

Collin County Regional Trails Master Plan

A Collaborative Multi-Jurisdictional Planning Effort

May 2012



**Bowman-Melton
Associates, Inc.**
Bicycle and Pedestrian Planners



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A Collaborative Multi-Jurisdictional Planning Effort

Adopted by the Collin County Commissioners Court on May 7, 2012

Court Order No. 2012-282-05-07

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Municipalities/Agencies Involved

City of Allen	City of Murphy
City of Anna	City of Nevada
City of Blue Ridge	Town of New Hope
City of Carrollton	City of Parker
City of Celina	City of Plano
City of Dallas	City of Princeton
Town of Fairview	Town of Prosper
City of Farmersville	City of Richardson
City of Frisco	City of Royse City
City of Garland	City of Sachse
City of Josephine	Town of Saint Paul
City of Lavon	City of The Colony
City of Lowry Crossing	City of Van Alstyne
City of Lucas	City of Weston
City of McKinney	City of Wylie
City of Melissa	

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INTRODUCTION TO THE COLLIN COUNTY REGIONAL TRAILS MASTER PLAN

The 2011 Collin County Regional Trails Master Plan (RTMP) is intended to provide coordination and connectivity between cities and towns for the development of a county-wide system of trails. This plan builds upon the planning efforts of the cities and towns within the county and other regional studies, such as the North Central Texas Council of Government's Regional Veloweb and the Six Cities Trails Plan. The key components of this project are to define high-priority trail corridors that provide regional linkages and identify and address gaps between cities. Doing so results in a plan that encourages corridor preservation and multi-jurisdictional implementation. As a final result, this plan will serve as a tool that gives guidance to Collin County for evaluating requests submitted as part of its Parks and Open Space Project Funding Assistance Program.

THE COLLIN COUNTY PARKS & OPEN SPACE PROGRAM

The mission of the Collin County Parks & Open Space Program is to implement program elements of the County's Open Space Strategic Plan (adopted October 2001) to promote a high quality of life for current County residents and future generations through the addition of new parks and open space resources. In addition to the protection and acquisition of open space land, the Open Space Strategic Plan identifies the need for regional trail connections for hiking, biking, and equestrian use.

One of the primary ways in which the Collin County Parks & Open Space Program fulfills its mission is through its Project Funding Assistance Program. Established in 1999, this program awards funds to cities, and non-profit organizations within Collin County for parkland acquisition, trail construction and park/open space improvements. Since the program's inception, approximately \$33.75 million has been approved by Collin County taxpayers, over half of which has been allocated to the 2009-2015 time frame.

The purpose of the RTMP is to assist the County and local municipalities in creating trail linkages between cities, coordinating the existing trail planning efforts of the municipalities, and funding the implementation of trails. This document will also assist the County in evaluating funding applications for its Project Funding Assistance Program.

MASTER PLAN GOAL AND OBJECTIVES

Develop a Collin County Regional Trails Master Plan that provides coordination and connectivity between cities within the County for future trail development.

The above statement represents the overall goal of the RTMP. This statement reflects the nature of this master plan to coordinate the existing planning efforts of cities and towns within the County, rather than to impose a top-down plan. In support of this overall goal, the following objectives have also been developed:

- Build upon the planning efforts of cities within and adjacent to Collin County and other regional studies.
- Define high-priority corridors that connect two or more cities within or adjacent to Collin County to encourage corridor preservation and multi-jurisdictional implementation.
- Identify and address gaps and primary potential trail connections between cities in order to provide intercity linkages.
- Ensure that every city and town in the County is connected to the Collin County Regional Trail System.
- Recommend design guidelines and facility hierarchy for the Regional Trail System.
- Provide a tool that gives guidance to Collin County for evaluating funding requests and coordinating trail projects with other capital projects.



STUDY AREA

The study area for the Collin County Regional Trails Master Plan encompasses the entire county and extends one mile outside of the county lines. This area includes thirty one cities and town, seven of which are partially or wholly outside of Collin County. Every city and town within Collin County was invited to be part of this process. These municipalities include:

- Allen
- Anna
- Blue Ridge
- Carrollton*
- Celina
- Dallas*
- Fairview
- Farmersville
- Frisco
- Garland*
- Josephine
- Lavon
- Lowry Crossing
- Lucas
- McKinney
- Melissa
- Murphy
- Nevada
- New Hope
- Parker
- Plano
- Princeton
- Prosper
- Richardson*
- Royse City
- Sachse*
- Saint Paul
- The Colony*
- Van Alstyne*
- Weston
- Wylie

*Cities partially or wholly outside of Collin County

In addition, the study area includes a considerable amount of unincorporated land. These areas are considered in this RTMP in order to account for future development and annexation or to provide guidance for organizations interested in providing trails in these areas.

PLANNING PROCESS & METHODOLOGY

The RTMP planning process included two phases, as detailed below and on the following page.

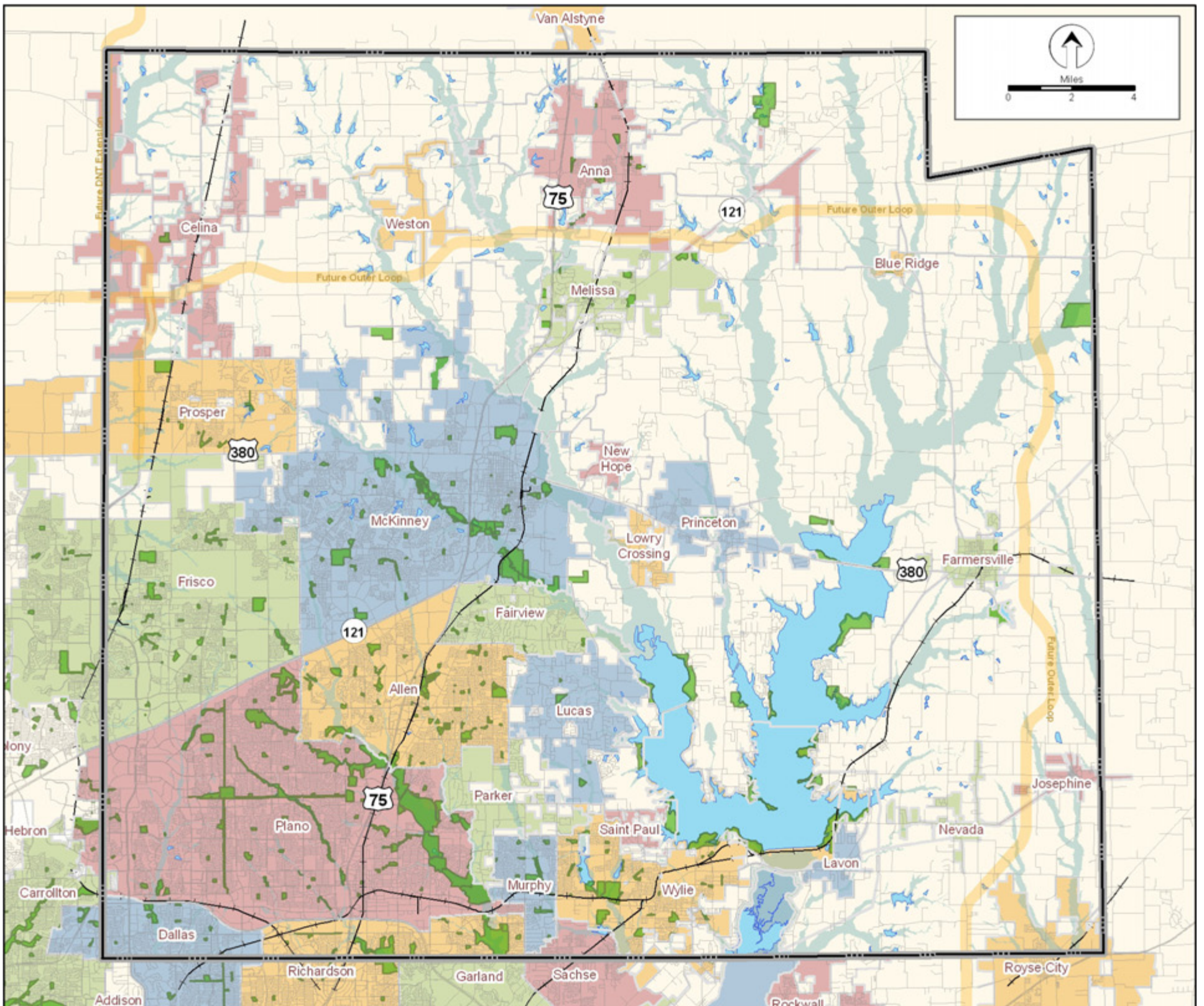
Phase 1

During the first phase of the project, hundreds of pieces of data were collected, compiled, and analyzed to develop a base plan upon which the entire RTMP was built. Major Trail Corridors, the primary outcome of this plan, were developed based on the existing plans of member cities and towns in the County and refined based on an opportunities and constraints analysis. Specific tasks in Phase 1 included:

- Base Data Assembly
- Demographic and Growth Forecast Analysis
- Inventory of Key Destinations
- Review of Existing & Planned Trails
- Draft Major Trail Corridor Alignments
- Field Review
- Opportunities and Constraints Analysis
- Governmental Agency Input and Review

FIGURE 1.1 – STUDY AREA

The study area for the Collin County Regional Trails Master Plan encompasses the entire county and extends one mile outside of the county lines. This area includes thirty one cities and town, seven of which are partially or wholly outside of Collin County. Every city and town within Collin County was invited to be part of this process.



Phase 2

The second phase of the RTMP focused on revising the Major Trail Corridor alignments and providing analyses of Key Intercity Connection Points. This final report and map book was produced as a product of this phase. Specific tasks in Phase 2 included:

- Revise Draft Major Trail Corridor Alignments
- Determine Corridor Hierarchy
- Analysis of Key Intercity Connection Points
- Create General Guidelines for Regional Trails
- Governmental Agency Input and Review
- Preparation of Final Report
- Public and Elected Official Review
- Distribution of Plan and Data to Cities

AGENCY INPUT SUMMARY



The RTMP is a collaborative planning effort that builds upon the efforts of each municipality in the County (rather than a top-down plan that would override the efforts of cities and towns). As such, the detailed input from representatives from each municipality and other relevant organizations was sought. Two workshops were held during 2010 and 2011. Every municipality in the County, as well as adjacent cities, was invited to attend each of these workshops.

Workshop #1

The initial stage of the agency input process consisted of a one-day-long series of input sessions. Representatives from each city/town were invited to attend a session. Each session included approximately 5 to 15 participants and were organized as follows:

- **Session #1** – Allen, Carrollton, Dallas, Fairview, Garland, McKinney, New Hope, Parker, Plano, Princeton, and Richardson.
- **Session #2** – Allen, Fairview, Lucas, McKinney, Murphy, Parker, Plano, Saint Paul, and The Colony.
- **Session #3** – Anna, Celina, McKinney, and Van Alstyne.

Workshop Results

Comments on the maps constituted the primary manner in which input was gained during the workshop. Specifically, comments were made to correct errors in the way municipalities existing and planned trails were displayed, to update the status of certain trail segments, to comment on the alignment of the Major Trail Corridors (see Chapter 3), and to comment on the Major Crossing Opportunities & Constraints (see Chapter 3). The workshop also provided opportunities for representatives from neighboring cities to meet each other, discuss future opportunities (trail-related and otherwise), and identify common issues and challenges. The primary issues and challenges discussed were:

- Challenges associated with ensuring the accommodation of parallel trails or trails crossing roadways, especially as related to Texas Department of Transportation projects.
- Discussion regarding how to work with Dallas Area Rapid Transit (DART) to provide trails along and/or crossing its rail lines.
- Challenges associated with implementing trails in areas with constrained right-of-way.

Workshop #2



The second workshop was held several months after the first, and allowed participants to comment on the revisions. This workshop was also organized into multiple sessions. In the first session, non-municipal entities that have significant influence on the provision of trails in Collin County were invited to learn about the RTMP and to discuss potential issues, challenges, and opportunities. A second session was held for municipalities and included a recapitulation of the RTMP process and goals, an overview of trail mileage included in this plan, a discussion of current and future trail level of service per capita, and a conversation regarding general guidelines for Major Trails (See Chapter 4). The two sessions included the following attendees:

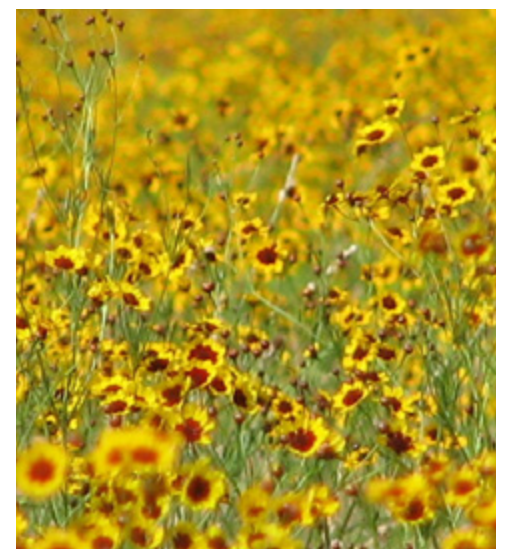
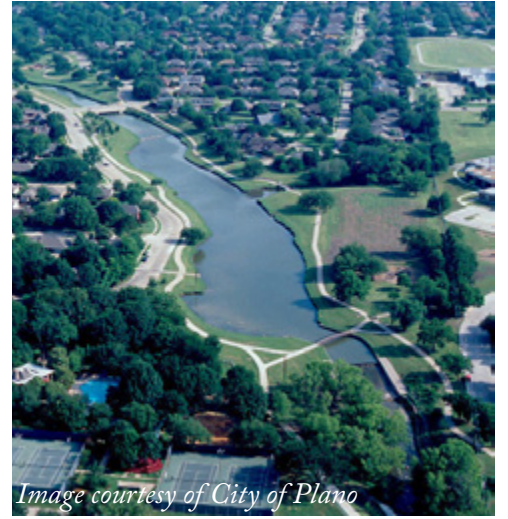
- **Session #1** – Non-Municipal Entities: Dallas Area Rapid Transit, North Texas Municipal Water District, Oncor, Texas Department of Transportation, and US Army Corps of Engineers.
- **Session #2** – Municipalities: Allen, Anna, Dallas, Farmersville, Frisco, Garland, McKinney, Melissa, Murphy, New Hope, Parker, Princeton, Richardson, and Wylie.

Workshop Results

The primary result from Session #1 (non-municipal entities) was that these agencies are willing to accommodate trails where feasible as long as the need for a trail crossing or parallel trail is brought to their attention early in the process. Specifically, it is very challenging to accommodate a facility once the design of a project is nearing completion. Attendees at this meeting stated that it is very important for the Collin County RTMP, as well as the local trail plans of municipalities, to be provided and publicized to the North Central Texas Council of Governments, TxDOT, DART, and city engineering departments so that as new projects are planned, trails are taken into consideration. A specific recommendation was made to ensure that trails are included in the Purpose and Need section of environmental documents. Some new opportunities identified during this session include the possibility to provide trails along unused DART right-of-way on a temporary basis until the time that the right-of-way is needed for rail operations.

The discussions during Session #2 (municipalities) mainly revolved around coordination between municipalities for signage, wayfinding, and on-street bicycle connections. Also, some additional changes and updates to the maps were made.







CURRENT POPULATION & FUTURE GROWTH

Collin County is one of the fastest growing areas in the Metroplex, the state, and the nation. The population within the county has nearly tripled in the last 20 years, growing from 264,036 in 1990 to 786,250 in 2010. This period of time represents a major growth boom in the county, with many municipalities doubling in size and formerly small towns such as Frisco, Allen, and Fairview growing into sizeable cities. The trend of significant growth is expected to continue over the next 20 years. The North Central Texas Council of Governments (NCTCOG) forecasts that Collin County will gain over 380,000 more residents by 2030. As the growth over the last 20 years has caused significant changes in Collin County, so will new growth in the coming decades. This new growth informs and guides the recommendations of the RTMP.

FIGURE 2.1 – HISTORIC AND FORECASTED POPULATION GROWTH

This figure illustrates population growth over a 60 year period. The figures for 1970 to 2010 indicate actual Census counts while the numbers for 2020 and 2030 are from NCTCOG's Population Forecast.

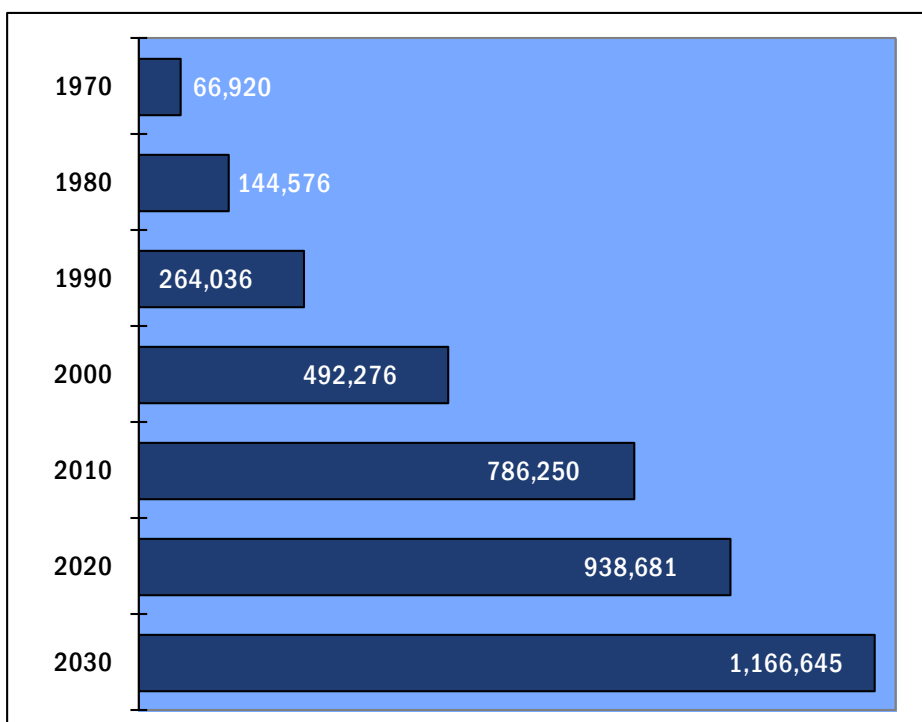
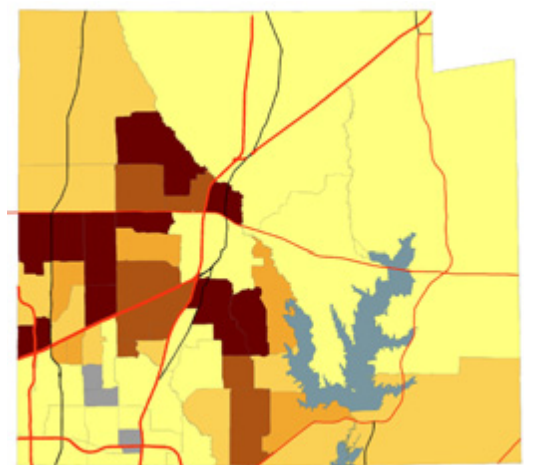


FIGURE 2.2 – DISTRIBUTION OF FORECASTED GROWTH

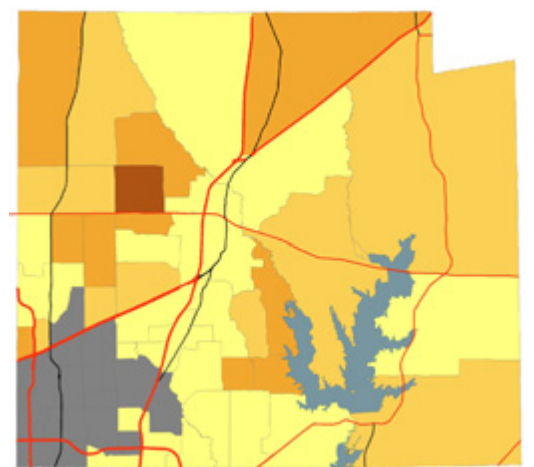
This series of maps indicate population growth across the county as a percent increase over ten year periods. The first map (2000–2010) is measured population growth while the second and third maps show forecasted growth.

Between 2000 and 2010, the western and central portions of the county grew quickly, with many areas experiencing >300% growth. The southwest portion (north Dallas, Richardson, and Plano) grew only slightly.

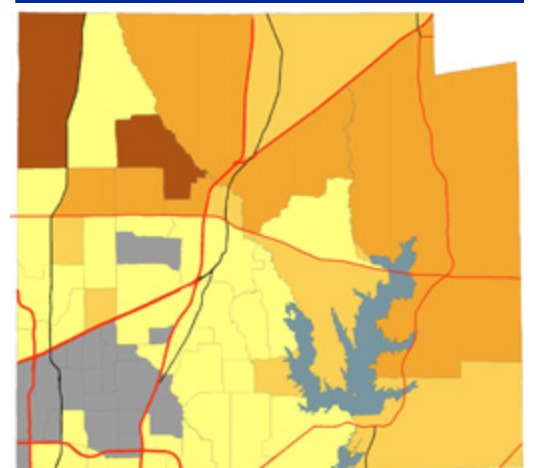
The 2010–2020 and 2020–2030 maps illustrate how growth is expected to occur in the future. It is forecasted that the northern and eastern portions of the county will experience significant growth while the more established southwestern portion stabilizes.



2000–2010

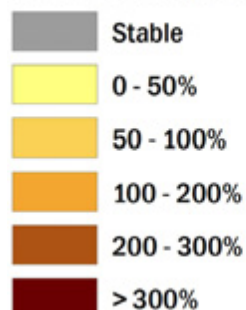


2010–2020



2020–2030

Percent of Population Growth





REVIEW OF PREVIOUS STUDIES & PLANS

A number of previous and ongoing planning efforts have shaped Collin County's growth up to this point and will continue to do so in the future. These plans illustrate the future of Collin County and provide a foundation for this RTMP. The previous studies reviewed are organized by geography: regional plans, county-wide plans, and local plans.

Regional Plans

Six Cities Trail Plan

Adopted in 2001, the Six Cities Trail Plan was one of the first inter-jurisdictional trail plans in Texas. This plan has served as a blueprint and guide to link major hard surface and soft surface trails within the cities of Plano, Allen, Frisco, Garland, McKinney, and Richardson. This regional trail plan focused on providing continuous, inter-city trail connections that link each of the six cities to major destinations in the area. The plan also proposed that existing and potential future DART lines in the area contain trail corridors that link the most densely populated portion of the member cities. The plan established key guidelines for trail width, boundary markers, and trail construction materials.

Much like this Collin County Regional Trails Master Plan, the Six Cities planning process included the review and integration of existing parks and trails master plans from all participating cities, as well as citizen goals and input related to trails in each of those plans. The result was the development of general trail alignments for six major inter-jurisdictional trail corridors and identification and analysis of 16 inter-jurisdictional connections. To date, this plan has had a major impact on trail planning in Collin County, has assisted each of the communities in acquiring grant funding, and has resulted in a significant portion of the major trail corridors being constructed.

North Central Texas Council of Governments' Mobility 2035 – The Metropolitan Transportation Plan

NCTCOG, the Metropolitan Planning Organization for the Dallas-Fort Worth area, maintains a long-range transportation plan that defines a 25-year vision for the region's multimodal transportation system. Mobility 2035 identifies policies, programs, and projects that respond to adopted goals and guide expenditures for state and federal funds. Mobility 2035 was adopted by NCTCOG's Regional Transportation Council on March 10, 2011. The final step in the formal adoption process is the approval of the Plan's Air Quality Conformity Determination by the Federal Highway Administration and the Federal Transit Administration (anticipated for June 2011).

The Mobility 2035 Plan includes a section Active Transportation in the Mobility Options chapter. This section includes three goals for Active Transportation in the region:

- Increase accommodation and planning for active transportation – Promote the integration of complete streets, context sensitive solutions, and other relevant initiatives into roadway planning, design, implementation, and maintenance policies so that all roadways safely accommodate all users, including bicyclists, pedestrians, transit riders, children, older individuals, disabled individuals, and motorists.
- Improve safety and mobility for active transportation – Improve safety for active travel by increasing education and training opportunities for cyclists, pedestrians, motorists, and professionals who are designing and implementing roadway facilities, implementing safety infrastructure projects, and by promoting enforcement of traffic laws to reduce bicycle and pedestrian-related conflicts.
- Increase active travel in the North Central Texas Council of Governments' region as an alternative to vehicle trips – Increase active travel for all trip purposes through consistent support of programs and infrastructure projects that address the five Es: Engineering, Education, Encouragement, Enforcement, and Evaluation. In addition, these goals

as a whole further support the five Es of bicycle and pedestrian planning outlined above. Engineering refers to changes to the built environment through engineering improvements; education campaigns disperse information in a variety of formats in an effort to increase the effectiveness of bicycle and pedestrian facilities; encouragement seeks to alter social norms and offer incentives for community members to utilize active transportation facilities; enforcement programs target unsafe driving behaviors and reinforce safe walking and bicycling behaviors; evaluation is critically important in determining the scope and success of a project as it establishes baseline data that can be compared to project results. The five Es apply to all active transportation components and are all equally important in determining the long-term success of a project.

Of specific interest to the RTMP is the Regional Veloweb – an updated network of off-street shared use paths designed to be the regional “expressways” for bicycle transportation. One of the criteria for the Regional Veloweb update was to incorporate recommendations from a series of sub-regional workshops that were consistent with City and County plans, as well as addressing missing connections or needed extensions. One big change was the extension of the Regional Veloweb from Collin, Dallas, Denton and Tarrant Counties to 10 counties. Added to the Regional Veloweb were Hunt, Rockwall, Parker, Kaufman, Johnson and Ellis Counties.

The Regional Veloweb generally follows existing rights-of-way along utility corridor easements, abandoned rail lines, levees, etc. While costs will vary along different sections, the average Mobility 2030 (the precursor to the Mobility 2035 Plan) Regional Veloweb construction costs were estimated at \$1.4 million per mile, excluding right-of-way. For the Mobility 2035 Plan, trail construction costs were reviewed against local and national trail construction costs and the estimate has been reduced to \$800,000 per mile for basic trail construction, including right-of-way. Total funding to complete all Regional Veloweb projects is estimated at \$1.12 billion in this financially-constrained plan.

The financial section of Mobility 2035 includes a variety of funding sources for bicycle and pedestrian transportation projects. Financial goals include incorporation of sustainability and livability options during the project selection process by including additional weighting or emphasis as appropriate and consistent with RTC policy objectives. These objectives include but are not limited to demand management, air quality, natural environment preservation, social equity, or consideration of transportation options and accessibility to other modes (i.e. freight, aviation, bicycle and pedestrian) (Goal F3-002).

Under Management and Operations Infrastructure Maintenance, Rehabilitation, and Operations, Goal MO3-002 is ensuring that the existing multimodal transportation system operates efficiently by constructing bridge replacements with approaches, new bridges, overpasses, or underpasses for railroads, bicycle/pedestrian facilities, off-system roads, and non-regionally significant facilities.

Under Congestion Management Process, Goal TSM3-001 is for the installation of pedestrian facilities by local agencies as part of intersection improvement and traffic signal improvement program shall provide access to usable walkways or sidewalks.

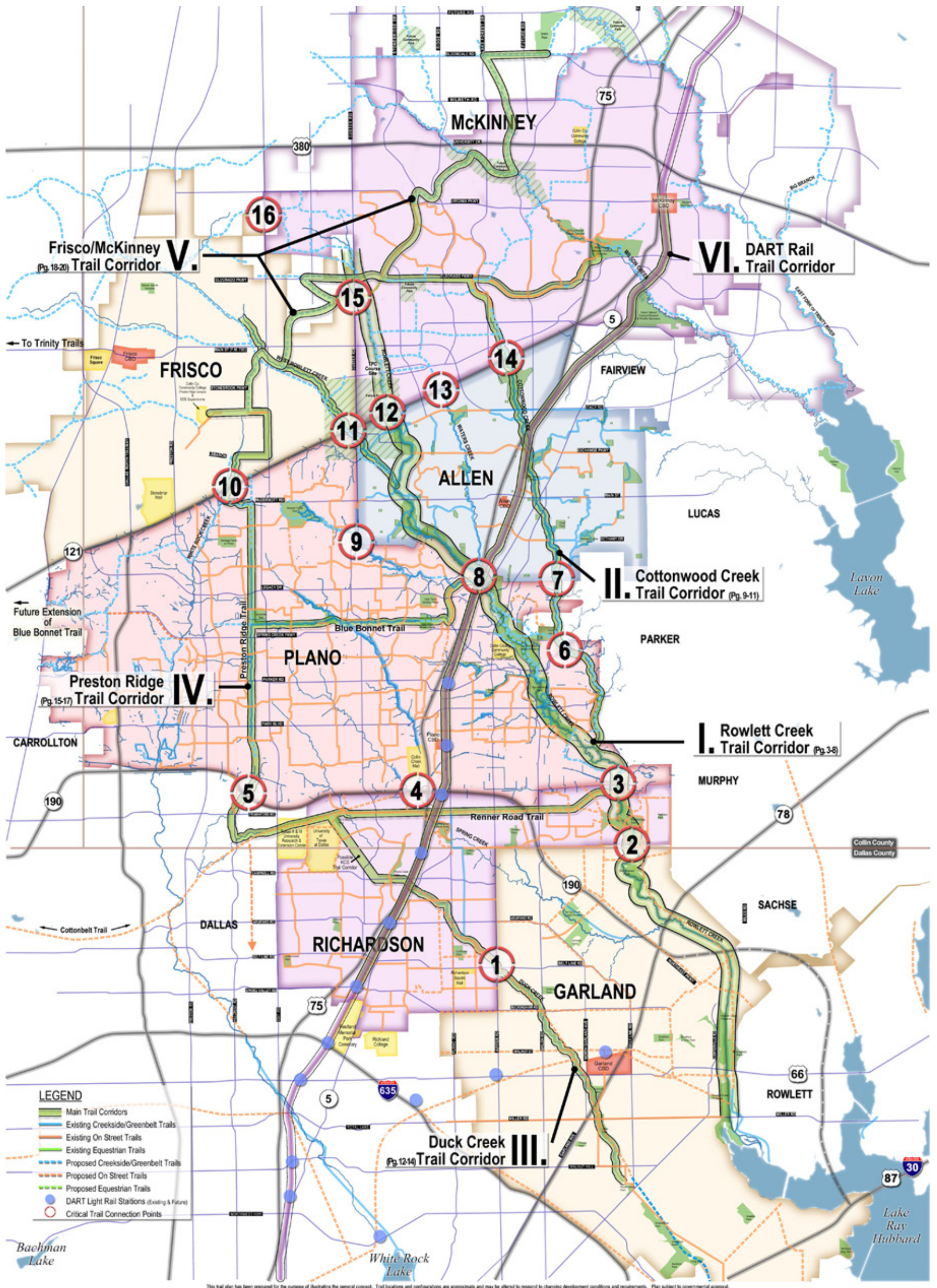
Mobility 2035 provides appropriate staging of Regional Veloweb improvements, calling for:

- Secure long-term right-of-way access.
- Work with community volunteers, park officials, and others to establish a soft surface trail for interim use, if necessary.
- Bridge streams and rivers and develop at-grade crossings to major roadways.
- Construct full, standard concrete trail facilities.
- Build overpasses/underpasses to major roadways.

Finally, Mobility 2035 includes design recommendations for the Regional Veloweb:

- Width – minimum 12' for heavily traveled shared use paths and up to 16-24' wide sections where warranted due to high peak pedestrian volumes in proximity to transit stations and major venues.
- Markings and travel speeds to meet minimum safety standards for simultaneous bicycle and pedestrian traffic.
- Intersections – Grade-separated crossings of roadways with significant traffic flows; few if any signalized or stop signs; easy access from roadways, particularly ones with on-street bicycle facilities.
- Traffic circle intersections with minor roadways where conflicts are a concern.
- Easy access to common trip destinations.





Six Cities Trail Plan
Dallas/Collin County, Texas

Approx. Scale: 1/2" = 1 Mile



The Six Cities Trail Plan, adopted in 2001, was one of the first regional trail plans of its type in the State of Texas.



The Collin County Regional Trails Master Plan

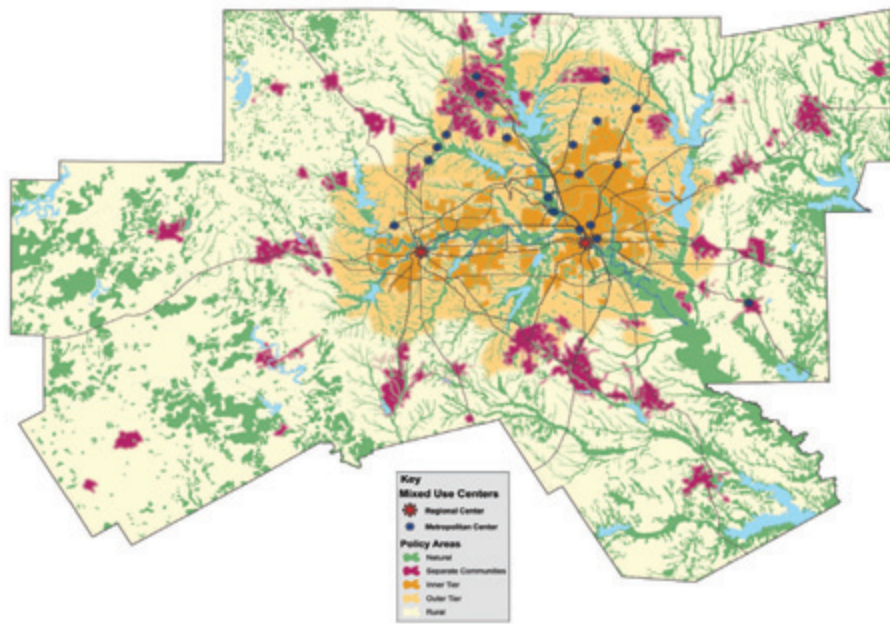
North Texas 2050 (Vision North Texas, 2010)

North Texas 2050 is the result of over five years of planning efforts by the Vision North Texas partnership, which includes private, public, and academic representatives from across the North Texas region. Through the process, numerous alternative futures were considered and eventually were refined into a single preferred future, which is detailed in the North Texas 2050 document along with policies and strategies developed to help the region realize this future. This document demonstrates that bicycle and pedestrian facilities

in need of protection or with landowners interested in dedicating their land to parks and open space use” (Executive Summary, Page 5).

This Plan’s recommendations were developed with the intention to work both with Collin County cities that have park system plans, as well as those that do not. Coordination and cooperation with all levels of government, as well as with partners in the private, non-profit, or religious sectors, is encouraged wherever possible. The Plan recognizes the need for both active recreation trails for bicycling and for passive recreation trails for walking; nature watching; and natural, historic, and cultural resource protection.

Exhibit 4.2: Preferred Future Diagram
(Illustration of a Preferred Physical Development Pattern for the Year 2050)



The Plan identifies 112 miles of existing County and municipal trails and between 350 and 431 miles of proposed trails for walking, jogging, hiking, bicycling and equestrian use. The proposed trails are primarily along creek corridors and are identified with the intent that they link with existing and proposed city or Regional Veloweb facilities. It also recommends consideration of proposed trail needs in the planning, design and construction of local, state, and federal road facilities. The intent is to encourage a recreational trail system that links to schools, libraries, neighborhoods and more transportation-oriented trail facilities in order to create a coordinated, interconnected, accessible countywide family-friendly system. The Plan states:

“A trail plan for Collin County should work in conjunction with the County’s thoroughfare plan, resolving potential conflicts of the two uses ahead of time. It should also in some cases be considered a part of the adopted thoroughfare plan, where trails provide legitimate and needed connections between road-based bicycle and pedestrian paths.” (CCPOSSP Section 3: Page 25)

A Vision for North Texas North Texas 2050
North Texas 2050 includes a Preferred Future Diagram that illustrates preferred future growth patterns for North Texas.

ties are crucial to the success of North Texas. The goals of North Texas 2050 align closely with those of Mobility 2035. This RTMP can help place Collin County on the leading edge of trail development in the region.

Dallas County Trail Plan: Trails for the Twenty-First Century

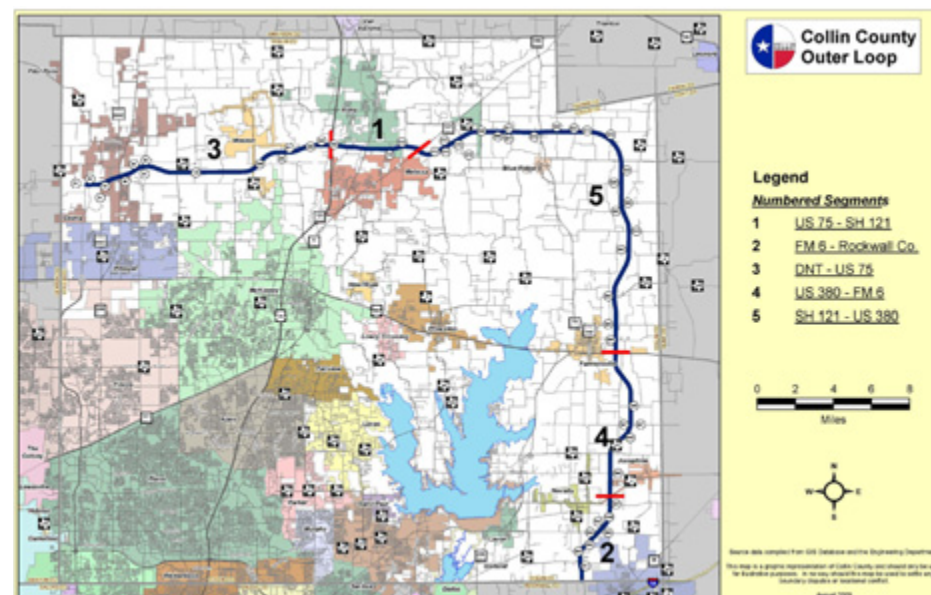
The first countywide plan in the North Central Texas region is The Dallas County Trail Plan: Trails for the Twenty-First Century, adopted in March 1997 by the Dallas County Commissioners Court. The major emphasis of this Plan was to inventory and evaluate potential trail corridors and to devise a plan for implementing a countywide trail network with support from governmental entities, neighborhood groups, community organizations and friends groups. At the time that plan was developed there were existing trails, but none of the cities in Dallas County had a trail plan.

Collin County Outer Loop

The Outer Loop will extend from Denton County, through Collin and Rockwall Counties, into Kaufman and Dallas Counties. It includes a segment in Collin County of approximately 52 miles in length.

This twenty-five year Plan recommends a network of more than 335 linear miles of hard surface trail for walkers, skaters, bicyclists, and people with disabilities, and is intended to serve both recreation and transportation functions. The Plan also recommends more than 145 miles of soft surface trails for recreation in the twenty-one Dallas County nature preserves and other areas where the focus on natural resources takes precedence over the need for mobility. In addition to pedestrian-only trails through sensitive natural areas and off-road bicycle trails in less sensitive ones, the Plan identifies potential corridors for equestrian trails, and access points for canoeists. Trail widths vary by type and range from 1.5’ tread width for one-way equestrian trails in environmentally

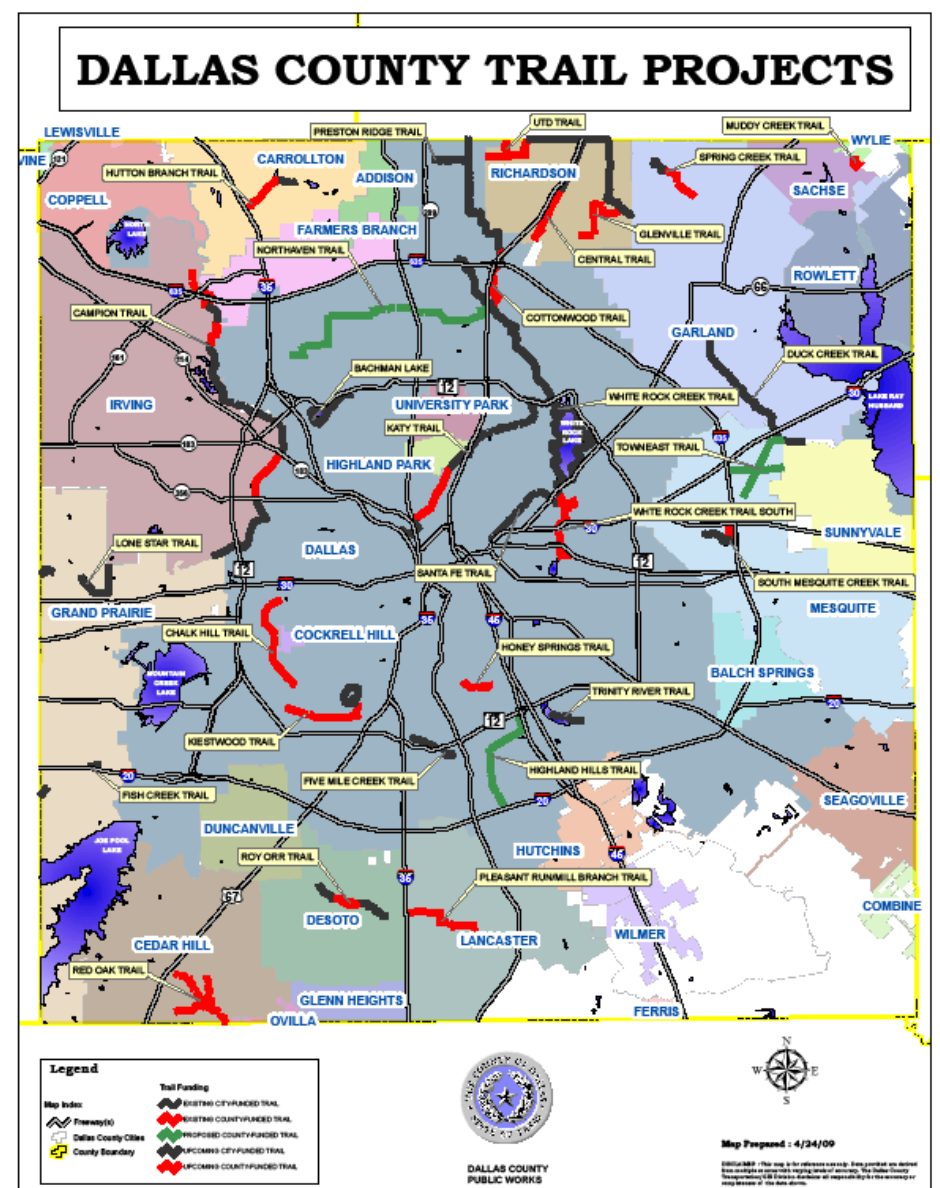
The Collin County Outer Loop from US 75 to SH 121 Collin County, Texas / Segment 1 – Local Environmental Document includes several mentions of bicycle and/or pedestrian facilities, three in the context of several congestion management alternatives and one in reference to one of the City of Anna’s transportation goals of a balanced transportation system that supports alternative transportation modes and is pedestrian friendly. The cross-county alignment of this future roadway provides a significant opportunity for parallel trails. It is important that the design and construction of this roadway accommodates trail crossings along cross-streets, creeks, railroad tracks, and other primary trail corridors.

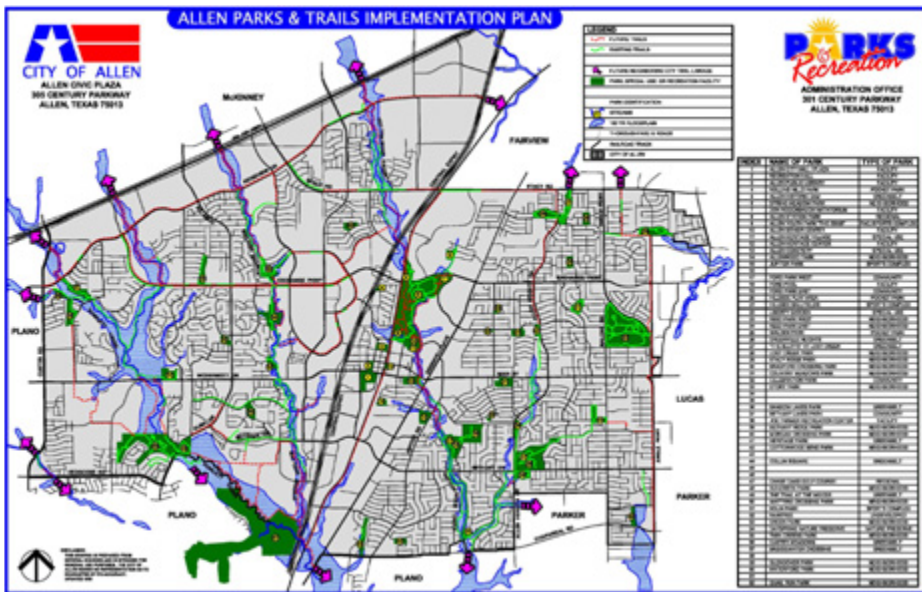


County Plans

Collin County Parks and Open Space Strategic Plan (October 2001)

Collin County published the Collin County Parks and Open Space Strategic Plan in 2001. It serves as a guidebook for adding new parks and open space resources to the existing system. It identifies where growth was anticipated and proposed generalized locations for future major parks and trails throughout Collin County, while leaving specific locations to be planned either with local municipal representatives or the County level “with respect to resources





The City of Allen's Parks & Trails Implementation Plan identifies areas for future trails.

sensitive areas to 16' for multi-use trails with equestrian use.

Establishing interjurisdictional connections across the County's cities to everyday destinations, such as access to Dallas Area Rapid Transit (DART) and Dallas' on-street bicycle route system, as well as the Dallas County Preserves were all key considerations in the countywide system. The Plan sought opportunities to locate trails along corridors with as much current public ownership as possible, including along DART-owned rail corridors utility corridors, and park and open space lands.

Proposed hard surface trails that would extend to Collin County included the Cotton Belt Trail, Spring Creek Preserve Trail, and Rowlett Creek Trail. Also, one soft surface trail, the Muddy Creek Trail, was proposed.

Local Plans

Many of the cities in Collin County have city-wide trail plans. These include (year of adoption):

- Sachse (2001)
- Celina (2001)
- Frisco (2002, updated in 2008)
- Lucas (2004)
- Fairview (2005)
- Carrollton (2006)
- Melissa (2006)
- Prosper (2007)
- Richardson (2007, updated in 2010)
- Dallas (2008)
- Murphy (2008)
- Parker (2008)
- Princeton (2008)
- The Colony (2008)
- Allen (2009)
- McKinney (2010)
- Wylie (2010).

The following cities and towns do not currently have a Trail Plan, Park Master Plan, Comprehensive Plan, Land Use Plan, Thoroughfare Plan, or similar plan: Blue Ridge, Josephine, Lavon, Lowry Crossing, Nevada, Van Alstyne, and Weston.

Level of Detail for City Trail Plans

Some Collin County cities (Murphy, Prosper, Sachse, The Colony, and Wylie) have prioritized plans with trail development status (shown as either existing, funded, or planned) indicated. Status of trail development is indicated in the Fairview and Richardson plans.

Trail Locations

All Collin County cities that discuss trail plans include trails along creek corridors / water bodies and some reference scenic bikeways and walkways. Trails connecting parks and green spaces, neighborhoods, parks, schools, and activity centers are mentioned in most plans. Pedestrians are usually to be accommodated with facilities adjacent to roadway corridors and along multi-use trails. On-street connections are sometimes called out for bicyclists. Rail with Trails or Rail to Trails is called out by Frisco, McKinney, Melissa, and Plano. When a community is or may be served by transit, transit access corridors are also featured. A few cities call out utility easements as opportunities for potential trail corridors.

Potential for Interjurisdictional Trails

All cities in Collin County with trail plans, whether they are stand-alone, part of a parks master plan, or within the comprehensive plan, have the potential for interjurisdictional connections.

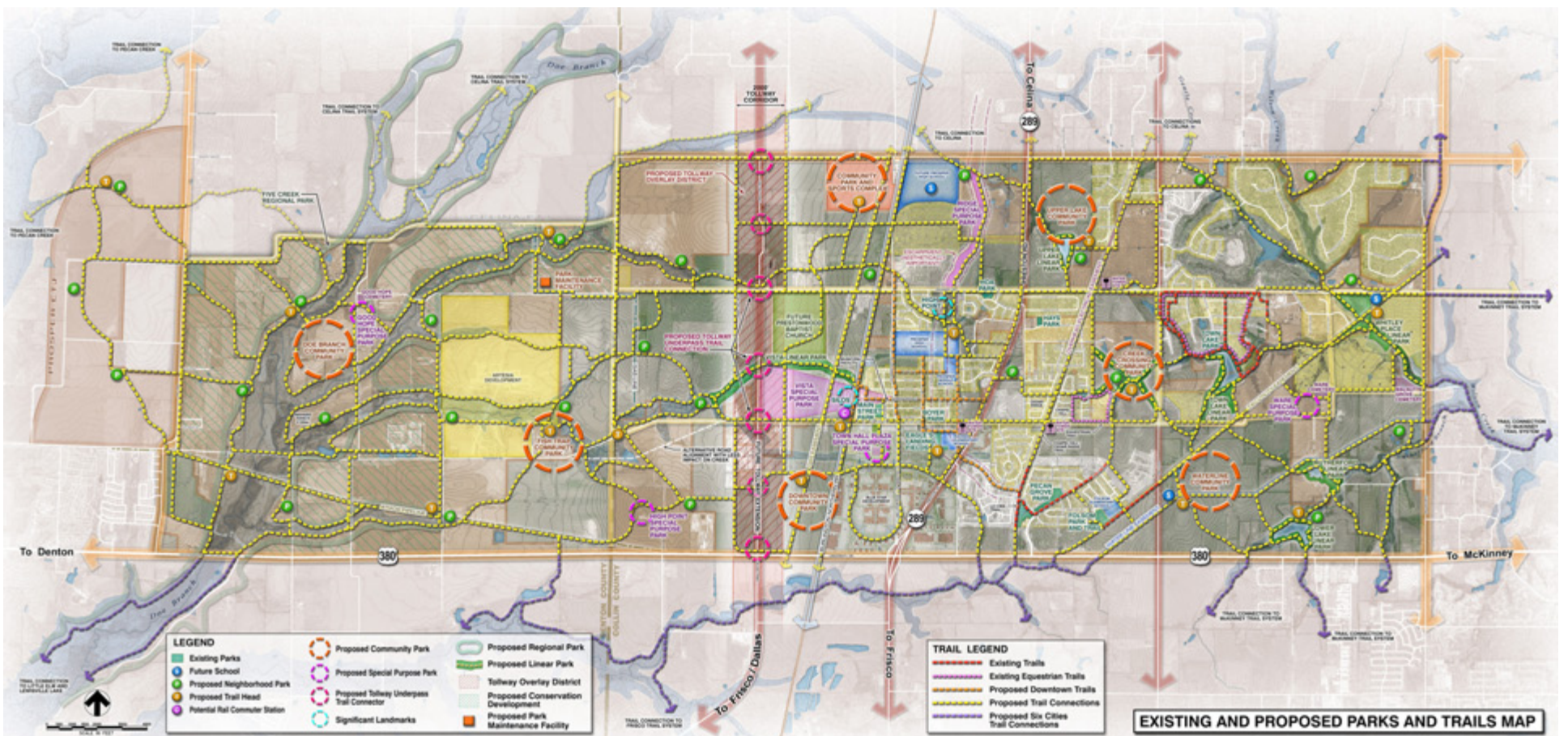
Trail User Groups

Most cities in Collin County with any trail plans include multiple-use trails serving pedestrians, bicyclists, and skaters. Lucas and Parker identify only walking trails. Lucas, McKinney, Parker, Plano, Prosper, Sachse, and Wylie include equestrian trails. The only city in Collin County to address canoeists is Prosper.

Standard Tread Width and Surface Composition

For cities that identify standard and/or minimum tread trail widths and surface composition, the information is compiled below:

- Addison – primarily hard surface trails
- Allen – 12' trail width, 10' trail/sidewalk may be hard or soft surface
- Anna – 8', 6' minimum trail width, may be asphalt or concrete
- Dallas – Generally 12' wide, but varies by use, 8' minimum for hard surface multi-use trails; also soft surface nature and off-road bicycle trails
- Frisco – Generally 12' wide, varies by use; minimum 8'; has both hard surface and soft surface trails
- Garland – 6'-8' trail width



TOWN OF PROSPER – PARKS AND TRAILS MASTER PLAN

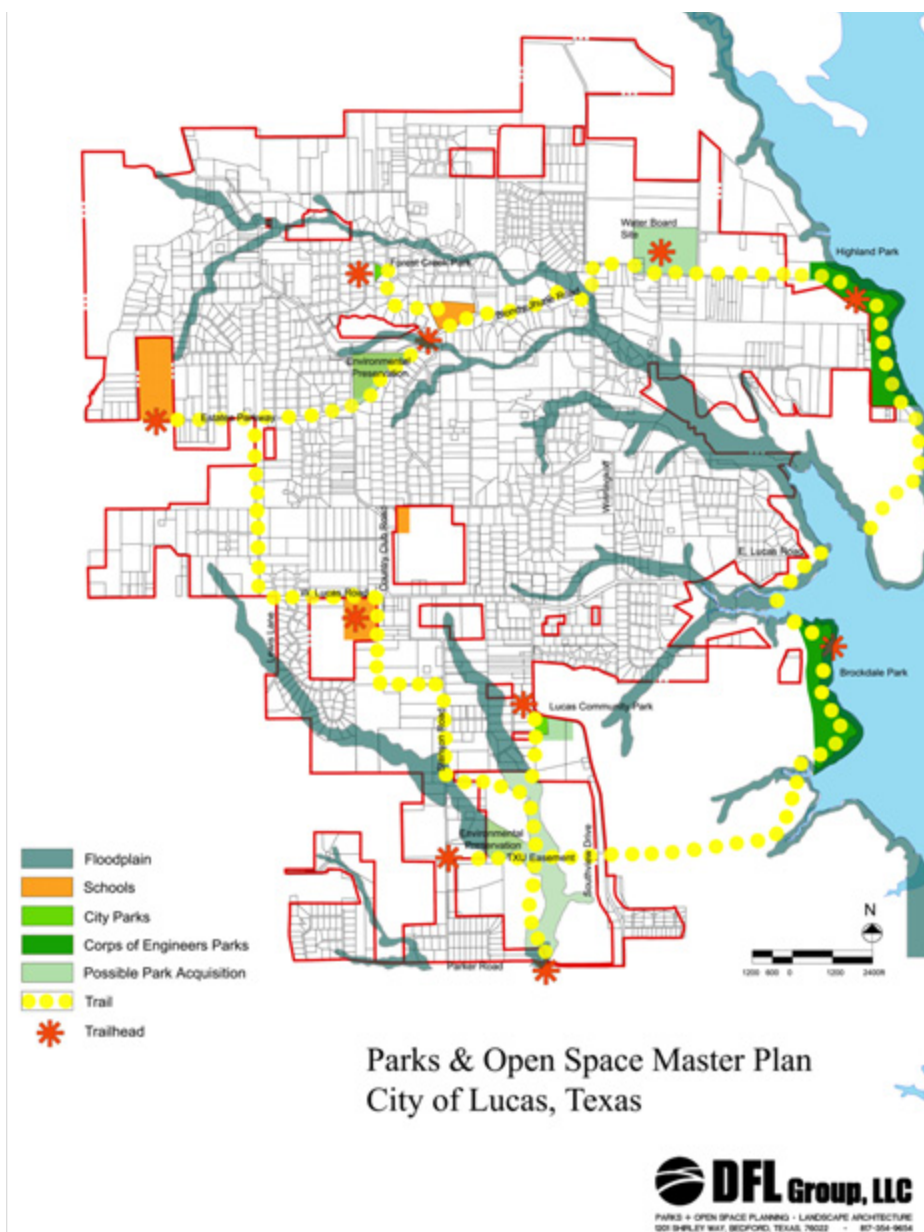
The Town of Prosper's Trails Master Plan illustrates existing and proposed trails for bikes, pedestrians, and equestrians



The Collin County Regional Trails Master Plan

- Lucas – trails include both hard and soft surface
- McKinney – trails include both hard and soft surface
- Melissa – 10' preferred trail width, and are standard along arterials and major collectors (both sides of roadway); minimum 8' wide trails, and are standard along minor collector and local streets (both sides)
- Murphy – generally 10' wide trails, 6' wide minimum neighborhood trails; both hard and soft surface
- Parker – 8' wide soft surface (granite) trail
- Plano – 8'-12' wide hard surface trails, plus soft surface trails
- Prosper – 10'-12' ideal trail width, both hard and soft surface
- Richardson – trails include both hard and soft surface trails
- Royse City - shows graphic of pathway 6-14' wide
- Wylie – generally 12' trail width; minimum 8' trail width; includes both hard and soft surface trails.

- Allen – Allen's 2002-2022 Comprehensive Plan references its adopted Consolidated Alternative Transportation / Recreational Trail Plan, which integrates its trail and designated bike route system with the Six Cities Trail Plan. The city's Land Development Code includes trail design standards and encourages developer participation in trail development. The completion of regional trail linkages within Allen is identified as a priority in the Parks, Recreation and Open Space Master Plan.
- Anna – Anna's 2010-2030 Comprehensive Plan's Future Transportation Goal is to provide "a balanced transportation system that is integrated locally and regionally, supports alternative modes of transportation, and is pedestrian friendly." The Thoroughfare Design Models include 4' minimum residential sidewalks and 5' commercial sidewalks in its thoroughfare design.
- Carrollton – Carrollton's 2003 Comprehensive Plan depicts prioritized trails, bicycle friendly routes, and regional trails. Carrollton's adopted trail plan includes trails to each of the city's three DART light rail stations.
- Celina – The 2009 Celina By Choice: The 2030 Comprehensive Plan presents goals for developing facilities for pedestrian, bicycle and other non-motorized transportation and adopting requirements and standards for "complete streets." The Future Land Use chapter identifies greenway corridors that will link all parts of the community through trails and paths.
- Dallas – The ForwardDallas! plan (the city's comprehensive plan) promotes a network of on-street and off-street trails and makes recommendations for regularly updating the Trail Master Plan, developing a commuter bike trail network, and seeking additional funding from a combination of local, state, federal and private sources.
- Fairview – The city's standard street sections in its Thoroughfare Plan include sidepaths for bicycle traffic along its 2-, 4-, and 6-lane roadways and a statement that right-of-way in specific corridors should include sidepaths for bicycles. The Parks and Recreation Plan includes prioritized multi-use trails along creeks connecting to neighborhoods, parks and greenways.
- Frisco – The 2006 Comprehensive Plan provides a new transportation strategy—an integrated street, transit, pedestrian, and bicycle trail system. The plan explores how trails can integrate or improve land uses; increase property values; provide connectivity between existing and newly developed areas; and serve as alternatives to the automobile.
- Garland – The City of Garland is taking efforts to expand its bike and pedestrian infrastructure in areas with limited right-of-way by using combinations of trails, sidewalks, and on-street bike routes.



The City of Lucas Parks & Open Space Master Plan includes trail alignments along roadways, creeks, and the shores of Lavon Lake.

On-Street Bicycle Plans

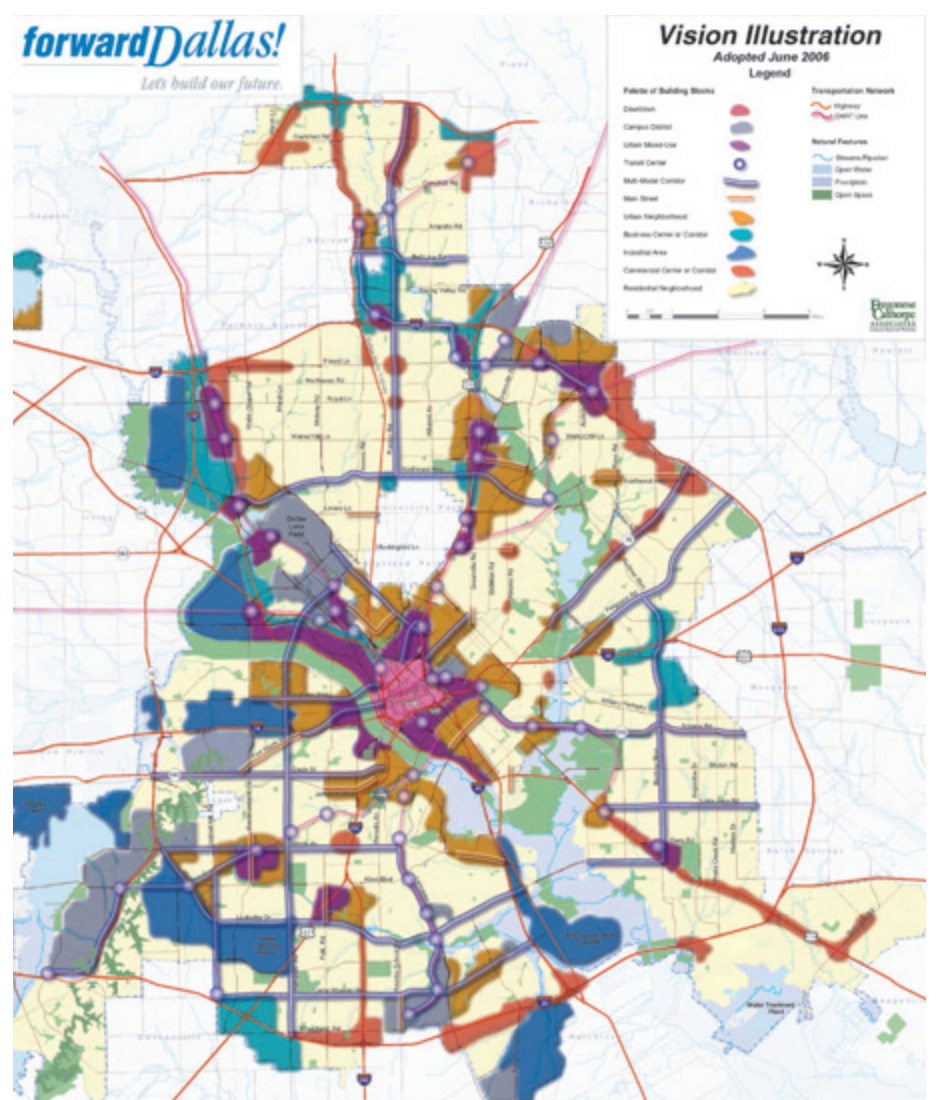
The following cities have citywide bicycle plans: Dallas, Frisco, Plano, Richardson, and The Colony. The need for on-street bicycle facilities is mentioned in documents for the cities of Allen, Carrollton, Celina, Garland, and Royse City.

Pedestrian Plans

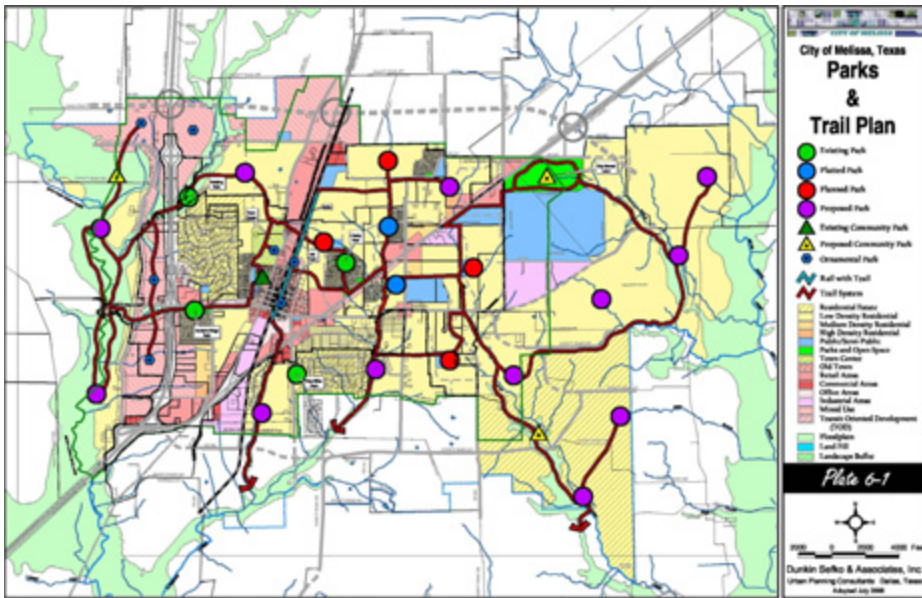
Cities with detailed pedestrian plans include Frisco, Melissa, and The Colony. The need to serve pedestrians is mentioned in documents for Allen, Anna, Carrollton, Celina, Dallas, Garland, Princeton, Prosper, Richardson, and Royse City.

Trail Planning Coordination with Comprehensive Plans, Thoroughfare / Transportation Plans, and Parks Plans

The adoption of a formal trails master plan is very important for any municipality, but is only the starting point for the implementation of bike and pedestrian facilities. The inclusion of bicycle and pedestrian considerations in cities' comprehensive plans, thoroughfare / transportation plans, and parks plans enhances coordination between projects and is an indication of the city's commitment for trail implementation. The following illustrates the ways in which trails are woven into other city planning efforts—especially the planning of mixed-use areas, which generate significant bicycle and pedestrian traffic—and how each city has a unique approach to providing trails for its citizens:



The ForwardDallas! Vision Illustration depicts high-density, mixed-use districts, transit centers, and multi-modal corridors.



The Parks & Trail Plan for the City of Melissa includes trails along natural features and the railroad corridor.



Wylie's Parks & Trails Master Plan includes several trail corridors that will provide intercity connections when completed. The city's planned trails link with the existing Trinity Equestrian Trail.

- McKinney – McKinney's Comprehensive Plan states the need to plan and construct additional multi-modal systems, including bicycle lanes and trails to support growth as the city matures. It also calls out the need for coordination between trail systems within the parks and greenbelts with pavement space on the road for bicycle use in the design of future thoroughfares. The City's 2008 Hike and Bike Trails map and 2009 Parks, Recreation & Open Space Master Plan show trails, bridges, and grade-separated crossings. The City is currently preparing a citywide bicycle plan.
- Melissa – Its 2006 Comprehensive Plan points out the challenge for the City to integrate pedestrian and bicycle facilities into a system that accommodates alternative modes of transportation. The city's standard street sections include 10' trails along both sides of arterials and major collectors and 8' trails along both sides of minor collectors and local streets. Melissa's Parks and Trail Plan map shows a network of trails covering the entire community.
- Murphy – Murphy's 2008 Comprehensive Plan states that new and enhanced roadways should include bicycle and pedestrian amenities. It also calls for investigation of the potential for trails along utility easements. The plan encourages pedestrian connections and access between residential and nonresidential areas via the City's roadway network and trail system.
- Plano – The City of Plano is currently updating its Comprehensive Plan—Plano Tomorrow—with adoption anticipated in late 2012 or early 2013. The Bicycle Transportation Plan map shows the location and type of system available in Plano through a network of on-street routes and off-street trails. Plano's trails are integrated with on-street bikeways for both recreation and transportation.
- Princeton – The construction of a multi-use trail system is identified in the City's 2008 Park Plan. The City's 2007 Future Land Use map depicts walking/jogging trails.
- Prosper – The 2005 Comprehensive Municipal Master Plan includes a goal for creating trail, walkway, and bikeway systems that serve as buffer zones between residential and non-residential uses. It also encourages the development of more public and private trail connections for pedestrians and off-and on-road bicyclists. Its 2007 Parks, Recreation, and Open Space Master Plan calls for creation of an inter-city trail system connected to all adjacent cities This plan discusses implementation of a citywide network of trails to accommodate users in significant detail.
- Richardson – The City's 2009 Comprehensive Plan includes the statement: "the automobile is no longer the center of the mobility universe. Alternative options such as bus and rail transit, walking trails, and bicycle routes should all be a part of transportation planning. The City should continue to promote freedom from the automobile in designing neighborhoods and nonresidential developments, and in requiring efficient and appropriate connections between land uses." The city's Trail-Way Master Plan map shows trails accessing all DART light rail stations in the city.
- Sachse – The Transportation chapter of its 2007 Comprehensive Plan includes an objective of providing alternative transportation modes to city residents by providing designated on- and off-street bike routes, as well as trails, sidewalks and crosswalks on all arterial and collector streets.
- The Colony – The Colony's Master Thoroughfare Plan Update in 2008 indicates that trails along major thoroughfares are included, stating that inclusion of trails in this Plan would ensure acquisition of right-

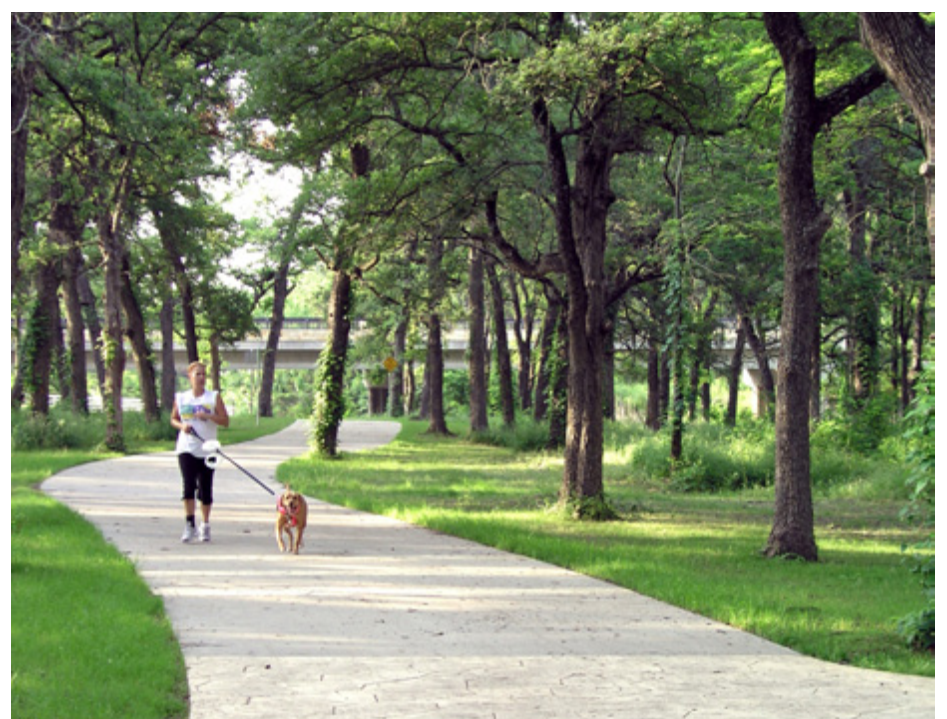
of-way for future arterial expansion and trails. The Short-Term (5-Year) Implementation Priorities of the Comprehensive Plan indicate that the trail plan should be implemented and some capital funding should be dedicated to implementation of high priority areas.

- Wylie – Wylie's 2010 Park, Recreation and Open Space Master Plan's recommendations include improving bicycle and pedestrian access to regional parks and pedestrian access to neighborhood parks. The Plan's floodplain management strategy includes acquiring or obtaining access easements for linear trails, especially along major creeks. Shoreline trails along Lavon Lake and Lake Ray Hubbard are also recommended.

EXISTING CONDITIONS

The cities within Collin County are renowned for the quality and quantity of their trails. Currently, there is approximately one mile of trail for every 2,900 people in Collin County, which places this area above the rest of North Texas with regard to trail level of service. Cities in Collin County recognize that a quality trail system is the most sought-after recreational amenity for many people and is something that increases quality of life. As such, the majority of trails within the County go beyond minimum standards by offering increased tread width, enhanced landscaping and aesthetics, and a greater level of amenities, such as benches, water fountains, interpretive signage, and wayfinding aids. Many cities in Collin County view trails as integral pieces of infrastructure and plan and budget for new construction as they grow. The coordination between trail construction and roadway projects, urban development, and flood control projects by many of the cities within the County is admirable and has lead to such results as trail accommodations under new roadways.

The following images depict examples of existing trail facilities in Collin County.



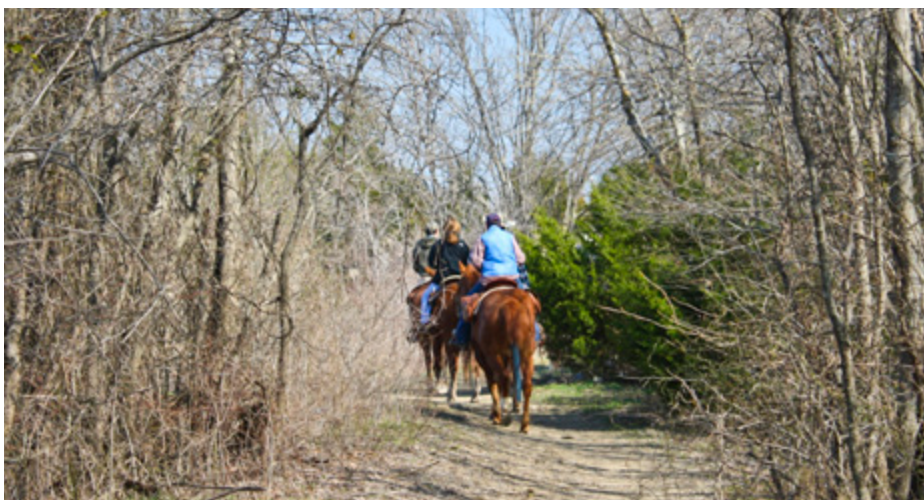
The West Rowlett Creek Trail in Frisco is an example of a 12' wide hard surface trail. This trail constitutes part of a Major Trail Corridor (see Chapter 3) and is a good example of the type of trail that is recommended for Major Trail Corridors where bicycle and pedestrian traffic is high.



Trails along creek corridors can provide significant challenges in terms of drainage, topography, and erosion. Shady Brook Trail in Plano utilizes boardwalk/bridge structures to address these issues.



Roadways also present barriers for trails in many cases. McKinney has proactively accommodated trail crossings by building trail underpasses when new roadways are constructed.



The Trinity Equestrian Trail, which runs from Wylie to Fairview along the western shores of Lavon Lake, is the primary equestrian facility in Collin County, along with shorter trails located elsewhere in the County.



Trail connections to commercial areas provide active transportation alternatives to driving. This example in Plano provides trail users with access to dining and retail areas.



Several cities have provided trail connections to their public facilities (recreation centers, libraries, city halls, etc.). This example is the Tom Muehlenbeck Center in Plano.

Miles of Existing & Planned Trails in Collin County

There are currently over 995 miles of existing and planned trails of various types in Collin County. Approximately 269 of these miles exist today or are funded for implementation in the near future. The table below illustrates the existing and planned mileage of trails by type in the County.

Trail Type	Existing / Programmed	Planned / Proposed	Total
Hard Surface	228.4	656.0	884.4
Soft Surface	22.1	48.7	70.8
Equestrian	16.9	15.5	32.4
Mixed Surface	1.3	6.8	8.1
Total	268.7	727.0	995.7

Level of Service

Calculating level of service for trails is a helpful way to identify how well the entire County population is currently served by trails. Comparing current level of service with forecasted populations for the future provide an approximation of future trail needs in terms of mileage in order to maintain the current level of service.

	Existing Miles of Trails	Current Level of Service*	2040 Trail Needs to Maintain Current Level of Service**
Hard Surface	228.4	1 mile per 3,425 people	445.7 miles (deficit of 217.3 miles)
Soft Surface	22.1	1 mile per 35,400 people	43.1 miles (deficit of 21 miles)
Equestrian	16.9	1 mile per 46,292 people	32.9 miles (deficit of 16 miles)
Mixed Surface	1.3	1 mile per 601,801 people	***
Total	268.7	1 mile per 2,912 people	524.3 miles (deficit of 255.6 miles)

*Based on a 2010 Census Redistricting Data population of 782,341

**Based on a forecasted population of 1,526,634

***Because of the low number of existing miles of this facility type, future needs can not be accurately forecasted.

Source: US Census Bureau; North Central Texas Council of Governments 2040 Population Forecasts



INTRODUCTION

In this chapter, the alignments of the Major Trail Corridors that comprise the Regional Trails Master Plan are illustrated. These alignments are based on the diverse needs of various trail user groups, opportunities and constraints across Collin County, and the diverse goals and challenges of each city and town in the County.

USER GROUPS

One of the primary challenges in developing a system of trails that meets the needs of citizens across the entire County is understanding the characteristics, preferences, and challenges presented by the multiple user groups that will utilize the system. In addition to the traditional recreational walking and recreational cycling groups (these two groups represent the “hike” and “bike” in “hike and bike trail”), the spectrum of current and potential trail users in Collin County also includes runners and joggers, advanced and novice cyclists, equestrians, and canoers and kayakers. While it is truly important to consider and attempt to meet the unique needs of each of these groups, the County’s primary goal should be to identify the shared or overlapping needs of these groups and help cities and towns build a trail system that most efficiently meets these various needs. The following section describes the various characteristics, preferences, and challenges of these trail user group types.

Cyclists

Cyclists comprise one of two primary trail user groups, along with pedestrians. There is significant variability between individual cyclists and careful consideration is required when planning and designing facilities that meet the need of all cyclists. Designing facilities for bicycle use requires an approach similar to that used by transportation engineers when designing streets and highways; specifically, trail alignments must be developed according to predetermined “design speeds,” which dictates sightlines, slopes, the radii of curves, etc. Other specifics include the requirement to provide improved shoulders on trails and a detailed regulatory/warning signage system. An important consideration for multi-use trails is that pedestrians and cyclists travel at much different speeds which creates the potential for traffic conflicts between these two groups. Beyond these requirements, cyclists also need facilities with surfaces that are smooth while still providing good traction. Quite often asphalt provides the best surface for cycling; however, as a less durable paving material than concrete, the use of asphalt can increase maintenance costs. Considering the variability in skill level and purpose for cycling is of critical importance. On the one hand, bicycles are ridden by people of all ages (including very young children) purely for recreational purposes; on the other hand, bicycles are also ridden by skilled adults as a mode of transportation. Planning for bi-

cycles as part of a county-wide system of trails, therefore, requires recognizing differences in abilities and perceptions amongst cyclists and motorists.

By Type (Transportation or Recreation)

As with all trail activities, cycling is simultaneously a recreational activity while also serving as a form of transportation; as such, cyclists ride bikes for both of these reasons. However, most cyclists are decidedly either more recreation-oriented or more transportation-oriented and each type has different preferences.

Specifically, recreation cyclists generally prefer trails that form loops and provide long distances (over five miles). This group is more interested in scenery and varying terrain than transportation cyclists usually are.

Transportation cyclists, on the other hand, generally prefer flat, direct routes. Many transportation cyclists prefer on-street bike routes over off-street trails. While it is advisable for each city to construct “complete streets” that accommodate cyclists and pedestrians, as well as cars and transit, continuous on-street bike routes are not always available and it is important to provide intercity linkages via trails to bridge the gap between bikeable streets. End-of-route facilities (such as bike racks, drinking fountains, and places to change clothes) and access to transit (including bus stops and future train stations) is also very important to transportation cyclists as cycling is often only one part of their daily commute.

By Skill Level (A, B, and C Cyclists)

In addition to differences between recreation and transportation cycling, cyclists can also be differentiated by skill level, each of which has different preferences and presents unique challenges to the Trails Master Plan. The Federal





Highway Administration (FHWA) classifies cyclists as Advanced, Basic, or Children and Seniors:

- **Advanced** - These are cyclists that are very experienced in riding with motor traffic and generally prefer to ride on streets. These cyclists will often use on-street bicycle facilities (if they are provided), but will usually choose their own routes and feel comfortable riding in many places that do not have any bicycle facilities. People within this group often see their bike as a replacement for an automobile.
- **Basic** - Most cyclists fall within this group, which comprises the primary cycling user group for the RTMP. Basic cyclists might feel comfortable riding on-street in neighborhoods with low traffic or in areas with adequate on-street bicycle facilities, but they often prefer grade-separated paths (i.e., trails). While this group makes up the majority of current or would-be cyclists, it is also historically the least-served in the United States. In many European countries, which enjoy extensive bicycle infrastructure and implement pro-bicycle policies, cycling is often an integral part of the daily lives of most people and basic cyclists make up the majority of users. This group has the most potential for growth in Collin County and across the country.
- **Children and Seniors** - While many seniors (and some children) fall into one of the two above categories, they generally fall into a third category based on their experience levels and physical abilities. Generally slower and less quick to react, children and seniors often only ride their bikes on trails or on very low traffic streets and generally for short distances.

Pedestrians

Due to the affordability, accessibility, health benefits, and relative ease of walking, running, jogging, and hiking, a large proportion of trail users fall within this broad category. Overall, pedestrians generally utilize trails because of the recreational experience that they provide. While it is important to provide connectivity between neighborhoods and destinations so people can walk to places instead of driving, the primary consideration when developing trails for pedestrians is that the trail is enjoyable, attractive, and comfortable. Because pedestrians move at a very slow speed, generally between three to six miles per hour, they “see more” (or notice more visual detail) when using a trail. As such, these users desire trails which meander through the woods, along a creek, or through some other attractive area and appreciate well-designed amenities (such as scenic overlooks, benches, and trail markers).



Comfort and accessibility are typically the pedestrian’s primary determinants when judging the quality of a trail. For a greenway trail in an urban environment, shade along trails; well-distributed amenities like benches, mile markers and wayfinding signage; and access points spaced no more than one mile apart are all essential considerations. However, when a trail is geared toward avid hikers, as may be appropriate in the more rural portions of the County, a more limited offering of amenities and access points may be appropriate. It is also important to consider how pedestrian users access trails; some will walk to the trail but many will drive, which requires the provision of adequate parking space at trailheads. The needs of people with physical disabilities and people pushing strollers must also be considered. The maneuverability requirements of these two groups are similar and can be met by designing trails to meet the requirements of the Americans with Disabilities Act and the Texas Accessibility Standards.

Paddlers

Another user group to consider is “paddlers” - people who canoe and/or kayak. There is a great opportunity to develop a “paddle trail” in Collin County along Sister Grove Creek. Compared to other user groups, paddlers have very few needs. The primary need of this group include put-ins and take-outs (locations up-river where people can put their canoe or kayak in the water and locations down-river where people can end their trip). These put-ins and take-outs must be located in areas with fairly flat banks and with shallow water near the shoreline. They need to be easily accessible from paved roads and should have adequate car parking for the volume of river traffic present. Other needs include mile markers along the river to aid emergency responders and



drinking fountains and litter receptacles at the put-ins/take-outs. Little maintenance along the creek itself is necessary as canoers and kayakers generally prefer for there to be trees, rocks, and other obstacles within the river.

Other Users

Though far less common than pedestrians and cyclists, there are other types of trail users that should be considered. Inline skaters constitute one such user group. The characteristics and preferences of inline skaters fall somewhere between those of pedestrians and cyclists and are generally well-served by shared-use trails built with these other two groups in mind. Similarly, skateboarders and BMX riders are becoming increasingly more prevalent as a user group. While most interested in skate parks and BMX tracks, these users will often use trails and sidewalks to access these facilities.



Equestrians users constitute yet another group. While equestrian trails offer some shared-use capabilities (typically limited to hikers), the use of traditional paved trails is not ideal for this user group. Rather, ideal trail surface materials are soil and decomposed granite. In addition, while sharing trails with other user types has many advantages, it is often desirable to provide separate, parallel trails for walking/biking and equestrian user, where possible. The Trinity Equestrian and Hiking Trail, which runs along the western shores of Lake Lavon from Wylie north to McKinney, is an excellent facility for horseback riding and hiking. With another 15.5 miles of equestrian trails planned in Fairview and McKinney, facilities available for this user group will more than double in the future.

OPPORTUNITIES & CONSTRAINTS

There are a number of opportunities and constraints that have shaped the planning of each city’s trail system and the design of each individual trail segment in the County. Similarly, many opportunities and constraints have shaped the development of the Major Trail Corridor alignments during this planning process. Key examples of these opportunities and constraints are analyzed in this section.

Opportunities

Existing Trails

Perhaps the greatest opportunity in Collin County is the existing trail network made up of trails planned and built by cities and towns in the county. These trails lay the groundwork for the expansion of a county-wide trail system. In fact, there are some intercity trail connections already present, which serve as a foundation for the development of this plan.

Parks & Public Facilities

Research indicates that the majority of non-motorized trips taken by most Americans are for recreation purposes, so connecting parks and public facilities (such as libraries, recreation centers, and senior centers) with a system of trails is a sensible priority that will enhance the usability and enjoyment of these parks and facilities).

Lake Lavon and Lake Ray Hubbard

The great amount of land owned by the US Army Corps of Engineers surrounding Lake Lavon and Lake Ray Hubbard present a great opportunity for connecting people with nature through trails. These areas provide opportunities for water-based activities, open space preservation, and greenway connections between cities and towns.



Schools

Though fewer and fewer children walk or bike to school these days, the provision of safe, accessible routes between neighborhoods and schools can help to encourage more children to use active transportation. In addition, there are grant programs—such as Safe Routes to Schools—which provide significant funding assistance for building such facilities near schools.

Employment Centers

Major employers (businesses that employ 350 to 1,500 employees) were mapped to help illustrate their proximity to trail corridors (see Figure 3.1). While it is likely that a large portion of the employees of these companies do not live in the immediate area, the provision of good pedestrian and bicycle facilities linking neighborhoods with employers will encourage active transportation and can provide important connections between transit stops and places of employment.

Transit Stations

Existing and planned DART stations are key opportunity areas that generate significant bicycle and pedestrian traffic. One of the most important ways to encourage transit use is to improve access to transit, which can be accomplished through trail connectivity.



DART light rail stations, such as this one in Downtown Plano, are important destinations for cyclists and pedestrians.

Downtown Areas

Downtowns, no matter how small, are often the location of a city or town’s public and cultural facilities. In addition to the commercial and civic destinations found in such districts, which attract cyclists and pedestrians, the small block sizes of these areas naturally encourage bicycle and pedestrian activity. Providing connections to and between these areas is essential.

Creek Corridors & Greenbelts

Many of the existing trails in Collin County are located along creek corridors for a good reason – these are some of the most attractive and most pleasant places for trails and they provide natural routes across cities and the County. This Regional Trails Master Plan looks toward each of the creek corridors in the city as potential trail corridors for these reasons.

Utility & Railroad Corridors

Though often lacking the natural beauty of creek corridors, utility and railroad corridors often provide excellent opportunities for trails in many instances. Providing trails along these corridors requires the ability to gain access easements and the cooperation of the railroad or utility company. Electric transmission lines may sometimes be good trail corridors, but often they by easement rather than right-of-way and therefore cross private property lines.

Future Thoroughfares

It is important to look at future thoroughfares and thoroughfare widening projects to identify opportunities to provide parallel trail facilities. Seeing these projects as opportunities is important from a planning point of view, because it is easier to design a trail or sidepath (an 8’ or wider, two-way, paved pathway along a roadway) into a thoroughfare corridor before it is built than it is to retrofit such a facility into an existing thoroughfare.

Constraints

Transportation Infrastructure

While they are very necessary and serve the needs of the general public, freeways, tollways, and railroads can be major obstacles to developing continuous and connected trails. The primary example is a freeway that crosses a creek and utilizes culverts or a low bridge, which precludes the possibility of building a trail under the roadway. Because these facilities are not designed or built with trail crossings as a major consideration, it is important to identify where trail crossings will be needed in the future so that roadway or railroad projects can take these crossings in account and provide adequate clearance underneath bridges.



Roadways crossing creeks can be both opportunities and constraints for trail connections. In this instance, the use of culverts rather than a bridge structure precludes the possibility of a trail crossing under the roadway along the creek.

Existing Development and Limited Right-of-Way

Limited right-of-way along railroads, roadways, and creeks due to the close proximity of adjacent development is a significant challenge. In many instances, the Major Trail Corridors identified in this plan have been rerouted due to such constraints.



While this street accommodates 4’ wide sidewalks, narrow right-of-way along roadways makes providing an 8’ wide sidepath (the minimum width to accommodate cyclists and pedestrians) very challenging.

Environmental Challenges

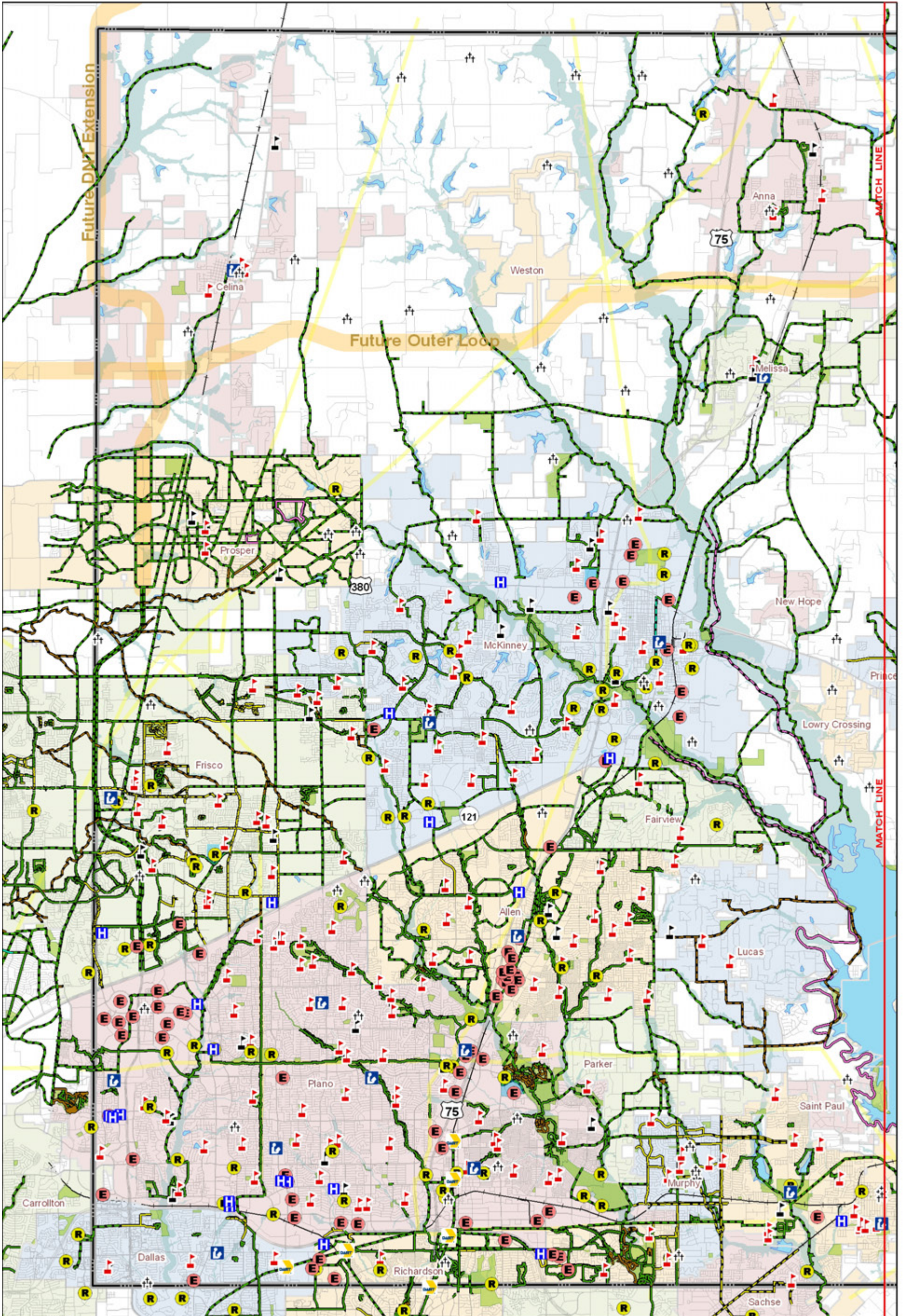
It is often the case that the most desirable place to have a trail is also a very environmentally sensitive area with many physical challenges. Creek corridors, which provide the most ecologically diverse landscapes, are especially sensitive to erosion and pollution. Similarly, nature preserves, tall grass prairie fragments, and wetlands contain very sensitive animal habitat, vegetation, and soils. In general, most of these areas will present challenges, including excessive slopes, cross-slopes, and undulating land; heavy and/or sensitive vegetation; and regular flooding. It is impossible to identify all topographic constraints when planning on a county-wide basis. Rather, each corridor will need to be analyzed individually as its trails are being designed. Alternative construction methods (such as boardwalks) and surface materials (such as natural surfaces or pervious paving) should be considered in these areas.

MAJOR TRAIL CORRIDORS

The Collin County RTMP is based on a network of Major Trail Corridors. These trails are not intended to be a stand-alone system. Rather, they are intended to serve as the major intercity linkages that connect to and overlap the local trails within each city and town. Using roads and streets as a metaphor, the Major Trail Corridors act as the “highways” and “arterials” of a county-wide trail system that connect the “collector” and “local street” trails within the cities and towns.

The alignments of these Major Trail Corridors follow both existing and planned trails developed by the cities and towns where possible. In some cases, the Major Trail Corridors represent new alignments proposed by this plan where not alternative or parallel trail (whether existing or planned) exists.

Figure 3.2 on pages 20-21 illustrates the alignments of the Major Trail Corridors. The colors indicate a hierarchy within the trail network, though this should not be mistaken for priority. Simply put, the purple “Spine Corridors” represent major alignments that provide intercity connections, while the red “Other Corridors” represent important connector alignments that may or may not connect multiple cities or towns.



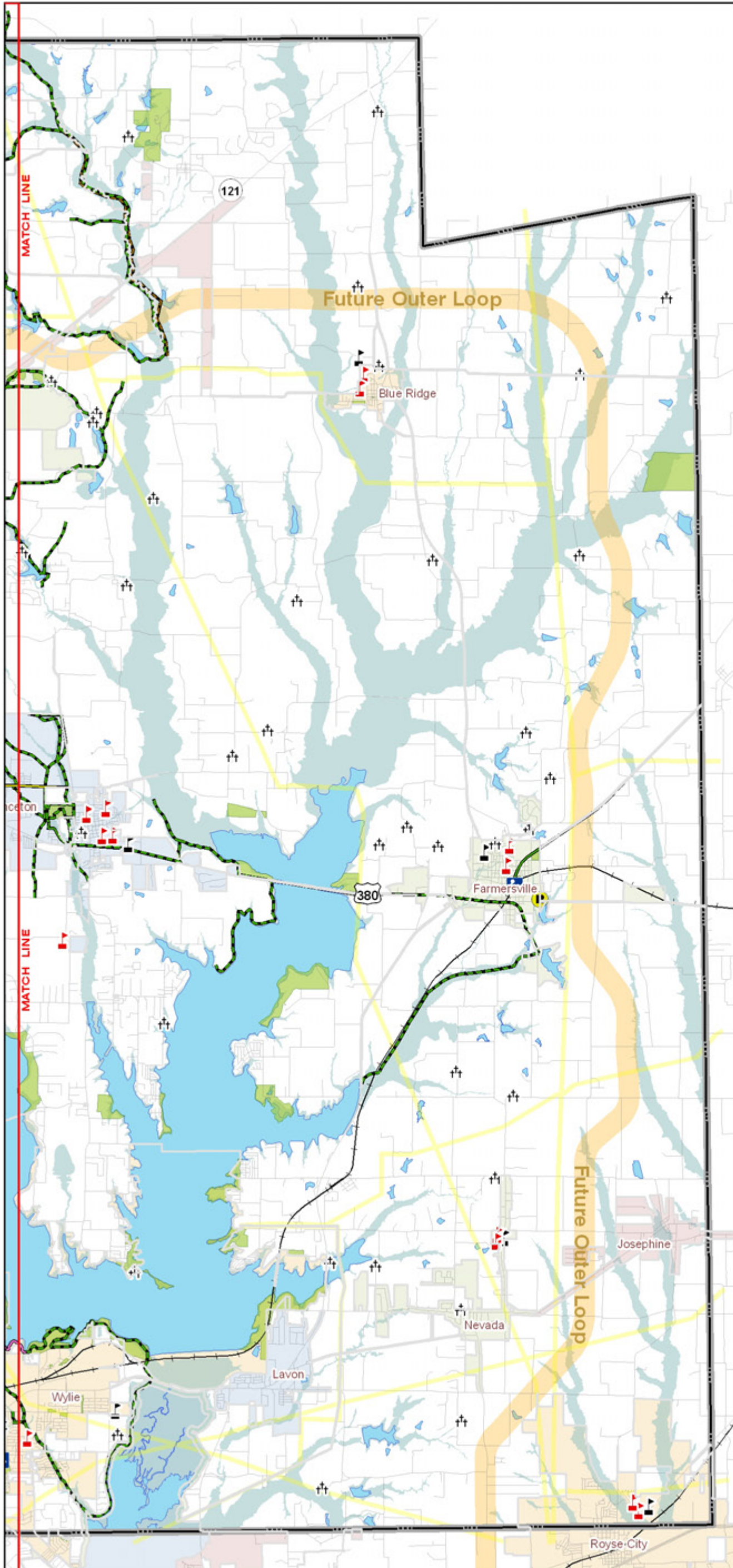


FIGURE 3.1 – TRAIL OPPORTUNITIES & CONSTRAINTS

This figure illustrates the location of trail generators and attractors, as well as constraints for trail alignments. These locations have shaped the development of the Major Trail Corridor alignments shown on the following pages.



Trails - Existing & Planned

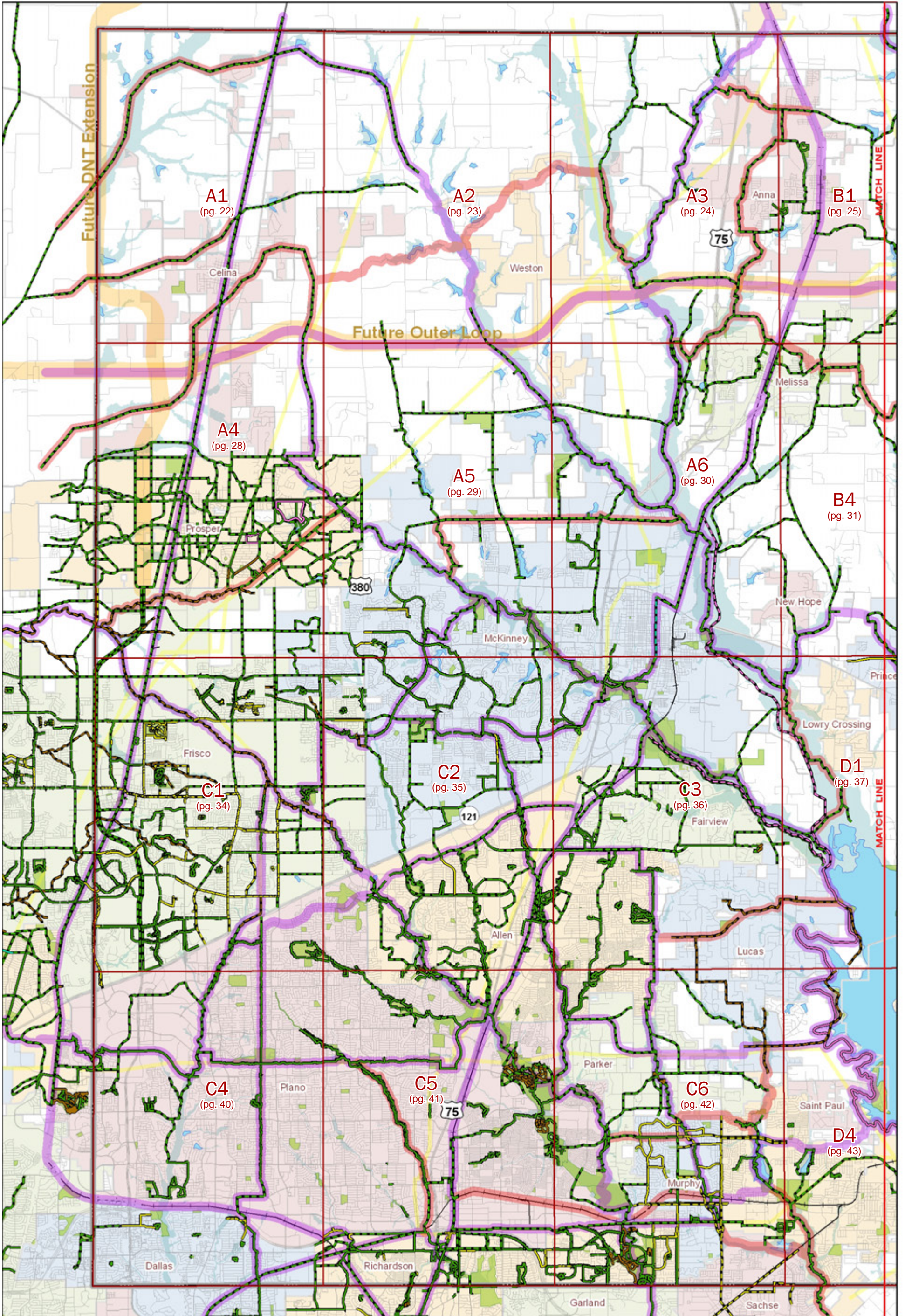
- Hard Surface Existing/Programmed
- Hard Surface Planned/Proposed
- Soft Surface Existing
- Soft Surface Planned/Proposed
- Equestrian Existing
- Equestrian Planned
- Mixed, Existing
- Mixed, Proposed
- Sidewalk, Existing
- Sidewalk, Proposed

Major Trail Corridors

- Cemeteries
- Libraries
- Hospitals
- Major Employment Centers
- DART Rail Stations (Existing & Future)
- Recreation Centers (Public & Private)
- Schools - 8th Grade and Under
- Schools - Over 8th Grade

Base Data

- County Boundary
- Utility Lines
- Streets & Roads
- Railroad Lines
- Parks
- Lakes
- 100 Year Floodplain



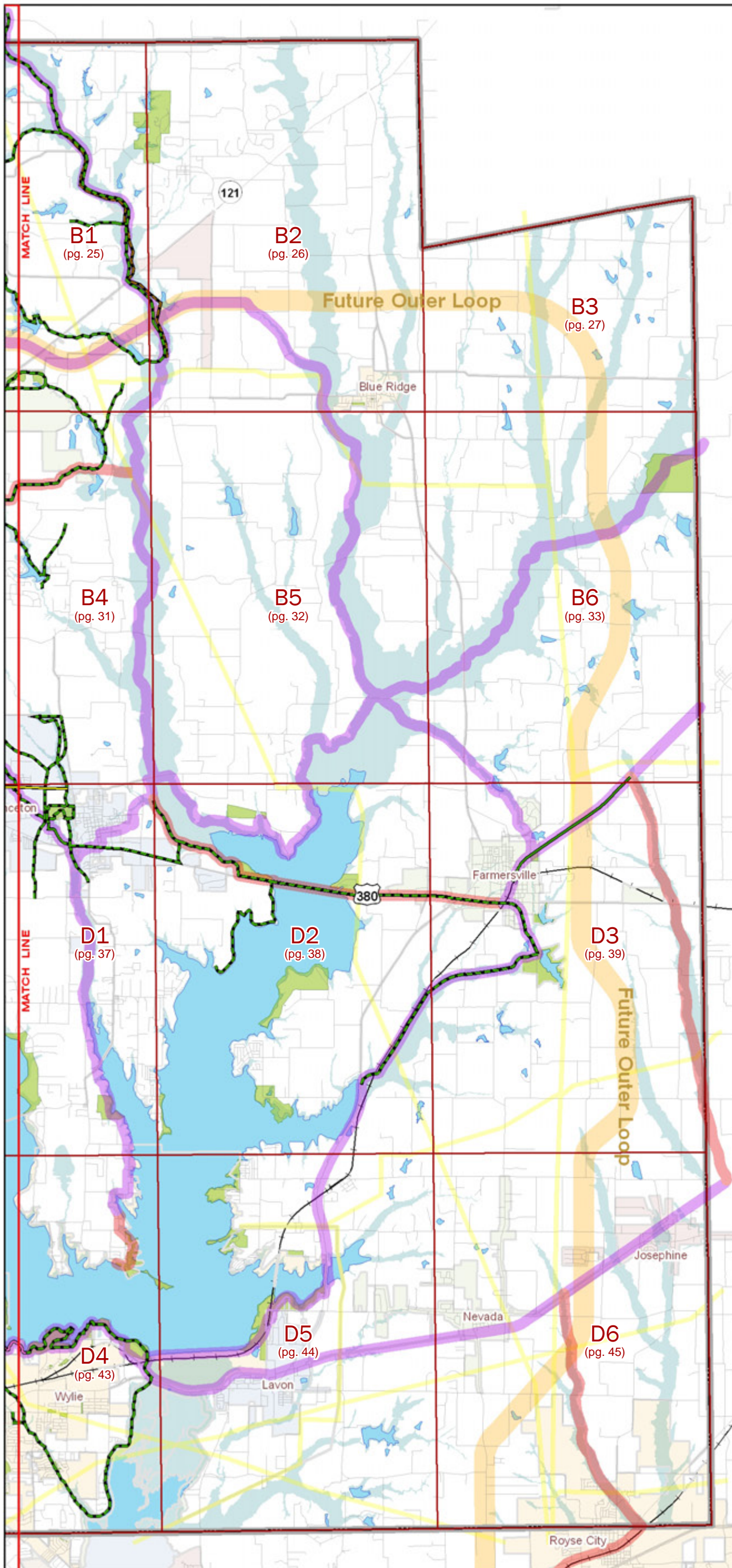
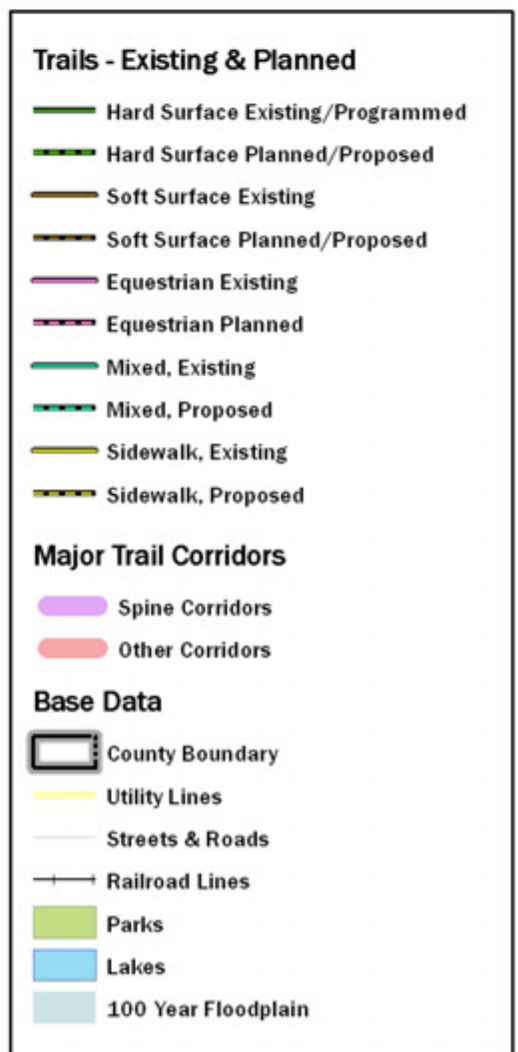


FIGURE 3.2 – MAJOR TRAIL CORRIDORS

This figure illustrates the location of the Major Trail Corridors. The purple lines represent the “Spine Corridors” or major alignments that provide intercity connections, while the red lines represent “Other Corridors,” which are important connector alignments that may or may not connect multiple cities or towns.





PADDLING TRAILS

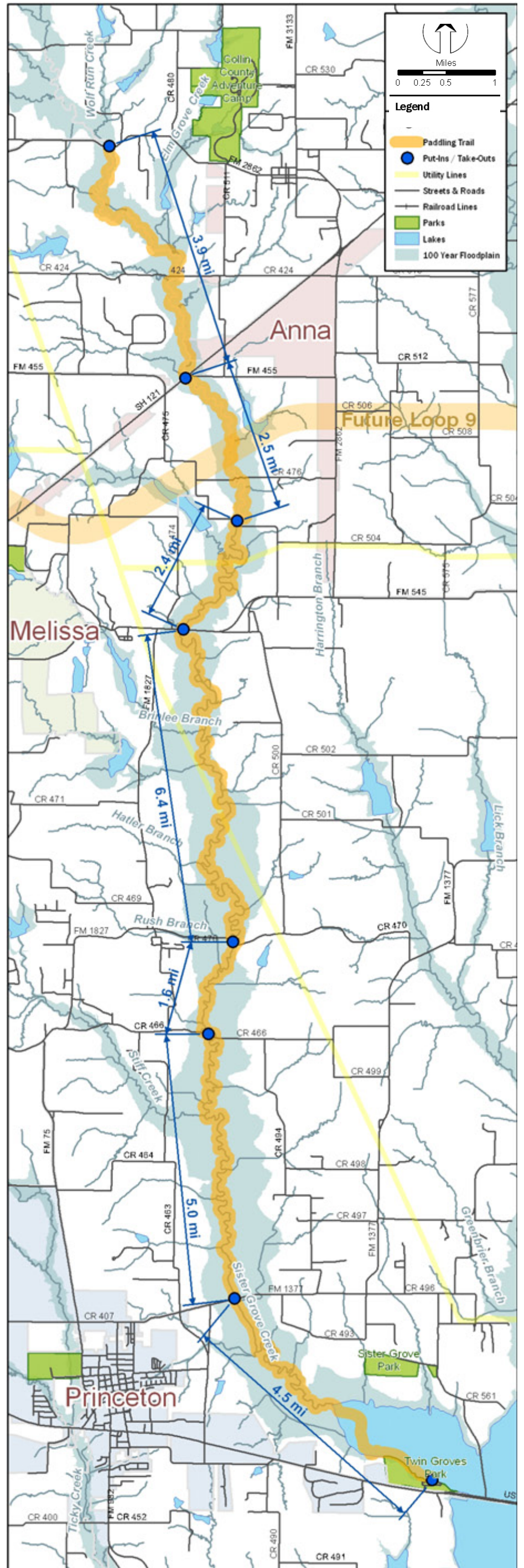
A paddling trail is a very specialized type of facility, yet is very cost-effective for the recreational opportunities it provides. A paddling trail requires very little capital investment compared to other facility types and almost no operational costs. There are many opportunities for paddling trails within Collin County along creeks, rivers, and lakes. The elements needed in order to develop a waterway into a paddling trail include mile markers (which aid emergency responders) and put-ins/take-outs, which are the riparian version of a trailhead. There is little difference between a put-in and a take-out other than its position on the river relative to the segment the user will travel. These facilities should be located at areas with relatively flat river banks which extend into somewhat shallow water and must have easy access to a roadway. It is necessary for put-ins/take-outs to include parking areas (paved or unpaved, depending on anticipated traffic volume), drinking water sources, and informational kiosks to warn canoers and kayakers of potential hazards on the river. A put-in should be located at the upper end of the waterway and roughly every three to five miles thereafter.

Sister Grove Creek provides an opportunity for a paddling trail of approximately 26 river miles in length, stretching from FM 2862 east of Anna to Twin Groves Park on the shores of Lavon Lake near Princeton. Eight put-in/take-out locations have been identified along the paddling trail. The distance between these locations vary due to lack of access points, but consequently provide opportunities for paddling trips of varying length. Paddling trail segments between put-ins/take-outs vary from 1.6 miles to 6.4 miles. Potential locations for these access points include FM 2862, SH 121, CR 475, FM 545, CR 470, CR 466, FM 1377, and Twin Groves Park.



FIGURE 3.3 – SISTER GROVE CREEK PADDLING TRAIL

This figure depicts a potential 26-mile long paddling trail along Sister Grove Creek. This trail would follow the creek from Anna to Lavon Lake. Eight put-ins / take-outs are depicted to provide users with various choices regarding the distance they wish to paddle and what section of the creek they prefer.



TILE MAPS

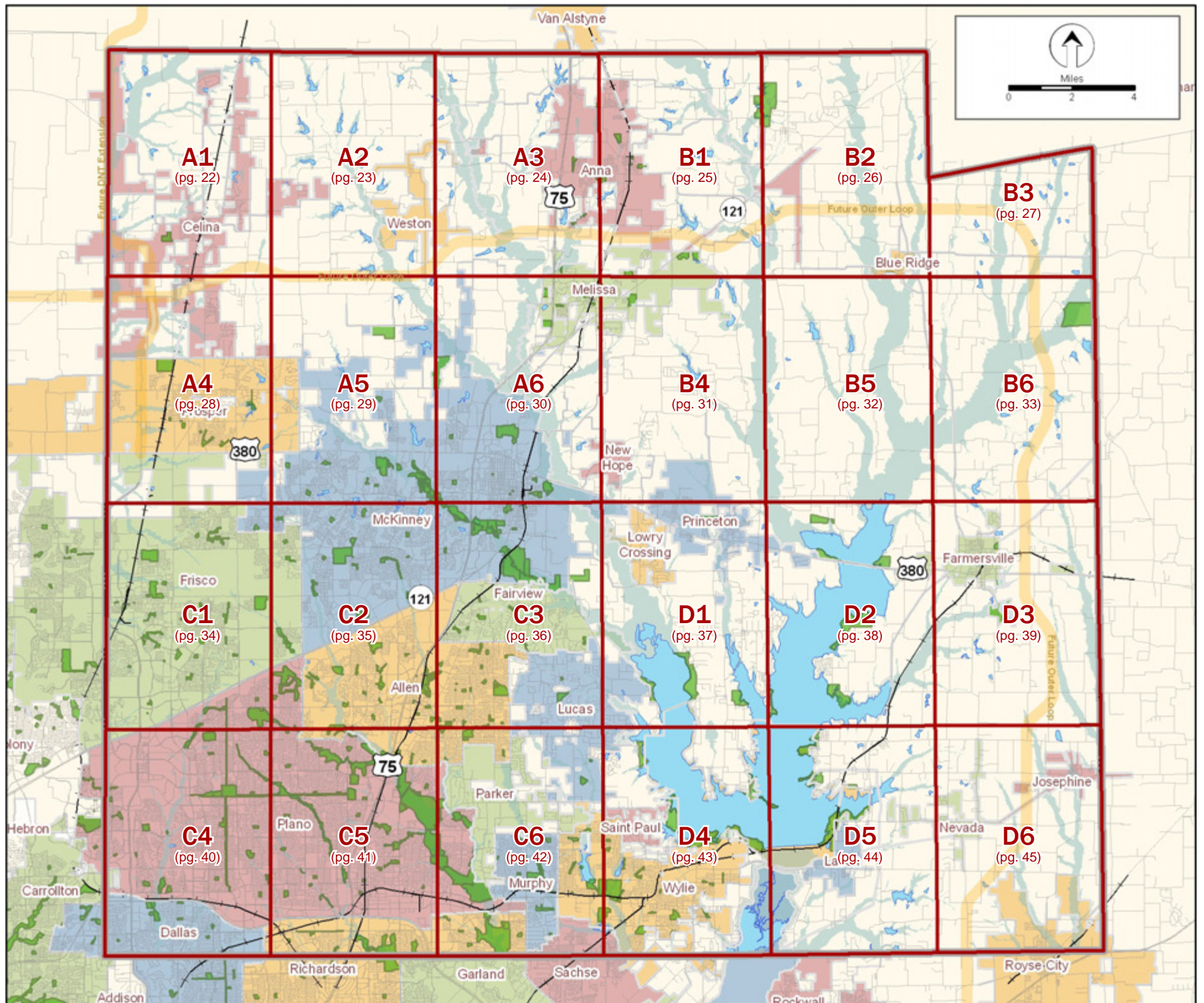
The following pages provide detailed views of the entire county and include the alignments of the Major Trail Corridors, as well as destinations, constraints, other existing and planned trails, and general base data such as roadways and creeks. The map below illustrates the location of each tile map relative to the County.

Note: most of the base data and trail alignment data displayed on the following maps was gained from municipalities and other entities. The accuracy of this data varies depending on its source. In some instances, data may appear inaccurate because it was not originally created to be displayed at this level of detail.



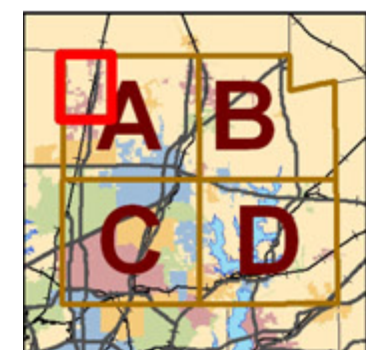
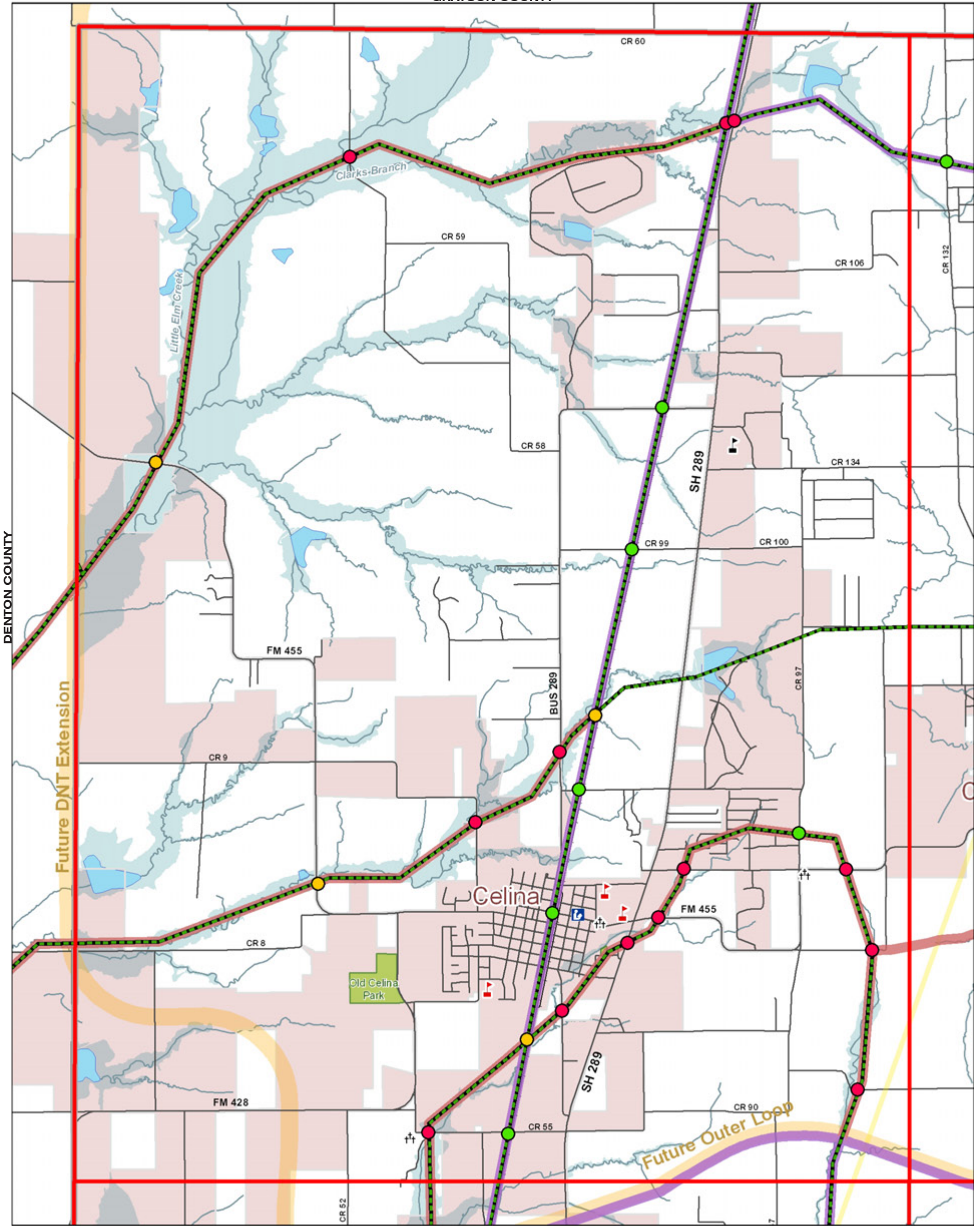
FIGURE 3.4 – TILE MAP KEY

The following pages provide detailed views of the entire county and include the alignments of the Major Trail Corridors, as well as destinations, constraints, other existing and planned trails, and much more information. This figure illustrates the location of each map tile in relation to other map tiles.





GRAYSON COUNTY

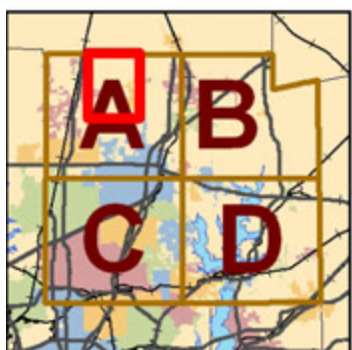
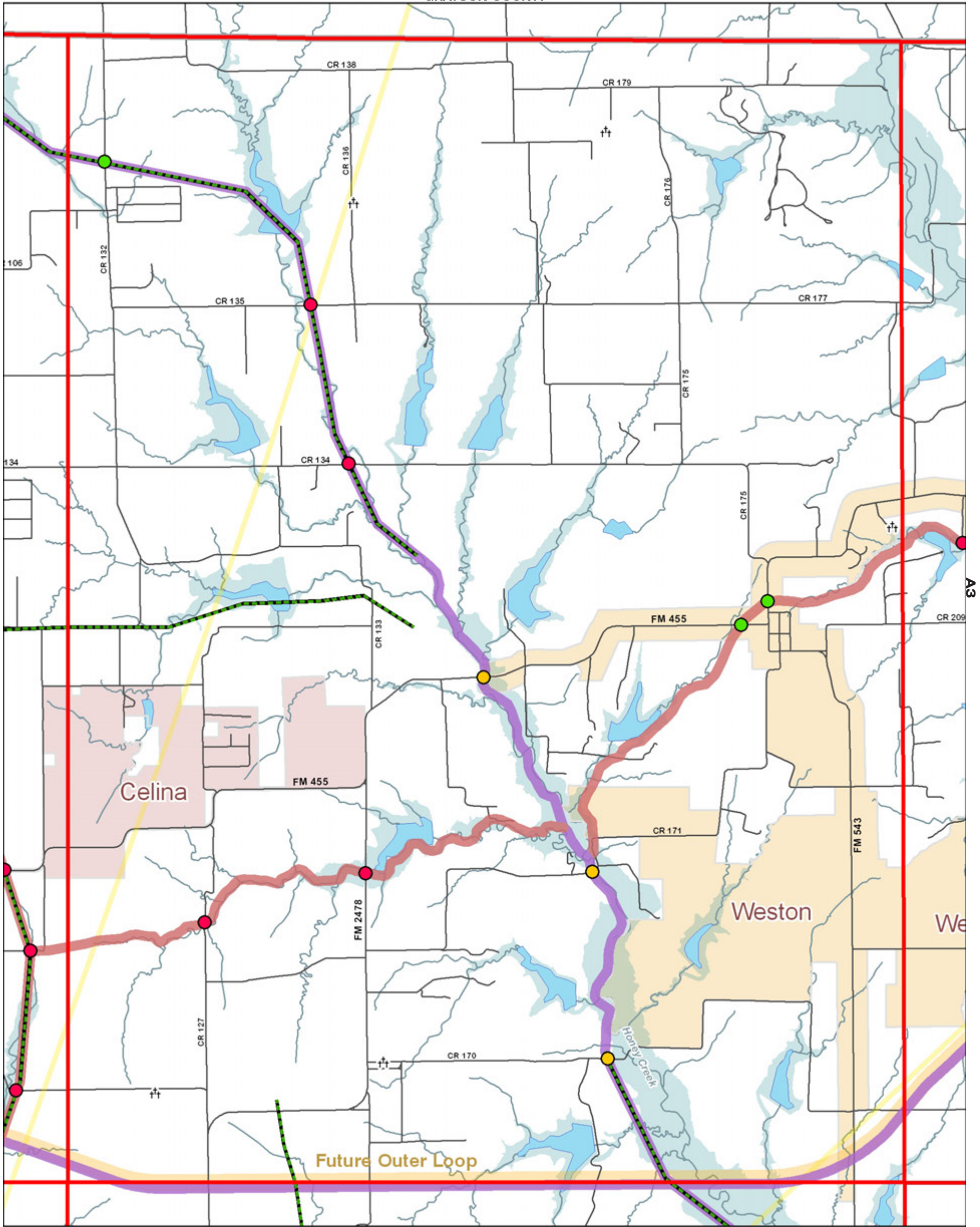


Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	Major Crossing Opportunities & Constraints	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	At-Grade Crossing - Mid-block	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Barrier		100 Year Floodplain
Soft Surface Planned/Proposed	Grade-Separated Crossing - Possibility		

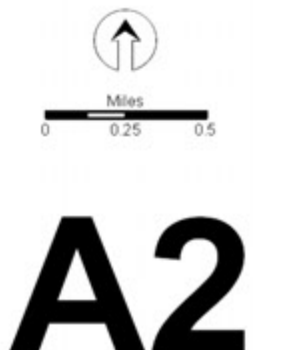


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GRAYSON COUNTY

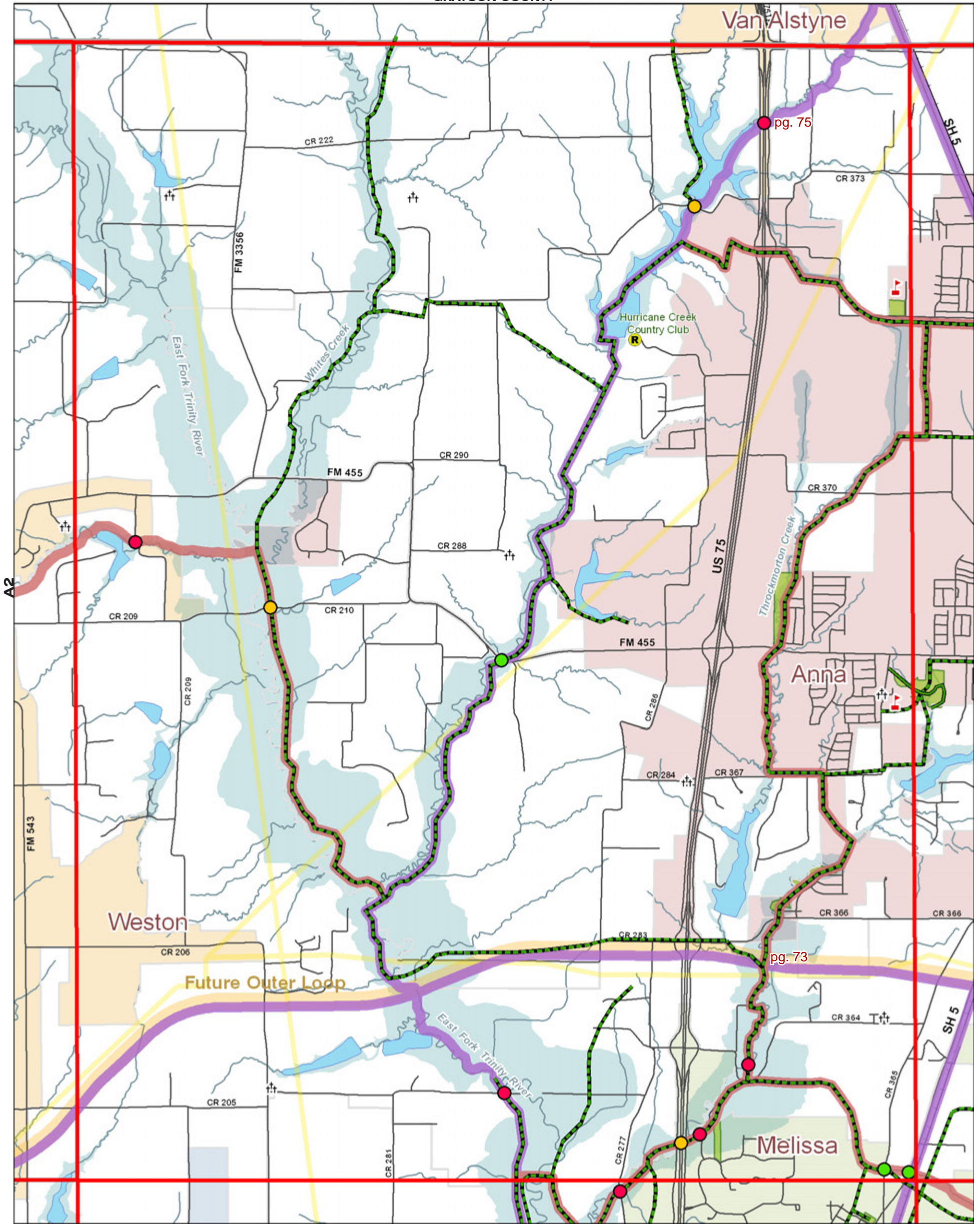


Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	At-Grade Crossing - Mid-block	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Barrier	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Possibility		100 Year Floodplain
Soft Surface Planned/Proposed			

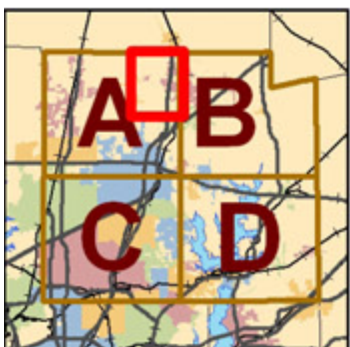




GRAYSON COUNTY



A6

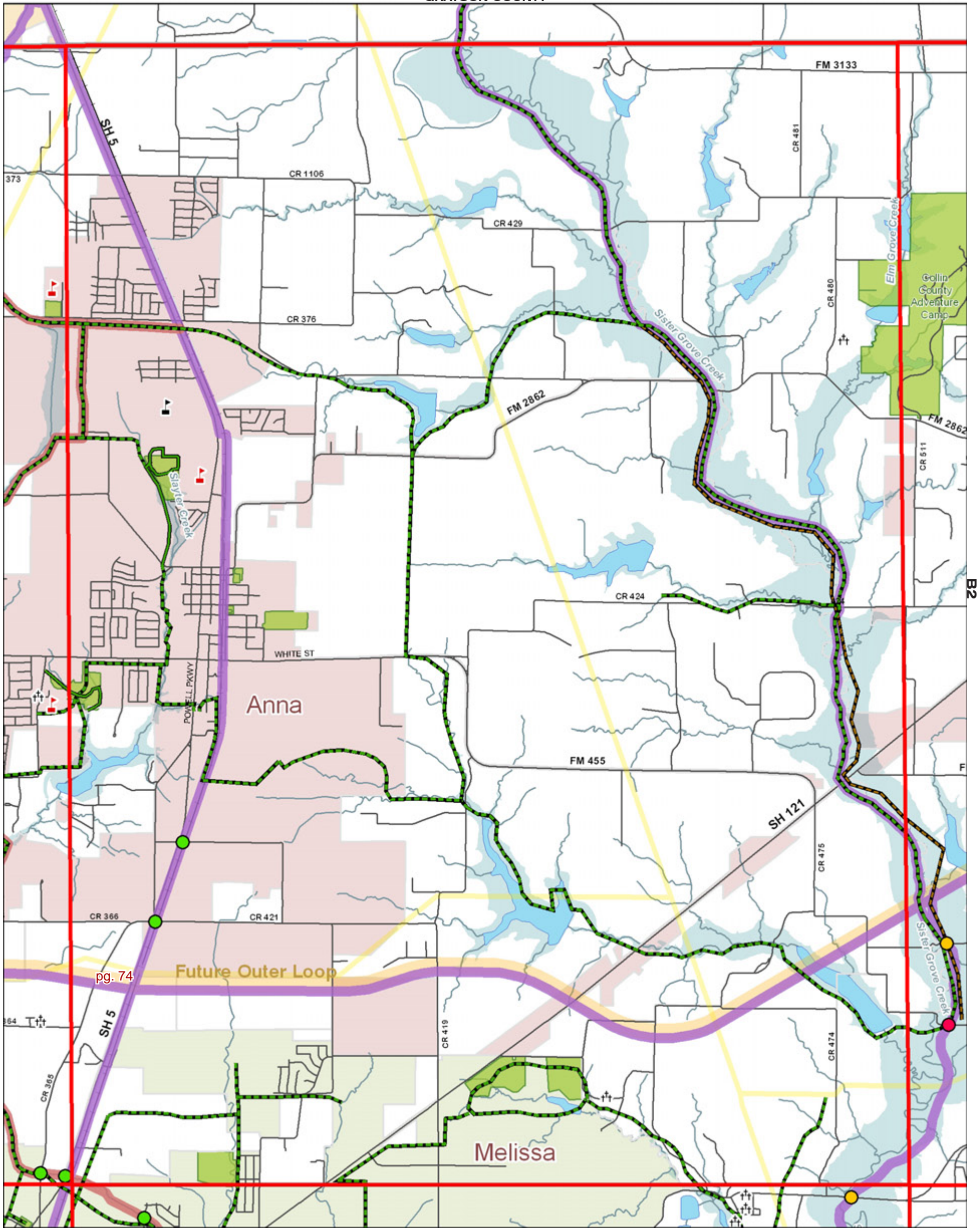


Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed	At-Grade Crossing - Mid-block	Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	Grade-Separated Crossing - Barrier	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Possibility	DART Rail Stations	Lakes
Soft Surface Existing			100 Year Floodplain
Soft Surface Planned/Proposed			

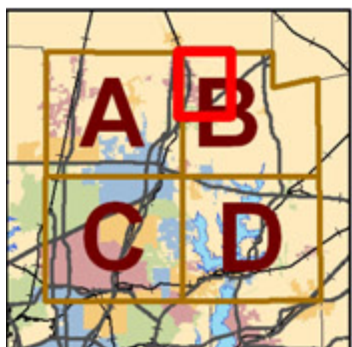


A3

GRAYSON COUNTY



B4



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
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Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			

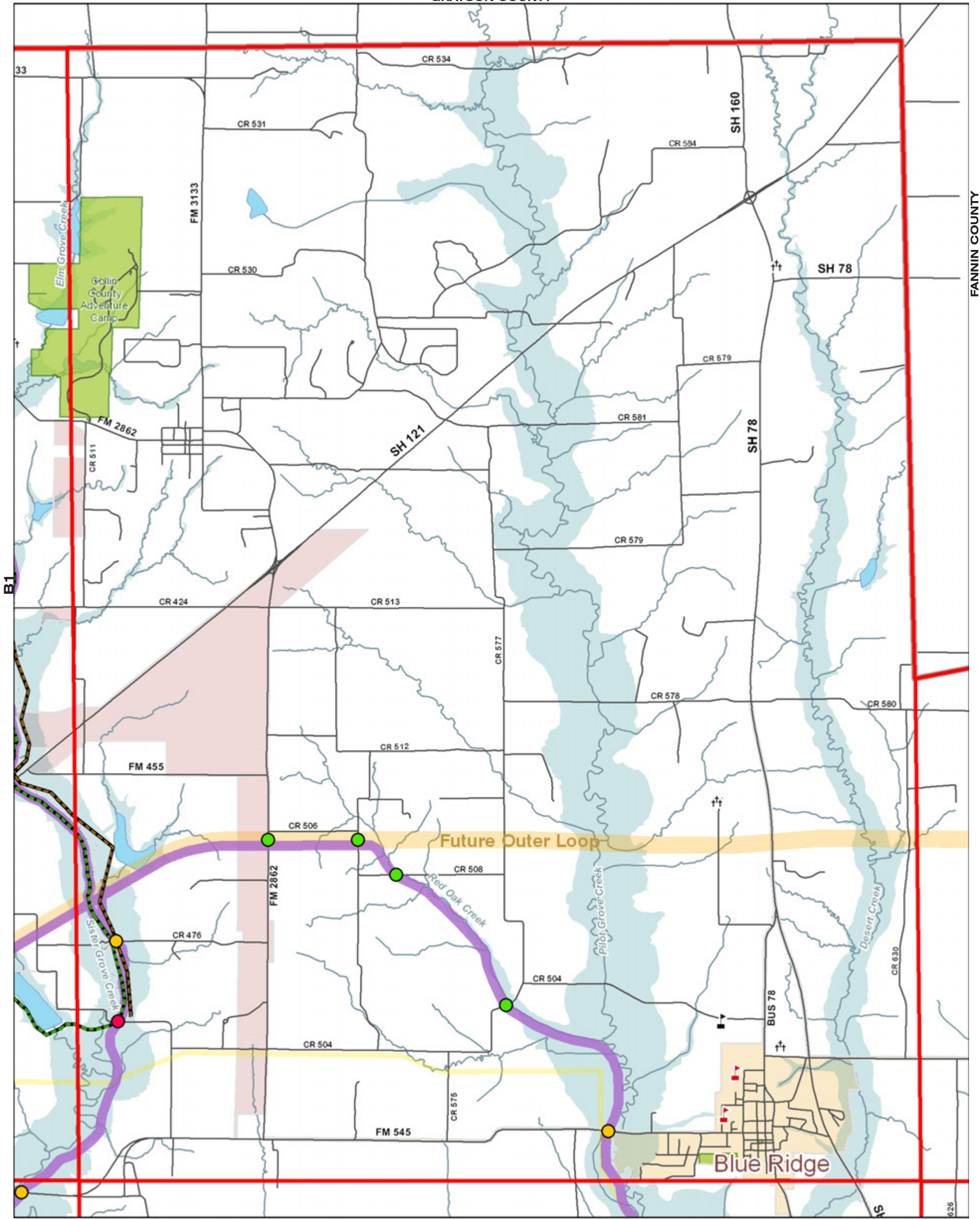


B1



The Collin County Regional Trails Master Plan

GRAYSON COUNTY



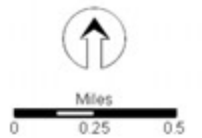
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FANNIN COUNTY

B5

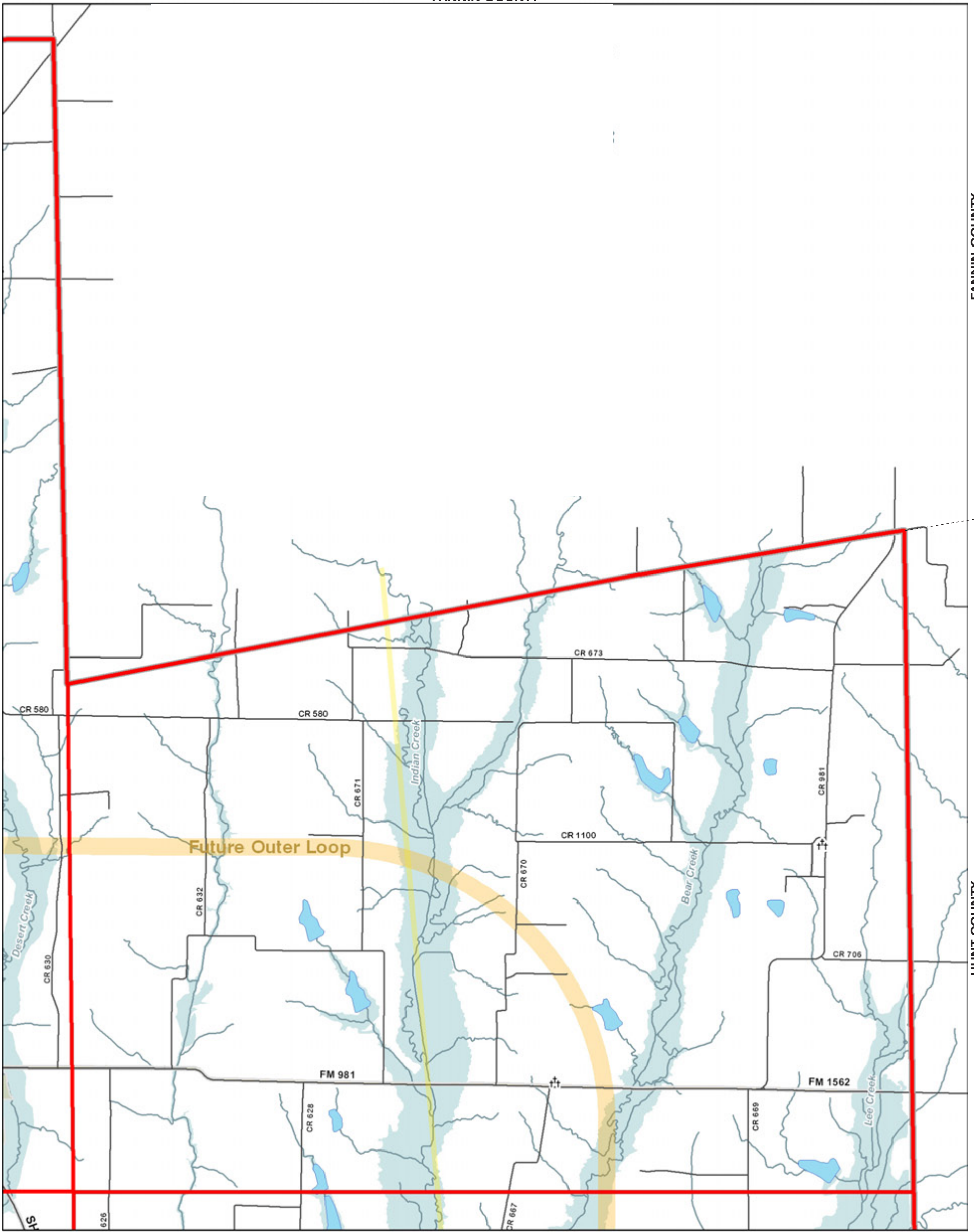


Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed	Major Crossing Opportunities & Constraints	Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		At-Grade Crossing - Mid-block	Utility Lines
Mixed, Existing		Grade-Separated Crossing - Barrier	Hospitals
Mixed, Proposed	Grade-Separated Crossing - Possibility	Recreation Centers	Railroad Lines
Sidewalk, Existing		Schools - 8th Grade and Under	Parks
Sidewalk, Proposed		Schools - Over 8th Grade	Lakes
Soft Surface Existing		DART Rail Stations	100 Year Floodplain
Soft Surface Planned/Proposed			



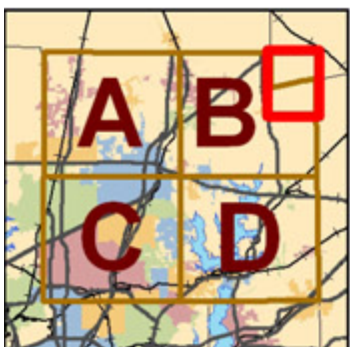
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FANNIN COUNTY



FANNIN COUNTY

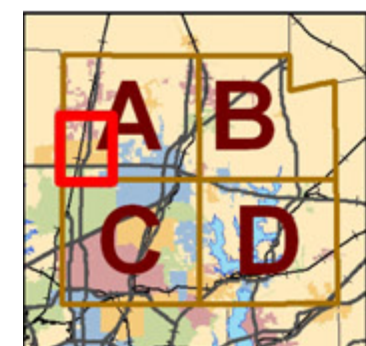
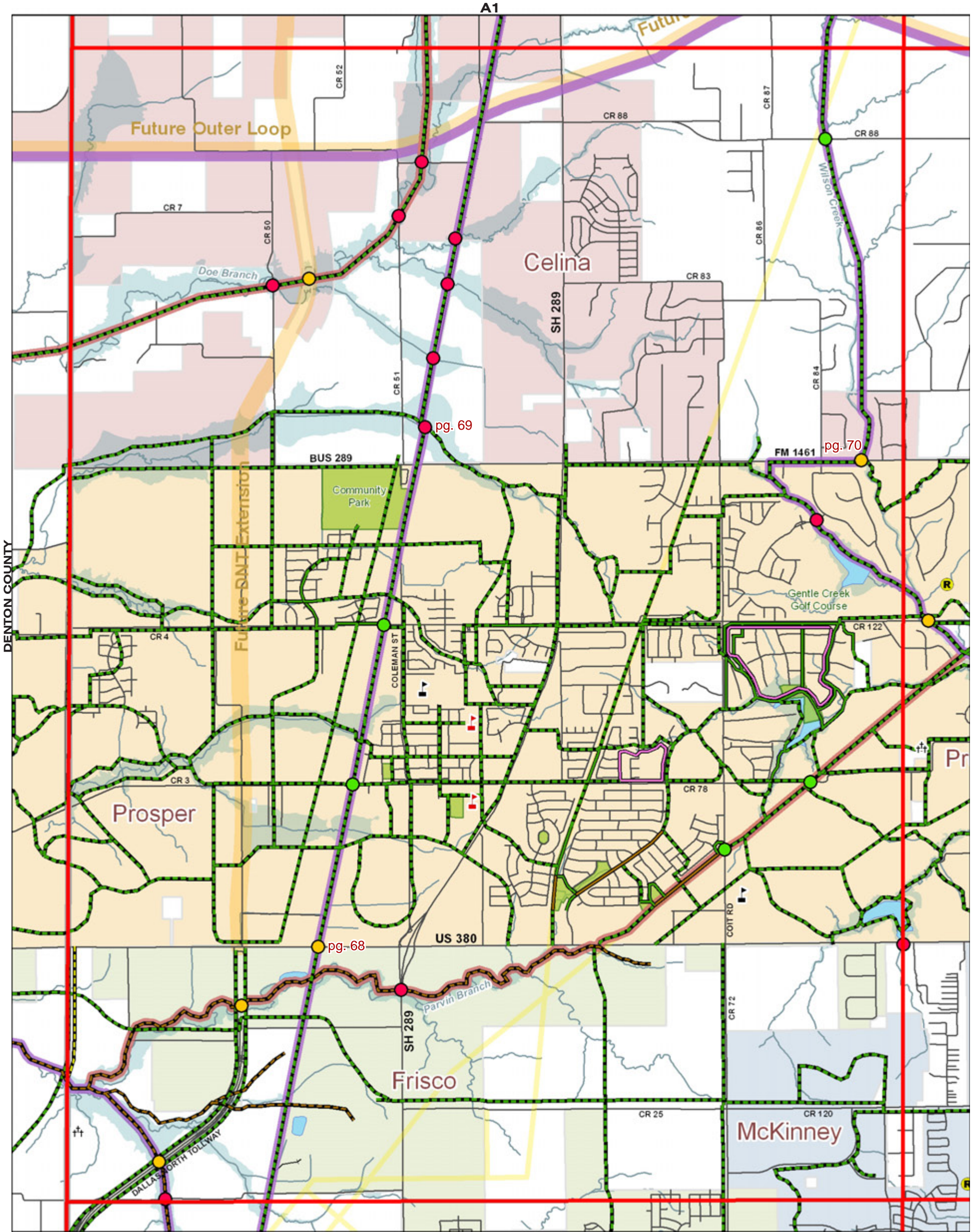
HUNT COUNTY



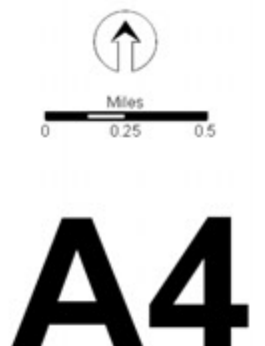
Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
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Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	At-Grade Crossing - Mid-block	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Barrier	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Possibility		100 Year Floodplain
Soft Surface Planned/Proposed			

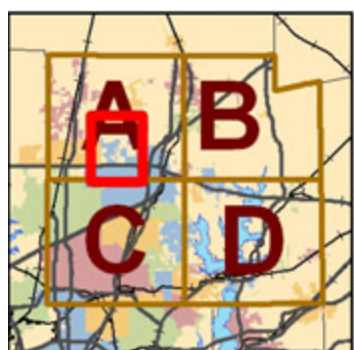
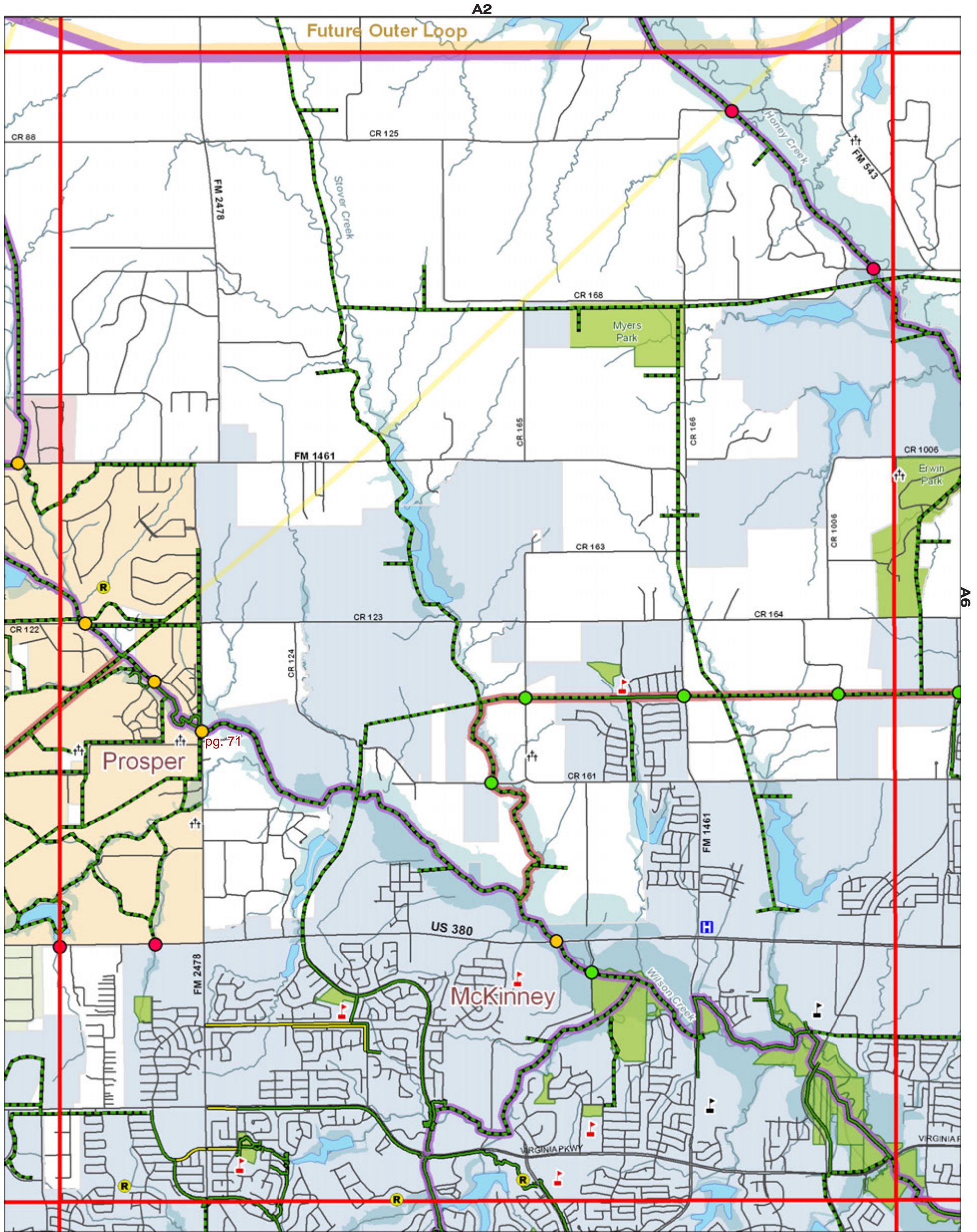


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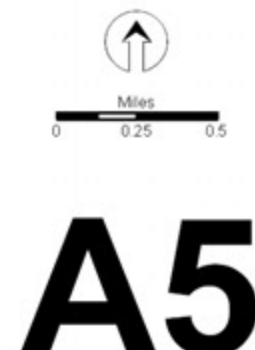


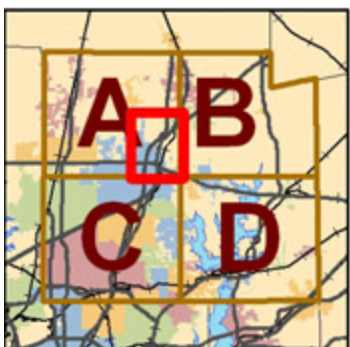
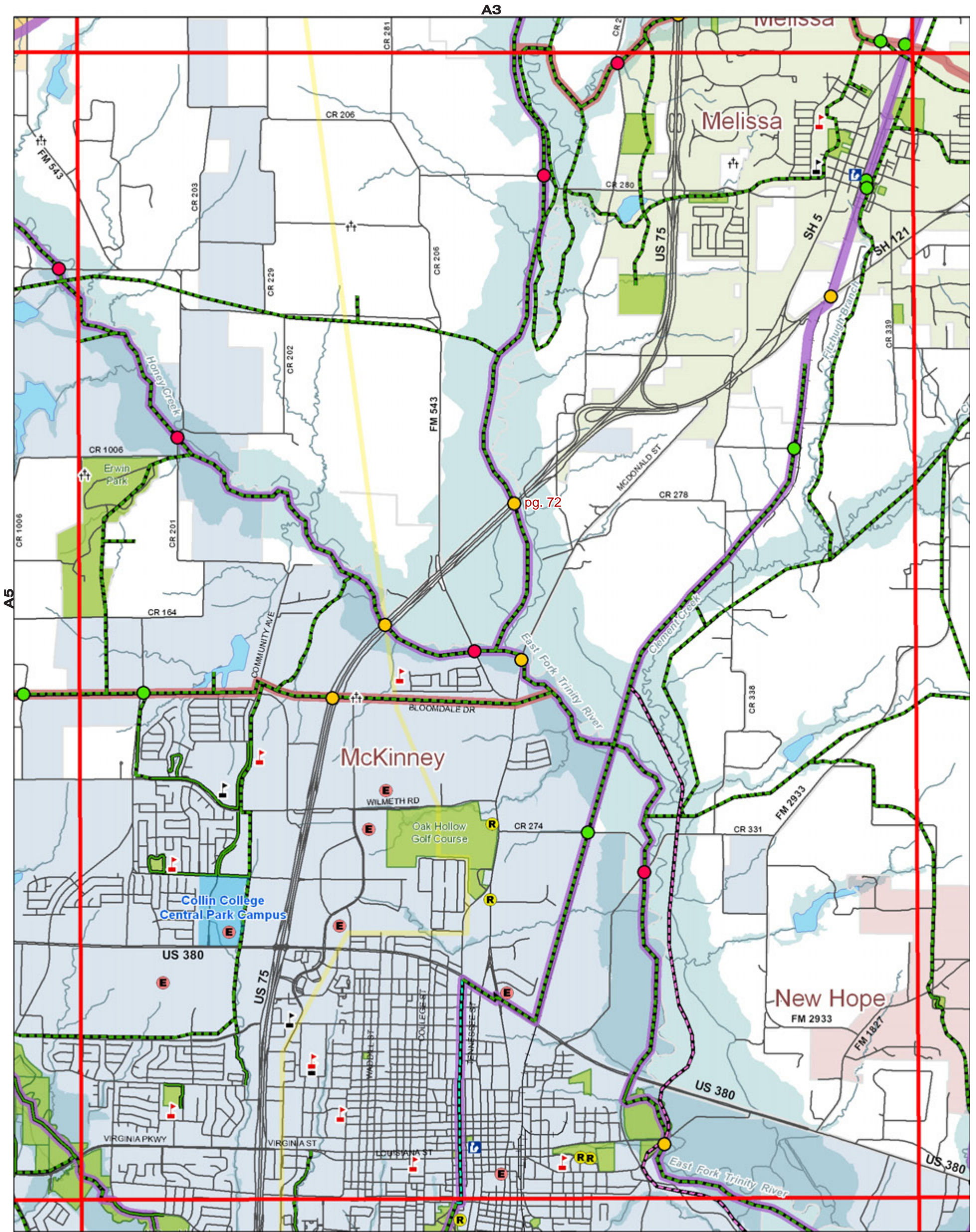
Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			





Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			

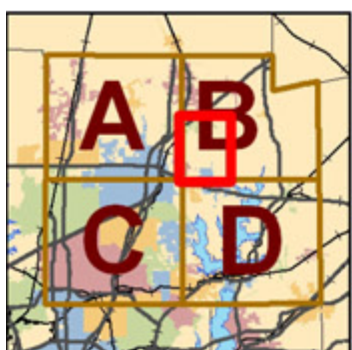
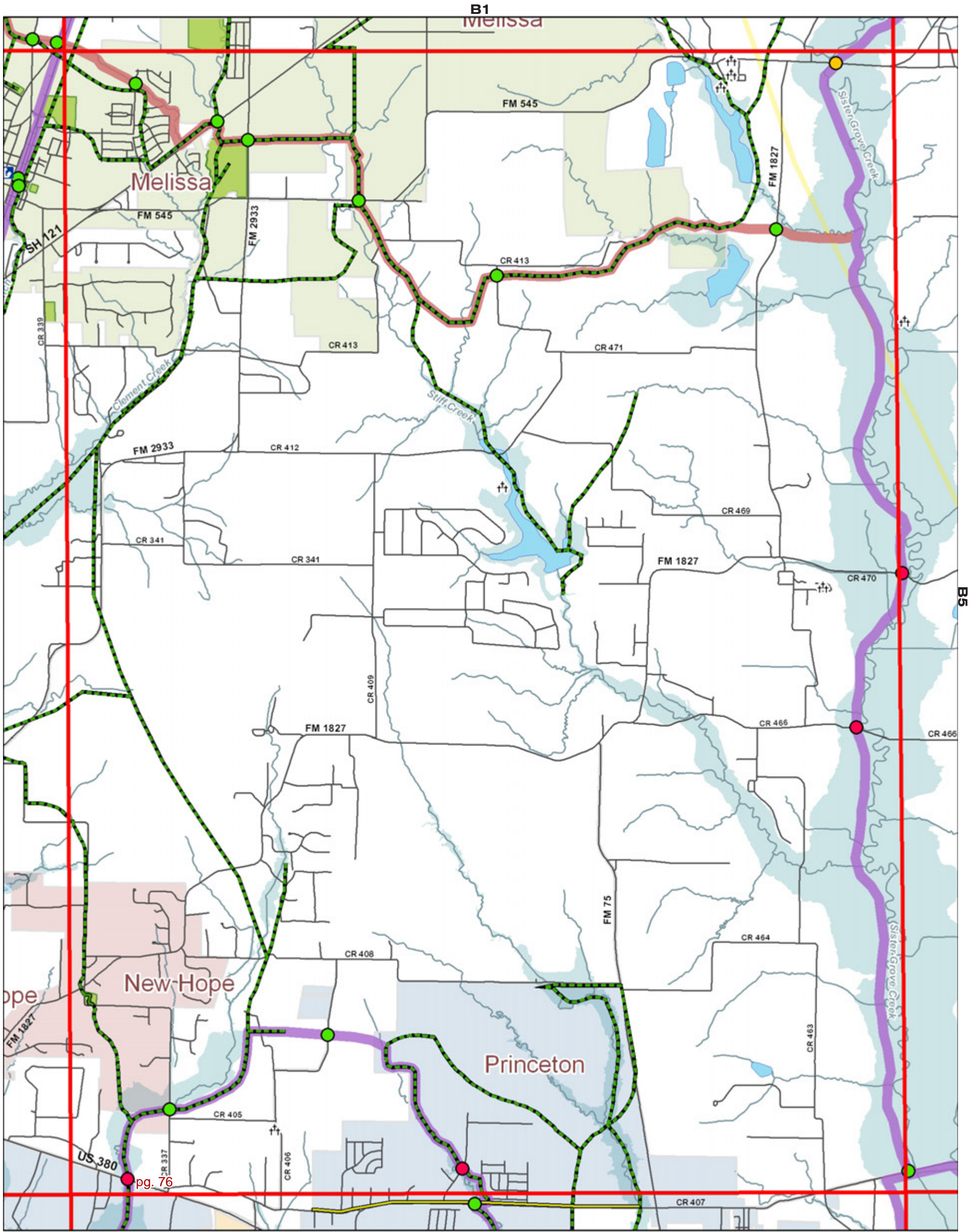




Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	At-Grade Crossing - Mid-block	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Barrier	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Possibility		100 Year Floodplain
Soft Surface Planned/Proposed			



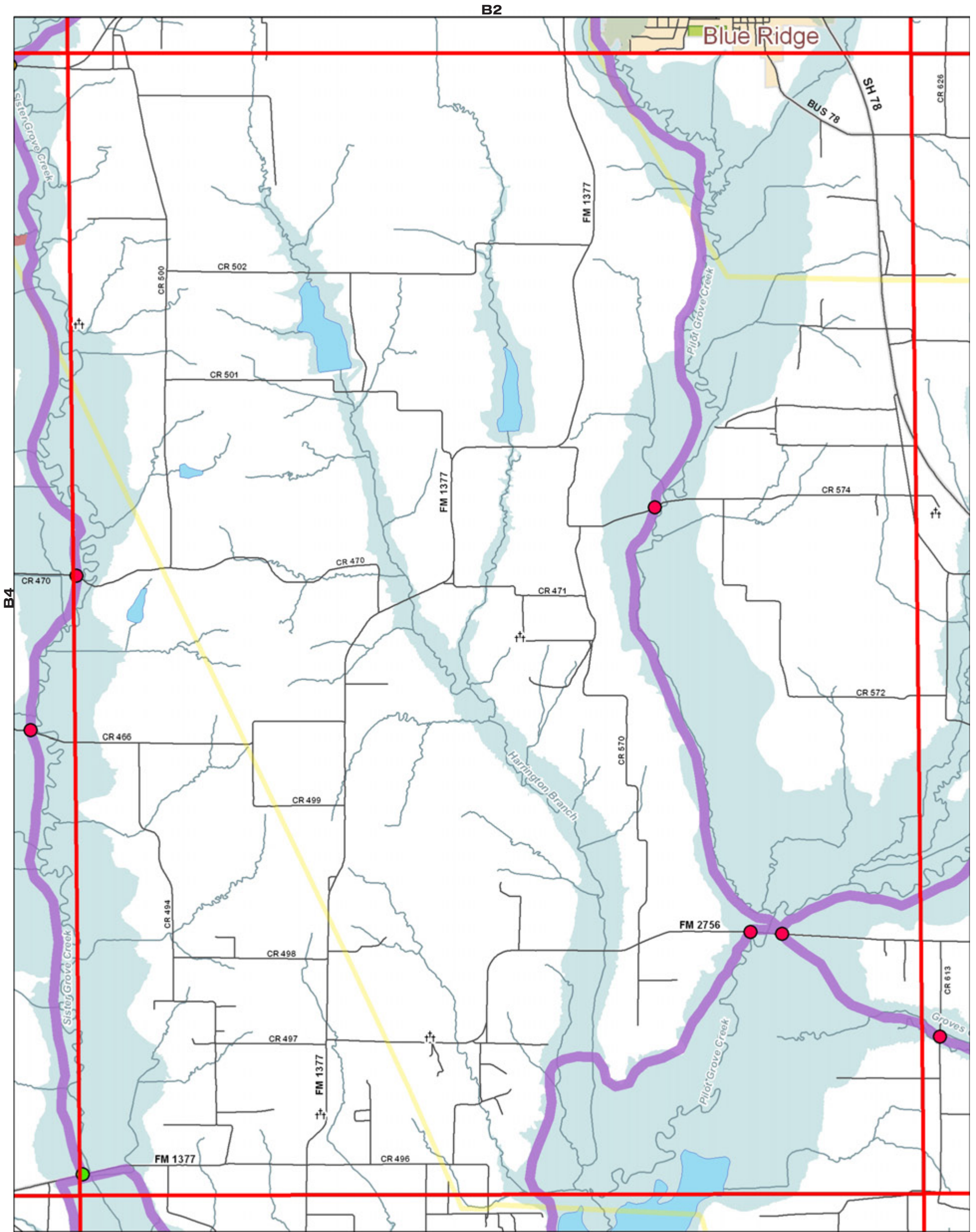
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Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	At-Grade Crossing - Mid-block	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Barrier	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Possibility		100 Year Floodplain
Soft Surface Planned/Proposed			

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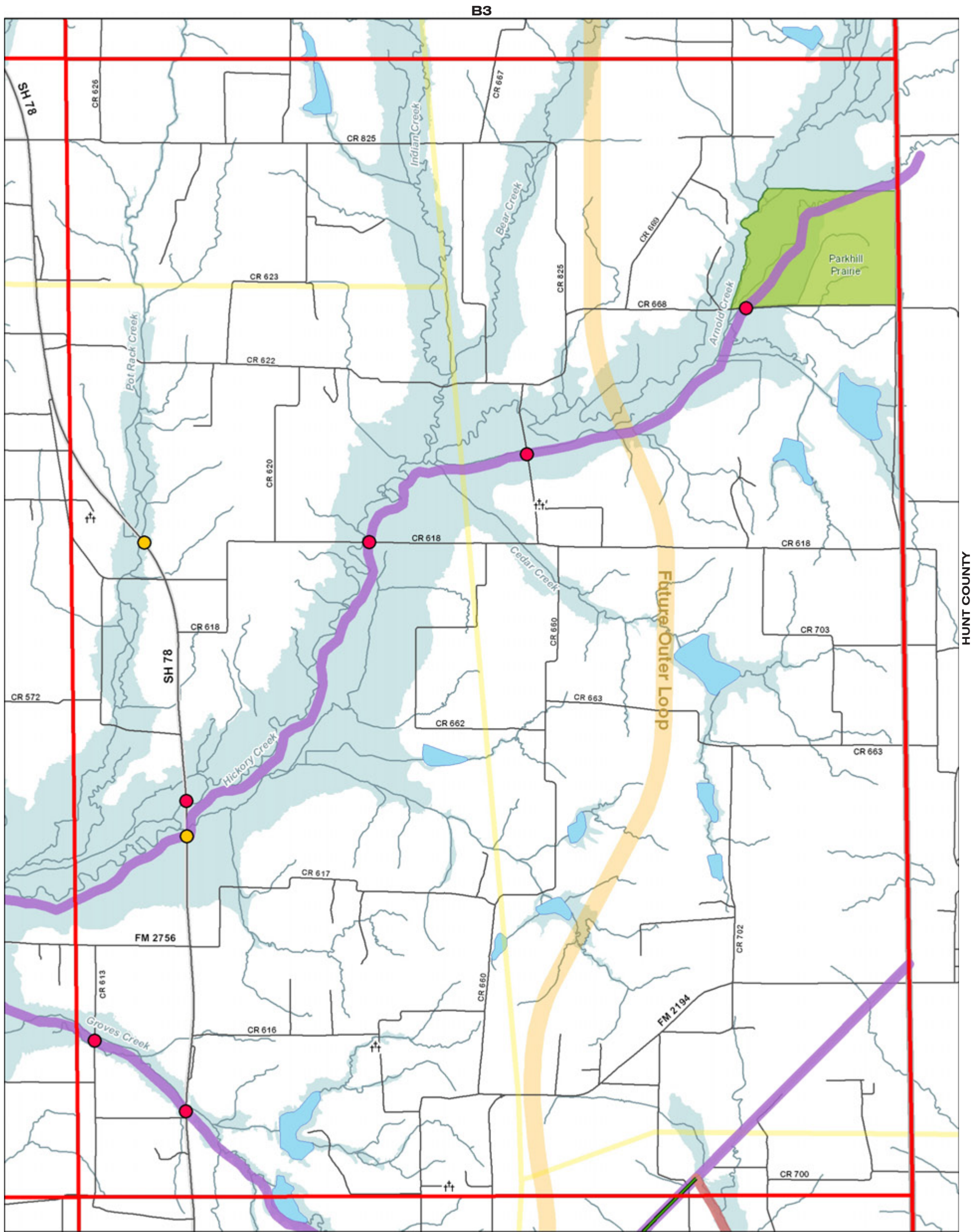
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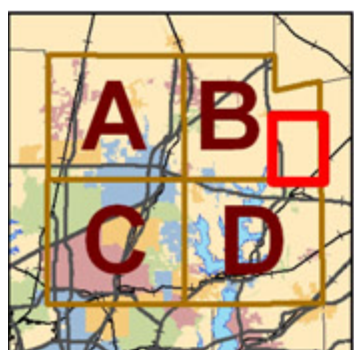
Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing		Schools - Over 8th Grade	Parks
Sidewalk, Proposed		DART Rail Stations	Lakes
Soft Surface Existing			100 Year Floodplain
Soft Surface Planned/Proposed			
	Major Crossing Opportunities & Constraints		
	At-Grade Crossing - Mid-block		
	Grade-Separated Crossing - Barrier		
	Grade-Separated Crossing - Possibility		



B5



HUNT COUNTY



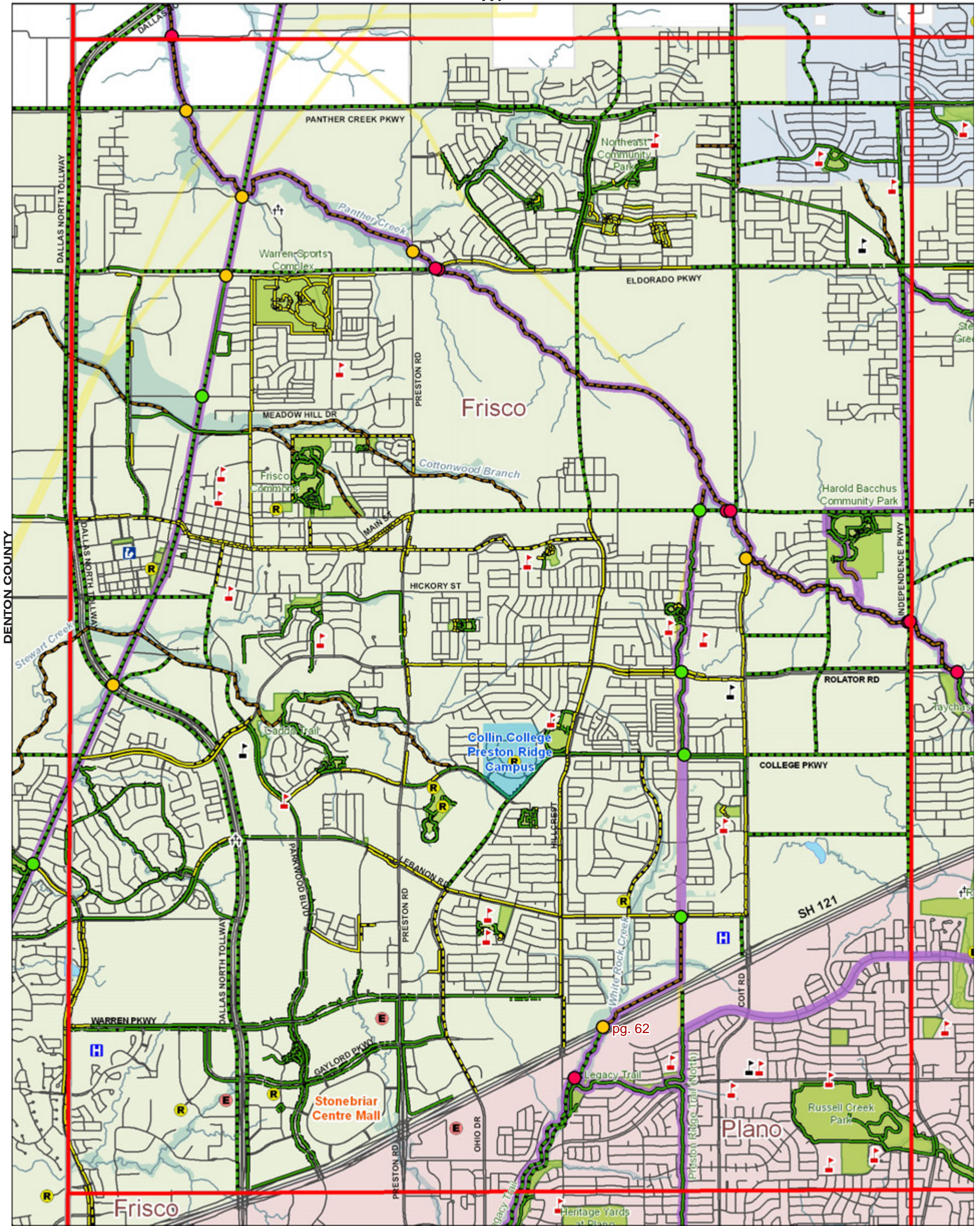
Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
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Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
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Sidewalk, Proposed		DART Rail Stations	Lakes
Soft Surface Existing			100 Year Floodplain
Soft Surface Planned/Proposed			
	Major Crossing Opportunities & Constraints		
	At-Grade Crossing - Mid-block		
	Grade-Separated Crossing - Barrier		
	Grade-Separated Crossing - Possibility		



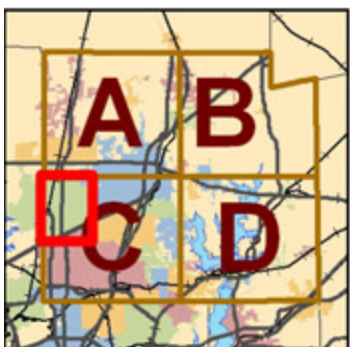
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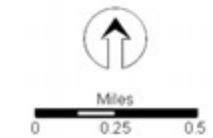
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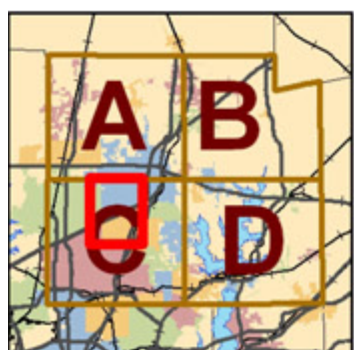
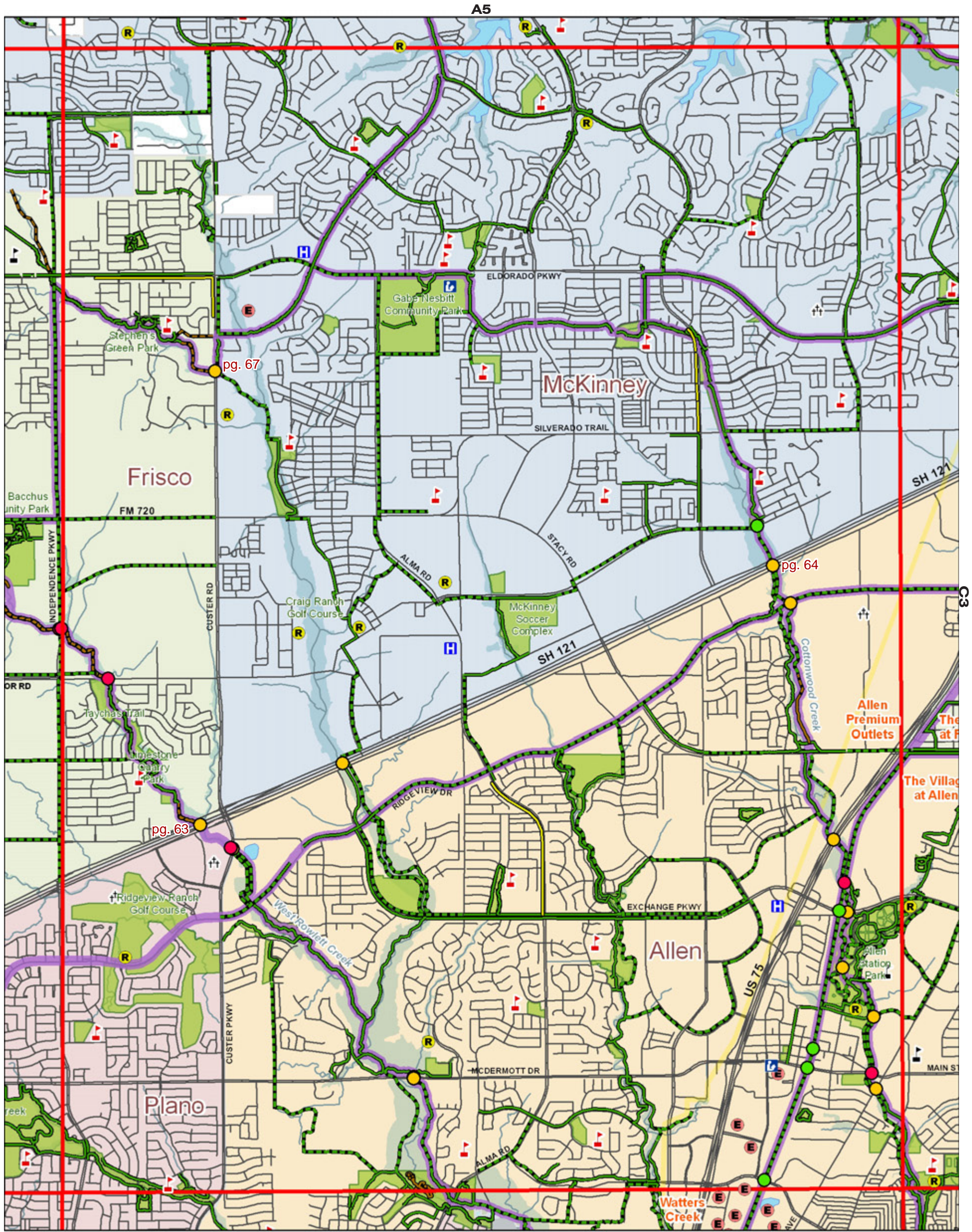
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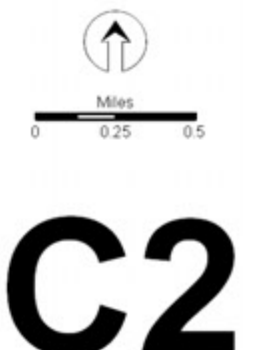
Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
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Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed	At-Grade Crossing - Mid-block	Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	Grade-Separated Crossing - Barrier	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Possibility	DART Rail Stations	Lakes
Soft Surface Existing			100 Year Floodplain
Soft Surface Planned/Proposed			

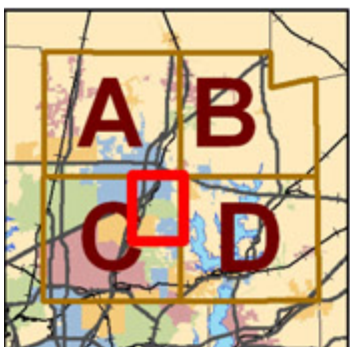
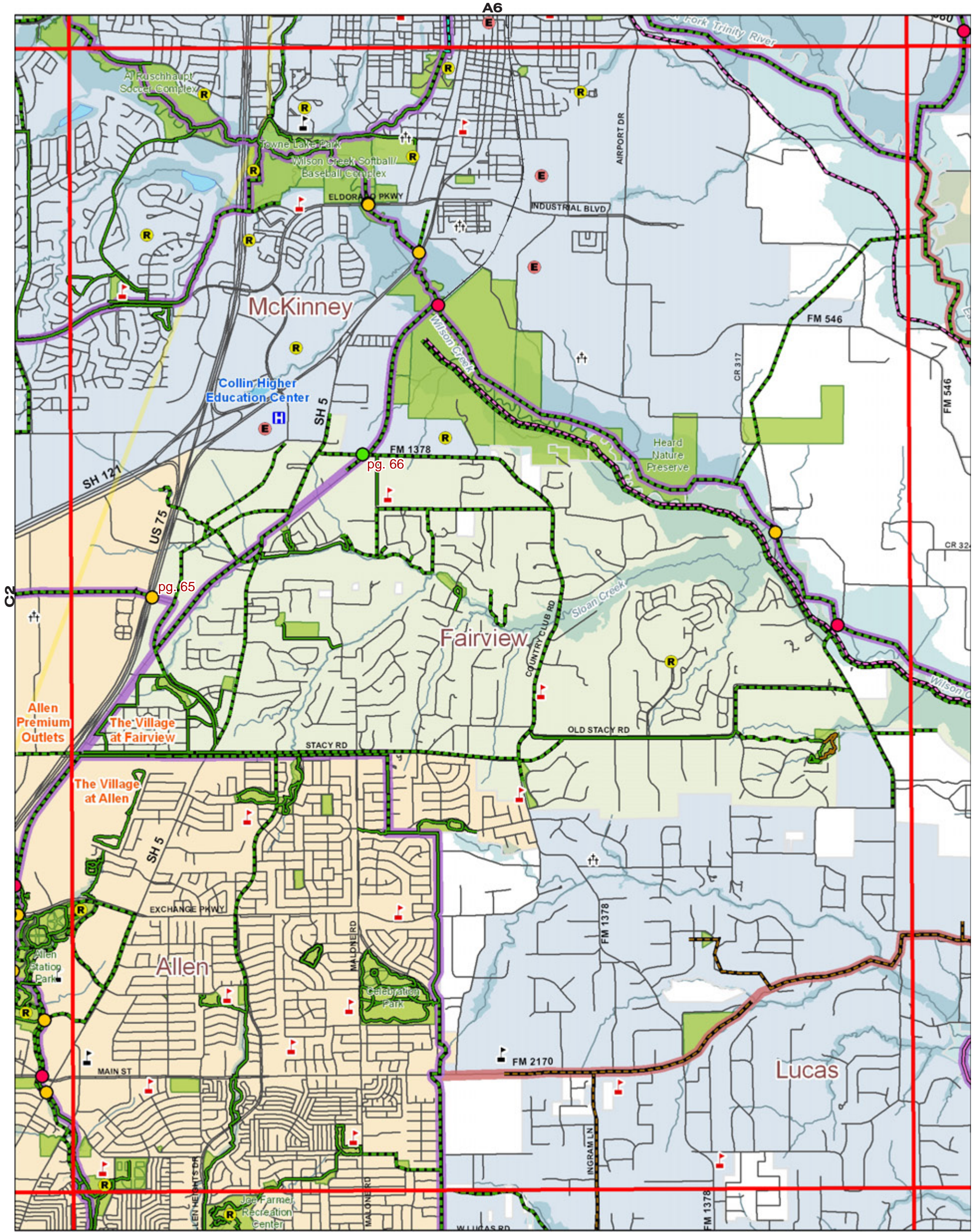


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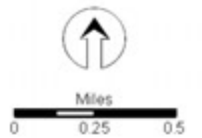


Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			

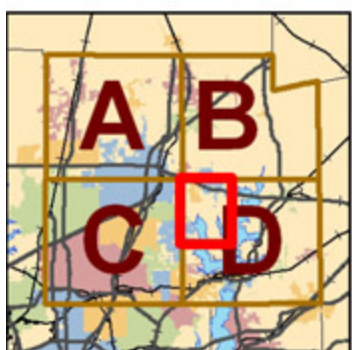
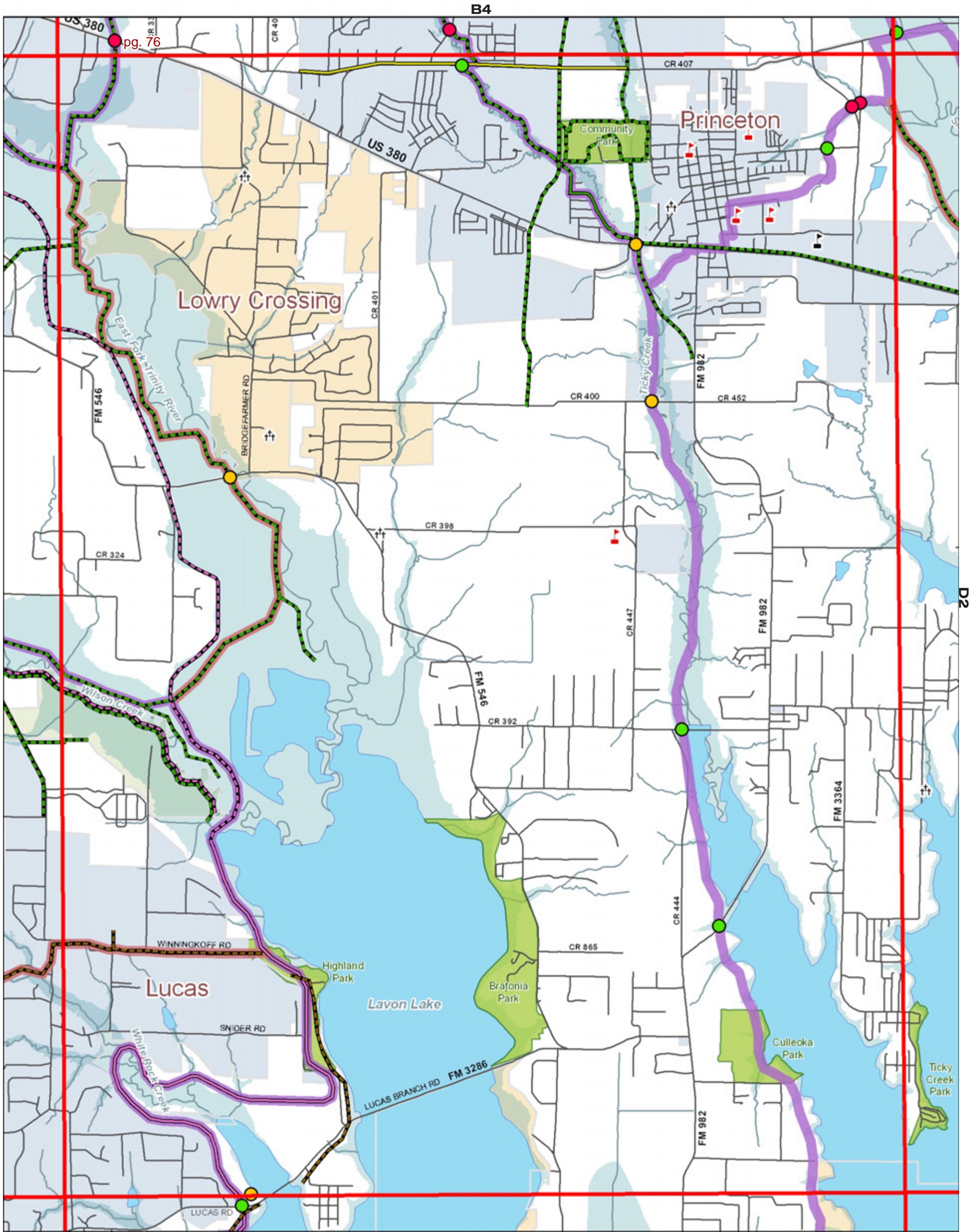




Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints			
<ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



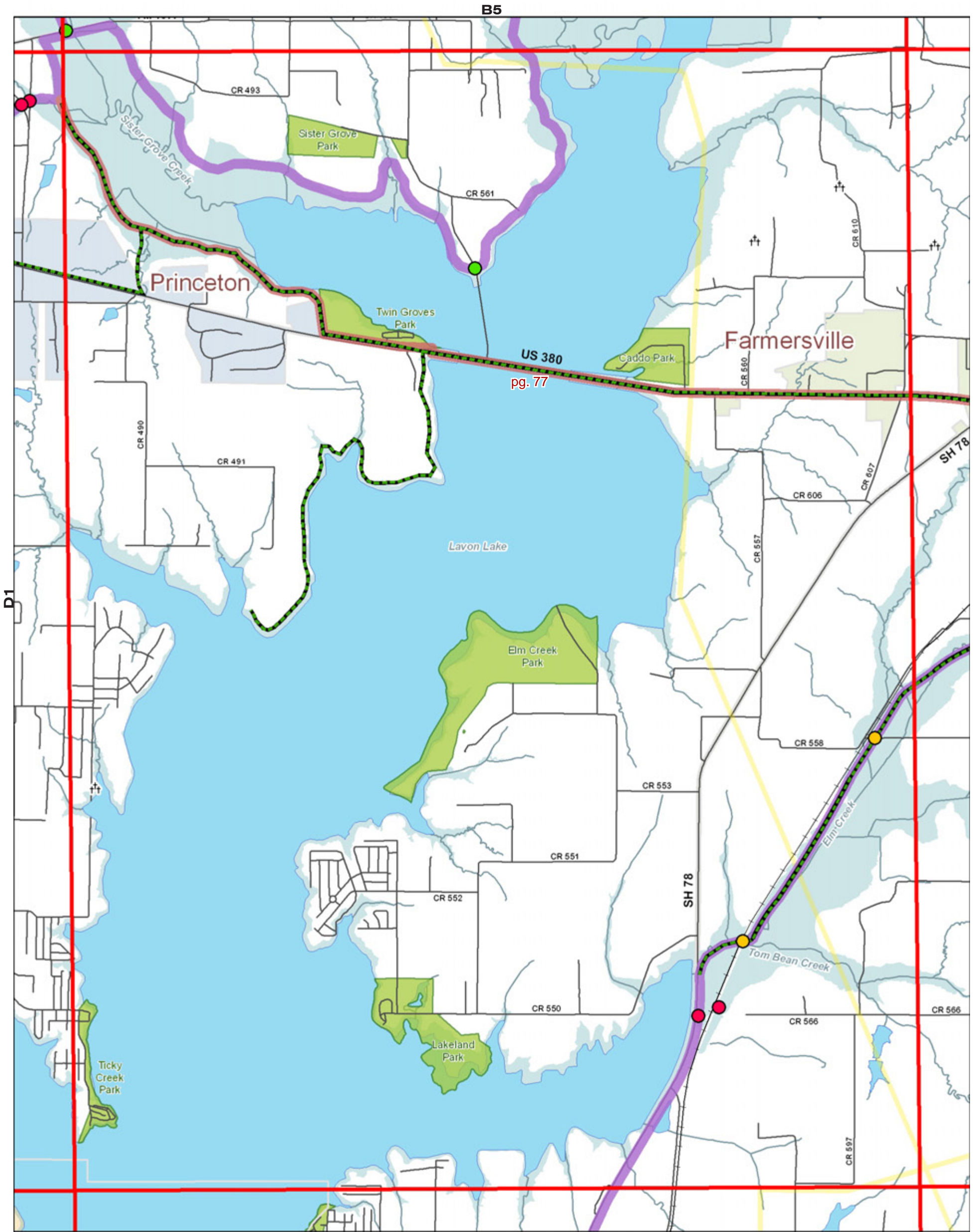
C3



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



D1

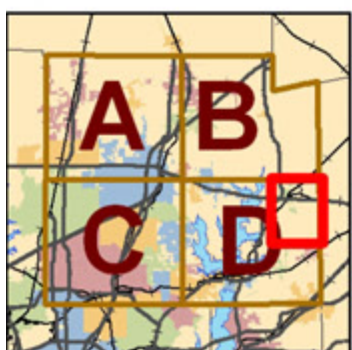
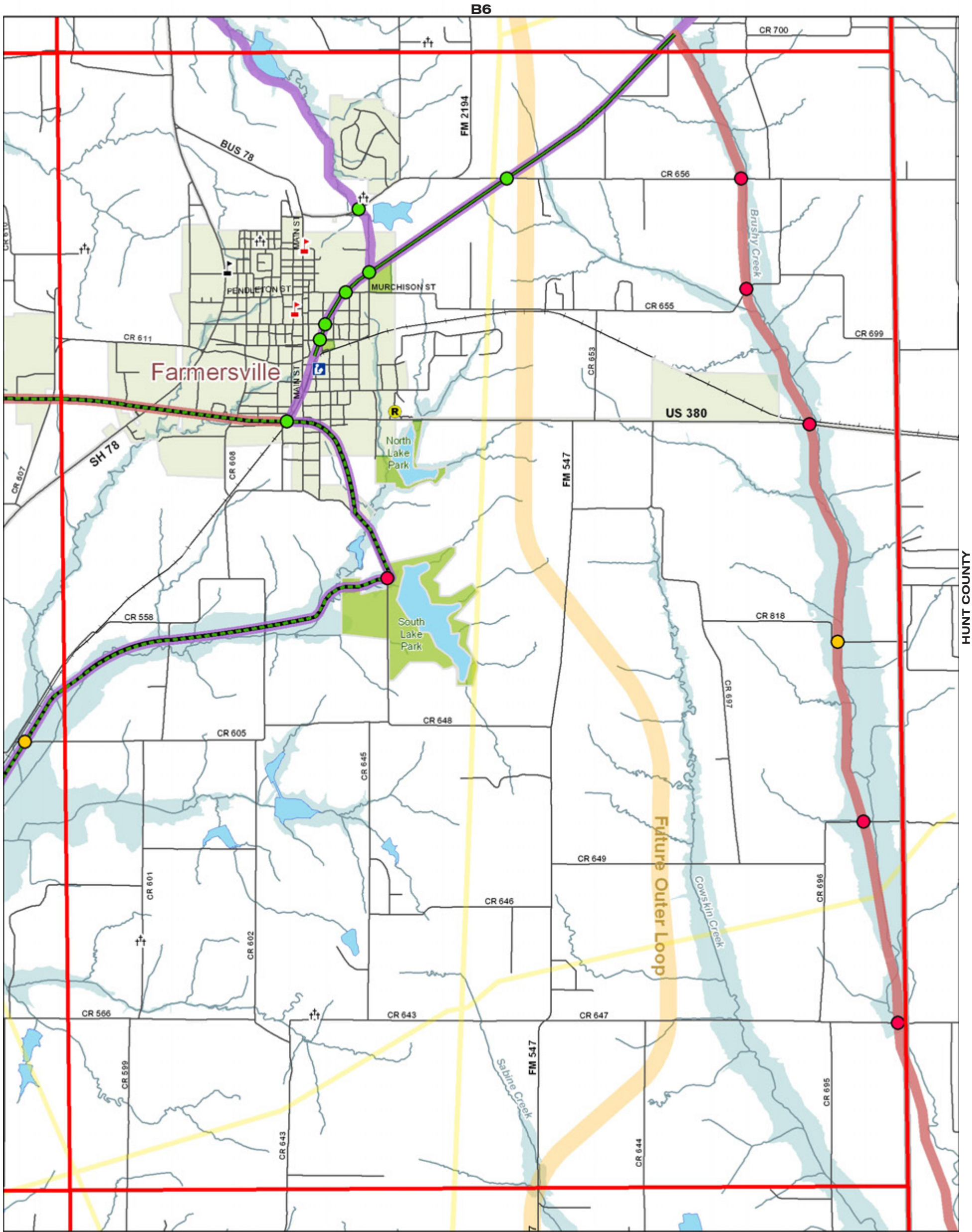


pg. 77



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing		Schools - Over 8th Grade	Parks
Sidewalk, Proposed		DART Rail Stations	Lakes
Soft Surface Existing			100 Year Floodplain
Soft Surface Planned/Proposed			
	Major Crossing Opportunities & Constraints		
	At-Grade Crossing - Mid-block		
	Grade-Separated Crossing - Barrier		
	Grade-Separated Crossing - Possibility		

D2

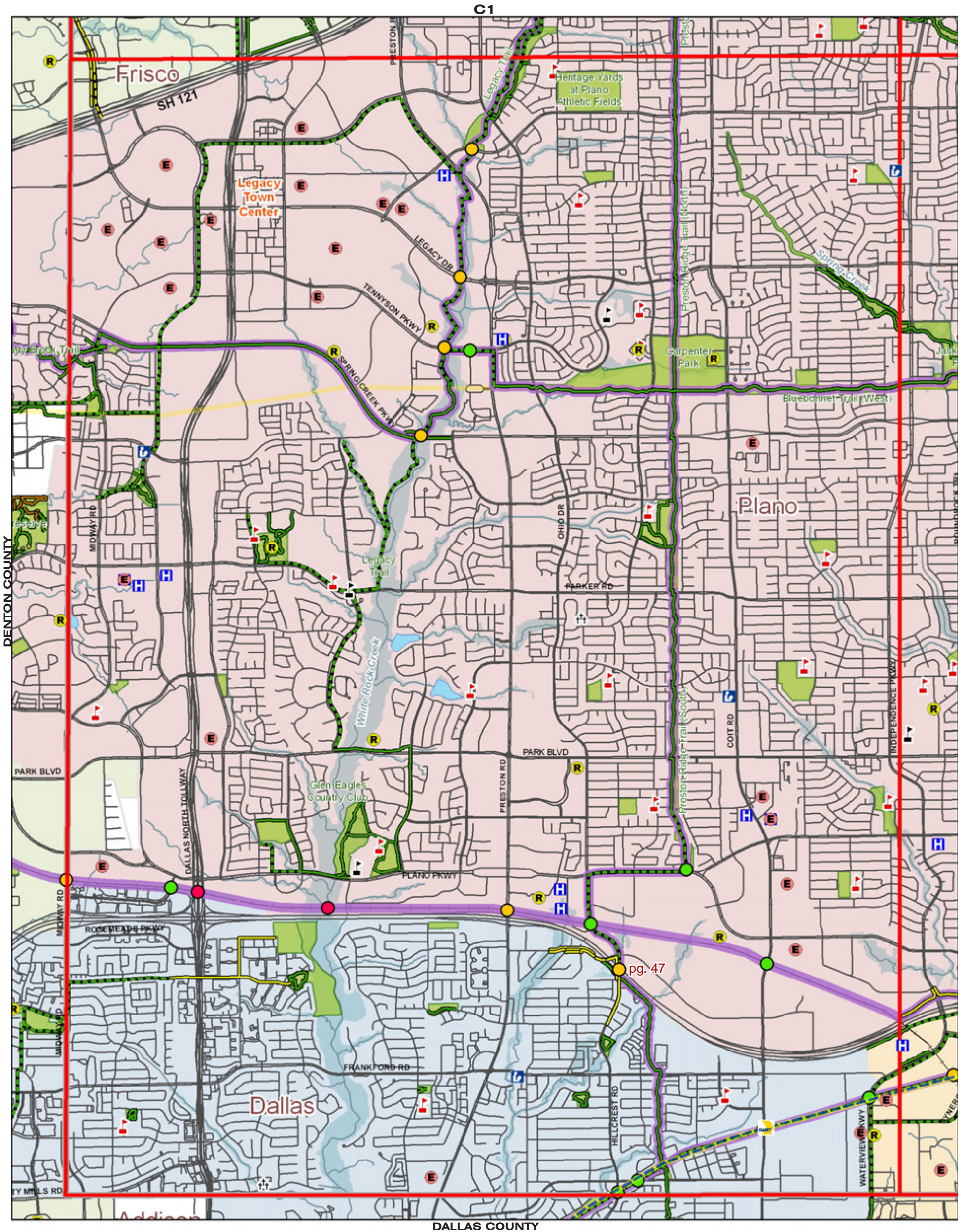


Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	At-Grade Crossing - Mid-block	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Barrier	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Possibility		100 Year Floodplain
Soft Surface Planned/Proposed			

↑

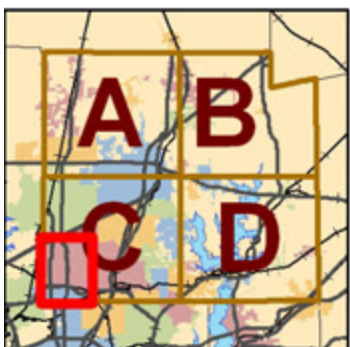
Miles
0 0.25 0.5

D3



DENTON COUNTY

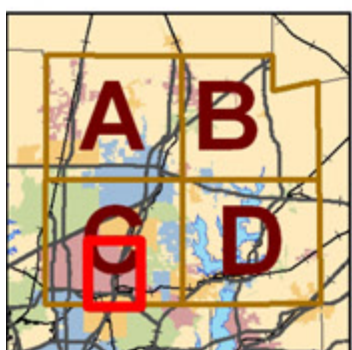
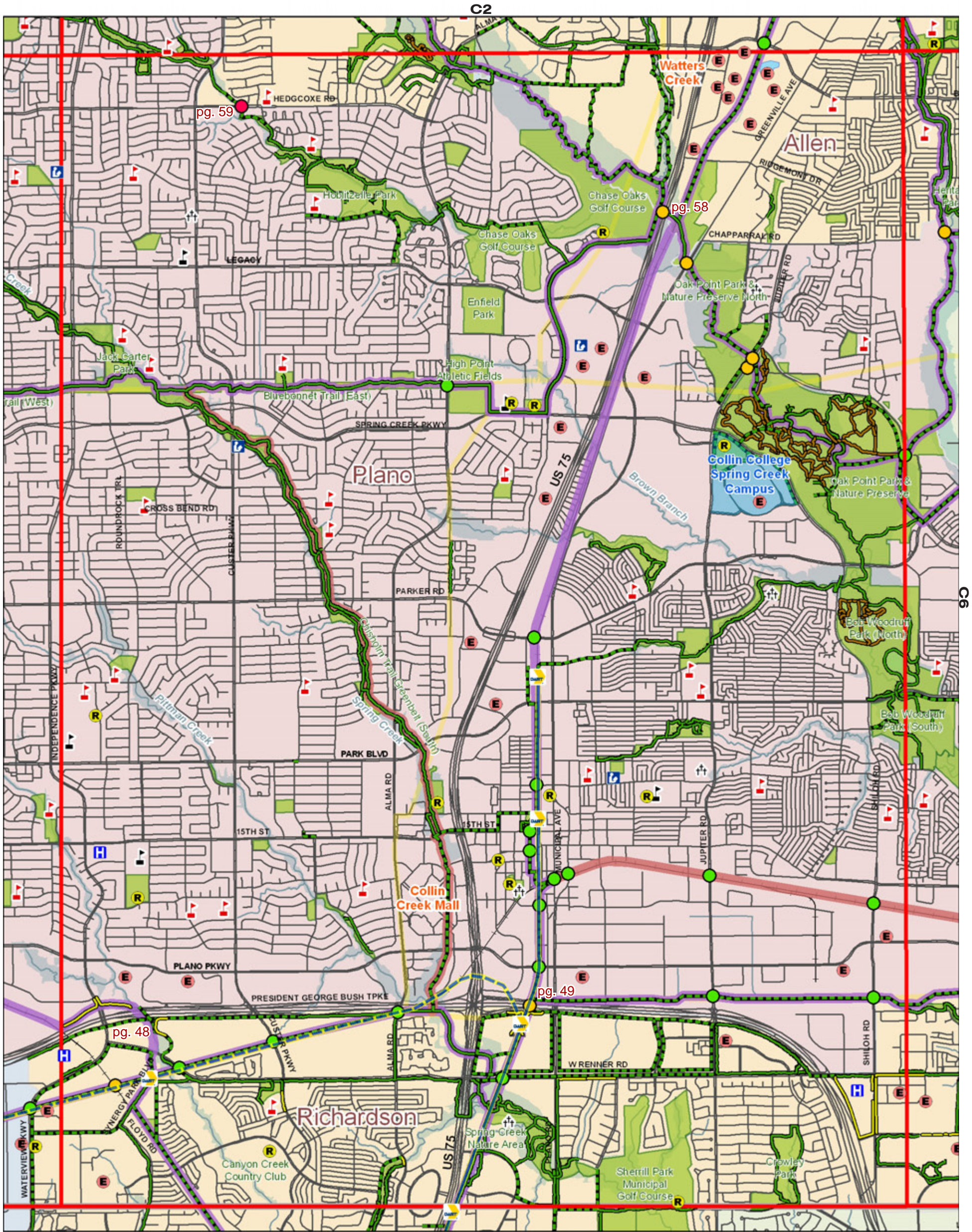
DALLAS COUNTY




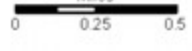
Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Major Employment Centers	County Boundary
Hard Surface Planned/Proposed		Hospitals	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	At-Grade Crossing - Mid-block	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	Grade-Separated Crossing - Barrier	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Possibility		100 Year Floodplain
Soft Surface Planned/Proposed			



C4

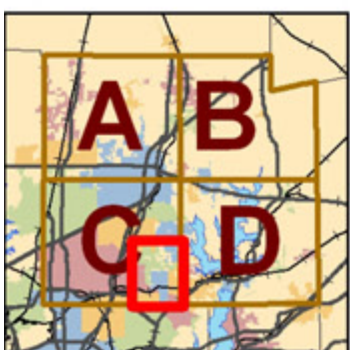
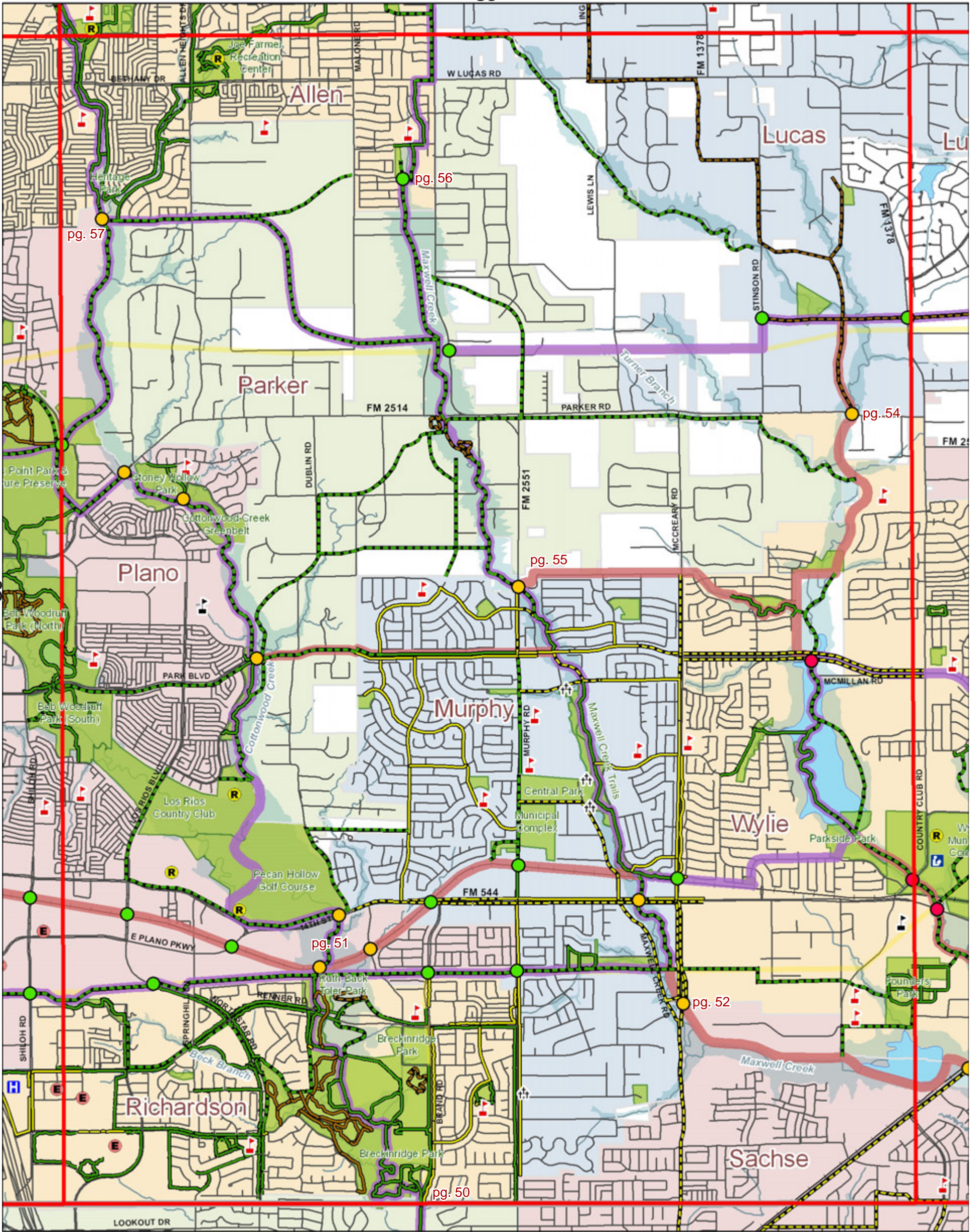


Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints			
<ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



C5



C3



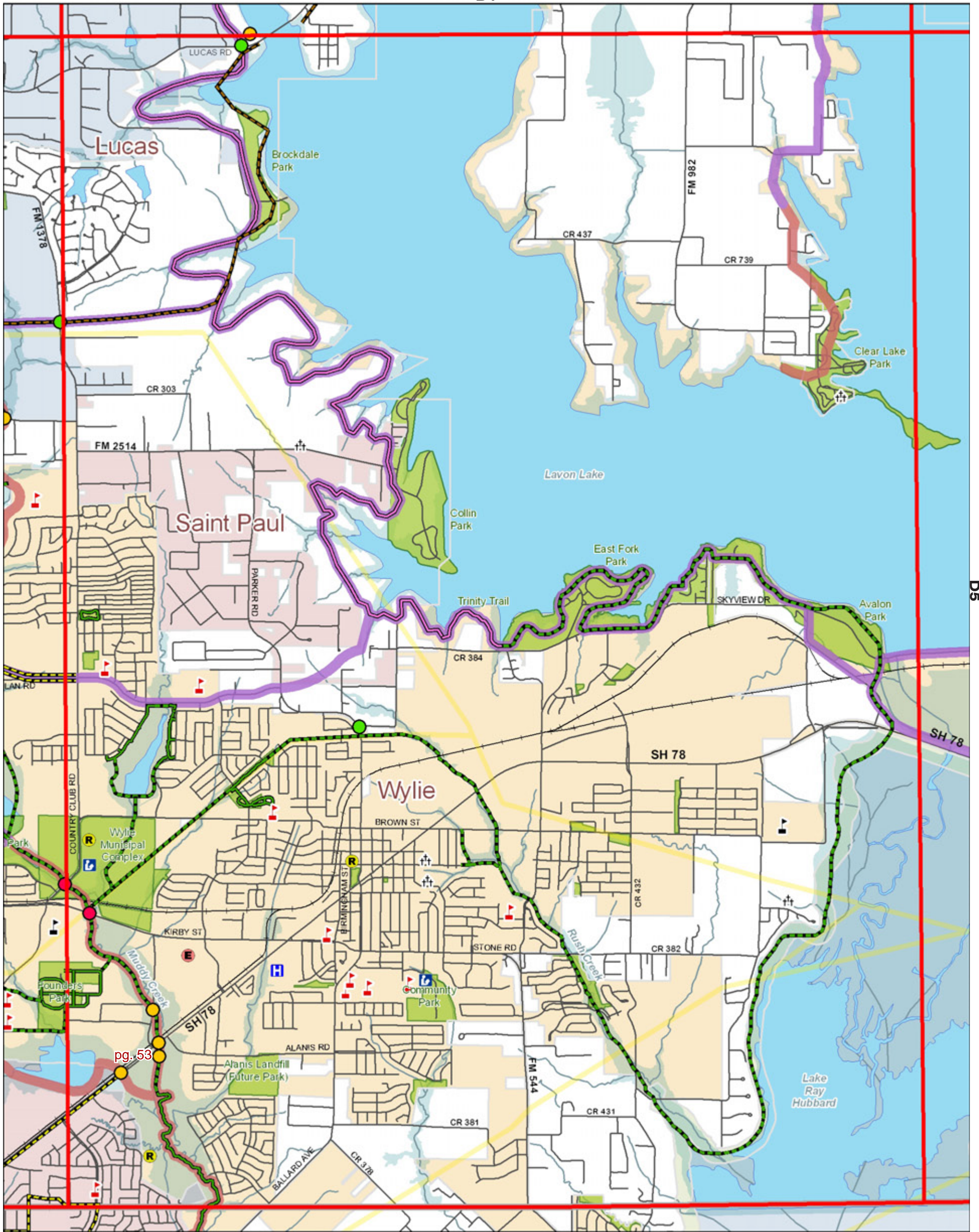
Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints			
<ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			

Scale: 0 0.25 0.5 Miles

North Arrow

C6

D1

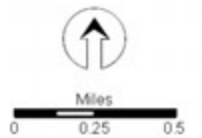


pg. 53

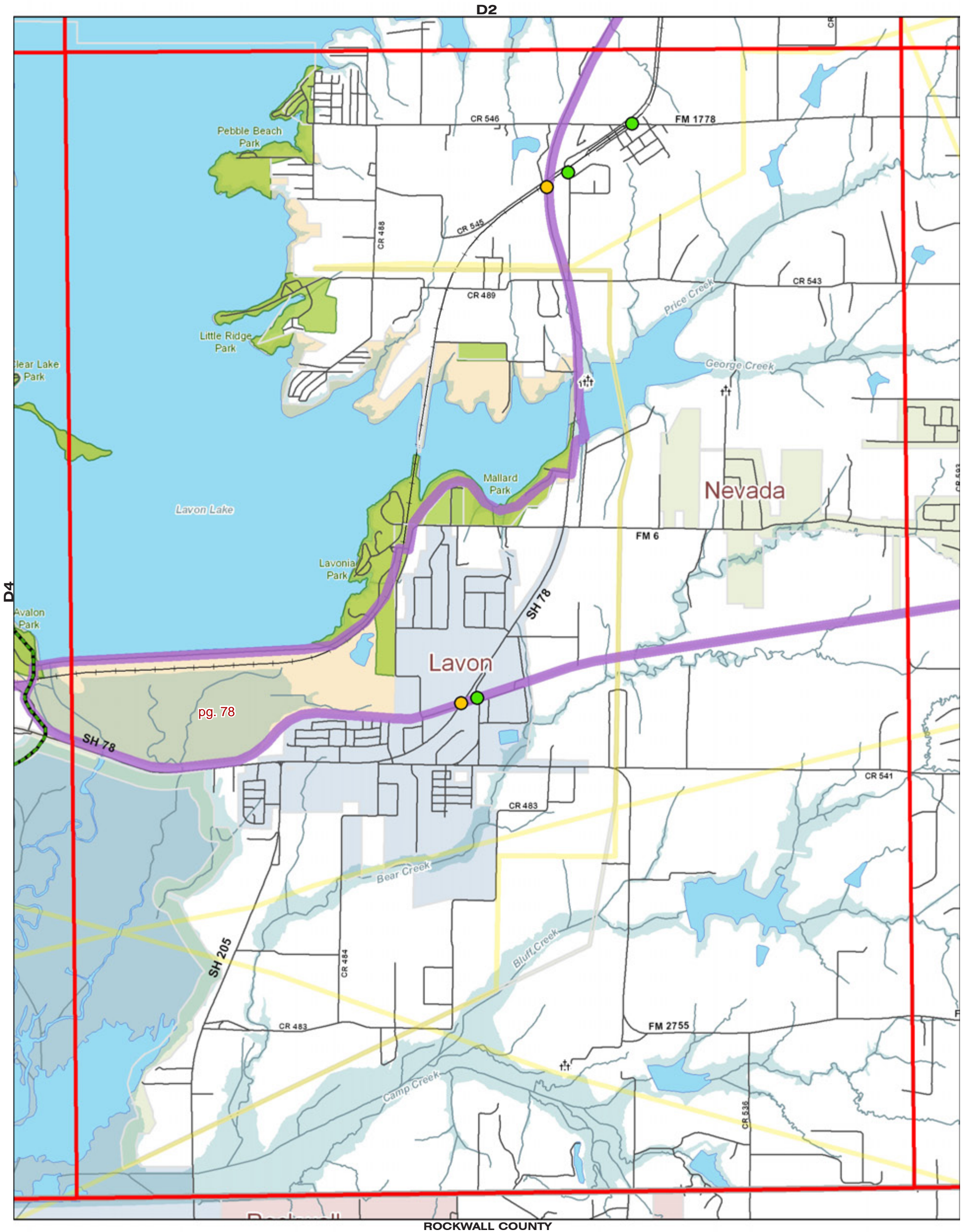
DALLAS COUNTY



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints			
<ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



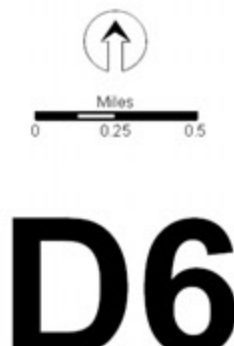
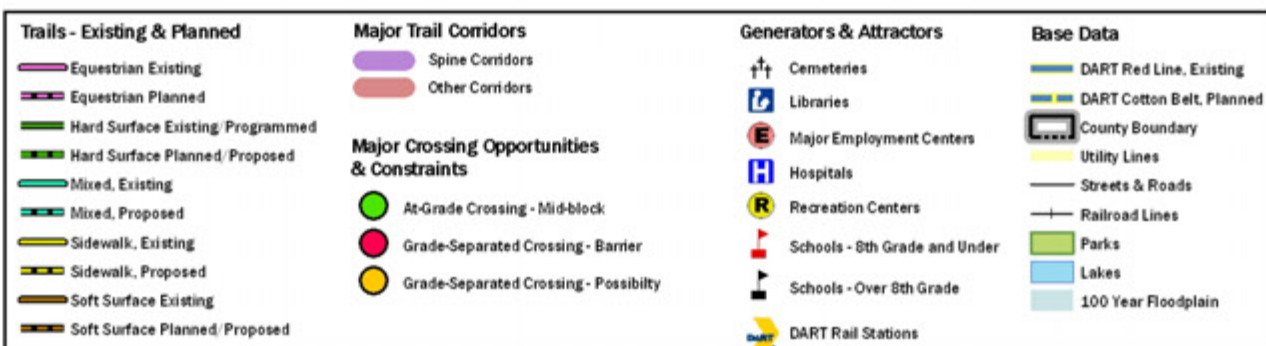
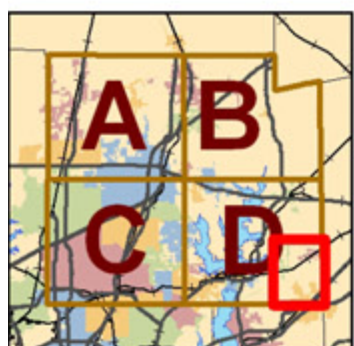
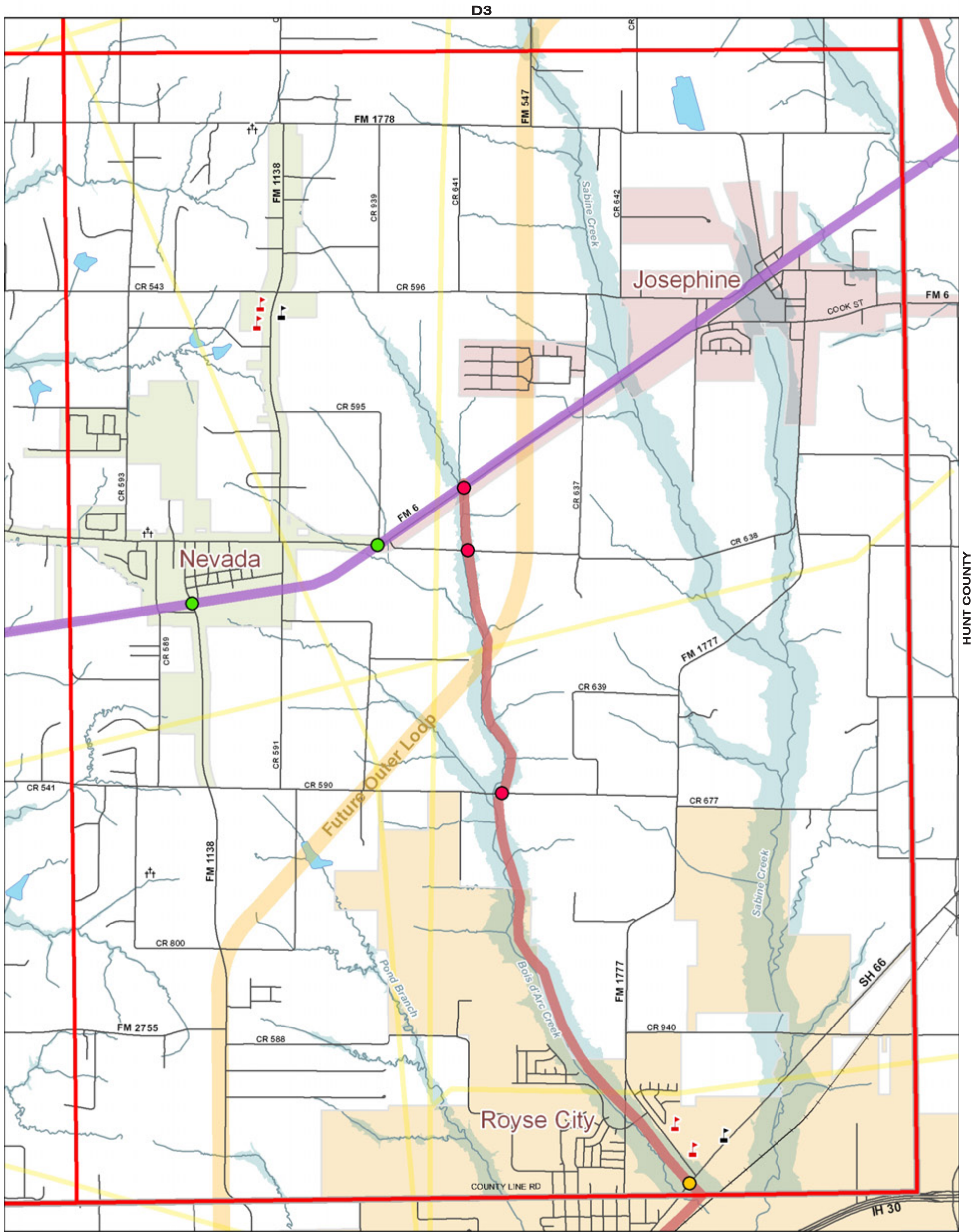
D4



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Major Employment Centers Hospitals Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			

Scale: 0 0.25 0.5 Miles

D5



D6



KEY INTERCITY CONNECTION POINTS

In order to assist cities and towns in creating intercity connections and to ensure continuity of the Major Trail Corridors across jurisdictions, key intercity connection points are analyzed in this section. These locations have been identified as some of the more challenging and critical places of intercity connection within the County. The majority of these points are located in Quadrant C (the southwest quadrant of the County) due to the greater level of physical constraints present in this area compared to the other quadrants.

The analysis of each key connection point includes a description of issues and challenges. The primary route through the connection point is identified and alternative routes are shown, if possible and if warranted. Finally, key constraints and landmarks are identified to further illustrate the anticipated challenges associated with making each connection.

The analysis is organized as follows:

- Location: The general location of the connection point in relation to nearby landmarks and roadways.
- Cities Connected: The cities that would be linked by this connection.
- Type of Connection: The type of feature that the connection parallels, such as roadways, creeks, or railroads.
- Existing / Planned Facilities: The type of facilities in the immediate vicinity of the connection point (in some cases additional facility types will appear on the map, but not in the immediate vicinity of the connection point; these facilities are not listed).
- Key Issues: a brief description of the major challenges and constraints

present at each connection point. These issues are numbered and called out on the accompanying map, if possible.

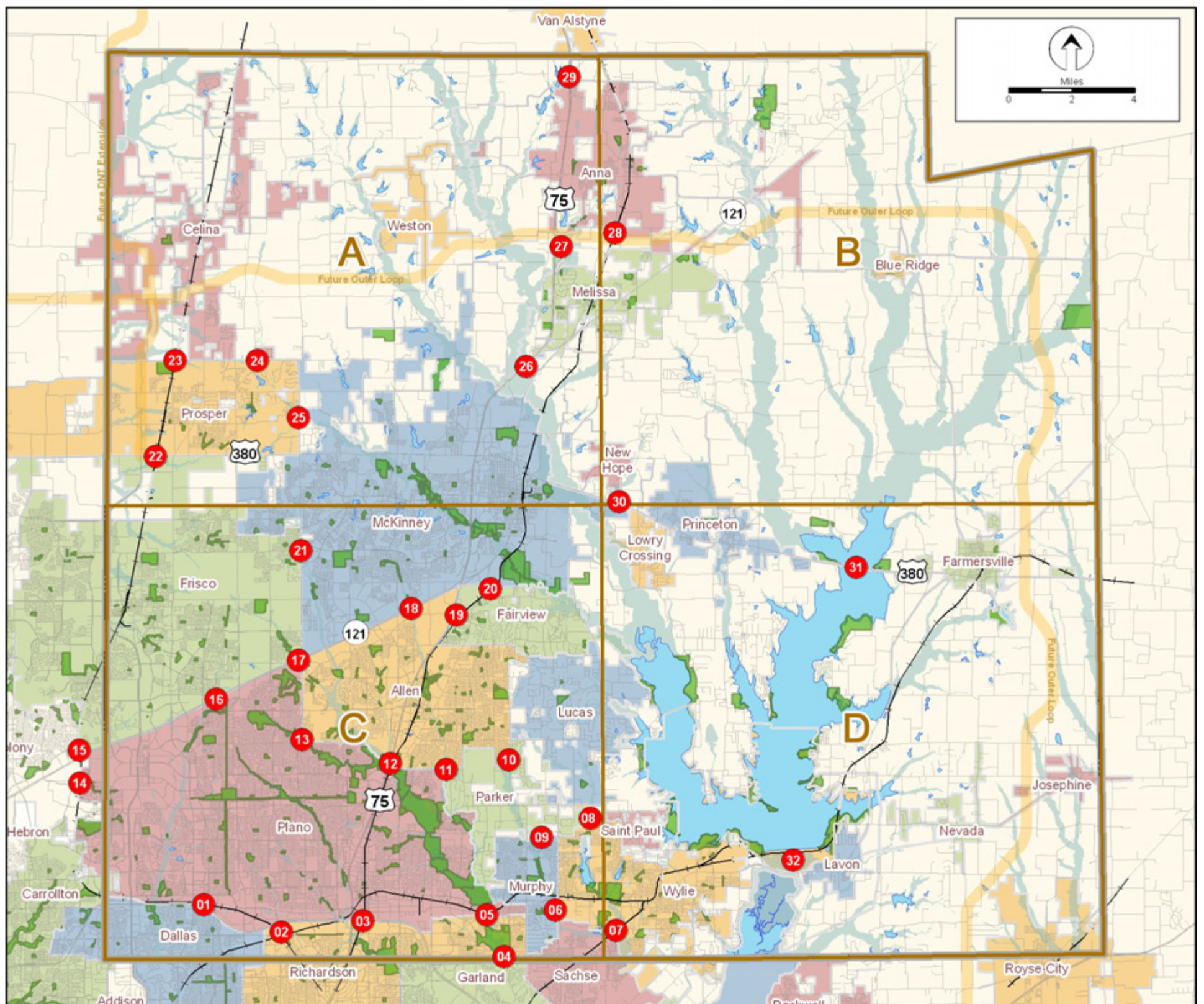
Note: most of the base data and trail alignment data displayed on the following maps was gained from municipalities and other entities. The accuracy of this data varies depending on its source. In some instances, data may appear inaccurate because it was not originally created to be displayed at this level of detail.



Image courtesy of City of Allen

FIGURE 3.5 – INTERCITY CONNECTION POINT KEY MAP

The following pages provide detailed views of specific connection points between cities and towns. The map below depicts the location of each connection point analyzed.



Connection Point #01

Location: Along Hillcrest Road / Ohio Drive at President George Bush Turnpike

Cities Connected: Plano and Dallas

Type of Connection: Roadway

Existing / Planned Facilities:

- Plano: concrete sidepath (planned)
- Dallas: 12' concrete trail

Key Issues

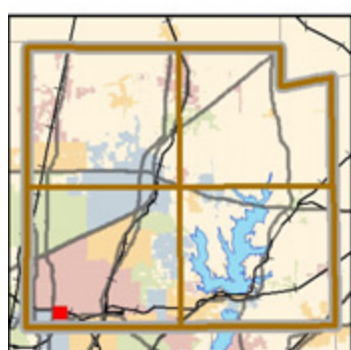
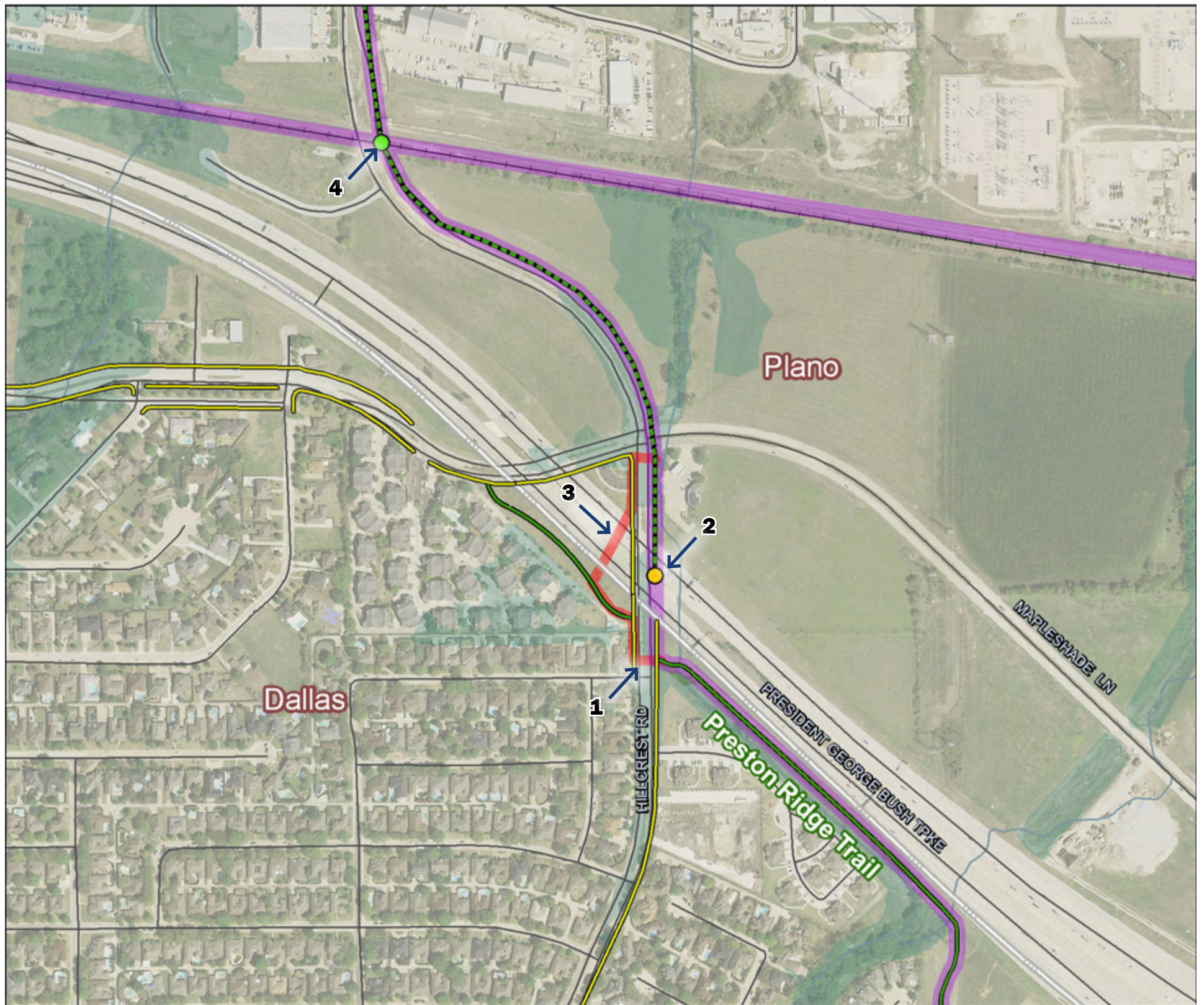
1. This connection requires mid-block crossing of Hillcrest Road / Ohio Drive. There is an existing painted crosswalk at Amador Drive (the first cross-street south of President George Bush Turnpike).
2. While the vertical clearance along Hillcrest Road / Ohio Drive is adequate, there is limited lateral space. There is an existing (6'-8') sidewalk on the west side of Ohio Drive. Mapleshade Lane also has wide sidewalks.
3. As an alternative, President George Bush Turnpike is on structure between Mapleshade Lane and Hillcrest Road / Ohio Drive. This area under the overpass is currently fenced off. With the fences removed or

relocated, this could be a good crossing that would connect people to the plaza area at the southwest corner of Mapleshade Lane and Ohio Drive. Providing a crossing here will require the participation and approval of the North Texas Tollway Authority.

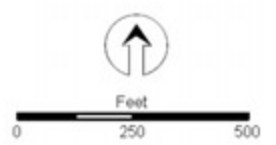
4. The Ohio Drive crossing of the railroad tracks is at-grade. The relocation of guard arms may be necessary to accommodate a sidepath along the roadway.



Ohio Drive, facing south. While the wide sidewalk accommodates pedestrian use, it may not be suitable for high volumes of cyclists. The fenced area to the right could be opened for a trail connection.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



01



Connection Point #02

Location: Along Waterview Parkway / Independence Parkway or Canyon Creek at President George Bush Turnpike

Cities Connected: Plano and Richardson

Type of Connection: Roadway or creek

Existing / Planned Facilities

- Plano: none
- Richardson: concrete sidepaths (planned)

Key Issues

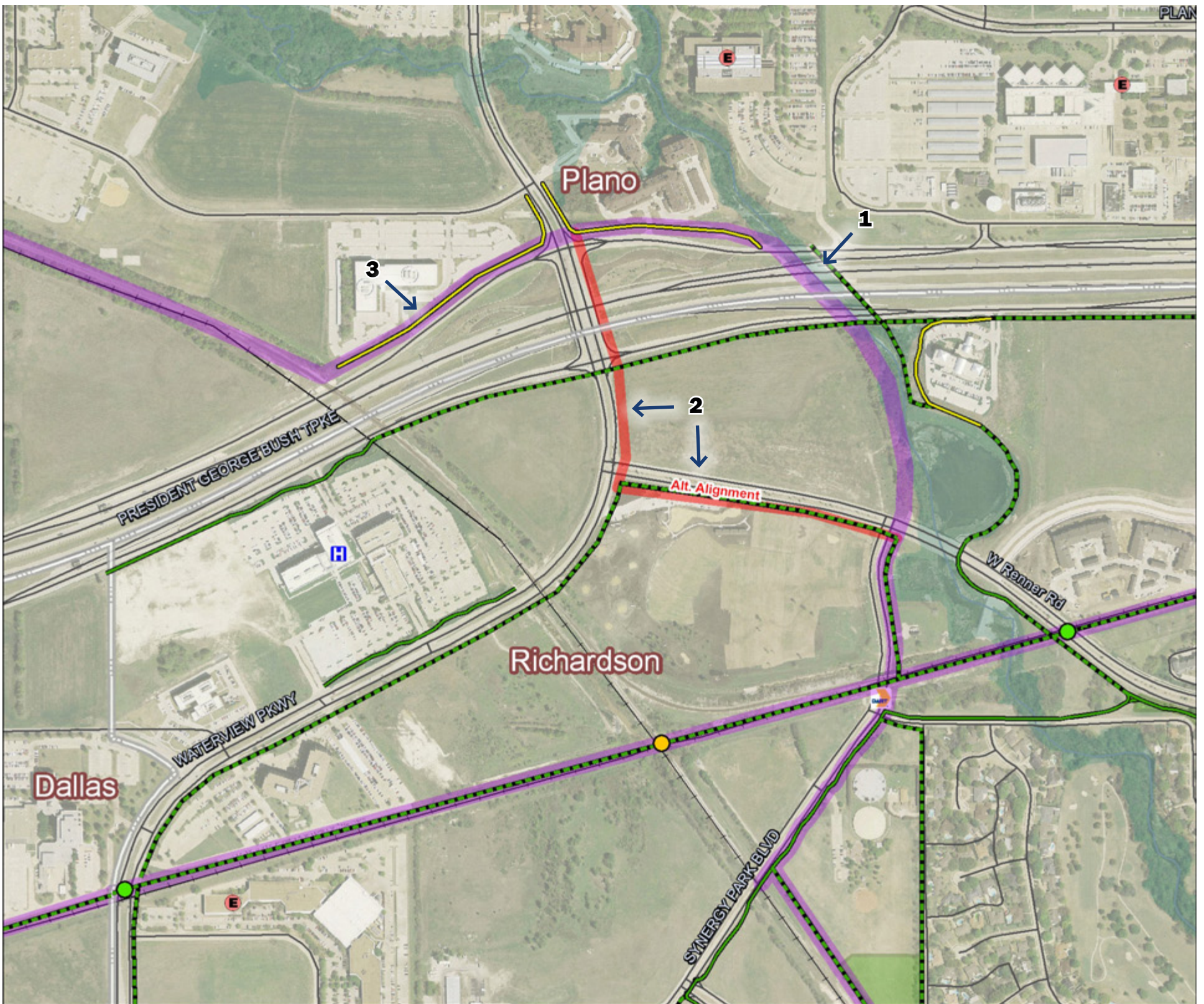
1. The preferred connection alignment follows the creek under the President George Bush Turnpike bridge. There is adequate vertical and lateral clearance for a trail in this location. A bench or shelf for a trail should be constructed to keep the trail above the waterline during minor rain events.
2. The alternative alignment is to follow Renner Road and Waterview Parkway by means of sidepaths. With this alternative, the existing slip lane islands, curb ramps, and crosswalks will need to be improved at both ends of the Independence / Waterview overpass. In addition, it would be necessary to relocate the utilities and traffic signs on raised medians on the overpass. Finally, the Waterview / Renner intersection

would need to be enhanced with crosswalks and curb ramps.

3. With either alignment option, the existing sidewalk between the railroad and Independence on the north side of President George Bush Turnpike in Plano will need to be widened or replaced with a trail of adequate width (10' minimum).



Looking south under the President George Bush Turnpike bridge.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



02

Connection Point #03

Location: Along the DART Red Line, Plano Road, or Crawford Road at President George Bush Turnpike

Cities Connected: Plano and Richardson

Type of Connection: Railroad or Sidepath

Existing / Planned Facilities

- Plano: concrete trail (planned)
- Richardson: concrete trail (planned)

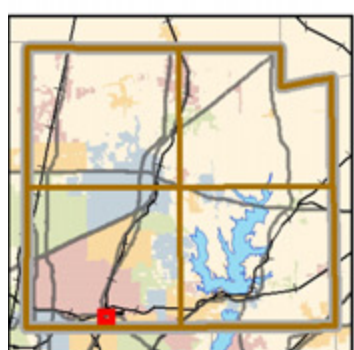
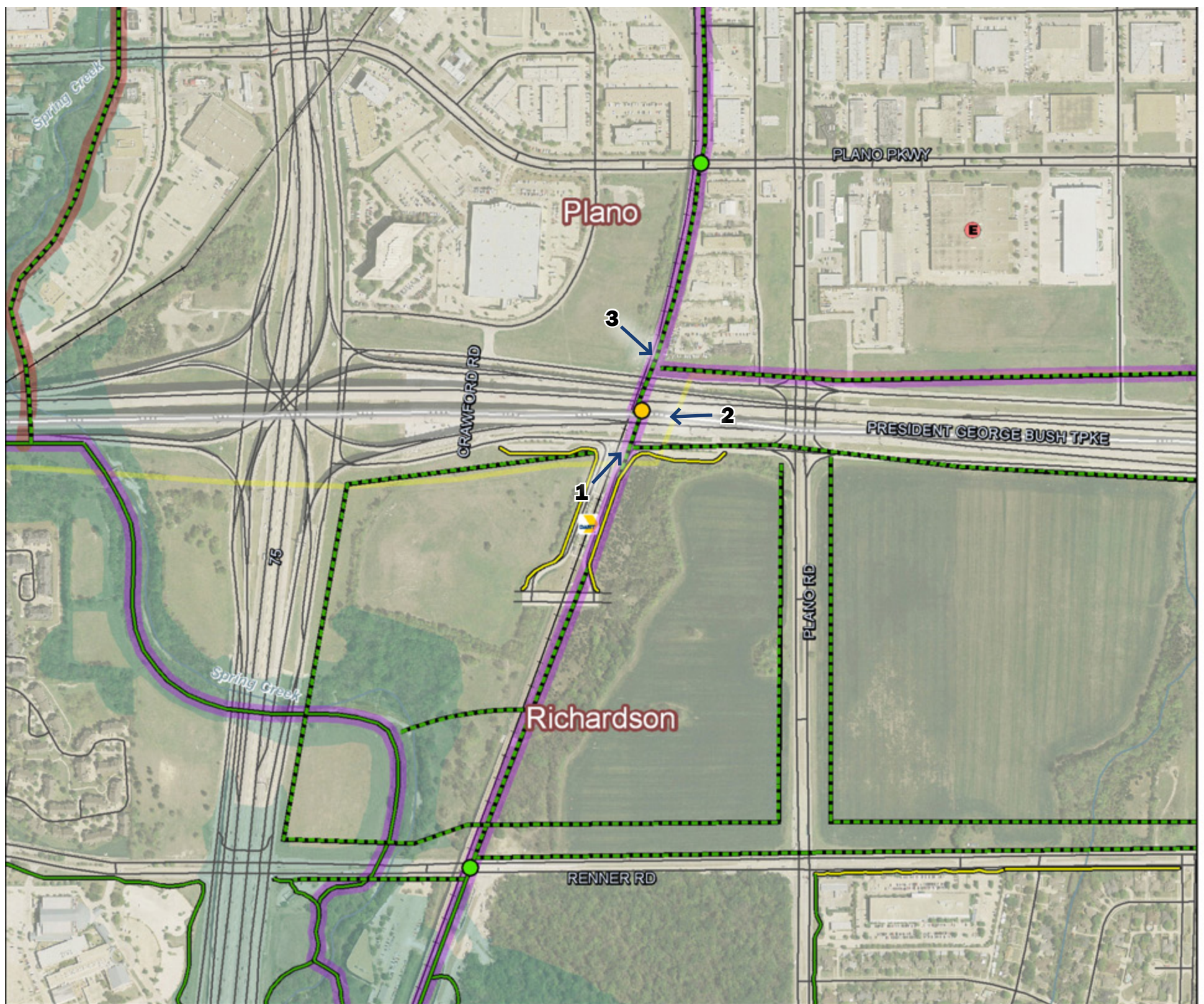
Key Issues

1. Crosswalks and curb ramps exist at the intersection of the DART line and the east-bound frontage road and there are wide sidewalks on both sides of the railroad extending south to the station.
2. The preferred alignment follows the DART railroad under President George Bush Turnpike. The area under the overpass has sidewalks parallel to the tracks on both sides, but they are not of an adequate width to accommodate cyclists. There might be the possibility to move the fencing on the east side of the tracks beneath the overpass to provide a trail between DART’s utility huts and the bridge columns. This would require significant coordination with DART.

3. There are not any crosswalks or curb ramps on the westbound frontage road. Providing a crossing here may require coordination with DART to relocate the guard arms. A trail crossing in this location should be west of the railroad crossing (“downstream” of traffic), or could be east of the railroad if an additional set of guard arms were installed to prevent cars from stopping on top of the crosswalk when a train is passing.



Looking north along the DART railroad under the President George Bush Turnpike bridge.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors <p>Major Crossing Opportunities & Constraints</p> <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain



03



Connection Point #04

Location: Along Brand Road at President George Bush Turnpike

Cities Connected: Richardson and Garland

Type of Connection: Roadway

Existing / Planned Facilities

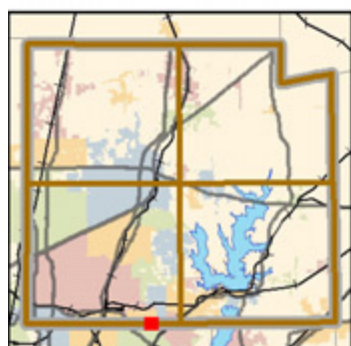
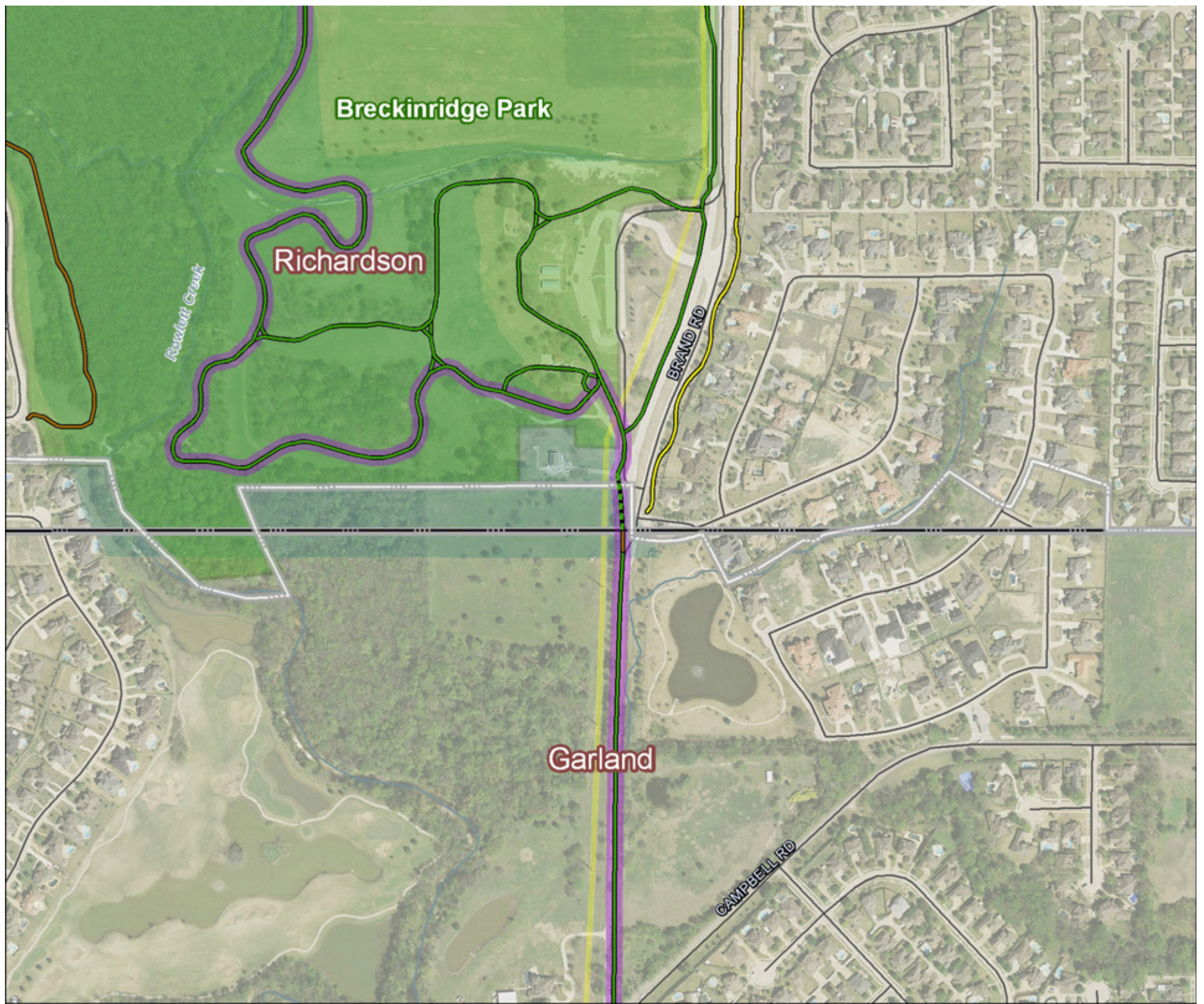
- Richardson: hard surface and soft surface trails
- Garland: concrete sidepath (programmed)

Key Issues

There are not any significant issues with this connection point. However, directional signage in Breckenridge Park will be important in order to help people navigate the multiple trail loops in this area. In Garland, the Brand Road right-of-way and adjacent powerline easement provide plenty of room for a trail.



Looking south along Brand Road.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors <p>Major Crossing Opportunities & Constraints</p> <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain



Connection Point #05

Location: Along Rowlett Creek at 14th Street and the KCS Railroad

Cities Connected: Plano and Richardson

Type of Connection: Creek

Existing / Planned Facilities

- Plano: hard surface trails (planned)
- Richardson: hard surface trails

Key Issues

General issues with this connection point is that the entire alignment is within the floodplain, which may causes challenges regarding erosion and inundation. In addition, land ownership may be an issue, although according to the Collin Central Appraisal District data, the City of Plano owns land on the western side of the creek. Additional considerations include:

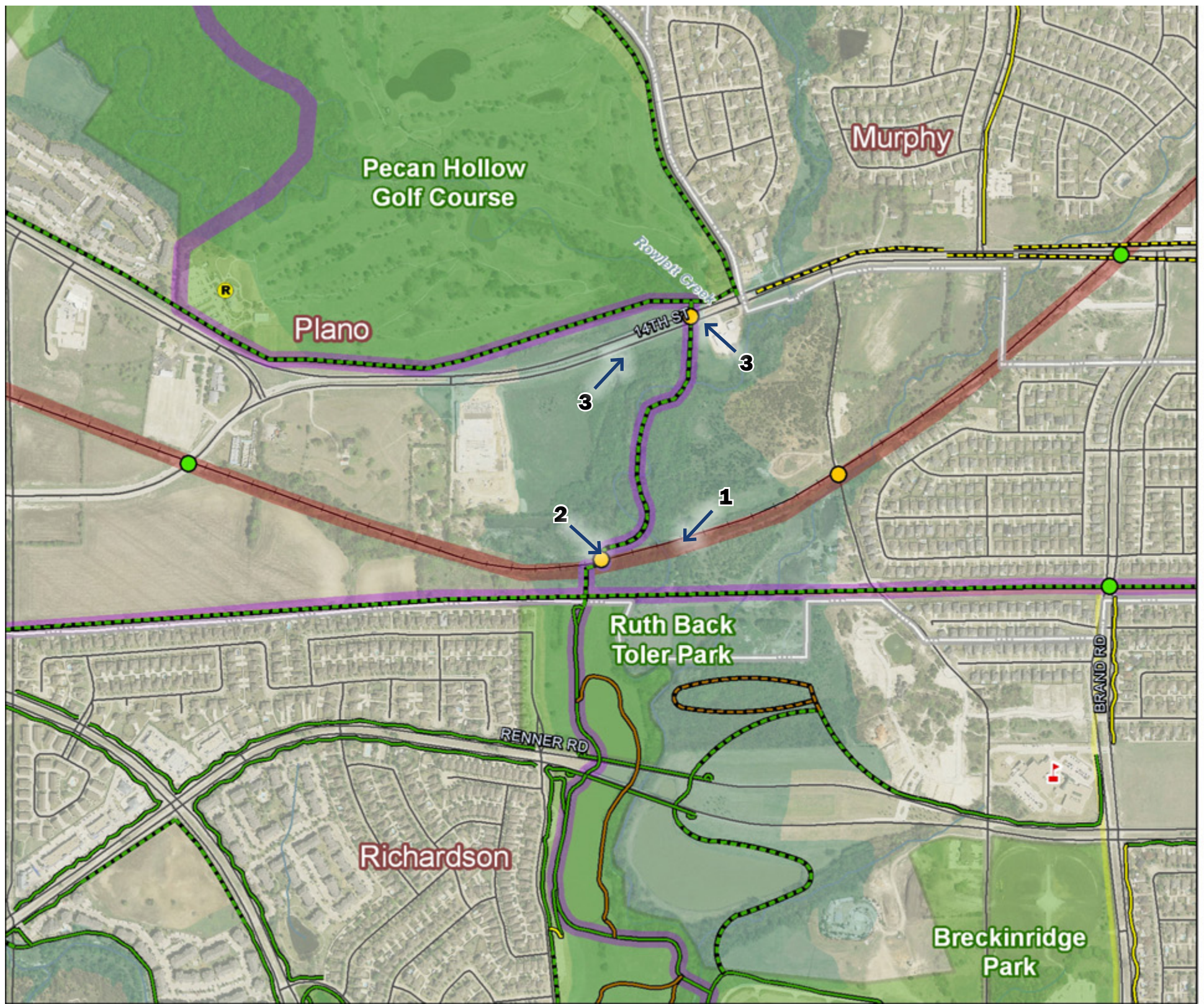
1. The railroad truss bridge has adequate vertical clearance, but there is likely to be lateral clearance issues due to the steep banks and the bridge footings that are located very close to the creek edge.
2. There is a second railroad bridge (a wooden bridge just west of the steel truss) that should provide enough vertical and lateral clearance. How-

ever, it appears that there could be sedimentation maintenance issues at this location.

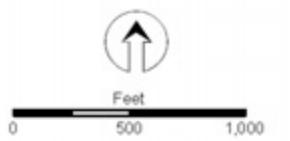
3. Both of the 14th Street bridges appear to provide adequate clearance, though neither has a trail bench under it.



Looking north at railroad bridge #2. The historic character of the bridge can provide a unique experience for trail users.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/ Programmed Hard Surface Planned/ Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/ Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



05



Connection Point #06

Location: Along Maxwell Creek at McCreary Road and along the KCS Railroad at McCreary Road

Cities Connected: Murphy, Wylie, and Sachse

Type of Connection: Creek

Existing / Planned Facilities

- Murphy: none along railroad tracks, hard surface trail along Maxwell Creek
- Wylie: none
- Sachse: none

Key Issues

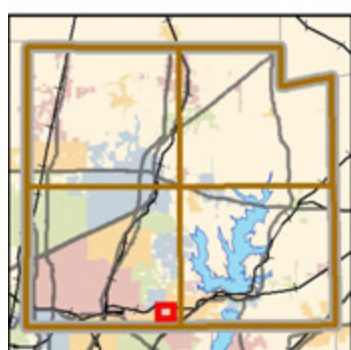
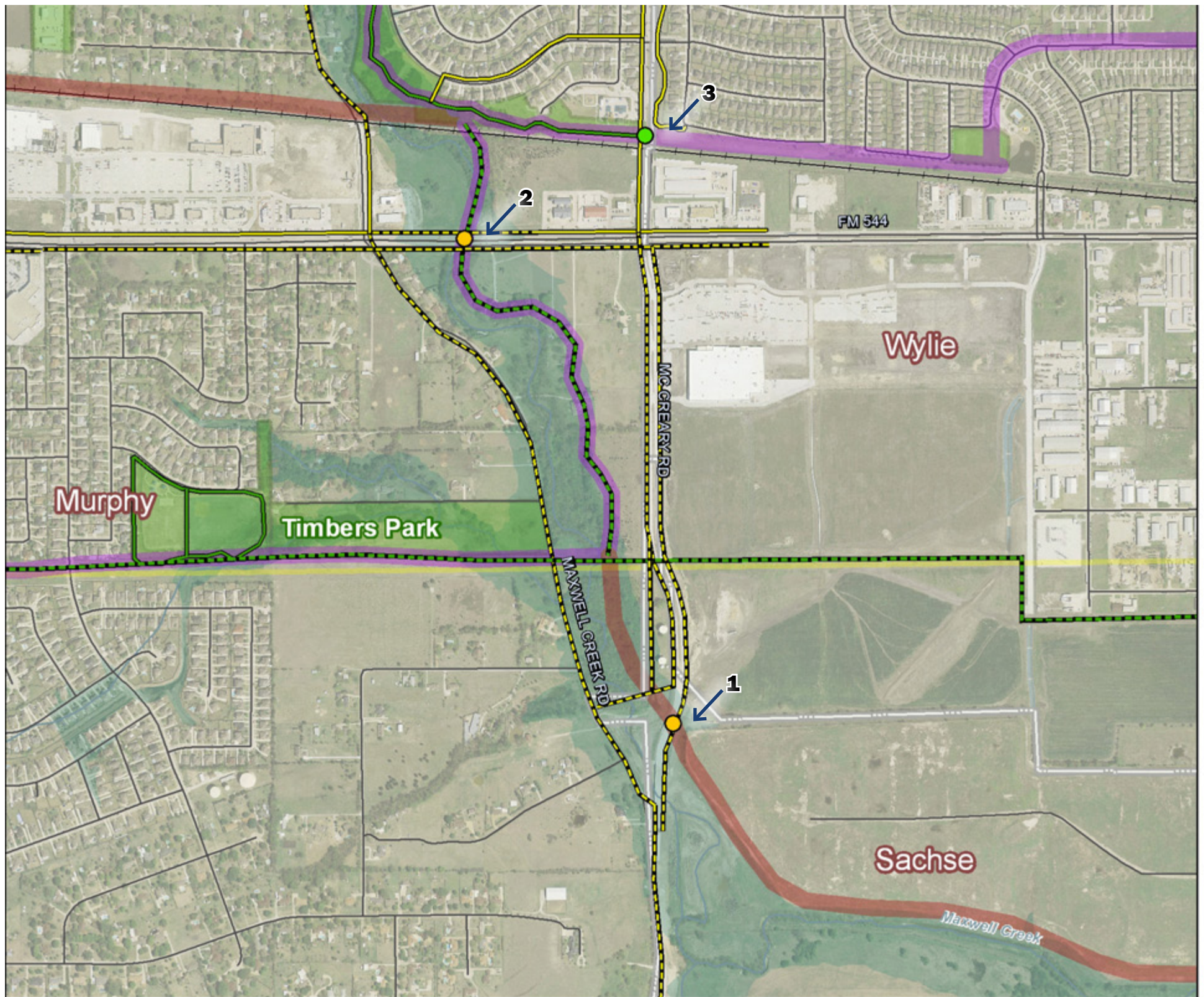
This location contains two connection points—one from Murphy to Wylie along the KCS railroad and one from Murphy to Sachse along Maxwell Creek.

1. The new bridge on McCreary Road has adequate clearance for a trail crossing. There is greater clearance on northeast side of creek than on the southwest side. The primary issue here is that the creek channel in this location is not deep and therefore may inundate the entire area under the bridge during significant rain events, causing the trail to flood.

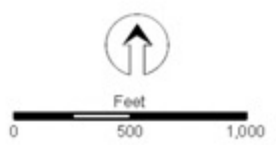
2. The FM 544 bridge has adequate clearance on the west side of the creek.
3. A mid-block crossing of McCreary Road near Waters Edge Park in Murphy will be required just north of the KCS tracks.



Looking north on the west side of the McCreary Road bridge over Maxwell Creek.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



06

Connection Point #07

Location: Along Maxwell Creek at Highway 78

Cities Connected: Wylie and Sachse

Type of Connection: Creek

Existing / Planned Facilities

- Wylie: hard surface trails (existing and planned)
- Sachse: none

Key Issues

Though two Major Trail Corridor alignments are visible on this map, the primary consideration with this connection point is the crossing under Highway 78 because it crosses city limits to connect Wylie to Sachse.

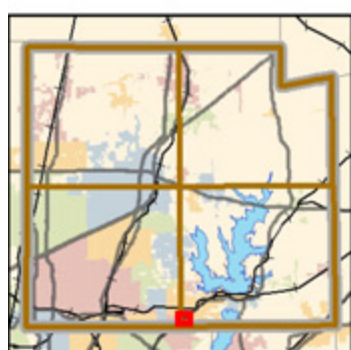
1. The Highway 78 Bridge has adequate vertical and lateral clearance for a trail connection. However, there is significant channeling of earth under the bridge (potentially from bridge drainage) and a very shallow channel (which likely results in regular inundation). The railroad bridge just north of Highway 78 also has adequate clearance.
2. Though not part of the intercity connection, the Sanden Boulevard bridge and Highway 78 bridge over Muddy Creek were both field inspected and found to have adequate clearance for a trail.



Looking north at the Highway 78 bridge.



Looking north at the railroad bridge.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/ Programmed Hard Surface Planned/ Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/ Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



07



Connection Point #08

Location: Along Muddy Creek at Parker Road

Cities Connected: Lucas, Parker, and Wylie

Type of Connection: Creek

Existing / Planned Facilities

- Lucas: soft surface trails (planned)
- Parker: hard surface trails (planned)
- Wylie: none

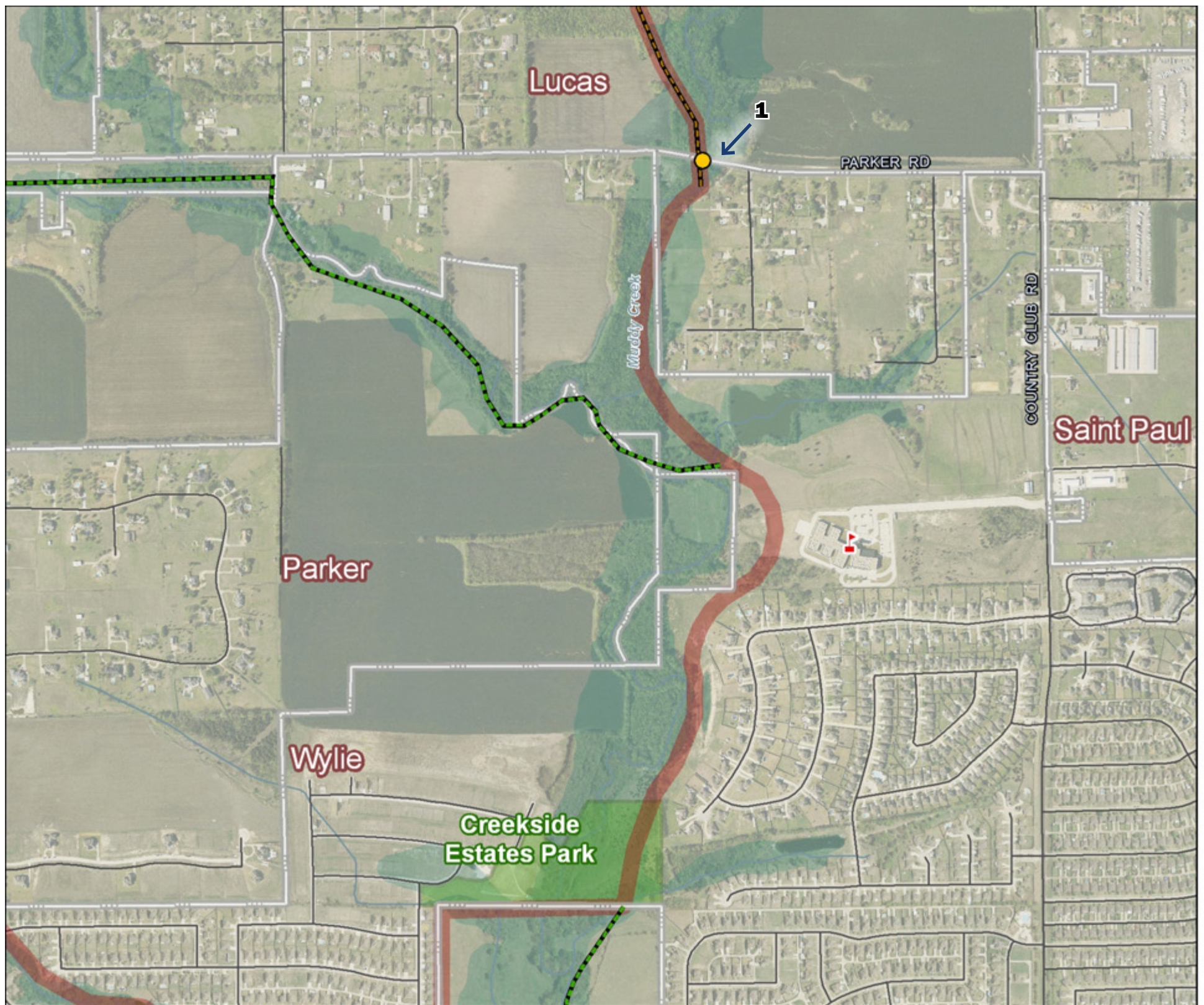
Key Issues

The key challenge with this connection point is interjurisdictional cooperation and commitment considering this area is relatively undeveloped. This alignment may be eligible for Safe Routes to School funding.

1. The Parker Road bridge provides adequate clearance, though a bench/shelf for the trail should be constructed to minimize future maintenance.



The Parker Road bridge over Muddy Creek provides adequate clearance, but requires a bench/shelf in order to minimize sedimentation of the future trail. If this bridge is reconstructed in the future, wide shoulders and sidewalks should be included to allow cyclists and pedestrians to cross the creek safely.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



08

Connection Point #09

Location: Along McWhirter Road between Maxwell Creek and McCreary Road

Cities Connected: Murphy, Wylie, and Parker

Type of Connection: Roadway

Existing / Planned Facilities

- Murphy: hard surface trails along Maxwell Creek (planned)
- Parker: none
- Wylie: hard surface trails (planned)

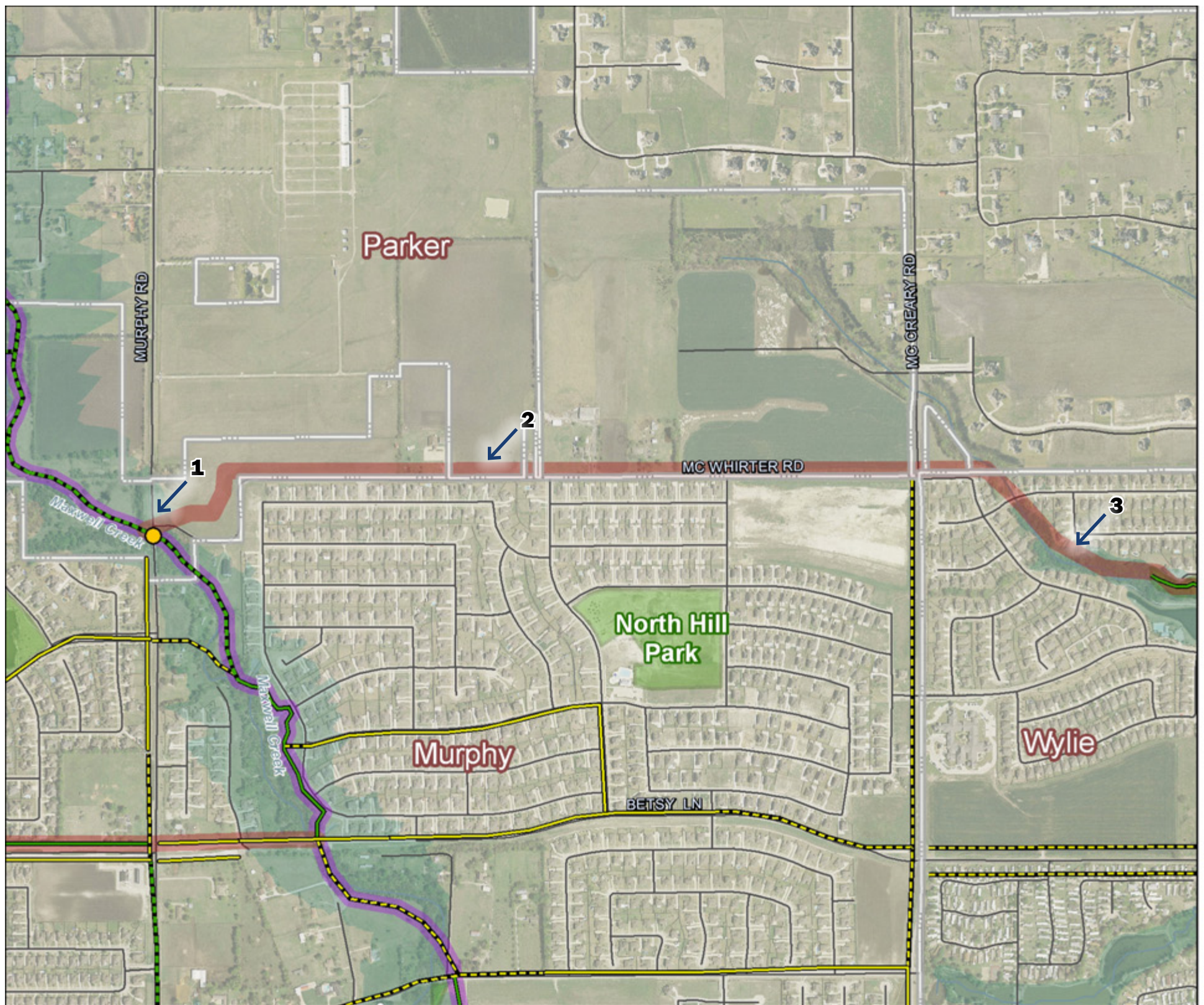
Key Issues

1. The north-south spine corridor along Maxwell Creek passes under Murphy Road. This bridge has adequate vertical clearance (with greater overall clearance on the southwest side) but will require a trail bench/shelf.
2. The connection through Parker runs along McWhirter Road (CR 247) on the north side. There appears to be adequate right-of-way for this connection.
3. From Creekside Park in Wylie to McWhirter Road might be challeng-

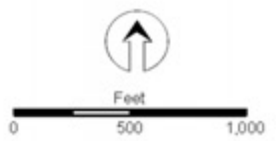
ing due to the narrow width of the creek corridor. The property lines of the adjacent development extend to the creek centerline.



Looking northwest at the Murphy Road bridge over Maxwell Creek.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



09



Connection Point #10

Location: Along Maxwell Creek at the Allen / Parker border (near Chaparral Drive)

Cities Connected: Allen and Parker

Type of Connection: Creek or Roadway

Existing / Planned Facilities

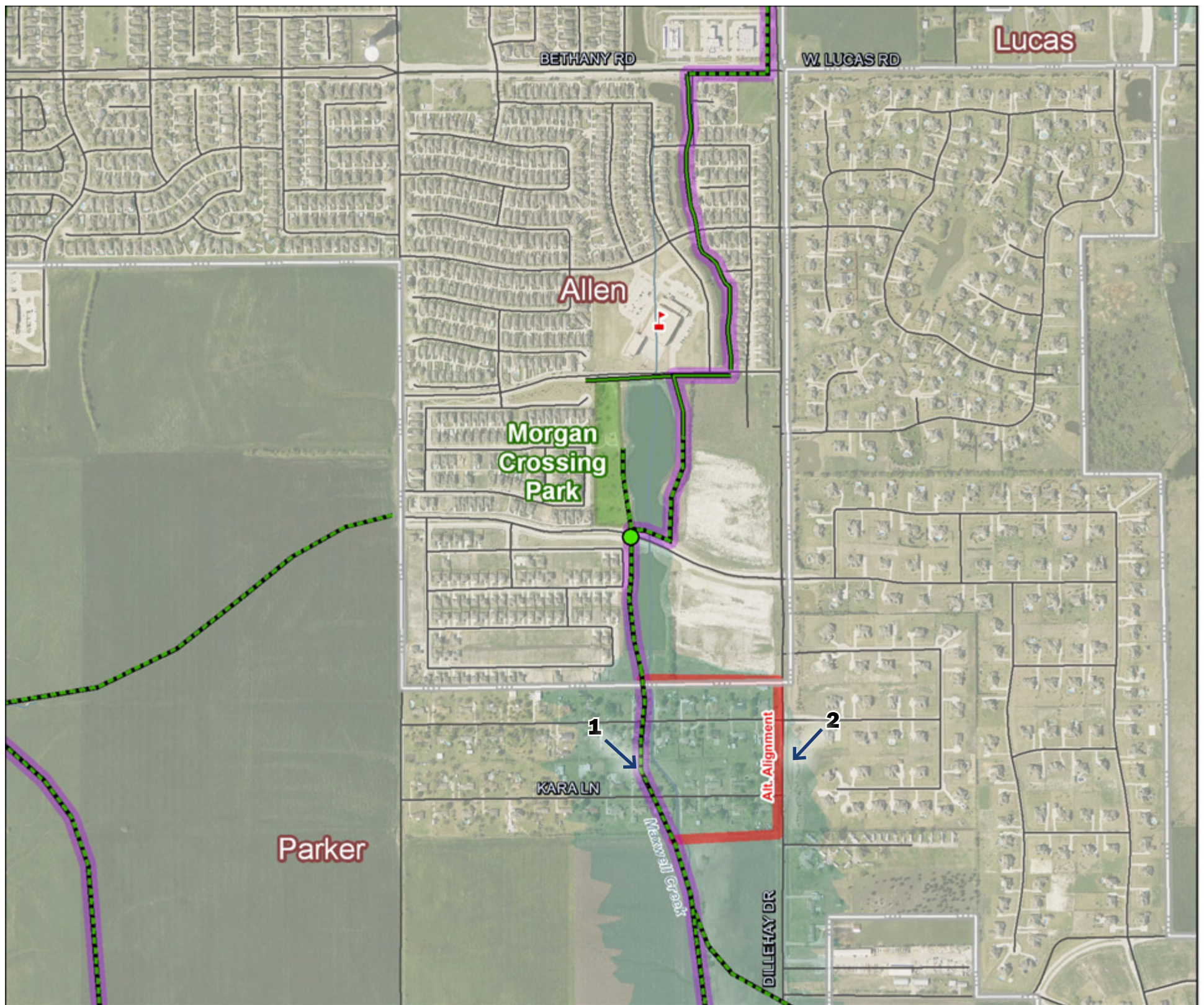
- Allen: hard surface trails (planned)
- Parker: hard surface trails (planned)

Key Issues

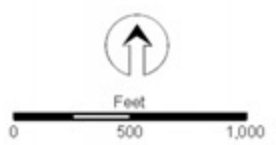
1. The primary challenge with this connection is that the planned trail in Parker (by the city) passes through an existing neighborhood as it follows Maxwell Creek. The creek flows through residential properties in a concrete channel. All of these properties are completely within the floodplain.
2. The alternative alignment is to follow Dillehay Road around this neighborhood.



Looking south (top) and north (above) along Maxwell Creek as it crosses Kara Lane.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



10

Connection Point #11

Location: Along Cottonwood Creek at Chaparral Road

Cities Connected: Allen, Plano, and Parker

Type of Connection: Creek

Existing / Planned Facilities

- Allen: hard surface trails (existing and planned)
- Plano: hard surface trails (planned)
- Parker: none

Key Issues

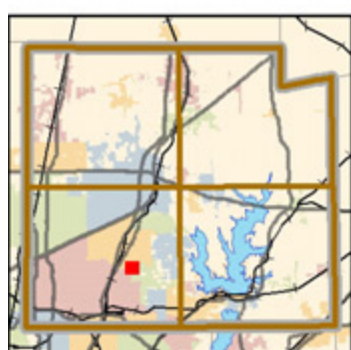
The City of Plano owns land south of the new Chapparral Road extension and there are existing trails in Allen to the north. However, the connection from the south and the east passes through private property (two ~7 acre residential lots) between the new Chapparral Road extension and the Plano / Allen border.

1. The preferred alignment would require acquisition of land from two private residences in order to connect between the Chapparral Road extension and the existing trail in Allen.

2. As an alternative, with the Chapparral Road extension complete, the trail can cross under Chapparral and run alongside the roadway east to the existing trails in Allen.



Looking west at the Chapparral Road and Brook Ridge Avenue intersection.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



11



Connection Point #12

Location: Along Rowlett Creek at Highway 75

Cities Connected: Allen and Plano

Type of Connection: Creek

Existing / Planned Facilities

- Allen: hard surface trails (existing and planned)
- Plano: hard surface trails (existing and planned)

Key Issues

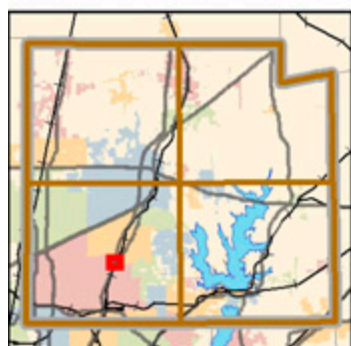
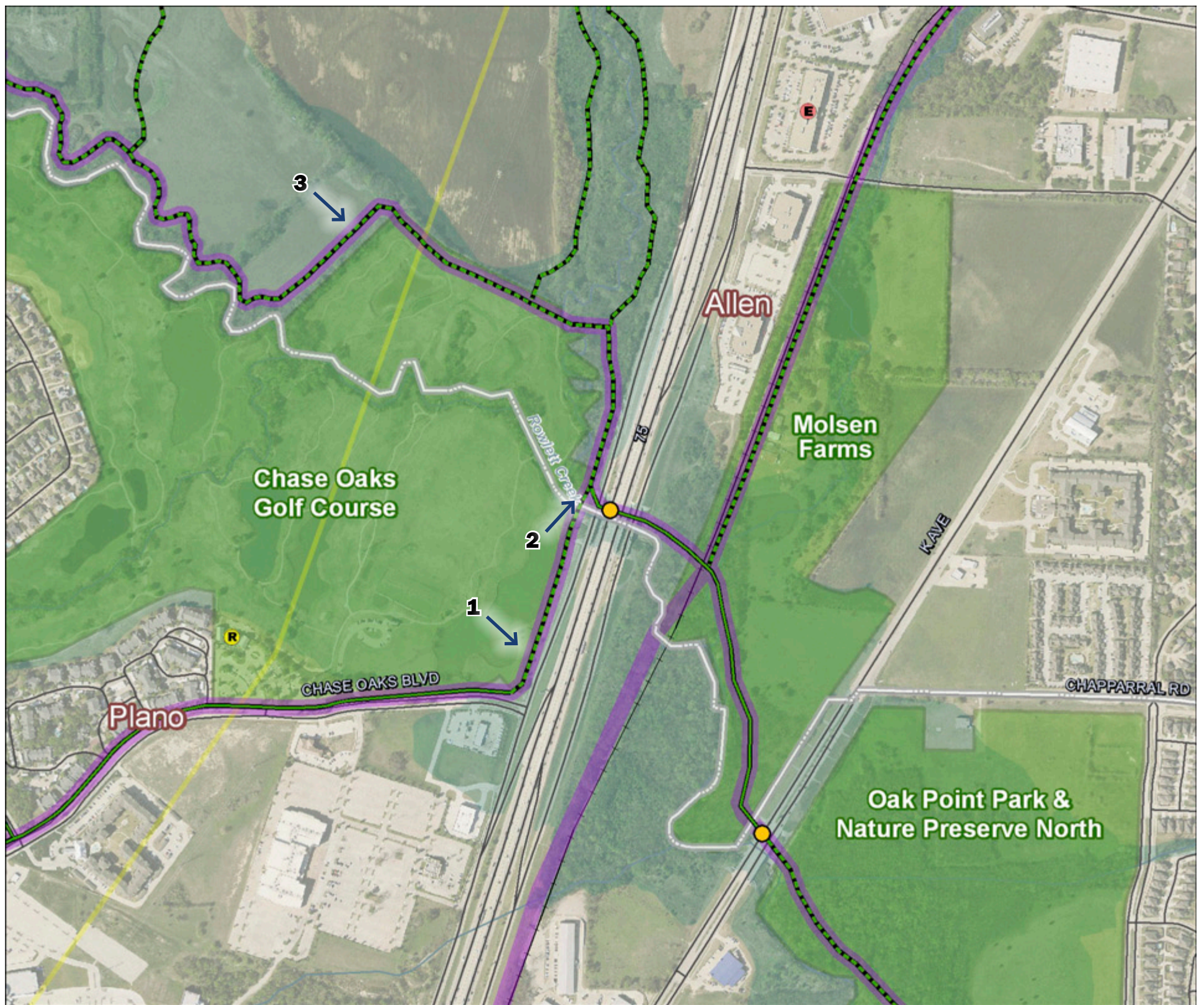
This connection has largely been completed. There is an existing trail in Allen from 75 to Greenville. The crossings under 75 and the DART line are constructed (tunnel under DART line).

1. In order to complete the intercity connection, Plano needs to build a trail from the existing trail along Chase Oaks Boulevard, around the edge of the golf course, to Rowlett Creek.
2. A trail bridge over Rowlett Creek is required to complete the connection.
3. It is also recommended that Allen complete the trails on the west side

of Highway 75 in order to provide a north-south connection with Plano.



Looking northeast at the trail crossing under Highway 75.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain



Connection Point #13

Location: Along Russell Creek at Custer Parkway and Hedgecoxe Road

Cities Connected: Allen and Plano

Type of Connection: Creek

Existing / Planned Facilities

- Allen: hard surface trails (existing and planned)
- Plano: hard surface trails (existing and planned)

Key Issues

One of the unique characteristics of this connection is that it cross a small corner of Allen and connects to Plano on both ends. This is similar to Connection Point #17. Another unique characteristic is that this connection does not fall along a Major trail Corridor. However, this is a very important intercity connection nonetheless.

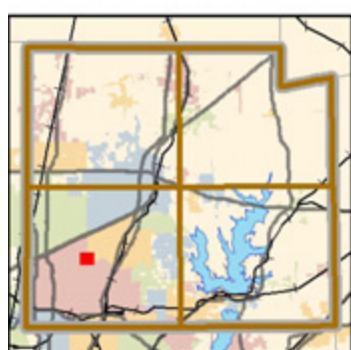
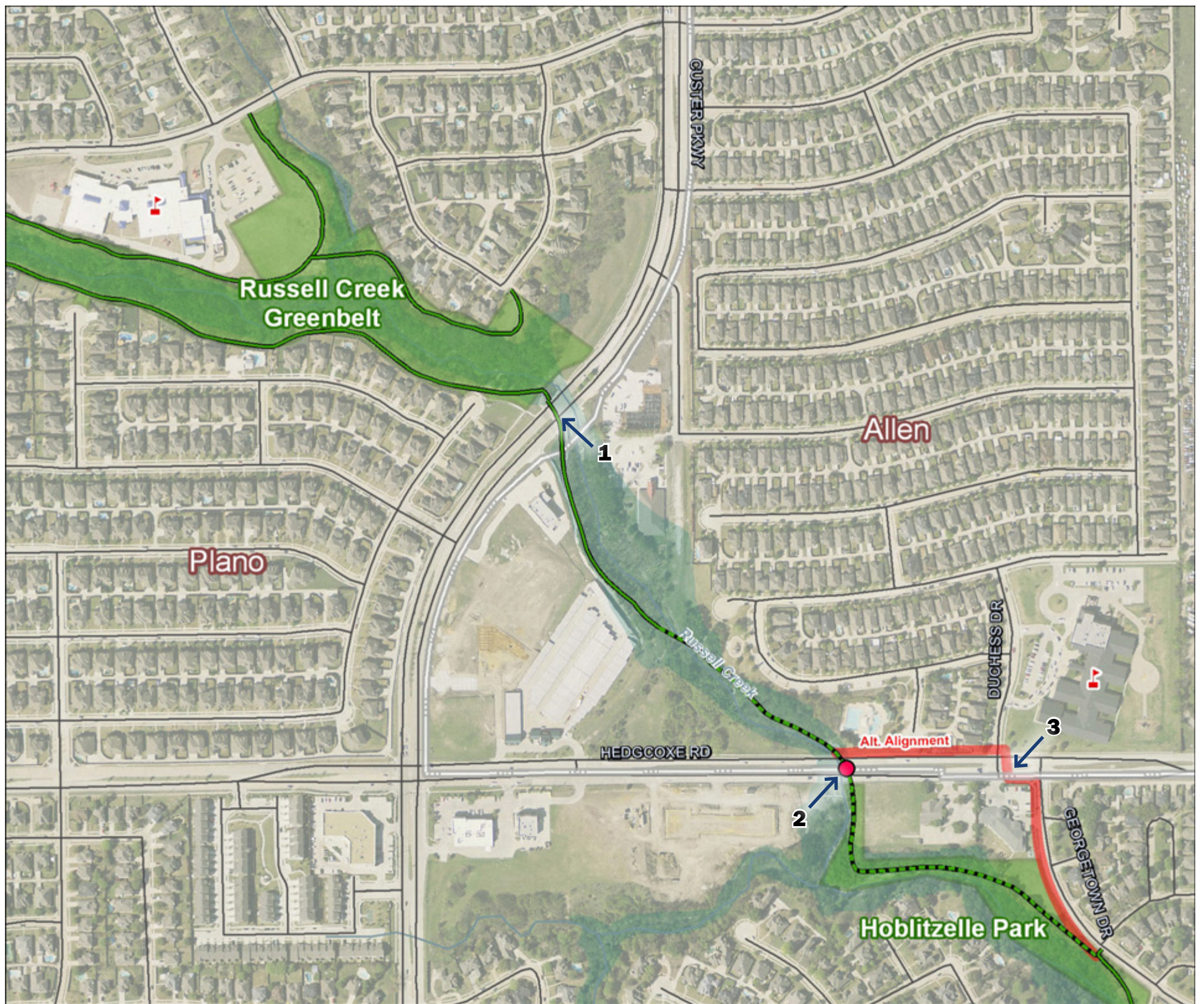
1. The existing trail connection between Plano and Allen across Custer Parkway partially addresses the connectivity issue.
2. However, the connection across Hedgecoxe Road, where the creek passes underneath it through a culvert, is the greatest limiting challenge at this location. The planned crossing option would therefore imply a mid-block crossing. Because the median of Hedgecoxe Road

is fairly wide, an off-set mid-block crossing—where the trail crosses the west-bound lanes, runs along the median across the bridge, then crosses the east-bound lanes—might be an option.

3. As an alternative, a sidepath could be constructed along the north side of Hedgecoxe Road, which contains an existing 5' sidewalk (this sidewalk has significant ADA compliancy issues). Trail users could then cross at Duchess (existing signal) and a sidepath could be constructed along Georgetown Drive to connect to the existing trail.



Two views of Hedgecoxe Road looking east.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			





Connection Point #14

Location: Along Shady Brook Creek or Windhaven Parkway at the Union Pacific Railroad

Cities Connected: The Colony and Plano

Type of Connection: Creek, Railroad, and Roadway

Existing / Planned Facilities

- The Colony: hard surface trails (existing) along Windhaven Parkway and hard surface trails (planned) along the railroad and Plano Parkway
- Plano: hard surface trails (existing and planned) along Shady Brook Creek and hard surface trails (planned) along the railroad

Key Issues

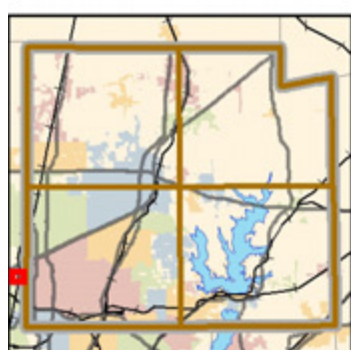
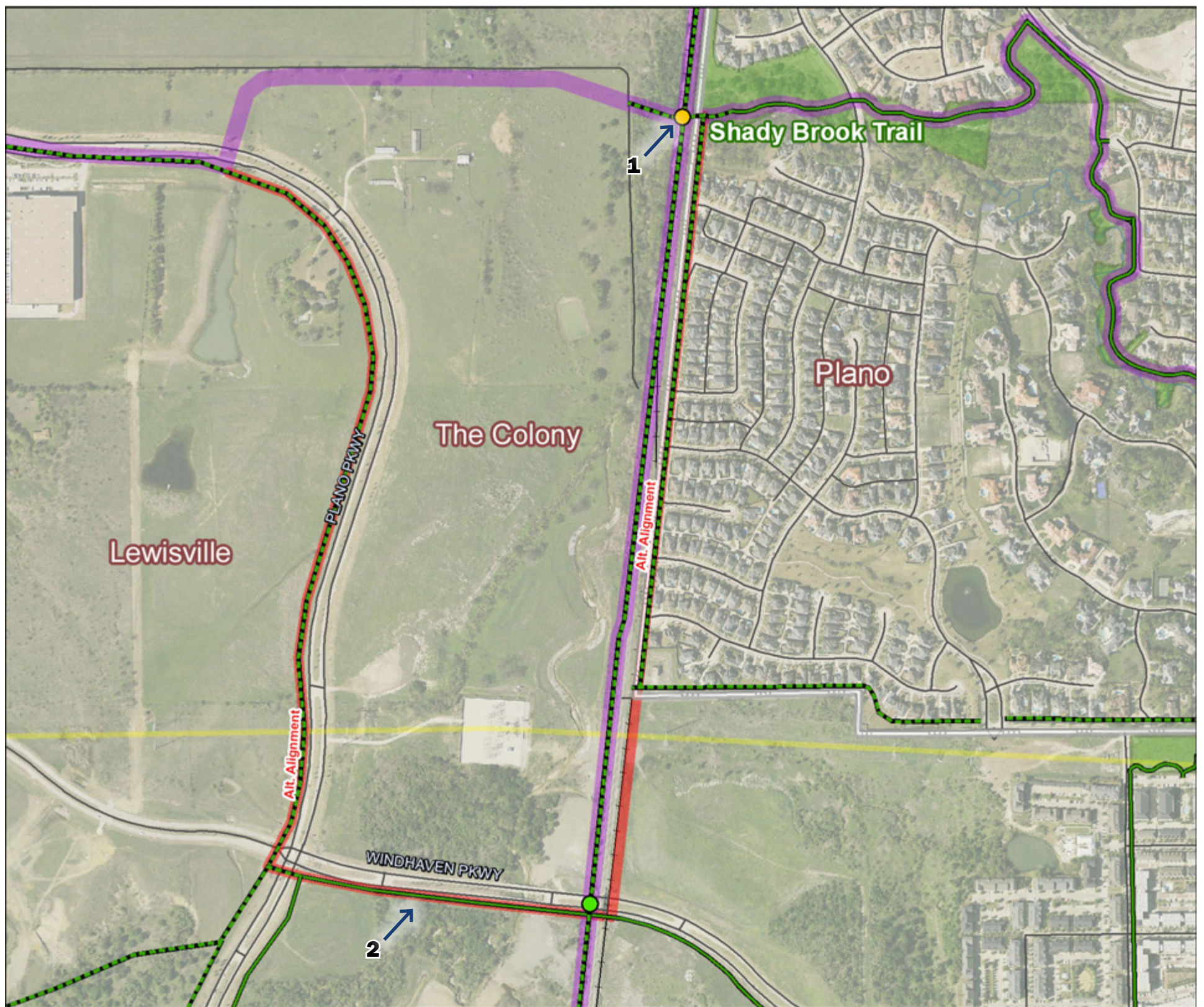
While this connection point is outside of Collin County, it provides an important intercity connection between Plano and The Colony.

1. The preferred and most direct connection is to cross under the railroad at the existing bridge. This would require a trail bench/shelf.
2. An alternative is to build a trail on the east side of the railroad tracks down to Windhaven Parkway, utilize the existing grade-separated crossing there, then follow the existing sidepath to Plano Parkway, where a new sidepath would need to be built. This alternative requires

a significantly greater amount of trail construction than the preferred, more direct alignment.



Looking southwest toward the railroad bridge.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



Connection Point #15

Location: Along the Union Pacific Railroad at State Highway 121

Cities Connected: The Colony, Frisco, and Plano

Type of Connection: Railroad or Roadway

Existing / Planned Facilities

- The Colony: hard surface trails (planned)
- Frisco: hard surface trails (planned)
- Plano: none

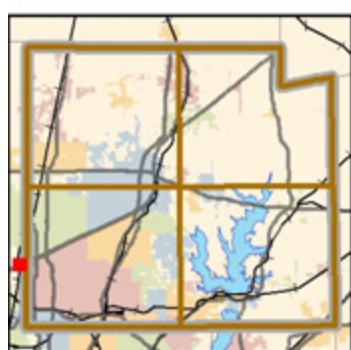
Key Issues

While this connection point is outside of Collin County, it provides an important intercity connection between Plano, Frisco, and The Colony.

1. This crossing utilizes the SH 121 bridge over the railroad track. This bridge provides ample vertical and lateral clearance. The challenge will be coordinating with the railroad (Union Pacific) to allow the trail within or partially within their ROW.



Looking north at the Highway 121 bridge over the Union Pacific railroad.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



15



Connection Point #16

Location: Along White Rock Creek at State Highway 121

Cities Connected: Frisco and Plano

Type of Connection: Creek

Existing / Planned Facilities

- Frisco: soft surface trails (planned)
- Plano: hard surface trails (planned)

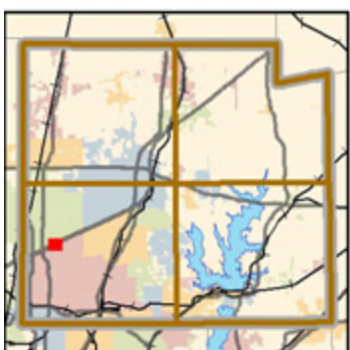
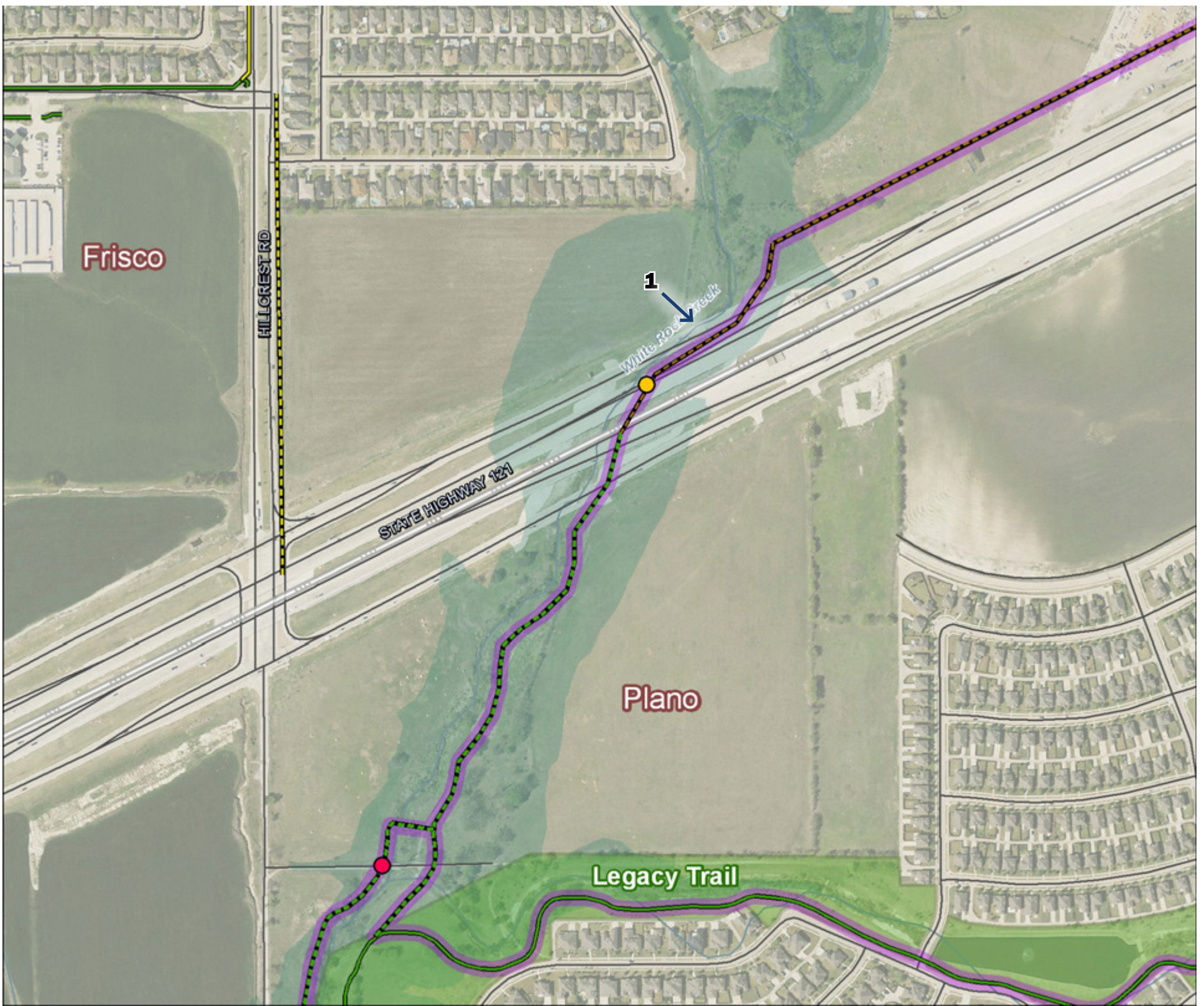
Key Issues

This crossing has very few challenges other than dealing with the hydrologic issues inherent in building a trail in the floodplain. As such, erosion and sedimentation may be maintenance concerns.

1. This connection might require a bridge or low water crossing under or just north of the SH 121 bridge due to the limited distance between the bridge piers and the creek bank.



Looking southwest at the State Highway 121 bridge.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



Connection Point #17

Location: Along West Rowlett Creek between State Highway 121 and Ridgeview Drive

Cities Connected: Frisco, Plano, and Allen

Type of Connection: Creek

Existing / Planned Facilities

- Frisco: soft surface trails (planned)
- Plano: none
- Allen: hard surface trails (planned)

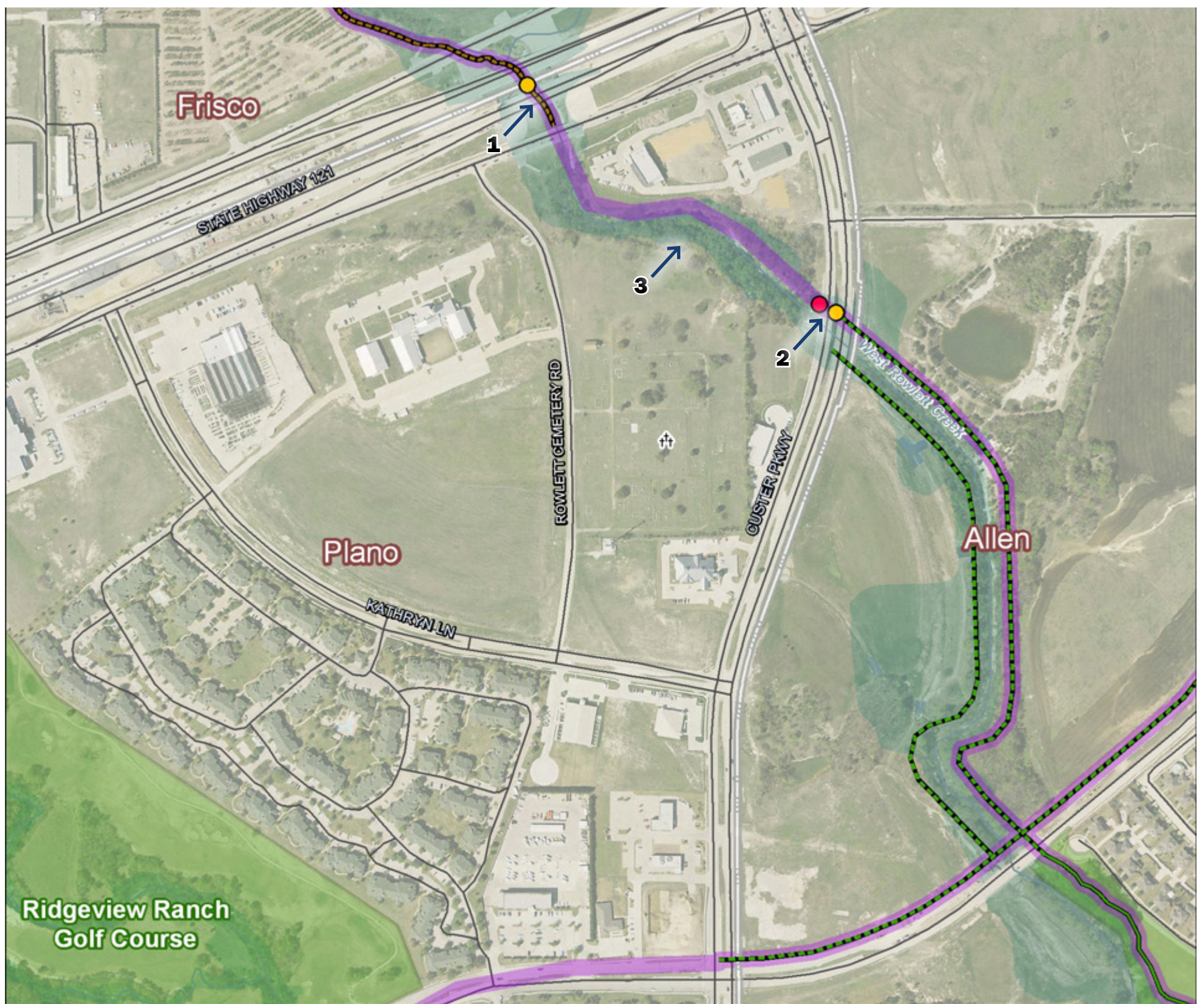
Key Issues

Similar to Connection Point #13, this alignment crosses a small corner of Plano and connects to Frisco and Allen on either end. Therefore, the benefit of this connection, while in Plano, is for the citizens of Allen and Frisco.

1. The SH 121 bridges over Rowlett Creek provide ample vertical and lateral clearance.
2. There is ample vertical and lateral clearance under the Custer Road bridge, but there is a sewer pipeline that might cause clearance issues.
3. If the new trail were to be constructed on the south side of Rowlett Creek, access to the adjacent cemetery would be provided, rather than the trail running along the back of a parking lot of commercial properties.



Looking northeast at the Custer Road bridge. The sewer pipeline is visible below the bridge.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> — Equestrian Existing — Equestrian Planned — Hard Surface Existing/Programmed — Hard Surface Planned/Proposed — Mixed, Existing — Mixed, Proposed — Sidewalk, Existing — Sidewalk, Proposed — Soft Surface Existing — Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors <p>Major Crossing Opportunities & Constraints</p> <ul style="list-style-type: none"> ● At-Grade Crossing - Mid-block ● Grade-Separated Crossing - Barrier ● Grade-Separated Crossing - Possibility 	<ul style="list-style-type: none"> + Cemeteries + Libraries + Hospitals + Major Employment Centers + Recreation Centers + Schools - 8th Grade and Under + Schools - Over 8th Grade + DART Rail Stations 	<ul style="list-style-type: none"> — DART Red Line, Existing — DART Cotton Belt, Planned — County Boundary — Utility Lines — Streets & Roads — Railroad Lines Parks Lakes 100 Year Floodplain





Connection Point #18

Location: Along Cottonwood Creek at State Highway 121

Cities Connected: McKinney and Allen

Type of Connection: Creek

Existing / Planned Facilities

- McKinney: hard surface trails (existing and planned)
- Allen: hard surface trails (planned)

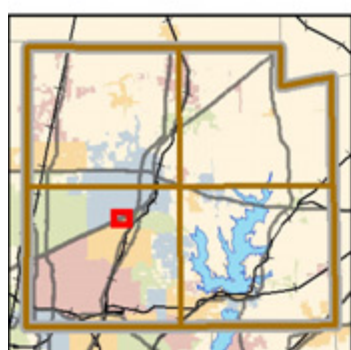
Key Issues

There are not any major issues regarding this intercity connection.

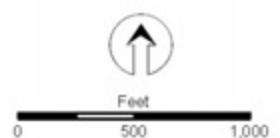
1. The SH 121 bridges have greater clearance on the east side of the creek, though it appears that either side could accommodate a trail crossing.



Looking northeast at the State Highway 121 bridge. The creek crosses under the bridge on the far side of the row of columns near the middle of the image.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



18

Connection Point #19

Location: Along Ridgeview Drive at US Highway 75

Cities Connected: Allen and Fairview

Type of Connection: Roadway

Existing / Planned Facilities

- Allen: hard surface trails (planned)
- Fairview: hard surface trails (planned)

Key Issues

This connection will utilize the Ridgeview Drive bridge when the road is reconstructed.

1. The new Ridgeview Drive bridge should be of adequate width to provide sidepaths for cyclists and pedestrians on one or both sides of the roadway.
2. In order to cross the railroad track, a trail will need to follow Fairview Parkway south, cross the railroad track, then continue north along the east side of the track.



Looking west at the existing Ridgeview Drive bridge over US-75. The current bridge is too narrow for a trail connection.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			





Connection Point #20

Location: Along The DART-owned railroad at Country Club Road

Cities Connected: McKinney and Fairview

Type of Connection: Railroad

Existing / Planned Facilities

- McKinney: hard surface trails (planned)
- Fairview: hard surface trails (planned)

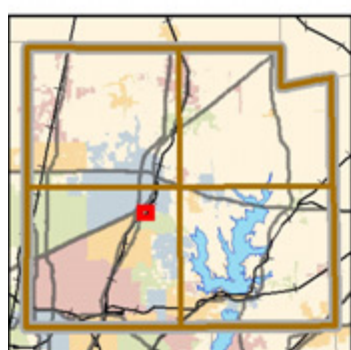
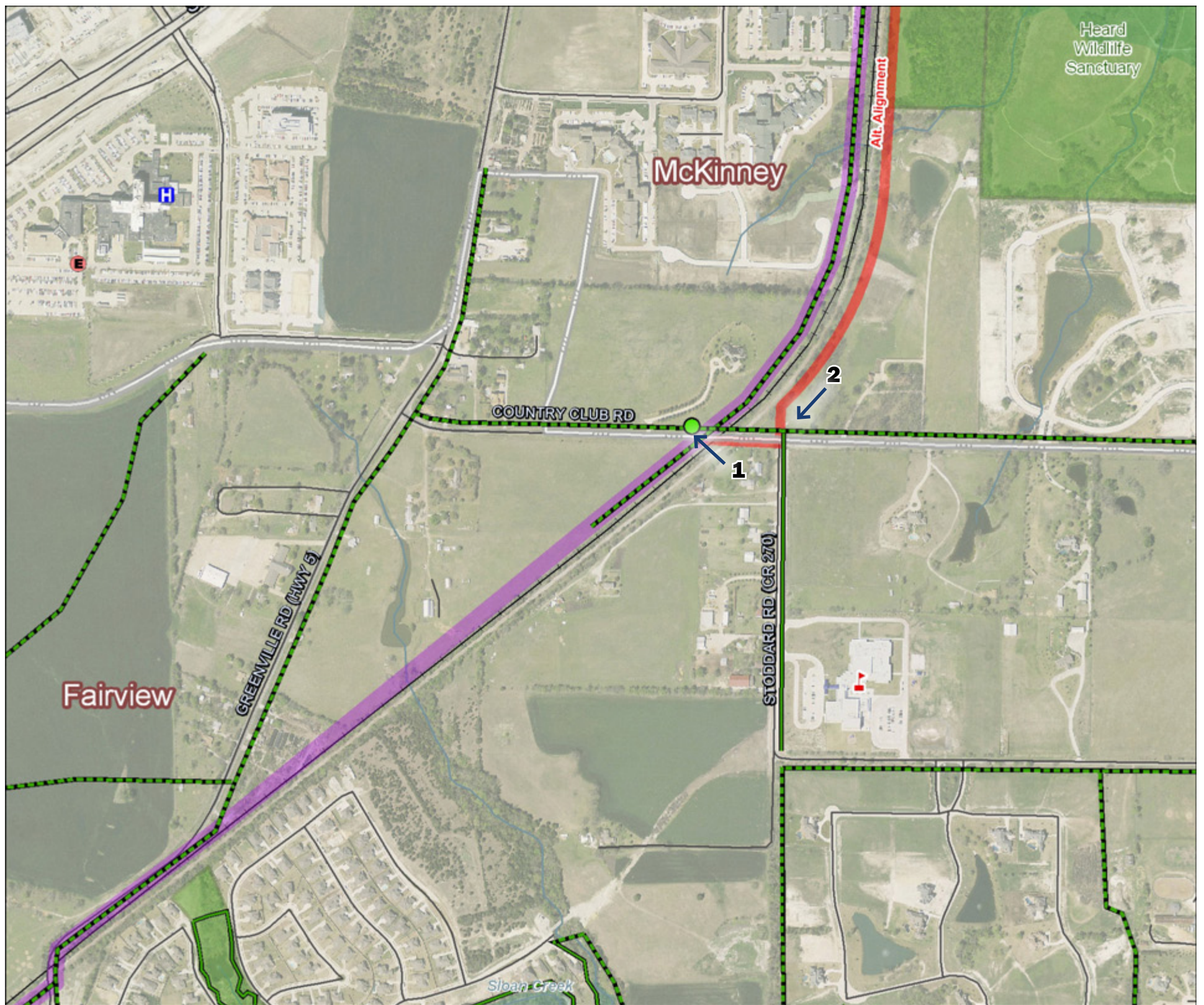
Key Issues

South of Country Club Road, there is potentially more available right-of-way on the western side of the railroad track. However, north of Country Club Road, there is more available right-of-way on the east side and the future trail could connect to the Heard Nature Center.

1. This planned alignment for this connection will require a mid-block crossing of Country Club Road.
2. Alternatively, a sidepath could be constructed from the railroad track to Stoddard Road (CR 270) and cross at that location. This would require the sidepath to cross the railroad tracks along Country Club Road.



Looking northeast at the Country Club Road railroad crossing.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



20

Connection Point #21

Location: Along Stonebridge Drive at Custer Road

Cities Connected: McKinney and Frisco

Type of Connection: Roadway and Creek

Existing / Planned Facilities

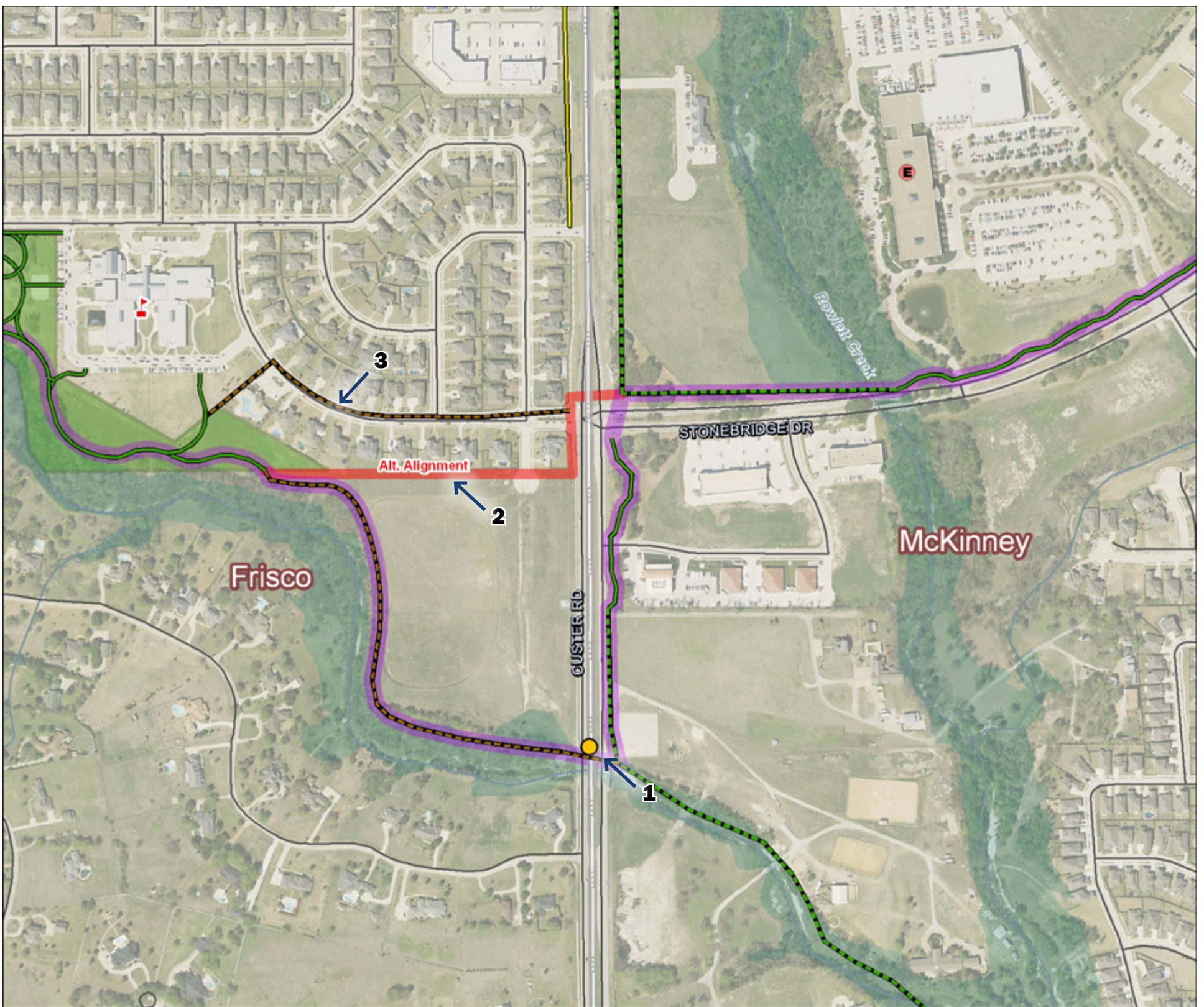
- McKinney: hard surface trails (existing and planned)
- Frisco: soft surface trails (existing) and hard surface trails (planned)

Key Issues

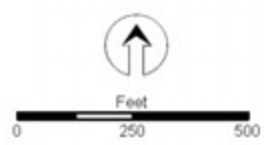
1. Due to the steep slopes of the creek banks, it is questionable whether there is adequate clearance for a trail crossing under Custer Road at this location. Further study of this area is recommended.
2. As an alternative, trail users can cross Custer Road at Stonebridge Road. A sidepath along Custer Road for a short distance and a trail along the backside of the existing neighborhood would complete the connection to the existing trails at Stephen's Green Park.
3. The planned trail connection along Stonebridge Drive east of Custer Road is not advisable as part of a Major Trail Corridor because the right-of-way does not allow for a trail of adequate width.



Looking southwest at the Custer Road bridge.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			





Connection Point #22

Location: Along the Union Pacific Railroad at US Highway 380

Cities Connected: Frisco and Prosper

Type of Connection: Railroad

Existing / Planned Facilities

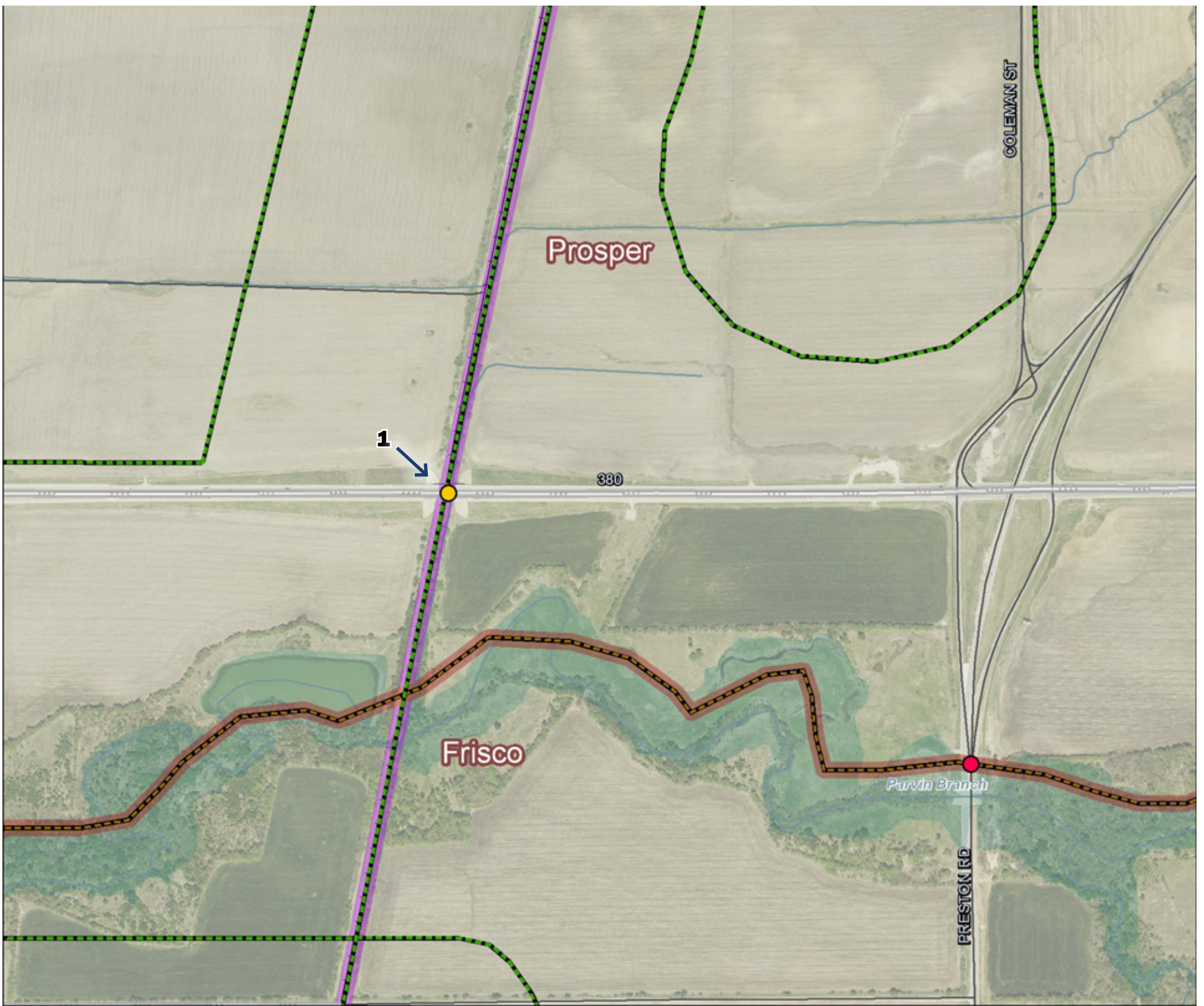
- Frisco: hard surface trails (planned)
- Prosper: hard surface trails (planned)

Key Issues

1. The Highway 380 bridge over the railroad tracks provides ample vertical clearance. There is currently ample lateral clearance as well. Coordination with the railroad company is important to reduce conflicts.



Looking north at the railroad crossing under US Highway 380.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



22

Connection Point #23

Location: Along the Union Pacific Railroad at Spur 439 / County Road 5

Cities Connected: Prosper and Celina

Type of Connection: Railroad

Existing / Planned Facilities

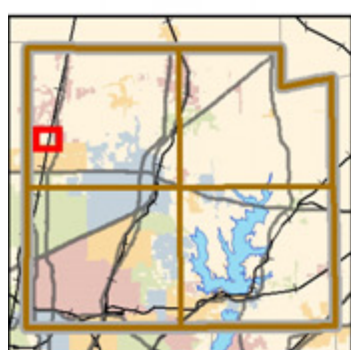
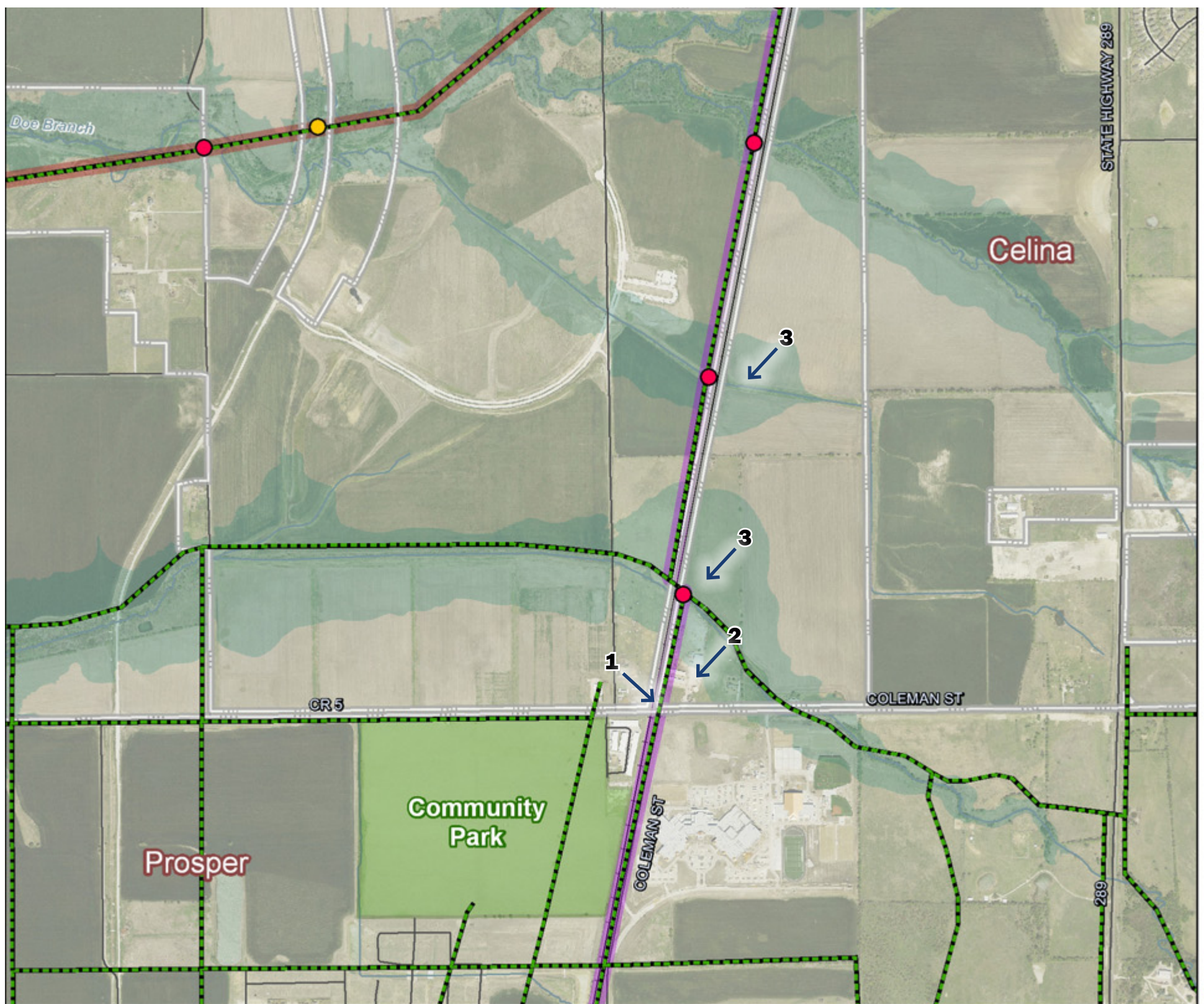
- Prosper: hard surface trails (planned)
- Celina: none

Key Issues

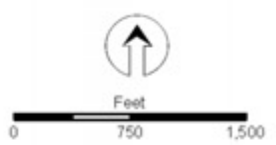
1. The intersection of Coleman Street and CR 5 will require crosswalks and curb ramps to accommodate a trail crossing.
2. There is a potential lack of right-of-way north of Spur 439 due to existing development, specifically on the east side of the railroad tracks.
3. North of Spur 439, this alignment crosses several creeks. Trail bridges or low water crossings will be necessary in these locations.



Looking north at the railroad crossing County Road 5.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> — Equestrian Existing - - - Equestrian Planned — Hard Surface Existing/Programmed - - - Hard Surface Planned/Proposed — Mixed, Existing - - - Mixed, Proposed — Sidewalk, Existing - - - Sidewalk, Proposed — Soft Surface Existing - - - Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors <p>Major Crossing Opportunities & Constraints</p> <ul style="list-style-type: none"> ● At-Grade Crossing - Mid-block ● Grade-Separated Crossing - Barrier ● Grade-Separated Crossing - Possibility 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> — DART Red Line, Existing - - - DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain





Connection Point #24

Location: Along Gentle Creek and Wilson Creek at FM 1461

Cities Connected: Prosper and Celina

Type of Connection: Roadway and Creek

Existing / Planned Facilities

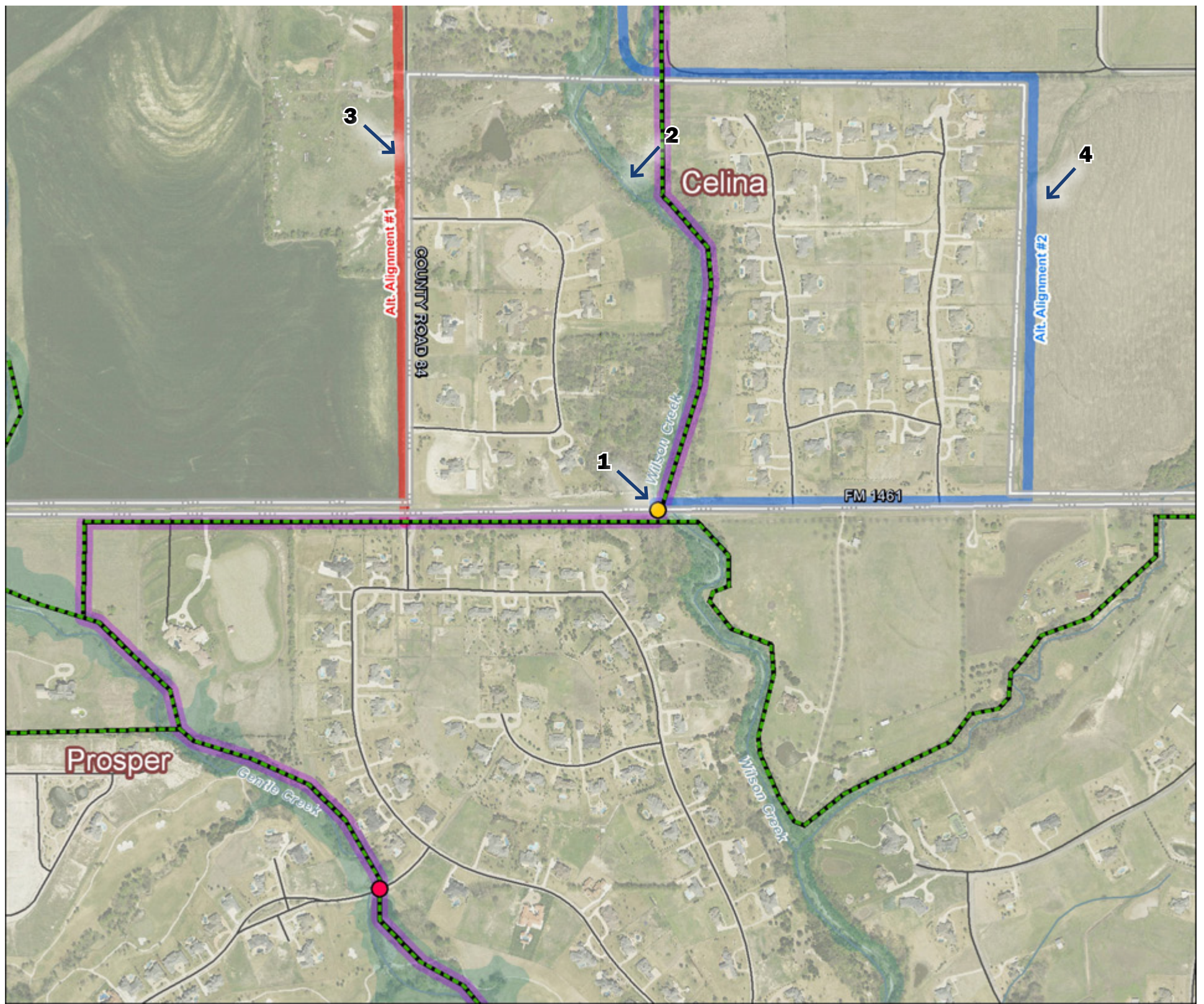
- Prosper: hard surface trails (planned)
- Celina: hard surface trails (planned)

Key Issues

1. There is adequate vertical clearance under the bridge. However, lateral clearance could be an issue, though there might be room to build a bench/shelf to address any lateral issues.
2. On the north side of 1461, in Celina, the primary alignment goes through the backyards of many houses (existing property lines go to center of creek).
3. An alternative is to construct a sidepath along CR 84.
4. A second alternative is to provide a crossing under FM 1461 at Wilson Creek, a sidepath along FM 1461, and a trail around the existing subdivision.



Looking northwest at the creek crossing under FM 1461.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



Connection Point #25

Location: Along Wilson Creek at Custer Road

Cities Connected: McKinney and Prosper

Type of Connection: Creek

Existing / Planned Facilities

- McKinney: hard surface trails (planned)
- Prosper: hard surface trails (existing and planned)

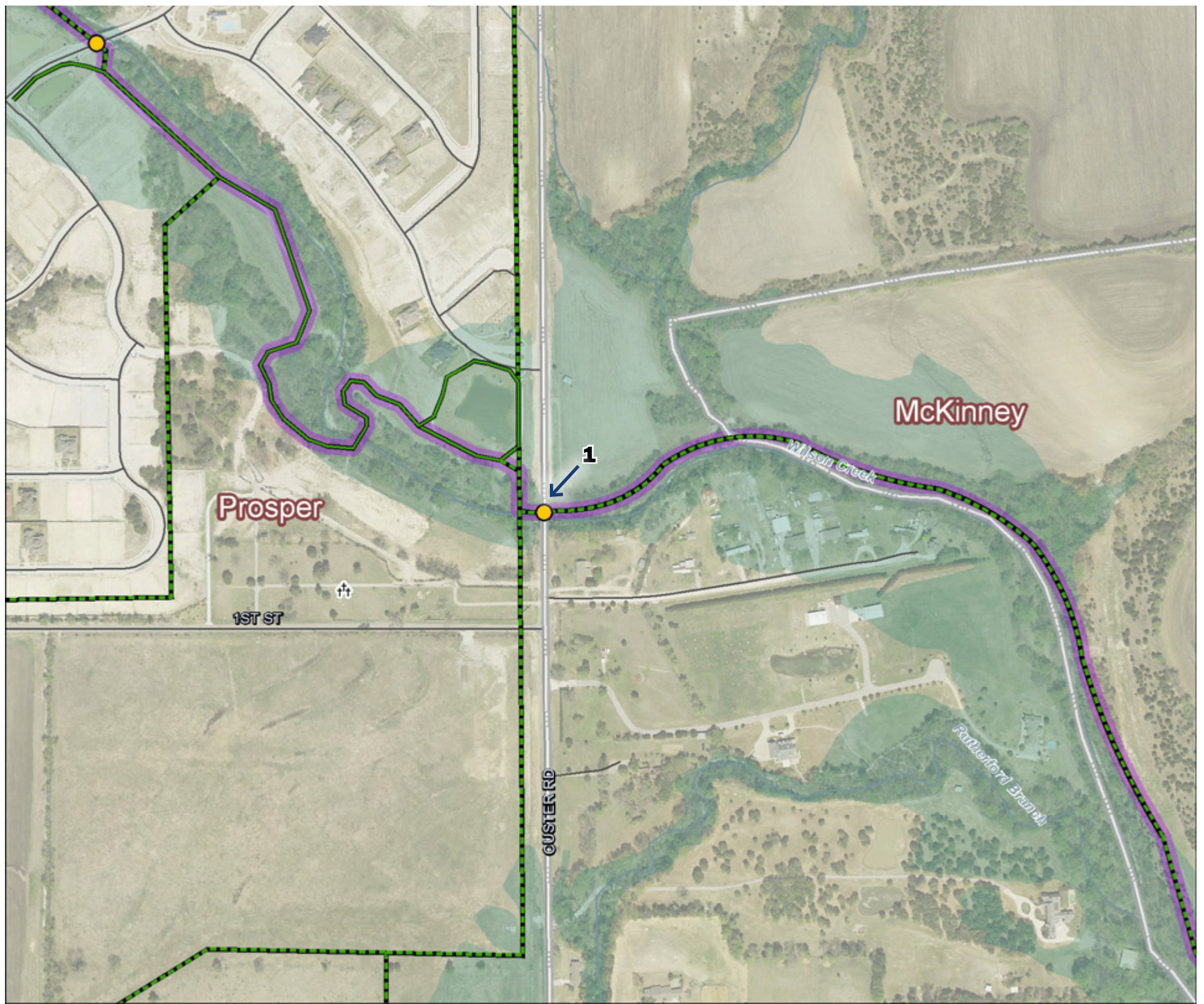
Key Issues

This alignment follows Wilson Creek along its north side from McKinney, crosses under Custer Road, and ties into existing and planned trails in Prosper. This should be a straight-forward connection with few challenges.

1. The Custer Road bridge over Wilson Creek has adequate clearance for a trail undercrossing. This crossing will require benching under the bridge to provide a level area for the trail.



Looking southeast at the creek crossing under Custer Road.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain





Connection Point #26

Location: Along the East Fork of the Trinity River at US Highway 75

Cities Connected: McKinney and Melissa

Type of Connection: Creek

Existing / Planned Facilities

- McKinney: hard surface trails (planned)
- Melissa: none

Key Issues

The Trinity River north of Highway 75 is the Dividing line between McKinney and Melissa ETJs. This connection point provides the opportunity to connect the two cities, both of which are generally undeveloped in this area. The primary challenge with this connection is the substantial floodplain of the East Fork of the Trinity River and the potential maintenance concerns that it provides.

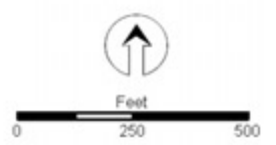
1. The Highway 75 bridge over the Trinity has ample vertical and lateral clearance on both sides.



Looking northwest at the US Highway 75 bridge over the Trinity River (East Fork) floodplain.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



26

Connection Point #27

Location: Along Throckmorton Creek and Slayter Creek at the future Outer Loop

Cities Connected: Anna and Melissa

Type of Connection: Creek

Existing / Planned Facilities

- Anna: hard surface trails (planned)
- Melissa: hard surface trails (planned)

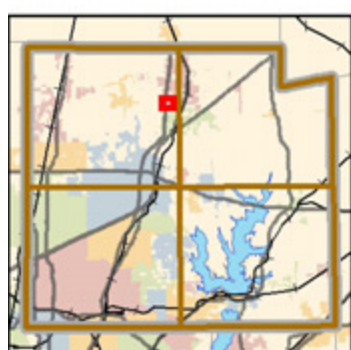
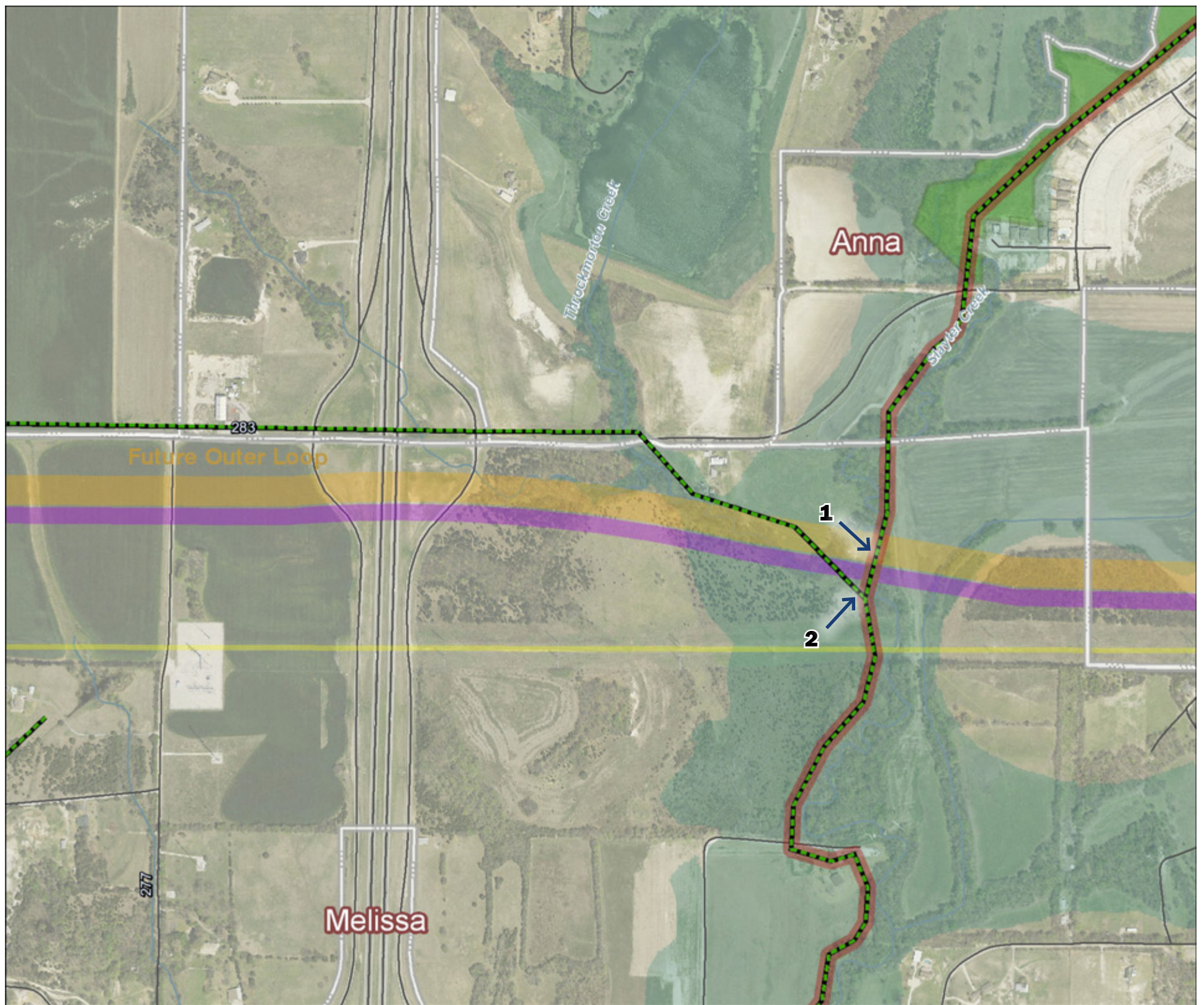
Key Issues

The area around this connection is generally undeveloped. The construction of a trail here may depend on new development and should be encouraged by both cities.

1. The west-bound frontage roads of the Outer Loop are being constructed in advance of the main lanes and the east-bound frontage roads. The bridge has been designed to accommodate a trail crossing underneath it along the creek. The construction of the future components of the Outer Loop must also accommodate a trail crossing in this location along the creek.



Looking south along Slayter Creek at the new Outer Loop frontage road bridge. The trail “bench” is visible under the bridge on the left side of the image.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			





Connection Point #28

Location: Along the DART-owned railroad (former Interurban) and Highway 5 at CR 421

Cities Connected: Anna and Melissa

Type of Connection: Railroad

Existing / Planned Facilities

- Anna: none
- Melissa: none

Key Issues

This intercity connection is in a generally undeveloped area. The trail could be located on either side of the railroad tracks (active but owned by DART). There are a few existing developments (mostly industrial in nature) that may restrict ROW on the eastern side of the railroad tracks. The challenge on the east side is that the land is privately owned by a single landowner estate, although this might be the best place for the trail.

1. The construction of the future Outer Loop must accommodate a trail connection crossing in this location along the railroad tracks.



Looking south along Highway 5. The construction on the left of the image is the west-bound frontage road of the future Outer Loop. The railroad is parallel to the highway behind the row of trees on the right side of the image.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain



28

Connection Point #29

Location: Along an unnamed tributary of Hurricane Creek at US Highway 75

Cities Connected: Anna and Van Alstyne

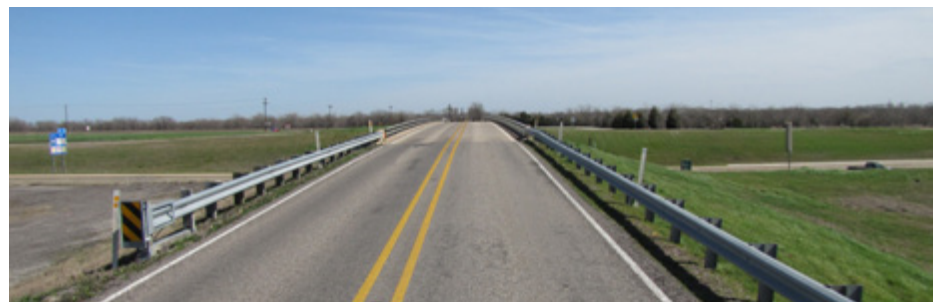
Type of Connection: Creek

Existing / Planned Facilities

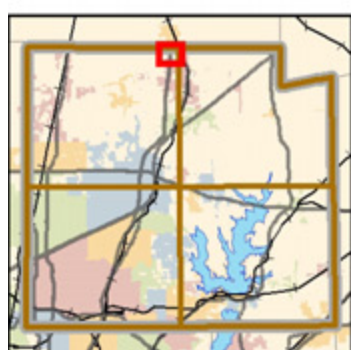
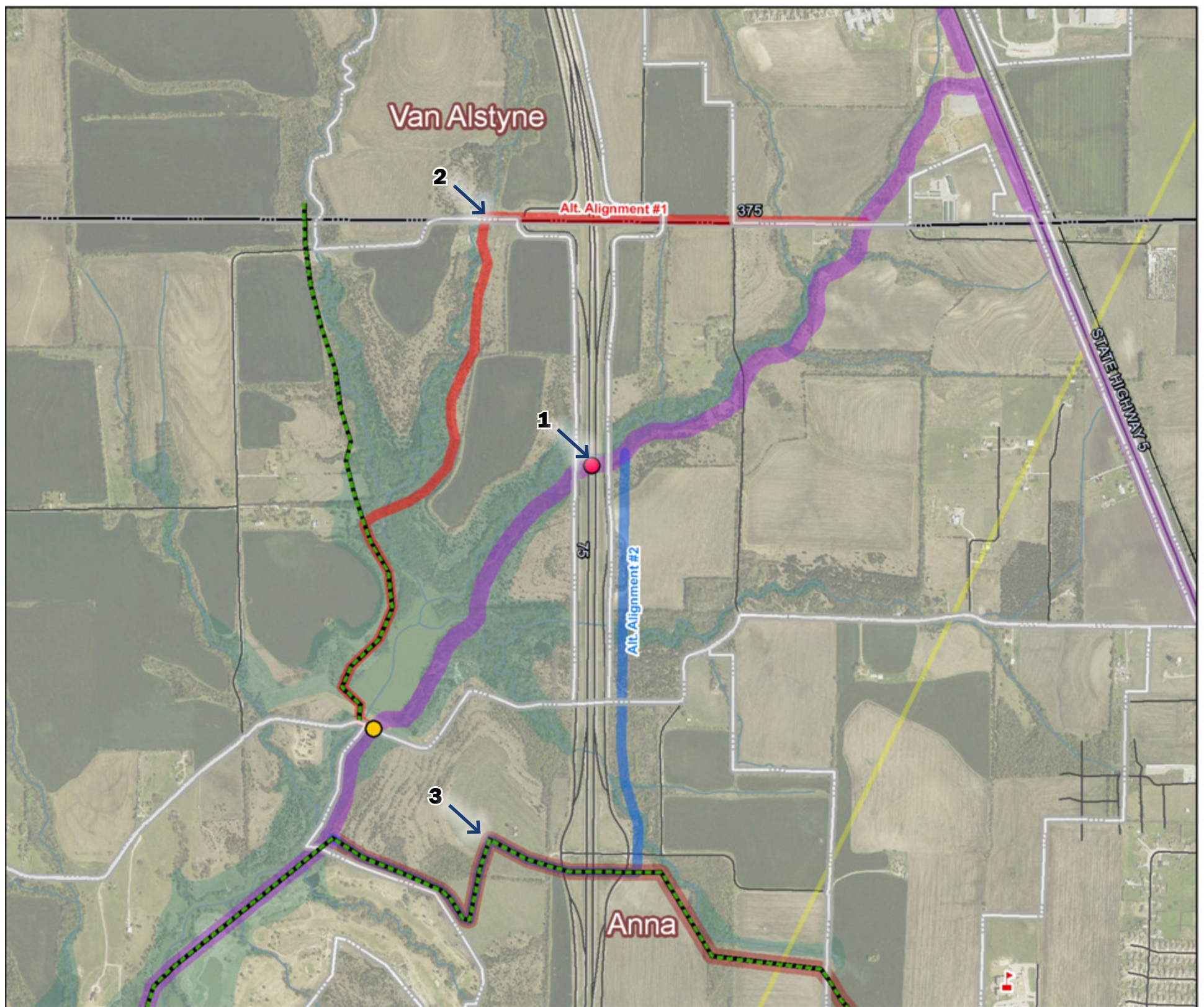
- Anna: hard surface trails (planned)
- Van Alstyne: none

Key Issues

1. The primary challenge with this connection point is the Highway 75 crossing over the creek, which flows through a culvert. Unless this section Highway 75 is to be reconstructed before this trail is constructed, alternatives will have to be considered.
2. One alternative is to follow one of the other Hurricane Creek tributaries north to Emerson Crossing then crossing over Highway 75. This narrow bridge would need to be reconstructed, however.
3. Another alternative is to follow another planned trail in Anna to Mantua Road and its crossing over Highway 75 (this bridge would also need to be widened) and then going north - either along Highway 75 or along CR 373/374.



The culvert under US Highway 75 (top) and the narrow Emerson Crossing bridge (above).



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



29



Connection Point #30

Location: Along Big Branch Creek at US Highway 380

Cities Connected: McKinney and New Hope

Type of Connection: Creek

Existing / Planned Facilities

- McKinney: hard surface trails (planned)
- New Hope: hard surface trails (planned)

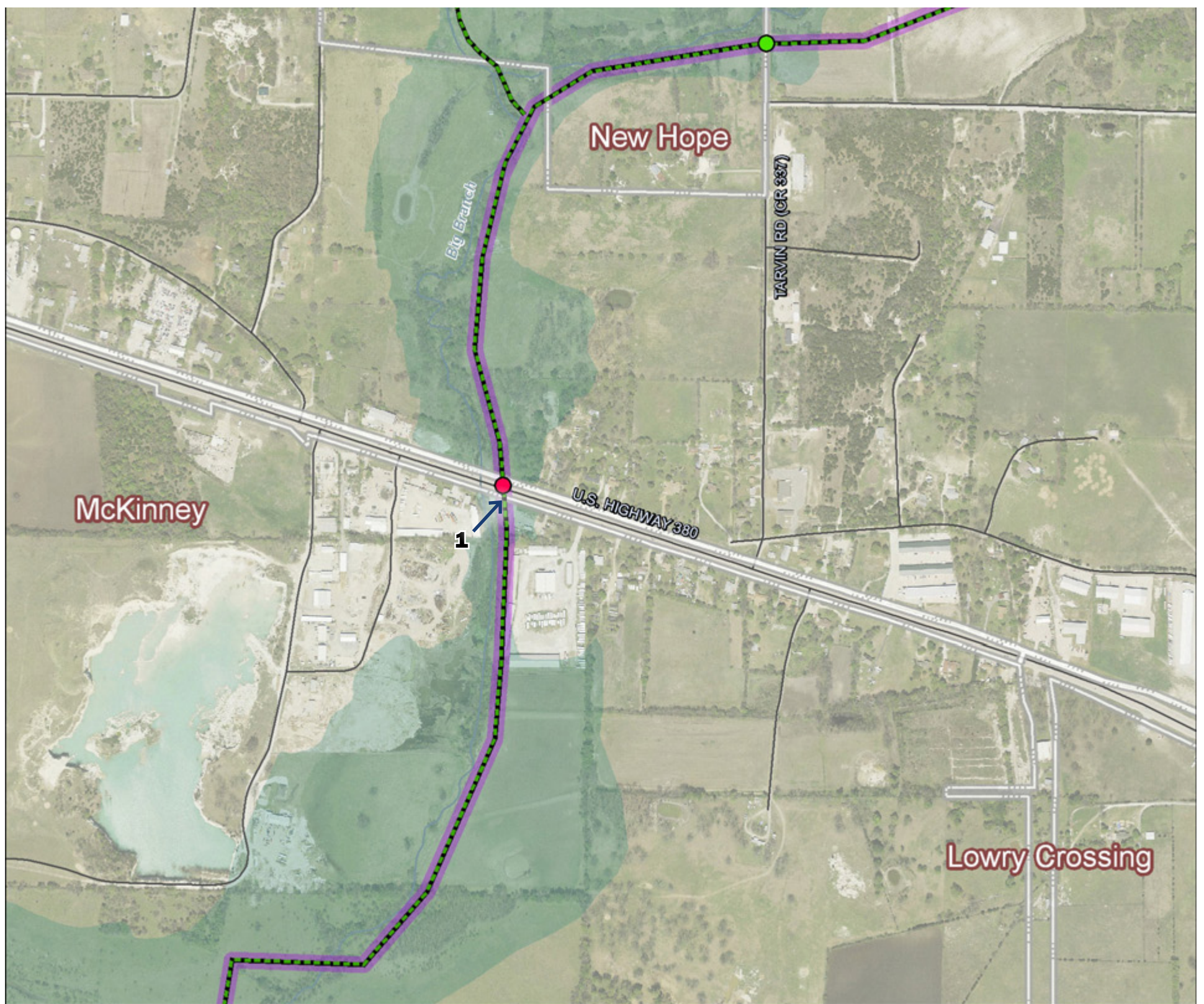
Key Issues

At this point in time, the construction of this connection is likely not feasible due to the physical constraints provided by Highway 380 and the lack of a safe alternative crossing.

1. The greatest challenge here is that the Highway 380 crossing of the creek is by culvert. Efforts should be made to accommodate a trail undercrossing at the creek if this segment of Highway 380 is reconstructed in the future. A mid-block crossing is not advisable at this location and would probably not be allowed by TxDOT.



Looking northwest at the Highway 380 culvert over Big Branch Creek.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



30

Connection Point #31

Location: Along the US Highway 380 bridge over Lavon Lake

Cities Connected: Princeton and Farmersville

Type of Connection: Roadway

Existing / Planned Facilities

- Princeton: hard surface trails (planned)
- Farmersville: hard surface trails (planned)

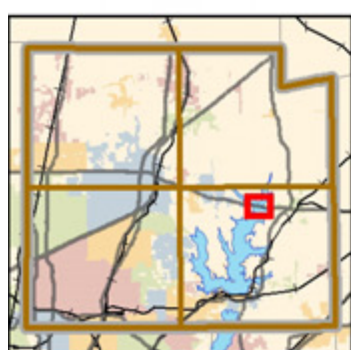
Key Issues

This connection would connect Princeton and Farmersville, as well as connecting Twin Groves Park (USACE) and Caddo Park (TPWD).

1. The Highway 380 bridge was recently reconstructed, but does not include any formal accommodations for a trail. While wide shoulders can accommodate cyclists, opportunities for incorporating a separated trail connection should be explored in the future.



Looking west at the Highway 380 bridge over Lavon Lake. The CR 559 bridge can be seen on the right side of the image.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
<ul style="list-style-type: none"> Equestrian Existing Equestrian Planned Hard Surface Existing/Programmed Hard Surface Planned/Proposed Mixed, Existing Mixed, Proposed Sidewalk, Existing Sidewalk, Proposed Soft Surface Existing Soft Surface Planned/Proposed 	<ul style="list-style-type: none"> Spine Corridors Other Corridors 	<ul style="list-style-type: none"> Cemeteries Libraries Hospitals Major Employment Centers Recreation Centers Schools - 8th Grade and Under Schools - Over 8th Grade DART Rail Stations 	<ul style="list-style-type: none"> DART Red Line, Existing DART Cotton Belt, Planned County Boundary Utility Lines Streets & Roads Railroad Lines Parks Lakes 100 Year Floodplain
Major Crossing Opportunities & Constraints <ul style="list-style-type: none"> At-Grade Crossing - Mid-block Grade-Separated Crossing - Barrier Grade-Separated Crossing - Possibility 			



31



Connection Point #32

Location: Along the top of the Lavon Lake Dam and along the abandoned rail right-of-way parallel to Highway 78.

Cities Connected: Wylie and Lavon (Dallas and Garland have slivers of city limits in this vicinity, but these areas are not inhabited)

Type of Connection: Railroad

Existing / Planned Facilities

- Wylie: hard surface trails (planned)
- Lavon: none

Key Issues

Making a connection across the Trinity River between Lavon Lake and Lake Ray Hubbard is very important from a regional and intercity trail point of view. Two alignments are shown here and both are considered primary alignments (not alternatives).

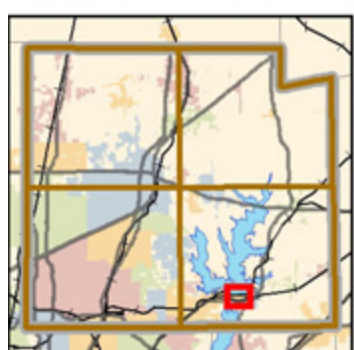
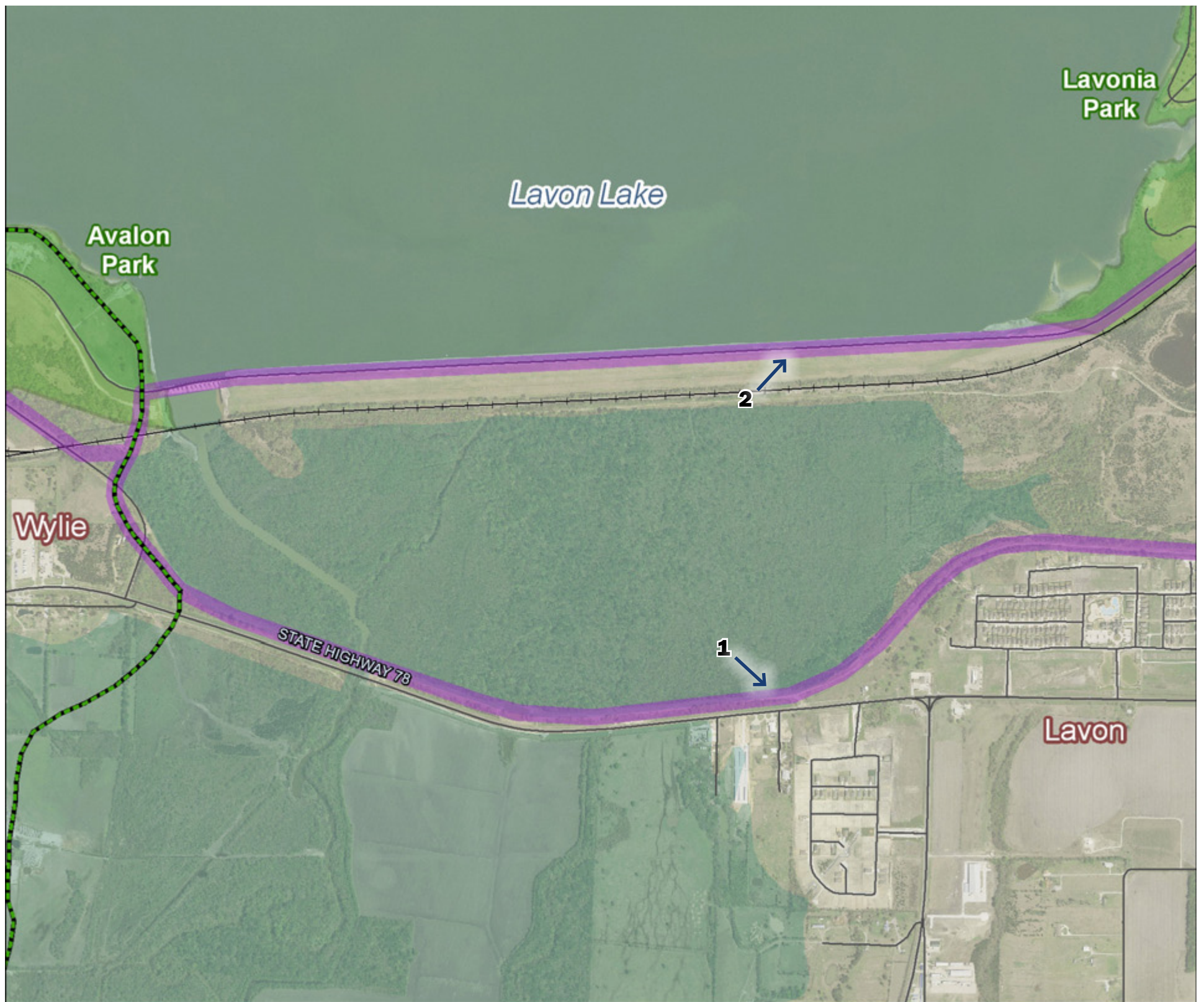
1. The southernmost alignment follows Highway 78, specifically within the abandoned railroad ROW owned by the Northeast Texas Rural Rail Transportation District (NETEX). NETEX is considering re-opening this rail line in the future.
2. The northern alignment would provide a trail along the top of the dam

and directly connect Avalon and Lavonia Parks. Concerns have been voiced in the past regarding the security of allowing people on dams. It is important to consider that nothing prevents people from boating to the dam or accessing the dam on foot. A trail might provide additional informal surveillance and actually increase the security of the dam.



Image courtesy of Richard Wezensky

Although the dam is not open to trail users on a regular basis, the annual Wildride! bike rally hosted by the City of Richardson includes routes that cross the Lavon Dam.



Trails - Existing & Planned	Major Trail Corridors	Generators & Attractors	Base Data
Equestrian Existing	Spine Corridors	Cemeteries	DART Red Line, Existing
Equestrian Planned	Other Corridors	Libraries	DART Cotton Belt, Planned
Hard Surface Existing/Programmed		Hospitals	County Boundary
Hard Surface Planned/Proposed		Major Employment Centers	Utility Lines
Mixed, Existing		Recreation Centers	Streets & Roads
Mixed, Proposed		Schools - 8th Grade and Under	Railroad Lines
Sidewalk, Existing	Major Crossing Opportunities & Constraints	Schools - Over 8th Grade	Parks
Sidewalk, Proposed	At-Grade Crossing - Mid-block	DART Rail Stations	Lakes
Soft Surface Existing	Grade-Separated Crossing - Barrier		100 Year Floodplain
Soft Surface Planned/Proposed	Grade-Separated Crossing - Possibility		



32

4

Recommendations & Implementation

City policies, together with supporting ordinances, set the stage for how trails across Collin County will be implemented. The adopted policies should assist the municipalities in planning, designing, and maintaining trails in a cost efficient way. By developing local trail systems that create regional linkages, those who seek active transportation modes, those who cannot drive due to age, ability or cost, and those who seek recreation or exercise are all served.

Though this Regional Trails Master Plan provides high-level guidance for trail development, it is important for each municipality to have a citywide trail plan for developed and undeveloped portions of its city limits and extra-territorial jurisdiction. Trail planning at the municipal level includes developing a citywide network of trails (at a higher level of detail than this RTMP's Major Trail Corridors), as well as planning for the development of specific trail corridors (either retrofitted into existing development or planned into new development). Each municipality should also maintain a set of trail-related policies to assist the city in implementing its trail system.

Timely coordination between city departments (such as parks and recreation, engineering, transportation, public works, planning, and community development), outside agencies, and land owners is key to planning, designing, and implementing trails. Trails should be designed to fit their context and to meet accepted design guidelines or standards.

The purpose of this chapter is to provide guidance for municipalities of all sizes and all levels of planning—from those with recent, comprehensive trail plans to those without any trail planning background. This chapter is organized into seven sections, as follows:

- Policy Recommendations
- Guidance for Planning Trails
- Guidance for Designing Trails
- Maintenance Recommendations
- Funding and Grant Information

POLICY RECOMMENDATIONS

Municipal policies, together with supporting ordinances, set the stage for citywide trail system implementation. Several mechanisms are available to municipalities to achieve trail inclusion with new development and with other city projects. In addition, actively pursuing grants and developing public/private partnerships provide additional avenues for trail implementation. Recommendations to achieve a citywide trail system are outlined and briefly discussed in this section.

Prepare a Maintain a City-wide Trails Master Plan

In order to effectively develop a network of trails, it is important for a municipality to develop and continually update a city-wide trails master plan. It is recommended that such a plan address transportation and recreation needs, span the entire city and its extra territorial jurisdiction, and consider connections to adjacent cities and counties (much in the way that this RTMP addresses connections). Policies that ensure development of trails in already developed areas, as well as the incorporation of trails into future development, should be included within the plan. Furthermore, plans should include policies and practices to ensure trails are incorporated as part of development. Trails should provide opportunities for active transportation and recreation, and should provide access from homes to destinations such as parks, schools, work, transit service, civic attractions, and shopping.

Although most of the municipalities within Collin County already have a citywide trails master plan, some do not. It is important for each city and town to develop and maintain its own trails master plan as an additional layer to the Major Trail Corridors included in this RTMP. A simple planning process, as shown below, can be used to efficiently develop a trails master plan by utilizing the data gathered and analysis performed in this RTMP as a starting point.

1. Access the RTMP Geographic Information System (GIS) data or, if your agency does not have GIS capabilities, the relevant tile maps from this document.
2. Identify additional important destinations, new areas of growth within your city, and local trail projects completed since the completion of the RTMP.
3. Determine anticipated user groups for your local trails, such as pedestrians, bicycles, equestrians, etc. and trail typology including multi-use trails, nature trails, sidepaths, etc.
4. Determine RTMP corridor connectivity to the local destinations identified in Step 2 (above) and identify additional local trail corridors along creeks, utility corridors, roads, etc. to access these destinations.
5. Identify constraints for new local trail corridors such as low bridges, obstacles (e.g., utility boxes), lack of right-of-way, etc.
6. Determine planning-level estimated costs based on constraints, trail typology, terrain, etc. and priorities based on community demand, ease of implementation, connectivity, etc.



Adopt the Trail Master Plan into the Comprehensive and Transportation Plans

While many citywide trail plans are included in a city's park master plan or are stand-alone citywide trail plans, **it is strongly recommended that the city's planned trail network be adopted as part of the city's transportation / thoroughfare plan and incorporated into its future land use plan.** By including an active transportation element (the planned trail network and relevant policies) in these plans, a mechanism can be established for incorporating and accommodating trails when new or reconstructed roads, intersections, and bridge plans move forward. Floodplain and creek corridors should be shown as open space in the comprehensive plan's future land use plan, and identified as future trail corridors, if relevant.

By including policy recommendations in local citywide plans, elected officials and the various city departments are alerted to the need for interdepartmental coordination to assure that trails are planned for, incorporated into other projects where feasible, and maintained.

Several Collin County cities have already successfully incorporated the provision of bicycle and pedestrian facilities (including trails) within their comprehensive and transportation / thoroughfare plans.

Submit Plans to the North Central Texas Council of Governments

Where federal funds are used for road construction or reconstruction, trails and on-street bicycle and pedestrian facilities can be included, or at least a provision for future accommodations can be provided. In this case it is critical that each municipality assures plans for these projects are included in the Purpose and Need section of environmental documentation during the road project's National Environmental Policy Act (NEPA) process, which occurs very early in the planning of a project.

When non-municipal agencies (such as the Texas Department of Transportation or Dallas Area Rapid Transit) enter the planning stage for projects using federal funds, they are required to coordinate with the region's Metropolitan Planning Organization, which in this area is the North Central Texas Council of Governments (NCTCOG). NCTCOG conveys information and project requirements—including any requirements for bike and pedestrian facilities—to these organizations. It is therefore critical that NCTCOG receive documentation for each municipality's bicycle and pedestrian plans, as well as regular updates, in order for bike / pedestrian accommodations to be made. In order to assure that this information is readily available, trail plan maps should be submitted to NCTCOG in GIS format. Communities without GIS capabilities can submit plans as an Adobe Acrobat (.pdf) file. Public involvement documentation for these projects should also be submitted to NCTCOG.

If plans are not articulated in this early design phase process, many cities have found resistance from the non-municipal agency toward opening up the NEPA documentation later in the design process. This results in lost opportunities for trails.



This is an example of a missed opportunity for a trail crossing under SH-121.

Trails & the Land Development Code

Inclusion of a requirement for hike and bike trails in a municipality's land development code can result in a significant part of the trail system being built as new development occurs. Trails from homes to schools, parks, and other community destinations as development occurs is a highly popular amenity for home buyers and improves residents' quality of life. These developer-built trails should connect to the citywide trail system either along another trail or with sidewalks and designated on-street bicycle facilities. It is recommended that each municipality explore modifications to their Land Development Code.

The City of Allen has successfully implemented their trail system, largely through requiring the construction of trails along with new development. The City includes the following requirements in its Land Development Code:

- The Zoning Application checklist for both Non-Residential and Residential Concept Plans must include hike and bike trails.
- The Preliminary Plat submission must include trails and trail crossings of creeks, tributaries and ravines. This preliminary plat submission is

reviewed by staff for compliance with the City's Consolidated Alternative Transportation and Recreational Trail Plan, and for the adequacy of neighborhood circulation to existing and proposed zoning and land use of the tract and adjacent tracts; and to sites required for schools, parks, and other public facilities.

- Construction documents must include a layout plan for hike and bike trails, showing trail alignment, grading and creek crossings, bridges and/or culverts.
- Design standards for hike and bike trails must be constructed in accordance with American Association of State Highway and Transportation Officials (AASHTO) standards by the developer along both sides of all major creeks and tributaries unless waived by the Planning & Zoning Commission upon the recommendation of the Director of Parks & Recreation.
- In Planned Developments, private streets in may not disrupt an existing or proposed public pedestrian pathway, hike and bike trail, or park.
- Sidewalks and Hike and Bike trails are required at the time of development. Sidewalks adjacent to residential streets interior to a subdivision may be delayed and built along with residential structures, provided a 25 percent cash escrow bond is submitted. All sidewalks must be completed within two years of the acceptance of the development by the City.
- All sidewalks and hike and bike trails shall comply fully with the Texas Accessibility Standards of the Architectural Barriers Act, administered by the Texas Department of Licensing and Regulation.

Developer Incentives

A developer may be willing to commit to trail development exceeding requirements if an incentive, such as a density bonus, is offered. This approach assumes that a proposed development will be given allowances—such as more dwelling units per acre, more non-residential building square footage, or less parking required—and will be approved if specific criteria are met. If adopted by a city, the land development code will need to include a list of density bonus criteria.

Parkland Dedication Ordinances

Trails can be developed through a Parkland Dedication Ordinance. Historically, this funding source has been used primarily for neighborhood parks within a new development. However, these funds can also be used for trails where allowed by the ordinance.

Construction of the hike and bike trail system should generally be completed as development occurs. If trails are constructed or funded by the development as part of necessary parkland dedication requirements, the completion of a city's trail network can be streamlined. Requiring new development to provide land or easements for trails, as well as funding for trail construction, helps ensure that new development pays for itself, rather than being subsidized by taxpayers.

When trail easement dedication and/or construction is required in a parkland dedication ordinance, certain guidelines and requirements should be included. Namely, trail linkages should be built from residential areas to neighborhood parks, schools, and other community destinations within the surrounding development, and accessible from and to the citywide trail system. Alignments should be allowed that traverse open space, floodplains, creek corridors, public utility corridors, and semi-public utility corridors, such as electric company and railroad easements. The ordinance should ensure that the trails connect to other trails and are publicly accessible. An excellent strategy for community support for the trail is to require it to be located along single-loaded streets when adjacent to a creek or greenbelt corridor. This provides eyes to the trail from residents, while making the trail a development-wide asset.

Credit for trail easement dedication and trail construction can be given to fulfill all or part of the parkland dedication requirement. The ordinance should not restrict the trail construction to a sector of the city, where a citywide trail serving the development already exists, but should allow these funds to be used to extend the trail into other areas of the city.

The parkland dedication ordinance should be reviewed periodically to assure that fees in terms of dwelling units and non-residential development are in line with the standard used in the industry and a relative to the average market value of land in the community and the true cost of trail and park development. In some cities, fees are applicable to both residential dwellings on a per unit basis and to business, commercial, and industrial enterprise on a per acre basis.

Floodplain Ordinances

Watershed management and drainageway ordinances can also be used as tools to protect and preserve greenbelts and floodplains. These also respond to Federal Emergency Management Agency (FEMA) and National Pollutant



The City of Allen, through its Land Development Code and other ordinances, has been very successful in ensuring the provision of trails along creek corridors throughout the city.

Discharge Elimination System mandates for cities, and provide a reciprocal benefit of preserving these areas for linear greenbelts and connections to destination throughout the city.

Where trails are along a drainage corridor, they should—where feasible—be sited outside of the floodplain. While outside the 100 year floodplain is ideal, there may be situations where siting the trail outside the 5 or 10 year floodplain (but within the 100 year floodplain) may be necessary.

4A / 4B Sales Tax

Using 4A or 4B tax funds can be an excellent mechanism for implementing a city's trail plan. 4A/4B funds are a special sales tax that can be levied for projects that improve a community's quality of life—including parks, trails, and other improvements—or expenditures that promote new or expanded business activity that create or retain primary jobs. These taxes must be approved by the voters at a sales tax election. A city's current combined state and local sales tax rate cannot exceed 8.25 percent, with the local tax cap being two percent (2%).

Section 4A or 4B economic development sales taxes may be initiated by the city council approving an ordinance calling an election on the imposition of the sales tax, or by a petition signed by a number of qualified voters that equals at least twenty percent (20%) of the voters who voted in the most recent regular city election. The sales tax rate for either a section 4A or 4B sales tax is 1/8th, 1/4th, 3/8ths or 1/2 of one percent.

Coordinate with Local Roadway Construction / Reconstruction

Cities should establish policies for incorporating planned bicycle and pedestrian facilities into roadway projects that overlap areas where trails or other pedestrian and/or bicycle facilities are planned. Where the non-motorized facility crosses the corridor, the section within the project should be built to accommodate or at least not obstruct future construction of the non-motorized facility. This requires interdepartmental coordination that can be accomplished through project development checklists developed specifically for that city.

In addition, it is advisable for municipalities to establish Complete Streets Policies that require the accommodation of pedestrian and bicycle facilities, as well as cars along all roadways (other than high-speed freeways and tollways). This policy should be incorporated into the city's transportation/thoroughfare plan.

Include Trails in Bond Propositions

Bond propositions must be approved by the voters. Trails have frequently been incorporated into bond propositions, frequently packaged with other transportation improvements. Propositions that include trails are almost always passed by the voters, who consider them a top recreational amenity in most communities.

Budget for Trails

Cities should also include bicycle and pedestrian facility improvements in their annual budgets. This funding source is ideal for spot improvements and addressing safety or maintenance concerns along existing trails.

Grant Application Program

Grants are almost always competitive applications and awardees usually must provide in the range of 20-50 percent of the project cost. Most grants are reimbursement grants and the city must expend the funds prior to applying for reimbursement. TxDOT's Safe Routes to School Program is an exception, in that 100 percent of the total applied for is eligible for reimbursement while any cost overruns are paid for by the applicant. Grant opportunities are discussed later in this chapter, under Funding and Grant Information. It is recommended that each city, depending on resources, develop a grant applica-

tion program that includes local matching funds in reserve and a full- or part-time grant writer on staff or contract.

GUIDANCE FOR PLANNING TRAILS

The Collin County Regional Trails Master Plan can be successfully implemented only through active coordination among trail-providing entities within and adjacent to Collin County, including municipalities, public agencies, private organizations, and individuals. While city policies set the parameters for how trail implementation is achieved, planning for citywide trails sets the framework within which the system will be developed. Timing of various actions is critical to moving trail projects forward. Recommended actions are discussed in this section.

Coordination Between City Departments

Key interdepartmental coordination includes parks and recreation staff responsible for trail plan implementation, transportation and land planning staff, and public works/engineering staff. While trail development is frequently overseen by the Parks department as part of a greenway corridor (along creeks, unused rail corridors, or utility easements), other trails may be developed by the Public Works/ Engineering department, especially if they are along roadway corridors or if they are on-street bicycle and pedestrian linkages. Planning departments usually oversee the development process and will need to assure the incorporation of bicycle and pedestrian connections from citywide plans into proposed developments. It is recommended that municipalities streamline this coordination by preparing a trail planning checklist that is applicable to its plan and the city's standard operating procedures to ensure new development and infrastructure projects accommodate elements of the municipality's trail plan.

Incorporate Trails into Transportation Planning

Planning and public works departments should include the citywide trail system in their Thoroughfare / Transportation Plan so that planned trails will be accommodated as part of the thoroughfare design. Of critical importance is the inclusion of grade-separated crossings where possible along major arterials and highways. Grade separated crossings at creeks, or where sufficient grade separation exists, should be considered along minor arterials and major collectors. Trail benches should always be included under roadways at creeks where future trails are planned, or if there is a possibility of a trail connection in the future. It is critical to think long term, as bridges are built to last many decades.

The City of McKinney, for example, is committed to constructing these below-grade crossings or underpasses of major thoroughfares at the time of roadway construction. Where thoroughfares cross creeks, rivers, railroads, and other terrain features, both at-grade (parallel to the roadway) and below-grade (underneath the roadway) crossings are important. At-grade crossings along roadways can be incorporated into future bridge projects and thereby allow cyclists and pedestrians to cross obstacles without requiring a stand-alone trail bridge. Below-grade crossings allow trails parallel to creeks, railroads, etc. to cross under roadways, as long as adequate vertical clearance is provided. Where there is not sufficient clearance, the trail can be diverted to a nearby intersection, where a safe at-grade crossing can be constructed.

Consider the Trail Plan when Reviewing Plats

City staff working in the current planning field should review the adopted citywide trail plan for its inclusion in each development plan as an item in its plan review checklist, and should also consider the need for local bicycle and pedestrian facilities within the planned development in relation to the overall citywide trail system. Neighborhood/community planning projects should discuss the need for bicycle and pedestrian facilities within the affected community and, where feasible, should incorporate connections to the citywide plan. Inclusion of these trails can be achieved through developer requirements or incentives, as discussed earlier in this chapter.

Cities should be flexible in accommodating trail alignments through a development, ensuring the trail works with the developer's plan, but at the same time ensuring that the connectivity of the overall citywide trail system to other existing and future trail segments remains intact. Be sure to include consideration of connections to adjacent cities as well, by coordinating with the adjacent city's staff.

Coordinate with Public Works/Engineering Departments

Coordination between Parks staff and Public Works/Engineering staff is critical when a trail or sidepath runs along or across other infrastructure. If facilities are to run along a roadway corridor, they must fit into the roadway's right-of-way and all at-grade crossings must be carefully evaluated for safety. Sidepaths present significant safety concerns at intersections, since motorists rarely expect trail users at intersections and may not look for cyclists and pedestrians when turning. Coordination is also needed for grade-separated crossings of trails and roadways and trail access points during the construction phase of a project. Other projects, such as trails built along city-owned utilities (including water delivery, stormwater, and wastewater lines) will require public works/engineering coordination.



Coordinate with Police and Fire Departments

Police and fire departments should also be included in trail planning and design. When trails are not immediately adjacent to a roadway, emergency vehicles will need to occasionally drive on the trail itself. If this is the case, the trail will need to be reinforced concrete at least 10' wide and 5" deep to bear the load without damage. Police and ambulances also need location markers along the trail in order for trail users to identify their location when in need of assistance. Fire departments should be consulted to assure that emergency response times will not be impacted (fire departments frequently have concerns about road humps, table crossings, and other traffic-calming measures that may slow response time).

Coordinate with Other Departments as Needed

All departments that may be impacted by the trail should be included in both the development of the citywide trail master plan and for each trail segment as it undergoes design. The outcome should be an attractive trail that serves local users needs, functions smoothly for city staff, and is easy for the city to maintain.

Coordinate with Outside Agencies

Interagency coordination, where appropriate, is also extremely important throughout the planning, design, and implementation process. Agencies that may be involved in trail planning efforts include (but are not limited to):

Texas Department of Transportation (TxDOT)

TxDOT plays a role in various types of trail design and construction efforts, either by incorporating a trail, sidewalk, or on-street designated bicycle facility in its roadway design and construction project or through grant administration for Statewide Transportation Enhancement Program grants, Safe Routes to School grants, and other programs (see Funding and Grant Information section). For roadway projects, TxDOT coordinates with the North Central Texas Council of Governments (NCTCOG) to learn about planned bicycle and pedestrian facilities along the roadway corridor. It is highly important that each city in Collin County provides NCTCOG with its most up-to-date trail and on-road bicycle and pedestrian plans and submits additions and other changes to the plan as they occur.

North Texas Tollway Authority (NTTA)

With NTTA it is best to initiate contact very early in their planning process for new toll roads where they may impact existing or planned trails or other bicycle and pedestrian connections. Make sure NTTA knows about planned connections along or across their corridor and urge them to include provision for that connection within their right-of-way.

Dallas Area Rapid Transit (DART)

DART has established policies for trails along active rail lines, as well as lines they own but currently have no plans to use. DART established its first Bike and Ride Policy on July 25, 1989 (Policy III.05, Resolution No. 890092, July 25, 1989) to promote and encourage multimodal commuting, including bicycling to transit, pointing out that bike commuting may include parking a bicycle at a transit facility, as well as transporting it aboard a bus or rail vehicle. Specifically, free parking at bike racks and long term parking in bicycle storage lockers for a fee are mentioned. In addition, DART's policy allows transit users to carry bicycles on bike racks (currently available on all buses), or bring them aboard if racks are full and the bike is clean and free of excess grease, dirt, or mud when space is available. Bikes may also be brought aboard rail vehicles under the same conditions.

DART's Rail Corridor Preservation and Use Policy (Policy III.08, Resolution No. 960033, February 27, 1996) states that it shall retain all existing railroad corridors with at least a 100' width where possible and that corridors should be managed to:

- Maintain flexibility for any future transit use;
- Generate revenues from the corridors by receiving fair consideration for other public and private uses that are not inconsistent with future transit use, provided that non-longitudinal utility crossings by member jurisdictions will be at no cost, and utilization of a corridor or portion of a corridor for hike, bike transportation, or recreational purpose will be covered by DART's Hike and Bike Policy.
- Reduce the number of public and private at-grade crossings by closure of the street crossing or elimination of railroad activity.

The Hike and Bike Trail Use on DART Right-of-Way Policy (Policy III.09, Resolution Number 960034, February 27, 1996) states that DART-owned rights-of-ways may be made available for pedestrian and bicycle transportation or recreation use under the following conditions:

- On rail corridors that are on DART's Service Plan for transit use in the near future, hike, bike transportation, or recreational uses of the corridor compatible with transit will be evaluated by DART during the preliminary engineering and environmental assessment phase of the development of the corridor.
- On rail corridors that are within DART's service area, a hike, bike transportation, or recreational use of the corridor compatible with existing rail/freight operations will be allowed, provided the [local] governmental entity agrees to:
 - Maintain fully the entire width of the corridor where the facility is located;
 - Indemnify DART for the use of the corridor; and
 - Vacate the corridor if and when DART wishes to use the corridor for its purposes.
- For rail corridors outside the DART service area, a hike, bike transportation, or recreational use of the corridor compatible with rail/freight operations will be allowed, provided the [local] governmental entity agrees to:
 - Maintain fully the hike or bike path;
 - Compensate fairly DART for the use of the property;
 - Indemnify DART; and
 - Vacate the corridor if and when DART wishes to use the property for its purposes.

In this policy, DART states that it will cooperate with other private and public bodies to find alternative funding sources for development by other governmental entities of all of its rail corridors for pedestrian and bicycle transportation or recreation use. DART also states that it is not obligated to provide any additional funding for these uses.

Private Sector Railroads

Private sector railroad tracks provide both freight and sometime passenger service. There are also rail corridors in Collin County that are infrequently or no longer used. Railroad companies vary in their willingness to allow trails to be established within their right-of-way, partially depending on the corridor width and the frequency and speed of the rail service. It is critical that the railroad company be contacted and a meeting be held to discuss feasibility of locating a trail within its corridor prior to applying for grant funds or beginning the design process. Most railroads require at least a 25' separation between the centerline or edge of the railroad track and the edge of the trail. Many also require a separation fence, grade-separation, or other barrier. Other concerns include safe rail crossing design and trail user warning signs.

In the case of a trail crossing a railroad, obtaining permission for a new at-grade crossing is rare. Most often, a new at-grade trail crossing is combined with an existing road/rail intersection. Overpasses and underpasses may be agreed to, but with specific design requirements. Grade-separated crossings may be very expensive unless existing topography, such as trestles at creeks, lends itself to a separated crossing.

The implementation of trails along railroads can often prove to be difficult because of hesitancy on the part of the railroad operator or community concerns about safety. Because these issues may be of concern to citizens and public officials, it is important to clearly demonstrate that properly-designed trails along active rail corridors are as safe for users as any other type of trail. Several resources are available to utilize when making the case for a rail trail, including the Rails to Trails Conservancy's "Rails with Trails" report, which includes a survey of 61 rail trails along active rail lines across the country as well as information on their design, management, and operating conditions.



The City of Allen was able to work with DART to provide a trail underpass under the DART rail line.

Utility Corridors



Utility lines can provide good opportunities for trails. The Bluebonnet Trail in Plano is an example of a well-used trail established in a power transmission corridor.

There are often excellent opportunities to provide trails along utility corridors, including water, wastewater, storm sewer, gas, electric, and fiber optic lines. Trail easements through such corridors are usually made available at little or no cost other than landscape maintenance to the County or cities and may be the most cost-effective location for a trail. However, there are limitations presented by this type of corridor. Specifically, many electric utility corridors are themselves easements and do not necessarily present the same opportunity as utility corridors with dedicated rights-of-way. In addition, utility corridors of various types have restrictions with regard to trail design and construction. For example, many electric utilities will not allow the planting of large trees within their rights-of-way, which greatly reduces shade and the overall comfort and attractiveness of the trail. Generally speaking, water, wastewater, and storm sewer utility corridors, which are typically City-owned, are the best candidates to provide a trail along because they usually have fewer restrictions regarding trail construction and corridor amenities.

Electric utility companies, such as Oncor, have a history of allowing the construction of trails within city-owned easements or along land they own. It is much more difficult in rural and unincorporated areas as the utility company usually does not own the land, but has agreements with landowners, who may also be farming or grazing the land and who must also agree to grant a public access easement. The electric companies generally require that no trees be planted either within the entire easement or possibly only within the envelope of the overhead lines, or they require a planting plan allowing only very small varieties of trees prior to any tree and shrub planting. Like other entities, early discussion about use of their rights-of-way is critical prior to the grant application or design process moving forward. Benefits for the utility companies include landscape maintenance within the easement and a facility (i.e., the trail) that may be used for utility truck access for line inspection and repair.

Pipeline utility and fiber optic companies, like electric utility companies, may be willing to allow trails to be built within their rights-of-way. The process is similar to that needed for the electric utility companies. They are different in that the pipelines or fiber optic lines are usually underground, which can significantly limit site excavation or grade changes. They also will not want tree roots impacting their lines. They almost always require that the trail tread be separated from the pipeline alignment. To determine the location of underground facilities when preparing a planting plan or before digging, it is necessary to call DIG-TESS at (800) DIG-TESS (or (800) 344-8377) 24 hours a day, 7 days a week or fax: (800) 690-1291. The administration phone number is (972) 231-5497.

Private Sector, Citizen & Advocate Group Coordination

Private sector coordination may involve landowners or trail advocates. For trails proposed along private land, the land may—through negotiations—be made available by easement, or possibly outright purchase. For trails using State of Texas controlled financing (grants), no condemnation is allowed. If a landowner or developer expresses interest in developing a trail along land under its control, then each city or the County, as is applicable, should work with the landowner/developer to facilitate the trail’s development.

Where private property or adjacent cities or counties have the potential to connect to a trail, representatives should meet at the beginning of the planning process to assure the feasibility of a trail connection.

Local resident input should be included in both citywide trail planning and for individual trail development. Early citizen input, prior to setting the trail alignment(s), a follow-up meeting with citizen input incorporated into the plan, and a final public meeting/hearing prior to plan adoption or letting

document release are all important and help build support for trails.

Where trail advocates are active, they should be encouraged to develop a Friends Group to support trail development. These groups frequently raise money for trail construction, land acquisition, and/or trailside enhancements such as benches, tree, and other landscape plantings. Some Friends Groups also patrol, undertake clean-ups, and maintain trails. Soft surface hiking, bicycling, and equestrian trails are frequently built, maintained, and patrolled by community volunteers.

GUIDANCE FOR DESIGNING TRAILS

For multi-use trails to reach their full potential, they must be integrated with on-road bike and pedestrian roadway design. Multi-use trails should also fit into their context from highly urbanized to rural settings. In this section, guidance for multi-use trail types in urbanized, suburban, and rural settings are discussed. Grade-separated and at-grade midblock and roadway intersection crossing options are also presented. Guidance for designing equestrian and paddling trails is included.

Guidance for Multi-Use Trail Design

Trail Typologies

The preferred trail type and its characteristics are to a large extent dependent on its context from highly urbanized mixed-use developments, to greenway trails within a city, to sidepaths along roads where urban build-out limits the location of trail alignments, to “Pioneer” trails in rural areas, where the top priority may be corridor preservation. A contiguous trail through the varying landscapes will need to accommodate varying user requirements.

Table 4.1 illustrates the four primary trail types that may constitute a Major Trail Corridor, as defined in Chapter 3.

Multi-Use Trail Type	Minimum Tread Width	Minimum Corridor Width	Estimated Cost per Mile ¹
Urbanized ² Exclusive ROW in Higher Density Areas	12’ (14’-16’ pref.)	20’ (32’ pref.)	\$650,000 to \$1,100,000
Greenway ³ Natural Areas in an Urban Environment	10’ (12’ pref.)	25’ (32’ pref.)	\$600,000 to \$900,000
Two-way Sidepath ⁴ Along a Roadway	10’ (12’ pref.)	18’ (25’ pref.)	\$450,000 to \$600,000
Pioneer Trail ⁵ Rural Areas	8’ (10’ pref.)	25’ (32’ pref.)	\$250,000 to \$550,000

¹Not including land acquisition or maintenance costs.
²Concrete; width depending upon adjacent densities and volume of use
³Concrete or pervious pavement in ecologically sensitive areas
⁴Concrete; includes shoulders and a 5’ buffer between path and roadway
⁵Corridor preservation; natural surface or asphalt acceptable

Corridor Widths

In all cases except for sidepaths, multi-use (hike and bike) trail corridor width should be 32’ wide to accommodate trail design comfortably; however the minimum required to fit a 12’ wide trail into an urban corridor with some obstructions such as utilities, is 20’ wide. For sidepaths, the preferred corridor width is 25’.

Twenty-five (25) feet is the minimum recommended Greenway or Pioneer (rural) trail corridor width, as there are frequently topographic constraints in these areas that make it much easier to site a trail in a corridor with more available width. Due to the scarcity of available right-of-way along roadways, a minimum corridor width for a two-way sidepath is 18’. This allows for the AASHTO-required 5’ setback buffer from the roadway (alternatively a physical barrier is required), plus the trail tread and inside shoulder.

Trail Tread Widths

Multi-use trails should be designed to accommodate bicyclists, pedestrians, skaters, people with children and dogs, and mobility impaired users with walkers or in wheelchairs. Depending on the trail’s context, it may be an 8’ wide natural surface or asphalt trail in rural areas where the mix of user types will occur infrequently; or as wide as 16’ or even more in dense urban areas. The need for trails separating pedestrians and bicyclists in a trail corridor with anticipated heavy use should be considered and implemented where needed.

In Collin County, most trails will be at least 10’ wide, where the suburban development pattern tends to disperse users. In the urbanized areas of cities where destinations are frequent, 12’ wide trails have become the standard. In



mixed-use or transit oriented areas, trails may need to be 16' wide or greater; or implemented as one-way cycle-tracks at least 6 feet wide and located between the road and sidewalk areas on both sides of the roadway. Eight (8) foot wide trails can serve as connections to major trails, but should be avoided anywhere where there is expected to be at least moderate use by both bicyclists and pedestrians and should not be signed as a hike and bike trail in those instances.

Trail Surfaces

Concrete is generally recommended, due to its durability and the low cost of maintenance, even though construction cost is initially higher than for asphalt or natural surface trails. For corridor preservation in rural areas, trails may initially be established as natural surface or asphalt trails and upgraded to concrete as use increases. In ecologically sensitive areas, pervious concrete may be chosen. Volunteer-built trails are almost always natural surface trails, or occasionally surfaced with 3/8" or less sized decomposed granite; they may serve single or multiple-user groups.

Trail / Roadway Crossings

Trail intersections at roadways will either be at-grade or grade separated. Grade-separated road/trail intersections are ideal for those not needing to use the roadway system to get to their destinations, but for those who do need access to or egress from the roadway system, it is critical that a seamless connection be made. One way of determining critical need is to look for "volunteer paths" that users have created to get to their destinations. These access trails, like all multi-use trails should be ADA-compliant. The result is that even with grade-separated roadway crossings, there should be an all weather at-grade access component to the trail.

Grade-separation can be achieved either by an underpass or overpass. The great majority of bicyclists and pedestrians prefer that the grade-separated trail crossing be at the same elevation as the trail. Where topography allows the building of an overpass that maintains a reasonably-level grade, use of that overpass will be much greater. Where a pedestrian overpass requires extensive ramping, it is usually necessary to include an at-grade barrier fence to prevent the trail users from crossing the road at-grade.

Road underpasses frequently occur along drainageways where the trail may already be located, making these an ideal crossing. In this case, it is important to provide a spur trail to a near-by at-grade intersection where there are nearby destinations. For underpasses, preventing persistent drainage onto the trail is a significant safety issue, as algae or silt may build up. Road underpasses or tunnels should have a minimum vertical clearance of 8' to be ADA-compliant and a minimum of 10' to be AASHTO-compliant. Due to trail users' perceptions of safety, they should also be designed so that the trail user can see all the way through the tunnel to the other side before entering. For long underpasses or where trails may be used during dark hours, they should be well-lit.



At-grade trail crossings require careful consideration of traffic speeds and volumes, sight-lines, and trail user volumes to ensure a safe crossing design.

For at-grade trail crossings at roadway intersections, the intersection must be designed so that trail users who enter the roadway do so along the correct side of the street. For those continuing on the trail beyond the intersection, warning signage for both motorists and trail users may increase safety.

For pedestrian and trail user safety, mid-block crossings of roads with more than three (3) lanes should include a median with a refuge designed to force eye contact with on-coming traffic. For trail mid-block crossings or at uncontrolled intersections, an appropriate crossing design can be referenced using the FHWA's Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations table (Table 4.2). Factors to be considered in selecting the appropriate design include the average daily traffic volume relative to the posted speed limit. Engineering judgment is often required to make the decision on a crosswalk design.

Grade-separated crossings must always be used for crossing limited-access roadways, including freeways and toll roads. Where feasible, grade-separated crossings should be used for crossing major arterials and highways. At-grade roadway crossings can be suitable for most minor arterials and collector streets.

Assure Seamless Trail/ Roadway Integration

For trail users, departure points and destinations are almost always accessed from the roadway system and trails must frequently make at-grade roadway crossings, either at intersections or mid-block. Bicyclists and pedestrians using the roadway also need safe road-to-trail connections that function for users who are approaching from both directions on the roadway. To achieve the best connections, it is important for those responsible for roads or trails to coordinate with each other during the trail design phase, or when roadways are being improved. Where safety is an issue, spot improvements should be made to improve crossing safety.

Table 4.2

Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations*

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT** <9,000			Vehicle ADT 9,000 to 12,000			Vehicle ADT 12,000 to 15,000			Vehicle ADT >15,000		
	Posted Speed Limit [†]			Posted Speed Limit			Posted Speed Limit			Posted Speed Limit		
	< 30 mph	35 mph	40 mph	< 30 mph	35 mph	40 mph	< 30 mph	35 mph	40 mph	< 30 mph	35 mph	40 mph
Two Lanes	C	C	P	C	C	P	C	C	N	C	P	N
Three Lanes	C	C	P	C	P	P	P	P	N	P	N	N
Multilane (four or more lanes) with raised median [‡]	C	C	P	C	P	N	P	P	N	N	N	N
Multilane (four or more lanes) without raised median	C	P	N	P	P	N	N	N	N	N	N	N

Source: modified from: Federal Highway Administration. Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. FHWA Publication Number: HRT-04-100. September 2005.

* These guidelines include intersection and midblock locations with no traffic signals or stop signs on the approach to the crossing. They do not apply to school crossings. A two-way center turn lane is not considered a median.

** ADT = Average daily trips

† Where the speed limit exceeds 40 mph, marked crosswalks alone should not be used at un-signalized locations.

‡ The raised median or crossing island must be at least 1.2 m (4 ft) wide and 1.8 m (6 ft) long to serve adequately as a refuge area for pedestrians in accordance with TMUTCD and AASHTO guidelines.

C = Candidate sites for marked crosswalks. Marked crosswalks must be installed carefully and selectively. Before installing new marked crosswalks, an engineering study is needed to determine whether the location is suitable for a marked crosswalk.

P = Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements. These locations should be closely monitored and enhanced with other pedestrian crossing improvements, if necessary, before adding a marked crosswalk.

N = Marked crosswalks alone are insufficient, since pedestrian crash risk may be increased by providing marked crosswalks alone. Consider using other treatments, such as traffic-calming treatments, traffic signals with pedestrian signals where warranted, or other substantial crossing improvement to improve crossing safety for pedestrians.



Grade-separated crossings minimize conflicts between trail users and automobiles, but are more costly to construct. Retrofitting such a crossing under an existing roadway can be prohibitively expensive.

Guidance for Paddling Trails

A paddling trail is a very specialized type of facility, yet is very cost-effective for the recreational opportunities it provides. A paddling trail requires very little capital investment compared to other facility types and almost no operational costs. There are many opportunities for paddling trails within Collin County along creeks, rivers, and lakes. The elements needed in order to turn a creek or river into a paddling trail include mile markers (which aid emergency responders) and put-ins/take-outs, which are the riparian version of a trailhead. There is little difference between a put-in and a take-out other than its position on the creek or river relative to the segment the user will travel. These facilities should be located at areas with relatively flat river banks which extend into somewhat shallow water and must have easy access to a roadway. It is necessary for put-ins/take-outs to include parking areas (paved or unpaved, depending on anticipated traffic volume), drinking water sources, and informational kiosks to warn canoers and kayakers of potential hazards on the river. A put-in should be located at the upper end of the creek or river and roughly every three to five miles thereafter. Specific guidance for the development of a paddling trail along Sister Grove Creek is included in Chapter 3.

The Texas Parks and Wildlife Department recently opened seven new paddling trails in the Dallas-Fort Worth area on May 10, 2011. These trails are located in Lewisville, the Bridgeport area (two trails), the Trinity River in Dallas, Joe Pool Lake, Lake Ray Hubbard, and the West Fork of the Trinity River in Fort Worth.

Guidance for Equestrian Trails

Equestrian trails require special design considerations including the accessibility of the trail for the user, the issue of horse waste along the trail, and the ergonomic requirements of a rider on horseback. Equestrian trails need to have trailheads with parking for the horse trailers, which must account for maneuvering requirements for at least a single-horse trailer. Multiple horse trailer parking spaces are recommended. Hitching posts are required in order for equestrian riders to prepare their horses for riding; the number of hitching posts should be relative to the size of the parking lot. The use of trees for this purpose may cause damage and should be prohibited. Horse waste on trails poses a nuisance if horses are allowed on multi-user trails. In this case a separate one-quarter mile “dung trail” should lead the equestrians to the main multi-use trail corridor from the parking area. Most horses rid themselves of dung in this first quarter mile. Equestrian trail riders also need to have at least 10 feet of vertical clearance to provide safe and comfortable passage.

MAINTENANCE RECOMMENDATIONS

In order to ensure the long-term sustainability and continued enjoyment of trails within Collin County, it is imperative that each municipality adopt a maintenance program that is effective and thorough. In general, trail maintenance activities most often include pavement stabilization, landscape maintenance, facility upkeep, sign replacement, mowing, litter removal, and painting. A successful maintenance program requires vigilance, continuity, and the involvement of citizens in maintaining and informally policing the trails (such as a neighborhood watch program applied to a trail corridor). Routine maintenance on a year-round basis will not only improve trail safety, but will also prolong the life of the trail. The following section illustrates the framework of an effective maintenance program that cities within Collin County can use as a model for its maintenance practices. The first section (General Considerations) describes common trail maintenance issues and strategies. The second section includes a typical trail maintenance schedule and list of anticipated annual maintenance costs.

General Considerations

The following describes common trail maintenance issues and strategies to consider in order to address some of these challenges.

Quality Control

Establishing a quality control program for the trail maintenance is an important responsibility of each city. Each city should provide appropriate equipment, material, and labor to achieve good maintenance on a reoccurring basis.

Trail and Soil Stabilization

It is crucial to protect trail stability by maintaining proper levels of backfill, profile, and contours of the subgrade. Continually maintain soil surfaces suitable for turf establishment and repair and re-establish grades in settled, eroded, and damaged areas as necessary. The grade of the soil adjacent to the edge of the trail should be maintained no higher than flush to the surface of the trail and no lower than a half-inch from the surface of the trail. Soil levels and grades adjacent to trail surfaces shall comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Maintenance should be performed periodically and often enough to assure safety of the trail user and to maximize the life of the trail (see Table 4.3).

Vegetation

Off-street trails require an unobstructed soft shoulder along both sides of the trail primarily to preclude any obstructions or hazards to cyclists. These soft shoulders also provide space for people to step off the trail if necessary. In order to maintain their effectiveness, shoulders must be unobstructed to maintain good visibility and to reduce hazards along the edges of trails. Vegetation is encouraged beyond the shoulder in order to provide visual interest and shade. Under-story vegetation within the shoulders of a trail should not be allowed to grow higher than 6”. Vegetation along sidewalks can be allowed to grow up to 24” in height since these facilities are intended for pedestrians only.

Basic measures should be taken to protect the trail investment. This includes mowing along both sides of the trail to prevent invasion of plants into the pavement area. The standards for mowing shall be the same for like areas of similar public spaces. Tree species selection and placement should minimize vegetative litter on the trail and root uplifting of pavement. Vertical clearance along the trail should be checked on a reoccurring schedule, and any overhanging branches must be pruned to a minimum vertical clearance of 10’. Vegetation control should be accomplished by mechanical means or hand labor. Some species may require spot application of State-approved herbicide.

Surfacing

Concrete is the recommended surface material for most paved off-street trails. Cracks, ruts, and water damage to the concrete surface shall be repaired periodically and often enough to maintain barrier-free access required by ADAAG. Where drainage problems exist along the trail, ditches and drainage structures shall be kept clear of debris to prevent washouts along the trail and maintain positive drainage flow. Inspections for erosion along the trail should be made on a reoccurring schedule and immediately after any storm that brings flooding to the local area. Natural and soft surface trails, such as those constructed with decomposed granite or earth, should be closed to users during wet conditions.

The trail surface should be kept free of debris, broken glass and other sharp objects, loose gravel, leaves, and stray branches. Trail surfaces shall be swept on a routine basis and as soon as practical after a storm event. Soft shoulders should be well maintained to assure safety and maximize their usability.

Litter and Illegal Dumping

Staff or volunteers should remove litter along the trail. Litter receptacles and dog waste stations should be placed at access points such as trail heads, rest areas and picnic areas. Illegal dumping should be controlled by vehicle barriers, regulatory signage, and fines where applicable. When illegal dumping does occur, it shall be removed as soon as possible in order to prevent further dumping. Neighborhood volunteers, friends groups (i.e. “Friends of ___ Trail”), “Adopt a Trail” groups, alternative community service crews, and inmate labor could be considered in addition to paid maintenance staff.

Signage

Directional, informational, and safety signage shall be replaced along the trail as signs become damaged or missing. Missing, damaged, or vandalized signs serve as clear, obvious indicators of ineffective maintenance practices. Considering James Q. Wilson and George L. Kelling’s “Broken Windows Theory,” which basically states that a broken window left unrepaired encourages vandalism, creates a sense of abandonment, and gives an impression of apathy, it is important to replace these signs before they become symbolic “broken windows.” As a related issue, it is important to immediately remove graffiti as it is discovered.



Recommended Maintenance Schedule

The following table summarizes a model maintenance schedule for trails. These guidelines address maintenance for off-street trails.

Table 4.3 Recommended Maintenance Schedule	
Action	Frequency
Inspections	Scheduled on a routine basis
Sign replacement	Immediately upon damage, deterioration, or are missing
Pavement marking replacement	Immediately upon damage, deterioration, or are missing
Major damage response (fallen trees, washouts, or flooding)	Schedule as soon as practical
Pavement sealing and pothole repair	As needed to maintain ADA accessibility standards and a smooth surface
Introduce new tree / shrub plantings, tree trimming	Scheduled on a routine basis
Culvert inspection	Scheduled on a routine basis and after major storms
Cleaning ditches	As needed
Trash/litter pick-up	Weekly during high use; twice monthly during low use
Lighting luminary repair	Immediately upon damage, deterioration or are missing
Pavement sweeping/blowing	Scheduled on a routine basis and after major storms
Maintaining culvert inlets	Scheduled on a routine basis and after major storms
Shoulder plant trimming (weeds, trees, or brambles)	Scheduled on a routine basis
Water barrier maintenance (earthen trails)	Annually
Site furnishings, replace damaged components	Immediately upon damage, deterioration or are missing
Graffiti removal	Immediately upon notification
Fencing repair	Immediately upon damage, deterioration or are missing
Shrub/tree irrigation for introduced planting areas	Weekly during summer months until plants are established
Trail and soil stabilization	Scheduled on a routine basis.

Table 4.4 describes the estimated annual maintenance costs for the four trail typologies described in Table 4.1.

Table 4.4 Estimated Annual Maintenance Costs	
Multi-Use Trail Type	Cost per Mile
Urbanized Exclusive ROW in Higher Density Areas	\$6,000
Greenway Natural Areas in an Urban Environment	\$4,000
Two-way Sidepath Along a Roadway	\$2,000
Pioneer Trail Rural Areas	\$3,500



The maintenance of creek crossings is an important consideration, as heavy rain can cause significant levels of sedimentation and debris build-up.

FUNDING & GRANT INFORMATION

There are numerous ways in which trail projects are funded. Many of these funding methods have been discussed in the Policy Recommendations section of this chapter. These include:

- Revise the Land Development Code to require the inclusion of trails prior to plat approval;
- Revise or Establish a Parkland Dedication Ordinance that includes trail requirements;
- Establish Developer Incentives for trail provision;
- Utilize 4A and/or 4B sales taxes;
- Coordinate trail construction with roadway projects;
- Establish a Complete Streets policy;
- Include trails in bond propositions; and
- Include bicycle and pedestrian facility improvements in the city’s annual budget.

Beyond these funding methods, grants are an important tool for trail implementation in Collin County. One of the primary grant programs for trails within the County is the Collin County Parks and Open Space Program. In addition, there are numerous other grant programs that can help fund trail development, land/easement acquisition, and trail amenities (such as landscaping, signage, etc.). This section details some of the most relevant grant and technical assistance opportunities available for trail development.

Collin County Project Funding Assistance Program

As discussed at the beginning of this report, the mission of the Collin County Parks & Open Space Program is to implement elements of the County’s Parks and Open Space Strategic Plan (adopted October 2001), primarily through its Project Funding Assistance Program. This program (established in 1999) awards funds to cities, unincorporated areas within the County and non-profit organizations within Collin County for parkland acquisition, trail construction and park/open space improvements.

Funds from this program are allocated on a competitive application basis and must be used to implement projects consistent with the Parks and Open Space Strategic Plan or this Regional Trails Master Plan. This is a reimbursement program with a maximum of a 50 percent County match.

For more information, visit <http://www.co.collin.tx.us/parks/funding.jsp>.

NCTCOG’s Mobility 2035

The North Central Texas Council of Governments’ Mobility 2035 – The Metropolitan Transportation Plan has been adopted by the Regional Transportation Council and is currently being reviewed by the U.S. Department of Transportation for final approval (anticipated summer 2011). NCTCOG’s ten-county Regional Veloweb, which includes several alignments within Collin County, represents high-priority projects and is often used as part of the evaluation process when funding becomes available for various Regional Transportation Council (RTC) programs.

NCTCOG has funded numerous trail construction projects within the region. Historically, Veloweb segments in proximity to high-density residential, large employers, and transit—especially in environmental justice areas—have been prioritized for funding. Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds can be used for some Calls for Projects.

Specific funding programs are described below. Additional information can be found here: <http://www.nctcog.org/trans/sustdev/landuse/funding/BikePed-Funding.asp>

Sustainable Development Program

The NCTCOG Sustainable Development Program facilitated a Call for Projects in 2001, 2005, and again in 2009 to allocate transportation funds to land use projects promoting alternative transportation modes or reduced automobile use in an effort to address mounting air quality, congestion, and quality of life issues. Eligible project types included: infrastructure, land banking, and sustainable development projects. Through the 2009 call for projects, more than \$48.1 million of funding was awarded to projects with bicycle and pedestrian elements. The next call for project is anticipated to be in 2013.

Local Government Air Quality Program

NCTCOG initiated the 2006 Local Government Air Quality Program in an effort to address the new federal 8-hour ozone standard and the current non-attainment status of the Dallas-Fort Worth region. Project types eligible for funding include: traffic signals, bicycle/pedestrian connections, park-and-ride traffic reduction programs, air quality outreach and marketing programs, van-pool programs, and other air quality strategies. Bicycle and pedestrian projects received more than \$9 million in funding through the Local Government

Air Quality Program in 2006. While no funding for this program is currently available, NCTCOG intends to issue a similar call when suitable funding is identified.

Regional Tollway Revenue Funding Initiative

NCTCOG announced the Regional Tollway Revenue Funding Initiative in April 2007 and closed the Call for Projects on August 3, 2007. The Regional Tollway Revenue initiative will distribute \$2.5 billion in toll proceeds from State Highway 121 to fund roadway, transit, air quality, safety, sustainable development, and bicycle and pedestrian projects. Cost overruns and projects affected by federal recissions will receive priority funding. Of the 561 total projects submitted, the funding requests for the 41 bicycle- and pedestrian-specific projects totals more than \$94 million. NCTCOG intends to continue the initiative when additional funds become available.

Texas Parks and Wildlife Grants

The Texas Recreation and Parks Account (TRPA) is funded through a portion of Texas sales tax received on select sporting good items. TRPA is administered by TPWD’s Recreation Grants Branch and funds five grant programs. These grant programs include: Outdoor Recreation, Indoor Recreation, Small Community, Regional, and Community Outdoor Outreach Program. TPWD also administers the Texas apportionment of the federal Land and Water Conservation Fund, which includes trails as a priority, through TRPA.

The Texas Parks and Wildlife Department also administers the Recreational Trail and the Boating Access Grants.

Grant Type	Annual Application Deadline	Award Limit	Required Match
Outdoor Recreation	March 1 and August 1	\$500,000	50%
Small Community	March 1	\$75,000	50%
Urban Outdoor Recreation	March 1	\$1,000,000	50%
CO-OP	February 1 and October 1	\$50,000	50%
Recreational Trail	February 1	\$200,000	20%
Boating Access	October 31	\$500,000	25%

The TPWD Recreation Grants Branch sends out an electronic newsletter to announce grants, deadlines, and other related information. To subscribe to this (email) newsletter, send a request to rec.grants@tpwd.state.tx.us to be added to the subscription list or call 512/389-8224. Additional information can be found here: <http://www.tpwd.state.tx.us/business/grants/trpa/>

Outdoor Recreation Grants

This program provides 50% matching grant funds to municipalities and other local units of government with a population less than 500,000 to acquire and develop park land or to renovate existing public recreation areas as identified and described per a TPWD-approved Parks Master Plan. There are two funding cycles per year with a maximum award of \$500,000. Application deadlines are March 1st and August 1st each year (the Parks Master Plan submission deadline for TPWD approval is 60 days prior to application deadline). Projects must be completed within three years of approval. Award notifications occur approximately 6 months after deadlines. For complete information on this grant, visit:

Small Community Grants

This grant was created to meet the recreation needs of small Texas communities (municipalities, counties, and other political subdivisions with a maximum population of 20,000). Funds must be used for the development or acquisition of park land. Eligible projects include trails.

Urban Outdoor Recreation Grants

Grants are available to cities and counties with populations over 500,000 for the acquisition and development of park land. Local governments must apply, permanently dedicate project areas for public recreational use, and assume responsibility for operation and maintenance.

Regional Grants

This grant program was created to assist local governments with the acquisition and development of multi-jurisdictional public recreation areas in the metropolitan areas of the State. It allows cities, counties, water districts, and other units of local government to acquire and develop parkland. The program, when active, provides 50% matching funds on a reimbursement basis for both active recreation and conservation opportunities. Grants are awarded yearly by the Texas Parks and Wildlife Commission when funds are available. This program is currently inactive.



Image courtesy of City of Plano

Trail grants are often focused toward supporting projects that provide recreational value, transportation function, or both—such as a trail linking destinations along a greenbelt.

Community Outdoor Outreach Program (CO-OP) Grants

The CO-OP grant helps to introduce under-served populations to the services, programs, and sites of the Texas Parks & Wildlife Department. This is not a land acquisition or construction grant; this is only for programs. Grants are awarded to non-profit organizations, schools, municipalities, counties, cities, and other tax-exempt groups. Minimum grant requests are \$5,000 and maximum grant requests are \$50,000. The purpose of the grants is to expose participants to environmental and conservation programs as well as outdoor recreation activities.

Recreational Trail Grants

TPWD administers the National Recreational Trails Fund in Texas under the approval of the Federal Highway Administration (FHWA). Both non-motorized and motorized trails are eligible for funding, with the maximum grant amount for non-motorized trails currently set at \$200,000. This federally funded program receives its funding from a portion of federal gas taxes paid on fuel used in non-highway recreational vehicles. The grants can be up to 80% of project cost. Funds can be spent on construction of new recreational trails, to improve existing trails, to develop trailheads or trailside facilities, and to acquire trail corridors.

Boating Access Grants

This grant program provides 75% matching grant funds for the construction of public boat ramp facilities throughout Texas. Local government sponsors must make an application, provide the land, provide access to the proposed boat ramp, supply 25% of the development costs, and accept operation and maintenance responsibilities for a minimum 25-year period. These funds are allocated annually through the federal Sport Fish Restoration Act.

Land and Water Conservation Fund (LWCF) Grants

TPWD administers the Texas apportionments of LWCF through the Texas Recreation and Parks Account. If an entity is applying for an Indoor Grant, Outdoor Grant, or Small Community Grant, TPWD may consider the application for LWCF funding. No separate application is required. Funding for this program exceeded \$1.4 million in 2009.

Texas Department of Transportation

Transportation Enhancement Program

Through the Transportation Enhancement (TE) program, the Texas Department of Transportation (TxDOT) periodically makes funds available for the construction of dedicated on-street bicycle facilities, hike and bike trails, pedestrian safety enhancements, and landscaping of transportation facilities. To date, there have been seven program calls (1993, 1994, 1996, 1999, 2001, 2005-cancelled, and 2009) totaling \$533.4 million worth of grant dollars awarded. Grant selection and administration goes through the North Central Texas Council of Governments (NCTCOG), which reviews the projects within the Metropolitan Planning Area for eligibility, ranks the projects, and provides the State-required Letter of Transportation Improvement Program Placement.

TE provides monetary support for transportation activities designed to strengthen the cultural, aesthetic, and environmental aspects of the transportation system. Funding is on a cost reimbursement basis and projects selected are eligible for reimbursement of up to 80%. Cost overruns are not eligible for reimbursement. Historically, this is one of the most important grants for trail projects.

Additional information can be found at: <http://www.txdot.gov/business/governments/te.htm>.



Safe Routes to School Program

The Safe Routes to School (SRTS) Program in Texas is based upon Federal funding and is administered by TxDOT. The overall purpose of this program is to improve safety in and around school areas. Projects eligible for SRTS funding are those that reflect one or more of the “5 Es” (engineering, education, encouragement, enforcement, and evaluation). Funds are available for use around schools that enroll kindergarten through eighth grade students and the amount of funding each State receives from the Federal government is based on percentage of student enrollment. This grant program is a 100% Federally-funded cost reimbursement program, which means there is no required match from the local government.

Additional information may be found at http://www.txdot.gov/safety/safe_routes/default.htm.

Texas Bicycle Tourism Trails Act

The Texas Bicycle Tourism Trails Act took effect September 1, 2005. The act created Section 201.9025 of the Texas Transportation Code to facilitate development of an on- and off-road statewide network of bicycle trails that reflect the geography, scenery, history, and cultural diversity of Texas and may include multiuse trails to accommodate pedestrians and equestrians. This infrastructure can serve local bicycle and pedestrian transportation network needs.

For more information about Texas Bicycle Tourism Trails contact BikeTexas at (512) 476-7433 or email mail@biketexas.org.



Image courtesy of City of Allen

Some grants require trails to be multi-use in order to be applicable for funding. Typically, this affects the design of the trails, often necessitating paved surfaces.

Other Federal Transportation Funding Sources

Bicycle and pedestrian projects are eligible for funding through many Federal programs so long as they are in accordance with State and NCTCOG transportation plans under the current federal transportation act—Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Funding programs include the TE and SRTS programs discussed above, as well as other federally funded projects as shown below (these each require a 20% funding match, unless otherwise noted).

- **Highway Bridge Replacement and Rehabilitation Program** – includes a requirement that bridge replacement or rehabilitation include safe bicycle accommodation if bicyclists are allowed to use the abutting roadway and if the additional cost is reasonable.
- **Highway Safety Improvement Program** – funds can be used for bicycle and pedestrian safety improvements, both on- and off-road. More information can be found here: <http://safety.fhwa.dot.gov/hsip/>
- **National Highway System (NHS)** – funds can be used for the construction of bicycle and pedestrian facilities within NHS corridors, including bike lanes, shoulders, and sidewalks on major arterials that are along the NHS. These funds can also be used to fund bridges or tunnels that cross NHS facilities. Interstate highway facilities can include multi-use trails.
- **Surface Transportation Program (STP)** – funds are flexible and can be used to fund on- and off-road bicycle and pedestrian facilities, including bicycle and pedestrian signals, crosswalks, and bike parking. These funds may also be used for local and collector street facilities. They may also be used to fund bicycle coordinator positions, encouragement programs, and maps.
- **Federal Transit Administration Programs (FTA)** – multiple grant programs are available for improving bicycle and pedestrian access to transit, including on-board accommodation. More information can be found here: http://www.fta.dot.gov/funding/grants_financing_263.html

- **Interstate Maintenance (IM)** – funds may include bicycle and pedestrian facilities incorporated into the design of resurfacing, restoration, rehabilitation and reconstruction projects, including new overpasses and interchanges. The local match for this program is 10 percent.
- **Transportation, Community and System Preservation (TCSP)** – provides funding for a comprehensive initiative including planning grants, implementation grants, and research to investigate and address the relationships among transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve those relationships. Applications submitted should support planning, development, and implementation of strategies to integrate transportation, community and system preservation plans and practices. The local match is 20 percent cash or other allowable match such as eligible non-cash donations. More information can be found here: <http://www.fhwa.dot.gov/tcsp/>

Other Federally Funded Programs including Bicycle and Pedestrian Opportunities

Other federal funds are available for bicycle and pedestrian projects through a variety of sources. These include:

- **Energy Efficiency and Conservation Block Grant (EECBG)** – provides funding for implementing programs that conserve energy, including bicycle and pedestrian facilities. This program is administered by the State Energy Conservation Office. Fort Worth has used these funds to implement designated bicycle facilities and bike parking in downtown Fort Worth, while the City of San Antonio has implemented a city employee bike share program. No local match is required.
- **Community Development Block Grant (CBDG)** – is administered by the U.S. Department of Housing and Urban Development and provides formula-based funds to cities and counties each year for use in low and moderate income areas. In Collin County, only the cities of Allen, Frisco, McKinney, and Plano are recognized as designated entitlement communities. These funds can be used for sidewalks and multi-use trails in qualifying areas.
- **U.S. Army Corps of Engineers (USACE)** – may provide up to a 50 percent match for trails within a congressionally authorized project. It also forms partnerships with volunteer trail groups who create and maintain hiking, mountain biking, and/or equestrian trails.
- **U.S. Department of Interior (USDOI)** – The National Parks Service’s Rivers, Trails and Conservation Assistance Program offers technical assistance to local groups and cities to preserve and develop trails, greenways and open space. This program does not provide monetary funds. The National Parks Service’s Land and Water Conservation program is administered by Texas Parks and Wildlife.

Other Sources of Funding for Trail Development

- **Grants for Greenways** – The Eastman Kodak Company, the Conservation Fund, and the National Geographic Society team up each year to present the Kodak American Greenways Awards Program. One major element of the Program involves “seed” grant awards to organizations that are growing our nation’s network of greenways, blueways, trails and natural areas. For this grant, non-profit organizations receive preference, but local and regional agencies may also apply. For more information, go to http://www.conservationfund.org/kodak_awards.
- **Communities Foundation of Texas** – The CFT is a hub for collaboration between donors, nonprofits and other funders to stimulate creative solutions to key community challenges. It has awarded funds to Friends Groups in North Central Texas. For more information go to www.cftexas.org, email the Philanthropy Department at grants@cftexas.org, or contact by phone at 214-750-4222.
- **Meadows Foundation** – The Meadows Foundation has provided grants for Trail Development under both its Arts & Culture category (for signage and exhibits along trails) and its Civic and Public Affairs category (for studies, landscaping and construction). For more information, go to: <http://www.mfi.org>.
- **Land Trusts** – Land trusts provide a valuable service to municipalities across the country in helping to acquire natural areas, open space, and other land for public use. Typically, land trusts not only assist in funding land acquisition but also assist in managing the transaction and financing. Often, each land trust will have a specific set of requirements for the types of land they are willing to help acquire and/or how that land will be used. Contact the Texas Land Trust Council for more information (<http://www.texaslandtrustcouncil.org>). Table 4.6 lists some of the land trusts operating in Collin County.

Table 4.6
Land Trusts Operating in Collin County

Name	Phone	Website
American Farmland Trust	(413) 586-4593	http://www.farmland.org/
Archaeological Conservancy	(505) 266-1540	http://www.americanarchaeology.org/
Connemara Conservancy	(214) 351-0990	http://www.connemaraconservancy.org/
Conservation Fund	(512) 477-1712	http://www.conservationfund.org/
Ducks Unlimited, Inc	(832) 595-0663	http://www.ducks.org/
Native Prairies Association of Texas	(512) 772-4741	http://www.texasprairie.org/
National Wild Turkey Federation	(803) 637-3106	http://www.nwtf.org/
Quail Unlimited	(800) 450-1602	
Texas Agricultural Land Trust	(210) 828-7484	http://www.txaglandtrust.org
Texas Cave Management Association	(210) 699-1388	http://www.tcmacaves.org/
Texas Land Conservancy	(512) 301-6363	http://www.texaslandconservancy.org
Texas Parks and Recreation Foundation	(972) 744-4595	http://www.tprfoundation.org/
Texas Parks and Wildlife Foundation	(214) 720-1478	http://www.tpwf.org/
The Nature Conservancy	(210) 224-8774	http://www.nature.org/texas/
The Trust for Public Land	(512) 478-4644	http://www.tpl.org/
Wetland Habitat Alliance of Texas	(936) 569-9428	http://www.whatduck.org/
Wildlife Land Trust, Humane Society	(301) 548-7735	http://www.hsus.org/

Source: Modified from Texas Land Trust Council's Prairies and Lakes Region Land Trust Database

- **Recreational Equipment, Inc.** – REI focuses its philanthropic efforts on supporting and promoting participation in active volunteerism to care for public lands, natural areas, trails and waterways. Annually, REI dedicates a portion of its operating profits to help protect and restore the environment, increase access to outdoor activities, and encourage involvement in responsible outdoor recreation. REI em-

ployees nominate organizations, projects, and programs in which they are personally involved to receive funding or gear donations. For more information, go to <http://www.rei.com/aboutrei/grants02.html>. REI employees also participate in service projects; contact the nearest REI store to learn more about their hands-on service projects, which are dedicated to restoring and improving areas for outdoor recreation.

- **Private Donations** – This source of financial assistance would usually come from a citizen, organization, or business which has an interest in assisting with the development of the trail system. Land dedication is not an uncommon occurrence when property is being developed. The location of a trail within a residential development offers additional value to residential units within that neighborhood. Private donations may also be received in the form of funds, facilities, recreation equipment, art, or in-kind services. Donations from local and regional businesses as sponsors for events or facilities could be pursued. A Parks Improvement Trust Fund may be set up to manage donations by service organizations, benevolent citizens, willed estates, and other donated sources. The purpose of this trust is to establish a permanent source of principle value that will increase as donations occur. The principal cannot be decreased; however, the annual interest can be used for park development.
- **Partnerships with Volunteer Groups** – Friends of the Trail Groups are usually set up for an individual trail or trail segment. Friends groups in North Central Texas have been formed to develop trail master plans that have then been adopted by a local government agency. They have been formed to raise funds for trail tread construction, land donations or easements, and/or amenities such as benches, rest plazas, water fountains, and art installations. They also lead athletic events, trail corridor clean-ups / landscape maintenance, and they frequently provide volunteer safety patrols. A Friends Group should be encouraged for every trail!

PLAN UPDATES

The RTMP is a guide to be used by Collin County, cities, and other agencies to coordinate the development of a county-wide system of trails. While this plan will serve the County for many years, it is important that the RTMP is seen as a living document and is updated as needed based on changing growth patterns, new approaches to trail development, and the construction of new trails. It is recommended that the RTMP be updated every five years or when significant changes occur. The maps contained in this document are static, while the planning and development of each city's individual trail system is dynamic and ever-changing. Maintaining a regularly-updated plan will ensure that the needs of Collin County citizens continue to be met and that a continuous and interconnected network of trails can be provided.



Image courtesy of City of McKinney

Funding resources can be maximized by building trails as part of other capital projects, such as park development. In this case, there is an added benefit of providing a trail connection to parks, which are popular destinations for pedestrians and cyclists.



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