similar features and attributes to the existing trail and will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). FTA intends to make a *de minimis* impact determination following public review and input, and will seek the City of Richardson's approval on FTA's determination of a *de minimis* finding. In a letter dated December 4, 2017, the City of Richardson stated support for the Preferred Alternative and use of the Spring Creek Trail (see **Appendix G**). Documentation of the planning, engineering and coordination activities is provided that demonstrates the use of the resource is justified, necessary and meets the *de minimis* impact requirements of Section 4(f) legislation. A *de minimis* determination requires public involvement. Circulation of the DEIS and its 45-day public comment period met that requirement. Additionally, the Spring Creek Trail realignment and Section 4(f) use was presented in a series of public meetings for the Preferred Alternative.

For compliance with Chapter 26 of the Texas Parks and Wildlife Code, there is no feasible and prudent alternative to the use, and the Preferred Alternative includes all reasonable planning to minimize harm

to the park, resulting from the use. The City of Richardson advertised a public hearing in June 2018 and held a public hearing in compliance with Chapter 26 on July 9, 2018. The City of Richardson passed a resolution which allows the use of the Spring Creek Trail for the CityLine/Bush Alignment.

Construction will be staged to maintain access to the Spring Creek Trail. This will be accomplished by first building the new portions of trail before severing the existing trail. However, in order to maintain safety for trail users during construction of the Preferred Alternative adjacent to the relocated trail, DART and its contractor may need to intermittently close the Spring Creek Trail during the Preferred Alternative construction activities. Coordination between DART, its contractor, and the City of Richardson will be required to develop detours and/or construction methods to limit or minimize temporary closures to Spring Creek Trail.

Figure 4-23 Spring Creek Trail Relocation



6(f) Properties

Two parks within the Study Area qualify as 6(f) properties, McInnish Park and Thomas Park, both located in Carrollton and have received funds from the LWCF. McInnish Park has received three LWCF grants since the 1970s for different portions of its complex, and Thomas Park received a grant for the Thomas Park Swimming Pool. The McInnish Park Sports Complex is adjacent to the Preferred Alternative; however, no property acquisition or conversion of park land will be required from the park for the Preferred Alternative. Thomas Park is approximately 540 feet north of the Cotton Belt alignment, and approximately 2,500 feet northeast of the Downtown Carrollton Station.

5. Surface Transportation Impacts Evaluation

The Preferred Alternative has the potential to have far reaching impacts on the transportation network. It is a corridor that parallels three primary east-west freeways (IH 635, PGBT, and SH 121), and creates a new east-west transit corridor that connects with existing and planned transit lines. Several major activity centers are located along the Preferred Alternative.

This chapter describes the anticipated transportation impacts of the No-Build Alternative and the Preferred Alternative. The evaluation is based upon the anticipated travel demand, transportation capacity, transportation performance measures, and impacts to the road network, traffic parking, and freight delivery. The analysis was developed from 2040 travel demand forecasts for the Preferred Alternative using the NCTCOG's regional travel demand model. Where possible, quantitative and qualitative data are presented to show the relative performance measures and impacts of each alternative.

5.1 Transit Facilities and Services

5.1.1 Affected Environment

A network of buses and transit facilities currently serves the Study Area. Existing transit facilities and rail stations from west to east include the DFW Airport LRT Station, Downtown Carrollton LRT Station, Addison Transit Center, and CityLine/Bush LRT Station. The Addison Transit Center is one of the busiest facilities in the system with nine bus bays and 300 parking spaces. The DFW Airport LRT station provides a direct connection to Terminal A and connections to DFW Shuttles. The Downtown Carrollton Station has 251 parking spaces and four bus bays, while the CityLine/Bush Station has nearly 1,200 parking spaces and on-street bus interface.

Several bus routes serve the Preferred Alternative and this part of the DART Service Area. Addison Transit Center is served by 12 routes including two local routes, one express route, five feeder routes, three crosstown routes, and two rail feeder routes. Most of the bus and rail service consists of north-south and radial service with east-west services mostly limited to shorter local and feeder bus routes. There is no direct east-west route connecting this part of the DART Service Area to DFW Airport. Existing express bus service is primarily focused on north-south connections from Northwest Plano park-and-ride to Addison Transit Center and continuing to downtown Dallas via the DNT. There is one new east-west express route, Route 211, operating from Parker Road Station to northwest Plano to service the growing Legacy business area. Of the three cross town routes, two terminate at Addison Transit Center, with only route 400 (recently split into shorter routes 402 and 403) providing longer crosstown service from Downtown Garland to North Irving/Las Colinas. This route follows Belt Line Road for much of its route. Routes 361 and 362 provide east-west service from Arapaho Center Station to Addison Transit Center via Arapaho Road and Campbell Road, respectively.

The UTD Route 883 shuttle, known as the Comet Cruiser, operates from CityLine/Bush to UT Dallas and parts of north Dallas. This is currently the highest ridership route on the DART system.

Three existing LRT lines interface directly with the Preferred Alternative (Orange, Green and Red Lines) and provide radial service to downtown Dallas, with the Red and Green Lines extending further south into the southeast Dallas and West Oak Cliff areas. While the Blue Line also provides service, it does not directly interface with the Preferred Alternative. In addition to LRT, DCTA operates the A-Train from Denton to the Trinity Mills Station just north of downtown Carrollton. The TEXRail Project is under construction and scheduled to open the DFW Airport Station at Terminal B and the DFW North Station in late 2018.

Table 5-1 summarizes the headways and average ridership for key routes traversing or paralleling parts of the Preferred Alternative. As shown, the 400 series of crosstown routes have the highest

ridership of key routes for the Preferred Alternative. The UTD route has over 7,000 riders per day. While ridership varies based on student population fluctuations, it retains high ridership all year.

Light rail ridership on the four existing lines ranges from 23,000 to 27,200 on an average weekday. Ridership at existing rail stations along the Preferred Alternative range from 630 at Downtown Carrollton, to 1,000 at DFW Airport, to 1,500 at CityLine/Bush.

DART also has transit use incentive programs through its employer pass (E-pass) program. This program can be a valuable benefit to both employers and employees.

Table 5-1. Existing Bus Service Levels and Ridership

Route	Name/Description	Weekday Headway (minutes) (peak/off peak)	Average Weekday Ridership
350	Addison TC - Collin County College	30/60	690
361	Arapaho Center – Addison TC via Arapaho	30/60	410
362	Arapaho Center – Addison TC via Campbell	30/60	630
400*	Las Colinas Urban Center - Downtown Garland via Addison TC	30/60	2,010
463	Addison TC – Downtown Garland	30/60	1,610
488	LBJ/Skillman – Brookhaven College	30/60	2,080
534	Addison TC – Trinity Mills Station	20/60	1,180
536	Trinity Mills Station – Addison TC	30/--	220
841	Telecomm Corridor Flex Route	60/--	190
843	South Plano Flex Route	35/--	80
883	UT Dallas Comet Cruiser		7,090
	East	30/30	
	East Express	30/30	
	West (McCallum/Meandering)	20/20	
	West (McCallum/Frankford)	20/20	

Source: DART Service Planning; www.DART.org; September 2017 average daily ridership data
Note: *Route 400 was split into two shorter routes 402 and 403 on March 26, 2018.

In addition to bus and rail, DFW Airport operates the airport Skylink people mover system, which is accessible at all terminals on the secure side of operations. A network of DFW shuttles provides service between the terminals (Terminal Link), TRE CentrePort Station, and the Remote South and North Parking lots on the non-secure side.

Operations and Ridership

As part of the March 2018 service changes, DART implemented operational improvements in this part of the Service Area, primarily improvements to mid-day and weekend service frequency and adjustments to the Route 400. Route 400, as one of the longest east-west crosstown routes, was split into two shorter routes given schedule reliability issues due to increasing traffic congestion. This congestion has affected bus run times, which requires adding more fleet (and costs) to meet schedules and maintain reliability. With these challenges, bus ridership has been experiencing a decline system-wide. Although other factors may contribute to ridership losses, rail ridership has continued to be steady or is growing. This is due to the ability to maintain a reliable schedule and provide more direct connections to key employment and activity centers.

5.1.2 Impact Evaluation

No-Build Alternative

DART recently implemented service improvements throughout the Service Area to improve headways and adjust routing which will enhance services in the Study Area. However, under the No-Build Alternative, there would continue to be a lack of direct east-west transit service to

employment/activity centers in the Study Area. Furthermore, transit services would continue to operate on the roadway system and be subject to increasing traffic congestion and incident delays.

Preferred Alternative

The Preferred Alternative will add a new east-west high capacity, fixed guideway rail service to the DART system. The Preferred Alternative will create new connections to existing and planned services and facilities in the north part of the Service Area, adding east-west capacity and improving access to employment and activity centers and residential areas. Service levels, ridership, reliability and geographic coverage will be improved. The Preferred Alternative will provide a new option for mobility within the DART Service Area and will be accessible from around the region.

Transit System Levels of Service

Table 5-2 summarizes transit system performance measures comparing the No-Build Alternative and the Preferred Alternative. Overall, the Preferred Alternative will have a positive impact on system performance. Local bus trips will increase due to additional riders using this mode to access the rail stations. Express bus and light rail ridership changes less than 1 percent. This is largely because there are no competing express bus or light rail modes. Regional rail trips increase by 16,000 or 42 percent with the additional riders now using the Project as part of their total trip. The total regional transit system, including DART, Trinity Metro, and DCTA will see an overall 2.6 percent increase in linked trips, or an additional 7,400 riders. Linked trips include all segments and modes of travel to complete one trip.

The Preferred Alternative will increase total transit system passenger miles by 2.5 percent, and total passenger hours by 1.6 percent. This indicates that the project has the effect of allowing transit passengers to travel longer distances but with travel time savings over the No-Build Alternative.

Table 5-2. 2040 Transit System Performance Measures

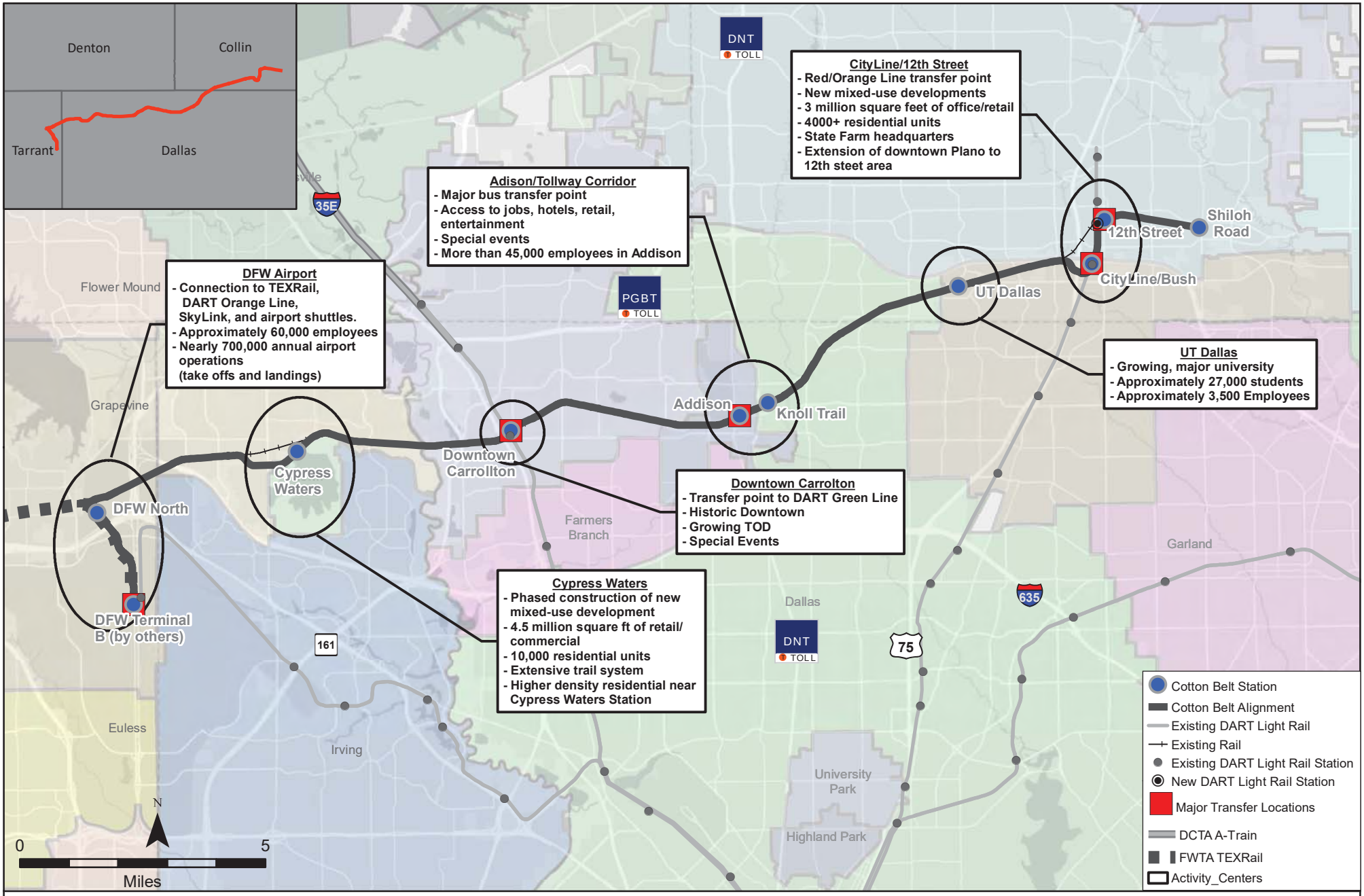
Daily Performance Measure	No-Build	Preferred Alternative	Change
Number of Unlinked Transit Trips			
DART Local Bus	171,000	173,800	+2,800 / 1.6%
DART Express Bus	33,600	33,400	-200 / 0.6%
DART Light Rail	135,500	134,700	-800 / 0.6%
Regional Rail	38,300	54,200	+16,000 / 42%
Total	378,400	396,100	
Number of Regional System Linked Transit Trips Added Riders	279,900	287,300	+7,400 / 2.6%
Passenger Miles	2,735,300	2,804,512	+692,212 / 2.5%
Passenger Hours	130,871	133,021	+2,150 / 1.6 %

Source: DART 2040 Base and CB Alt7 Model Runs and Performance Reports; December 2017.

Geographic Coverage

The Preferred Alternative will improve the geographic coverage of transit in the northern part of the DART Service Area, providing a benefit to transit users system wide given the range of connections available from bus, light rail and other regional rail systems. This new regional rail service will expand the reach of transit to new rail stations using an enhanced feeder bus network to better link residents with transit and associated employment/activity centers.

Figure 5-1 identifies the major employment/activity centers along the corridor, as well as the major transfer locations from the existing and programmed transit network. Using the NCTCOG



DART COTTON BELT

Figure 5-1
Activity Centers

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regional travel demand model, origin and destination data were analyzed to determine the travel patterns and passenger demand for riders using the Preferred Alternative. Productions (origins) are spread throughout the DART Service Area, with some also coming from outside of the DART Service Area. Approximately 80 percent of productions and attractions that will use the Preferred Alternative start or end outside of the 0.5-mile Study Area, supporting the importance of this Project in enhancing access and mobility system-wide. Examples of these travel patterns from major transfer locations include:

- Riders using DFW North Station primarily originate to the west and transfer from TEXRail, with attractions concentrated around the activity centers identified in **Figure 5-1**.
- Riders using Downtown Carrollton originate from along the Preferred Alternative, and also from areas along the DART Green Line corridor to the south and DCTA to the north. Attractions are concentrated at the Preferred Alternative's activity centers as well as the high employment area along the Green Line south of Carrollton such as the Medical District and Dallas Love Field Airport in northwest Dallas.
- Addison origins come from a large area, mostly in the northern part of the DART Service Area. Attractions for riders using the Addison Station are at activity centers along the Preferred Alternative, and north and south along the DNT to growing employment centers such as the Plano Legacy Business area via a transfer to bus from the Addison Station.
- At CityLine/Bush, trips originate from areas to the east and north, and also from the south along the existing DART Red Line corridor. Attractions for riders using this station are focused at the Preferred Alternative's activity centers and also to areas south along the Red Line and the Green Line.

These observations demonstrate the strong interactions between the Preferred Alternative and the existing and future rail and bus transit network. They also illustrate the extent of geographic coverage that will occur with the enhanced mobility and access provided by the Project.

Travel Time

One of the primary purposes of the Preferred Alternative is to provide connections to improve mobility, accessibility and linkages to employment and activity centers in this part of the DART Service Area. The Preferred Alternative will accomplish this through improved travel times, convenient and reliable connections, and direct access to key locations. The Preferred Alternative will use an exclusive guideway that will not be subject to incidents or accidents on the roadway system, providing a reliable service schedule. While every station will have bus transfer opportunities, four major transfer locations to the larger transit network will be provided. During off-peak times, the Preferred Alternative travel time may take longer than auto travel given station stops and dwell times. However, roadway travel during these times is still subject to potential incidents and the local traffic signal systems.

Table 5-3 summarizes anticipated station to station travel times. Overall, end to end travel time is 58 minutes, compared to auto travel time which can take from 35 minutes to more than one hour during peak times and depending on traffic congestion. There is no current direct route to DFW Airport to CityLine, which is a growing business and residential area.

Using existing LRT through downtown Dallas to get from the CityLine area to DFW Airport takes 1 hour and 45 minutes. A combination of bus/rail across the northern part of the DART Service Area for this same trip would require four bus routes and one rail transfer at more than three hours. Transit travel time from major LRT transfer locations will also be improved. For example, from Downtown Carrollton Station (projected to have the highest rail to rail transfers to the Cotton Belt) to Addison Transit Center would be eight minutes, compared to 20 minutes on Route 400 today. Travel from Downtown Carrollton LRT to UT Dallas would take more than one hour today using Routes 400 and 362, compared to 18 minutes using the Project. The CityLine/Bush Station,

where there is a growing residential population, to Addison, a major employment center, would be 16 minutes compared to nearly 30 minutes from Arapaho Station using Route 362.

Table 5-3. Anticipated Station to Station Travel Times (minutes)

Station	Eastbound Direction	Westbound Direction
DFW Terminal B	-	58
DFW North	7	51
Cypress Waters	17	40
Downtown Carrollton	24	33
Addison	32	24
Knoll Trail	35	22
UTD	42	14
CityLine/Bush	48	8
12th Street	52	4
Shiloh Road	57	-

Source: GPC6, 2018

Note: Times are estimated and include station dwell times. Dwell time is the time the train is stopped at each station.

Reliability and Comfort

The No-Build Alternative would continue to have people rely on the roadway network and bus routes subject to local traffic congestion. Given increasing congestion levels in the area, buses would continue to be subject to less reliable schedules and increased travel times. Because the Preferred Alternative will operate on exclusive guideway and not be subject to congestion, it will offer a reliable travel mode for residents, employees and visitors.

The Preferred Alternative will also offer a comfortable transit experience by using new regional rail vehicles equipped with passenger amenities such as Wi-Fi, air conditioning, heat and comfortable seating. The new track infrastructure will offer an even ride experience compared to roadway travel, and vehicles are design for smooth acceleration and deceleration at stations. All facilities and vehicles will be designed for easy access by mobility-impaired individuals.

Corridor and Station Ridership

System level ridership impacts and benefits are highlighted in **Table 5-2**. This section assesses corridor and station level ridership in more detail. Ridership is directly related to Preferred Alternative goals, including improving mobility and accessibility and increasing transit usage, which can in turn reduce VMT and congestion delay (see **Section 4.13 and Section 5.1**). A summary of the station characteristics, including platform types, access characteristics and available parking, is provided in **Table 2-1** in **Chapter 2**. The DFW Airport Terminal B Station is currently under construction as part of the TEXRail Project but ridership for this station associated with the Preferred Alternative is reported in this section. **Table 5-4** summarizes the Preferred Alternative and station ridership including projected mode of access percentages. As shown, daily ridership for the Preferred Alternative is forecasted to be 11,160. Based on the regional travel demand model; 7,400 transit trips are new riders that will be switching from another mode, mostly like automobile (see **Table 5-2**). In addition to new riders, some riders are current transit users that now complete their trip using the Preferred Alternative due to improved access and connectivity.

In addition to the stations, the Preferred Alternative also includes an infill station on the DART Red Line at 12th Street to interface with the riders. Projected ridership at this infill station is 4,426 daily riders.

Table 5-4. Year 2040 Ridership and Station Mode of Access

Station	Daily Riders	Mode of Access Percent (%)			
		Rail Transfer	Bus Transfer	Drive	Walk
DFW Airport	1,160	48	26	0	25
DFW North	1,305	57	10	27	6
Cypress Waters	890	0	17	35	48
Downtown Carrollton	1,855	58	20	7	16
Addison	1,945	0	52	5	44
Knoll Trail	530	2	6	8	85
UT Dallas	1,205	5	62	15	18
CityLine/Bush	1,240	64	10	13	13
12th Street	340	19	9	51	21
Shiloh	690	0	13	48	39
Total Corridor	**11,160**	**29**	**27**	**16**	**28**

Source: DART CB Alt3 Model Run adjusted

As shown in **Table 5-4**, rail transfers account for the highest mode of access at 29 percent with walk and bus access nearly as high at 28 and 27 percent, respectively. This demonstrates the importance of the multimodal connectivity this project provides. At DFW Airport, most alightings from the Cotton Belt walk, but many also transfer to the Skylink system and the Orange Line. At DFW North, most station activity is associated with the transfers from TEXRail to the Preferred Alternative where passengers continue east into the DART Service Area, indicating a strong travel pattern between Fort Worth and the north part of the DART Service Area.

Substantial rail-to-rail transfers occur at the Downtown Carrollton and CityLine/Bush stations, and to a lesser degree at the 12th Street Station. The high station ridership at Downtown Carrollton Station is due mostly to transfers to and from the DART Green Line. Transfers from LRT represent 27 percent of all boardings and 30 percent of all alightings. Given high transfer activity, station circulation and pedestrian walkways are being designed to accommodate expected loads to provide safe and efficient transfers.

Bus access is also strong, especially at the Addison and UT Dallas stations. As a major destination and employment area, more than 80 percent of ridership to Addison are alightings that walk or transfer to bus to reach their destination. At UT Dallas, 62 percent of station activity is associated with the bus network.

Drive access is the lowest mode of access to the Preferred Alternative. Drive access is only available at stations with parking and is highest at stations at either end of the Preferred Alternative (DFW North and Cypress Waters on the west, and 12th Street and Shiloh Stations on the east).

Walking is highest at the Knoll Trail station as this station serves the immediate residential area and has no parking. The Cypress Waters and Addison stations also forecast high walking access due to the mixed-use nature and proximity to multi-family residential areas.

The stations at Knoll Trail and 12th Street have the lowest ridership along the Preferred Alternative. Previously, the Preston Road Station had the lowest ridership but it, along with the Coit Road Station, was eliminated from the Preferred Alternative due to community concerns (see **Section 2.2**).

Special Events

In addition to average daily ridership forecast, the Preferred Alternative also includes multiple special events that will draw riders and provide an alternative to automobile travel. This includes

events such as Addison Kaboom Town, Richardson Wildflower Festival and Carrollton Festival at the Switchyard. DART will coordinate with corridor cities to plan for service and crowd control for these and other major events. Prior special event surveys by DART have shown transit mode share of up to 20 percent when there is direct and convenient access by rail.

Stations

The Preferred Alternative will not modify any existing DART stations, but will construct or expand facilities adjacent to them, including new connections to facilitate access and transfers between modes. Details of the platforms, including enhanced pedestrian connections, are shown in the 10 percent preliminary engineering drawings contained in **Appendix A**. Where the side platforms are adjacent to the bus loading areas, the site pavement/sidewalks will match the platform elevation creating a unified transit plaza space and reducing the need for steps and railings. This will facilitate a seamless transition between modes for the most vulnerable transit riders in wheelchairs or those visually impaired.

Five stations will have enhanced features to address access from other modes. In downtown Carrollton, the Preferred Alternative will include additional park-and-ride lots to the north of the tracks, and will add specific pedestrian improvements to facilitate movements between platforms and to new facilities (refer to **Section 2.3.1**). In Addison, the Preferred Alternative will construct the platform adjacent to the Addison Transit Center. Increases in bus service may be needed in the future, and a recent analysis by DART shows the need to increase bus bays at this location. DART will continue to monitor bus service and plan for facilities improvements at the appropriate time. A parallel platform will be constructed next to the existing CityLine/Bush Station to provide a cross platform transfer opportunity. At the 12th Street Station, there will be specific pedestrian connections designed to connect the elevated, infill 12th Street LRT station and the at-grade Cotton Belt platform.

Pedestrian access to the Shiloh Station is a critical component of the site plan, as passengers will be diverted around the substation to reach station platforms. A pedestrian access easement will be provided between the substation and the platform on the west side. There will also be a crew room at this station located at the northeast end of the tracks.

5.1.3 Mitigation Measures

In general, no mitigation is required relative to transit service and facilities. Rather, the Preferred Alternative provides an overall benefit and the design will be developed to accommodate increases in passenger activity and bus services based on specific conditions at each station. Bus route modifications will be defined through a Feeder Bus Plan to be developed as the Preferred Alternative design advances (see **Section 2.4.6**).

5.2 Highway and Roadway

5.2.1 Affected Environment

Parallel Roadways

The Preferred Alternative generally extends across the northern portion of the DART Service Area from DFW Airport to Plano. According to the NCTCOG Mobility 2040 MTP, the area north of LBJ Freeway in this part of the DART Service Area will continue to experience severe congestion based on increased travel time on area roadways. As described in **Chapter 1**, the region's population is expected to increase by approximately four million persons, to nearly 11 million, by 2040. Combined, Dallas, Collin and Tarrant counties (through which the Preferred Alternative travels) will account for 75 percent of this population. These counties will also account for 85 percent of the region's nearly seven million jobs by 2040.

Two primary east-west freeways (IH 635 and PGBT) in this part of the region extend through the northern portion of the DART Service Area. The Preferred Alternative is situated midway between these two east-west freeways. Additionally, Belt Line Road parallels the Preferred Alternative for about 11 miles. IH 635 is the seventh most congested highway in the State of Texas.[3] The highway was recently reconstructed, and the improvements included two travel lanes and six managed/tolled lanes that replaced the two existing HOV lanes. PGBT is a six-lane tollway way that carried 84,590 vehicles per day in 2017 and is projected to carry over 90,000 vehicles per day by 2040 in the Study Area. Belt Line Road is a six-lane regional arterial running east-west through the Study Area. In 2017, traffic was over 38,000 vehicles per day (vpd) and is projected to increase to over 45,000 vpd by 2040.

The roadway network within the Study Area currently has moderate to severe traffic congestion. **Table 1-4** indicates that VMT per day, VHT per day, and vehicle hours of congestion delay per day are all projected to increase by 2040 within the 0.5-mile Study Area. Hours of congestion delay are forecasted to increase by approximately twice the rate of VMT and VHT. In addition, **Table 1-4** shows that by 2040, 23 percent of Study Area roadways will be operating at LOS D or E, with 41 percent operating at LOS F.

Crossing Roadways

The existing Cotton Belt railroad corridor traverses the area in a generally at-grade configuration. The Preferred Alternative includes deviations from this corridor in four locations: DFW Airport Terminal B Connection, Cypress Waters Alignment, Downtown Carrollton reconfiguration, and the CityLine/Bush Alignment. Excluding the DFW Airport Terminal B Connection, which is discussed separately, the Preferred Alternative introduces a regional rail line that crosses 64 existing and future roadways (see **Figures 5-2** through **5-5**). The roadways range in size from single-lane dirt roads to six-lane major arterials. Of these, there are 10 existing roadway grade separations. Since all major freeways crossing the alignment will be grade separated, two additional roadway grade separations (PGBT and US 75) along the CityLine Alignment are assumed. The freeway grade separations include SH 121, IH 635, PGBT (twice), IH 35E/Frontage, DNT, and US 75. Additional existing grade separations are at Preston Road, Synergy Park Boulevard, Renner Road, and two private driveways. Average daily traffic volumes on three of the busiest arterials (Midway Road, Coit Road and Plano Parkway) range from 44,000 to nearly 60,000 vpd.

DFW Airport Connection

On DFW Airport property, the Preferred Alternative turns south from the railroad right-of-way to join the TEXRail alignment in a new right-of-way. Before merging with the TEXRail alignment, the new rail alignment will cross an existing access road to a Chesapeake natural gas facility. Along the DFW Airport Terminal B Connector, the Preferred Alternative will match the configuration of the TEXRail Project within the existing TEXRail right-of-way. The alignment crosses over SH 121/SH 114 and extends southeast to parallel International Parkway before terminating at the DFW Airport-Terminal B Station. The alignment through DFW Airport has been closely coordinated with DFW Airport and Trinity Metro to accommodate both rail projects. The TEXRail Project has been environmentally cleared and is currently under construction. Grade separations include SH 121/SH 114, North Airfield Drive and the southbound International Parkway Service Road. The Cotton Belt and TEXRail rail lines are also grade separated from Taxiways X and Z and the Skylink People Mover. The Cotton Belt and TEXRail rail lines will cross two roadways at-grade: North Employee Road and Service Road Crossunder No. 2.

[3] http://www.txdot.gov/inside-txdot/projects/100-congested-roadways.html

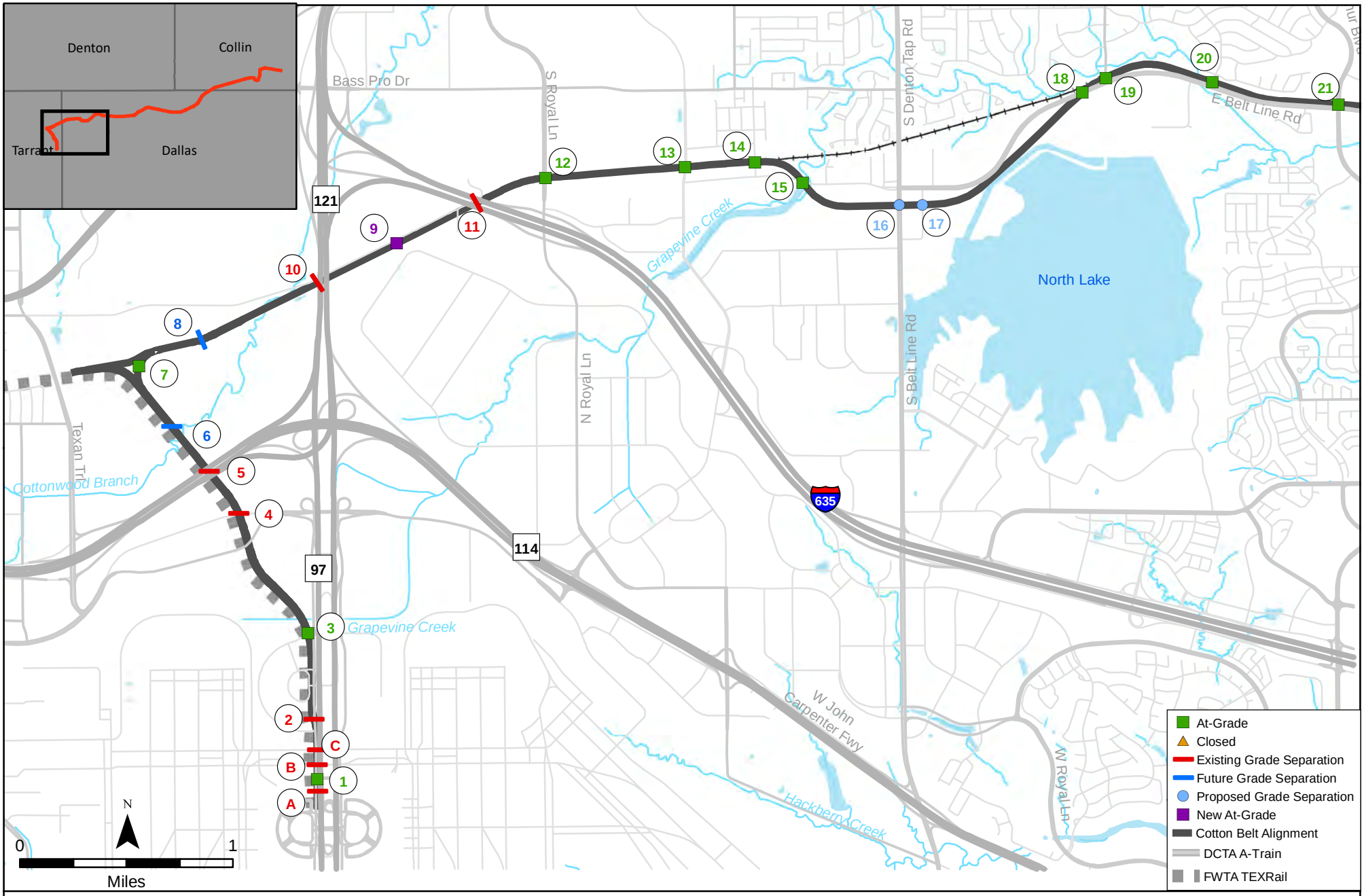

Figure 5-2
Roadway and Other Crossings of the Cotton Belt
Data Source: GPC6, 2017

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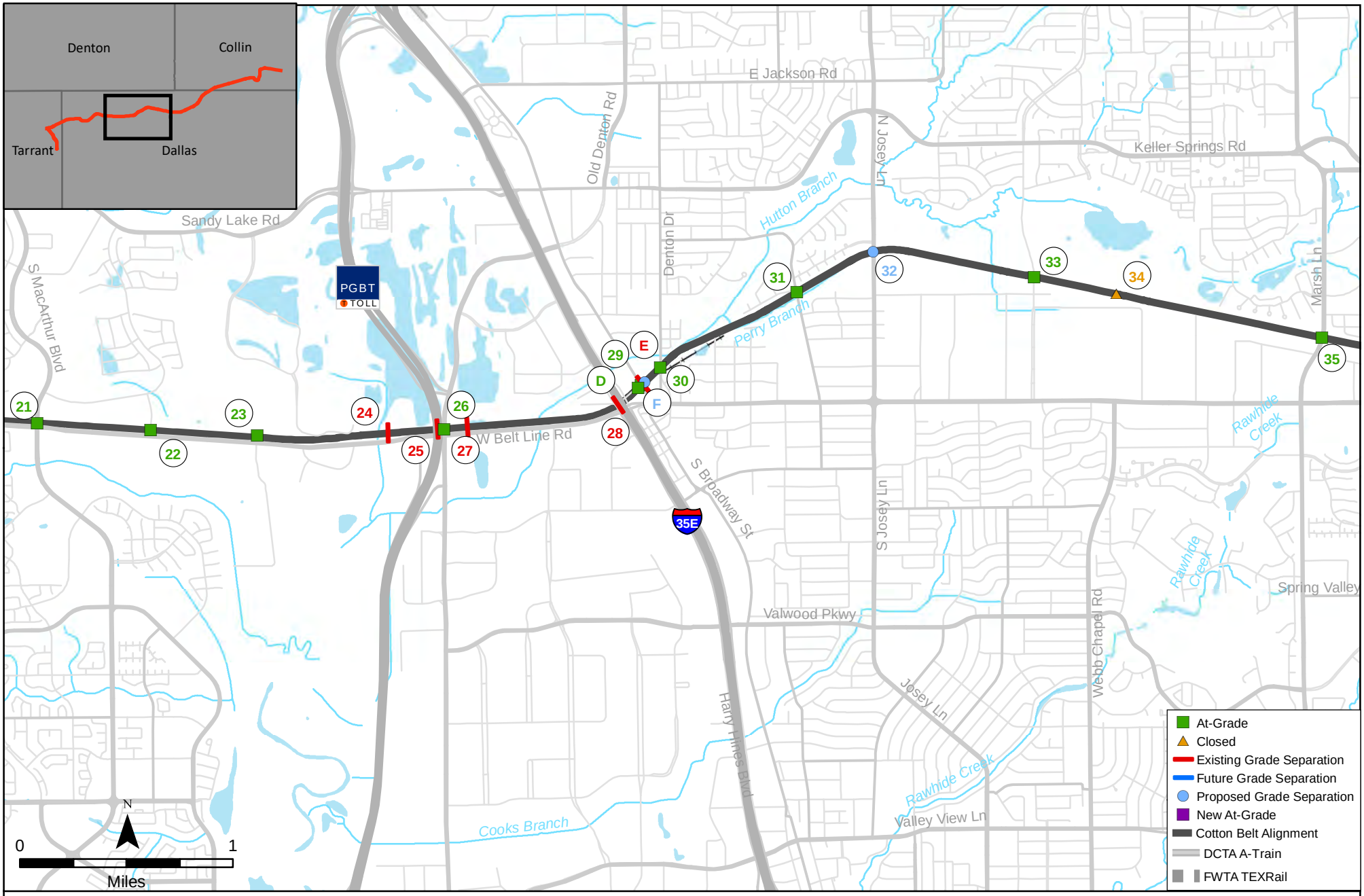

Figure 5-3
Roadway and Other Crossings of the Cotton Belt
Data Source: GPC6, 2017

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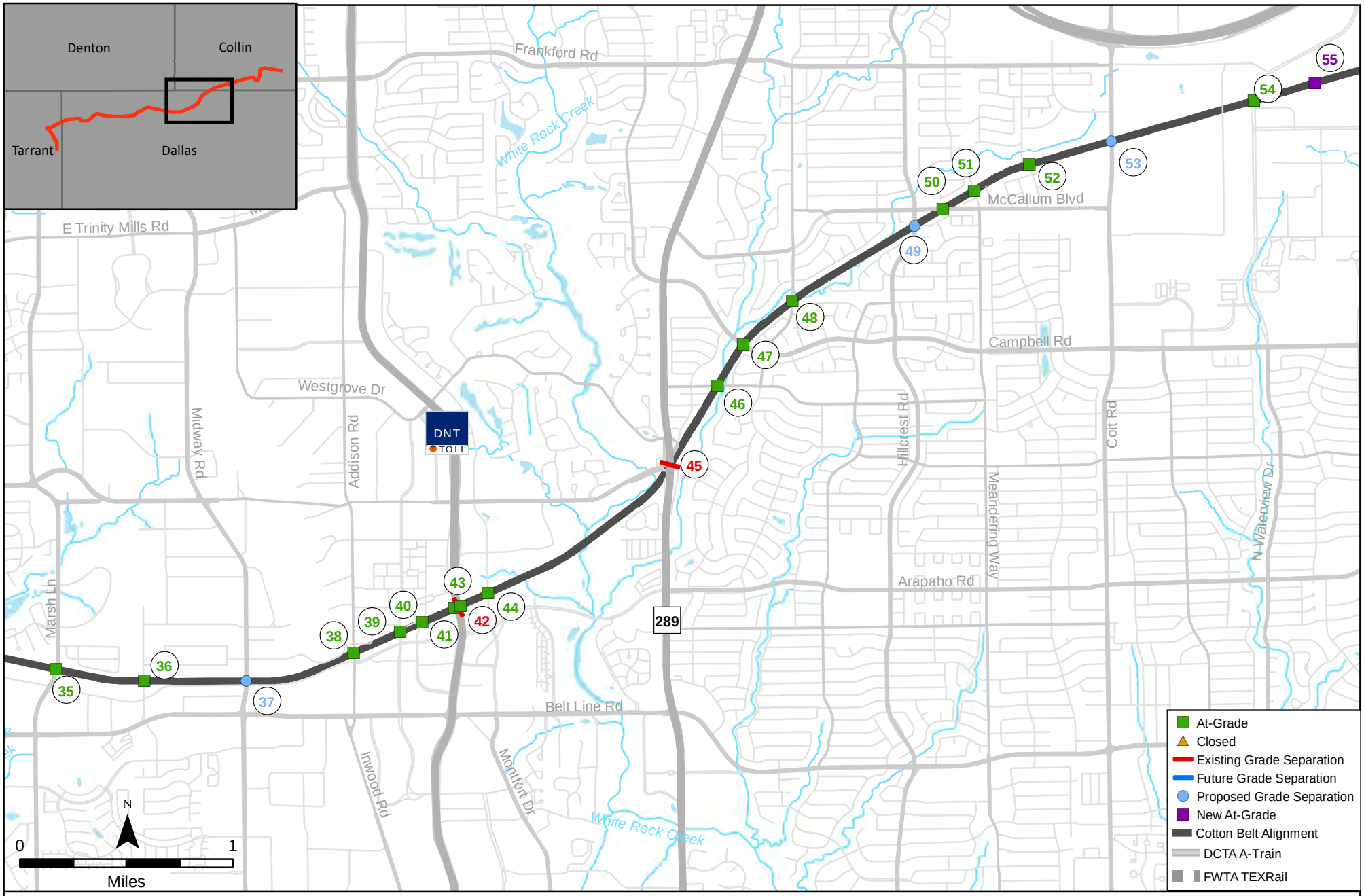

DART COTTON BELT

Figure 5-4
Roadway and Other Crossings of the Cotton Belt
Data Source: GPC6, 2017

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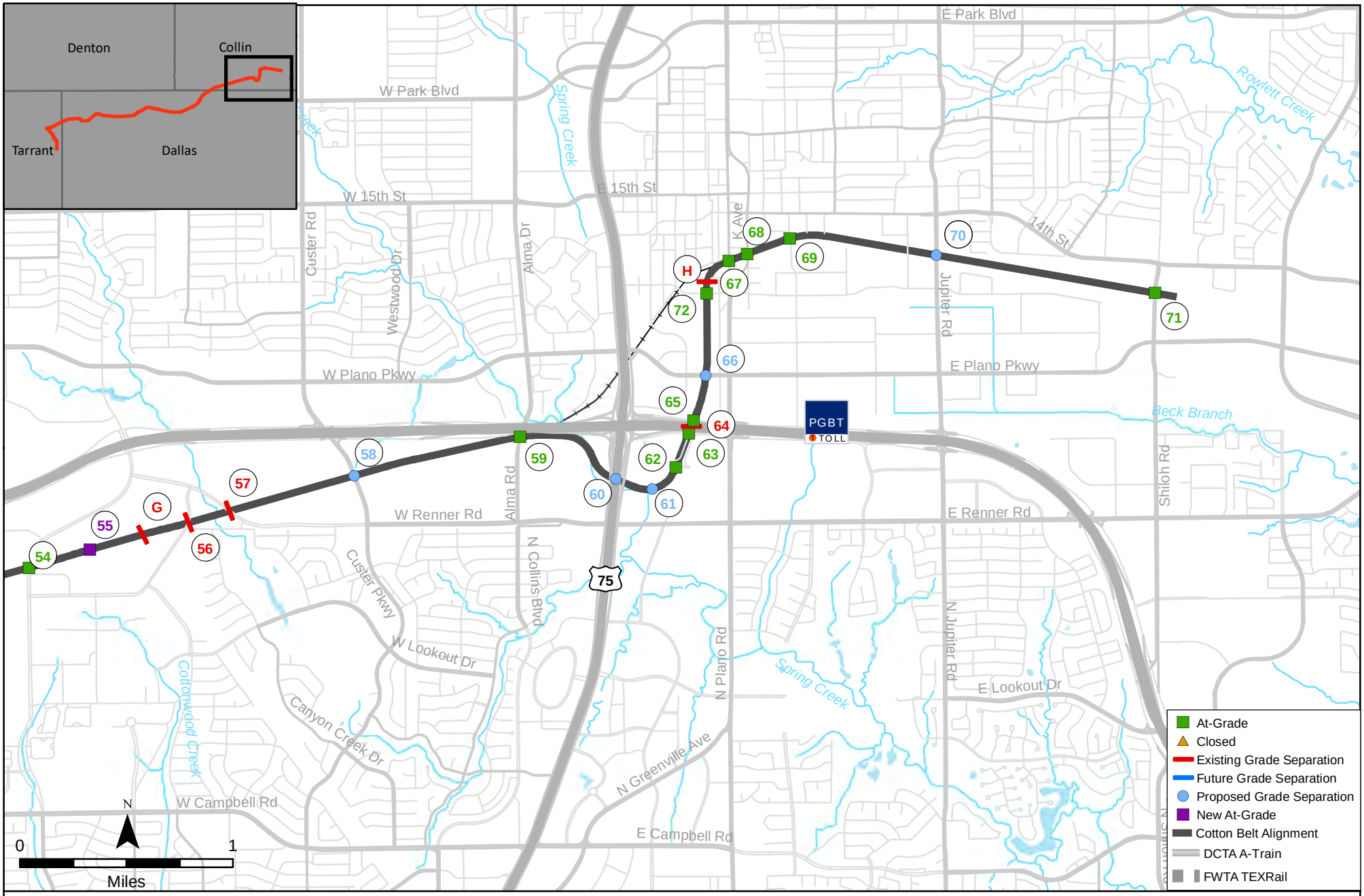

Figure 5-5
Roadway and Other Crossings of the Cotton Belt
Data Source: GPC6, 2017

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DFW Airport, in cooperation with DART, is also planning new roadways to accommodate growth and development of the area around the DFW North Station. At DFW Airport Fire Station 6 (711 Regent Boulevard) along the existing railroad right-of-way, DART will construct a new at-grade crossing to allow fire access to the north side of the right-of-way. Two future aerial roadway crossings of the Cotton Belt rail line are also being planned. One will cross the existing railroad right-of-way east of the DFW North Station to connect to future airport developments north of the Cotton Belt rail line. The precise alignment of the aerial roadway will be coordinated with DFW Airport. The second aerial crossing is Dallas Road which will cross the new right-of-way south of the DFW North Station. This will facilitate east-west circulation.

DFW is planning a road extension of Technology Drive north of the Preferred Alternative where it crosses under SH 121. As such, DART and DFW will coordinate plans to ensure there is sufficient clearance under SH 121 for the rail, future trail, and road.

EMF Connection and Layover Track

With the selection of the EMF Option 2 (Irving Yard), non-revenue trains will operate between the EMF and the Preferred Alternative along the existing TRE corridor east to the Madill Subdivision then north along the Madill Subdivision to the Preferred Alternative. This connection will serve as a non-revenue yard lead. These train movements will occur once in the morning prior to the a.m. peak and once in the evening after the p.m. peak. During the midday, some trains will layover at one of two layover sites (relocated Mercer Yard and tail track east of the Shiloh Road Station).

The Preferred Alternative vehicles using the non-revenue yard lead will cross 17 streets at-grade. Trains using the Shiloh Road layover site will cross Shiloh Road at-grade twice a day.

5.2.2 Impact Evaluation

No-Build Alternative

The No-Build Alternative would limit options for east west movements to the existing street network and transit services. As a result, there would be no reduction in VMT and hours of congestion delay. However, potential street crossing and station area impacts would not exist.

Preferred Alternative

Regional Impacts

The Preferred Alternative will have beneficial impacts to the regional transportation system by helping to reduce VMT and hours of congestion delay. DART conducted a comparison of VMT and hours of congestion delay in 2040 with and without the Preferred Alternative. Forecast VMT with the Preferred Alternative in operation results in a reduction of nearly 80,000 daily (nearly 24,000,000 annual) VMT in the DART Service Area. In terms of hours of congestion delay within the DART Service Area, the Preferred Alternative will save nearly 3,800 daily hours of congestion; or 1,123,000 hours of congestion delay per year. For freeways alone, the VMT is reduced approximately 26,000 daily miles and the Preferred Alternative will save nearly 1,100 daily hours of congestion, or 330,000 hours of congestion delay per year.

Local Impacts

The Preferred Alternative, with its associated park-and-ride lots and feeder bus network, will provide incentive for commuters to use transit and therefore decrease automobile travel on area roadways. However, roadways in localized areas may experience potential traffic impacts. This is because of short delays at gated intersections and vehicles entering and exiting the stations. The gates will create brief interruptions to the flow of traffic to allow for the safe crossing of rail vehicles. In addition, the construction of park-and-ride lots, regional rail stations, and the traffic they will attract, could have limited impact on traffic operations near those stations. Roadway and

intersection impacts are discussed in greater detail below. Station area impacts are discussed in **Section 5.4**.

Roadway and Intersection Impacts

As detailed in the *Street At-Grade Crossing Traffic Analysis Report* in **Appendix B**, an extensive study of the roadway crossings for the Preferred Alternative was conducted. This study analyzed future traffic conditions at 46 major roadway crossings, determined traffic impacts due to the Preferred Alternative, and established whether any of these at-grade rail crossings might warrant a grade separation based on year 2040 conditions. All major freeways, which are assumed to be grade separated, and existing grade separations were excluded from this analysis. Other roadways were not included in the traffic analysis and are discussed in the summary section below.

As detailed in the *Street At-Grade Crossing Traffic Analysis Report*, an initial screening identified 25 crossings requiring additional analysis. Thirteen of these met Institute of Transportation Engineers' (ITE) thresholds for consideration of mitigation. An additional 12 were based on proximity of nearby intersections to rail crossing or community concerns. The goal of the traffic study was to evaluate the existing at-grade rail crossings and nearby roadway intersections to determine the effects that the Preferred Alternative will have on the operation of these roadways and intersections in the study year of 2040. The analyses were performed in accordance with the procedures outlined in the Highway Capacity Manual Year 2000 Edition (HCM 2000), published by the Transportation Research Board, Washington, D.C., as implemented by SYNCHRO software package, Version 9.0. The results of these analyses provided projected LOS and queue values on crossing or nearby roadways.

If the presence of DART's rail line causes the LOS on streets adjacent to the rail line to drop two or more levels or causes the street to have a LOS of "F", a LOS impact may exist. If the presence of DART's rail line causes vehicular traffic on streets adjacent to the rail line to queue through adjoining intersections or queue through the rail intersection, a queuing impact may exist.

As originally reported in the DEIS, the results of the roadway grade crossing analysis indicated that 10 crossings will experience queuing or LOS impact that will require mitigation.

In their review of the DEIS and ongoing coordination with DART, three cities raised concern over the growth rates applied to three streets in the traffic analysis. A 0% percent growth rate was estimated for Josey Lane in Carrollton. A 0.5% growth rate was estimated for Hillcrest Road in Dallas. A 1.0% growth rate was estimated for Jupiter Road in Plano. Based on experience with existing conditions, growth on parallel streets, and knowledge of local development trends, the cities requested that DART reconsider the growth rate assumptions for these three streets crossing the Preferred Alternative. In coordination with each city staff, it was determined that a 2.0% growth rate was the appropriate growth rate for the three roadways. The reassessment of the traffic analysis for these three streets is contained in the *Additional Traffic Analysis As A Result of Public Comment on Draft Environmental Impact Statement (DEIS) Technical Memorandum* in **Appendix B**. **Table 5-5** shows the existing and revised projected ADT for the at-grade crossings that were studied for the Preferred Alternative.

The City of Plano has expressed concern about traffic on K Avenue and Municipal Avenue due primarily to the unique setting of the 12th Street Station Area Complex. The 12th Street Cotton Belt platform will be situated directly between the two, one-way roadways which are the principal north-south arteries serving downtown Plano. Pedestrian access will connect this platform to the aerial 12th Street LRT platform. The Plano Transit Veloweb will also extend through station area. New residential and commercial development is occurring directly adjacent to the station.

Table 5-5. Average Daily Traffic At-Grade Crossings

Location	Name	ADT Year	Existing ADT	Growth Rate	2040 ADT Estimate
Coppell	Royal Lane	2014	15,009	2%	25,116
Coppell	Freeport Parkway	2017	16,788	2%	26,473
Coppell	Coppell Road	2014	1,379	2%	2,308
Coppell	Southwestern Boulevard	2014	4,265	2%	7,137
Coppell	South Belt Line Road	2014	37,290	0%	37,290
Dallas	East Belt Line Road	2017	16,499	1%	20,742
Coppell	Moore Road	2014	5,631	1%	7,294
Coppell	Mockingbird Lane	2014	3,068	2%	5,134
Coppell	MacArthur Boulevard	2014	20,031	0.7%	24,014
Coppell	Fairway Drive	2010	4,323	2%	7,831
Coppell	Private Driveway/Ledbetter Road	2010	1,049	2%	1,900
Carrollton	Luna Road	2014	16,385	1%	21,223
Carrollton	North Broadway Street	2014	4,741	2%	7,934
Carrollton	North Denton Drive	2016	4,692	2%	7,547
Carrollton	Perry Road	2014	3,158	2%	5,285
Carrollton	North Josey Lane	2015	31,648	2%	51,922
Carrollton	Kelly Boulevard	2014	11,535	0%	11,535
Carrollton	Private Driveway (Maridoe Golf Club)	2010	159	2%	288
Addison	North Marsh Lane	2014	32,244	0.5%	36,708
Addison	Surveyor Boulevard	2014	3,365	2%	5,631
Addison	Midway Road	2016	39,168	0.5%	44,149
Addison	Addison Road	2014	19,210	0.5%	21,870
Addison	Quorum Drive	2014	6,975	2%	11,672
Addison	Spectrum Drive	2010	2,444	2%	4,427
Dallas	DNT SB Frontage Road	2017	13,536	0.5%	15,181
Dallas	DNT NB Frontage Road	2017	12,328	0.5%	13,826
Dallas	Knoll Trail Drive	2014	8,063	2%	13,493
Dallas	Davenport Road (South)	2017	4,634	0%	4,634
Dallas	Campbell Road	2017	18,013	2%	28,405
Dallas	Davenport Road	2017	3,401	2%	5,363
Dallas	Hillcrest Road	2017	17,494	2%	27,587
Dallas	McCallum Boulevard	2014	5,343	2%	8,941
Dallas	Meandering Way	2014	2,652	2%	4,438
Dallas	Dickerson Street	2014	1,094	2%	1,831
Dallas	Coit Road	2016	46,291	1%	58,777
Richardson	Waterview Parkway	2016	26,101	1%	33,141
Richardson	Custer Parkway	2017	19,950	2%	31,459
Richardson	Alma Road	2015	10,100	2%	16,570
Plano	PGBT EB Frontage Road	2013	2,232	0.5%	2,554
Plano	PGBT WB Frontage Road	2017	6,680	1%	8,398
Plano	Plano Parkway	2010	30,851	2%	55,882
Plano	K Avenue	2017	12,318	1%	15,486
Plano	Municipal Avenue	2017	11,166	2%	17,608
Plano	N Avenue	2014	1,572	2%	2,631
Plano	Jupiter Road	2016	25,850	2%	41,579
Plano	Shiloh Road	2016	10,874	2%	17,490

Source: GPC6, 2017/2018

Although the traffic analysis did not identify any traffic impact, local knowledge suggests that these roadways experience peak hour congestion. Localized traffic volumes are expected to increase due to new and planned developments. As discussed in **Section 3.2**, City policy encourages growth along the rail corridors and envisions that the 12th Street Station Area Complex will act as a magnet for further development. To alleviate the City's concerns and to account for a potential of higher than anticipated growth, DART is recommending mitigation at K Avenue and Municipal Avenue.

Another concern expressed by the City of Plano is the effect of 12th Street Station operations on both automobile and pedestrian traffic due to the proximity of a street crossing near the end of the platform. Delays in boarding and alighting activities could result in unnecessary downtime for crossing gates. Other stations with street crossings at the end of the platform include: Downtown Carrollton, Addison, Knoll Trail, UT Dallas, CityLine/Bush and Shiloh.

Table 5-6 shows the results of the revised traffic analysis of the 25 crossings that were advanced for additional analysis.

Table 5-6. Recommended Mitigations At-Grade Crossings

Roadway at Crossing	Location	LOS Impact	Queue Impact	Mitigation Recommended
Freeport Parkway	Coppell	No	No	No
South Belt Line Road	Coppell	Yes	Yes	Yes
East Belt Line Road	Coppell	No	No	No
MacArthur Boulevard	Coppell	Yes	Yes	Yes
Luna Road	Carrollton	Yes	Yes	Yes
Josey Lane	Carrollton	No	Yes	Yes
Marsh Lane	Carrollton	Yes	Yes	Yes
Midway Road	Addison	No	Yes	Yes
Addison Road	Addison	Yes	Yes	Yes
DNT SB FR	Dallas	No	No	No
DNT NB FR	Dallas	No	No	No
Davenport Road South	Dallas	No	No	No
Campbell Road	Dallas	No	No	No
Davenport Road	Dallas	No	No	No
Hillcrest Road	Dallas	No	Yes	Yes
Coit Road	Dallas	No	Yes	Yes
Waterview Parkway	Richardson	No	No	No
Custer Parkway	Richardson	Yes	Yes	Yes
Alma Road	Richardson	Yes	Yes	Yes
PGBT EB FR	Richardson	No	No	No
PGBT WB FR	Plano	No	No	No
Plano Parkway	Plano	Yes	Yes	Yes
K Avenue	Plano	No	No	Yes
Municipal Avenue	Plano	No	No	Yes
Jupiter Road	Plano	No	Yes	Yes

Source: GPC6, 2017/2018

The revised roadway grade crossing analysis indicated that a growth factor of 2.0% now triggers a grade separation at Josey Lane, Hillcrest Road and Jupiter Road. In 2040, queue length will extend beyond nearby signalized intersections during peak hours. In total, 13 crossings will experience queuing or LOS impact that will require mitigation. The Preferred Alternative will only have minimal impact on traffic operations at 33 of the 46 crossings. Most of the at-grade crossings will continue to operate at acceptable LOS with projected queuing not affecting adjacent signalized intersections.

DFW Airport Terminal B Connection Impacts

There are only three at-grade crossings of the DFW Airport Terminal B Connection. The Chesapeake Access Road is a minor, low volume access road. It is anticipated that Crossunder No. 2 will have minimal impact on traffic operations. The intersection of North Employee Road and the southbound International Service Road is anticipated to experience minimal queuing and LOS impacts with the addition of the Preferred Alternative operations.

EMF Connection and Layover Track

Since publication of the DEIS, DART conducted additional traffic analysis of the 17 crossings along the nonrevenue yard lead and Shiloh Road approaching the Shiloh Road Yard Lead. This assessment is contained in the *Additional Traffic Analysis As A Result of Public Comment on Draft Environmental Impact Statement (DEIS) Technical Memorandum* in **Appendix B**. An initial screening identified that Shiloh Road and 14 of the 17 yard lead crossings did not meet ITE thresholds for consideration of mitigation. Three crossings, North MacArthur Boulevard, Valley View Lane and West Crosby, will warrant further analysis if revenue service operated along the line. Since train movements along the yard lead will occur once in the morning prior to the a.m. peak and once in the evening after the p.m. peak, no impacts will be created that will warrant any type of mitigation.

Roadway Closures Impacts

In anticipation of the relocation of Mercer Yard, the City of Carrollton officially abandoned the driveway serving Maridoe Golf Club and provided alternative access. The property on which this driveway is located was sold by the private club to DART in 2012 as right-of-way preservation. Although officially abandoned, the driveway through DART property is still being unofficially used to access the club. This informal use will be eliminated, and the roadway will be closed.

Driveway Impacts

The redesigned Coit Road grade separation to lower grades of the roadway (see **Section 2.2**) will eliminate or modify two current driveways. One driveway provides access to a small Dallas Water Utilities facility located northeast of the Cotton Belt intersection with Coit Road. The second driveway provides access to an apartment complex located northwest of the Cotton Belt intersection with Coit Road. The Coit Road redesign will also require the reconstruction of the Sugar Cane Way intersection with Coit Road. Sugar Cane Way provides access to the University Place neighborhood to the east and Adventure Landing to the west.

At Hillcrest Road, the rail line will remain at-grade and the roadway will be depressed. This will result in the closure of one driveway from Hillcrest Road to businesses located at the southeast corner of Hillcrest Road and McCallum Boulevard. Additionally, a portion of McCallum Boulevard will be depressed to meet the new grade of Hillcrest. This will require the modification of several driveways along McCallum Boulevard to ensure continued access to the businesses.

5.2.3 Mitigation Measures

Roadway and Intersection Mitigation

The Preferred Alternative will operate within exclusive right-of-way and the moving train will always take precedence over automobile traffic at grade crossings through the use of priority signals and warning devices. All grade crossings will have active warning devices, train signals, and gates that are activated by approaching trains.

Signal systems at grade crossings within the Preferred Alternative right-of-way will include all signs, signals, and warning devices. The function of these systems will permit safe and efficient operation of the train, on track equipment, highway traffic, and pedestrians over level grade crossings. Grade crossing warning devices will be designed in conformance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD), TxDOT, and the recommended American Railway Engineering and Maintenance-of-Way Association (AREMA) practices.

As a result of the grade crossing analysis, several modifications to existing conditions have been incorporated into the Preferred Alternative. As described in DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects*, there are several techniques that can be employed to mitigate traffic impacts. These include grade separation, signal timings improvements, signal phasing, and roadway capacity improvements. Site-specific conditions help determine the mitigation.

Of 14 crossings identified for mitigation, a grade separation is infeasible at three locations. At Luna Road and Alma Road, the proximity of the elevated PGBT does not allow for a grade separated rail line. Addison Road is located within the runway protection zone for Addison Airport and vertical structures are restricted. Based upon the grade crossing analysis and in accordance with DART's Grade Separation Policy, a new grade separation will be constructed at the following crossings:

- South Belt Line Road
- Josey Lane
- Midway Road
- Hillcrest Road
- Coit Road
- Custer Parkway
- Plano Parkway
- Jupiter Lane

Except for Hillcrest Road and Coit Road, all grade separations will elevate the rail over the roadway. At Hillcrest Road, the roadway will be depressed under the Preferred Alternative. At Coit Road, the rail will be slightly depressed and Coit Road will be elevated over the rail line.

Traffic impacts at the following locations could be mitigated by signal timing, signal phasing improvements and intersection improvements:

- MacArthur Boulevard and Belt Line Road
- Luna Road and East Belt Line Road
- Marsh Lane
- Addison Road and Arapaho Road
- Alma Road and SH 190 Frontage Roads
- K Avenue
- Municipal Avenue

Signal timing improvements will be coordinated with the appropriate jurisdictions and may include:

- Upgrading the detection and utilizing adaptive signal control at approaching intersections to accommodate for changing traffic patterns and demand. This will also ensure optimized signal timing plans.
- Addition of right turn overlap signal heads for all approaches which will improve the LOS at intersections.
- Back of queue detection for approaches will pre-empt the signal as soon as vehicles reach the intersection and switch the signal indication to red. This will help control the vehicles from blocking the intersection and to clear the side street traffic.
- Use of Railroad preemption at the intersection.

On-going coordination with the City of Carrollton has resulted in the identification of specific mitigation at Marsh Lane:

- Dual left turn lanes will be provided from southbound Marsh Lane to Arapaho Road.
- A right turn lane will be provided from eastbound Realty to Marsh Lane.
- A right turn lane will be provided from Southbound Marsh Lane to Realty Road.
- A traffic signal at Stonehenge Lane and Marsh Lane will be provided.
- Signal timing improvements.

DART will continue to coordinate with the appropriate jurisdictions to determine if intersection capacity improvements may be necessary to achieve maximum efficiency and improve the overall LOS.

Most roadways that cross the Preferred Alternative will require some reconstruction. Some crossings such as Hillcrest Road, McCallum Boulevard and Coit Road in Dallas will require more extensive reconstruction to accommodate grade separations. Roadway modification plans are shown in **Appendix A**. In general, roadways will be reconstructed to match existing cross-sections. Many cities have design standards that include Complete Streets design concepts to promote higher quality street designs and create safe, multimodal streets for all users. DART will coordinate with the appropriate jurisdictions to design the streets to local standards. Roadway modification design will adhere to the Complete Streets guidelines within the envelope of the existing right-of-way to the extent reasonably feasible.

At stations directly adjacent to an at-grade street crossing, DART will design the traffic control system to avoid unnecessary downtime for crossing gates. Crossing signals will be coordinated with train operations to accommodate railroad safety and facilitate crossings of automobiles and pedestrians without unnecessary delays.

DFW Airport Terminal B Connection Mitigation

As part of the TEXRail Project, several infrastructure modifications are being implemented. New rail aerial structures over SH 121/SH 114, the southbound International Parkway Service Road, and North Airfield Drive will be elevated over the rail line. The access road to ASR-9 Radar facility has been rerouted to avoid crossing the rail line. Access to the North Employee parking area and the North Express Parking area have been modified to accommodate circulation changes.

Additionally, the signal free right turn lane from southbound International Service Road to North Employee Road is being eliminated to channel traffic through a single crossing. These turning movements will utilize a right turn only lane at the signalized intersection at North Employee Road and southbound International Service Road. DART proposes to mitigate traffic impacts at this location by improving signal timing. DART will continue to coordinate with DFW Airport to

determine if additional intersection capacity improvements are needed to achieve maximum efficiency and improve the overall LOS.

EMF Connection and Layover Track Mitigation

No mitigation is required for the 17 roadway crossings along the EMF yard lead, or for Shiloh Road crossing approaching the Shiloh Road Yard lead.

Roadway Closures Mitigation

No mitigation is required for the closure of a private driveway to the Maridoe Golf Club. The property was sold to DART in 2012 with the understanding that if the roadway were to be closed, alternative access to the site exists.

Driveway Mitigation

The driveway to the Dallas Water Utilities facility located northeast of the Preferred Alternative intersection with Coit Road will be relocated to extend north parallel to the Coit Road aerial structure before entering the roadway at ground level. The easement granting access to the current driveway will be required to be modified to accommodate the relocated driveway.

One of two driveways to an apartment complex located northwest of the Preferred Alternative intersection with Coit Road will be eliminated. DART will work with the complex and the City of Dallas to provide alternate access if necessary.

Reconstruction of the Sugar Cane Way intersection with Coit Road will require raising the profile of the driveway to Adventure Landing and the entrance into University Place to meet the new profile of Coit Road. DART will work with the community to maintain access to the greatest extent possible during construction. DART will also evaluate the need for traffic signal and turn lanes at this intersection.

Changes to the Hillcrest Road/McCallum Boulevard intersection will affect several driveways. During final design, DART will work with the City of Dallas and these businesses and residences to relocate, modify or otherwise mitigate these changes in access.

Highway and Roadway Summary

The Preferred Alternative will be grade separated at all major freeways and all existing grade separations will remain grade separated. The existing Cotton Belt freight corridor and Madill Subdivision at-grade crossings with roadways will remain at grade. Along the DFW Airport Terminal B Connector, the Preferred Alternative will align with the configuration of the TEXRail Project. Outside of this alignment, DART conducted an extensive traffic analysis to determine roadway configurations. Roadways not discussed in the analysis include: Chesapeake Access Road, DFW Airport Fire Station 6 Road, Sanders Loop, an unnamed utility road, Maridoe Gulf Club driveway, Rutford Avenue, Red Moon Way, West City Line Drive, and 10th Street. Several of these roads are low volume roads that will not meet warrants for mitigation. Others are proposed or recently constructed roadways that have been located to cross the Preferred Alternative as configured.

- Chesapeake Access Road is a minor, low volume utility access road that will be crossed at grade.
- The DFW Airport Fire Station 6 Road at-grade crossing was requested by DFW Airport and is being constructed as part of the Project to allow only emergency vehicles access across the tracks.
- Sanders Loop is a low volume street parallel to South Belt Line Road. The proximity to the two roadways requires that Sanders Loop be included as part of the South Belt Line grade separation.
- An unnamed access road provides utility vehicle access under the existing track structure. This grade separation will remain.

- Maridoe Gulf Club driveway has been officially abandoned. Informal use of this roadway will be eliminated, and the roadway will be closed.
- The at-grade Rutford Avenue crossing will be constructed as part of the Preferred Alternative at the request of the City of Richardson. It was designed to cross the Cotton Belt Line at grade. This roadway will improve access and circulation to the station and UT-Dallas campus.
- Red Moon Way is a newly constructed roadway that will pass under the Preferred Alternative aerial structure over US 75. It was located to cross under the Preferred Alternative aerial structure.
- W. City Line Drive is a circulator street that was designed to cross both the Red Line LRT line and the Preferred Alternative at-grade.
- After publication of the DEIS, it was discovered that the 10th Street at-grade crossing in Plano was inadvertently omitted from the traffic analysis. DART conducted a screening of this crossing and determined that it does not meet ITE thresholds for consideration of mitigation. The minor, two-lane roadway is projected to carry less than 3,000 cars per day in 2040 and will remain at grade.

Normal operations of the Preferred Alternative will cross 72 existing or future roadways, three freight railroads (see **Section 5.3**), two LRT lines, two taxiways, and one automated people mover (APM). Twice a day, during off peak periods, an additional 17 roadways along the EMF Yard Lead will be crossed at grade. Of the 72 roadway crossings along the Preferred Alternative:

- 45 will be at-grade;
- 26 will be grade separated; and,
- 1 will be closed.

Table 5-7 lists the configuration of all roadways and other crossings of the Preferred Alternative from DFW Airport Terminal B Station to Shiloh Road. **Figures 5-2** through **5-5** show the location of these crossings.

Table 5-7. Cotton Belt Project Crossing Configuration

ID	Location	Name	Type	Configuration
1	DFW	Crossunder # 2	Street	At-Grade
2	DFW	International Service Road	Street	Existing Grade Separation (Rail Under)
3	DFW	North Employee Road	Street	At-Grade
4	DFW	North Airfield Drive	Street	Existing Grade Separation (Rail Under)
5	DFW	SH 121/SH 114	Freeway	Existing Grade Separation (Rail Under)
6	DFW	Dallas Road	Street	Future Grade Separation (Rail Under)
7	DFW	Chesapeake Access Road	Access	At-Grade
8	DFW	New DFW Road	Street	Future Grade Separation (Rail Under)
9	DFW	DFW Airport Fire Station 6 Road	Driveway	New At-Grade
10	DFW	SH 121	Freeway	Existing Grade Separation (Rail Under)
11	DFW	IH 635	Freeway	Existing Grade Separation (Rail Under)
12	Coppell	Royal Lane	Street	At-Grade
13	Coppell	Freeport Parkway	Street	At-Grade
14	Coppell	Coppell Road	Street	At-Grade
15	Coppell	Southwestern Boulevard	Street	At-Grade
16	Coppell	South Belt Line Road	Street	Proposed Grade Separation
17	Coppell	Sanders Loop	Street	Proposed Grade Separation
18	Dallas	East Belt Line Road	Street	At-Grade
19	Coppell	Moore Road	Street	At-Grade
20	Coppell	Mockingbird Lane	Street	At-Grade
21	Coppell	MacArthur Boulevard	Street	At-Grade
22	Coppell	Fairway Drive	Street	At-Grade
23	Coppell	Private Driveway/Ledbetter Road	Driveway	At-Grade
24	Carrollton	Private Driveway (Gun Range Road)	Driveway	Existing Grade Separation (Rail Over)
25	Carrollton	PGBT	Freeway	Existing Grade Separation (Rail Under)
26	Carrollton	Luna Road	Street	At-Grade

Table 5-7. Cotton Belt Project Crossing Configuration (cont'd)

ID	Location	Name	Type	Configuration
27	Carrollton	Unnamed dirt road (Utility)	Access	Existing Grade Separation (Road Under)
28	Carrollton	IH-35E/Frontage	Freeway	Existing Grade Separation (Rail Under)
29	Carrollton	North Broadway Street	Street	At-Grade
30	Carrollton	North Denton Drive	Street	At-Grade
31	Carrollton	Perry Road	Street	At-Grade
32	Carrollton	North Josey Lane	Street	Proposed Grade Separation
33	Carrollton	Kelly Boulevard	Street	At-Grade
34	Carrollton	Private Driveway (Maridoe Golf Club)	Driveway	Closed
35	Addison	North Marsh Lane	Street	At-Grade
36	Addison	Surveyor Boulevard	Street	At-Grade
37	Addison	Midway Road	Street	Proposed Grade Separation
38	Addison	Addison Road	Street	At-Grade
39	Addison	Quorum Drive	Street	At-Grade
40	Addison	Spectrum Drive	Street	At-Grade
41	Dallas	DNT SB Frontage Road	Street	At-Grade
42	Dallas	Dallas North Tollway	Freeway	Existing Grade Separation (Rail Over)
43	Dallas	DNT NB Frontage Road	Street	At-Grade
44	Dallas	Knoll Trail Drive	Street	At-Grade
45	Dallas	Preston Road,	Street	Existing Grade Separation (Rail Under)
46	Dallas	Davenport Road (South)	Street	At-Grade
47	Dallas	Campbell Road	Street	At-Grade
48	Dallas	Davenport Road	Street	At-Grade
49	Dallas	Hillcrest Road	Street	Proposed Grade Separation
50	Dallas	McCallum Boulevard	Street	At-Grade
51	Dallas	Meandering Way	Street	At-Grade
52	Dallas	Dickerson Street	Street	At-Grade
53	Dallas	Coit Road	Street	Proposed Grade Separation
54	Richardson	Waterview Parkway	Street	At-Grade
55	Richardson	Rutford Avenue	Street	New At-Grade
56	Richardson	Synergy Park Boulevard	Street	Existing Grade Separation (Rail Over)
57	Richardson	Renner Road	Street	Existing Grade Separation (Rail Over)
58	Richardson	Custer Parkway	Street	Proposed Grade Separation
59	Richardson	Alma Road	Street	At-Grade
60	Richardson	US 75	Freeway	Proposed Grade Separation
61	Richardson	Red Moon Way	Street	Proposed Grade Separation
62	Richardson	W. CityLine Drive	Street	At-Grade
63	Plano	PGBT EB Frontage Road	Street	At-Grade
64	Plano	PGBT	Freeway	Existing Grade Separation (Rail Under)
65	Plano	PGBT WB Frontage Road	Street	At-Grade
66	Plano	Plano Parkway	Street	Proposed Grade Separation
67	Plano	K Avenue	Street	At-Grade
68	Plano	Municipal Avenue	Street	At-Grade
69	Plano	N Avenue	Street	At-Grade
70	Plano	Jupiter Road	Street	Proposed Grade Separation
71	Plano	Shiloh Road	Street	At-Grade
72	Plano	10th Street	Street	At-Grade
A	DFW	Skylink People Mover	APM	Existing Grade Separation (APM Over)
B	DFW	Taxiway Z	Taxiway	Existing Grade Separation (Taxiway Over)
C	DFW	Taxiway Y	Taxiway	Existing Grade Separation (Taxiway Over)
D	Carrolton	UP Railroad	Railroad	At-Grade
E	Carrolton	DART Green Line	LRT	Existing Grade Separation (LRT Over)
F	Carrolton	BNSF/Madill Subdivision	Railroad	Proposed Grade Separation
G	Richardson	KCS Railroad	Railroad	Existing Grade Separation (KCS Over)
H	Plano	DART Red Line	LRT	Existing Grade Separation (LRT Over)

Source: GPC6, 2017/2018

5.3 Freight Rail

5.3.1 Affected Environment

The existing Cotton Belt Railroad Corridor traverses the area from west to east in a generally at-grade configuration. The corridor width varies in a few locations but is primarily 100-feet wide. The existing freight tracks in the corridor are primarily in a single-track configuration. Along the existing Cotton Belt Railroad Corridor, there are 16 active industrial spurs or sidings and two industry tracks that are inactive. There are two at-grade freight rail crossings in downtown Carrollton and a grade-separated freight rail crossing (KCS) in Richardson.

The general condition of the existing track throughout the corridor is at best Class 2. Portions are Class 1 or lower. Much of the corridor is comprised of substandard rail, ties, special trackwork and other track materials. Many of the existing roadway crossings are also substandard and exhibit varying degrees of wear. Most crossings have an Active Warning System with crossing gates that appear to have been in place for several years. Operating speeds of the corridor are severely restricted and the existing condition of the track is not suitable for passenger rail service. Local freight rail service is provided by short line and regional carriers.

Four freight railroad companies (DGNO, FWWR, KSC, and UP) can operate within the Cotton Belt Corridor through agreements on DART-owned tracks. The UP Railroad, which currently does not operate any trains in the corridor, has track usage rights on the entire corridor except for the freight abandoned section in North Dallas. A fifth freight operator (BNSF), has limited switching in downtown Carrollton.

Figure 2-3 shows the current freight service providers. Freight operates on the Cotton Belt Railroad Corridor except for the area between the DNT and the KCS Crossing at Renner Junction. There are typically 27 freight train trips per week along the various sections of the Cotton Belt Corridor and typically 12 trains per week on any given section. The FWWR, which provides local freight service from Fort Worth to west of downtown Carrollton, operates three trains per week with switching activity within the Project corridor. The DGNO provides local freight service from the UP in downtown Carrollton east to Addison. The DGNO also operates Mercer Yard in downtown Carrollton. Mercer Yard is the local hub for the DGNO that serves switching operations and train storage. The DGNO currently operates 12 trains per week with extensive switching operations at Mercer Yard. The KCS provides local freight service from Renner Junction east to Plano.

Two freight lines cross the Cotton Belt Corridor in downtown Carrollton. The BNSF corridor, or Madill Subdivision, intersects the Cotton Belt Corridor at grade. The BNSF operates several trains per day with train lengths as long as 8,000 feet. The UP Rail corridor also crosses the Cotton Belt corridor at grade. The UP corridor operates four trains per week.

5.3.2 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, freight would continue to operate on and across the corridor as it does today. The tracks in downtown Carrollton would not be reconfigured and Mercer Yard would not be relocated. There would be no potential disruption in service to accommodate construction activities. The general condition of the existing track throughout the corridor would remain at best Class 2.

Preferred Alternative

The existing rail corridor will be upgraded to be in compliance with DART passenger rail standards. The existing single-track configuration will be completely reconstructed as a double-track configuration. The Preferred Alternative will be designed to Class 4 track standards and

consist of new track, ballast, subballast and subgrade. Existing single-track roadway crossings will be rebuilt with new crossing panels to accommodate the double track configuration. The existing Active Warning System and crossing gates will be upgraded and replaced. The Preferred Alternative will also include PTC, which is a system for monitoring and controlling train movements.

As designed, freight will continue to operate on the existing railroad corridor and only passenger service will run on the new alignments, including the DFW Airport Terminal B Connection, the Cypress Waters Alignment, the North Dallas freight abandoned segment, and the CityLine Alignment.

The railroad crossings in downtown Carrollton will be reconfigured as part of the Preferred Alternative. An existing lumber yard situated between the rail rights-of-way will be acquired and relocated to accommodate the reconfiguration. The dual track Preferred Alternative will be shifted slightly to the north. The at-grade crossing of the Preferred Alternative and the Madill Subdivision will be eliminated. This rail intersection will be reconfigured by moving the crossing approximately 1,800 feet to the east where the Preferred Alternative will be elevated over the Madill Subdivision. Freight on the Madill Subdivision will continue to operate at grade. The UP tracks running north-south have limited traffic and will be maintained as an at-grade crossing. The 16 active industrial spurs will remain in place. The two inactive industry tracks will be removed. Details of all modifications are shown in the 10 percent preliminary engineering drawings contained in **Appendix A**.

Mercer Yard, currently located southeast of the Downtown Carrollton station, will be relocated to the east of the Downtown Carrollton Station on DART- and City of Carrollton-owned property located approximately 1.5 miles to the east along the Cotton Belt. The relocated Mercer Yard will be located within the City of Carrollton between Country Club Road and the existing Cotton Belt Corridor on the south side of the tracks. The engine shop and transload track will be relocated to the existing Mockingbird Yard.

The selected EMF site at the existing TRE Irving Yard is accessible by the DART-owned Madill Subdivision Corridor and TRE rail corridor (see **Figure 2-13**). The Preferred Alternative vehicles will use the BNSF Madill Subdivision/TRE line as a non-revenue “yard lead.” Except for the reconfiguration in downtown Carrollton, no physical improvements are associated with the connection along the Madill Subdivision and TRE alignment.

With the implementation of the Preferred Alternative, the Cotton Belt Corridor will see an increase in train traffic which will limit the time periods for freight providers to operate. However, there will also be an upgrade to the track conditions and number of tracks. This will increase the speed and efficiency of the freight providers. Relocating Mercer Yard will also provide upgraded switching operations.

As shown in the draft *DART Cotton Belt Operations and Maintenance Plan* in **Appendix B**, DART can operate the Preferred Alternative and accommodate freight operations. The Preferred Alternative will be grade separated over the Madill Subdivision and will have no impact on BNSF operations. The KCS through movements at the east end of the line are assumed to operate at any time, including peak periods. Local freight service on the Cotton Belt and UP will be dispatched by the regional rail operator dispatch center. Freight operation will be restricted from peak period operation to avoid interference with Preferred Alternative passenger services.

During construction, it is anticipated that there will be minimal disruption of freight activities and service.

5.3.3 Mitigation Measures

The Preferred Alternative is being designed to avoid, minimize or mitigate impacts to freight operations. The Cotton Belt will be grade separated over the Madill Subdivision to avoid any conflicts with BNSF Railway operations.

DART will dispatch trains within and across the Cotton Belt corridor to ensure appropriate coordination of Cotton Belt and freight operations. DART will continue to coordinate with the freight providers to identify windows of opportunity for freight operations. Ongoing coordination with the BNSF will provide windows of opportunity (in the morning prior to the a.m. peak and in the evening after the p.m. peak) to use the Madill Subdivision to bring trains to and from the TRE Irving Yard. The FRA will be involved as necessary during final design, particularly as it relates to safety and the shared use of the corridor.

DART will stage the construction to minimize disruption in service. For instance, the new Mercer Yard will be constructed before construction will occur in downtown Carrollton. During construction, minimal freight activities may be temporarily switched to trucking.

5.4 Station Access and Parking

All Preferred Alternative stations will be sources of new, added accessibility to other areas in the region through use of the Preferred Alternative or through connections to other existing rail lines. Each station will have pedestrian access plus bus and/or rail connections. The Preferred Alternative will interface with three DART LRT lines: The Red Line in Richardson/Plano, the Green Line in Carrollton, and the Orange Line at DFW Airport. Also, at DFW Airport, the Preferred Alternative connects to the TEXRail Project to Fort Worth. These existing rail lines could be accessed by any of the stations because they will all be connected by the Preferred Alternative. The accessibility potential of each station is summarized in the *Indirect and Cumulative Impacts Assessment and Mitigation Technical Memorandum* in **Appendix B.**

Although all stations are interconnected through the Preferred Alternative, once reaching the desired station, additional transportation modes may be needed to reach ultimate destinations. Destinations near or within walking distance from the stations will receive the most benefit and result in an increase in accessibility. In summary, the Preferred Alternative has the potential to increase accessibility at and near destinations primarily within walking distance of the station locations.

Eight stations along the Preferred Alternative will have park-and-ride lots, three of which exist and will remain as is or be expanded. Stations with new or expanded parking will generate additional traffic with increased auto access. All stations will have bus access as well (see **Table 2-2**). Each station will have different potential impacts to the surrounding area depending on the layout, access points, and forecast activity levels.

The following sections describe conditions relative to existing stations along the corridor, including parking at those facilities. Potential auto and bus access and parking impacts are also discussed, along with mitigation measures to address access or parking concerns. Station site plans are included in **Appendix A**. General parking along the corridor and potential parking displacements are also discussed.

5.4.1 Affected Environment

Park-and-ride activity currently occurs at existing stations or transit centers along the corridor, including Downtown Carrollton, Addison, and CityLine/Bush. A parking utilization survey was conducted by DART on December 2, 2015, to assess capacity levels for an average weekday. Downtown Carrollton has 251 parking spaces with parking utilization of 83 percent. Addison

Transit Center has 300 parking spaces with parking utilization of 42 percent. The CityLine/Bush Station has 1,193 parking spaces with parking utilization of 58 percent.

Along the corridor, non-transit facility parking is generally associated with land use developments and not located within the Preferred Alternative right-of-way.

5.4.2 Impact Assessment

No-Build Alternative

The No-Build Alternative would not create any impacts relative to station access or parking. The Addison Station will continue to be a high-volume bus transfer facility as it is today with route additions and service enhancements planned under the No-Build Alternative.

Preferred Alternative

Most stations will be accessible from major arterial roadways for automobiles and buses. Existing and forecasted traffic volumes along roadways that intersect the alignment are discussed in **Section 5.2** and the *Street At-Grade Crossing Traffic Analysis Report* in **Appendix B**. The preliminary bus routes anticipated to serve stations is documented in **Table 2-2**. Roadways that will provide access to stations with new or expanded park-and-ride facilities include:

- Cypress Waters Station: Denton Tap Road/South Belt Line Road, East Belt Line Road and Moore Road via East Belt Line Road
- Downtown Carrollton Station: Denton Drive and Belt Line Road
- UT Dallas Station: Waterview Parkway, Rutford Road via Synergy Park Boulevard
- 12th Street Station: K Avenue, Municipal Avenue, 12th Place
- Shiloh Road Station: Shiloh Road

It is anticipated that the Preferred Alternative will add traffic volume to the roadway network surrounding and adjacent to potential station locations that will have park-and-ride facilities. Volumes associated with this passenger drop off mode of access are low and not expected to impact traffic. Based on the forecast mode of access for stations shown in **Table 5-4**, the additional drive access traffic volumes generated by each station during the a.m. and p.m. peak hours are not expected to substantially impact traffic flow or require additional capacity on the adjacent street network. The highest auto mode of access and largest parking facilities will be located at DFW North, Cypress Waters, 12th Street and Shiloh Road.

Parking facilities and passenger drop-off locations are not proposed for the Knoll Trail Station, as this is primarily a neighborhood walk access station. However, there is the potential for overflow parking into adjacent neighborhoods or commercial areas. In addition, bus access for the station will be on-street and could present pedestrian access issues on high traffic roadways. A discussion of potential impacts at each station follows.

DFW Airport Station

This station is under construction by DFW Airport and was cleared environmentally by Trinity Metro. The station features a cross platform transfer to TEXRail. There is no driving access. The station will include a pedestrian walkway to the Orange Line Station at Terminal A. Pedestrian walkways provide direct access into the DFW Airport from both Terminal A and Terminal B. The remaining terminals can be accessed via the DFW Airport Terminal Link bus. The DFW Airport people mover system (Skylink) can also be accessed on the secure side of each terminal.

DFW North Station

DART will be constructing one platform adjacent to the TEXRail platform to serve DFW Airport and facilitate cross platform transfers. Much of this station infrastructure is being built as part of the FTWA TEXRail Project, with 362 parking spaces to be shared by DART and Trinity Metro.

Roadway access is also being constructed by Trinity Metro by extending Dallas Road to the west from SH 26/Texas Trail. This station has a high rail transfer mode of access and parking demand for both projects combined is anticipated to be accommodated in the near term. The additional traffic associated with the drive access and limited bus operations can be absorbed by the network and accommodated by the existing traffic signal at Texan Trail and Dallas Road. Enhanced headways in the future could create additional parking demand beyond the parking spaces provided initially. Trinity Metro has reserved an area as part of their project for future parking expansion. As discussed in **Section 5.2**, DFW Airport is also planning two new elevated roadways over the Cotton Belt tracks. These will help facilitate north-south and east-west circulation through the station area. Both of these could contain pedestrian elements to improve pedestrian circulation.

A second platform will be constructed by DART on the existing east-west railroad corridor to the north to facilitate through train movements not entering the airport. DART will be constructing a pedestrian linkage between the two new station platforms. This linkage will also provide station access to future development north of the tracks.

Cypress Waters Station

This facility will be accessible directly off East Belt Line Road for both automobiles and buses. The station site plan identifies construction of turn lanes along Belt Line Road into the facility to provide protected turns into the facility. Approximately 192 parking spaces will be provided which translates into low additional traffic generation onto East Belt Line Road throughout the day. This traffic will largely come from Denton Tap or MacArthur Boulevard, both of which are currently signalized at Belt Line Road. No additional traffic signalization is anticipated. Pedestrian and bicycle access will primarily be associated with new mixed-use development to the south and will be coordinated with the developer and the City of Dallas. Cypress Waters is planning an extensive mixed-use trail that will circulate through the development with connections to Campion Trail, the Cotton Belt Regional Trail and trails planned for the City of Coppell. Portions of the Cypress Waters Trail will use the new DART right-of-way through Cypress Waters. Given that this is the only station between DFW Airport and downtown Carrollton, parking demand could be higher than projected.

Downtown Carrollton

The Preferred Alternative includes the addition of parking north of the rail corridor to supplement existing Green Line LRT parking which is already highly utilized and near capacity. Drive access is projected to be low at this station; however, its visibility and accessibility from IH 35E and Belt Line Road could increase this projection. Bus access will continue to be in the current LRT station facility so this new parking area will be for passenger parking and potential kiss-and-ride/passenger drop off only. The new parking is in two separated lots both accessible from Denton Drive and separated by an active freight spur which could lead to additional traffic to and from Denton Drive if drivers need to circulate between the two lots to find a parking space. Denton Drive will be reconstructed through this area to match the cross-section to the south and provide a center turn lane for protected turn lane access into the new park-and-ride areas. The City of Carrollton has made pedestrian improvements along Denton Drive which will provide access from the north parking lot to the platform. Much of the projected station ridership is transfers between the LRT and regional rail. The two station areas are separated by the Madill Subdivision/BNSF tracks. To facilitate transfers, DART will construct a stairway and elevators off the western end of the Cotton Belt platform to connect to the elevated LRT platform level. A pedestrian connection from the north end of the LRT platform will be extended to the top vertical circulation. Additionally, a new gated, at-grade, pedestrian crossing will be installed across the Madill Subdivision/BNSF tracks between the two station areas. This will increase pedestrian access between regional rail,

LRT and buses. A second gated at-grade pedestrian crossing will be installed across the UP railroad track running north-south. This will open the station to pedestrian traffic from the west.

Addison

As part of the Preferred Alternative, no new parking will be provided at this station, but there is the potential for increased traffic to the current parking lot based on projected 5 percent drive mode of access. Bus access will continue with improvements planned under the No-Build Alternative to keep up with growth and demand. Traffic impacts to the surrounding street network are not anticipated under the Preferred Alternative and station traffic is anticipated to be absorbed into the network. The station will allow new pedestrian access across the tracks at the platform. The Town of Addison is currently conducting a special area study around the station to create a long-term vision. This study will look at all access to the station and how to facilitate connections to development area and may recommend a shared parking facility.

Knoll Trail Station

This will be a walk-up and bus access station only. Bus Route 347 will continue to operate on Knoll Trail and stops may need to be adjusted to enhance access to the platform. The nearest pedestrian access across Knoll Trail is at Bent Tree to the north and Arapaho to the south. The Cotton Belt Regional Trail at this location presents an opportunity for a controlled pedestrian and bicycle crossing of Knoll Trail to enhance access to this station. Given the multi-family development in the vicinity, DART and the City of Dallas will explore opportunities for pedestrian access enhancements. This station will not have parking, which could present problems like “hide-and-ride parking” in nearby office or commercial developments.

UT Dallas Station

This station will generate additional traffic along Waterview Parkway to access the park-and-ride via two new access roads. These roads will eventually be integrated into future development with the potential for shared structured or surface parking with DART. The potential need for access, signal or turn lanes improvements will need to be coordinated with the timing and final configuration of new development at this location. As part of the Preferred Alternative, Rutford Drive will be extended across the rail corridor to link to the main campus to the south of the station. Future infrastructure improvements by UT Dallas and the City of Richardson will enhance both vehicular and pedestrian circulation. The Cotton Belt Regional Trail will also extend through the station area.

CityLine/Bush Station

No new parking will be provided at this location and it will primarily function as a destination station and location for LRT to Cotton Belt transfers. There will be additional drive attractions to the existing park-and-ride and there is excess capacity to absorb those vehicles. The City of Richardson continues to make trail and sidewalk investments in the area which will greatly enhance access to and from the platform. Bus and kiss-and-ride access will be modified as the new platform will be built between West Routh Drive and the existing LRT platform. DART will relocate West Routh Drive to continue to provide circulation for bus, paratransit and passenger drop-off.

12th Street Station

This station area will consist of both the at-grade Cotton Belt station and the infill 12th Street LRT station on the elevated Red Line. The park-and-ride will attract riders for both stations but primarily the LRT station. Based on model results, many of these are being redistributed from Parker Road Station. There will be a walk required for transfers between the two lines; thus, most rail-rail transfers will occur at CityLine/Bush due to the ease of the cross-platform transfer. New sidewalks

and street markings will direct pedestrians to the LRT platform. This area continues to transition to mixed-use. The Plano Transit Village Veloweb will extend north to south through the station area. This multi-use trail will connect downtown Plano to the CityLine Development. Portions of the trail will use the Cotton Belt and the Red Line LRT rights-of-way.

Shiloh Road Station

This station will have the largest park-and-ride facility with 672 spaces as an end of line station. Based on ridership projections, parking demand may be lower than this but could grow over time. Two station entrances will be accessible from Shiloh Road for autos only. There may need to be improvements to the Shiloh median and turn lanes to accommodate traffic flow. Bus service will be limited here and is anticipated to stop at on-street bus stops. Since the parking lot is separated from the platform by an Oncor facility, a new pedestrian connection will be provided to link to the platform. There are no anticipated impacts to parking in terms of displacements along the corridor beyond those impacts associated with right-of-way acquisitions.

5.4.3 Mitigation Measures

During final design, DART will conduct a detailed traffic study based on final configuration of roadways and feeder bus plans for stations if required by the local jurisdiction. These studies may recommend turn lanes, traffic control, signal improvements, pedestrian markings/signals, bus stop relocations, or other improvements to ensure safe access for autos, buses and pedestrians. DART will coordinate with each city during final design to conduct these analyses and develop appropriate mitigation. **Table 5-8** presents a summary of additional impacts and mitigation measure at stations.

Table 5-8. Summary of Impacts and Mitigation Measures at Stations

Station	Potential impact	Mitigation
DFW North	Potential for additional parking demand long-term.	Monitor parking utilization. Options for future parking expansion include construction of a garage or expanding parking into area north of the platform between TEXRail and the Cotton Belt. Coordinate new roadway development with airport.
Cypress Waters	Potential for increased parking demand.	Monitor parking utilization and preserve excess right-of-way for potential parking expansion.
Downtown Carrollton	Potential for pedestrian crossings of freight spur between new parking lots.	Provide fencing along the freight spur to control access between parking lots and direct pedestrians to Denton Drive. Provide signage, pedestrian crossings and markings to direct passengers to safe crossing locations.
Addison	Pedestrian access enhancements.	Coordinate with the Town of Addison to facilitate pedestrian connections to existing and new development.
Knoll Trail	Hide-and-ride parking in nearby commercial areas. Pedestrian access from bus stops across Knoll.	Monitor parking overflow with adjacent property owners and develop mitigation plan such as signage or increased enforcement if an issue is identified. Provide mid-block access across Knoll Trail to the station via the Cotton Belt Regional Trail crossing.
UT Dallas	Combined traffic from proposed development and park-and-ride.	Coordinate future traffic study with UTD and City of Richardson to assess need for signal and roadway improvements, including potential shared parking garage.
CityLine/Bush	Access from modified bus and passenger drop-off locations.	Coordinate street improvements and pedestrian linkages with the City of Richardson.
12th Street	Pedestrian access between platforms.	Provide pedestrian crossings and markings to direct passengers between stations.
Shiloh Road	Pedestrian crossing of Shiloh Road from northbound bus stop.	Coordinate northbound bus stop placement in conjunction with crosswalk or designated street intersections.

Source: DART Capital Planning

5.5 Non-Motorized Transportation

5.5.1 Affected Environment

Dedicated non-motorized (bicycle and pedestrian) facilities exist at several locations along the Cotton Belt Corridor. Trails, paths, bikeways, and sidewalks are part of the local transportation system which function primarily for transportation along portions of the Preferred Alternative.

Pedestrian circulation facilities in the Study Area are primarily provided as part of the roadway facility cross section via sidewalks, pedestrian crossings and pedestrian signals. High numbers of pedestrian crossings do not occur at many locations along the alignment and are typically highest in areas of denser development. There are also areas where school children may cross the alignment to access schools. Pedestrian access is important at rail stations and is a priority of station design. This is especially important for the Preferred Alternative at stations where transfer activity occurs with bus and rail. **Section 5.4** Station Access and Parking focuses on station area access.

Bicycle routes and trails also exist throughout the corridor. **Section 3.4** documents off-street trail locations within the Study Area. Additional information can also be found in the *Parks and Recreational Facilities Technical Memorandum* in **Appendix B** for the trails located within the proximity of the Cotton Belt Corridor.

A total of three existing trails cross the corridor. Spring Creek Trail, in Richardson, crosses the track alignment just east of Alma Road near PGBT, and Preston Ridge Trail crosses just north of McCallum Boulevard along the eastside of Meandering Way in Dallas. In Carrollton, Green Trail crosses the tracks on the western side of Denton Drive north of Belt Line Road.

In addition to off-street trails, six cities have signed bike routes that share the roadway with vehicles and may or may not have a buffered or striped bicycle lane. For example, in north Dallas, route 350 McCallum and route 360 Davenport/Keller Springs cross the corridor as part of the roadway right-of-way. Richardson has an extensive bicycle network with signed routes, bicycle lanes and “share the road” corridors. However, the Waterview Parkway bicycle route currently is disconnected at the Cotton Belt right-of-way. Several other possible connections have been identified throughout the corridor to accommodate the construction of a future Cotton Belt Trail. Once identified, the type and number of crossovers will vary pending the cities’ designs and construction.

The Cotton Belt Regional Trail currently exists within DART-owned right-of-way in several locations west of DFW Airport. Expansion of the Cotton Belt Regional Trail system within the Preferred Alternative is part of the NCTCOG Regional Veloweb plan. According to NCTCOG, corridors identified on the Veloweb as “planned” may be prioritized for future funding.

DART Policy

The DART Hike and Bike Trail Policy III.09 states that DART-owned rights-of-way may be available to other governmental entities for hiking, bike transportation, or recreational use.

Two trails are currently programmed that will utilize portions of the Preferred Alternative. Portions of the Cypress Waters Trail will use the new DART right-of-way through Cypress Waters. This trail will serve the rail station new development. The Plano Transit Village Veloweb which will connect downtown Plano to the CityLine area, will use a portion of the Cotton Belt and the Red Line LRT rights-of-way.

5.5.2 Impact Evaluation

No-Build Alternative

Under the No-Build Alternative, the existing trail system including Spring Creek Trail, would remain unaffected. The Plano Transit Veloweb has an agreement to be in DART right-of-way but would not connect to the 12th Street Station. Portions of the programmed Cypress Waters Trail would need to be reconsidered as it is designed to use new DART right-of-way that would be acquired for the Preferred Alternative. This portion of the trail is also envisioned to facilitate connecting the station to an extensive regional trail network. The No-Build Alternative would only accommodate some sections of the Cotton Belt Regional Trail. Portions of this proposed trail would be eliminated or delayed.

Preferred Alternative

Pedestrian and on-street bicycle facilities that cross the corridor as part of the roadway cross-section may be temporarily affected by construction of the project as roadway crossings are rebuilt. Potential impacts associated with school zone crossings are addressed in **Section 4.3** Socioeconomic Characteristics as well as **Section 4.8** Public Safety and Security. The Preferred Alternative will directly impact approximately 150 linear feet of the Spring Creek Trail near Alma Road and approximately 100 linear feet of trail roughly 1,500 feet east of Alma Road. As a result, another 1,500 feet of the trail will be severed by the Preferred Alternative. A detailed discussion of this impact and mitigation can be found in **Section 4.22** Section 4(f)/6(f) Evaluation. Impacts to off-street trails are discussed in **Section 4.5** Parks and Recreational Facilities.

Several future facilities, as shown in **Figures 3-16** to **3-19**, are planned in the Study Area. While these will not be affected by the Preferred Alternative, coordination is necessary to ensure they are not precluded from future implementation by the local jurisdictions.

5.5.3 Mitigation Measures

DART will minimize closures of pedestrian and bicycle facilities as roadway crossings are rebuilt. Mitigation measures for temporary construction impacts will include installation of safety equipment. Necessary precautions to ensure a safe environment for operation of and access to crosswalks and access to trails will be taken. Measures could include enhanced traffic signals, crosswalks, and striping, and signage and notifications of road and sidewalk closures and detours during construction. A portion of Spring Creek Trail will be reconstructed parallel to and south of the new tracks as part of the Project. Temporary closure of the trail may be necessary during construction; however, the trail will remain open to the greatest extent possible. Stations will be designed to accommodate clear and safe pedestrian linkages across the tracks and between station platforms where transfers occur. DART will coordinate with local jurisdictions and private developers to facilitate connections from DART facilities to nearby uses. A discussion of station specific access is provided in **Section 5.4**. Mitigation for school zone crossings and recreational trails is provided in **Chapter 4**.

Where future facilities are planned, DART will coordinate with cities to ensure that future non-motorized facilities are not precluded. DART is also working with the NCTCOG and communities along the corridor to preserve an envelope for the Cotton Belt trail within the DART right-of-way, where feasible. This trail concept is described in **Section 2.6** and the trail envelope is identified in the plan and profile drawings in **Appendix A**.

6. Airports and Aviation

6.1 FAA Policy and Guidance

This chapter analyzes potential impacts of the Preferred Alternative related to FAA environmental impact assessment guidance.

The Preferred Alternative crosses northern portions of DFW Airport property traveling under IH 635 and International Parkway and will join with the TEXRail Project at a shared station. The existing Cotton Belt railroad right-of-way and Preferred Alternative traverses south of the southern property line of Addison Airport. Because portions of the Preferred Alternative are located on DFW Airport and near Addison Airport properties, the FAA has an interest in the Preferred Alternative (see **Figure 6-1**). Therefore, the FAA has been invited to participate in the EIS process as a Cooperating Agency. With joint approval authority, the FAA's signed approval of this FEIS is required.

As a Cooperating Agency with jurisdiction over a component of the proposed federal action as described below, the FAA assumes responsibility to independently review the environmental documents prepared for the FEIS/ROD and assess whether the documentation meets the standards of adequacy under NEPA, including consideration of all actions and direct, indirect, and cumulative impacts. FAA focuses its efforts on those issues and subject areas in the EIS pertaining to and related to airport planning and potential effects on the airport. This EIS will comply with FAA Order 1050.1F, *Environmental Impacts: Policy and Procedures* (Order 1050.1F) and FAA Order 5050.4B: *NEPA Implementing Instructions for Airport Actions* (Order 5050.4B).

Airport Layout Plans (ALP)

The proposed federal action includes as a connected action, FAA approval of a revision to the DFW Airport ALP (see **Appendix C**). Under 49 USC 47107(a)(16), the FAA Administrator (under authority delegated from the Secretary of Transportation) reviews and approves or disapproves any revision or modification to an ALP that materially impacts the safe and efficient operation of aircraft at, to, or from the airport; adversely affect the safety of people or property on the ground adjacent to the airport as a result of aircraft operations; or adversely affect the value of prior Federal investments to a significant extent. As discussed in **§ 6.4.1.7**, DART will coordinate with the FAA to evaluate and monitor the vibration impacts of the Project on a navigational aid. This continuing evaluation relates to the Project's potential to materially impact the safe and efficient operation of aircraft at, to, and from DFW, necessitating the FAA's approval of the ALP change. The ongoing evaluation will ensure the continuing safety and efficiency of aircraft operations.

As the regional rail line will remain within the existing rail right-of-way south of Addison Airport, revisions to the Addison Airport ALP will not be required (see **Appendix D**).

Runway Protection Zones (RPZ)

The FAA Office of Airports (ARP) issued interim guidance dated September 7, 2012, on land uses within a RPZ with intent to clarify its policy on land uses within the RPZ. This interim guidance addresses what constitutes a compatible land use and how to evaluate proposed new or modified land uses that would exist in an RPZ. Coordination with the FAA Airport Planning and Environmental Division (APP) is required when transportation facilities such as rail are proposed within the RPZ. Although the FAA recognizes that in certain situations the airport sponsor may not fully control land within the RPZ, the FAA expects the airport sponsor to take all possible measures to protect against and remove or mitigate incompatible land uses. Under FAA's interim guidance, establishing DART rail service, even within existing right-of-way, may be considered a change of land use and require coordination.

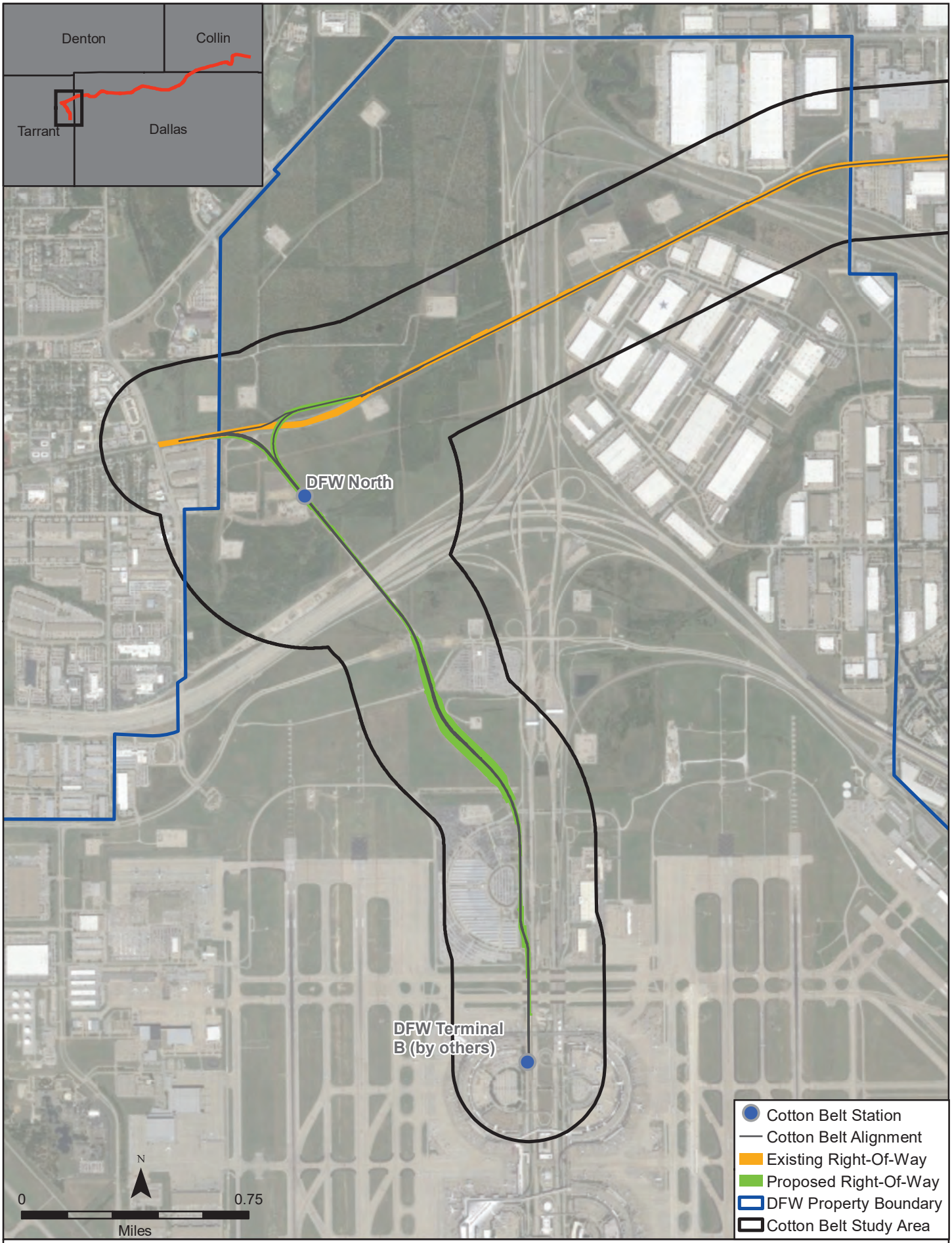

Figure 6-1
DFW Airport Study Area

Cotton Belt Corridor Regional Rail Project
Final Environmental Impact Statement

DART provided FAA schematic drawings of the alignment south of Addison Airport. FAA made a final determination that an RPZ alternative analysis is not required since the majority of the alignment will remain the same and a land use change was not occurring. See **Appendix D** for FAA's RPZ determination for Addison Airport.

TxDOT Aviation

TxDOT Aviation is responsible for assisting with federal funding for reliever and general aviation airports included in the Texas Airport System Plan. TxDOT oversees the construction activities at these airports providing rules, standards and guidelines. TxDOT will be engaged to facilitate coordination with the FAA and to assist with the planning, development and construction activities near Addison Airport.

6.2 Introduction and Methodology

The FEIS for the Preferred Alternative has been prepared in accordance with Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508); DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*; and FAA Orders 1050.1F and 5050.4B. FAA is a Cooperating Agency in the FEIS and will be a co-signatory agency for the NEPA documentation.

Purpose and Need

The Purpose and Need for the Cotton Belt Project is presented in **Chapter 1**: Background, Purpose and Need. The Preferred Alternative will improve mobility by providing another transportation option (passenger rail) to commute within the region, but will not alter the physical features of DFW's aviation infrastructure or trigger a change in aviation forecasts; therefore, no aviation forecasts are included. There are projected to be 11,160 daily riders on the Preferred Alternative in 2040 from the Shiloh Station in Plano to the DFW Airport-Terminal B Station. Of the 11,160 daily riders, approximately 10 percent (or about 1,116) are expected to arrive at DFW (at either the DFW Airport-North or the DFW Airport-Terminal A/B Stations). Many riders are expected to be airport employees, or transit patrons traveling to destinations in the DART Service Area.

The implementation of the Preferred Alternative will provide alternative airport access for employees and airline passengers. However, rather than increasing the demand for commercial air travel, the Preferred Alternative has more potential to decrease the demand for other ground transportation modes and parking. The Preferred Alternative is less expensive, more direct or faster than other ground transportation options.

Preferred Alternative

As described in **Chapter 2**: Alternatives Considered, the Preferred Alternative will be a 26.2-mile commuter rail system with 10 stations planned to operate between Plano and DFW Airport. The existing east-west Cotton Belt Railroad Corridor traverses the north end of DFW Airport on existing right-of-way that predates the airport. Trinity Metro is currently constructing the TEXRail Project, which extends from downtown Fort Worth to DFW Airport, on the western portion of the Cotton Belt right-of-way. At the north end of the airport, the TEXRail Project turns south from the railroad corridor to new right-of-way extending to Terminal B. On September 29, 2014, both FTA and FAA issued a ROD for the TEXRail Project. On April 16, 2015, FTA issued an amended ROD for project changes off airport property.

On DFW Airport property, new tracks will be constructed in the vicinity of the junction with TEXRail. Coming from the east in existing right-of-way, the line will veer north of the current alignment before turning south in new right-of-way before joining the TEXRail alignment at the DFW Airport-North Station. Within the existing TEXRail right-of-way, the alignment will cross over

SH 121/SH 114 and parallel International Parkway, terminating at Terminal B of the DFW Airport-Terminal B Station. At DFW Airport Fire Station 6 (711 Regent Boulevard) on the existing railroad right-of-way, DART will construct a new at-grade crossing to allow fire access to the north side of the right-of-way. DFW Airport is also planning two additional aerial roadway crossings of the rail line. One will cross the existing railroad right-of-way east of the DFW North Station to connect to future airport developments across the tracks. The second is Dallas Road which crosses the new right-way south of the DFW North Station. This will facilitate east-west circulation.

The portion of the Preferred Alternative on airport property will require FAA approval of DFW Airport's proposed changes to the ALP. This connected federal action is referred to as the DFW Airport Proposed Action. The DFW Airport Proposed Action will allow the construction of the Preferred Alternative on DFW Airport property as described in this paragraph. A station platform will be constructed directly adjacent to the TEXRail platform to accommodate transfers. A second platform will be constructed within existing right-of-way north of the junction to accommodate east-west movements. South of the station area, the rail line will be constructed along the TEXRail Project using a single-track alignment, with one passing siding south of North Airfield Drive. Also, south of the station area, the Preferred Alternative will utilize the bridges, culverts, underpasses and at-grade crossings being constructed for the TEXRail Project.

The details of the alignment, stations and service are described in **Chapter 2**. Overall impacts from the Preferred Alternative are described in **Chapters 4 and 5**. This chapter addresses potential environmental effects to airports and airport property. Therefore, this chapter primarily focuses on the portion of the Preferred Alternative located on DFW Airport property as illustrated in **Figure 6-1**. It is noteworthy that the majority of the Preferred Alternative through DFW Airport is located on existing railroad right-of-way or in new right-of-way that has previously received environmental clearance for the TEXRail Project. As such, there are few impacts to airport property associated with the Preferred Alternative. The Preferred Alternative is consistent with the TEXRail Project and complementary to airport development plans which include TEXRail and Cotton Belt service to Terminal B as well as Orange Line light rail service to Terminal A.

The Preferred Alternative includes identification of a 12-foot wide envelope for the proposed Cotton Belt Regional Trail, a multi-use trail identified in the NCTCOG Regional Veloweb Plan. This trail envelope is identified within the DART right-of-way along approximately 16 miles of the project corridor where it is feasible. This includes the railroad alignment extending from DFW North Station to the east through DFW Airport, but does not extend to the south to Terminal B. While the trail envelope is included in this FEIS, additional environmental clearance may be required depending on the project funding source and final trail design. This is especially true where the trail may impact water resources or riparian areas.

Shared Corridor

DART has coordinated the Preferred Alternative with the Trinity Metro TEXRail Project and DFW Airport. As previously indicated, portions of the Preferred Alternative corridor will be co-located with the TEXRail track in a corridor that has previously been environmentally cleared. DFW Airport is currently constructing the DFW Terminal B Station, a dual-track station that will be shared by both transit agencies. North of the Terminal B Station, Trinity Metro is constructing a single-track rail alignment extending 10,000 feet to the TEXRail DFW North Platform. DART will construct a second track and a 1900-foot siding in this corridor. Much of the infrastructure being constructed by TEXRail will accommodate the TEXRail and Cotton Belt tracks. This infrastructure includes: a culvert over Grapevine Creek, a bridge over Cottonwood Branch, two roadway bridges over the tracks (Southbound International Parkway frontage road and North Airfield Drive), and a railroad bridge over SH 121/SH 114. The two tracks will also share two at-grade roadway crossings (Crossunder # 2 and North Employee Road).

At the DFW North Station, the two projects diverge. DART will construct separate platforms and dual tracks in new right-of-way to spur to the existing Cotton Belt railroad right-of-way. The two projects will share the DFW Station parking, bus lanes and station access being constructed for the TEXRail project. DART will add additional pedestrian connections.

No-Build Alternative

No new construction would be included on DFW Airport property as part of the No-Build Alternative. The No-Build Alternative reflects the impacts and benefits associated with only the current provisions and programs in the NCTCOG Mobility 2040 MTP, as well as programmed projects in the Transportation Improvement Plan (TIP) (currently the 2017-2020 TIP). The No-Build Alternative includes existing and committed roadway and transit projects in the Study Area, as described in detail in **Chapter 2**: Alternatives Considered. In general, the capital improvement projects include additional roadway lanes as well as new roadways, bike/pedestrian trails, interchanges, intersection improvements, traffic signal improvements, and improvements to existing transit infrastructure.

6.3 Airport Environment

This section provides documentation of existing environmental conditions of the potentially affected geographic area or areas (i.e., the Study Area). The Study Area varies based on the impact category being analyzed; thus, this section describes how to define the existing or baseline environmental conditions in the Study Area for each impact category.

The following sections of the FEIS relate existing conditions (affected environment) and impacts (environment consequences) for the No-Build Alternative and DFW Airport Proposed Action as required by NEPA, FAA Orders 1050.1F and 5050.4B, and the CEQ Regulations.

As required under FAA Order 1050.1F, considerations of impacts to the following resource categories, and mitigation measures where appropriate, were assessed:

- Air Quality
- Biological Resources
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historical and Archeological Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Noise-Compatible Land Use (including Vibration)
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Visual Effects
- Water Resources
- Cumulative Impacts
- Irreversible and Irretrievable Commitment of Resources

Each resource section contains an introduction to the regulatory context and methodologies and the affected environment. The impact evaluation and mitigation measures for the impacted resources are in **Section 6.4**. Significance thresholds are derived from FAA Order 1050.1F.

6.3.1 Addison Airport

No ALP changes are planned for Addison Airport. **Chapter 3** of the FEIS contains the resource discussion of the existing environment near Addison Airport. **Chapter 4** of the FEIS lists any impacts of the Preferred Alternative within the Addison Airport Study Area. An Airspace Study (FAA Form 7460-1, Notice of Proposed Construction or Alteration) will be completed and provided for FAA approval during the Design-Build phase of the Preferred Alternative at a least 60 days prior to construction activities to allow for FAA processing.

DART provided FAA schematic drawings of the alignment south of Addison Airport. FAA reviewed the alignment located within the Addison Airport RPZ and addressed FAA's Interim Guidance on Land Use (September 2012). FAA determined that since the majority of the alignment will remain the same, there appears to not be a land use change; therefore, an RPZ alternative analysis is not required. There is a slight realignment of the track on the east boundary of the RPZ, but the land use before and after the Preferred Alternative will remain the same (see **Appendix D** for FAA RPZ Coordination).

6.3.2 DFW International Airport

As noted above, the rail alignment on DFW Airport property south of the DFW North Station will be constructed adjacent to TEXRail track within the previously approved project corridor. DART will construct a second track within this corridor. The TEXRail Project is being constructed in advance of the Preferred Alternative. The corridor is being disturbed by construction activity and all bridges, culverts, underpasses and at-grade crossings along this shared portion of the corridor will be constructed by the TEXRail Project. DFW Airport will be constructing the Terminal B Station. The Preferred Alternative will share this infrastructure with TEXRail. Except as noted below, no new environmental impacts between the two stations are anticipated.

Note: An Airspace Study (FAA Form 7460-1, Notice of Proposed Construction or Alteration) will be completed and provided for FAA approval during final design at least 60 days prior to construction.

6.3.2.1 Air Quality

Regulatory Context and Methodology

Air Quality Standards

Air quality is a term used to describe the amount of air pollution to which the public is exposed. Air quality is governed by the CAA and administered by the EPA. As required by the CAA, NAAQS have been established for certain transportation-related air pollutants: carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), lead (Pb), and particulate matter (PM10 and PM2.5). The EPA also regulates MSAT. The CAA states that transportation projects are subject to transportation conformity analysis; that is, a proposed transportation project must conform to the state air quality implementation plan (SIP). Transportation conformity has two parts, regional (mesoscale) conformity and local (microscale or hotspot) conformity. Regional conformity is demonstrated by the project being included in the area's Regional Transportation Plan (RTP) and TIP. The Preferred Alternative is included in these plans which reflects conformity with the SIP.

Two types of national air quality standards have been established. Primary NAAQS set limits to protect public health, including the health of "sensitive" populations, such as asthmatics, children, and the elderly. Secondary NAAQS set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings. The CAA requires that all states attain compliance through adherence to the NAAQS, as demonstrated by the comparison of measured pollutant concentrations with the NAAQS.

The NAAQS represent the maximum levels of background pollution considered acceptable with an adequate margin of safety to protect public health and welfare. These pollutants are typically quantified in units of milligrams per cubic meter (mg/m3), parts per million (ppm), or micrograms per cubic meter (µg/m3). **Table 3-11** in **Chapter 3** lists the NAAQS for six criteria pollutants.

Regional Attainment and Conformity Attainment Status

The EPA tracks compliance with NAAQS by using categories to designate areas, including attainment, nonattainment, unclassifiable, and maintenance (40 CFR 81). Attainment refers to an area where the NAAQS for a pollutant is not exceeded or meets the national primary or secondary NAAQS. Nonattainment refers to any area where the concentration of a particular pollutant exceeds or does not meet the national primary or secondary NAAQS for that pollutant. Unclassifiable refers to areas that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant. Maintenance areas are those areas that were formerly nonattainment for a criteria air pollutant, but have since achieved attainment status.

Pursuant to the CAA, the EPA has established NAAQS for six criteria pollutants as discussed above. States are required to develop EPA-approved plans, or SIPs, to achieve or maintain the NAAQS within timeframes set under the CAA. In 2012, the EPA designated ten counties (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise counties) in North Central Texas as being in nonattainment for the pollutant ozone in accordance with the 2008 8-hour ozone NAAQS. The attainment deadline for the DFW Moderate Nonattainment Area is December 31, 2018.

Conformity

This section discusses applicable FAA conformity requirements (General Conformity Rule) for the DFW Airport Proposed Action (*Chapter 1, Desktop Reference*). Section 176 (1)(A) of the CAA provided a definition and expanded the scope and content of conformity as:

> (A) conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and
>
> (B) that such activities will not:
>
> *(i)* cause or contribute to any new violation of any standards in any area
>
> *(ii)* increase the frequency or severity of any existing violation of any standard in any area, or
>
> *(iii)* delay timely attainment of any standard or a required interim emission reduction or other milestones in any area.

The NCTCOG is responsible for determining that area transportation projects conform to the current TIP and the Metropolitan Transportation Plan.

The General Conformity Rule refers to the requirements under Section 176(c) of the CAA for federal agencies (other than the FHWA and FTA) to show that their actions conform to the purpose of the applicable SIP. General conformity is required for all non-exempt federal projects within nonattainment areas if the project emissions are not covered by transportation conformity. Although the Preferred Alternative is consistent with the area's financially constrained and conforming MTP under FTA transportation conformity regulations, the FAA has requested that a General Conformity review of the portion of the Preferred Alternative traversing DFW Airport property be conducted.

As described in *40 CFR 51 Revisions to the General Conformity Regulations* issued by the EPA, general conformity analysis evaluates both direct emissions, which occur at the same time and place as the Project (e.g., emissions from construction equipment building new railroad tracks), and indirect emissions, which are reasonably foreseeable emissions that may occur later in time and/or are farther removed from the project (e.g., emissions from trains utilizing newly constructed tracks), in order to ensure that the project emissions conform with the SIP. Once it has been determined by the FAA that a non-exempt project in a nonattainment area is subject to the requirements of general conformity, an applicability analysis of the Project's direct and indirect emissions is conducted. These emissions are totaled and compared to the *de minimis* levels established by the EPA. If the expected emissions fall below the *de minimis* threshold, then no further air quality analysis is needed and the preparation of a full general conformity determination is not required. The DFW area is currently classified as a moderate nonattainment area under the 2008 ozone standard, and the resulting *de minimis* level is 100 tons per year for VOC or NO_2.

Affected Environment

Air Basin

The DFW MSA represents the air basin or air quality control region and the Air Quality DFW Airport Study Area. The DFW MSA is located in north central Texas, approximately 250 miles north of the Gulf of Mexico. It is near the headwaters of the Trinity River which lie in the upper margins of the Coastal Plain. The rolling hills in the area range from 500 to 800 feet in elevation (NWS, 2007).

According to the 2010 U.S. Census, approximately 6.4 million residents live within the DFW MSA. The area is home to numerous industries, commercial areas, aviation activity, and a robust transportation system, all of which contribute to local air quality degradation. Air quality pollutant concentrations on any given day represent a combination of emissions from all of these sources.

Existing Air Quality and Meteorological Conditions

Outdoor air quality in a given location is described by the concentration of various pollutants in the atmosphere. Air quality is a function of several factors, including the quantity and dispersion rates of pollutants in the region, temperature, the presence or absence of inversions, and topographic features of the region.

The DFW Airport Study Area can be classified by two seasons, summer (April through October) and winter (November through March). The climate in the region is humid subtropical, with hot summers and prevailing winds generally from the south. Summers are accompanied by fair skies, westerly winds, and low humidity and winters are generally mild. Average monthly maximum temperatures for summer are 87 degrees Fahrenheit (ºF) with the highest temperature averaging 95ºF usually in July and August. Minimum temperatures during these months average 65ºF. Average monthly maximum temperatures for the winter months are 61ºF and the minimum temperatures average 23ºF. Average annual normal precipitation is 35 inches (National Weather Service, 2017).

The TCEQ operates air monitoring stations in the Study Area. The air monitoring station location is shown in **Figure 6-2**.

The nine-county DFW metropolitan area was originally designated a serious nonattainment area under the 1997 8-hour ozone NAAQS. A nonattainment designation means that an area is not achieving federal air quality standards established by the EPA. The ozone nonattainment area included Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant counties. On March 27, 2008, the EPA lowered the primary and secondary eight-hour ozone NAAQS to 75 parts per billion (ppb). Wise County was added to the ozone nonattainment area, and the new ten-county DFW area was designated nonattainment and classified moderate under the 2008

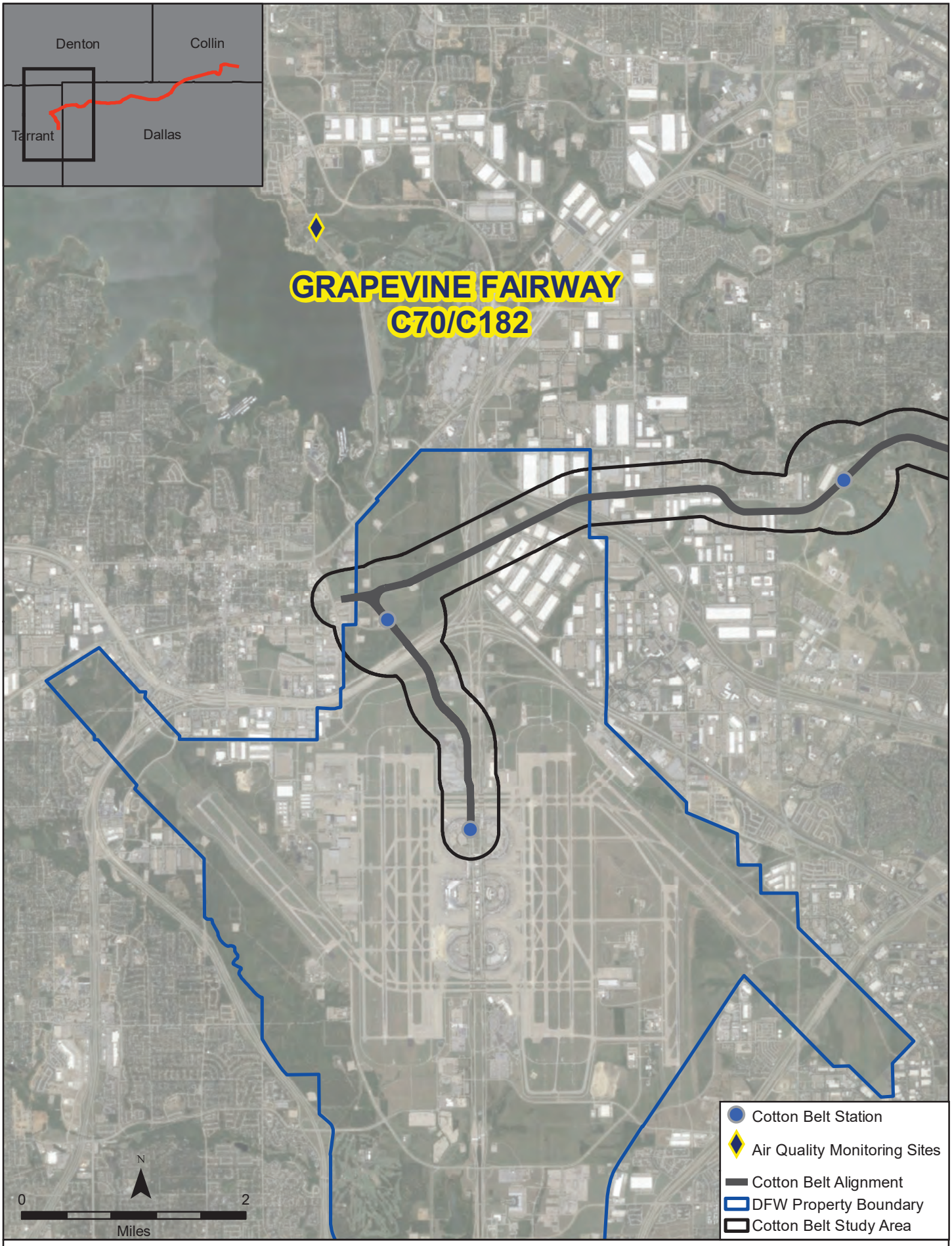

Figure 6-2
Air Monitoring Location Near DFW Airport

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eight-hour ozone NAAQS, effective July 20, 2012. The attainment deadline for the DFW Moderate Nonattainment Area is December 31, 2018. A final determination of ozone attainment status for an area is made by the EPA after a review of complete, quality assured air quality monitoring data over a three-year period using the methods shown in **Table 3-11**.Transportation currently contributes to only four of the criteria pollutants under the NAAQS including O_3, CO, NO_X, and PM10. Other non-transportation related sources contribute to Pb and SO_2 pollution.

6.3.2.2 Biological Resources (Including fish, wildlife, and plants)

This section describes the existing natural vegetation types, ecoregion and biotic province areas found within the DFW Airport Study Area which is 0.25-mile from each side of the right-of-way and 0.5-mile radius around the station/platform footprints. The corridor-wide study area is discussed in **Section 3.15** and **Section 4.17**.

Regulatory Context and Methodology

Federal regulations and guidance require protection of species and minimization of adverse project effects. Certain biotic resources are protected under federal and state jurisdiction by the ESA and Texas statutes, respectively. The ESA not only prohibits the direct take of a protected species, but also includes a prohibition of indirect take such as destruction of designated critical habitat. Listed plant species are not protected from take, although it is illegal to collect or maliciously harm them on federal land.

In addition, FAA Advisory Circular 150/5200-33 Hazardous Wildlife Attractants on or near Public Use Airports, recommends that a wildlife management biologist review landscaping plans for airports to minimize attracting wildlife that could be hazardous to aircraft movement areas.

Affected Environment

Ecoregion and Biotic Province

The DFW Study Area contains two ecological subregions: The Northern Blackland Prairie and the Eastern Cross Timbers (LBJ et al, 1978).

Vegetation

A vegetation analysis was performed within the DFW Airport Study Area utilizing EMST GIS shapefiles to estimate vegetation areas and unique habitat types. The EMST data set provides an updated ecological system classification for Texas which includes more land cover classes than were previously identified for the State (TPWD, 2016). The spatial resolution of this data was developed by first classifying the existing vegetation, and then modeling the resulting ecological systems by overlaying data such as land position, slope, aspect, and soil type. The data was then clipped using the Study Area shapefile, and lists of specific area vegetation types were determined (**Table 6-1**). A calculation of the percent area and acres of each vegetation type was then developed to support the determination of possible significant vegetation area impacts within the Study Area.

The largest areas defined by the EMST criteria found within the DFW Airport Study Area include: Urban Low Intensity at 29.1 percent, Blackland Prairie: Disturbance or Tame Grassland at 21.9 percent, Urban High Intensity at 20.6 percent, and Native Invasive: Deciduous Woodland at 16.5 percent. These four vegetation types include approximately 88 percent of the Study Area and are described in detail below.

- The Urban Low Intensity vegetation type includes most of the area found within cities and towns. These areas are built-up but not entirely covered by impervious cover.
- Because little intact Blackland prairie remains, the existing grasslands are mapped as Blackland Prairie: Disturbance or Tame Grasslands. This vegetation type includes

disturbance or tame grasslands that contain primarily non-native grasses such as *Cynodon Dactylon* (bermudagrass), and *Sorghum halepense* (Johnsongrass). In addition, weedy forbs such as *Ambrosia Psilostachya* (western ragweed), and trees including *Prosopis glandulosa* (honey mesquite) are often present and may occur in dense groupings. Native grasses important to this area include *Schizachyrium scoparium* (little bluestem), *Sorghastrum nutans* (Indiangrass), and *Aristida* spp. (threeawn species) among others.

- The Urban High Intensity areas are dominated by impervious cover and include built-up areas and wide transportation corridors.
- Native Invasive: Deciduous Woodland is a broadly defined vegetation type which may include *Celtis laevigata* (sugar hackberry), *Liquidambar styraciflua* (sweetgum) and *Prosopis glandulosa* (honey mesquite) among the dominant tree species. Other species which may be important in this area include *Quercus stellata* (post oak), and *Quercus fusiformis* (plateau live oak).

Table 6-1. EMST Vegetation Types Within the Study Area

Vegetation Type*	Acres	% of Study Area
Urban Low Intensity	576.07	29.09
Blackland Prairie: Disturbance or Tame Grassland	432.65	21.85
Urban High Intensity	406.99	20.55
Native Invasive: Deciduous Woodland	326.77	16.50
Central Texas: Floodplain Hardwood Forest	94.03	4.75
Crosstimbers: Post Oak Woodland	55.59	2.81
Crosstimbers: Savanna Grassland	25.76	1.30
Row Crops	22.47	1.13
Barren	16.37	0.83
Native Invasive: Mesquite Shrubland	13.99	0.71
Open Water*	6.38	0.32
Edwards Plateau: Live Oak Motte and Woodland	1.20	0.06
Central Texas: Riparian Hardwood Forest	1.17	0.06
Central Texas: Riparian Herbaceous Vegetation	0.78	0.04
Totals for Study Area	**1,980.22**	**100.00**

*Open water, which is not a vegetation type includes 6.4 acres or 10.32 % of the Study Area.

Four additional vegetation types each contain five percent or less of the Study Area, and the remaining five vegetation types each include less than one percent of the Study Area total. Open water was included in the above table to realize the listing of potential habitats within the Study Area, but it is not considered a vegetation type.

A review of current aerial photography of the DFW Airport Study Area revealed that although the majority of the area vegetation types as mapped by EMST have remained relatively stable, additional urban development has occurred northeast of the intersection of SH 114 and SH 121. Urban areas within the Study Area typically include a mix of landscaped species and introduced opportunistic species which are considered to be indicative of highly disturbed habitat. These areas are most prevalent within the southern and northeastern portions of the Study Area. The portions of the Study Area located immediately north of the DFW Airport operations area and northeast of the intersection of SH 114 and SH 121 include the majority of the pasture and woodland areas. Pasture areas provide important cover and food sources for birds and small mammals, especially when located near highly urbanized areas. Woodland areas are primarily

found near riparian or floodplain areas in the northwest and northeast portions of the Study Area. These are smaller areas which are generally vegetated with native species, which typically support a diverse community of faunas. **Figure 6-3** displays the EMST cover types found within the DFW Airport Study Area.

A review of TPWD and USFWS lists of threatened and endangered species for Tarrant County, Dallas County, and TPWD's Texas Natural Diversity Database (TXNDD) Element of Occurrence (EOC) records for rare resources identified within ten miles of the Study Area was conducted to determine the likelihood for threatened, endangered, candidate, and rare species, or their habitat to exist within or near the Study Area. None of the rare resources were identified within the DFW Airport Study Area.

Approximately 49 species of mammals, 57 species of reptiles, and 23 species of amphibians occur in the Texan Biotic Province (Blair, 1950). In addition, approximately 471 avian species, including both residents and migrants, have been reported in the Oaks and Prairies and Osage Plains of Texas (Freeman, 2003) which is roughly analogous to the Texan Biotic Province.

The DFW Airport Study Area is mostly urban and suburban in nature. The majority of wildlife species inhabiting the Study Area will be anticipated to be those which are generally associated with these types of vegetation. The *Cotton Belt Corridor Biological Resources Existing Conditions Technical Memorandum* is located in **Appendix B**.

Threatened and Endangered Species

The Endangered Species Act of 1972, as amended, provides protection for federally-listed species and their habitats. Texas state law includes provisions which prohibit direct harm to state-listed species. USFWS' endangered species list for Tarrant, Dallas, and Collin counties and TPWD's Annotated County List of Rare Species for Tarrant, Dallas, and Collin counties were examined along with Study Area information to determine whether the project is likely to have an effect on listed species or their habitats. In addition, TPWD's TXNDD was reviewed to determine previously recorded occurrences of any of the listed species within or near the Study Area.

Six federally-listed endangered species, two federally-listed threatened species, six state-listed endangered species, 14 state-listed threatened species, and 20 state species of concern (which are tracked by TPWD for monitoring purposes, but do not currently receive regulatory protection) are listed as having potential to occur in Tarrant, Dallas, or Collin counties (TPWD, 2017b; USFWS, 2017a). **Table 6-2** contains a listing of all of these species and a determination of whether habitat exists within the Study Area.

None of the species listed were observed during project field visits; however, potential habitat was identified for nine state-listed threatened or endangered species, and two state species of concern as included in **Table 6-2**. No designated critical habitat or preferred habitat for any federally-listed species was identified on DFW Airport property, or within or near the Study Area.

6.3.2.3 Climate

Energy from the sun drives the Earth's weather and climate by heating the Earth's surface; in turn, the Earth radiates energy back into space. Atmospheric greenhouse gases (GHGs), including water vapor, CO_2, and other gases, trap some of the outgoing energy by retaining heat somewhat like the glass panels of a greenhouse. This warming of the Earth is called the "greenhouse gas effect" (USDOT, 2016). Without this natural greenhouse effect, temperatures would be much lower than they are now, and life as it is known today would not be possible.

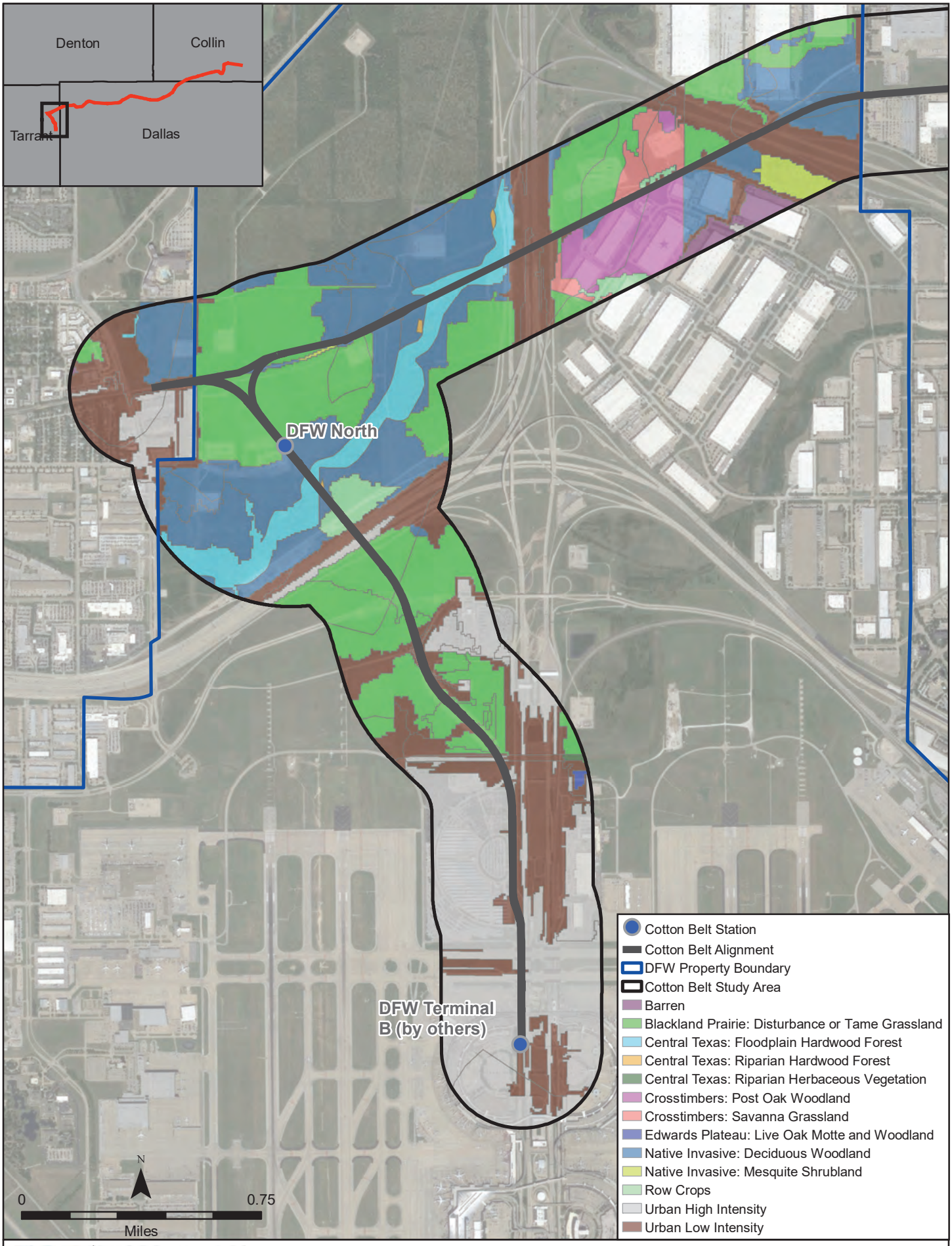

Figure 6-3
Vegetation Types on DFW Airport Study Area
Data Source: TPWD, The Vegetaion Types of Texas, 1984

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Table 6-2. Rare, Threatened, & Endangered Species of Potential Occurrence in Tarrant, Dallas, and Collin Counties, Texas

Common Name	Scientific Name	Federal Status	State Status	Potential Habitat Present
American Peregrine Falcon	*Falco peregrinus anatum*	DL	T	No
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL	SOC	No
Bald Eagle	*Haliaeetus leucocephalus*	DL	T	Yes
Black-capped Vireo	*Vireo atricapilla*	LE	E	No
Golden-cheeked Warbler	*Setophaga chrysoparia*	LE	E	Yes
Henslow's Sparrow	*Ammodramus henslowii*	NL	SOC	No
Interior Least Tern	*Sterna antillarum athalassos*	LE	E	No
Peregrine Falcon	*Falco peregrinus*	DL	T	No
Piping Plover	*Charadrius melodus*	LT	T	No
Red Knot	*Calidris canutus rufa*	LT	SOC	No
Sprague's Pipit	*Anthus spragueii*	NL	SOC	No
Western Burrowing Owl	*Athene cunicularia hypugaea*	NL	SOC	No
White-faced Ibis	*Plegadis chihi*	NL	T	Yes
Whooping Crane	*Grus americana*	LE	E	No
Wood Stork	*Mycteria americana*	NL	T	Yes
Shovelnose sturgeon	*Scaphirhynchus platorynchus*	NL	T	No
Black Lordithon rove beetle	*Lordithon niger*	NL	SOC	No
Cave myotis bat	*Myotis velifer*	NL	SOC	No
Gray wolf	*Canis lupus*	LE	E	No
Plains spotted skunk	*Spilogale putorius interrupta*	NL	SOC	Yes
Red wolf	*Canis rufus*	LE	E	No
Louisiana pigtoe	*Pleurobema riddellii*	NL	T	Yes
Sandbank pocketbook	*Lampsilis satura*	NL	T	Yes
Texas heelsplitter	*Potamilus amphichaenus*	NL	T	Yes
Texas pigtoe	*Fusconaia askewi*	NL	T	Yes
Auriculate false foxglove	*Agalinis auriculata*	NL	SOC	No
Glass Mountains coral-root	*Hexalectris nitida*	NL	SOC	No
Glen Rose yucca	*Yucca necopina*	NL	SOC	No
Hall's prairie clover	*Dalea hallii*	NL	SOC	No
Osage Plains false foxglove	*Agalinis densiflora*	NL	SOC	No
Plateau milkvine	*Matelea edwardsensis*	NL	SOC	No
Reverchon's curfpea	*Pediomelum reverchonii*	NL	SOC	No
Texas milk vetch	*Astragalus reflexus*	NL	SOC	No
Topeka purple-coneflower	*Echinacea atrorubens*	NL	SOC	No
Tree dodder	*Cuscuta exaltata*	NL	SOC	No
Warnock's coral-root	*Hexalectris warnockii*	NL	SOC	No
Alligator snapping turtle	*Macrochelys temminckii*	NL	T	Yes
Texas garter snake	*Thamnophis sirtalis annectens*	NL	SOC	Yes
Texas horned lizard	*Phrynosoma cornutum*	NL	T	No
Timber rattlesnake	*Crotalus horridus*	NL	T	Yes
Key: LE = Federally Endangered; DL = Delisted; LT = Federally Threatened; SOC = Species of concern; NL = Not Federally Listed; E = State Endangered, T = State Threatened; SOC = State Species of concern				

Source: TPWD, 2017b; USFWS, 2017a

Many GHGs occur naturally and remain in the atmosphere for periods ranging from decades to centuries. Water vapor is the most abundant GHG and makes up approximately two thirds of the natural greenhouse effect. CO2 occurs naturally, as well as through human activities such as fossil fuel combustion.

In its history, the Earth has gone through many natural changes in climate. Because the atmospheric concentration of GHGs continues to climb in recent history, our planet may experience global climate change-related phenomena. For example, warmer global temperatures may cause changes in precipitation, sea levels, storm frequency and intensity, and could contribute to increased drought and forest fires.

To date, no national standards have been established regarding GHGs, nor has the EPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO2 under the CAA. However, there is a considerable body of scientific literature addressing the sources of GHG emissions and their impacts on climate, including reports from the Intergovernmental Panel on Climate Change (IPCC), the National Academy of Sciences, EPA, and other federal agencies.

Given their characteristic rapid dispersion into the global atmosphere, GHGs are different from other air pollutants evaluated in federal environmental reviews, because the impacts are not localized or regional. The Resource Study Area for CO2 and other GHG emissions is the entire planet. In addition, from a quantitative perspective, and in terms of both absolute numbers and types, global climate change is the cumulative result of numerous and varied natural and anthropogenic emissions sources. Each source makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad-scale actions such as those involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Presently, there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

The transportation sector is the second-largest source of total GHG emissions in the U.S. behind electricity generation. The transportation sector was responsible for approximately 27 percent of all anthropogenic GHG emissions in the U.S. in 2009 (EPA, 2016b). The majority of transportation sector GHG emissions result from fossil fuel combustion. CO2 is the largest component of these GHG emissions. CO2 emissions from the U.S.' consumption of energy accounted for about 18 percent of the worldwide energy consumption-related CO2 emissions in 2009 (EIA, 2016). CO2 emissions from the U.S.' transportation sector accounted for about 6 percent of worldwide CO2 emissions in 2009 (EIA, 2011).

While the contribution of GHGs from transportation in the U.S., as a whole, is a large component of U.S. GHG emissions, the GHG contributions become quite small as the scale of analysis is reduced down to an individual transportation project.

6.3.2.4 Coastal Resources

No coastal barriers are located within the Study Area which is located inland and over 250 miles from the coast (Texas General Land Office, 2012).

6.3.2.5 Section 4(f) and 6(f)

No publicly owned parks or recreational areas, National Wildlife Refuges (NWRs), wildlife refuges, and waterfowl refuge lands exist in the DFW Airport Study Area. FTA, in coordination with the SHPO, determined that no historic sites of national, state, or local significance are located in the DFW Airport Study Area. Refer to **Section 4.22** for the Section 4(f) Evaluation.

6.3.2.6 Farmlands

No farmlands are located within the DFW Airport Study Area, which is located within the DFW Metroplex, a dense urban development. There are six prime farmland soil types located within the DFW Airport Study Area; however, there are no active farms on DFW Airport property.

6.3.2.7 Hazardous Materials, Solid Waste, and Pollution Prevention

This section analyzes potential contaminant sources that may be present within the Study Area. It assesses the potential of encountering hazardous waste and impacted soil and/or groundwater during project construction activities, as well as the project's potential use of hazardous materials and its potential impact to the environment.

Regulatory Context

The primary federal laws regulating hazardous waste and materials are RCRA and CERCLA. The NPL is a listing of the most polluted sites in the nation that are eligible for cleanup funding (Superfund) under CERCLA. The EPA is the primary agency responsible for administering RCRA and CERCLA.

Affected Environment

A screening of hazardous materials issues associated with the DFW Airport Study Area was conducted by reviewing available regulatory agency databases and topographic maps (see **Figure 6-4**). One site that was determined to be a high-risk site is the former location of Budget Rent-A-Car. According to the EDR database report (EDR, 2017b), the address of the site was 5305 DFW Airport North, DFW Airport, and is listed in the Leaking Petroleum Storage Tanks (LPST) and Underground Storage Tanks (UST) database. According to the database report, the LPST resulted in soil contamination and did not require a remedial action plan. Final concurrence has been issued and the case is closed. This facility is also listed as inactive in the UST database.

DFW Terminal B Station will be located on the north side of Terminal B at DFW Airport. This area was not visited during site reconnaissance. Based on the EDR regulatory database search, one hazardous material site of indeterminate risks was located within 0.25 mile of the DFW Terminal B Station site. DFW Airport has initiated construction activities at this station as part of the TEXRail Project.

DFW North Station will be located north of SH 114, west of SH 121, and east of Texan Trail Road. At the time of the site reconnaissance, the station location was not accessible due to construction; however, the site was viewed from nearby roadways. Based on the EDR regulatory database search, no hazardous material sites with potential risk was found within 0.25 mile of this site. Additionally, the TEXRail Project did not identify any hazardous materials issues in the DFW North Station area.

The remaining sites with locations that could be determined were all considered low risk sites.

As previously stated, the rail alignment on DFW Airport property, south of the DFW North Station will be constructed adjacent to TEXRail track within the previously approved project corridor. DART will construct a second track within this corridor. The TEXRail Project is being constructed in advance of the Preferred Alternative. The corridor is being disturbed by construction activity at the location of the high-risk site and at bridges, culverts, underpasses and at-grade crossings along this shared portion of the corridor. DFW Airport will be constructing the Terminal B Station. The Preferred Alternative will share this infrastructure with TEXRail.

The *Cotton Belt Corridor Hazardous Materials Existing Conditions Technical Memorandum* is located in **Appendix B**.

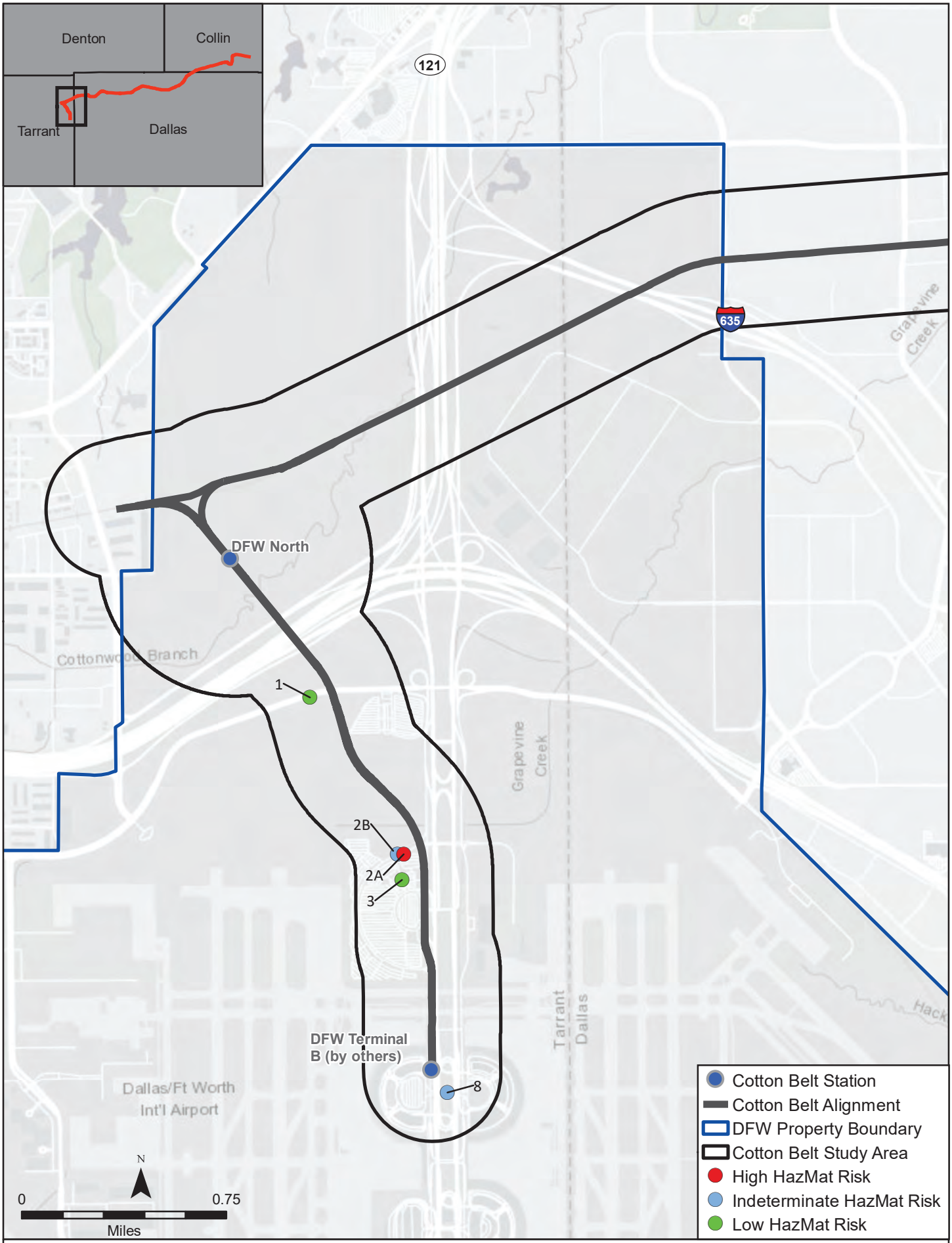

Figure 6-4
Hazardous Material Database Inventory on DFW Airport
Data Source: EDR, 2017

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6.3.2.8 Historic and Archeological Resources

The Preferred Alternative is subject to compliance with the NHPA of 1966 as amended (16 USC 470 et seq.) and it's implementing regulations (36 CFR 800). Specifically, Section 106 of the NHPA requires that the responsible federal agency consider the effects of its actions on historic properties, which are properties listed in or determined eligible for listing in the NRHP, and provide the ACHP an opportunity to comment on the undertaking.

Methodology

Per Section 106 requirements, the lead federal agency, in consultation with the SHPO, develops the APE, identifies historic properties (i.e., NRHP-listed and NRHP-eligible properties) in the APE, and makes determinations of the Preferred Alternative's effects on historic properties in the APE. Section 106 regulations require that the lead Federal agency consult with the SHPO and identified parties with an interest in historic resources during planning and development of the Preferred Alternative. The ACHP may participate in the consultation or may leave such involvement to the SHPO and other consulting parties. ACHP, if participating, and SHPO are provided an opportunity to comment on the Preferred Alternative and its effects on historic properties. They participate in development of a MOA or Programmatic Agreement (PA) to avoid, minimize, or mitigate adverse effects, as applicable.

Stipulations in a MOA or PA must be implemented. If a National Historic Landmark (NHL) is located within the APE and would be adversely affected by the project, the federal agency must also comply with Section 110(f) of the NHPA. Section 110(f) requires that the agency undertake, to the maximum extent possible, planning and actions to minimize harm to any adversely affected NHL and afford the ACHP an opportunity to comment. The ACHP regulations require that the NPS, an agency of the DOI, be notified and invited to participate in the consultation involving NHLs.

Area of Potential Effects

FTA, in consultation with the SHPO, determined the APE for identification of built resources. The SHPO concurred with the APE in February 2017. The APE is 175 feet from the centerline of the existing or new alignment.

Historic Resources

A review of the Texas Historical Sites Atlas (Atlas) shows no previously-recorded resources of historic-age, no NRHP-eligible or listed properties, no Recorded Texas Historic Landmarks (RTHL), or any historic markers within the DFW Airport Proposed Action's APE.

A reconnaissance survey for the Study Area was conducted to record all historic-age resources within the project APE. The surveys were completed during two field sessions: July 2010 and May 2017. No historic-age resources were identified on DFW Airport property within the DFW Airport Proposed Action's APE. The *Historic-Age Resource Reconnaissance Survey-Station Locations* is located in **Appendix B**.

Archeological Resources

The GPC6 archeologists consulted the Atlas to identify previous surveys and previously-recorded cultural resources. According to the Atlas, 45 previous surveys have been conducted within one kilometer (0.62 mile) of the Study Area. None of the surveys were located within the APE and none documented any sites within the survey areas.

The corridor from Terminal B to the junction within the existing Cotton Belt Corridor north of SH 114 was previously surveyed (Hartsfield et al, 2013). The DFW North Terminal, which will be shared with TEXRail, is included in the previously surveyed section and was therefore not

surveyed as part of the Preferred Alternative. However, a small amount of new right-of-way was located north and south of the existing railway north of the station, in which 17 shovel tests were excavated. None of these tests were positive, encountering only compact black clays. No archeological resources were identified within the APE. The *Cotton Belt Archeological Survey* is located in **Appendix B**.

6.3.2.9 Land Use

In the DFW Airport Study Area, the majority of the Preferred Alternative is located on existing railroad right-of-way with freight activity or new regional rail right-of-way that will be occupied by the TEXRail Project that has previously received environmental clearance. Most of the land surrounding the Preferred Alternative is currently undeveloped or vacant. Within the DFW Airport Study Area, land uses were identified by NCTCOG in 2015 as approximately 54 percent vacant, 20 percent runways, 14 percent industrial, and 11 percent airport. The remaining approximately one percent of the DFW Study Area is composed of commercial, railroad, hotel/motel, ranchland, utilities, and small water bodies, as illustrated in **Figure 6-5**.

There are also existing natural gas gathering systems on DFW Airport. There are no plans to expand these based on current lease agreements, as shown in **Figure 6-6**. According to the 2014 *DFW Airport Land Use Plan*, the Preferred Alternative is committed for use as a transportation corridor, as presented in **Appendix C**. Commercial office/corporate spaces would be located south, adjacent to the corridor. East and southeast of the corridor's east-central zone, surrounding land use is designated for airport support facilities. The remaining area is designated as open space or is undevelopable.

6.3.2.10 Natural Resources and Energy Supply

Regulatory Context and Methodology

EO 13123, "Greening the Government through Efficient Energy Management" (64 Federal Register 30851, June 8, 1999), encourages each federal agency to expand the use of renewable energy within its facilities and in its activities. EO 13123 also requires each federal agency to reduce petroleum use, total energy use and associated air emissions, and water consumption in its facilities. EO 13514 "Federal Leadership in Environmental, Energy, and Economic Performance" (74 Federal Register 52117, October 8, 2009) requires agencies to coordinate with regional ecosystem, watershed, and environmental management programs.

The FAA has not established a significance threshold for Natural Resources and Energy Supply.

Affected Environment

The suppliers of energy resources found in the DFW Airport Study Area include local utility service providers and DFW Airport water utilities, sewage disposal utilities, and suppliers of natural gas and petroleum.

6.3.2.11 Noise and Vibration-Compatible Land Use

Regulatory Context and Methodology

Noise Methodology

The objective is to assess the potential noise impacts of commuter rail operations with trains consisting of diesel motorized unit (DMU) vehicles at community locations along the Cotton Belt Study Area. Potential noise impacts for the proposed action are discussed in the following sections. The methodology used to assess the potential for noise or vibration impacts within the Study Area on DFW Airport property is in accordance with the provisions set forth in FAA Order 1050.1F, Appendix B.

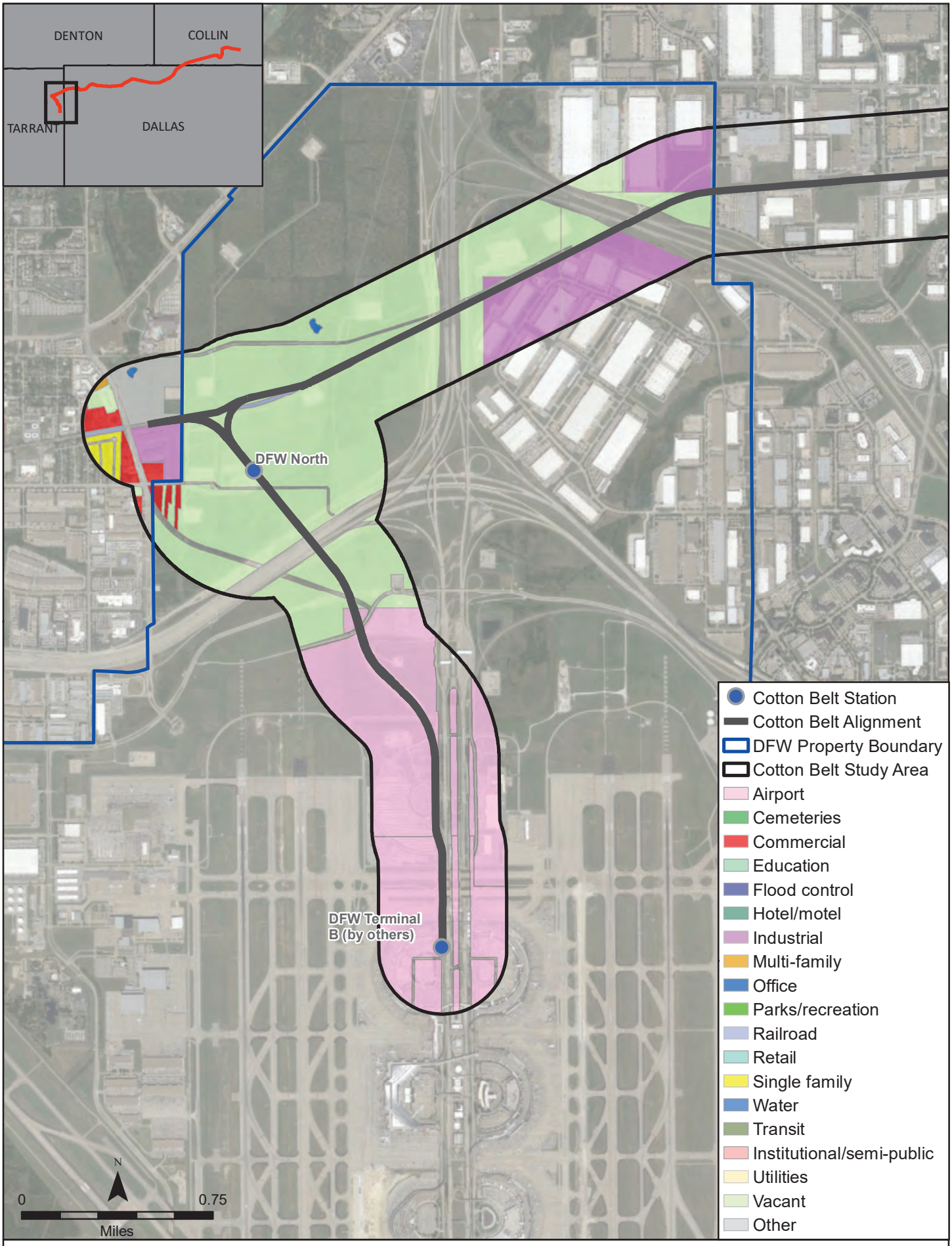

Figure 6-5
Land Use Within DFW Study Area
Data Source: North Central Texas Council of Governments, 2015

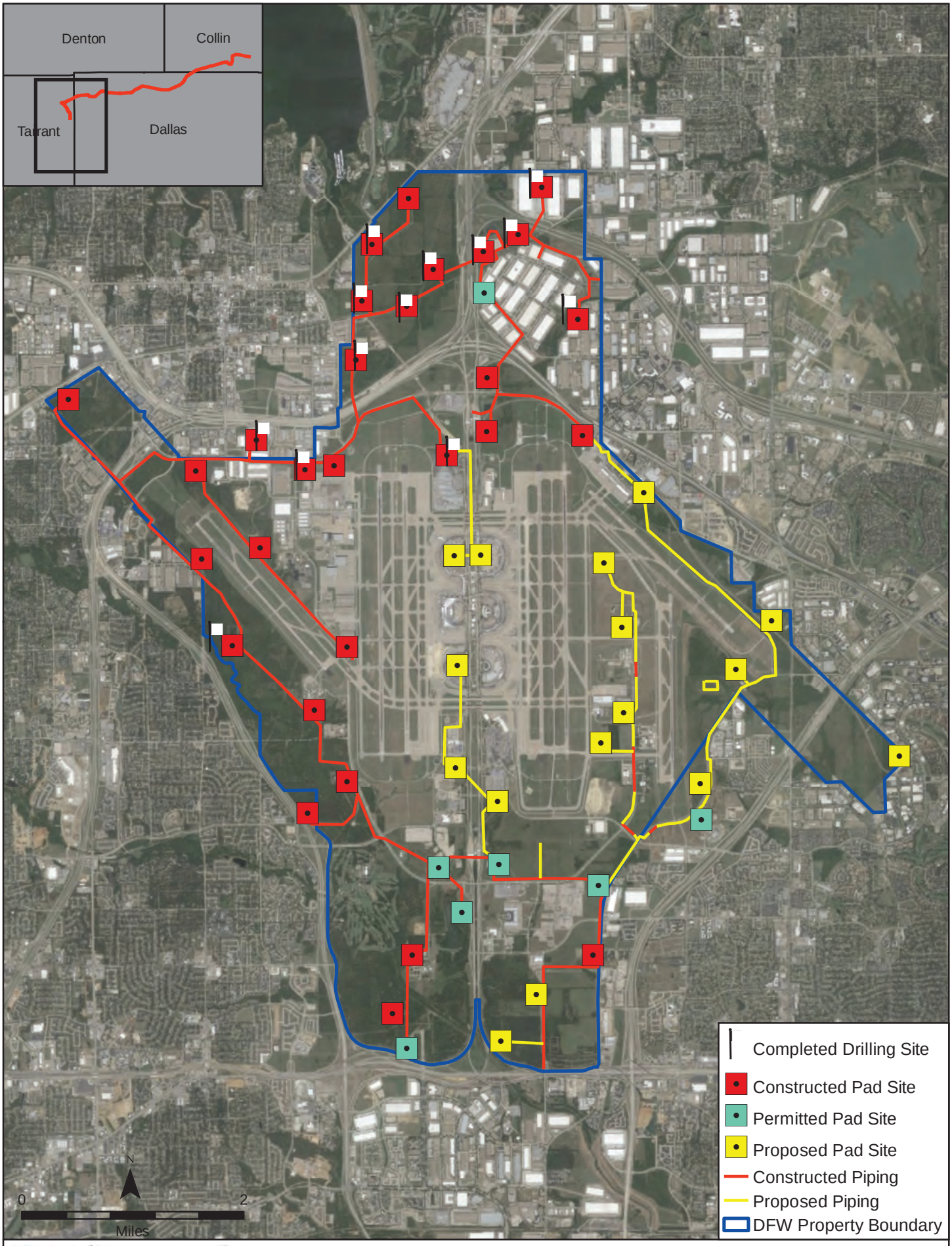

Figure 6-6
Natural Gas System at DFW Airport

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Vibration Methodology

The FTA has developed ground-borne vibration impact criteria based on land use and train frequency data that was used to determine potential vibration impacts along the DFW Airport Proposed Action alignment.

The potential effects of ground-borne vibration on navigation aids and other airport structures at DFW Airport are discussed in the following sections.

Affected Environment

Noise

The existing noise levels within DFW Airport property are dominated by aircraft operations and airport roadway traffic. There are no noise-sensitive receptors along this section of the Preferred Alternative. Since there are no noise sensitive uses on DFW property and no change in aviation forecasts associated with the DFW Airport Proposed Action, no noise measurements were conducted in this area.

Vibration

The existing vibration levels within DFW Airport property are dominated by aircraft operations and other airport-related ground activities. FAA has identified the existing Area Surveillance Radar (ASR)-9 facility located approximately 400 feet from the TEXRail and DFW Airport Proposed Action alignment as a potential vibration impact site. Due to the sensitivity of equipment located at the ASR site, the ASR installation has been added as a vibration-sensitive receptor. No other vibration sensitive sites were identified adjacent to the Proposed Action.

During the TEXRail assessment, potential vibration impacts at the ASR-9 radar facility were analyzed based on vehicle technology, number of train cars, and projected train speeds in the vicinity of the ASR facility.

6.3.2.12 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

Regulatory Context and Methodology

Section 1508.27(b) of the CEQ Regulations Implementing NEPA requires federal agencies to consider a proposed action's impact significance by considering the impact's intensity and context. Section 1508.8 addresses indirect impacts (effects) which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induce changes in the pattern of land use, population density or growth rate, and related effects on air and water.

The FAA Desk Reference requires an evaluation of how a proposed action would affect communities by the following factors:

- Shifts in patterns of population movement and growth;
- Public service demands;
- Changes in business and economic activities; or
- Other factors identified by the public.

Affected Environment

No residences or businesses are located on DFW Airport property other than businesses associated with DFW Airport that are located within the terminal areas and outside of the Study Area.

6.3.2.13 Visual Effects

Regulatory Context and Methodology

NEPA states the need to "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings". The FAA Desk Reference states that visual effects deal broadly with the extent to which the proposed action or alternative(s) would either: 1) produce light emissions that create annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment.

The FAA has not established a significance threshold for visual effects in FAA Order 1050.1F; however, the FAA has identified factors to consider when evaluating the context and intensity of potential environmental impacts for visual effects. These factors include:

- The potential to create annoyance or interfere with normal activities
- The potential to affect the visual character of the area
- The potential to contrast with the visual resources in the Study Area
- The potential to block or obstruct the views of visual resources

Affected Environment

In the DFW Airport Study Area, the majority of the Preferred Alternative is located on existing railroad right-of-way with freight activity or new regional rail right-of-way that will be occupied by the TEXRail Project that has previously received environmental clearance. The DFW North station platforms will be located adjacent to the TEXRail Station. Outside the rail alignment physical characteristics of the area include open space, trees, transportation facilities, vacant land, and structures and development associated with DFW Airport. Highway transportation infrastructure at the SH 114/121 interchange is immediately north of DFW Airport. The interchange includes elevated ramps and lanes. Primary viewers in this inventory unit will be motorists along SH 114 and SH 121 and employees and patrons of DFW Airport.

6.3.2.14 Water Resources

Regulatory Context and Methodology

The USACE, under Section 404 of the CWA (33 USC 1344), regulates the discharge of dredged and fill material into waters of the U.S., including wetlands, defined under 33 CFR Section 328.3. The USACE authorizes general activities with minimal impacts by issuing Nationwide Permits (NWP). Under the Fish and Wildlife Coordination Act, federal actions require consultation with the USFWS.

In accordance with Section 404 of the CWA, existing waters of the U.S., including wetlands, along the DFW Airport Study Area were evaluated. The field reconnaissance first occurred during the growing season when plants were easily identifiable, in March and August 2012, and then again in May 2017, and included wetland delineations (using the *USACE 1987 Wetlands Delineation Manual* in addition to the *USACE Regional Supplement 2010 Great Plains Region Version 2.0*). These USACE guidance manuals utilize a set of primary metrics for preliminary determinations of jurisdictional water bodies including wetlands.

Jurisdictional water bodies are determined by the presence of an OHWM and connectivity to another jurisdictional water body. USACE defines waters of the US as displaying an OHWM and defined bed and bank. Wetlands are also regulated by the USACE under Section 404 as defined by waters of the U.S., but must meet different criteria than having an OHWM and defined bed and bank. To be classified as a jurisdictional wetland, a site must be delineated using the USACE methodology, which typically requires that each of three parameters be present at a site

(hydrophilic vegetation, wetland hydrology, and hydric soils) and must show connectivity to other jurisdictional waters (e.g., a perennial stream).

Wetlands are highly productive, biologically diverse systems, which provide floodwater attenuation, groundwater recharge, nutrient cycling, filtering of sediments and toxins from surface water, and maintenance of plant and animal communities. From a regulatory standpoint, wetlands are those areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Non-jurisdictional wetlands are not regulated by the USACE and can include isolated wetlands or areas that may briefly retain water only during stormwater runoff events and not long enough to support wetland plant species or hydric soils. Non-jurisdictional wetlands reviews were included during the field reconnaissance. This methodology is in accordance FAA Order 1050.1F, Executive Order 11990, US DOT Order 5660.1A, and Section 404 of the CWA.

Affected Environment

The Study Area is located within the Trinity River Basin, in a part of the state that receives an average of 30 to 35 inches of rainfall a year (TPWD, 2006). Surface water flow across the Study Area is generally to the southeast.

The DFW Airport Study Area lies within the Cottonwood Branch and Grapevine Creek watersheds, situated within the Trinity River Basin (USGS, 2012). According to TCEQ, the DFW Airport Proposed Action will cross Cottonwood Branch (Segment 0822A), which flows into Denton Creek (Segment 0825). Grapevine Creek (Segment 0822B) also crosses the alignment and flows into Elm Fork of the Trinity River (Segment 0822).

Neither Cottonwood Branch nor Grapevine Creek are included in the 2014 Texas Integrated Report (https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_303d.pdf), which contains the Texas 303(d) List of Category 5 water bodies. However, the *Texas Integrated Report Index of Water Quality Impairments*, identifies both Category 4 and Category 5 water bodies with one or more impairments. (https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_303d.pdf).

These segments are classified as Category 4a which means that all TMDLs have been completed and approved by EPA. Bacteria TMDLs for Cottonwood Branch and Grapevine Creek were approved by the EPA on May 30, 2012. Completion of an approved implementation plan for these segments occurred on December 11, 2013. In addition, a TMDL project for PCBs in fish tissue for four segments of the Trinity River including Cottonwood Branch was completed in 2008. The most recent consumption advisory for the area, ADV-43 released in 2010, added the pollutant dioxin and extended the area of the consumption advisory to areas of Clear Fork Trinity River and West Fork Trinity River (https://www.tceq.texas.gov/waterquality/tmdl/77-trinity_pcbs.html).

The May and June 2017 field surveys and delineations within DFW Airport property resulted in the identification of three crossings at two streams and no non-jurisdictional or jurisdictional wetlands as outlined in **Table 6-3** and depicted on **Figure 6-7**. The two streams were delineated as waters of the U.S. for having a defined bed and bank, an OHWM, and having a significant nexus to the Elm Fork of the Trinity River.

Table 6-3. Streams/Drainages in the DFW Airport Study Area

Crossing ID	Name	Type	Description
S-1a	Grapevine Creek	Perennial	The headwaters of Grapevine Creek; the stream has been channelized and concreted.
S-2a and S-2b	Cottonwood Branch	Perennial	A small stream draining bottomland within abandoned farm/ranch land. A riparian corridor along stream banks with low sloped floodplains.
S-3	Unnamed tributary to Cottonwood Branch	Ephemeral Stream	An ephemeral stream draining bottomland adjacent to highway.

Source: FEMA, 2012; GPC6, 2017

FEMA has regulations governing alterations or development within floodplains shown on Flood Insurance Rate Maps (FIRM). Under FEMA regulations, no alterations of flood zones can result in an increase in the 100-year base flood elevation or cause an increase in the velocity of floodwaters. In addition, DFW Airport is responsible for issuance of construction permits on airport property.

In compliance with FAA Order 1050.1F and DOT Order 5650.2, all FAA actions must avoid floodplains if a practicable alternative exists. If no practicable alternative exists, actions in a floodplain must be designed to minimize adverse impacts to the floodplain's natural and beneficial values. If the proposed action or alternative(s) involves a *significant encroachment* in a floodplain, the FAA should issue a written *finding* that the proposed significant encroachment is the only practicable alternative. As defined in DOT Order 5650.2, significant encroachment is an encroachment in a floodplain that results in one or more of the following construction or flood-related impacts: 1) considerable probability of loss of human life, 2) likely future damage associated with the encroachment that could be substantial in cost or extent, including interruption of service on or loss of a vital transportation facility, and 3) a notable adverse impact on "natural and beneficial floodplain values."

Wetlands

No wetlands are located within the area affected by the Preferred Alternative.

Floodplains

According to the floodplain maps, the DFW Airport Study Area includes approximately 1,300 linear feet of the Cottonwood Branch floodplain (see **Figure 6-7**).

Surface Waters

The DFW Airport Study Area lies within the Cottonwood Branch and Grapevine Creek watersheds that are within the Trinity River Basin (USGS, 2012). According to TCEQ, the DFW Airport Proposed Action will cross Cottonwood Branch (0822A), which flows into Denton Creek (Segment 0825). Grapevine Creek (Segment 0822B) also crosses the alignment and flows into Elm Fork of the Trinity River (Segment 0822).

Bacteria total maximum daily loads (TMDLs) for Cottonwood Branch (0822A) and Grapevine Creek (0822B) were approved by the EPA on May 30, 2012. Completion of an implementation plan is anticipated in 2013. A TMDL project for PCBs in fish tissue for four segments of the Trinity River including Cottonwood Branch was completed in 2008. The most recent consumption advisory for the area, ADV-43 released in 2010, added the pollutant dioxin and extended the area of the consumption advisory to areas of Clear Fork Trinity River and West Fork Trinity River (https://www.tceq.texas.gov/waterquality/tmdl/77-trinity_pcbs.html).

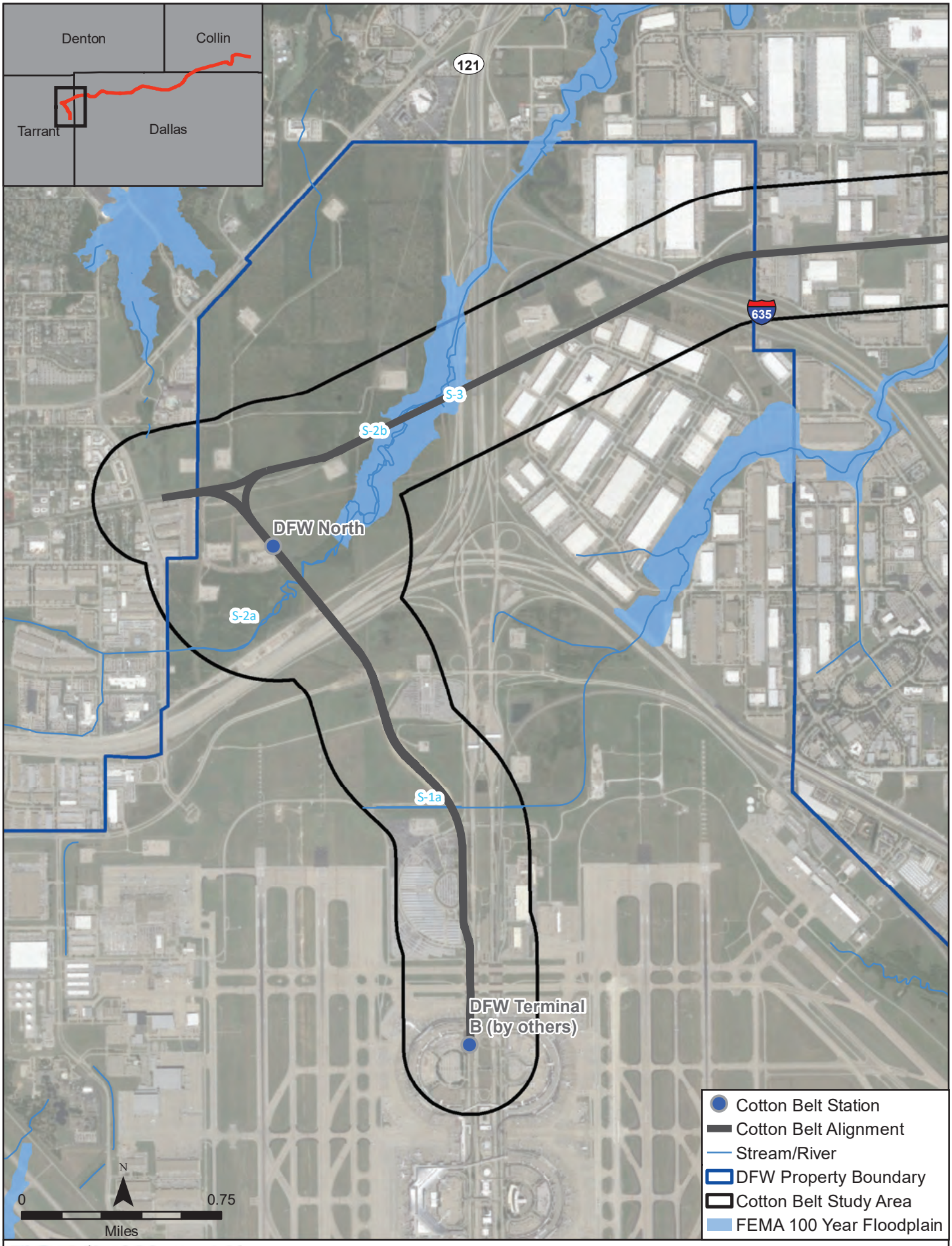

Figure 6-7
Water Resources Within DFW Airport Study Area
Data Source: FEMA, 2012

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Groundwater

The region centering on the Dallas-Fort Worth Metroplex is served by the Trinity and Woodbine aquifers. The Trinity Aquifer is a major aquifer extending across much of the central and northeastern part of the state. The Woodbine Aquifer is a minor aquifer overlying the Trinity Aquifer.

Due to intense groundwater extraction, 18 counties in this region have been included in the list of Priority Groundwater Management Areas of the state by the TCEQ. These management areas are designated as currently experiencing or are expected to experience critical water issues within the next 25 years. In the Trinity Aquifer, water quality impacts have resulted from progressive groundwater quality decline. While in the Woodbine Aquifer, impacts are associated with higher salinity and chemical contamination that exceed safe drinking water quality standards (Ledbetter and Srinivasulu, 2013).

Based on information provided by the DFW Airport Board, Water Systems, drinking water at the airport is purchased from the cities of Dallas and Fort Worth. Dallas currently obtains water from area reservoirs: Lake Ray Hubbard, Lake Lewisville, Lake Grapevine, Lake Ray Roberts and Lake Tawakoni with plans to use Lake Fork and Lake Palestine in the future. All of Dallas' water supply comes from surface water (http://dallascityhall.com/dwu/water_quality_information.html). Fort Worth currently obtains water from Lake Bridgeport, Eagle Mountain Lake, Lake Worth Cedar Creek, Richland- Chambers, and Benbrook Lake (http://fortworthtexas.gov/water/info/default.aspx?id=6056&ekmensel=c1987b5b_1306_2296_6056_3).

Wild and Scenic Rivers

There are no wild and scenic rivers within or adjacent to the Preferred Alternative. The Wild and Scenic Rivers Act would not be applicable.

6.4 Environmental Impact Evaluation

The Environmental Impact Evaluation section provides guidance on the analysis and documentation of any impacts. No ALP changes are planned for Addison Airport and potential project impacts in the vicinity of Addison Airport are addressed elsewhere in the document. This section focuses on DFW Airport and summarizes the impact thresholds identified in FAA Order 1050.1F that are used by the FAA to determine the significance of the impacts of the proposed action and alternative(s) where such thresholds have been established. This section also summarizes the factors to consider when evaluating the significance of potential impacts. If necessary, types of mitigation that may be used to reduce the potential impact of the Preferred Alternative are described.

The No-Build Alternative would reflect impacts and benefits associated with only the current provisions and programs in the NCTCOG Mobility 2040 Plan, as well as programmed projects in the Transportation Improvement Plan (TIP) (currently the 2017-2020 TIP). The No-Build Alternative includes existing and committed roadway and transit projects in the Study Area, as described in detail in **Chapter 2**: Alternatives Considered. In general, the capital improvement projects include additional roadway lanes as well as new roadways, bike/pedestrian trails, interchanges, intersection improvements, traffic signal improvements, and improvements to existing transit infrastructure; therefore, the No-Build Alternative would have no effect on any of the resource categories identified in FAA Order 1050.1F.

As stated in paragraph of 4-2.c of FAA Order 1050.1F, “if an environmental impact category is not relevant to the proposed action or any of the reasonable alternatives identified (i.e., the resources included in the category are not present or the category is not otherwise applicable to

the proposed action and alternative(s)), this should be briefly noted and no further analysis is required."

As discussed in **Section 6.3.1**, the geographic location and site-specific characteristics of DFW Airport render several resource categories as not relevant to the proposed action. These categories are: coastal barriers; coastal management zones; Section 4(f) and 6(f) properties; farmlands; historic and archeological resources; environmental justice populations; children's health and safety populations; and wild and scenic rivers. These resources are not discussed further.

Those impact categories that are minimally affected by a project are not described in detail, but are briefly discussed as to why they are being dismissed.

6.4.1 DFW International Airport

6.4.1.1 Air Quality

Potential air quality impacts associated with the DFW Airport Proposed Action would occur if the project exceeded one or more of the NAAQS for any time periods analyzed, or increased the frequency or severity of existing air violations. Compliance with local transportation and air quality management plans and the General Conformity Rule is also required.

As identified in the NCTCOG Mobility 2040 Metropolitan Transportation Plan for North Central Texas, estimates of air emissions associated with diesel and locomotive traffic under 2040 conditions indicates that the DFW Airport Proposed Action will provide reduced emissions of all NAAQS criteria pollutants relative to the No-Build Alternative. The No-Build Alternative, which does not involve new rail construction, will not exceed established significance thresholds.

The DFW Airport Proposed Action has been included in the previous TIP and the current TIP conformity analyses. Therefore, it complies with the Transportation Conformity Rule. The analysis results indicate the DFW Airport Proposed Action will not cause or contribute to any new NAAQS air quality violations or increase the frequency or severity of existing violations in the ten-county DFW Ozone (O_3) Nonattainment Area (which is also the DFW MSA). Therefore, the DFW Airport Proposed Action conforms to the goals set forth in the CAA Amendments of 1990 and is in conformity with the SIP.

Furthermore, the DFW Airport Proposed Action direct and indirect air emissions will not exceed *de minimis* levels for VOCs and NO_x individually. This meets the requirements of the General Conformity Rule, and a full General Conformity Determination is not required. The DFW Airport Proposed Action is a commuter rail project operating on airport property and not an aviation source of emissions, DFW Airport emissions were evaluated with the same regional travel demand model maintained by NCTCOG as the remainder of the DFW Airport Study Area.

In consideration of potential emissions and FAA significance thresholds, the DFW Airport Proposed Action will not exceed the significance threshold.

Construction Air Quality

Air quality impacts during construction will be limited to short term, increased fugitive dust and mobile source emissions. These impacts will be short-term and cease once construction is complete.

As discussed in **Section 3.11**, the alignment is located within the ten-county ozone nonattainment area for North Central Texas and has been included in current Transportation Improvement Plan (TIP) conformity analysis. Air quality impacts from transportation projects generally focus on changes in motor vehicle-related pollution caused by on road vehicles; however, during construction non-road equipment will be expected to generate exhaust emissions which could

contribute to a localized area of poor air quality. Non-road equipment typically used for construction of transit projects and the types of tasks they perform is listed in **Table 4-20**.

Prior to Preferred Alternative construction, DART or its designated Design-Build contractor will prepare an estimate of the construction emissions for the DFW Airport Proposed Action using emission factors for the construction-related direct emissions analysis obtained from the EPA Clean Air Nonroad Diesel – Tier 4 Final Rule (*40 CFR Part 89* et al).

It is assumed that the direct emissions will be below the de minimis level based on the measurements calculated for the TEXRail Project at DFW Airport (3.4 tons VOCs and 6.5 tons NO_x). The direct emissions fell well below the de minimis level of 100 tons per year established for VOC and NOx when estimating the construction emissions. The Preferred Alternativeconstruction activities will be less extensive than the TEXRail Project, which included approximately 2.5 miles of track construction on new right-of-way on DFW Airport property, the DFW North parking lot, a 1,600-foot bridge over SH 121/SH 114, and several other roadway, culvert and bridge infrastructure. The construction in new right-of-way includes grading and track bed preparation. The conservative estimate assumed that construction would occur over approximately 12 months and would fall within one calendar year.

By contrast, only 3,700 feet of the Preferred Alternativewill be constructed in new right-of-way. Two miles of the Preferred Alternative will be placed on right-of-way that has been cleared and graded by the TEXRail Project. DART will share two miles of corridor that will have been cleared, graded and prepared by TEXRail. Additionally, DART will use the parking, SH 121/SH 114 bridge, and other roadway, culvert and bridge infrastructure being constructed by TEXRail. Extending to the east, the remainder of the Preferred Alternative will be located within DART owned right-way. Construction of the Preferred Alternative on DFW Airport property is anticipated to be less than one year.

Other impacts to air quality due to construction activities include dust generated from construction activities associated with concrete demolition, delivery trucks, and earth-moving operations throughout the project corridor.

Mitigation Measures

For the alignment, compliance with Clean Air Act legislation will require that DART or its designated Design-Build contractor submit FAA Form 7460-1, Notice of Proposed Construction or Alternation. For airports within ozone non-attainment areas, an Airport Construction Emissions Inventory must accompany the FAA Form 7460-1. This inventory will be completed by the Design-Build contractor once construction material quantity estimates are completed and construction staging planned.

The control of exhaust emissions emanating from non-road equipment and other construction related vehicles will be in accordance with EPA guidelines. To minimize exhaust emissions, contractors will be required to use emission control devices and limit the unnecessary idling of construction vehicles. Other measures to mitigate air quality include minimizing emissions through the use of clean fuels in construction equipment, deployment of clean diesel construction equipment (new, retrofit, rebuilt or repowered), and the implementation of anti-idling practices at construction sites.

6.4.1.2 Biological Resources (Including fish, wildlife, and plants)

Biotic Resources

Areas designated for new tracks and fill embankments will be cleared and graded, and therefore impacted more than areas within existing right-of-way. Trees close to the right-of-way and large trees with branches overhanging the right-of-way will be removed or trimmed. Areas designated

for new tracks and fill embankment will be impacted to a greater extent as these areas will be cleared and graded. The extent of these impacts cannot be determined until design of the alignment is finalized. During final design, a tree survey will be conducted to quantify the number, size, and species of any trees to be removed. As the current project design is not sufficiently advanced to accurately assess areas of impact, the impact analysis for the Project utilizes a conservative approach, assuming that all vegetation within the right-of-way and current station footprints will be impacted by clearing and grading.

Based on the EMST shapefiles and current aerial photography, the riparian and floodplain densely wooded area impacted by the new alignment along Cottonwood Branch is approximately one acre. Additional wooded areas that are impacted is approximately 1.3 acres. The remaining portion of the new alignment occurs within disturbed or non-disturbed grassland, and shrubland.

It is estimated that the proposed trail will impact approximately 0.5 acres of additional wooded riparian area. Additional design will be required to determine the actual impact.

Fish

Project activities involving work within streams, temporary or permanent haul roads or crossings within streams, the construction of bridges or culverts, and dewatering activities may impact aquatic resources, if occurring within the Preferred Alternative. Dewatering activities can impact aquatic resources by stranding fish and mussels. Trampling, dredging or filling riparian areas can impact stationary aquatic resources such as plants and mussels.

Fish species may be impacted at the crossings of Cottonwood Branch during construction activities, both perennial and intermittent waters crossed by the DFW Airport Proposed Action. Neither of these streams is considered an Ecologically Significant Stream Segment (ESSS) (TPWD, 2013). Essential fish habitats are not located in the Biotic DFW Airport Study Area as this status applies only to coastal fisheries; therefore, the Proposed Action will not result in impacts.

Wildlife

The portions of the Study Area located immediately above the DFW Airport and northwest of the intersection of SH 114 and SH 121 include the majority of the pasture and woodland areas within the Study Area. Pasture areas provide important cover and food sources for birds and small mammals, especially when located near highly urbanized areas. Woodland areas are primarily found near riparian or floodplain areas and are generally vegetated with native species, which typically support a diverse community of faunas.

Minor impacts to common wildlife species and their associated habitats will be anticipated within the Biotic DFW Airport Study Area. Implementation of the Preferred Alternative will result in trees being removed or trimmed within the right-of-way and station footprint.

Post-construction, the operation of the DFW Airport Proposed Action will be anticipated to have minor impacts on wildlife in the immediate vicinity of the right-of-way. Common wildlife species within the Biotic DFW Airport Study Area are currently exposed to the existing freight service within the corridor of the DFW Airport Proposed Action; therefore, impacts as a result of the Project to these wildlife species will be considered negligible. Impacts may include minimal adverse effects from the increased use of the tracks (i.e., more frequent disruption due to noise and presence of the trains) and thus a greater likelihood for wildlife to be struck by the trains. Fencing will not be located on DFW Airport property. It is anticipated that the wildlife species currently nesting or foraging within these areas have acclimated and conditioned themselves to the presence of trains. Additionally, the developed nature of the corridor and surrounding area has already resulted in the displacement of less adaptable, more sensitive species from the Preferred Alternative. In areas where habitat will be affected along the right-of-way, similar habitats are available in adjacent areas.

As described in **Section 6.3.2.2**, eight federally-listed threatened or endangered species, 20 state-listed threatened or endangered species, and 20 state species of concern (which are monitored by TPWD but do not currently receive regulatory protection) are listed as having potential to occur in Tarrant, Dallas, or Collin counties (TPWD, 2017b; USFWS, 2017a). A listing of all of these species, information about recorded occurrences of the species, and habitat descriptions is located in the C*otton Belt Corridor Biological Resources Existing Conditions Technical Memorandum* (**Appendix B**).

Federally-listed species and their habitats are protected under the Endangered Species Act of 1973 (16 USC § 1531 et seq.) No designated critical habitat or preferred habitat for any federally-listed species was identified on DFW Airport property, or within or near the Study Area, therefore the Project will have **no effect** on federally-listed species for Tarrant, Dallas or Collin counties.

No species listed by TPWD were observed during field surveys of the Study Area. Species having potential habitat in the study area on DFW Airport property include peregrine falcon, western burrowing owl, plains spotted skunk, Texas garter snake, timber rattlesnake, Louisiana pigtoe, sandbank pocketbook, Texas pigtoe and Texas heelsplitter. The Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter, all have recorded TXNDD element of occurrences within 0.7 – 7 miles from the Study Area. The Project may impact these state-listed species if they are present within the Study Area.

DART will inform employees and contractors of the potential for any protected species (i.e., timber rattlesnake) that may occur in the Study Area. Contractors will be advised to avoid impacts to these species and other snake species and should avoid contact with the species if encountered. Any state-listed species encountered during construction will be reported to the TXNDD.

Migratory Bird Treaty Act

Construction activities have the potential to impact migratory bird species primarily through the destruction of and disturbance of vegetation and bare ground that may harbor active nests, including nests that may occur in grass, shrubs and trees, potentially resulting in the loss of eggs and young birds. Mitigation measures for avoiding impacts to MBTA-protected species are discussed below.

Summary

Implementation of the DFW Airport Proposed Action will impact biotic resources; however, by integrating the mitigation measures (described below), the DFW Airport Proposed Action will not exceed the established thresholds of significance.

Mitigation Measures

Biotic Resources

The Presidential Memorandum on Economically and Environmentally Beneficial Landscaping encourages the use of native plants at federal facilities and federally funded landscaping projects. Landscaping and re-vegetation plans will be developed during final design and take into consideration the guidance provided in the Presidential Memorandum listed above. Disturbed vegetated areas will be replanted with replacement vegetation that will utilize native species yet not create an unacceptable wildlife attractant for aeronautical operations. Site planning and construction techniques will be designed to avoid and preserve existing mature native trees and shrubs to the greatest extent possible.

DART will coordinate with DFW Airport to identify appropriate plant species to ensure they minimize attracting potentially hazardous wildlife.

Wildlife

All wildlife species present within the Biotic DFW Airport Study Area are subject to an existing urban environment that is regularly disturbed. Temporary and long-term impacts will be mitigated through re-vegetation. Existing vegetation or habitat will be replanted along the disturbed areas.

Additionally, TPWD provided several recommendations for mitigating impacts to wildlife resources which DART will implement. These recommendations include:

- Utilizing existing rail, transportation and utility corridors to minimize the impact to undeveloped areas,
- Designing the bridge spans across the streams to allow usable vertical and horizontal space beneath the structures for wildlife to cross under,
- Avoidance and preservation of existing mature native trees and shrubs (native replacement trees will be planted as mitigation for trees removed), and
- The use of native vegetation beneficial to fish and wildlife will be used for all landscaping areas (with DFW Airport coordination).

State law prohibits direct harm for state-listed species, but does not currently provide for habitat protection. If any individuals of state-listed species are encountered within the Study Area during construction, care will be taken to avoid harming them.

Potential construction-related erosion and sedimentation will be minimized by implementation of standard engineering BMPs (i.e., silt fences around the construction limits). These construction and mitigation measures will minimize and/or alleviate any potential negative effects to the aquatic habitat resulting from erosion and subsequent sedimentation. Other construction BMPs will be implemented to prevent invasive species and prevent impacts to migratory bird species through wildlife awareness programs.

In compliance with the MBTA, trees with active nests will be avoided.

The following guidelines will be adhered to:

- During the nesting season, active nests will not be disturbed, destroyed, or removed.
- Prevent the establishment of active nests during the nesting season.
- Birds, eggs, young, or active nests will not be collected, captured, relocated, or transported without a permit.
- If clearing vegetation during the March 15th through September 15th nesting season is unavoidable, DART will survey the construction area to ensure that no nests with eggs or young will be disturbed by construction. Any vegetation or bare ground areas where occupied nests are located will not be disturbed until the eggs have hatched and the young have fledged. Removal of trees which contain colonial waterbird rookeries will be avoided through route adjustments to the extent reasonable and feasible.

6.4.1.3 Climate

This document does not incorporate a quantitative analysis of the GHG emissions or climate change impacts of the Preferred Alternative because the potential change in GHG emissions will be minimal in the context of the affected global environment. As documented in **Section 4.13**, the Preferred Alternative is estimated to reduce VMT by nearly 80,000 per day, and save nearly 3,800 hours of congestion delay. Since automobile transportation is a source of GHG emissions, the Preferred Alternative will have a net positive effect at a regional level. Because of the insignificance of the project-level GHG emission impacts, those impacts will not be meaningful toward identification of the Preferred Alternative.

6.4.1.4 Hazardous Materials, Solid Waste, and Pollution Prevention

FAA Order 1050.1F Desk Reference establishes significance thresholds for hazardous material concerns for projects that:

- Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;
- Involve a contaminated site (including, but not limited to, a site listed on the NPL;
- Produce an appreciably different quantity or type of hazardous waste;
- Generate an appreciably different quantity or type of solid waste, or use a different method of collection or disposal, and/or would exceed local capacity; or
- Adversely affect human health and the environment.

The Preferred Alternative does not fall within any of the above categories and therefore is not expected to meet or exceed any of these thresholds. FAA Order 1050.19B was developed to provide the FAA a means to comply with applicable federal environmental regulations and best practices associated with environmental due diligence during property acquisitions and disposals. The Preferred Alternative requires no property acquisition or disposal.

Mitigation Measures

If contaminated soil is suspected due to visual and/or olfactory evidence of contamination during subsurface construction activities, and needs to be removed from the premises, the soil will be tested to evaluate whether it is contaminated and requires proper disposal. If it is found to be contaminated, that soil will be properly classified and disposed of as non-hazardous or hazardous waste (i.e., Type II landfill or hazardous waste treatment/landfill).

Environmental due diligence activities will be performed prior to use agreements. According to ASTM 1527-05, “Due diligence is the process of inquiring into the environmental characteristics of a parcel of commercial real estate or other conditions, usually in connection with a commercial real estate transaction. The degree and kind of due diligence vary for different properties and differing purposes.” A compliant Phase I ESA will be conducted. If the Phase I ESA concludes that one or more recognized environmental concerns (RECs) exist, Phase II testing will be performed to help establish whether contamination is present and, if present, its nature and extent.

With respect to anticipated materials to be brought onto the project site and waste materials to be generated, all will be managed in accordance with good industry practices and federal, state and local regulations.

6.4.1.5 Land Use

FAA Order 5050.4B requires consideration of several factors when analyzing effects on land uses in the airport area, including: community disruption, business relocations, induced socioeconomic impacts, wetland and floodplain impacts, and critical habitat alteration. Each of these factors can have potential land use ramifications. The Project’s impacts associated with these factors do not meet the significance threshold established by FAA Order 5050.4B.

As illustrated in the 2014 *DFW Airport Land Use Plan* map (**Appendix C**), DFW Airport has long planned to develop the vacant developable areas in the general Study Area. The Project corridor is set aside in the plan as a transportation corridor, and the project will be consistent with the airport’s development plans.

There will be no acquisitions, community disruption, business relocations or any displacements associated with the Project. There will be no induced socioeconomic impacts, wetland and floodplain impacts, or critical habitat alteration.

In consideration of the factors with potential to have land use ramifications and FAA significance thresholds, the Preferred Alternative will not constitute a significant land use impact.

The Preferred Alternative conforms with DFW Airport's 2009 Airport Development Plan Update, Executive Summary: VFR 2030, Vision of the Future, Realized and with the DFW Airport 2012 and 2014 Commercial Development Land Use Plans. Although the project corridor is currently undeveloped and vacant land, the Commercial Development Land Use Plan commits this land for development as a transportation corridor. The remaining undeveloped or vacant land surrounding the project corridor is designated for future mixed-use commercial, commercial – office corporate development, or is undevelopable. The Preferred Alternative has been designed to not encroach upon the existing nearby utility land lease boundary, or onto property otherwise designated for future development as described above. No adverse impacts affecting planned land uses are anticipated as a result of the Preferred Alternative.

Mitigation Measures

The use of DFW Airport land needed to build and operate the Proposed Action will be gained through a Public Mass Transit Easement agreement between DART and DFW Airport. DFW Airport will be compensated fair market value for the use. A release from federal obligations and land use requirements will not be anticipated.

6.4.1.6 Natural Resources and Energy Supply

The primary impact on energy supplies, air emissions, and water consumption will result from the construction of the DFW Airport Proposed Action. This includes fuel usage during construction of the identified improvements, construction-related air emissions, and water consumption during construction.

Indirect impacts attributed to construction activities will temporarily increase use of some or all of the following: electricity, fuel, oil, chemicals, water, and other forms of energy and resources needed to construct the improvements. The demand for these resources will not exceed supply or substantially increase demand.

6.4.1.7 Noise and Vibration-Compatible Land Use

FAA Order 5050.4B requires consideration of several factors when analyzing effects on compatible land uses in the airport area, including change in airport noise. As illustrated in the 2014 *DFW Airport Land Use Plan* map (**Appendix C**), DFW Airport has long planned to develop the vacant developable areas in the general Study Area. The Preferred Alternative is set aside in the plan as a transportation corridor, and the project will be consistent with the Airport's development plans.

Noise

There are no noise-sensitive land uses within DFW Airport property, and the Preferred Alternative is compatible with existing land uses.

The DFW Airport Proposed Action will be constructed within DFW Airport property; however, it will not be constructed or operated by DFW Airport and will not directly affect any aviation operations or activities. Based on the ridership model that shows the DFW Airport stations are used predominantly for transfers to the TEXRail system and for employees of the companies located at the airport, there is no increase in air passenger activity expected as a result of the DFW Airport Proposed Action.

No aviation-related noise changes are anticipated as a result of the Preferred Alternative. The project will not directly or indirectly increase aviation operations at the airport, including the number of aircraft takeoffs/landings, flight patterns, or ground taxiing operations; therefore, the

project will not increase the airport's day-night noise level (DNL) contours. The resulting noise levels will also have no impact on the airport DNL contours.

There will be no resulting increase in airplane activity and associated noise. Therefore, no increase in aviation operations will occur as a result of implementation of the DFW Airport Proposed Action and the threshold of significance is not exceeded.

Vibration

Due to the sensitivity of equipment located at the ASR site, the ASR has been added as a vibration-sensitive receptor for the Preferred Alternative.

The TEXRail Project team completed a vibration study of the ASR-9 facility at DFW Airport in July 2010. The objective of the study was to assess the potential effects of ground-borne vibration on the ASR-9 facility due to the planned construction and operation of the DFW Airport Proposed Action. Potential vibration impacts at the ASR-9 radar facility were analyzed based on updated locomotive hauled coach vehicle technology, number of train cars, and projected train speeds in the vicinity of the facility. The study concluded that no vibration impact is anticipated at the DFW Airport ASR-9 radar facility from TEXRail Project construction or operation. The FAA reviewed the study and determined that additional analysis was not required at this time; however, this will be monitored during TEXRail operation start-up, and testing and mitigation will be implemented if impacts are identified.

During final TEXRail Project design, several infrastructure modifications have occurred. One included realignment of the track to the west side of the ASR-9. The realignment also minimized the below-grade trench near the ASR-9. The realignment increased the distance of the tracks to the ASR-9 and decreased the trench depth. Both of these modifications minimize possible vibration effects to the ASR-9.

In October 2018, as part of its study and evaluation of the ASR-9, the FAA utilized the Radar Analysis Support System tool to measure the vibration or "jitter" in the antenna pedestal group. The FAA also studied and evaluated the operational system software and performed data recordings to ensure the radar is performing within its operational tolerance and at an operational capability equal to or better than before the installation of TEXRail and the operations thereon. FAA's study and evaluation determined that TEXRail will have no impacts to the ASR-9 facility. DART will coordinate with FAA to conduct similar analysis on the Cotton Belt operations. DART will also coordinate with FAA to study, evaluate, and as necessary, conduct further vibration testing once test rail operations have commenced on the Preferred Alternative.

If Cotton Belt vibration testing indicates potential for Project impacts, mitigation measures will be identified through implementing the following process:

a) In the event that trains operating per the Preferred Alternative cause or produce any interference or false targets for the ASR-9, the FAA will perform radar data recordings to determine if the radar reflector tables can eliminate the interference and false targets caused by the operating train.

b) In the event that vibration or "jitter" is an issue with regard to the operational capability of the ASR-9, the offending frequencies would have to be mitigated. DART and DFW Airport would be required to mitigate all of these issues and will work with the FAA to remedy the situation prior to operation of the Preferred Alternative.

c) In the event that interference or false targets are an issue with regard to the operational capability of the ASR-9, the FAA would attempt to optimize the radar so as to eliminate or "mask out" the interference or false targets created by the trains so that the ASR-9 does not misinterpret or "confuse" the trains as or with airborne targets.

d) The foregoing additional testing, and mitigation, if necessary, will take approximately three to six months. It is anticipated that this testing will be conducted concurrently with the Preferred Alternative testing period.

e) The FAA construction representative or Resident Engineer (RE) must be present for any work associated with this facility.

Mitigation Measures

Vibration

Coordination with the FAA will continue for the ASR-9 tower and a determination of potential mitigation measures that may be required will be made during the regional rail testing period (as requested by the FAA). DART will participate with the testing to determine if an additional track and increased frequency will result in any impacts.

6.4.1.8 Visual Effects

As the DFW Airport Study Area lacks coastal areas, wild and scenic rivers, sensitive wildlife species, Section 4(f) and 6(f) properties, and historic properties, the Proposed Action will not have a visual impact on these visually protected resources.

The DFW Airport Proposed Action will minimally add to the number of aboveground structures in the DFW Airport Study Area. DFW Airport is planning two new aerial roadway crossings of the rail line, east and south of the DFW North Station area. Within the existing railroad corridor, DART will reconstruct two bridges overs creeks. Extending south, most of the Project will be constructed adjacent to the TEXRail Project and utilize TEXRail infrastructure including bridges and overpasses. The DFW Proposed Action will modify the DFW North Station by adding tracks and platforms. The DFW Terminal B Station will not be altered. The general visual identity of the area is characterized by transportation infrastructure and structures emphasizing horizontal planes, such as bridge overpasses.

Because the Preferred Alternative is consistent with the current and historical use of the Cotton Belt right-of-way and the emerging TEXRail Project as transportation corridors, and because visual elements associated with the existing railroad contribute to the overall visual quality and affect the visual sensitivity of the corridor, minimal visual impacts will occur from the alignment.

Likewise, the DFW North Station platform development is consistent with the TEXRail Project. Elevated highways are visible in the distance. The area is primarily industrial and visual impacts at this area will be viewed primarily by travelers. Visual impacts will be expected to be minimal.

Limited new light emissions will result from the DFW Airport Proposed Action. The origin of the light emissions from the DFW Airport Proposed Action will be a result of platform lighting at the DFW North Station. Adjacent land uses include the TEXRail platform and parking. The DFW Airport Proposed Action will not create an annoyance to people in the vicinity or interfere with normal airport activities.

Mitigation Measures

Coordination to ensure compliance with DFW Airport development guidelines is ongoing and DFW Airport Staff will review the design of the proposed action. Any project lighting will be designed to ensure compliance with DFW Airport development guidelines and will be compatible with that approved and installed developments of similar elevation and distance from the airfield.

6.4.1.9 Water Resources

Wetlands

Since there are no wetland resources; none will be impacted as a result of the DFW Airport Proposed Action, and no mitigation will be required.

Floodplains

As shown in **Figure 6-7**, the Preferred Alternative crosses approximately 1,313 linear feet in the Cottonwood Branch floodplain. The Preferred Alternative will be located within the existing Cotton Belt railroad corridor which operates at grade across the northern end of DFW Airport. Major highways (IH-635 and SH 121) are grade separated over the railroad corridor. Infrastructure associated with SH 121, its frontage roads and ramps represents a barrier to east-west movements in this area. The existing 100-foot wide railroad corridor provides the only opportunity to pass under the freeway. Moving from east to west, the railroad corridor emerges from the SH 121 underpass directly into the Cottonwood Branch floodplain. In this location, the floodplain cannot be avoided because of geometrical requirements for the track. Specifically, the need for the Preferred Alternative to meet and provide service at the DFW North Station, as well as to fit under the SH 121 underpass, prevents an opportunity for an alternative route to avoid the floodplain. The existing right-of-way provides a direct route between the existing DART-owned underpass and the shared DFW North Station currently under construction. Railroad track design requires a minimum degree (maximum radius) of curves. This track geometry precludes diverting the alignment to minimize encroachment into the floodplain. Additionally, the existing corridor contains active freight service. The freight provider has operating rights to maintain this service in the existing corridor.

While attempts have been made in the design of the Preferred Alternative to avoid the Cottonwood Branch floodplain, the challenges of the Preferred Alternative geometric design criteria and its horizontal curvature constraints, physical location of the SH 121 freeway grade separation, and need to serve the DFW Airport North Station do not allow the avoidance of the floodplain. Although the existing Cotton Belt rail represents a current encroachment upon the 100-year floodplain of Cottonwood Branch, the Preferred Alternative will avoid significant floodplain encroachments and actions that adversely affect the base floodplains by constructing sufficient Cottonwood Branch bridge crossing openings and sizeable culverts allowing for needed floodwater passage. These designs will be compatible with the NFIP and FEMA programs; therefore, the Preferred Alternative will meet the requirements of a practicable alternative under Executive Order 11988.

No relocation or alteration of any natural channel is proposed. Direct impacts to the floodplain include minor amounts of fill associated with retaining walls and structures for the bridges of the two crossings of the channels in the Cottonwood Branch floodplain. The DFW Airport Proposed Action is not anticipated to exceed the significance threshold stated in Order 1050.1F. During final design, a detailed hydrologic/hydraulic analysis will be conducted to ensure that the floodplain encroachment will not modify the floodplain in a manner that it will adversely affect any existing infrastructure or development.

<u>Impacts on Human Life and Transportation Facilities</u>

The Cottonwood Branch floodplain is located in a largely undeveloped section DFW Airport property which is isolated from airport infrastructure and airport commercial development by SH 121 and SH 121/SH 114. Outside the floodplain, several unmanned gas well sites are scattered across the otherwise expansive vacant property. Because of this isolated location, there is a low probability that the Cotton Belt floodplain encroachment will result in of loss of human life or property.

Similarly, it is unlikely that there are any damages associated with this encroachment and no interruption of service on or loss of a vital transportation facility is anticipated. No airport or FAA infrastructure is located in this vacant and isolated portion of the airport. All major infrastructure and facilities and access roads are segregated from the floodplain as they are located south of SH 121/SH 114 and will not be affected by the floodplain encroachment. Access to the airport and its facilities will not be altered by the floodplain encroachment. To the east, SH 121 and its frontage roads are elevated over the floodplain and creek. To the south, SH 121/SH 114 is on higher ground than the floodplain.

A detailed hyrdrologic/hydraulic analysis will be conducted during final design which will ensure that modification of the floodplain will not cause flood-induced spills of hazardous materials at the natural gas facilities which are located outside the existing floodplain. The owner or operator of the natural gas facilities are also responsible for having a Spill Prevention, Control, and Countermeasure (SPCC) Plan which documents measures to prevent accidental release to the environment, and should they occur, the response procedures and corrective actions in place to minimize environmental impact. In addition, the SPCC Plan will be required to comply with federal, state, and local hazardous materials/waste management regulations to assure proper management of hazardous and other special waste streams.

Impacts to the Floodplain's Natural and Beneficial Values

The DFW Airport Proposed Action will not have a notable and adverse effect on the floodplain's natural and beneficial values. No agricultural or aquacultural activities currently take place in the Cottonwood Branch floodplain. As discussed in **Section 6.4.1.2**, Cottonwood Branch is not considered an ESSS. Only minor impacts to fish, wildlife and their associated habitats are anticipated. No relocation or alteration of any natural channel is proposed and all modifications to the floodplain will be directly adjacent to the active freight railroad line. The impacts do not exceed the established thresholds of significance. Mitigation to wildlife impacts are discussed in **Section 6.4.2.1**.

In compliance with Executive Order 11988, public notice was included as part of the local advertisements for the DEIS public hearings. No individuals commented on the floodplain encroachment at DFW Airport or if the Preferred Alternative will affect human life, safe airport operations, aircraft services, or the natural and beneficial floodplain values.

A stated above, a detailed hyrdrologic/hydraulic analysis will be conducted during final design to ensure that modification of the floodplain will not cause unacceptable flow alterations or aquifer recharge capabilities, nor will it disrupt the floodplain's capacity to maintain desired water qualities. Modifications to the floodplain will occur adjacent to the existing railroad alignment and the existing stream channel will not be altered. The rail and track bed will be permeable surfaces although they may have a lower infiltration rate than existing surfaces. The DFW Airport Proposed Action is expected to have a less than significant encroahment on floodplains with the mitigation described below.

Surface Waters

As depicted on **Figure 6-7,** the DFW Proposed Action will cross Grapevine Creek at Crossing S-1a, Cottonwood Branch at Crossings S-2-a and S-2b, plus a tributary to Cottonwood Branch at Crossing S-3. Crossings S-1a and S-2a will have no impact as they will occur on existing infrastructure being constructed for the TEXRail Project. Crossings S-2b and S-3 will be placed on new aerial structures. Total impacts to these water bodies will be dependent upon the size and number of support columns placed within the OHWM for each individual water body. Despite placing support columns into these water bodies, significant impacts are not expected. Given the current design of the Preferred Alternative, the permanent impacts appear to be limited to the

stream crossings where bridge columns will be placed in the water areas. These bridge column impacts will total 0.017 acres (refer to **Figure 6-8**).

Groundwater

The Preferred Alternative has the potential to contribute to the current trend of declining water levels within the Trinity Aquifer.

Project construction activities during which proper spill response and BMP implementation are practiced are not expected to impact groundwater quality. Increased impervious areas post-construction may decrease the amount and quality of stormwater available for aquifer recharge. However, this potential impact may be mitigated by appropriate BMP implementation. There will be no impact on groundwater quality.

Mitigation Measures

With regard to all water resources, DART will continue to coordinate with the USACE, DFW Airport, and the cities of Dallas, Fort Worth, and Grapevine during final design. The project design will require review and approval. Preliminary coordination with the USACE has been initiated in order to document the expected permits and mitigation needs for any Section 404 impacts. DART, through an MOA with NCTCOG and USACE, participates in Section 214 of the Water Resources Development Act (WRDA) and was issued Permit No. SWF-2011-00508 in 2011. Section 214 of the WRDA, as amended, allows the USACE to accept funds from non-federal public entities to provide priority review of their permit applications. Participation in this program is anticipated to expedite the permitting process. The Project is currently at a 10 percent design level. The USACE requires a higher level of design to fully assess impacts and prescribe mitigation. As design progresses, coordination efforts will continue until a permit has been authorized. Permit authorization may occur after the FEIS/ROD, but will be available for public review.

Although the entire Preferred Alternative has the potential to impact to 1.32 acres of Waters of the U.S., the impact to waters at DFW Airport is anticipated to be 0.017 acres. During final design, DART will continue to investigate reducing both the impacts to the stream crossings. DART and its contractors will comply with all federal, state, and local regulations regarding construction and operation within floodplains.

During final design, efforts will be made to elevate the alignment above any 100-year floodplain that will be crossed. Impacts to floodplains will be minimized, when practical, to replacing existing piers located in the flood zone or minor amounts of fill associated with retaining walls, culverts, and other improvements to existing bridges. Future design phases will include a detailed hydrologic/hydraulic analysis to determine if any existing infrastructure or development will be adversely impacted. Final design will also include erosion and runoff controls and include measures to restore beneficial natural functions of the floodplain including water circulation. If an unavoidable floodplain encroachment will occur as a result of the DFW Airport Proposed Action, DART will follow the public involvement process as outlined in Section 2(d) of E.O. 11988 *Floodplain Management.* Public notice will also be provided during the FEIS/ROD process.

Additional design of the proposed Cotton Belt Trail is required to determine if there are additional water resource impacts associated with this separate project. Additional environmental clearances may be required.

More than five acres of earth disturbance will occur as a result of the Preferred Alternative; therefore, a SWPPP, construction site notice, and NOI will be required.

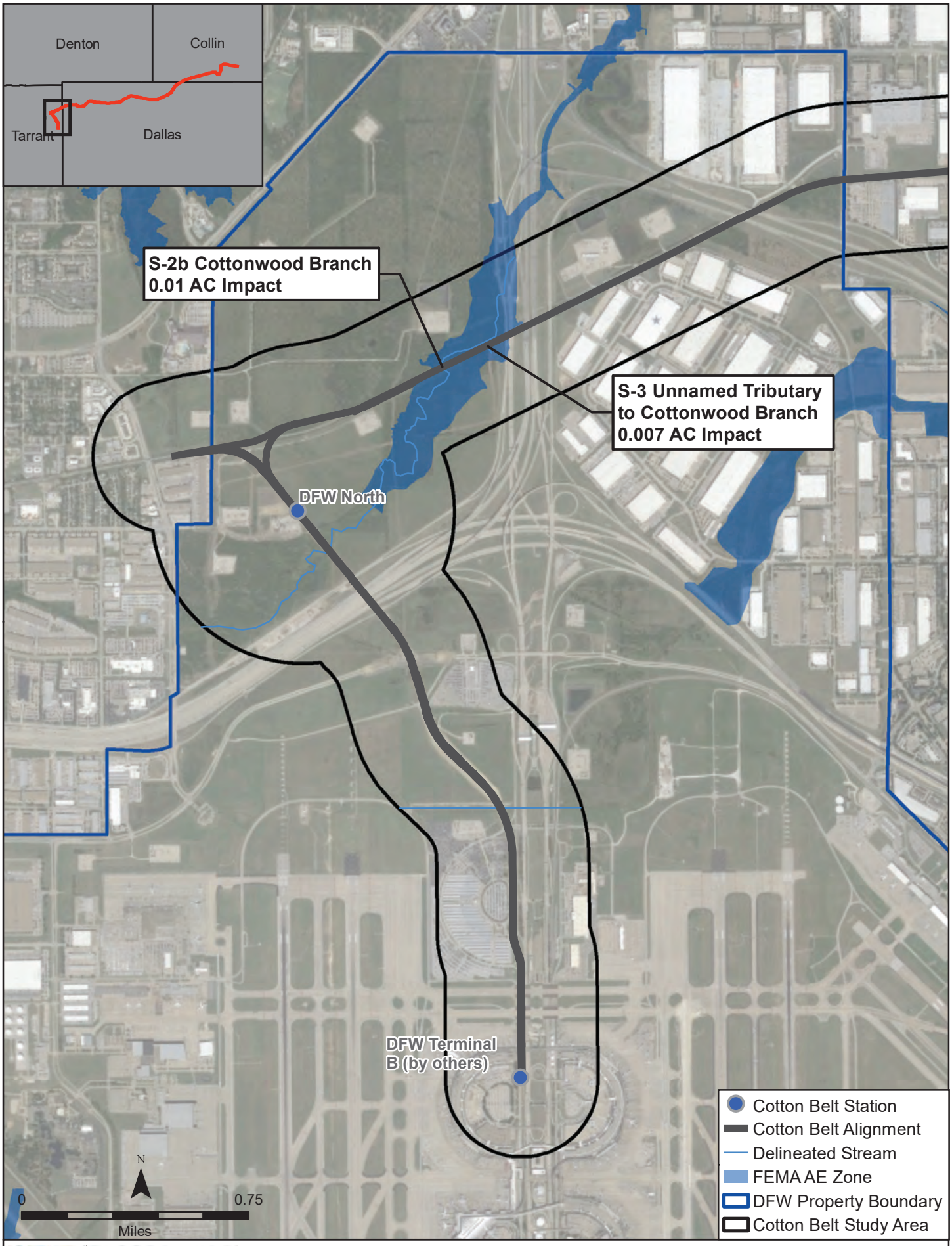

Figure 6-8
Surface Water Impacts of DFW Airport
Proposed Action

Cotton Belt Corridor
Regional Rail Project
Final Environmental Impact Statement

Construction activities, such as grading, removal or addition of fill materials, paving, and material storage and use (i.e., concrete, petroleum products) can be potential pollutant sources which are controllable with the proper implementation of BMPs identified in the DFW Airport Proposed Action's construction SWPPP. Potential post-construction pollutant sources include stormwater discharges from train tracks, station platforms and parking lots associated with the station areas which may carry trash, anti-freeze, lubricating fluids, gasoline and other petroleum hydrocarbons associated with trains and automobiles. In addition, stormwater runoff from platforms could contribute to erosion and sedimentation issues adjacent to station sites.

With appropriate project design and BMP implementation, such as minimizing impervious cover, implementing low impact development design, regular station and parking lot sweeping/cleaning, it is assumed that there will be minor impacts to surface water which will be below the significance threshold.

6.4.1.10 Cumulative Impacts

Cumulative impacts refer to those impacts that result from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions.

As shown in the 2014 *DFW Airport Land Use Plan* map (**Appendix C**), the TEXRail Project and the Preferred Alternative have been incorporated into the development plans for DFW Airport. South of the DFW North Station the two projects share a corridor. This alignment has been coordinated with DFW Airport to avoid conflicts with major airport infrastructure projects including the Northeast Perimeter Taxiway Extension and the Terminal Renewal and Improvement Program (TRIP). Several roadway modifications minimize or avoid traffic impacts of the rail corridor. The North Airfield Drive realignment will be grade separated over the rail corridor. The service road for the ASR-9 Radar facility has been relocated to avoid crossing the tracks. Access to DFW North Employee Parking and the DFW North Express Parking has also been modified. DFW Airport has long planned to develop the vacant developable land areas surrounding the Project corridor. The Preferred Alternative is consistent with these plans. It is understood that the DFW Airport's property development will proceed with or without the Preferred Alternative, and such development is thus not a secondary or induced impact of the Preferred Alternative.

At DFW Airport Fire Station 6 (711 Regent Boulevard) on the existing railroad right-of-way, DART will construct a new at-grade crossing to allow fire access to the north side of the right-of-way. DFW Airport is also planning two additional aerial roadway crossings of the Preferred Alternative. One would cross the existing railroad right-of-way east of the DFW North Station to connect to future airport developments across the tracks. The second is Dallas Road which crosses the new right-way south of the DFW North Station. This will facilitate east-west circulation.

Although the DFW Airport Proposed Action is mostly undeveloped and vacant land, the DFW Airport *Commercial Development Land Use Plan* commits this land for development as a Transportation Corridor. No adverse impacts affecting planned land uses are anticipated as a result of the Project.

The cumulative effects relating to DFW Airport Study Area considered actions planned by the City of Grapevine, DART, DFW Airport, NCTCOG, Trinity Metro, and TxDOT. Transportation plans near the Study Area include the TEXRail Project, the addition of lanes to the DFW Connector on SH 121 to the north of the airport and construction of a new four-lane arterial identified as the East-West Connector, connecting SH 360 at East Harwood Road and the Spur 97 at Rental Car Drive on the south end of the airport. Land use developments included in the DFW Airport *Commercial Development Land Use Plan* provide a general pattern for location, distribution, and character of future commercial land uses, while the City of Grapevine does not currently have a comprehensive plan, nor an adopted plan, for the area.

6.4.1.11 Irreversible and Irretrievable Commitment of Resources

The construction of the DFW Airport Proposed Action will impact energy supplies, air emissions, and water consumption. This includes fuel usage during construction of the improvements, construction-related air emissions, and water consumption during construction.

Construction activities will temporarily increase use of some or all of the following: electricity, fuel, oil, chemicals, water, and other forms of energy and resources needed to construct the identified improvements. The demand for these resources will not exceed supply or substantially increase demand.

The DFW Airport Proposed Action will not result in substantial impacts to natural resources and energy supply above the threshold of significance; therefore, further analysis is not required.

To ensure the construction and operations of the Preferred Alternative meets the principles of EO 13123 by reducing petroleum use, total energy use and associated air emissions, and water consumption, DART will include language within its contracts requiring contractors and operators to follow these guidelines. Within the Design-Build contract, the General and Special Provisions will include the following references:

- Energy Policy and Conservation Act – The Contractor shall comply with mandatory standards and policies relating to energy efficiency contained in the State Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act (42 USC Section 6321, et seq. and 49 CFR Part 18).
- Buy America Certificate – The Contractor certifies that it will comply with the requirements of Section 165(a) of the Surface Transportation Assistance Act of 1982, as amended, and the applicable regulations of 49 CFR Part 661 Buy America Requirements for mass transit procurements.

7. Cost and Financial Analysis

7.1 Introduction

This chapter presents the capital and operating and maintenance (O&M) cost estimates and the financial analysis for the Preferred Alternative. Capital cost estimates reflect a 10 percent level of preliminary engineering and understanding of the principal structural and systems elements. The DART 20-Year Financial Plan includes a range of funding sources for the project, which are also discussed in this chapter.

7.2 Cost Estimate Methodology

This section summarizes the cost estimating methodology for both the capital cost estimate and ongoing O&M costs.

7.2.1 Capital Cost Methodology

The methodology for estimating the capital construction costs for the Preferred Alternative is in accordance with Federal Transit Administration (FTA) guidance as outlined in the Capital Investment Grant program and is further defined in the *DART Cotton Belt Corridor Capital Cost Estimating Methodology Technical Memorandum* **(Appendix B)**. The cost estimates use parametric unit prices (unit cost per route foot) and special condition costs for the majority of the cost effort. The parametric unit costs are based on a level of detail appropriate for conceptual engineering and project development phases. The parametric unit costs are an estimate developed for all elements included in a typical cross section for a unit of measurement (e.g., route feet). The parametric cost is then multiplied by the total length of the project for the total cost of that element.

This estimate includes expenses for the development of civil/structural elements, cost to develop transit passenger stations, accommodation of known site conditions, purchase and installation of system control components, and acquisition of vehicles. The conceptual composite unit prices were developed by using unit prices recently experienced by DART from the Green and Orange Lines Corridor construction and the South Oak Cliff Corridor Blue Line Extension project. Various major elements of the estimates include: utilities, special construction, grade preparations, trackwork, structures, street grade crossings, stations, ticket vending machines, park and ride lots, communications, train signals, a maintenance facility, and vehicles. Cost estimates were developed based on the current 10 percent level of design.

The *DART Cotton Belt Corridor Capital Cost Estimating Methodology Technical Memorandum* also identifies estimated direct costs, non-construction related costs, and corresponding allocated and unallocated contingencies associated with the current status of design. Once the typical “unit cost per route foot” and/or “cost per mile” estimates were determined at a basic civil cost level, several allowances and add-on factors are applied. These factors are added to account for uncertainty of the estimates at this level given that only 10 percent design has been completed, and also account for the costs of non-construction items such as engineering design, construction management, and insurance. The capital cost estimate utilizes FTA Standard Cost Categories (SCC) for Capital Projects encompassing the anticipated project components and corresponding estimated unit prices into a comprehensive conceptual estimate.

7.2.2 O&M Cost Methodology

The methodology for estimating operating and maintenance (O&M) costs was designed to satisfy FTA guidance on cost modeling. Additional information about the methodology used to forecast O&M costs is provided in **Appendix B** in the *DART Cotton Belt Operations and Maintenance Plan, January 2018*. Key assumptions to support the O&M plan and O&M cost estimate include:

- The system will require a fleet of eight DMUs (five required for peak revenue service).
- During initial operations, weekday span of service will generally be from 6:00 am to 9:00 pm. The service hours for some stations could be as early as 5:15 am or as late as 10:15 pm as trains come in and out of revenue service from the EMF.
- Trains will operate in both directions every 30 minutes during the peak travel periods of 6:00 am - 9:00 am and 3:00 pm - 7:00 pm.
- Trains will operate in both directions every 60 minutes during the non-peak travel periods of 9:00 am - 3:00 pm and after 7:00 pm.
- Service on Saturday, Sunday, and major holidays will be from 8:00 am to 8:00 pm operating in both directions every 60 minutes throughout the day.
- In the future (date to determined) trains will operate during the peak periods at an increased service level of every 20 minutes in both directions, and service hours may be extended to 12:15 am.
- A phased approach to implementation with an initial operating schedule of 30-minute peak headways and 60-minutes off-peak headways. The ultimate phase will operate with an operating schedule of 20-minute headways. O&M costs were only estimated for the initial schedule as the schedule for reducing headways is not yet known.
- Under normal operations, it is assumed that every scheduled train will stop at every passenger station along the line on every revenue trip. DART may run a “Special Event” train with limited station stops for key special events along the corridor such as Addison Kaboom Town, Richardson Wildflower Festival, and Carrollton Festival at the Switchyard.
- Each train will be staffed by two people, an Engineer and a Conductor. To allow for flexibility of assignments with a small overall staff, Engineers and Conductors will be cross-trained, certified, and qualified in both crafts.

7.3 Capital Plan

The following sections discuss the status of the capital cost estimate of the Preferred Alternative, as well as proposed funding sources. The DART 2030 Transit System Plan (TSP), approved in October 2006, identified the Preferred Alternative as a priority project. In 2016, DART advanced implementation of the Preferred Alternative to the year 2022 and reflected this new revenue service date in its FY17 Twenty-Year Financial Plan. The DART 2040 Transit System Plan, which is under development, will reflect this change to the project schedule.

7.3.1 Capital Cost Estimate

The preliminary cost estimate is based on 10 percent design and is subject to change. It is in line with the current FY18 Financial Plan budget of $1,135 million (year-of-expenditure or YOE). **Table 7-1** documents the current draft cost estimate using FTA Standard Cost Categories (SCC). There is a design contingency at this stage of design that is included in categories 10.0 through 70.0.

A brief description of each of the capital cost categories, and key items of note are as follows:

Guideway and Track Elements – This includes the costs of track guideway including the ties, rail, ballast, the aerial grade separation bridge structures, and the retaining walls to support the retained fill and retained cut areas.

Stations – There are nine new regional rail stations included in the cost estimate with varying costs depending on if it is platform only or if a new park-and-ride, bus circulation area, vertical circulation, etc. is provided. The largest cost component of this category will be the infill 12th Street LRT Station.

Support Facilities (Maintenance Facility) – For the Project, it was determined that a new maintenance facility was required. Information from the recently completed TEXRail Maintenance

Facility and DCTA A-Train Maintenance Facility will inform estimates for site development, track, and building facilities. This category also includes relocation of Mercer Yard in Carrollton and improvements to Mockingbird Yard in Dallas.

Sitework and Special Conditions – This includes the costs of any necessary demolition, clearing, earthwork, site utilities, environmental mitigation, sound walls, pedestrian trail relocation, and automobile and bus access roads to the rail stations.

Systems – This includes the costs of passenger vehicle positive train control and signals, the addition of any street crossing traffic signals and crossing protection, communications systems, fare collection systems, and additions needed to the DART Control Center.

Right-of-Way, Land Improvements – As outlined in **Section 4.4**, there will be acquisitions and displacements, as well as other right-of-way easements (permanent or temporary) for the project. The Preferred Alternative will assume a percentage of the total construction costs until full details related to right-of-way are determined.

Vehicles – This cost estimate will reflect purchase of eight regional rail vehicles; five for service and three spares. For the Project, it is assumed that a modern diesel multiple unit (DMU) commuter rail technology vehicle will be selected for operations similar to the selected TEXRail vehicle.

Professional services (Add-On Allowances) - An additional allowance is included in the construction costs. This covers the administrative cost of planning, support services, insurance, preliminary and final design, project management and construction management, which are consistent with the items identified in the FTA Standard Cost Category (SCC) worksheets.

Unallocated contingency - A contingency is added to the construction cost estimate to cover the expense of unforeseen costs incurred by contractors during construction. This is also referred to as an unallocated contingency. This is included above.

Table 7-1. Capital Cost Estimate for Cotton Belt

FTA Standard Cost Category	Categories	Base Cost Estimate (YOE - $M)
10.0	Guideway and track elements	$258.0
20.0	Stations	$106.0
30.0	Support facilities (EMF, Mercer Yard, Mockingbird Yard improvements)	$45.0
40.0	Sitework and special conditions	$89.0
50.0	Systems	$96.0
60.0	Right-of-way, land, existing improvements	$93.0
70.0	Vehicles	$106.0
80.0	Professional services	$195.0
	Allocated and Unallocated Contingency and Betterments	$147.0
Total		$1,135.0

Source: DART

7.3.2 Proposed Capital Funding Sources

The Preferred Alternative is proposed to be financed through a federal loan program called Railroad Rehabilitation and Improvement Financing (RRIF), along with a combination of other federal, regional and local sources. **Table 7-2** summarizes the proposed funding sources, which total $1,135.0 million (YOE). This amount is currently contained in the FY18 20-Year Financial Plan. A description and status of each of the funding sources is provided below.

Table 7-2. Project Funding Sources

Sources	Amount (millions$ YOE)
Railroad Rehabilitation and Improvement Financing (RRIF) Loan	$908.0
FTA Congestion Mitigation and Air Quality (CMAQ)	$100.0
FTA (Section 5307 Formula)	$3.3
FTA (CMAQ)	$36.0
Local*	$87.7
TOTAL	$1,135.0
*Anticipated local sources may include a combination of the following: - DART sales tax - City of Plano (tax increment financing) - City of Richardson (tax increment financing) - City of Addison ($5M in CMAQ funds to be repaid to RTC by City) - City of Coppell (in kind contribution) - Fare revenue - Naming rights, advertising - Other value capture sources	

Source: DART Finance Department; FY18 20-Year Financial Plan

7.3.2.1 RRIF Loan

The RRIF program was established by the Transportation Equity Act for the 21st Century (TEA-21) and amended by the Safe Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Under this program, the FRA Administrator is authorized to provide direct loans and loan guarantees to finance development of railroad infrastructure. The funding may be used to acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, components of track, bridges, yards, buildings and shops. Direct loans can fund up to 100 percent of a railroad project with repayment periods of up to 35 years and interest rates equal to the cost of borrowing to the government.

DART submitted a pre-application to the FRA with project information and the anticipated loan request amount of $908 million. A complete application will be submitted concurrent with the completion of the NEPA process and issuance of the FEIS/ROD.

7.3.2.2 FTA

On July 13, 2017, the Regional Transportation Council (RTC) approved allocation of $100 million from the CMAQ and Surface Transportation Block Grant (STBG) funding program to the Preferred Alternative over years 2018-2022. During each of the years when funding is approved, DART will file a grant application with FTA for the funding.

7.3.2.3 Local

Local sources are anticipated to fund approximately $87.7 million of the project. Interlocal agreements (ILA) have been or will be developed with public and private entities to document these local contributions and finalize amounts and funding schedules. Local sources may include:

- DART sales tax
- City of Plano (tax increment financing)
- City of Richardson (tax increment financing)
- City of Addison ($5M in CMAQ funds to be repaid to RTC by City)
- City of Coppell (in kind contribution)
- Fare revenue
- Naming rights, advertising
- Other value capture sources

7.4 Operating and Maintenance Costs

Based on the above methodology and assumptions, an O&M Cost Build-up for Cotton Belt initial operations was developed. Labor costs account for nearly half (46 percent) of annual costs. In total, Cotton Belt operations are estimated to cost about $17.2 million dollars per year.

Table 7-3 summarizes the anticipated O&M costs by National Transit Database (NTD) category. These annual costs reflect the initial operating plan of 30-minute peak and 60-minute off-peak headways.

Table 7-3. Annual Operating and Maintenance Cost Estimate

NTD Cost Category	2022 Opening Year Annual O&M Cost Estimate ($1,000s 2017 dollars)	Cost Driver
Transportation	$5,708	Revenue train hours
Fuel & Utilities	$2,774	Revenue train hours
Vehicle Maintenance	$2,232	Vehicles
Maintenance of Way	$3,440	Directional route miles
General Administration	$3,084	22% of other O&M costs
TOTAL	$17,238	

Source: LTK; Cotton Belt Operations and Maintenance Plan (Revision; March 2018)

Vehicle maintenance capabilities will encompass the activities of inspection, servicing, and component repair and replacement. Specialized infrequently performed maintenance work may be performed off-site through subcontracts (i.e., diesel engine rebuild). Systems and facilities maintenance work requiring infrequently used specialty skills, such as roof repair, landscape maintenance, or upholstery may also be handled by contractors.

In addition, the DART FY 2018 Financial Plan includes an estimate of $35 million for Cotton Belt Preventive Maintenance for a 20-year period on the Capital/Non-Operating Project Budget List.

7.5 Cash Flow Analysis

As previously stated, DART is currently pursuing a loan from the FRA's RRIF program to finance the Preferred Alternative. If such a loan can be obtained, it will come at a substantially lower interest rate than conventional tax-exempt debt. As the Preferred Alternative progresses and expenses are incurred, draws will be made against the loan. It is anticipated that the debt will be structured with level repayments over approximately thirty years.

Beyond already existing discretionary grants, DART assumed the following federal participation in future programs in the FY2018 Financial Plan: $103.3 million for Cotton Belt Rail scheduled to be received between 2018 and 2022.

When service begins on the Preferred Alternative in December 2022, it will generate additional formula funds beginning in 2024. An estimate of $2.3 million has been made for these additional funds based on current federal apportionment values.

Cash flow for local sources will be developed as interlocal agreements are developed. An additional $33.1 million is expected from several sources between 2022 and 2035 to support operations, maintenance, and debt service for the Preferred Alternative.

7.6 Risks and Uncertainties

As with any project in the planning stage, there is a degree of cost risk associated with the Preferred Alternative. This cost risk is primarily associated with the definition of the project scope, project schedule, and project funding.

In DART's FY2017 Financial Plan, total sources of funds for the period FY 2017 through FY 2021 were projected to increase $969 million (20.8 percent) from the FY 2016 Plan. $860 million of this increase was associated with debt issuances and capital contributions for advancing the Preferred Alternative by 13 years.

Cost estimates are based on an approximate 10 percent level of engineering. The cost estimate will become more precise as the Preferred Alternative is refined with the Design-Build contractor. Cost increases could occur as a result of unexpected soil conditions and geotechnical issues, or the need for unexpected utility relocations. The current cost estimate includes contingencies to cover potential changes.

Schedule delays could be related to unforeseen construction challenges, local decision-making process, equipment malfunctions, or general construction delays. Uncertainty still exists in the precise timing of construction phases, which may be affected by the availability of local funding, and the timing of Federal funding approvals.

7.6.1 Local Funding Risks

The primary source of non-Federal funding is local cities' sales tax. Sales tax collections are sensitive to economic conditions and overall rates of consumption. Any reduction in funding could impact DART's ability to complete the Preferred Alternative. Conversely, positive economic conditions could improve DART's financial position and increase funding availability.

8. Public and Agency Consultation and Coordination

8.1 Public Involvement Plan

This chapter summarizes public participation and agency consultation and coordination during development of the environmental studies and documentation of this FEIS/ROD. A *Cotton Belt Corridor Regional Rail Public Involvement Plan (PIP)* was developed to proactively and effectively communicate the project scope, issues, and potential impacts and benefits while collecting valuable public, agency and stakeholder input for the project. Refer to **Appendix H** for the Cotton Belt Public Involvement Plan.

Goals of the PIP are as follows:

- Develop and maintain relationships with community leaders, stakeholders and technical group members to provide an environmentally aware and multi-modal approach to transportation needs.
- Inform, educate and actively involve the public throughout the planning process by providing timely and easily understood information to members of the affected community and any other interested party.
- Integrate citizens' needs and concerns into the project development process.
- Work with traditionally underserved populations to understand and consider their needs by implementing processes recommended for environmental justice by the US Department of Transportation (USDOT).
- Providing for periodic review of the effectiveness of the public involvement process to ensure full and open access to all and revision of the process, if necessary.

Public and Agency Scoping

Public and agency involvement activities officially started with the publication of the Notice of Intent (NOI) to prepare an environmental impact statement for the proposed Cotton Belt Regional Corridor Project. The NOI was issued in the Federal Register by the FTA on July 8, 2010. It provided information on the scoping process purpose and meeting logistics, the project's proposed purpose and need, location and environmental setting, possible alternatives, possible effects, FTA procedures, and other pertinent project information.

The public scoping meeting was held on Thursday, July 29, 2010, at 6:30 p.m. at the Addison Conference Center. DART held an Interagency Scoping Meeting on July 28, 2010. Numerous federal, state, tribal, regional and local agencies were invited to provide input during the scoping process. Comments received during this initial scoping process are documented in the Scoping Summary Report, available on DART.org/Cottonbelt as part of the AECR documentation (**Appendix F**). In August 2016, DART relaunched the project and EIS documentation efforts. This chapter focuses on the additional outreach done since August 2016. Both the initial scoping effort and more recent activities provided the basis for identification of issues important to project definition and EIS development.

8.2 Methods and Tools

Implementation of the PIP involves a variety of methods and tools, ranging from regular DART Board of Directors meetings, federal agency meetings, city and stakeholder coordination meetings, and formation of specific Area Focus Groups (AFGs) along the corridor. AFGs were established after project scoping and reconvened in early 2017 to provide input and assist with resolving issues and developing support for the project. These AFGs, which consist of residents, property owners, schools, and other community leaders representing a variety of interests, reviewed the recommendations relative to the environmental analysis and preliminary design of

the project. The role of the AFG is to provide input, exchange ideas, identify and assist with resolving issues and concerns and disseminate information to their respective neighborhoods or organizations. Four AFGs were established: DFW Airport/Coppell, Cypress Waters, Carrollton/Addison, North Dallas, and Richardson/Plano.

A web page was also established for the Project at DART.org/Cottonbelt. Persons visiting the website can obtain information on the status of the project, reference material, prior studies, meeting presentations and materials, and meeting summaries and comments. The website is a comprehensive source of project information. The website also provides a means for the public to provide comments. Since July 2010, the site has registered over 109,000 page hits.

In August 2016, DART relaunched the public process for the Project with a series of public meetings held along the Cotton Belt Corridor. Since the relaunch of the Project, DART has hosted four sets of public meetings (May 2017, August 2017, November/December 2017, and March 2018 in North Dallas only) to present information to the public, as well as receive input from the affected community. A Facebook Live public meeting was held on March 15, 2018, which had nearly 14,000 views. Public meetings were tailored to meet community needs and have occurred in accordance with project milestones. Meeting presentation materials, technical information, and documentation of the meeting summaries were posted to the project website for each meeting.

For public meetings, a variety of outreach methods were used. As DART sought meaningful public input specific to the EJ communities, a special effort was made to involve these communities. EJ inclusion efforts included bilingual advertisements and publications, outreach to minority organizations, and material distribution within EJ communities. **Section 4.9** identified the key issues and concerns raised by the EJ community. The following specific notification efforts were used for Cotton Belt public meetings:

- 20,000 brochures printed in both English and Spanish for each community meeting. A postage paid comment card was attached to the brochure;
- Bilingual meeting brochures were placed on all DART vehicles: bus routes, LRT, TRE;
- Windshield distribution was done at six DART facilities located near the corridor: Downtown Carrollton, Addison Transit Center, CityLine/Bush Station, Arapaho Center Station, Jack Hatchell Transit Center and Parker Road Station;
- Door hangings were placed along the corridor at residential and business locations within 500 feet from center of tracks on both sides of alignment;
- Newspaper ads were in the following publications: Dallas Morning News, Al Dia (Hispanic), Dallas Weekly (African American), Dallas Chinese News (Asian);
- Email/texts for DART meetings to Cotton Belt subscribers (5,290);
- Posted on DART.org, Twitter and Facebook page;
- Posted to 38 Nextdoor neighborhoods along the corridor (12,384);
- Email to the following: DART AFG members, all previous meeting attendees and any other appropriate contact;
- Email to Chambers of Commerce including the Hispanic, African American and Asian Chambers;
- Email to the DART congressional delegation, councilmembers, mayors, city managers, and appropriate city staff; and
- Email to all media outlets.

DART also held four public hearings for the Project. One was held on March 27, 2018, for the Service Plan amendment, and three were held on May 14, 15, and 16, 2018, to receive comments on the DEIS. DART also held a Sound Wall Demonstration in the north Dallas area from July 31 to August 4, 2018, to illustrate the height options of the noise barriers.

8.3 Summary of Public and Agency Participation

Public participation strategies and activities have been used to disseminate project information and solicit and receive public input and comment on project-related issues, concerns and potential environmental impacts of the project. A summary of public and agency coordination meetings since the August 2016 project re-initiation is provided in **Table 8-1**.

Table 8-1. Public and Agency Coordination Meetings

Meeting	Date	Location
Public Meetings/Hearings		
Project Re-Initiation Meetings	August 24, 2016 August 25, 2016 August 29, 2016 August 30, 2016 August 31, 2016 August 31, 2016	Richardson Civic Center Addison Conference Center Parkhill Junior High School, Dallas Event 1013, Plano Plaza Arts Center, Carrollton DFW Airport Marriot
May 2017 Project Update Meetings	May 15, 2017 May 17, 2017 May 22, 2017	Parkhill Junior High School, Dallas Richardson Civic Center DeWitt Perry Middle School, Carrollton
September 2017 Project Update Meetings	September 18, 2017 September 20, 2017 September 25, 2017	DeWitt Perry Middle School, Carrollton Richardson Civic Center Parkhill Junior High School, Dallas
November/December 2017 Project Update Meetings	November 28, 2017 November 30, 2017 December 7, 2017	Parkhill Junior High School, Dallas Richardson Civic Center Addison Conference Center
March 2018 Project Update Meeting	March 8, 2018	Parkhill Junior High School, Dallas
Project Update	March 8, 2018	Parkhill Junior High School, Dallas
Facebook Live	March 15, 2018	DART HQ/Facebook
DART Service Plan Amendment Pubic Hearing	March 27, 2018	DART HQ
Draft EIS Public Hearing	May 14, 2018	Renaissance Dallas Addison – Lalique Ballroom
Draft EIS Public Hearing	May 15, 2018	Richardson Civic Center – Grand Ball Room
Draft EIS Public Hearing	May 16, 2018	DFW Airport Marriott
Chapter Texas Parks and Wildlife Public Hearing	July 9, 2018	Richardson Civic Center
Cotton Belt Sound Wall Demonstration	July 31, 2018 – August 4 2018	Preston Green Park, Dallas
Area Focus Group (AFG) Meetings		
Richardson/Plano AFG	April 27, 2017	Richardson City Hall
DFW Airport/Coppell/Cypress Waters AFG	May 4, 2017	Cypress Waters Office Conference Room
North Dallas AFG	May 9, 2017	North Central Police Service Center
Addison/Carrollton AFG	May 10, 2017	Addison Conference Center
Richardson/Plano AFG	August 24, 2017	Plano Municipal Center
Addison/Carrollton AFG	August 29, 2017	Addison Conference Center
DFW Airport/Coppell/Cypress Waters AFG	August 31, 2017	Cypress Waters Office Conference Room
North Dallas AFG	September 11, 2017	Campbell Green Recreation Center
North Dallas AFG	March 1, 2018	UT Dallas, Richardson
DART Board/Committee Meetings		
DART Board Workshop	February 3, 2017	Renaissance Richardson
DART Planning Committee	February 28, 2017	DART
DART Planning Committee	March 28, 2017	DART
DART Planning Committee	April 25, 2017	DART

Table 8-1. Public and Agency Coordination Meetings (cont'd)

Meeting	Date	Location
DART Planning Committee	May 23, 2017	DART
DART Planning Committee	July 11, 2017	DART
DART Planning Committee	August 22, 2017	DART
DART Planning Committee	September 26, 2017	DART
DART Planning Committee	September 26, 2017	DART
DART Planning Committee	October 3, 2017	DART
DART Committee-of-the-Whole	November 1, 2017	DART – Special Meeting
DART Planning Committee	November 14, 2017	DART
DART Committee-of-the-Whole	November 28, 2017	DART – Special Meeting
DART Committee-of-the-Whole	December 12, 2017	DART
DART Planning Committee	January 23, 2018	DART
DART Planning Committee	February 27, 2018	DART
DART Planning Committee	March 28, 2018	DART
DART Committee-of-the Whole	April 10, 2018	DART
DART Committee-of-the Whole	April 24, 2018	DART
DART Committee-of-the Whole	May 8, 2018	DART
DART Committee-of-the Whole	May 22, 2018	DART
DART Committee-of-the Whole	June 5, 2018	DART
DART Committee-of-the Whole	June 21, 2018	DART
DART Committee-of-the Whole	June 26, 2018	DART
DART Committee-of-the Whole	July 10, 2018	DART
DART Committee-of-the Whole	August 14, 2018	DART
DART Committee-of-the Whole	August 28, 2018	DART
One DOT Meetings (FTA, FAA, FRA)		
Project Initiation Meeting	December 8, 2016	FTA Region VI Headquarters
Project Update Meeting	January 4, 2017	Conference Call
Project Update Meeting	January 29, 2017	Conference Call
Project Update Meeting	February 1, 2017	Conference Call
Project Update Meeting	March 2, 2017	Conference Call
Project Update Meeting	March 26, 2017	Conference Call
Project Update Meeting	April 13, 2017	Conference Call
Project Update Meeting	April 27, 2017	Conference Call
Project Update Meeting	May 18, 2017	Conference Call
Project Update Meeting	June 29, 2017	Conference Call
Project Update Meeting	September 14, 2017	Conference Call
Project Update Meeting	September 28, 2017	Conference Call
Project Update Meeting	November 2, 2017	Conference Call
Project Update Meeting	December 7, 2017	Conference Call
Project Update Meeting	January 25, 2018	Conference Call
Project Update Meeting	February 22, 2018	Conference Call
Project Update Meeting	March 15, 2018	Conference Call
Project Update Meeting	April 5, 2018	Conference Call
Project Update Meeting	May 24, 2018	Conference Call
Project Update Meeting	June 28, 2018	Conference Call
Project Update Meeting	July 26, 2018	Conference Call
Project Update Meeting	August 23, 2018	Conference Call
FTA Coordination Meetings		
Coordination/Project Update	August 8, 2016	Conference Call
Coordination/Project Update	August 25, 2016	Conference Call
Coordination/Project Update	September 22, 2016	Conference Call
Coordination/Project Update	October 4, 2016	Conference Call

Table 8-1. Public and Agency Coordination Meetings (cont'd)

Meeting	Date	Location
DART/FTA Quarterly Meeting	October 17, 2016	DART Headquarters
Coordination/Project Update	November 3, 2016	Conference Call
Coordination/Project Update	November 17, 2016	Conference Call
Coordination/Project Update	December 15, 2016	Conference Call
Coordination/Project Update	January 13, 2017	Conference Call
DART/FTA Quarterly Meeting	January 26, 2017	FTA Region VI Headquarters
Coordination/Project Update	March 9, 2017	Conference Call
Coordination/Project Update	March 23, 2017	Conference Call
Coordination/Project Update	April 4, 2017	Conference Call
Coordination/Project Update	April 12, 2017	Conference Call
Coordination/Project Update	May 3, 2017	Conference Call
Coordination/Project Update	April 4, 2017	Conference Call
DART/FTA Quarterly Meeting	April 20, 2017	DART Headquarters
Coordination/Project Update	April 24, 2017	Conference Call
Coordination/Project Update	May 3, 2017	Conference Call
Coordination/Project Update	May 31, 2017	Conference Call
Coordination/Project Update	June 15, 2017	Conference Call
Coordination/Project Update	June 27, 2017	Conference Call
Coordination/Project Update	July 12, 2017	Conference Call
DART/FTA Quarterly Meeting	July 20, 2017	FTA Region VI Headquarters
Coordination/Project Update	August 22, 2017	Conference Call
Coordination/Project Update	September 7, 2017	Conference Call
Coordination/Project Update	September 21, 2017	Conference Call
DART/FTA Quarterly Meeting	October 19, 2017	DART Headquarters
Coordination/Project Update	November 1, 2017	Conference Call
Coordination/Project Update	November 30, 2017	Conference Call
4f Coordination Meeting	December 14, 2017	Conference Call
Coordination/Project Update	January 11, 2018	Conference Call
DART/FTA Quarterly Meeting	January 18, 2018	FTA Region VI Headquarters
Coordination/Project Update	February 8, 2018	Conference Call
Coordination/Project Update	February 22, 2018	Conference Call
Coordination/Project Update	March 8, 2018	Conference Call
Coordination/Project Update	April 5, 2018	Conference Call
DART/FTA Quarterly Meeting	April 26, 2017	DART Headquarters
Coordination/Project Update	May 16, 2018	FTA Region VI Headquarters
Coordination/Project Update	May 17, 2018	Conference Call
Coordination/Project Update	May 31, 2018	Conference Call
Coordination/Project Update	June 19 2018	Conference Call
Coordination/Project Update	June 28, 2018	Conference Call
Coordination/Project Update	July 10, 2018	Conference Call
DART/FTA Quarterly Meeting	July 26, 2018	FTA Region VI Headquarters
Coordination/Project Update	August 23, 2018	Conference Call
FAA/Airport Coordination Meetings		
DFW Airport Station Design	January 19, 2017	DART
DFW Airport Coordination Meeting (DFW, Trinity Metro, NCTCOG)	February 7, 2017	DART
DFW CEO Briefing	April 20, 2017	DART
Addison Airport	November 2, 2017	Addison Service Center
DFW Airport Project Coordination	November 13, 2017	DFW Airport
DFW Airport Project Coordination	January 9, 2018	DFW Airport

Table 8-1. Public and Agency Coordination Meetings (cont'd)

Meeting	Date	Location
FRA/Freight Railroad Coordination Meetings		
FRA Passenger Division Coordination	October 7, 2016	Conference Call
FWWR Coordination	May 2017	Multiple telephone and email exchanges
DGNO Coordination	May 2017	Multiple telephone and email exchanges
FWWR Coordination	July 2017	Multiple telephone and email exchanges
DGNO Coordination	July 2017	Multiple telephone and email exchanges
DGNO Coordination Meeting	July 12, 2017	DGNO Carrollton
BNSF Coordination	September 22, 2017	BNSF HQ Fort Worth, TX
FWWR Coordination	October 2017	Multiple telephone and email exchanges
FWWR Coordination	November 30, 2917	Corridor Hi Rail Tour
DGNO Coordination	November 30, 2917	Corridor Hi Rail Tour
KCS Coordination	December 1, 2917	Corridor Hi Rail/Walking Tour
DGNO Plan Review	January 25, 2018	DGNO Garland, Tx
FWWR Plan Review	January 30, 2018	FWWR Hodge Yard
BNSF Coordination	March 2, 2018	TRE Irving Yard
BNSF Coordination	March 9, 2018	TRE Irving Yard
FRA	March 16, 2018	TRE Irving Yard
FRA PTC Group	May 30, 2018	FRA Region 5 HQ, Fort Worth, TX
FRA	June 28, 2018	Conference Call
BNSF	July 23, 2018	TRE Irving Yard
Build America Bureau/ RRIF Loan Meetings		
Build America Bureau	April 3, 2018	Washington, DC
Build America Bureau	April 12, 2018	Conference Call
Build America Bureau	April 19, 2018	Conference Call
Build America Bureau	April 26, 2018	Conference Call
Build America Bureau	May 3, 2018	Conference Call
Build America Bureau	May 10, 2018	Conference Call
Build America Bureau	May 17, 2018	Conference Call
Build America Bureau	May 24, 2018	Conference Call
Build America Bureau	May 31, 2018	Conference Call
Build America Bureau	June 7, 2018	Conference Call
Build America Bureau	June 14, 2018	Conference Call
Build America Bureau	June 21, 2018	Conference Call
Build America Bureau	June 28, 2018	Conference Call
Build America Bureau	July 12, 2018	Conference Call
Build America Bureau	July 19, 2018	Conference Call
Build America Bureau	July 12, 2018	Conference Call
Build America Bureau	August 9, 2018	Conference Call
Build America Bureau	August 16, 2018	Conference Call
Build America Bureau	August 23, 2018	Conference Call
Agency/City Coordination Meetings		
Richardson City Council Briefing	August 22, 2016	Richardson City Hall
Trinity Metro Coordination Meeting	February 3, 2017	DART
Corridor City Managers Meeting	February 7, 2017	DART
Coppell Parks Department	February 14, 2017	Coppell City Hall
City of Coppell	March 6, 2017	Conference Call

Table 8-1. Public and Agency Coordination Meetings (cont'd)

Meeting	Date	Location
City of Dallas	March 7, 2017	Dallas City Hall
City of Carrollton	March 8, 2017	Carrollton City Hall
City of Plano	March 9, 2017	Plano City Hall
City of Richardson	March 16, 2017	Richardson City Hall
Town of Addison	March 29, 2017	Addison Service Center
City of Richardson/UT Dallas	April 4, 2017	Richardson City Hall
NCTCOG, Regional Trails	April 13, 2017	DART
Corridor City Managers Meeting	April 27, 2017	DART
Dallas Councilmember Alonzo	May 4, 2017	Dallas City Hall
City of Coppell	May 5, 2017	Coppell Service Center
Dallas City Council Transportation and Trinity River Project Committee Meeting	May 8, 2017	Dallas City Hall / Joint DART Board of Directors meeting
City of Plano, Douglass Community/Davis Cemetery	August 7, 2017	Plano City Hall
Texas Historical Commission	August 21, 2017	Conference Call
NCTCOG, Regional Trails	August 23, 2017	NCTCOG
Dallas County/NCTCOG, Trails	August 29, 2017	Dallas County Administration Building
City of Coppell, Parks	August 29, 2017	Dallas County Administration Building
NCTCOG	September 18, 2017	Conference Call
City of Richardson	October 6, 2017	Richardson City Hall
City of Coppell, Parks	October 18, 2017	Coppell Service Center
City of Coppell	October 18, 2017	Coppell City Hall
City of Carrollton	October 23, 2017	Carrollton City Hall
Town of Addison	November 2, 2017	Addison Service Center
NCTCOG	November 7, 2017	Conference Call
City of Dallas, Traffic Analysis	November 7, 2017	Dallas City Hall
NCTCOG, Cotton Belt Trail	November 7, 2017	Conference Call
NCTCOG/Corridor Cities, Trails	November 13, 2017	Carrollton City Hall
NCTCOG, Regional Trails	November 16 2017	NCTCOG
City of Plano	November 21, 2017	Plano City Hall
City of Carrollton	December 1, 2017	Carrollton City Hall
NCTCOG/DCTA	December 4, 2017	NCTCOG
Dallas City Managers Meeting	December 15, 2017	DART
Corridor City Managers Meeting	December 19, 2017	DART
City of Dallas	January 31, 2018	Dallas City Hall
NCTCOG, Regional Trails	February 14, 2018	DART
City Manager/Richardson	March 2, 2018	DART
Corridor City Managers Meeting	March 8, 2018	DART
City of Dallas Mobility Committee	March 26, 2018	Dallas City Hall
NCTCOG, Regional Trails	March 28, 2018	NCTCOG
City of Plano	April 13, 2018	DART
City of Dallas	April 12, 2018	Dallas City Hall
Dallas Water Utilities	May 11, 2018	Downtown Dallas
City of Dallas	May 18, 2018	Dallas City Hall
UT Dallas	May 23, 2018	UT Dallas Campus
NCTCOG, Regional Trails	May 30, 2018	NCTCOG
City of Dallas	June 8, 2018	Dallas City Hall
City of Plano	June 12, 2018	Plano City Hall
City of Richardson	June 12, 2018	Richardson City Hall
City of Carrollton	June 13, 2018	Carrollton City Hall
City of Plano	June 20, 2018	Plano City Hall
City of Coppell	July 17, 2018	Coppell City Hall

Table 8-1. Public and Agency Coordination Meetings (cont'd)

Meeting	Date	Location
City of Coppell	July 31, 2018	Coppell City Hall
City of Grapevine	August 3, 2018	Grapevine City Hall
City of Coppell	August 14, 2018	Coppell City Hall
City of Dallas	August 17, 2018	Dallas City Hall
NCTCOG	August 24, 2018	NCTCOG
City of Dallas	August 27, 2018	Dallas City Hall
City of Plano	August 28, 2018	Plano City Hall
NCTCOG	September 13, 2018	NCTCOG
Stakeholder Meetings/Briefings		
Stadler – Vehicle Discussion	January 31, 2017	DART
Cotton Belt Concerned Citizens Coalition (CBCCC)	March 13, 2017	DART
Craig Janssen, North Dallas Noise Analysis review	March 30, 2017	Idibri Offices
Cypress Waters/Lucy Billingsley	April 18, 2017	Arts District
Operations Modeling Workshop	May 24, 2017	DART
Douglass Community/Davis Cemetery	June 30, 2017	Plano City Hall
Stadler Vehicle Workshop	July 13, 2017	DART
Douglass Community/Davis Cemetery	July 31, 2017	Plano City Hall
ONCOR	August 29, 2017	Dallas County Administration Building
Cotton Belt Design Workshop	September 15, 2017	DART
Addison Business Association	October 18, 2017	Crown Plaza Addison
Craig Janssen, North Dallas Noise Analysis review	October 31, 2017	Idibri Offices
ONCOR	December 4, 2017	Conference Call
Minority Business Outreach Partners Roundtable	December 5, 2017	DART
Cypress Waters/Lucy Billingsley	January 30, 2018	Arts District
Trafalgar Square HOA	March 23, 2018	DART
Craig Janssen, North Dallas Noise Analysis review	July 3, 2018	Idibri Offices

Source: DART

8.4 Agency Coordination

In addition to meetings listed above, DART has coordinated with agencies to ensure review of potential environmental impacts and obtain comments or concurrence on proposed approach to mitigate impacts. **Appendix G** includes agency coordination documentation since re-initiation of the Preferred Alternativein August 2016. Original consultation letters were provided at the time of the NOI to prepare an EIS. Project and issue specific coordination has continued since that time.

8.5 Public and Agency Involvement and the Draft EIS

The DEIS acted as a public decision-making document, in accordance with applicable state and federal regulations, by presenting the anticipated environmental consequences of the Preferred and No-Build Alternatives with appropriate mitigation measures. The DEIS was approved for public circulation by the FTA, and the cooperating agency, FAA. FRA, as a participating agency, has coordinated with DART on the Project and is continuing to provide input. The DEIS was made available to the public, stakeholder organizations, and local, regional, state and federal agencies for their review and comment. Its availability for review and comment was officially advertised in the Federal Register, as well as through the local media and press.

Formal public hearings were held in May 2018 to give affected and interested parties the opportunity to formally submit comments on the DEIS. The hearings included a technical presentation followed by time for testimony during the public comment period. Additional or subsequent written comments were received at DART headquarters via written or email form.

Public hearing transcripts and all correspondence were reviewed at the close of the DEIS public and agency review period. Substantive comments were classified and recorded into appropriate subject areas. All comments were reviewed and documented.

8.6 Organization of the Comments and Responses Received

The DEIS 45-day comment period began on April 20, 2018, when notice of the availability of the document was published and ended on June 4, 2018. During the comment period, in accordance with FTA guidance, DART conducted a series of public hearings on the DEIS. Comments were transmitted in several ways including written communications (letters, email communications, and comment cards filled out at public hearings) and by people testifying at public hearings. All communications received or postmarked by the end of the comment period are included in **Appendix J**. Each communication was assigned a unique identifying number. All correspondence, along with the transcripts from the public meetings, has been reviewed. All comments were reviewed and have received complete responses.

Within the comment period, the DART and the FTA received 119 distinct communications from agencies, Project stakeholders, and the general public on the DEIS. Commenters included elected officials, federal state and regional agencies plus individuals. Some individuals commented in more than one format. One petition, signed by 90 individuals, was received.

Appendix J contains the comments received on the DEIS. This appendix is organized with the following sections (**Appendix J.1** through **Appendix J.6**):

J.1: Responses to Comments

J.2: Written Elected Official/Agency Comments Received on DEIS

J.3: Written Public Comments on DEIS

J.4: Public Hearing Summary and Transcript – Addison– May 14, 2018

J.5: Public Hearing Summary and Transcript – Richardson– May 15, 2018

J.6: Public Hearing Summary and Transcript – Irving/DFW– May 16, 2018

8.6.1 Summary of Comments

As discussed in **Section 2.2**, comments provided during the 45-day comment period have resulted in several changes to the Project. These changes include the selection of an Equipment Maintenance Facility (EMF) location, the addition of three new grade separations, the modification of a grade separation design, and the elimination of two stations.

The most frequent comments received focused on noise impacts and mitigation. Twenty comments discussed noise impacts to the Trafalgar Square neighborhood in Carrollton and 34 discussed noise impacts elsewhere along the corridor. Ninety residents of the Hollows of Northlake Woodlands neighborhood in Coppell signed a petition expressing concern about the increase in noise from the Project.

Other frequent comments focused on vibration, traffic, stations, trails, and betterments. As many comments were similar in nature, master responses were prepared to these comments. Similar and recurring comments have been grouped into eight common master response themes, as shown in **Table 8-2.** Each general comment is described and is followed by a master response. The master response numbers are referenced by number, where applicable, in each of the responses to comments in **Appendix J.1**. If an individual comment is not addressed by one of the general comments and master responses, a specific response is provided for that comment. The numbering of themed comments does not denote the number of comments that were received regarding that theme.

Table 8-2. Master Response Summary

Theme Number	General Comment and Master Response Theme
1	Noise Impacts/Mitigation
2	Vibration Impacts/Mitigation
3	Traffic Impacts/Mitigation
4	Traffic Analysis Reevaluation
5	Marsh Lane Traffic/Trafalgar Square Mitigation
6	Stations
7	Trails
8	Betterments

Source: DART Capital Planning

Theme 1: Noise Impacts/Mitigation

General Comment 1: Several commenters expressed concerns that their neighborhood was not receiving noise mitigation.

Master Response 1: As discussed in **Section 3.12** and **Section 4.14** and detailed in *the Noise and Vibration Technical Report* in **Appendix B**, the noise analysis for the Project adheres to FTA guidance and DART policy for identifying and mitigating noise impacts. All residential neighborhoods that are within the FTA screening distance of 1,200 feet from the Cotton Belt Corridor have been assessed for noise impact in accordance with FTA methodology. Noise impacts and mitigation measures have been identified along the Cotton Belt Corridor where appropriate. Noise impacts are being mitigated through the implementation of quiet zones, crossing bell mitigation and noise walls. All noise impacts requiring mitigation are being mitigated. In general, it is DART's policy to mitigate locations with severe noise impacts and other locations where a 3 Ldn (dBA) or greater noise increase is attributed to the Project. During Preferred Alternative operations, noise impacts at existing noise sensitive receptors will not exceed current community noise levels by more than 3 Ldn (dbA) at maximum headways. The implementation of quiet zones eliminates 95 percent of all noise impacts and eliminates all severe noise impacts. The remaining moderate noise impacts are eliminated through crossing bell mitigation and noise barrier walls. While a 12-foot noise barrier is sufficient to mitigate noise, walls will be 15 feet above the top of rail to also serve as a visual screening where noise barrier walls are required (see **Section 4.7.2**). The DART Board may also consider additional walls as betterments (See **Master Response 8**).

Theme 2: Vibration Impacts/Mitigation

General Comment 2: Several commenters expressed concerns that their neighborhood was not receiving vibration mitigation. Others contend that the FTA vibration standard was insufficient for this Project given the limited data available for the new technology vehicle that was identified for this corridor.

Master Response 2: Vibration is discussed in **Section 3.13**, **Section 4.15** and **Appendix B**. The vibration analysis for the Project adheres to FTA guidance and DART policy for identifying and mitigating vibration impacts. All residential vibration impacts requiring mitigation are being mitigated through the application of Tire Derived Aggregate (TDA). The FTA impact threshold for determining vibration impact is 72 VdB for Category 2 (residential) land use. All vibration impacts that exceed this threshold are being mitigated by installing TDA beneath the alignment (see **Section 4.15.2**). In consideration of the new technology vehicle and other factors discussed in **Section 4.15.3**, TDA will be installed beneath the tracks at locations where the vibration projection is 65 VdB or greater.

Theme 3: Traffic Impacts/Mitigation

General Comment 3: Several commenters expressed concerns that traffic impacts were not being mitigated.

Master Response 3: As detailed in DART's S*treet At-Grade Crossing Traffic Analysis Report* in **Appendix B**, the analysis follows DART's *Environmental Impact Assessment and Mitigation Guidelines for Transit Projects* and adheres to Article IX "Traffic Mitigation Measures" of the Planning and Development Supplemental Agreement #1 to the DART/City of Dallas Interlocal Agreement. Except for the streets discussed in **Master Response 4** below, the traffic analysis remains unchanged. **Section 5.2** identifies the roadway crossing configurations and mitigation.

Theme 4: Traffic Analysis Revaluation

General Comment 4: Three cities raised concern over traffic analysis of certain streets and requested a reanalysis. The streets were Josey Lane in Carrollton; Hillcrest Road in Dallas; and K Avenue, Municipal Avenue and Jupiter Road in Plano.

Master Response 4: As discussed in **Section 5.2** with city input, DART reevaluated the roadways in question and determined that Josey Lane, Hillcrest Road and Jupiter Road meet warrants for grade separation. Additionally, K Avenue and Municipal Avenue warrant traffic mitigation. The reassessment of the traffic analysis is contained in the *Additional Traffic Analysis As A Result of Public Comment on Draft Environmental Impact Statement (DEIS) Technical Memorandum* in **Appendix B**. As described in **Section 2.2**, DART has considered all community input, and on August 28, 2018 (Resolution 180085), the DART Board of Directors approved a Service Plan Amendment that established the alignment, grade separations, station locations, and facilities locations for the Preferred Alternative. This resolution identified a grade separation at Josey Lane, Hillcrest Road and Jupiter Road.

Theme 5: Marsh Lane Traffic/Trafalgar Square Mitigation

General Comment 5: Many commenters expressed concern over the Project's impact to the Trafalgar Square neighborhood in Carrollton. These concerns focused on noise impacts, visual impacts, privacy, and safety. Additionally, several commenters expressed concern over traffic impacts on Marsh Lane and access to the neighborhood from Marsh Lane. The City of Carrollton requested that specific traffic mitigation be identified to address traffic concern on Marsh Lane.

Master Response 5: As discussed in **Section 3.12** and **Section 4.14** and detailed in the *Noise and Vibration Technical Report* in **Appendix B**, the noise analysis for the Project adheres to FTA guidance and DART policy for identifying and mitigating noise impacts. All noise impacts requiring mitigation are being mitigated. The analysis did not identify a noise impact at Trafalgar Square. As discussed in **Section 4.7.2,** visual mitigation will be provided to residential neighborhoods along the corridor. Landscaping will be installed at intervals of approximately 120 to 150 feet along residential areas for visual screening. Regarding privacy, Trafalgar Square is separated from the rail corridor by an existing community fence and an alley. The speed of the passenger train will minimize the duration of visual exposure and proposed landscaping will further limit potential privacy concerns. The landscaping can be supplemented by DART's Corridor Betterments Program (**See Master Response 8**). The DART Board may also consider additional walls as betterments which can address perceived visual and privacy concerns. As discussed in **Section 4.8.2**, DART will install fencing in residential areas without walls. No specific safety concerns have been identified at Tafalgar Square.

The DEIS did recommend signal and capacity improvements along Marsh Lane. As discussed in **Section 5.2**, ongoing coordination with the City of Carrollton has identified specific traffic mitigation along Marsh Lane that includes the addition of turn lanes and a new traffic signal at Marsh Lane and Stonehenge Lane.

Theme 6: Stations

General Comment 6: Many Dallas residents, as well as the City of Dallas, requested the elimination of the Preston Road Station and the Coit Road Station. Concerns cited for the Preston Road Station included low ridership, school adjacency, safety, traffic impacts, access, and neighborhood parking. The primary objection to the Coit Road station was the displacement of a small amusement park. Other commenters expressed support for various stations including the Preston Road Station and the Coit Road Station.

Master Response 6: As described in **Section 2.2**, DART has considered all community input and on August 28, 2018, the DART Board of Directors approved a Service Plan Amendment (Resolution 180085) that established the alignment, grade separations, station locations, and facilities locations for the Preferred Alternative. This resolution eliminated both the Preston Road Station and the Coit Road Station. All other stations discussed in the DEIS remain. **Section 2.3** fully describes the Preferred Alternative which includes the project changes based on DEIS comments and reflects the Service Plan Amendment. Any additional environmental impacts associated with these project changes have been identified and incorporated into this FEIS/ROD as appropriate.

Theme 7: Cotton Belt Regional Trail

General Comment 7: Several commenters, including agencies and cities, inquired about the status of the Cotton Belt Regional Trail and how it will be incorporated into the Project.

Master Response 7: As discussed in **Section 2.6**, the Cotton Belt Regional Trail is a component of the NCTCOG Regional Veloweb Plan that would be located within some segments of the Cotton Belt Corridor. DART is coordinating NCTCOG and cities along the corridor to preserve an envelope for the trail. The proposed location of the future trail is shown on the 10% plans in **Appendix A.** The trail is shown along most of the corridor where right-of-way permits. It will connect to the DFW North Station but will not extend further south into DFW Airport. DART has only identified where within the right-of-way a trail could be placed. It has not been designed and will likely be implemented by others in coordination with DART. The trail will only be located outside of any noise walls or fencing and will likely be 12-feet wide. The location of potential pedestrian bridges and street crossings are also identified.

Since this FEIS includes the trail envelope in the design plans and the environmental analysis was conducted for the corridor, which includes the trail concept, it can be used as a basis for future environmental clearance of the trail. Locations where the trail will deviate from the Cotton Belt right-of-way are not covered in the FEIS. Once detailed trail design is completed, and funding source agency requirements are known, additional environmental analysis may be required. Construction of the trail is assumed to be done by local jurisdictions in coordination with DART. Each jurisdiction will operate and maintain the trail within their jurisdictional boundary.

As discussed in **Section 5.5**, two other trails are currently programmed that will utilize portions of the Cotton Belt Corridor. Portions of the Cypress Waters Trail will use the new DART right-of-way through Cypress Waters. This trail will serve the rail station and new development. The Plano Transit Village Veloweb which will connect downtown Plano to the CityLine area, will use a portion of the Cotton Belt and the Red Line LRT rights-of-way. These trails, which will ultimately interface with the Cotton Belt Regional Trail, are also shown in **Appendix A**.

As discussed in **Section 4.22.1**, the White Rock Creek Railroad Bridge, located on the existing Cotton Belt Rail line, will be removed and relocated to an area approximately 30 feet northeast of its current location for use as an element of the future Cotton Belt Regional Trail within the DART-owned right-of-way.

Theme 8: Betterments

General Comment 8: Several commenters expressed desire for items above and beyond identified mitigation documented in this FEIS. These betterment requests included items such as walls or barriers where no noise impact was identified, taller or enhanced walls/fencing, and/or additional landscaping.

Master Response 8: The FEIS/ROD is a federal document that is only intended to address impacts and associated mitigation. All impacts have been addressed. For the Cotton Belt Project, mitigation measures are identified in this FEIS/ROD based on impact analyses completed in accordance with NEPA. Measures are also documented in the ROD Attachment A. As described in **Section 4.1**, DART will develop and implement a *Mitigation Monitoring Program* (MMP) that will ensure Project mitigation measures are documented in an MMP. The MMP provides a guide for staff to ensure mitigation measures are tracked and implemented through the more detailed Design-Build phase.

Betterments are defined as items above and beyond standard environmental mitigation measures and are usually identified after the FEIS during more detailed design. DART Board Policy IV.11 *Betterments Policy for Residential Areas* outlines a process for the identification and implementation of betterments in residential areas that are adjacent to a project corridor. DART works closely with adjacent residents to identify and select betterments that are within policy parameters. Per DART Policy, betterments will be applied consistently across the corridor. In addition, DART Board Resolution 180084 was approved on August 28, 2018, to outline potential additional betterments in residential areas along the corridor in response to community concerns.

DART will develop a *Corridor Betterments Program* (CBP) separate from this FEIS/ROD. The CBP will provide a companion document to the MMP to identify betterments locations and the process to involve the community in decision-making. The CBP will also allow staff to document decisions and track the implementation of betterments during the Design-Build phase.

9. List of Preparers

9.1 Introduction

This chapter lists the individuals who have provided key input, technical expertise and/or guidance for preparation of the Cotton Belt Project FEIS.

9.2 Public Agency Staff

Table 9-1 lists public agency individuals that provided oversight, guidance and/or technical review for the FEIS.

Table 9-1. Public Agency Staff

Name	Title
Federal Transit Administration (Lead Federal Agency)	
Robert Patrick	Region VI Administrator
Sharyn LaCombe	Office of Planning and Environment (Headquarters), Federal Preservation Officer
Don Koski	Region VI Director of Planning and Program Development
Ronisha Hodge	Region VI Community Planner
Brian Hooker	Region VI General Engineer
Melissa Foreman	Region VI Community Planner
Leslie Roche	Region VI Environmental Contractor
Federal Aviation Administration (Cooperating Agency)	
Dean McMath	Southwest Region Environmental Team Leader
John MacFarlane	Texas Airports Development Office
Federal Railroad Administration (Participating Agency)	
Kevin Wright	Environmental Protection Specialist
Dallas Area Rapid Transit	
Tim McKay	Executive Vice President, Growth and Regional Development
Steve Salin	Vice President, Capital Planning
Bonnie Murphy	Vice President of Commuter Rail/Railroad Management
Michael Miles	Vice President, Government Relations
Chad Edwards	Assistant Vice President, Capital Planning
John Hoppie	Cotton Belt Project Manager
Kay Shelton	Project Manager, Capital Planning
J. Lawrence Meshack, III	Senior Manager, Community Engagement
Rosa Rosteet	Community Engagement Representative
John Rhone	Vice President, Capital Design & Construction
David Ehrlicher	Assistant Vice President, Capital Design & Construction
Reza Shirmanesh	Project Manager, Design & Construction
Nathaniel Morgan	Assistant Vice President, Commuter Rail/Railroad Management
Annka Robinson	Project Manager, Commuter Rail/Railroad Management*
Phil Johnson	Capital Planning, Travel Demand Modeling
Connie Xu	Capital Planning, Travel Demand Modeling
Victor Ibewuike	Capital Planning, Environmental Coordination
Cleo Grounds	Assistant Vice President, Real Estate
Greg Althoff	Acquisition and Relocations Manager
Rob Smith	Assistant Vice President, Bus Service Planning
Hans Michael Ruthe	Project Manager, Bus Service Planning
Dallas/Fort Worth International Airport – DFW Airport	
Greg Royster	Senior Airport Planner
Sandy Lancaster	Environmental Affairs

*No longer with DART

9.3 Consultant Team Members

Table 9-2 lists consultant team staff that provided technical input and oversight for preparation of the FEIS document and associated preliminary engineering documents.

Table 9-2. Consultant Team Members (GPC 6 Consultant Team)

Name and Title	Years of Experience	Role
HDR Engineering, Inc.		
Tom Shelton, P.E., Vice President Regional Transit Market Leader	37	Project Manager
Amanda Stahlnecker, P.E., Senior Rail Engineer	14	Engineering Lead
Israel Crowe, P.E., Senior Transportation Engineer	20	Rail Engineering
Mark Martin, P.E., Senior Rail Engineer	32	Rail Engineering
Chris Phonpituck, P.E., Rail Engineer	13	Rail Engineering
Lucas Gublo, EIT, Rail	7	Rail Engineering
Lindsey Boitsov, P.E., Rail Engineer	10	Rail Engineering
Cassandra Wallof, P.E., Bridge Engineer	7	Bridge Structural Engineering
Reddy Edulakanti, P.E., Senior Traffic Engineer	14	Traffic Engineering
Kristine Lloyd, NEPA Project Manager	25	Document Preparation, Public Involvement
Maggie Cowling, GIS Manager	8	GIS Mapping
Terri Asendorf Hyde, Environmental Project Manager	11	Land Use Research, Document Preparation
Jory Dille, Transportation Planner	10	Acquisitions and Displacements, GIS, QA/QC
Peggy Jones, Environmental Scientist	32	Habitat Assessment, Document Preparation
Christine Magers, CWB, Environmental Scientist II	11	Water Resource Section Author, Lead Wetland Delineator
Sara Moren, Environmental Scientist	13	Air Quality, Hazardous Materials, Document Preparation
Adam Roberts, Environmental Scientist	10	Geology and Water Quality, Land Use, Visual and Aesthetic Resources
Sherry Sultenfuss, Environmental Scientist	30	Parks, Safety and Security
Shane Valentine, P.G., Senior Project Manager	20	Geology, Land Use, QA/QC Technical Reviewer
KAI Texas		
Darren James, AIA	24	Station Design Lead
Veronica Castro de Berrera, RA, AIA, LEED AP	20	Station Architecture
Derwin Broughton, AIA	18	Station Architecture
K Strategies		
Dianne Tordillo, Public Engagement Specialist	7	Public Involvement
Stephanie Tapke, Public Engagement Specialist	2	Public Involvement
Emily Riggs, Public Engagement Specialist	6	Public Involvement
Cross Spectrum Acoustics		
Dave Towers, Principal Associate	43	Noise and Vibration Specialist
Scott Edwards, Senior Associate	7	Noise and Vibration Analyst
Joelle Suits, Associate	5	Noise and Vibration Analyst
AmaTerra Environmental		
Deborah Dobson-Brown, PhD, RPA, Cultural Resources Program Manager	31	Cultural Resources, Historic Resources Survey
Joel Butler, Principal Investigator/GIS Analyst	15	Archeological Survey, Document Preparation, GIS analysis, Figure Preparation
Amy Goldstein, Project Archeologist	7	Archeological Survey, Document Preparation
Joshua Hamilton, Archeologist, GIS Technician	10	Archeology Field work & Research
Noel Steinle, Archeology Technician	10	Archeology Field work & Research

Table 9-2. Consultant Team Members (GPC 6 Consultant Team) (cont'd)

Name and Title	Years of Experience	Role
Katherine Seikel, Archeology Curation/Lab Manager	10	Archeology Curation
Erica Howard, M.A., Staff Architectural Historian	10	Historic Resources Survey, Document preparation
Civil Associates, Inc.		
Jenn-Hwan Ma, P.E.	27	Civil Engineering and Station Civil Design
Iconic Consulting Group, Inc.		
Jeffrey Briscoe, P.E.	18	Street Modifications and Drainage Design
HNTB		
Selena Solis Asire, P.E.	21	Passenger Rail Systems Design
Julie Morse, Environmental Task Lead	21	Socioeconomics, Indirect and Cumulative Impacts
Michele Lopez, Environmental Planner	12	Socioeconomics, Indirect and Cumulative Impacts
Nathan D. Maier Consulting Engineers, Inc.		
Gary Matthews, RPLS	39	Field Surveying & R.O.W. Confirmation
William Wallace, RPLS	40	Field Surveying & R.O.W. Confirmation
Rudy Santini	14	Field Surveying & R.O.W. Confirmation
Urban Engineers Group		
Faisal Syed, P.E., PTOE, LEED AP	21	Project Engineer, Utility Research
Hasan Raza	5	Project Designer, Utility Research
Urban Opportunity		
Frank Turner, Principal	40	Stakeholder Coordinator

Source: GPC6, 2017

10. Distribution List

Chapter 10 contains the distribution list for the notice of availability for this FEIS.

FEDERAL AGENCIES

Mr. Reid Nelson, Director - Advisory Council on Historic Preservation
Mr. Vishal Joshipura, Financial Policy Advisor - Build America Bureau; U.S. Department of Transportation
Mr. Leo Wetula, Program Manager - Build America Bureau; U.S. Department of Transportation
Mr. John Tahsuda, Acting Assistant Secretary - Bureau of Indian Affairs
Mr. Terry McClung, NEPA Coordinator - Bureau of Indian Affairs
Ms. Carol Braegelmann, Director, Office of Environmental Policy and Compliance - Department of the Interior
Mr. Ryan Zinke, Secretary of Interior - Department of the Interior
Mr. John MacFarlane, Environmental Protection Specialist - Federal Aviation Administration - Southwest Region
Mr. Tony Robinson, Regional Director - Federal Emergency Management Agency, Region VI
Mr. Al Alonzi, Division Administrator - Federal Highway Administration-Texas Division
Mr. Kevin Wright, Environmental Protection Specialist - Federal Railroad Administration
Mr. Vence Haggard, Regional Administrator - Federal Railroad Administration - Region 5
Mr. Nathan Wallace, HQ Passenger Rail Safety Specialist - Federal Railroad Administration, Passenger Division
Mr. Robert Babcock, Regional Administrator - General Services Administration
Ms. Sue Masica, Regional Director - National Park Service Intermountain Region
Mr. Stephen Brooks, Chief, Regulatory Branch - U.S. Army Corps of Engineers
Colonel Calvin C. Hudson II, Ft. Worth District Commander - U.S. Army Corps of Engineers
Rear Admiral David Callahan, District Commander - U.S. Coast Guard, 8th District
Mr. Bob Cook, Field Office Director - U.S. Department of Housing and Urban Development, Dallas Office
Mr. Arturo Blanco, Deputy Director, Region 6 Tribal Program - U.S. Environmental Protection Agency, Region 6
Ms. Anne Idsal, Administrator - U.S. Environmental Protection Agency, Region 6
Ms. Kimeka Price, EIS Reviewer, Transportation Projects - U.S. Environmental Protection Agency, Region 6
Ms. Debra Bills, Field Supervisor - U.S. Fish and Wildlife Service, Ecological Services
Ms. Amy Lueders, Southwest Regional Director - U.S. Fish and Wildlife Service, Region 2

STATE AGENCIES

Ms. Christi Craddick, Chairman - Railroad Commission of Texas
Mr. Tony Walker, Regional Director - Texas Commission on Environmental Quality, Dallas/Fort Worth Region
Mr. Peter Espy, Rail Division Director - Texas Department of Transportation
Mr. William Hale, PE, Chief Engineer - Texas Department of Transportation
Mr. Dan Perge, Environmental Affairs - Dallas Division - Texas Department of Transportation
Mr. Kelly Selman, PE, District Engineer - Texas Department of Transportation
Mr. Carlos Swonke, Director, Environmental Affairs Division - Texas Department of Transportation
Mr. Marc Williams, Deputy Executive Director, Transportation - Texas Department of Transportation
Mr. George P. Bush, Commissioner - Texas General Land Office, Asset Management
Mr. Justin Kockritz, Lead Architectural Historian - Texas Historical Commission
Ms. Becky Shelton, Regional Archeologist - Texas Historical Commission
Mr. Mark Wolfe, Executive Director - Texas Historical Commission
Mr. Bob Gottfied, Program Supervisor, Texas Natural Diversity Database - Texas Parks and Wildlife Department
Ms. Karen Hardin, Habitat Assessment Biologist, WHAP - Texas Parks and Wildlife Department
Mr. Carter Smith, Executive Director - Texas Parks and Wildlife Department
Ms. Laura Zebehazy, Program Leader, WHAP - Texas Parks and Wildlife Department

REGIONAL AGENCIES

Mr. Joel Jenkinson, PhD, AAE, Airport Director - Addison Airport
Mr. Drew Campbell, Executive Director - Dallas Regional Mobility Coalition
Mr. Jim Cline, President - Denton County Transportation Authority
Mr. John Brookby, Commercial Development - DFW International Airport
Ms. Karen Kavanagh, Vice President Planning - DFW International Airport
Ms. Lisa Hughes, Assistant Vice President Planning - DFW International Airport
Mr. Jason Williams, Planning Manager - DFW International Airport
Mr. Robert Horton, Vice President Environmental Affairs - DFW International Airport
Mr. Rusty Hodapp, Vice President Design, Code, and Construction - DFW International Airport
Mr. Ramiro Garcia, DCC Program Manager - DFW International Airport
Ms. Tammy Huddleston, AVP Infrastructure Planning and Engineering - DFW International Airport
Ms. Smitha Radhakrishnan, Sr. Land and Facilities Manager - DFW International Airport
Mr. John Terrell, Vice President Commercial Development - DFW International Airport
Mr. Charles Cinquemani, DPS Police Chief - DFW International Airport
Mr. Stephen Knox, Project Manager - DFW International Airport
Ms. Sandy Lancaster, Environmental Program Manager - DFW International Airport
Mr. Greg Royster, Senior Airport Planner - DFW International Airport
Mr. Eddie Tovar, Systems Performance Manager - DFW International Airport
Mr. Paul Ballard, President/Executive Director - Fort Worth Transportation Authority
Mr. Richey Thompson, Chief Engineer, TEXRail - Fort Worth Transportation Authority
Mr. Michael Eastland, Executive Director - NCTCOG
Mr. Dan Lamers, Senior Program Manager - NCTCOG
Ms. Edith Marvin, Director of Environment & Development - NCTCOG
Mr. Michael Morris, Director of Transportation - NCTCOG
Mr. Gerry Carrington, Executive Director - North Texas Tollway Authority

LOCAL AGENCIES

Mr. John Crawford, Public Works Director - City of Carrollton
Mr. Marcos Fernandez, Senior Engineer - City of Carrollton
Mr. Tom Hammons, Transportation Engineering Manager - City of Carrollton
Mr. Scott Hudson, Director of Environmental Services - City of Carrollton
Ms. Kelli Lewis, Marketing Director - City of Carrollton
Mr. Mike McKay, Civil Engineering Manager - City of Carrollton
Mr. Cesar Molina, Director of Engineering - City of Carrollton
Ms. Erin Rinehart, City Manager - City of Carrollton
Mr. Ravi Shaw, Urban Development Director - City of Carrollton
Mr. Scott Whitaker, Parks & Recreation Director - City of Carrollton

Mr. Brett Haney, City Manager - City of Cockrell Hill

Mr. Kent Collins, Assistant Director of Engineering & Public Works - City of Coppell
Mr. John Elias, Parks & Recreation Department - City of Coppell
Mr. Mike Land, City Manager - City of Coppell
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Mr. Matt Steer, City Planner - City of Coppell

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Mr. Larry Casto, City Attorney - City of Dallas
Ms. Jeanne Chipperfield, Chief Ethics and Compliance Officer - City of Dallas
Mr. David Coatney, Chief, Fire Department - City of Dallas
Mr. David Cossum, Department Director, Sustainable Development and Construction - City of Dallas
Ms. Beverly Davis, Fair Housing - City of Dallas
Mr. Mark Doty, Historic Planner - City of Dallas

Mr. William Finch, Chief Information Officer - City of Dallas
Ms. Erica Flores, Department Director, Economic Development - City of Dallas
Mr. Jon Fortune, Assistant City Manager - City of Dallas
Mr. Mike Frosch, Department Director, Business Development and Procurement - City of Dallas
Mr. Ricardo Galceran, Department Director, Public Works and Transportation - City of Dallas
Ms. Renee Hall, Chief of Police, Police Department - City of Dallas
Mr. Raymond Lee, III, Streets Service Manager - City of Dallas
Ms. Terry Lowery, Department Director, Water Utilities - City of Dallas
Mr. James McGuire, Department Director, Office of Environmental Quality - City of Dallas
Ms. Theresa O'Donnell, Chief Resiliency Officer - City of Dallas
Ms. Jody Puckett, Assistant City Manager - City of Dallas
Ms. Elizabeth Reich, Chief Financial Officer - City of Dallas
Ms. Jacqueline Rodarte-Valle, Assistant Director, Housing/Community Services - City of Dallas
Mr. Michael Rogers, Director, Transportation Department - City of Dallas
Ms. Kris Sweckard, Department Director, Code Compliance - City of Dallas
Ms. Kimberly Tolbert, Chief of Staff to the City Manager - City of Dallas
Mr. Jared White, Bicycle Transportation Manager - City of Dallas
Mr. Willis Winters, Department Director, Parks and Recreation - City of Dallas
Mr. Joey Zapata, Assistant City Manager - City of Dallas

Mr. Charles Cox, City Manager - City of Farmers Branch

Mr. David Cooke, City Manager - City of Fort Worth

Mr. Bryan Bradford, City Manager - City of Garland

Ms. Aretha Ferrell-Benavides, City Manager - City of Glenn Heights

Mr. Bryan Beck, Director of Public Works - City of Grapevine
Mr. Bruno Rumbelow, City Manager - City of Grapevine

Mr. Chris Hillman, City Manager - City of Irving
Mr. Dan Vedral, Traffic and Transportation Director - City of Irving

Mr. Peter Braster, Director of Special Projects - City of Plano
Mr. Jack Carr, Deputy City Manager - City of Plano
Ms. Christina Dorrance Day, Director of Planning - City of Plano
Mr. Bruce Glasscock, City Manager - City of Plano

Mr. Dave Carter, Asst. Director of Development Services: Traffic & Transportation - City of Richardson
Mr. Dan Johnson, City Manager - City of Richardson
Mr. Cliff Miller, Assistant City Manager - City of Richardson
Mr. Michael Spicer, Director of Development Services - City of Richardson
Mr. Mark Titus, Transportation Engineering Manager - City of Richardson

Mr. Brian Funderbunk, City Manager - City of Rowlett

Ms. Robbie Corder, City Manager - City of University Park

Ms. Laura Bell, City Secretary - Town of Addison
Mr. Orlando Campos, Director of Economic Development & Tourism - Town of Addison
Ms. Ashley Mitchell, Deputy City Manager - Town of Addison
Mr. Wes Pierson, City Manager - Town of Addison
Ms. Lisa Pyles, Director of Infrastructure and Development Services - Town of Addison
Ms. Caitlan Smelley, Assistant City Manager - Town of Addison

Mr. Bill Lindley, Town Administrator - Town of Highland Park

Mr. Clarence Daugherty, Collin County Engineering Department - Collin County
Mr. Bill Bilyeu, Collin County Administrator - Collin County Administration Building

Ms. Alberta Blair, Director of Public Works - Dallas County
Ms. Antoinette Bacchus, Assistant Director Transportation Planning - Dallas County

Mr. G.K. Maenius, Tarrant County Administrator

FEDERAL ELECTED OFFICIALS

The Honorable Joe Barton, Congressman - U.S. House of Representatives
The Honorable Michael Burgess, Congressman - U.S. House of Representatives
The Honorable Jeb Hensarling, Congressman - U.S. House of Representatives
The Honorable Sam Johnson, Congressman - U.S. House of Representatives
The Honorable Eddie Bernice Johnson, Congresswoman - U.S. House of Representatives
The Honorable Kenny Marchant, Congressman - U.S. House of Representatives
The Honorable Pete Sessions, Congressman - U.S. House of Representatives
The Honorable John Cornyn, Senator - U.S. Senate
The Honorable Ted Cruz, Senator - U.S. Senate

STATE ELECTED OFFICIALS

The Honorable Greg Abbott, Governor, State of Texas - Office of the Governor
The Honorable Roberto Alonzo, State Representative, District 104 - Texas House of Representatives
The Honorable Rafael Anchia, State Representative, District 103 - Texas House of Representatives
The Honorable Rodney Anderson, State Representative, District 105 - Texas House of Representatives
The Honorable Cindy Burkett, State Representative, District 113 - Texas House of Representatives
The Honorable Angie Chen Button, State Representative, District 112 - Texas House of Representatives
The Honorable Yvonne Davis, State Representative, District 111 - Texas House of Representatives
The Honorable Pat Fallon, State Representative, District 106 - Texas House of Representatives
The Honorable Helen Giddings, State Representative, District 109 - Texas House of Representatives
The Honorable Justin Holland, State Representative, District 33 - Texas House of Representatives
The Honorable Eric Johnson, State Representative, District 100 - Texas House of Representatives
The Honorable Linda Koop, State Representative, District 102 - Texas House of Representatives
The Honorable Jodie Laubenberg, State Representative, District 89 - Texas House of Representatives
The Honorable Jeff Leach, State Representative, District 67 - Texas House of Representatives
The Honorable Morgan Meyer, State Representative, District 108 - Texas House of Representatives
The Honorable Victoria Neave, State Representative, District 107 - Texas House of Representatives
The Honorable Tan Parker, State Representative, District 63 - Texas House of Representatives
The Honorable Matt Rinaldi, State Representative, District 115 - Texas House of Representatives
The Honorable Toni Rose, State Representative, District 110 - Texas House of Representatives
The Honorable Scott Sanford, State Representative, District 70 - Texas House of Representatives
The Honorable Matt Shaheen, State Representative, District 66 - Texas House of Representatives
The Honorable Ron Simmons, State Representative, District 65 - Texas House of Representatives
The Honorable Joe Straus, Speaker of the House - Texas House of Representatives
The Honorable Lynn Stucky, State Representative, District 64 - Texas House of Representatives
The Honorable Jason Villalba, State Representative, District 114 - Texas House of Representatives
The Honorable John Wray, State Representative, District 10 - Texas House of Representatives
The Honorable Brian Birdwell, Texas Senator, District 22 - Texas Senate
The Honorable Craig Estes, Texas Senator, District 30 - Texas Senate
The Honorable Bob Hall, Texas Senator, District 2 - Texas Senate
The Honorable Kelly Hancock, Texas Senator, District 9 - Texas Senate
The Honorable Don Huffines, Texas Senator, District 16 - Texas Senate
The Honorable Jane Nelson, Texas Senator, District 12 - Texas Senate

The Honorable Dan Patrick, Lt. Governor, State of Texas - Texas Senate
The Honorable Van Taylor, Texas Senator, District 8 - Texas Senate
The Honorable Royce West, Texas Senator, District 23 - Texas Senate

LOCAL ELECTED OFFICIALS

The Honorable Kevin Falconer, Mayor - City of Carrollton
Mayor Pro Tem Glen Blanscet - City of Carrollton
Deputy Mayor Pro Tem John Sutter - City of Carrollton
Councilmember Frances Cruz - City of Carrollton
Councilmember Mike Hennefer - City of Carrollton
Councilmember Doug Hrbacek - City of Carrollton
Councilmember James Lawrence - City of Carrollton
Councilmember Young Sung - City of Carrollton

The Honorable Karen Hunt, Mayor - City of Coppell

The Honorable Mike Rawlings, Mayor - City of Dallas
Mayor Pro Tem Dwaine Caraway, District 4 - City of Dallas
Deputy Mayor Pro Tem Adam Medrano, District 2 - City of Dallas
Councilmember Tennell Atkins, District 8 - City of Dallas
Councilmember Rickey Callahan, District 5 - City of Dallas
Councilmember Mark Clayton, District 9 - City of Dallas
Councilmember Kevin Felder, District 7 - City of Dallas
Councilmember Sandy Greyson, District 12 - City of Dallas
Councilmember Scott Griggs, District 1 - City of Dallas
Councilmember Philip Kingston, District 14 - City of Dallas
Councilmember Lee Kleinman, District 11 - City of Dallas
Councilmember Adam McGough, District 10 - City of Dallas
Councilmember Omar Narvaez, District 6 - City of Dallas
Councilmember Jennifer Staubach Gates, District 13 - City of Dallas
Councilmember Casey Thomas, II, District 3 - City of Dallas

The Honorable William Tate, Mayor - City of Grapevine

The Honorable Rick Stopfer, Mayor - City of Irving

The Honorable Harry LaRosiliere, Mayor - City of Plano
Mayor Pro Tem Rick Grady - City of Plano
Deputy Mayor Pro Tem Ron Kelley - City of Plano
Councilmember Tom Harrison - City of Plano
Councilmember Angela Miner - City of Plano
Councilmember Kayci Prince - City of Plano
Councilmember Anthony Ricciardelli - City of Plano
Councilmember Rick Smith - City of Plano

The Honorable Paul Voelker, Mayor - City of Richardson
Mayor Pro Tem Mark Solomon, Place 2 - City of Richardson
Councilmember Bob Dubey, Place 1 - City of Richardson
Councilmember Scott Dunn, Place 3 - City of Richardson
Councilmember Marta Gomez Frey, Place 5 - City of Richardson
Councilmember Steve Mitchell, Place 6 - City of Richardson
Councilmember Mabel Simpson, Place 4 - City of Richardson

The Honorable Joe Chow, Mayor - Town of Addison
Mayor Pro Tem Ivan Hughes - Town of Addison
Deputy Mayor Pro Tem Jim Duffy - Town of Addison

Councilmember Al Angell - Town of Addison
Councilmember Tom Braun - Town of Addison
Councilmember Paul Walden - Town of Addison
Councilmember Lori Ward - Town of Addison

The Honorable Susan Fletcher, Collin County Commissioner
The Honorable Keith Self, Collin County Judge
The Honorable John Thomas, Collin County Commissioner
The Honorable Duncan Webb, Collin County Commissioner
The Honorable Cheryl Williams, Collin County Commissioner

The Honorable Mike Cantrell, Dallas County Commissioner, District 2
The Honorable Theresa Daniel, Dallas County Commissioner, District 1
The Honorable Dr. Elba Garcia, Dallas County Commissioner, District 4
The Honorable Clay Jenkins, Dallas County Judge
The Honorable John Wiley Price, Dallas County Commissioner, District 3

The Honorable Hugh Coleman, Denton County Commissioner
The Honorable Andy Eads, Denton County Commissioner
The Honorable Mary Horn, Denton County Judge
The Honorable Ron Marchant, Denton County Commissioner
The Honorable Bobbi Mitchell, Denton County Commissioner

The Honorable Roy Charles Brooks, Tarrant County Commissioner
The Honorable Gary Fickes, Tarrant County Commissioner
The Honorable J.D. Johnson, Tarrant County Commissioner
The Honorable Andy Nguyen, Tarrant County Commissioner
The Honorable B. Glen Whitley, Tarrant County Judge

INTERESTED ORGANIZATIONS/PROPERTY OWNERS/AREA FOCUS GROUP MEMBERS

Jim Abadie, Resident - City of Carrollton
Joe Altemore, Manager - Bush/75 Partners
Carol Armstrong, President - Haggard Park HOA
Matt Bach, President/Holiday Park HOA - North Dallas Neighborhood Alliance/Holiday Park HOA
Linda Baity - Cotton Belt Concerned Citizens Coalition (CBCCC)/Willow Green Condominiums
Jim Baker, Membership Chair - Bel Air of Josey Ranch Homeowners Association
Judi Bargmann, President - Preston Green Homeowners Association
Blake Barnard, Representative - Town of Addison
Richard Barnor, Pastor - Fountain of Life International Church
Gail Barth, Representative - Town of Addison
Mr. John Hollingsworth, Manager, Utility Coordination North Texas - AT&T
Mr. David Coker - Atmos
Ms. Sue Inurrigarro, Project Manager - Atmos
Vijay Bilamuri - Coppell Greens
Lindsay Billingsley - Alliance Residential Company
Ms. Lucy Billingsley, Partner - Billingsley Company
Brian Binggelli, School Superintendent - Plano ISD
Ryan Binkley, Lead Pastor - Create Church
Sandy Blue, Customer Relations - TreeHouse Foods
Vijay Borra, Property Owner - Coppell
Taylor Bowen - AMLI Residential
Juli Branson, Representative - Town of Addison
Allen Brier, Senior Manager - Facilities - Halliburton
Gia Brodt - AMLI Residential
Adam Brown - Trinsic Residential

Bob Bruce, Director - Fifteenth Street Village Homeowners Association
Joe Bruce, Managing Director - Transwest
Mr. Paul Cristina, Director - Public Private Partnerships - Burlington Northern Santa Fe
Ms. Olivia Templeton, Director - Contracts and Joint Facilities - Burlington Northern Santa Fe
Vance Bryson - The Vance Bryson Company, PC
Bobby Burns, School Superintendent - Carrollton-Farmers Branch ISD
Allison Burrow, Membership Director - The Clubs of Prestonwood
Michael Byington, Representative - Chalfont Place Homeowners Association
Warren Caldwell, President Elect - Canyon Creek Homeowners Association
Ms. Martina Callahan, THPO - Comanche Nation of Oklahoma
Bill Calvalle - Creekview Homeowners Association
Jeffery Canose - Texas Health Resources Plano
Erin Carney, President - Metrocrest Chamber of Commerce
Wilbert Carter, Plant Manager - Gerdau-Carrollton Wire Products
Mary Jo Cater, Representative - Town of Addison
Josh and Adrienne Causey - Creekview Homeowners Association
Alex Chako, Pastor - Sehion Mar Thoma Church
Jun Choi, Pastor - Semihan Church (Korean)
Dane Cofer, Resident - North Dallas
Josh Cohen, Resident
Elizabeth Corbell, Senior Property Manager - CYPR Office - Billingsley
Nancy Craig, Representative - Town of Addison
Mona Crider, President - La Foofaraw
Mr. Phil Cross, THPO - Caddo Nation
Charles Dale - Creekview Homeowners Association
Jack Daniels - Highland Springs
Richard Dempsey, AVP of Facilities Management - The University of Texas at Dallas
Herman Denzer - Creekview Homeowners Association
Dennis Deshazer, Homeowner - CBCCC/Prestonwood
David Dick, President - Prestonwood Trails
Jeff Diora, Owner - Precision Technology, Inc.
Christine Douglass, President/CEO - Coppell Chamber of Commerce
Raymond Egana, Facility Manager - United Health Group
Ms. Marnese Elder, President - Dallas Black Chamber of Commerce
Danelle Ericson, Resident
Rick Fambro, President - Fairway Groups, Real Estate
Lisa Faulkner-Dunne, Representative - CBCCC/Preston Creek Homeowners Association
Joe Ferrier, Facility Superintendent - Blue Cross and Blue Shield of Texas
Logan Finkelstein, President - Bel Air of Josey Ranch Homeowners Association
Bobby Finken - Lakes of Coppell
Clarence Ford, Pastor - Hill's Chapel CME Church
Ms. Tamara Francis, Chairman - Caddo Nation
Tim Freeney, President - Trafalgar Square
Karen & Bill French
Camille Garcia, Public Affairs Manager - State Farm
Randy Garrison, General Manager - Riverchase Golf Course
Tonya Gilbert, Administrative Assistant - Abeo Practice Management
Charles Gillet, Member - The Historic Downtown Plano Association
Gayle Glosser, Co-Owner - Tenth Street Industries
Katherine Gorenc, Resident
Scott Gorenc, Resident
Lydia Goulas, Board Member - Northlake Woodlands HOA
Danny Goulas, - Northlake Woodlands HOA
Rick Gover, Representative - Chalfont Place Homeowners Association
Sid Grant, Assistant Superintendent for Business Support Services - Coppell ISD
Lesli Gray, Representative - Town of Addison

Guy Gregg, Director of Landscape Management - Billingsley
Margie Gunther, Representative - Town of Addison
Mr. Kenny Day, General Manager - Dallas Garland and Northeastern Railroad
Andy Harmon - Highlands of McKamy HOA
Maya Hayes, Property Manager - Madison Estates HOA
Whitney Heiman, Member - Summit at the Springs
Julie Higginbotham, Partner - La Foofaraw
Mark Hill, LEED AP BD+C
Mr. Michael Hinojosa, Superintendent - Dallas Independent School District
Mr. Terry Leppla, Right-of-Way Specialist - ExxonMobil Pipeline Company
Tom Holland, Vice President Development - Billingsley
Gage Hunt - Mary Kay, Inc.
Lola Hurt, Representative - Town of Addison
E. Kenneth Hutchenrider, Jr., President - Richardson Regional Medical Center
Kathy Ingle - Ingle Rentals
Mr. Kevin Erasmus, President/CEO - Fort Worth and Western Railroad
Mr. Bill Parker, Director of Planning and Special Projects - Fort Worth and Western Railroad
Carol Jablonski, President - Preston Creek Homeowners Association
Matt Jackson, President - Copynet
Martin Jackson, Vice President - Copynet
John Jacobs, Senior Vice President - Richardson Chamber of Commerce
Calvin Jamison, Senior Vice President - The University of Texas at Dallas
Craig Janssen, Representative Acoustic Engineer - Court Estates
Sherry Jenkins, Secretary - River of Glory
Hildegard Jessup, Headmistress - Oak Crest Private School
Steve Johnson, President - Creekview Homeowners Association
Jamee Jolly, President - Plano Chamber of Commerce
Steve Jones, Project Manager - Billingsley
Mr. Phillip Jones, President/CEO - Dallas Convention and Visitors Bureau
Anil Joshua, Secretary - Sehion Mar Thoma Church
Dr. Judy Kelly, President - Carrollton Heights HOA
Marty Kennard, Owner - Sports Garden DFW
Heidi Kessel, Assistant to Senior Vice President - The University of Texas at Dallas
Sang Tae Kim, Pastor - Korean Church of Dallas
Russ Kissick, Co-Director - The Plano Conservancy
Cathy Kuebler, VP Property Management - Billingsley
Phillip LaBerge, President - Coppell Greens
Sandra LaClave, General Manager - Collin Creek Mall
Marijke Lantz, Senior Vice President Investments - Billingsley
Dr. Wright Lassiter, Jr., Chancellor - Dallas County Community College District
Mr. Joe Turner, Roadmaster Dist.7 - Kansas City Southern Railway Company
Paul Lauriat - The Bonaventure
Lead Pastor - Fountain of Life International Church
Yohan Lee, Korean Church of Dallas - Associate Pastor
Barrett Lesher - Hallett & Perrin
Tom Lewis, Sales Manager - Plano Marine
Daniel K. Long, Sr., President - Plano Homeowners Council
Lot Manager - Park 'n Fly
Bill Lovell, Vice President - Old Downtown Carrollton Neighborhood Association
Chris Luna, Staff Vice President & Assistant General Counsel - MetroPCS Communications
Sheila Lustfield, Director - The Country Place, Inc. Homeowners Association
Mirna Lynch, Chairman of the Board - The Historic Downtown Plano Association
Mr. John Bachelder, OSP National Support/Investigations - MCI/Verizon
Paula MacDonald, President - Old Downtown Carrollton Neighborhood Association
Donna Magro, President - Highland Square Homeowners Association
April Maldonado, HR Director - Reliant Rehabilitation Hospital-North Texas

Property Manager, Principal Management Group - The Woodlands of Plano
Walt Marston, President - Hillcrest Manor Homeowners Association
Tony Martellott, President - Dallascape, Inc.
Mr. Russell Martin, President - Tonkawa Tribe of Oklahoma
Liesl Mayerson, Representative - Town of Addison
Gray Mayes, Public Affairs Manager - Texas Instruments
David McCall, Partner - Gay, McCall, Isaacks, Gordon, May & Roberts, P.C.
Laura McCorkle, Principal - All Saints Catholic School
Paula McDonald, Treasurer - Carrollton Heights HOA
Mr. Jon Bowers, Sr. Right of Way Agent - ONCOR
Mr. Matt Kinsey, Transmission Engineering - ONCOR
Mr. Keith Williams, Project Manager, Network Design - ONCOR
Robert McGraw, OEM and National Account Contact - AER Manufacturing Corporation Headquarters
Rockie McMillan-Allen, Operations Manager - Cypress Waters
Mansi Mhashelkar, President - Chateaus of Coppell
Robert Miller, President - Dallas North Estates HOA
Mohammed Amer Mohiuddin, President - Medina Villas
Walt Monford, Executive Vice President - KDC
David Montoya, President - Fairfield of Plano Homeowners Association
Bob Moore, Representative - Preston Green Homeowners Association
Shahzad Nathani, Director - Ivy Montessori School
Mr. William Nelson, Chairman - Comanche Nation of Oklahoma
Matt Neville, Executive Director - Highland Springs Retirement Community
Bernard O'Brian, Facilities Manager - Qorvo
Mr. Ricardo Ortiz, President & CEO - Greater Dallas Hispanic Chamber of Commerce
Robert Pannell, Plano Masonic Lodge Member - Plano Masonic Lodge
Ms. Terri Parton, President - Wichita and Affiliated Tribes
Cookie Peadon, Representative - CBCCC/Highlands of McKamy IV-V
Roy Pendergrass, Chairman of the Board - Fairhill School
Rusty Pendleton, Board of Directors - The Country Place, Inc. Homeowners Association
Mr. Dale Petroskey, President - Dallas Regional Chamber
Peggy Ploss, Representative - Town of Addison
Frank Polma, Homeowner
Robert Pope, President - Robert W. Pope & Associates
Chip Pratt, Community Relations Director - Canyon Creek Homeowners Association
Mr. David Preziosi, Executive Director - Preservation Dallas
Stacia Price, CBCCC Steering - Highlands of McKamy
Carmen Prince - Coppell Greens
Jim Prince - Coppell Greens
Mike Reeves, Asst. Director - The Country Place, Inc. Homeowners Association
A Reynolds - Century Golf
John Richardson - Court Estates
Ellen Richardson, Representative - Highlands of McKamy 1-3 Homeowners Association
Melissa Robinson, Director - Small Miracles Daycare
Aryeh Rodin, Rabbi - Congregation Ohev Shalom
Barry Rosen, Homeowner - CBCCC
Jan Rugg, Board President - Addison Business Association
Dori Ruiz, Office Administrator - Grapevine Mills Mall
Chris Ryan, VP of Sales and Marketing - Air Liquid America
Amit Sangani - Chateaus of Coppell
Luis Santeliz, Representative - Town of Addison
Bob Sappington, President - Jackson Highlands Homeowners Association
Jean Schobert, Transportation Chair - North Dallas Neighborhood Alliance
Bill Schultz, Social Chairman - Bel Air of Josey Ranch Homeowners Association
Ken Schwantner - Creekview Homeowners Association
Chris Seaman, Owner - Seamans Lawn and Landscape, Inc.

Shannon Sear, Resident - Post Addison Circle
Angela Sham, Owner - Royale Ballet
Bonnie Shea, President - The Historic Downtown Plano Association
Russ Sikes, President - Tenth Street Industries
Larry Slawter, Horticulture Manager - Gaylord Texan Hotel & Convention Center
Tony Soto, Owner - Soto's Auto
Bill Sproull, President - Richardson Chamber of Commerce
Michelle St. Claire, Office Staff - Bush/75 Partners
Carla Stanford, Executive Director - Fairhill School
Jonathan Stites - Argent Property Company
Ms. Dottie Kelly - Time Warner Cable
Jeannie Stone, School Superintendent - Richardson ISD
Sam Swanson - Bush/75 Partners
Deb Tarantino, Representative - Highlands of McKamy 1-3 Homeowners Association
Neil Teitelman, President - CBCCC/Willow Green Condominiums
Sean Terry, Vice President - Centurion American
Barbara Thomas - Hudson Heights
Jeremy Thomason, President - Canyon Creek Homeowners Association
Susan Thompson, President - Campbell Green Neighborhood Association
Scott Vann - Southwood Estates
Gracie Vela, Manager - The Woodlands of Plano
Kisha Voss, President - Douglas Community Neighborhood Association
Bill Walker, Senior Vice President Development - Billingsley
Robert Weatherford, President - Carter Estates
Kevin Whitfield, Sr. V.P. Design/Development - Drury Hotel
Jim Wills, Partner - BC Station Pinsland
Roy Wilshire - Kimley-Horn
Richard Wiltshire - Carrollton Heights HOA
Mr. James Stuart, National Field Ops - Field Engineer - US Sprint
Mr. Buddy Smith - Verizon
David Wiseman - Congregation Ohev Shalom
Sally Wolfish, Representative - Prestonwood Homeowners Association
Tom Wood, Representative - Preston Green Homeowners Association
Hank Woodburn, Owner - Adventure Landing
Ulyssess Wright, President HOA - Oak Creek Estates Homeowners Association

A hard copy of the Draft EIS was available for viewing at the following libraries:

Carrollton Public Library at Josey Ranch Lake – 1700 Keller Springs Rd., Carrollton, TX 75006
Cozby Library and Community Commons – 177 N. Heartz Rd., Coppell, TX 75019
Fretz Park Branch Library – 6990 Belt Line Rd., Dallas, TX 75254
Grapevine Public Library – 1201 Municipal Way, Grapevine, TX 76051
Harrington Library – 1501 18th St., Plano, TX 75074
Park Forest Branch Library – 3421 Forest Ln., Dallas, TX 75234
Richardson Public Library – 900 Civic Center Dr., Richardson, TX 75080

Acronyms

Acronym	Description
ARRP	Aquatic Resource Relocation Plan
ACHP	Advisory Council on Historic Prevention
ACM	Asbestos Containing Materials
ACS	American Community Survey
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
AFG	Area Focus Group
ALP	Airport Layout Plan
APAR	Affected Property Assessment Report
APE	Area of Potential Effect
APP	Airport Planning and Environmental Division
ASCE	American Society of Civil Engineers
ASR-9	DFW Airfield Surveillance Radar
AST	Above Ground Storage Tank
ASTM	American Society for Testing and Materials
AUL	Activity and Use Limitation
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
BMP	Best Management Practices
BNSF	BNSF Railway Co. (formerly known as the Burlington Northern Santa Fe Railroad)
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDC	Corridor Development Certificate
CEQ	Council on Environmental Quality
CESQG	Conditionally Exempt Small Quantity Generator
CERCLIS	Comprehensive Environmental Response Compensation & Liability Information System
CFR	Code of Federal Regulations
CGP	Construction General Permit
CLI	Closed and Abandoned Landfills
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CO	Carbon Monoxide
COA	Comprehensive Operations Analysis
CORRACTS	RCRA Corrective Action
CPS	Comprehensive Payment System
CT	Census Tract
CTA	Central Terminal Area
CTC	Centralized Traffic Control
CWA	Clean Water Act
DART	Dallas Area Rapid Transit
dBA	Decibel
dbh	Diameter At Breast height
DCAD	Dallas Central Appraisal District
DCTA	Denton County Transportation Authority
DEIS	Draft Environmental Impact Statement
DFW	Dallas-Fort Worth
DFW Airport	Dallas-Fort Worth International Airport
DGNO	Dallas Garland Northeastern Railroad
DMU	Diesel Multiple Unit
DNT	Dallas North Tollway

Acronym	Description
DOCKETS	EPA Docket Data
DOD	Department of Defense
DOT	Department of Transportation
DOI	Department of the Interior
EAD	DFW Airport Environmental Affairs Department
ECHO	EPA Enforcement and Compliance History Online
EDMS	Emissions and Dispersion Modeling System
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMF	Equipment Maintenance Facility
EMST	Ecological Systems Classification and Mapping Project
ENF	Enforcement Report
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental Sites Assessment
EO	Executive Order
FAA	Federal Aviation Administration
FAST	Fixing America's Surface Transportation Act
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act of 1981
FR	Federal Register
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTTS	FIFRA/TSCA Tracking System
FWTA	Fort Worth Transportation Authority (also known as Trinity Metro)
FWWR	Fort Worth & Western Railroad
GC	General Condition
GCOR	General Code of Operating Rules
GCP	General Construction Permit
GCC	Groundwater Contamination Cases
GHG	Greenhouse Gas
HC	Hydrocarbons
HMIRS	Hazardous Material Information Resource System
Hz	Hertz
I-3	Orange Line DFW Airport Extension (IRVING-3)
I-35E	Eastern Split of Interstate Highway 35 (also commonly referred to as IH-35E)
IH	Interstate Highway
IHW	Industrial Hazardous Waste
IOP	Innocent Owner/Operator Program
I-ETMS	Interoperable Electronic Train Management System
ISD	Independent School District
ITS	Intelligent Transportation System
KAST	Kills and Spills Team
KCS	Kansas City Southern
LBJ	Lyndon B. Johnson Freeway
Ldn	Day-Night Sound Level
LEED	Leadership in Energy and Environmental Design
LEP	Limited English Proficiency

Acronym	Description
Leq	Equivalent Sound Level
LNAPL	Light Non-Aqueous Phase Liquid
LOS	Level of Service
LQG	large quantity generator
LRT	Light Rail Transit
LRV	Light Rail Vehicle
LPST	Leaking Petroleum Storage Tank
LWCF	Land and Water Conservation Fund Act
MAP-21	Moving Ahead for Progress in the 21st Century
MBTA	Migratory Bird Treaty Act
MMP	Mitigation Monitoring Program
µg/m^3	micrograms per cubic meter
mg/m^3	milligrams per cubic meter
MKT	Missouri, Kansas and Texas Railroad
MOA	Memorandum of Agreement
Mobility 2035	NCTCOG Mobility 2035: The Metropolitan Transportation Plan for North Central Texas
Mobility 2040	NCTCOG Mobility 2040: The Metropolitan Transportation Plan for North Central Texas
MOS	Minimum Operable Segment
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MPH	Miles per hour
MSA	Metropolitan Statistical Area
MS4	Municipal Separate Storm Sewer System
MSAT	Mobile Source Air Toxics
MTP	Metropolitan Transportation Plan
MVEB	Motor Vehicle Emissions Budget
NAAQS	National Ambient Air Quality Standards
NCTCOG	North Central Texas Council of Governments
NDNA	North Dallas Neighborhood Alliance
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NIST	National Institute of Standards and Technology
NLEV	National low emission vehicle
NLR	No Longer Regulated
NMHC	non-methane hydrocarbon
NOA	Notice of Availability
NOI	Notice of Intent
NOV	Notice of Violation
NO_X	Nitrous Oxides
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NTD	National Transit Database
NTTA	North Texas Tollway Authority
NWI	National Wetlands Institute
NWP	Nation Wide Permit

Acronym	Description
O_3	Ozone
O&M	Operations and Maintenance
OHWM	Ordinary High Water Mark
Pb	Lead
PCB	polychlorinated biphenyl
PCN	Pre-Construction Notification
PE	Preliminary Engineering
PGBT	President George Bush Turnpike
PIP	Public Involvement Plan
PM_{10}	Particulate matter equal to or less than ten micrometers in diameter
$PM_{2.5}$	Particulate matter equal to or less than 2.5 micrometers in diameter
ppb	parts per billion
PTC	Positive Train Control
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
ROD	Record of Decision
ROE	Right-of-Entry
ROW	Right-of-Way
RPZ	Runway Protection Zone
RRIF	Railroad Rehabilitation and Improvement Financing
RRCS	Regional Rail Corridor Study (by NCTCOG)
RTC	Regional Transportation Council
RTHL	Recorded Texas Historic Landmark
SAL	State Antiquities Landmark
SCC	Standard Cost Categories
SEL	Sound exposure level
SEMS	Superfund Enterprise Management System
SH	State Highway
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
STB	Surface Transportation Board
STBG	Surface Transportation Block Grant
SUE	Subsurface Utility Engineering
SWPPP	Storm Water Pollution Prevention Plan
TAC	Texas Administrative Code
TAD	Tarrant Appraisal District
TARL	Texas Archeological Research Laboratory
TASA	Texas Archeological Sites Atlas
TCEQ	Texas Commission on Environmental Quality
TDA	Tire Derived Aggregate
THC	Texas Historical Commission
THSA	Texas Historic Sites Atlas
TIP	Transportation Improvement Program
TMDL	total maximum daily loads
TMP	Traffic Management Plan
TOD	Transit-Oriented Development
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TRB	Transportation Research Board
TRE	Trinity Railway Express
TRIS	Toxic Release Inventory System

Acronym	Description
TSA	Transportation Security Administration
TSP	Transit System Plan
TSS	Total Suspended Solids
TSCA	Toxic Substances Control Act
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
TxDPS	Texas Department of Public Safety
TXNDD	Texas Natural Diversity Database
UP	Union Pacific
URA	Uniform Relocation Assistance and Real Property Acquisition Policies Act
USACE	United States Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTD	University of Texas - Dallas
VCP	Voluntary Cleanup Program
VdB	Vibration velocity (in decibels)
VOC	Volatile Organic Compounds
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles of Travel
YOE	Year-of-Expenditure

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Anderson, Jacob E.

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