

# STAFFORD HERITAGE TRAIL MULTIMODAL PLAN





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ACKNOWLEDGMENTS**

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**ABOUT GAP-TA**

The Growth and Accessibility Planning Technical Assistance (GAP-TA) program supports Virginia localities in planning and developing multimodal transportation opportunities. The program has four components, and each component has differences in eligible applicants, eligible activities, expected outcomes, and application evaluation criteria. Component 1 involves conducting multi-modal planning within existing or planned Urban Development Areas or Growth Areas. Component 2 involves developing or evaluating strategies to address emerging planning issues. Component 3 involves developing an accessibility planning process. Finally, Component involves conducting multi-modal planning outside urbanized areas. Visit [vtrans.org/about/GAP-TA](https://vtrans.org/about/GAP-TA) for information about the Growth and Accessibility Planning Technical Assistance program.

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CONTENTS

<b>1. INTRODUCTION</b>	<b>7</b>
1.1 Project Purpose	7
1.2 Planning Approach	7
1.3 Project Background	7
<b>2. EXISTING CONDITIONS</b>	<b>8</b>
2.1 Study Area	8
2.2 Plan Review	12
<b>3. FIELD REVIEW</b>	<b>15</b>
3.1 Western Alignment	15
3.2 Eastern Alignment	17
<b>4. FEASIBILITY AND NEEDS ASSESSMENT</b>	<b>21</b>
4.1 Corridor Feasibility Assessment Approach	21
4.2 Preliminary Feasibility Assessment	23

<b>5. PROPOSED ROUTE IDENTIFICATION</b>	<b>28</b>
5.1 Overview of Proposed Alignment	28
5.2 Western Alignment	29
5.3 Eastern Alignment	32
<b>6. GAP PRIORITIZATION AND COSTS</b>	<b>43</b>
6.1 Prioritization Approach	43



LIST OF FIGURES

Figure 1: Project Approach and Timeline	7
Figure 2: Urban Service Areas, TDAs, Conservation Easements, and Resource Protection Areas in Stafford County	8
Figure 3: Active Transportation Propensity by Census Tract in Stafford County	9
Figure 4: Jobs by Census Block in Stafford County	9
Figure 5: Key Destinations (Parks, Cultural Resources, Schools, and Community Facilities) in Stafford County	10
Figure 6: VTrans 2021 Mid-Term Active Transportation Infrastructure Needs in Stafford County, VA	11
Figure 7: Existing and Proposed Bike and Pedestrian Facilities, Stafford County, VA	11
Figure 8: Proposed new facilities and facility upgrades from 1996 Bicycle and Pedestrian Facilities Plan	12
Figure 9: Stafford County Facility Recommendations map from the 2045 George Washington Region Bicycle and Pedestrian Plan	12
Figure 10: Proposed Arterial Routes as reproduced in the Stafford County Bicycle and Pedestrian Facilities Plan	12
Figure 11: Stafford County Active Transportation Needs (FAMPO 2050 AT Draft Plan)	13
Figure 12: 2014-2021 Crashes Involving Cyclists and Pedestrians (FAMPO 2050 AT Draft Plan)	13
Figure 13: Map of Recommended Improvements in the Stafford Southern Gateway Bicycle and Pedestrian Study	14
Figure 14: Intersection of Staffordboro Road and Juggins Road Connector and northernmost section of Garrisonville Park & Ride lot	15
Figure 15: Goat path in the grass along an undeveloped segment of Mine Road between Garrisonville Road and Highpointe Boulevard	15
Figure 16: New 10’ shared use path on Mine Road at the Embrey Mill subdivision	16
Figure 17: Looking south down Centreport Parkway towards Mountain View Road. Centreport can be seen rising again beyond Mountain View	16
Figure 18: A small community center sits along Truslow Road just southeast of Enon Road	16

Figure 19: The sidepath along Plantation Drive is narrow for a shared use path, cracked, occasionally concrete, and sometimes merges into the roadway (left: near Truslow Road; right: south of Lichfield Blvd)	16
Figure 20: Route 1 north of Aquia Harbour	17
Figure 21: Walking trails underneath Power Line Corridor at Aquia Harbour	17
Figure 22: Aquia Harbour Walking Trails map (Source: Aquia Harbour Property Owners Association)	17
Figure 23: Bells Hill Road shared use path (Source: Google)	18
Figure 24: View of Wayside from Coal Landing Road	18
Figure 25: Power line corridor between Hospital Center and Civil War Park, with easement visible as a dirt path going into the woods on left	18
Figure 26: Power line easement approaching Forbes Street, viewed from Canaan’s Faith Church of God	19
Figure 27: Power line easement at Melchers Drive, where a steep embankment at left meets a blind curve	19
Figure 28: Route 1 south of Eskimo Hill/American Legion Rd (SR 628)	19
Figure 29: Leeland Road just north of Walnut Farms Parkway, about 1/4 mile south of Conway Elementary School	19
Figure 30: Route 1, left, and West Cambridge Street, right, diverge both horizontally and vertically south of Route 17. West Cambridge Street is a single lane one-way road that is akin to an off-ramp.	19
Figure 31: Doc Stone Road (SR 659) climbing out of Smith Lake Park	20
Figure 32: Coal Landing Road (SR 631), left, and Widewater Road (SR 611), right	20
Figure 33: Trail Corridor options in Quantico, North Stafford, and northern Aquia Harbour	22
Figure 34: Trail Corridor options in Aquia Harbour, Courthouse, and Central Stafford	22
Figure 35: Trail Corridor options in Central and Southern Stafford	23
Figure 36: Trail Corridor options in Southern Stafford east of I-95	23



LIST OF FIGURES (CONTINUED)

Figure 37: Elevation profile of Power Line Easement (segs. B1 & B2) from US 1 (left) to Widewater Road (right)	24
Figure 38: Preliminary feasibility assessment of trail alignment options, Quantico to Aquia Harbour	24
Figure 39: Elevation profile of Power Line Easement in Aquia Harbour (segments G1 and G2), north on left	25
Figure 40: Preliminary feasibility assessment of trail alignment options, Aquia Harbour to Central Stafford	25
Figure 41: Elevation profile for the Power Line Easement, Segments L3 to L6	26
Figure 42: Preliminary feasibility assessment of trail alignment options, Central Stafford	26
Figure 43: Elevation profile for the Power Line Easement,segments M1 to M4	27
Figure 44: Preliminary feasibility assessment of trail alignment options, Southern Stafford east of I-95	27
Figure 45: Draft Alignment of the Stafford Heritage Trail broken down into 11 segments	28
Figure 46: Narrow shared use path along Mine Road at Northhampton Boulevard (left) and wide shared use path along Mine Road at Shields Road (right)	29
Figure 47: Map of Segment 1 of the Stafford Heritage Trail – Garrisonville to Embrey Mill	29
Figure 48: Limited shoulder on Centreport Parkway looking towards Mountain View Road (SR 627)	30
Figure 49: Map of Segment 2 of the Stafford Heritage Trail – Embrey Mill to Enon	30
Figure 50: Enon Road by Hulls Memorial Baptist Church (left) and Plantation Drive at Sheffield Street (right)	31
Figure 51: Map of Segment 3 of the Stafford Heritage Trail – Enon to Southern Gateway	31
Figure 52: Map of Segment 4 of the Stafford Heritage Trail – Quantico to Aquia	32
Figure 53: Power line easement at Stonebridge subdivision (left) and trail by Heim Middle School (right)	33
Figure 54: View of Woodstock Lane (SR 639, left) and Telegraph Road (SR 637, right) by Carl Lewis Field	33

Figure 55: Map of Segment 5 of the Stafford Heritage Trail – Aquia to Courthouse	34
Figure 56: View of Government Island Trail boardwalk towards Aquia Harbour	35
Figure 57: Map of Segment 6 of the Stafford Heritage Trail – Government Island Spur	35
Figure 58: Map of Segment 7 of the Stafford Heritage Trail – Courthouse to Civil War Park	36
Figure 59: View of power line easement from Forbes Street (SR 627) across from electrical substation	37
Figure 60: Map of Segment 8 of the Stafford Heritage Trail – Civil War Park to Stafford High School	37
Figure 61: Map of Segment 9 of the Stafford Heritage Trail – Stafford High School to Leeland Road VRE	38
Figure 62: Map of Segment 10 of the Stafford Heritage Trail – Leeland Road VRE to Belmont-Ferry Farm Trail	39
Figure 63: Examples of rail-with-trail projects in different contexts and with different types of separation, setback, and rail service types from Seattle, WA (top left), York, PA (top right), and Minneapolis, MN (bottom left)	41
Figure 64: Power line corridor extending south towards the Rappahannock River at Lendall Lane	42
Figure 65: Map of Segment 11 of the Stafford Heritage Trail – Stafford High School to Belmont-Ferry Farm Trail	42

LIST OF TABLES

Table 1: Comprehensive Plan segments and projects relevant to the Western Alignment	13
Table 2: Stafford Heritage Trail Corridors by Gap Analysis Area	21
Table 3: Additional Analysis Segment Labels	21
Table 4: Stafford Heritage Tail Segment Prioritization Measures and Scores	43



LIST OF ACRONYMS

CTB	Commonwealth Transportation Board
CMAQ	Congestion Mitigation and Air Quality Improvement Program
DCR	Virginia Department of Conversation and Recreation
DRPT	Virginia Department of Rail and Public Transportation
DWR	Virginia Department of Wildlife Resources
EEA	Equity Emphasis Area
ECG	East Coast Greenway
FAMPO	Fredericksburg Area Metropolitan Planning Organization
FHWA	Federal Highway Administration
FRA	Federal Rail Administration
GAP-TA	Growth and Accessibility Planning Technical Assistance Program
GIS	Geographic Information Systems
HSIP	Highway Safety Improvement Program
LEHD	Longitudinal Employer-Household Dynamics
L RTP	Long-Range Transportation Plan
MCB	Marine Corps Base Quantico
MPO	Metropolitan Planning Organization
OIPI	Office of Intermodal Planning and Investment
PHNST	Potomac Heritage National Scenic Trail
REF	Rail Enhancement Fund
ROW	Right-of-Way
RSTP	Regional Surface Transportation Program

TAP	Transportation Alternatives Program
TDA	Targeted Development Area
UDA	Urban Development Area
VDOT	Virginia Department of Transportation
VPRA	Virginia Passenger Rail Authority
VRE	Virginia Railway Express
VTrans	Virginia’s Statewide Transportation Plan



# 1 INTRODUCTION

## 1.1 Project Purpose

The purpose of the Stafford Heritage Trail Plan is to identify one or more north-south corridors suitable for a cross-county trail which would improve access, mobility, and recreational opportunities for people walking and biking in and between Urban Development Areas (UDAs) and Targeted Development Areas (TDAs) in Stafford County. The trail could also serve as the missing link of the Potomac Heritage National Scenic Trail, and connect various cultural and natural resources in the county via five potential spurs.

The Project Scope identified several potential corridors for study, namely U.S. Route 1, the North-South Power Line Easement owned by Dominion Energy, and the county’s developing north-south roadway network west of Interstate 95 (I-95) that is centered on existing and future segments of Mine Road (the “Western Alignment”).

## 1.2 Planning Approach

The approach and process for this project is outlined in Figure 1, below. The project began with an **existing conditions analysis**, compiling and reviewing a comprehensive set of available data including socio-demographic and land use context, community destinations and environmental features, existing projects and plans, and other multimodal needs and priorities. This data analysis was followed by a **field visit** to verify local conditions and infrastructure along each corridor and potential parallel facilities.

Building on the insights and gaps identified through the existing conditions study, the next step in the project involved a **preliminary feasibility analysis** of proposed trail corridors and parallel facilities. This analysis was applied to **determine a recommended route** for north-south connectivity, identifying a potential Heritage Trail alignment and its associated improvement projects. A final and **prioritized list of projects** to advance this recommendation was developed, including planning-level cost estimates for each segment.

## 1.3 Program Background

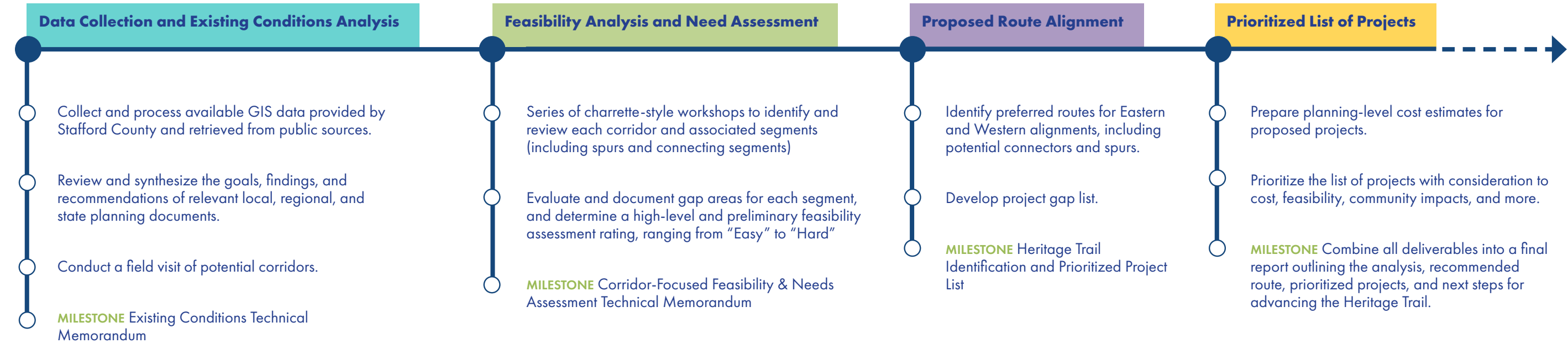
This project is made possible with funding from the Growth & Accessibility Planning Technical Assistance Program (GAP-TA) at Virginia’s Office of Intermodal Planning and Investment (OIPI). GAP-TA projects offer Virginia municipalities the opportunity to engage technical assistance that meets one of the following program areas:

1. Conduct multi-modal planning within existing or planned Urban Development Areas (UDAs);
2. Develop or evaluate strategies to address emerging planning issues;
3. Develop an accessibility planning process; or,
4. Conduct multi-modal planning outside urbanized areas.

This project addresses the first component area. Identifying the preferred trail alignment requires a comprehensive analysis of available and anticipated multimodal facilities, development and travel patterns, and key community connections.

Stafford is one of the region’s safest and most desired locations in which to live, work, play and raise a family. Unique and inviting neighborhoods are the centerpieces of development and feature walkable urban experiences, anchored by arts and cultural amenities. Downtown Stafford is a nationally recognized district, providing a variety of authentic shopping, service and dining opportunities, along with the best recreational and entertainment venues in the community and the region.

Figure 1: Project Approach and Timeline





# 2 EXISTING CONDITIONS

## 2.1 Study Area

As seen on Figure 22, Stafford County’s Urban Service Area is centered on Interstate 95, so the study corridors that run on either side of it — the Western Alignment to the west and the Route 1 Corridor to the east — run roughly along the center-west and center-east portions of the Urban Service Area, respectively. The Power Line Easement, which is east of the Route 1 corridor, dips in and out of the Urban Service Area, so the corridor’s character includes suburban, rural, and undeveloped areas. Most of the areas further to the east of the Power Line Easement, including most of the rail corridor now owned by the Virginia Passenger Rail Authority (VPRA), is of rural character or a natural resource protection area.

The propensity to use active transportation, presented in Figure 33, is estimated using an index that combines various socio-demographic factors from the U.S. Census’ American Community Survey. The factors include population density, age (i.e., youth and seniors), disability, low-income households, and zero-car households.<sup>1</sup> This analysis shows high propensity for active transportation near the proposed corridors in the earlier-developed and less-wealthy areas around Falmouth east of I-95 and south of Route 17 as well as further east along the existing Deacon Road bike lanes; in Berea north of Route 17 and west of I-95; and in areas north of Garrisonville Road by Marine Corps Base (MCB) Quantico. Propensity to bike or walk for transportation is lowest in the more-recently developed and wealthier areas along Mine Road and Centreport Parkway and the Courthouse area. Areas west of the Western Alignment also show high propensity, but their populations are spread out across larger census tracts due to their rural character.

Using data from the U.S. Census Bureau’s Longitudinal Employer-Household Dynamics (LEHD) data, the location and number of jobs across the county can be visualized at the census block level (see Figure 44). Employment opportunities are concentrated in the south end of the county along Route 17, with large employers such as GEICO and Walmart, as well as numerous commercial, service, and industrial establishments; in the Courthouse area with Stafford Hospital and county government facilities;<sup>2</sup> on the commercial strip along Garrisonville Road; and in Boswell’s Corner at the northern end of Route 1 with businesses primarily serving MCB Quantico.

Most key destinations as provided by the county, such as schools, parks, and other community facilities (see Figure 55 for a summary of key destinations), are concentrated in the residential areas such as the Historic Falmouth riverfront, neighborhoods near Leeland Road station, Stafford Courthouse, and Telegraph Road, neighborhoods around the northern border of Aquia Harbour, and in the newer developments along and west of Mine Road.

<sup>1</sup> A more detailed description of the factors and their weighting in the index can be found on page 13 of the Stafford Southern Gateway Bicycle and Pedestrian Study.  
<sup>2</sup> Map may overestimate employees located in the Courthouse area as government jobs may be attributed to the location of the primary government facility in LEHD data (e.g., all teaching jobs across county school sites may be associated to the school board’s central office).

Figure 2: Urban Service Areas, TDAs, Conservation Easements, and Resource Protection Areas in Stafford County

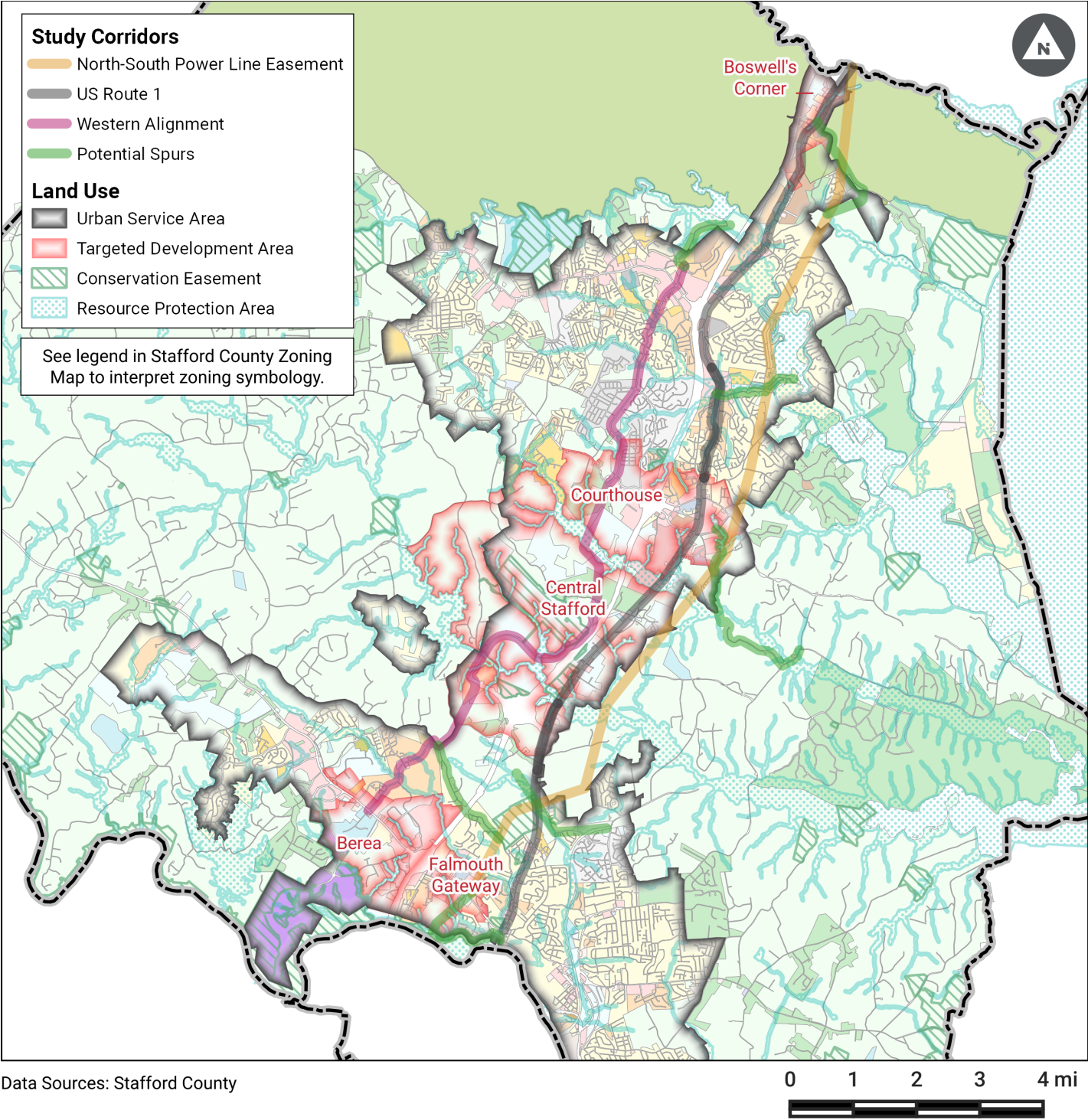




Figure 3: Active Transportation Propensity by Census Tract in Stafford County

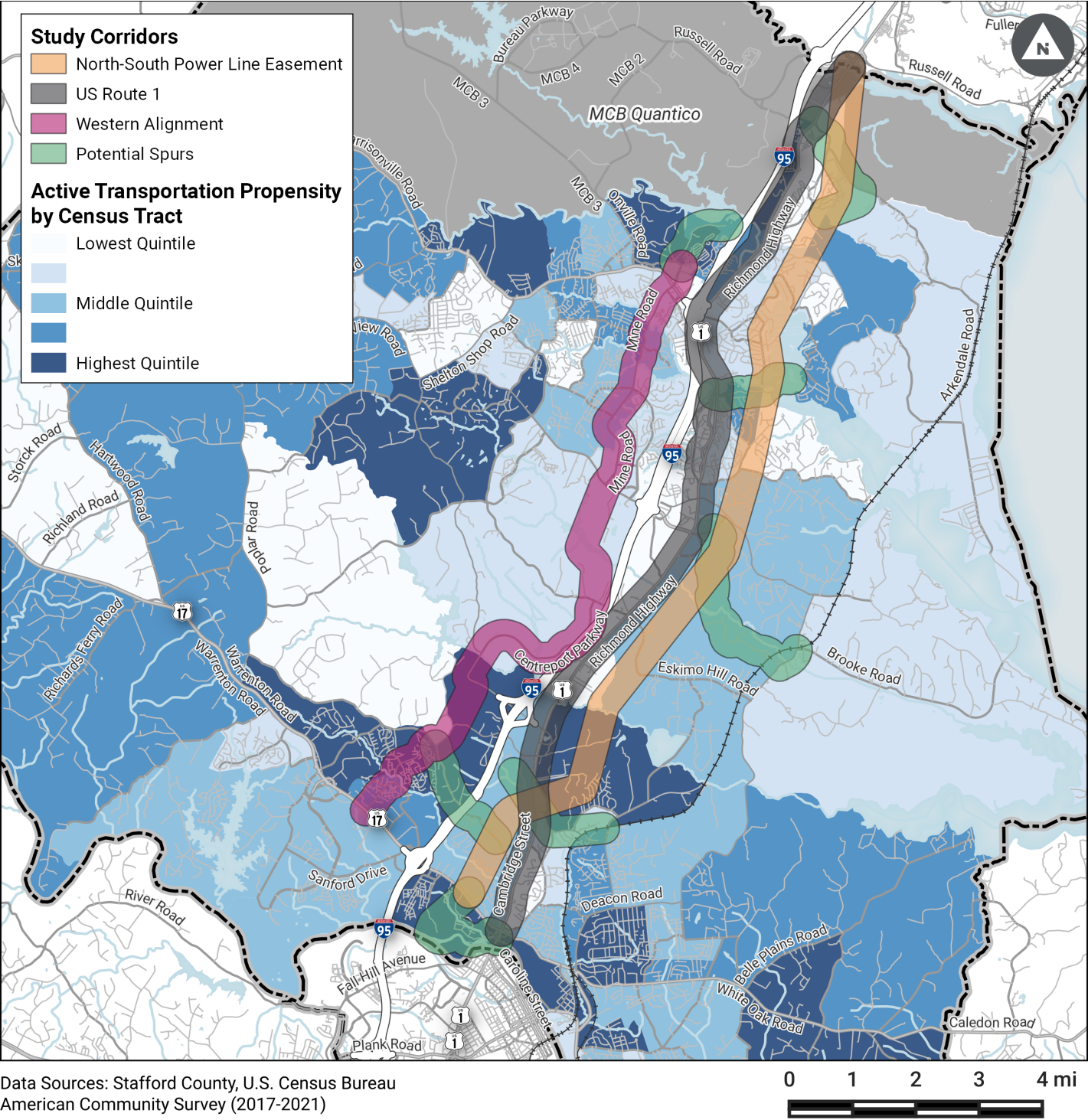


Figure 4: Jobs by Census Block in Stafford County

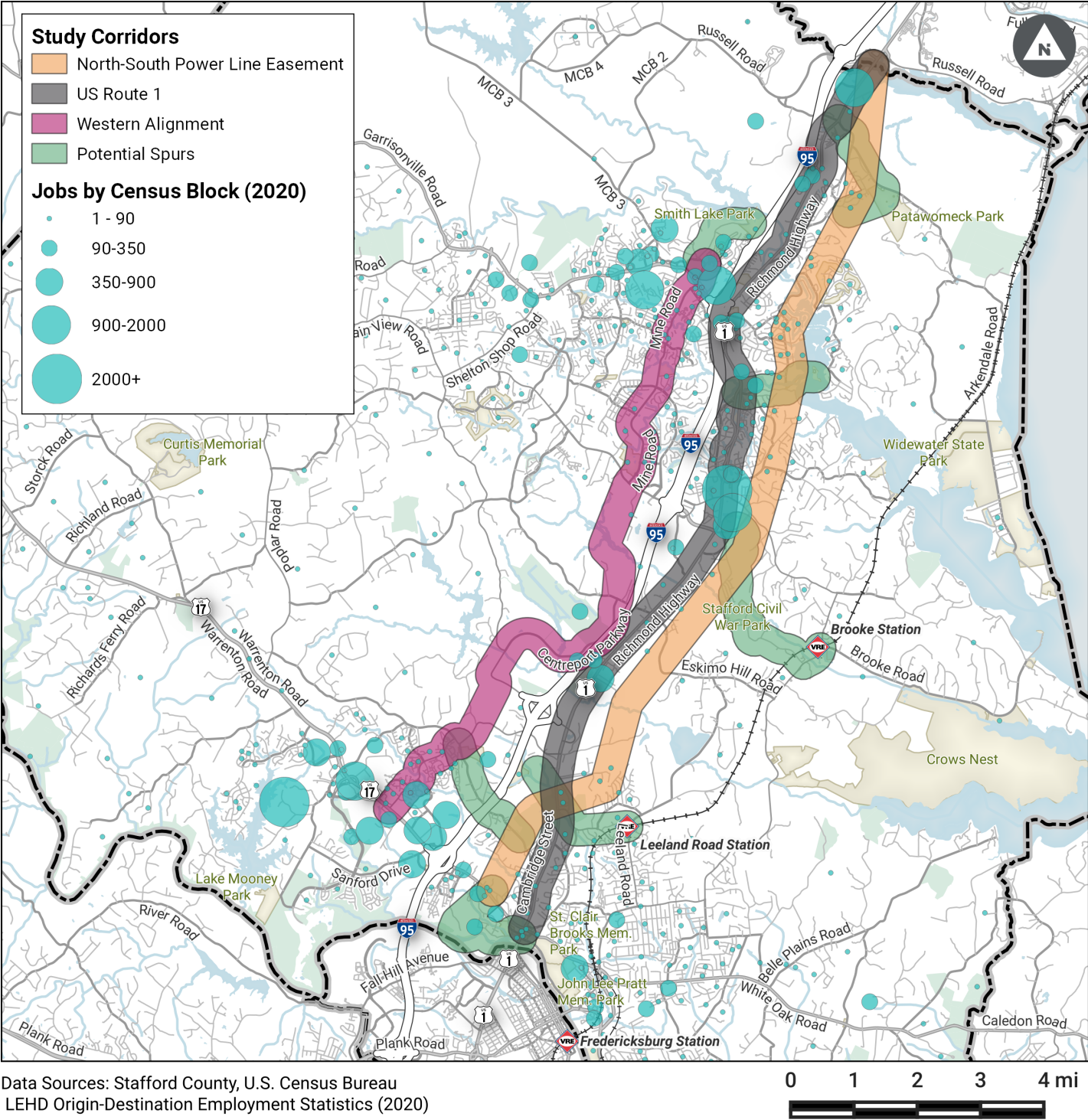
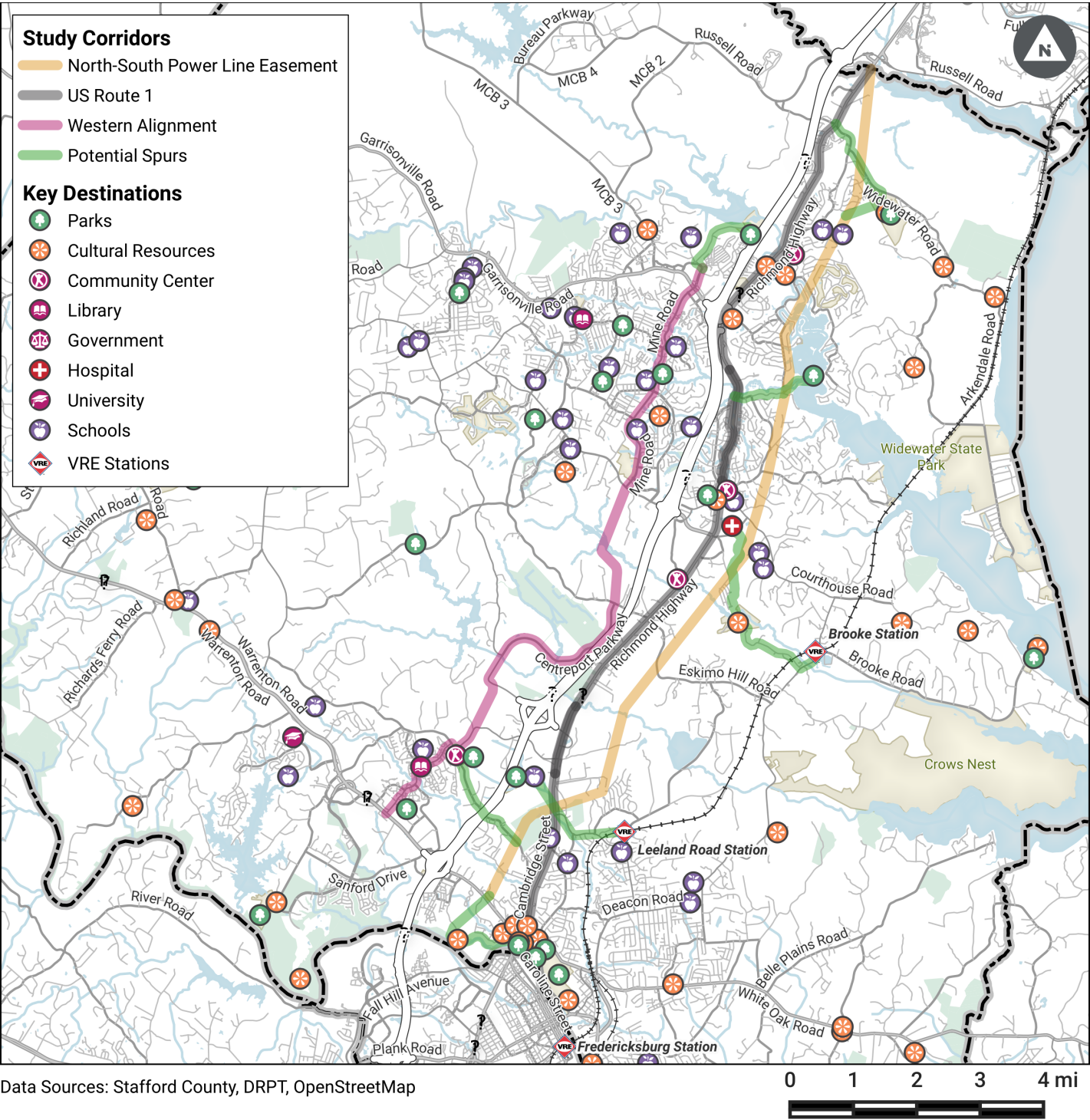




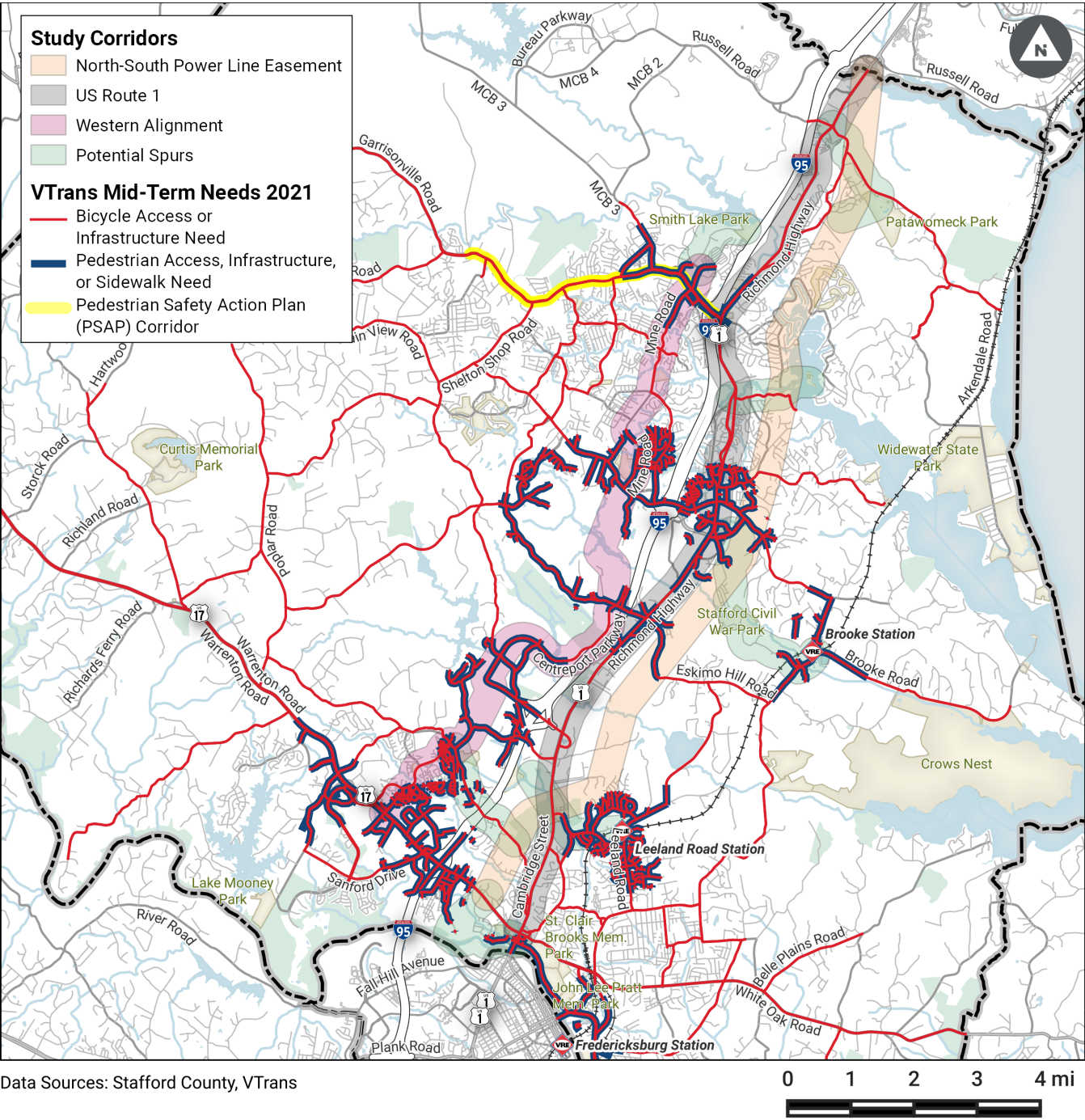
Figure 5: Key Destinations (Parks, Cultural Resources, Schools, and Community Facilities) in Stafford County





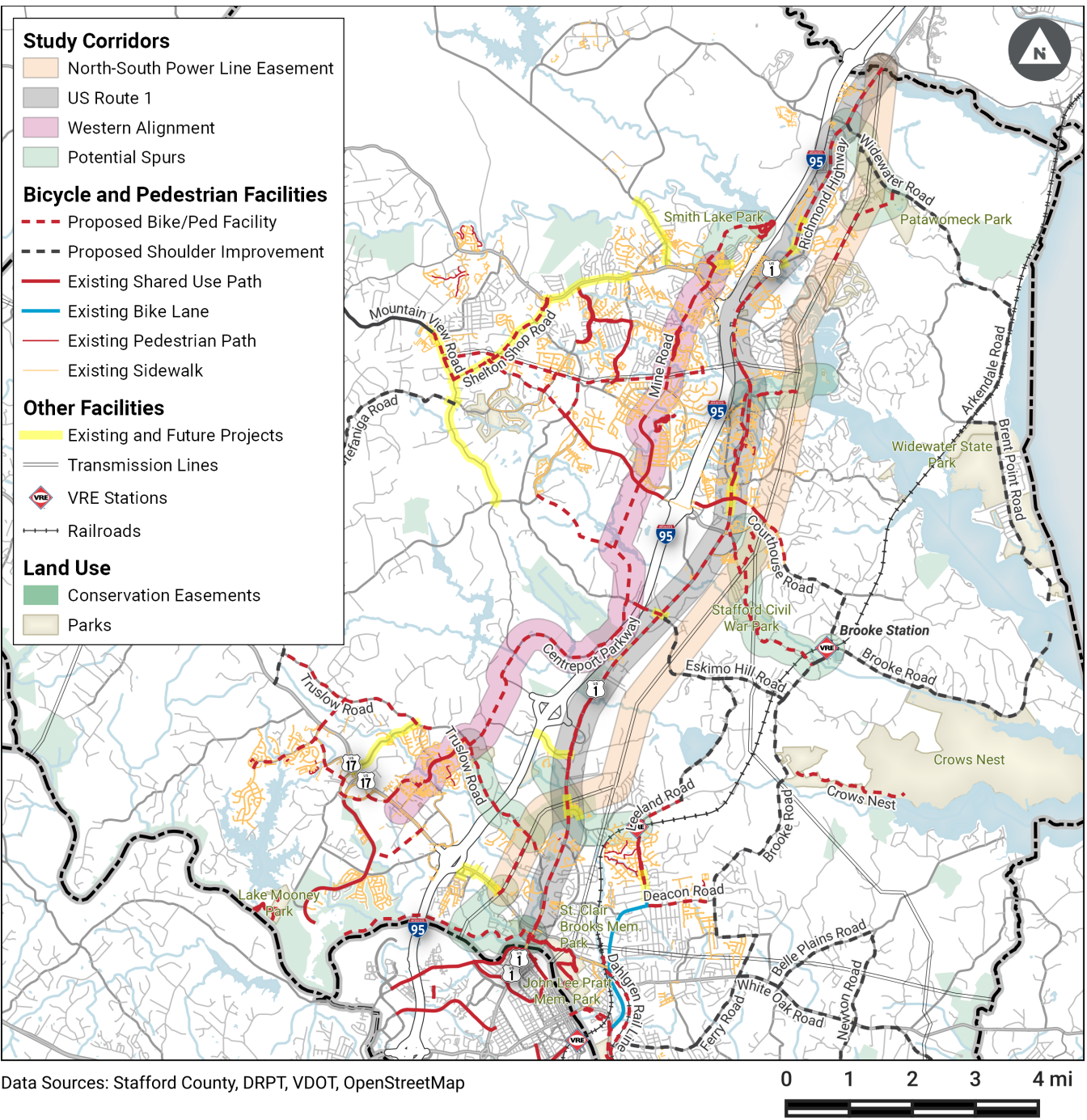
Nearly every major arterial road in Stafford County is rated as needing bicycle access or infrastructure according to VTrans 2021 Mid-Term Needs (see Figure 66). Many of these roads are likewise rated in need pedestrian access or infrastructure, especially on or just off Route 17 in the southwest, Centreport Parkway in Central Stafford, Ramoth Church and Courthouse Roads in Courthouse, Garrisonville Road in northern Stafford, and near the Brooke and Leeland Road VRE stations. Garrisonville Road from Route 1 west of Barrett Heights Road is additionally rated a Pedestrian Safety Action Plan Corridor.

Figure 6: VTrans 2021 Mid-Term Active Transportation Infrastructure Needs in Stafford County, VA



The county’s existing bicycle and pedestrian facilities as well as proposed facilities from the county’s 2019 Bicycle and Pedestrian Facilities Plan are presented in Figure 77. Existing facilities that intersect with the study corridors include shared use paths on sections of Courthouse Road, Mine Road, Plantation Drive, and the Belmont-Ferry Farm Trail, and the county’s sole bicycle lanes on Deacon Road. Proposed bicycle and pedestrian facilities, likely shared use paths, can be found along the entire length of the Western Alignment and Route 1 corridors as well as potential spurs to Patowomeck Park, Government Island, and Stafford Civil War Park. Shoulder improvements are also proposed along several roads connecting to major waterfront access points such as Aquia Landing Park and Widewater State Park.

Figure 7: Existing and Proposed Bike and Pedestrian Facilities, Stafford County, VA





2.2 Plan Review

The team reviewed County and regional documents to determine what, if anything, they say about the potential trail corridor(s) relevant to the Stafford Heritage Trail, including:

- Stafford County Bicycle and Pedestrian Facilities Plans
- Stafford County Virginia Comprehensive Plan 2016–2036: 2021 5-Year Update
- Fredericksburg Area Metropolitan Planning Organization (FAMPO) 2050 Active Transportation Plan Draft: Bicycle and Pedestrian Facilities Plan for Fredericksburg, Spotsylvania, and Stafford
- Stafford Southern Gateway Bicycle and Pedestrian Study: Multi-Modal Transportation Opportunities

Other documents that may be relevant but are not included in this review include:

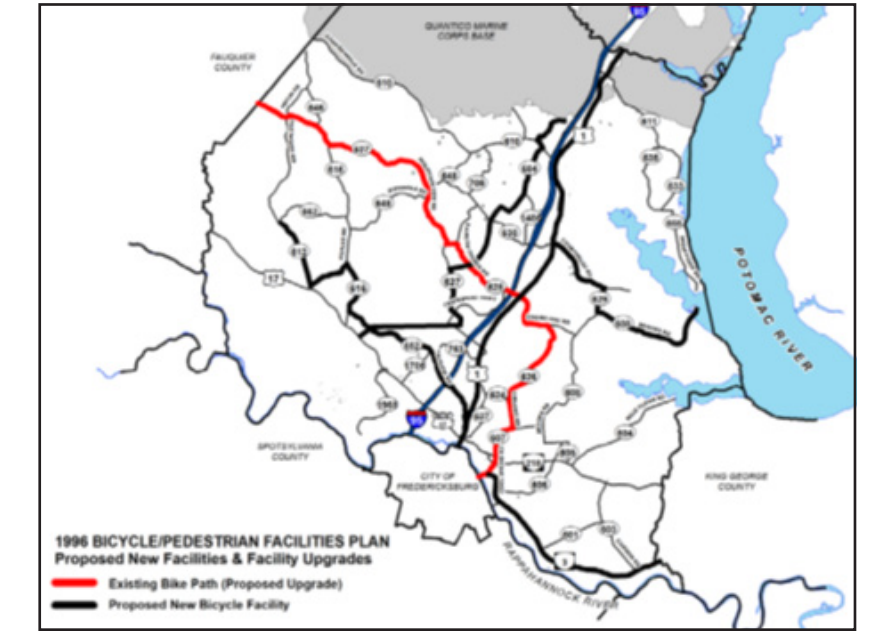
- Special Area Plans for the U.S. Route 1 Corridor and the Falmouth Area
- Stafford County Master Transportation Plan (under development)
- FAMPO Intraregional Multimodal East-West Mobility Study (Phase I and II)

While the County has responsibility over transportation planning, all public roads in Stafford County are owned and maintained by VDOT. Trails may be the responsibility of VDOT, the County, or adjacent landowners depending on their ownership.

Stafford County Bicycle and Pedestrian Facilities Plans (1996, 2019)

The 1996 Bicycle and Pedestrian Facilities Plan, the County’s first, proposed “approximately 58 miles of new bicycle facilities” including, among others, the entire length of Route 1 from Prince William County to the Fredericksburg city line, and a series of parallel roads west of I-95, including part of Mine Road (Figure 88).

Figure 8: Proposed new facilities and facility upgrades from 1996 Bicycle and Pedestrian Facilities Plan

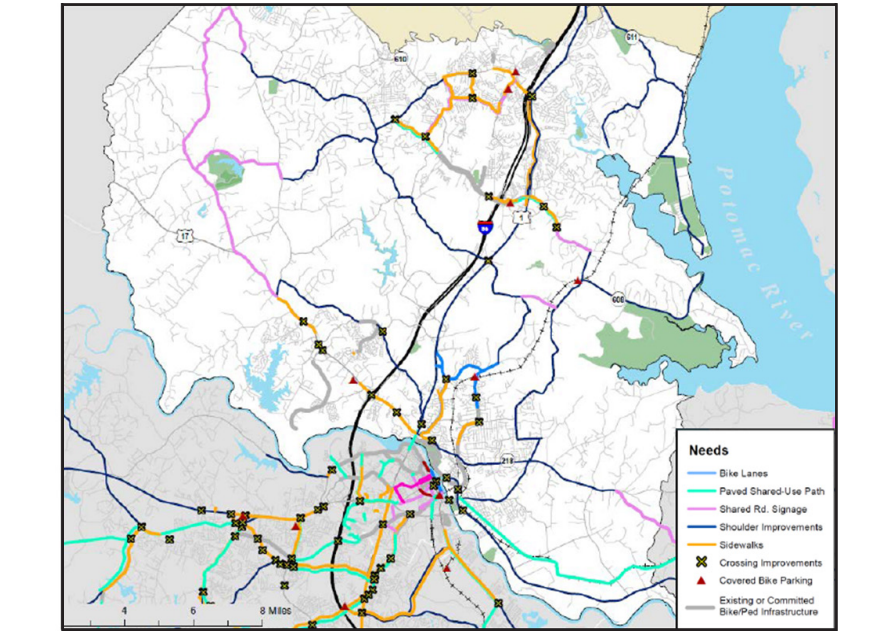


The 2019 update to the Facilities Plan notes the then-recent adoption of FAMPO’s 2045 Long Range Transportation Plan (LRTP), and recommendations for Stafford County from the LRTP are depicted in the county’s Facilities Plan as shown in Figure 99. The 2019 Plan also notes the difficulty of building trail facilities in railway corridors owned by CSX, and suggests that “other resources, such as utility corridors, may allow for cost-effective bicycle and pedestrian accommodations.” The Plan specifically calls out power line and sewer line easements as potential corridors of interest.

The Plan proposes routes that build on the FAMPO LRTP (see Figure 7 for overlaps between the 2019 Plan and proposed trail corridors). Of note are the proposed realignments for the East Coast Greenway (ECG) and US Bike Route 1 (USBR 1), both of which cross the county north-south. The proposed realignments would:

- Keep the ECG and Potomac Heritage National Scenic Trail (PHNST) on Route 1 north of Courthouse Road, while adding a bike/ped facility to this segment.
- Reroute ECG along Courthouse Road across I-95 to Mine Road, while adding missing bike/ped facilities.
- Build bike/ped facilities on a Mine Road extension south of Courthouse Road, and reroute ECG and USBR 1 along it.
- Add bike/ped facilities to Centreport Parkway, a second Mine Road extension, Truslow Road, and the Power Line Easement south to Route 17, and reroute ECG along it.
- Add bike/ped facilities and shoulder improvements to Courthouse Road east of I-95, Andrew Chapel Road, Brooke Road, and Eskimo Hill Road, and reroute PHNST along it.
- Add shoulder improvements and bike/ped facilities on American Legion Road, Eskimo Hill Road, Potomac Run Road, and Leeland Road to existing Deacon Road bike lanes and rerouting USBR 1 along it.

Figure 9: Stafford County Facility Recommendations map from the 2045 George Washington Region Bicycle and Pedestrian Plan

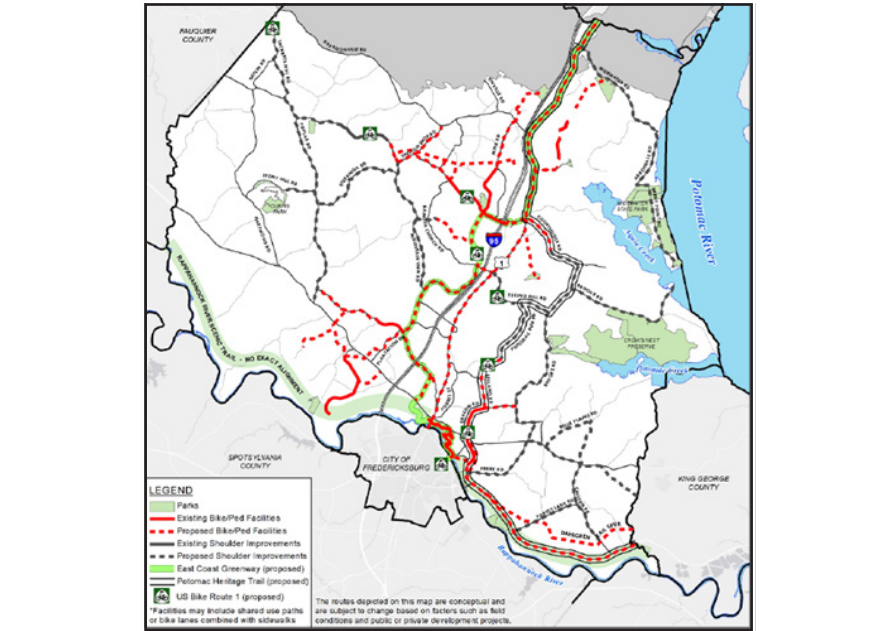


The 2019 Plan makes policy recommendations, highlighting the Courthouse TDA as a place where “encouraging foot and bicycle traffic in this area will help create an active and vibrant downtown setting,” which can be done by providing “safe and accessible bicycle and pedestrian facilities” within the area, as well as facilities that extend to adjacent neighborhoods to encourage non-vehicular access to this growing area.

As part of the Plan, the County conducted public outreach via an online survey during August and September 2018. While respondents skewed older than the county’s median age and were more likely to use active transportation for commuting and running errands than the average county resident,<sup>1</sup> when asked what discouraged them from riding or walking, the top responses were “safety along roads” and “lack of facilities” by wide margins. “Safety at crossings” and “lack of scenic routes” were a distant third and fourth place, respectively. Asked for their top destinations, over 88 percent said “parks”, but more than 50 percent said “shopping/errands” and nearly 40 percent said “schools.” The document notes that “only 1.5% of respondents are under 24 years old” and suggests that the primacy of parks and schools despite so few young respondents “emphasizes the demand for connections to public facilities,” likely by parents with children. Open-ended questions in the survey surfaced additional streets that could be considered for the Stafford Heritage Trail study, such as Onville Road (a primary connection between Garrisonville and MCB Quantico), Eustace Road (which approximately parallels Mine Road to the west), and Leeland Road (which connects several communities to Leeland Station VRE); as well as the need for improved connectivity generally with VRE stations, parks, schools, shopping centers, commuter lots, and both within Stafford communities such as Aquia Harbour and to adjacent localities such as Fredericksburg.

<sup>1</sup> Nearly one-in-ten (9.5%) of survey respondents said they commuted to work via bicycle, while 2021 American Community Survey data shows bike to work rates in the county at 0.0%.

Figure 10: Proposed Arterial Routes as reproduced in the Stafford County Bicycle and Pedestrian Facilities Plan



Stafford County Comprehensive Plan 2016–2036: 2021 5-Year Update

Stafford County’s Comprehensive Plan Update contains policies and recommendations that are supportive of more bicycle and pedestrian facilities across the county to “offer alternatives to single occupancy vehicle trips,” provide “a diversity of recreational opportunities,” and support connectivity between neighborhoods and land uses even when a road may not be feasible (e.g., via a trail). While the policy recommendations are general, the Comprehensive Plan refers to the 2019 Bicycle and Pedestrian Facilities Plan to guide implementation. The Comprehensive Plan also recommends amending the 2019 Facilities Plan “to include a new Cannon Ridge Trail to connect existing pedestrian trails in the Celebrate Virginia North development to the Belmont-Ferry Farm Trail with proposed trails along the Rappahannock River.” This may have implications on the Western Alignment of the Stafford Heritage Trail.

Consistent with the 2019 Facilities Plan, the Comprehensive Plan states that all new, reconstructed, or expanded roadways should include bicycle and pedestrian routes in compliance with VDOT standards. The Comprehensive Plan names several roads that are part of the Western Alignment as projects for widening or upgrade (Table 1). Of note, Mine Road, with or without Centreport Parkway, is listed in several places in the Comprehensive Plan as a strategic corridor and a reliever for traffic congestion on Interstate 95 and Route 1. As the corridor develops to be an alternative parallel route to I-95 and Route 1, it is expected that vehicle volumes will increase, which will have an impact on the safety and comfort of bicyclists and pedestrians traveling along the corridor.

Table 1: Comprehensive Plan segments and projects relevant to the Western Alignment

Western Alignment Road	Comprehensive Plan Segment	Comprehensive Plan Project
Staffordboro Blvd	Garrisonville Road to Sunningdale Drive	Widen to a four-lane divided minor collector
	Sunningdale Drive to Pike Place	Upgrade to urban two-lane major local road
	Juggins Road Connector to Crater Lane	Add 0.23-mile sidewalk
Mine Road	Garrisonville Road to Settlers Way	Upgrade to a four-lane major collector
Mine Road extended (Courthouse Rd to Centreport Pkwy)	Austin Ridge Drive to Ramoth Church Road	Build new road <sup>1</sup>
	Ramoth Church Road to Berea Parkway (new)	Anticipated Transportation Need
	Extension south to Enon Road	TDA Improvement #13
Centreport Parkway	U.S. 1 to Ramoth Church Road	Traffic study for future development and roadway improvements
	Centreport Parkway to Enon Road	Build new road
Plantation Drive	Lichfield Boulevard to Truslow Road	Anticipated Transportation Need
	Lichfield Boulevard to Lyons Boulevard	Widen to a four-lane divided minor collector
	South Gateway Dr to Knight's Court	Construct 500’ of sidewalk

<sup>1</sup> This road has been partially built from Austin Ridge Drive to Courthouse Road, but does not exist between Courthouse Road and Ramoth Church Road.

FAMPO 2050 Active Transportation Draft Plan

This document contains a comprehensive list of “important projects for Stafford County,” among which these shared use path projects intersect with the Stafford Heritage Trail Plan study corridors:

- Mine Road from Garrisonville Road to Austin Ridge Drive (partially built)
- Route 1 from Prince William County to Fredericksburg
- Easement from Mountain View Road to Austin Ridge Drive
- Plantation Drive from Lichfield Boulevard to Truslow Road
- Staffordboro Boulevard from Juggins Connector Road to Garrisonville Road
- Centreport Parkway from Ramoth Church Road to future connector road
- Enon Road/future connector road from Truslow Road to Centreport Parkway
- Coal Landing Road from Route 1 to Government Island
- Mine Road Extended (future road) from Courthouse Road to Centreport Parkway

The draft Plan also notes scoring criteria for several of the federal and state funding mechanisms that may be needed to build out the Stafford Heritage Trail. Funding options include, but are not limited to:

- Transportation Alternatives Program (TAP)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ) and Regional Surface Transportation Program (RSTP)
- Highway Safety Improvement Program (HSIP)
- Federal Discretionary Grants (e.g., RAISE)
- SMART SCALE
- VDOT Revenue Sharing Program
- Recreational Access Program

CMAQ and RSTP could be potential sources of funding as the distribution of funds is directly administered by FAMPO and their criteria overlaps with the stated goals of the trail project. VDOT’s HSIP program may also provide a unique source of funding, especially the Bicycle and Pedestrian Safety Pro-gram (BPSP) within HSIP, given Route 1’s history of fatal and serious injury crashes, especially north of Stafford Courthouse (Figure 1212).

Figure 11: Stafford County Active Transportation Needs (FAMPO 2050 AT Draft Plan)

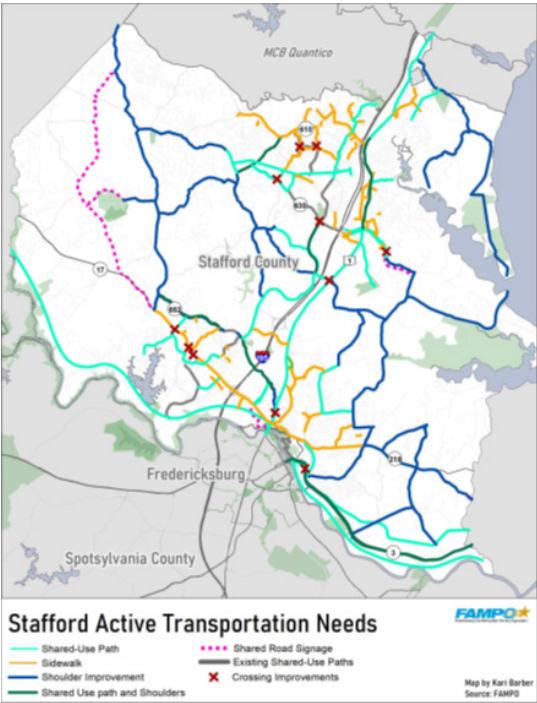
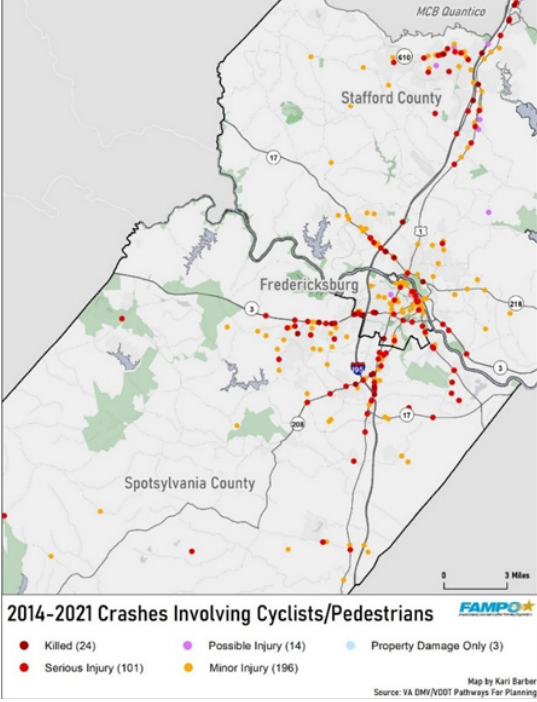


Figure 12: 2014-2021 Crashes Involving Cyclists and Pedestrians (FAMPO 2050 AT Draft Plan)





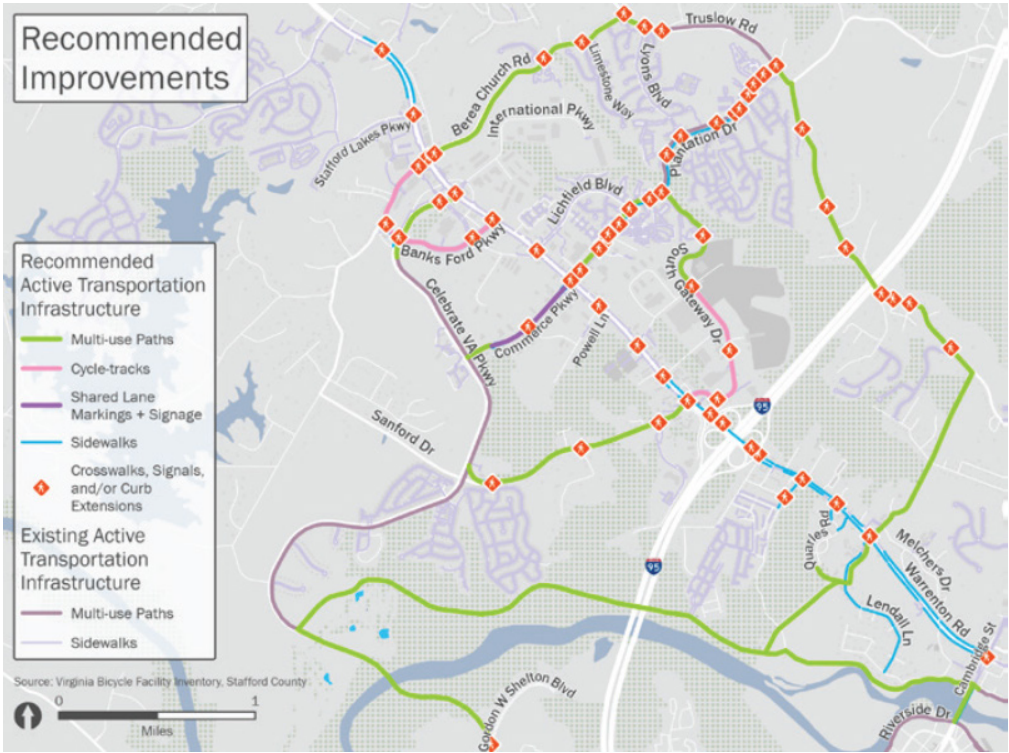
Stafford Southern Gateway Bicycle and Pedestrian Study

This 2022 OIPI Growth and Accessibility Planning Technical Assistance (GAP-TA) study looked at the area in and around the Southern Gateway UDA, which surrounds the intersection of I-95 and Route 17 at the south end of the county. It names a number of “Funded or Proposed Cycling and Pedestrian Projects,” including along two longer-distance routes relevant to the Stafford Heritage Trail Plan – the Rappahannock River Scenic Trail (alignment to be determined) and the East Coast Greenway (from Belmont-Ferry Farm Trail to Embrey Mill Park along “Lendall Lane, Route 17, Truslow Road, and future connector roads”).

It also identified, through a variety of sociodemographic analyses, sections of its study area with low, moderate, and high propensity for active transportation. Notably, the area of greatest propensity, which spans from I-95 to Route 1 south of Route 17, “does not include cycling or pedestrian infrastructure to facilitate safe or comfortable active transportation,” but it is bisected by the south end of the Power Line Easement corridor. A second, moderately high active transportation propensity area exists near the end of the Western Alignment corridor in Berea.

According to the study, shared use paths already exist along Plantation Drive north of Lichfield Blvd and along Celebrate Virginia Parkway south of Banks Ford Pkwy. However, the connectivity of these trails is limited “as both terminate before reaching Route 17.” Additionally, the existing path along Plantation Drive is considered inadequate as it is still identified as an active transportation gap. Another two identified active transportation gaps roughly equate to the Power Line Easement corridor, while another identified gap is Route 1 south of Route 17 Business, including the bridge to Fredericksburg; the study proposes shared use paths for all of these gaps. The study also recommends that a future replacement of the Falmouth Bridge should include a sidewalk on one side and a multi-use path on the other, both providing staircases and “cycling/pedestrian ramps to facilitate connections between the Falmouth Bridge replacement, the Rappahannock River Heritage Trail, and the Belmont-Ferry Farm Trail.”

Figure 13: Map of Recommended Improvements in the Stafford Southern Gateway Bicycle and Pedestrian Study





### 3 FIELD REVIEW

The consultant team visited Stafford County on October 19, 2023, and were joined by County and VDOT staff for part of the field visit. The team visited potential trail segments in several parts of the county:

- Various sections of the road network west of I-95 between Garrisonville and Berea, including existing parts of Mine Road, Centreport Parkway, Enon Road, and Plantation Drive;
- The historic Falmouth area at the southern end of the county;
- The length of Route 1 from Falmouth in the south to the Prince William County line in the north; and
- Several potential off-right-of-way trail areas in east-central Stafford County, including development sites abutting the Power Line Corridor.

This section of the report discusses the existing and potential road network west of I-95, potential trail routing options along Route 1 and the Power Line Corridor, and potential trail spur options, primarily to the east of Route 1.

#### 3.1 Western Alignment

The road network west of I-95, collectively referred to as the Western Alignment, is characterized by narrow or nonexistent sidewalks and trails in older developments and earlier subdivisions, wide shared use paths at newer developments, and areas with significant grades or traffic volume and no pedestrian or bicycle accommodation.

At the northern end, the Staffordboro Park and Ride lot was full during the mid-morning, Thursday visit. This area had narrow-to-nonexistent sidewalks and no bike lanes (Figure 1414). Sidewalks that were present were measured at approximately 5 feet wide, but on the west side of Staffordboro there is none at all between Clement St and Garrisonville Road.

**Figure 14: Intersection of Staffordboro Road and Juggins Road Connector and northernmost section of Garrisonville Park & Ride lot**



South of Garrisonville Road, Staffordboro Boulevard becomes Mine Road. The entirety of Mine Road is wide and fast-moving with four travel lanes, a substantial median, and a 40 mph posted speed limit. Turn lanes are present at all intersections of Mine Road on at least one leg, making intersections even wider. Sidewalks are intermittent in this section of Mine Road, but the network will be built over time as new developments come in. For example, a development application is pending between Greenspring Drive and Highpointe Boulevard which will be expected to build out a segment of sidewalk along the properties involved. However, as there will remain at least one undeveloped parcel between that development and the intersection with Highpointe Boulevard, it is expected that at least one segment of sidewalk will remain unbuilt even after that development is complete. This, however, doesn't keep people from using it, as the path worn in the grass along this section shows (see Figure 1515).

South of Highpointe along the Hampton Oaks community, curbside sidewalk converts to an HOA-owned asphalt shared use path on both sides of the road. This path is very narrow (3-4' asphalt) with deep ditches and tree stands at times between the path and road, while the road curb-to-curb occupies the full extent of the right-of-way. At New Bedford Court, a short asphalt connector runs from the west-side path to a curb ramp at an unmarked crossing of Mine Road.

Between New Bedford Court and Northampton Boulevard, an apparent greenway and possible goat path might be an opportunity for an off-street path connecting to Hampton Oaks Elementary School. At the intersection with Northampton, the signal is already set to be a pedestrian scramble, stopping all traffic for pedestrians and other trail users to cross all directions at once.

Between Northampton Boulevard and Coastal Avenue, there is a substantial gap in the sidewalk on the southbound side. While there is a sidewalk on the northbound side, there is no signal or other traffic control to provide a safe crossing of this 40 mph road.

**Figure 15: Goat path in the grass along an undeveloped segment of Mine Road between Garrisonville Road and Highpointe Boulevard**





South of Coastal Avenue in the Embrey Mill community, there is a relatively new 10' shared use path along the southbound side of Mine Road in excellent condition which was well-used by joggers during the site visit (Figure 1616). While inspecting the path, the consultant team noted that vehicle speeds appeared to be in excess of the posted 40 mph limit due to long straightaways. Even in this new section, possible accessibility issues were encountered, such as a curb on the edge of the sidewalk ramp by the soccer fields on Shields Road that would prevent people from rolling up onto the park's sidewalks.

Mine Road currently ends at Courthouse Road but is expected to be built towards Centreport Parkway per the County's Comprehensive Plan. A shared use path along the north side of Courthouse Road looked to be in a similarly good condition, though no stop was made for a close assessment. It appears the trail currently terminates at the large park-and-ride lot just east of I-95, but if continued could be used to connect to the Courthouse area.

**Figure 16: New 10' shared use path on Mine Road at the Embrey Mill subdivision**



Along the section of Centreport Parkway south of the airport, the roadway slopes down to Mountain View Road from both directions at a grade peaking at about 3.5%. There may be room for a sidepath along this section, as it has somewhat wide shoulders, though there are drainage ditches between the current roadway edge and the significant hillsides to either side of the road (Figure 1717). Eventually, it is planned for Mine Road to continue south from Centreport Parkway towards Enon Road.

**Figure 17: Looking south down Centreport Parkway towards Mountain View Road. Centreport can be seen rising again beyond Mountain View**



Along Enon Road, large lots with cleared land could provide plenty of space for a new shared use path, particularly on the west/southbound side of the road. Then it reaches the intersection with Truslow Road, which is skewed and may be slightly confusing. A community center and future park are located one block south from this intersection (Figure 1818). On the short section of Truslow Road between Enon Road and Plantation Drive, there is a berm on the north/westbound side of the road on private property. However, there is little right-of-way on the south/eastbound side as well with only 11 feet from curb to property fence, and south of Enon Road there is a house that stands directly adjacent to the road. To the northwest, the rest of Truslow Road has a decent 10' shared use path on its south/eastbound side.

On Plantation Drive, there is a substandard 5–6-foot path on one side, which previous plans have recommended replacing and expanding (Figure 199). While the 2019 Bicycle and Pedestrian Facilities Plan recommends veering off from Plantation Parkway into Lichfield Boulevard to reach Route 17, Plantation Drive probably has more right-of-way to work with and provides a more direct connection to the commercial core of Route 17.

**Figure 18: A small community center sits along Truslow Road just southeast of Enon Road**



**Figure 19: The sidepath along Plantation Drive is narrow for a shared use path, cracked, occasionally concrete, and sometimes merges into the roadway (left: near Truslow Road; right: south of Lichfield Blvd)**





3.2 Eastern Alignment

The options east of I-95 could potentially be combined in a multitude of ways, so instead of separate Route 1 and Power Line Corridors, this section will discuss them together in four separate gap analysis areas from north to south.

Gap Analysis Area: Quantico, North Stafford, and Aquia Harbour

North of Boswell’s Corner, Route 1 is the only road across MCB Quantico to Prince William County, with the Potomac Historic National Scenic Trail ending in a natural surface path at Locust Shade Park by the southbound ramps of Route 1 at Russell Road. Between Boswell’s Corner and Aquia Harbour, Route 1 is quite congested; Telegraph Road is a roughly parallel potential alternative option, but it is narrow and does not have a significant shoulder. The current East Coast Greenway route uses Telegraph Road. The Power Line Corridor is east of these two roads and crosses single family neighborhoods and two schools, but through challenging terrain.

Between Aquia Harbour and the divided segment of Route 1 known as Wayside, there is an occasional, but not continuous, 5-foot sidewalk along the highway. Certain properties along Route 1, such as the St. William of York Catholic Church between Telegraph Road and Aquia, appear to be well set back from the road and to have lots of room for a potential shared use path, but this is not universal. Sidewalks exist intermittently along the commercial strip in Aquia (Figure 20).

The gated community of Aquia Harbour contains a private walking trail system within part of the power line corridor, with 8–9 foot wide asphalt trails (Figure 21). It is unknown whether the community would be interested in making these trails accessible to the wider walking and bicycling public.

Figure 20: Route 1 north of Aquia Harbour



Figure 21: Walking trails underneath Power Line Corridor at Aquia Harbour



Figure 22: Aquia Harbour Walking Trails map (Source: Aquia Harbour Property Owners Association)





**Gap Analysis Area: Courthouse**

In the Courthouse area and its environs – roughly the area from Wayside and Coal Landing Road to Stafford Hospital and stretching into the Stafford Civil War Park – there are only three north-south street corridors that run for a substantial distance. From west to east, these three corridors are Bells Hill Road, Route 1, and a combination of Hope Road, Olde Concord Road, and Greenridge Drive. The Power Line Easement is to the east of these three roadway corridors.

Due to time constraints, the team was not able to visit Bells Hill Road as part of the fieldwork visit, though Google Street View suggests that at least 0.4 miles of the road have a shared use path on its southbound side which is of comparable quality to Mine Road near Embrey Mill Park (Figure 233). Developments on the rest of the southbound side of the road are set back well enough that a shared use path trail could be continued along the length of Bells Hill Road.

**Figure 23: Bells Hill Road shared use path (Source: Google)**



Wayside is a wooded area in between the divided segments of Route 1 from Coal Landing Road to Bells Hill/Hope Road which is partially a utility corridor. Only the northern half seems wide enough to use. It does already have a rough dirt path laid for water/sewer line access, but the path appears to have been partially reclaimed by the forest already (Figure 244). Getting to Wayside and out of it is a significant issue, especially since the only road south of Coal Landing that intersects both sides of the divided section of Route 1, Austin Run Boulevard, which is the stem of a T-shaped cul-de-sac.

**Figure 24: View of Wayside from Coal Landing Road**



Closer to Courthouse on Route 1, the right-of-way is often fully built out in this section, with multiple lanes in each direction and one or more turn lanes at most intersections, making them wider. Expansion for a potential shared use path would require property acquisition. Much of Route 1 in this area has sidewalk available, but there are many curb cuts for driveways, and the sidewalk is often right up next to the road with no buffer, making for an unpleasant walking experience. However, many community facilities are located on or near Route 1 compared to other streets.

Greenridge Drive has a number of speed humps installed to prevent passthrough traffic from veering off from Route 1/I-95 in the area between Coal Landing Road and Olde Concord Road. While this suggests traffic on this road is not naturally calm, particularly when the major thoroughfares are congested and drivers seek alternatives, perhaps the speed humps make it calm enough to be a potential alternative route, or a way to connect between Route 1 and the Power Line Easement. Greenridge Drive connects to Olde Concord and Hope Roads, which can bring people back to the Courthouse area. Properties on these two-lane roads are set back enough to have a trail running through them, but the number of developed parcels to traverse is substantial.

This stands in contrast to the area south of Courthouse where there are numerous new developments, especially south and southeast of Stafford Hospital which have provided easements specifically for trail development (Figure 255). For example, most of the easement for a corridor running from Hospital Center Boulevard to the Civil War Park has already been secured, except for the northernmost portion approaching the Boulevard.

On the grounds of Stafford Hospital itself, the Hospital has small trails for patients, but the administration has not committed to them being used to cut through to Courthouse Road. However, it may not be necessary to use the Hospital property itself as the grassy utility corridor along the southeast side of Hospital Center Boulevard is wide. Within the Civil War Park, there exist both paved modern roadways and unpaved Civil War-era paths which are unlikely to be paved. However, multiple abutting development sites, including a potential data center, could provide additional access and connectivity in this more undeveloped area.

**Figure 25: Power line corridor between Hospital Center and Civil War Park, with easement visible as a dirt path going into the woods on left**





**Gap Analysis Area: Central Stafford**

The area between Courthouse and Falmouth is largely rural still, with large sections of undeveloped and wooded land. The Route 1 and Power Line Easements, which cross each other near Stafford High School just south of privately-owned Dogwood Airpark, are among the very few continuous corridors to cross this area north to south. Though upcoming development sites here are fewer and lower density than in the Courthouse area, one notable site, a potential data center north of Eskimo Hill Road, could provide an easement for trail.

In addition to a wide shoulder on Route 1 north of Centreport Pkwy, there seems to be a pipeline running to the west of Route 1 near the Centreport Pkwy exit. Additionally, some segments of the Route 1 right of way are bordered by a smaller power line corridor, primarily on its northbound side. While it appears to be much hillier than the road itself, this smaller power line corridor could be a way to route the trail away from the vehicle traffic and noise of Route 1 for relatively short distances where it is flatter.

**Figure 26: Power line easement approaching Forbes Street, viewed from Canaan’s Faith Church of God**



**Gap Analysis Area: Southern Gateway**

In the southernmost part of the county, there are increasing options for a north-south routing, including not only the Power Line Easement (now west of Route 1 south of Stafford High School) and the Route 1 corridor, but also Forbes Street, Leeland and Deacon Roads, and potentially even the VPRA-owned rail corridor.

The varied terrain of the Power Line Easement continues in this segment of the county, which could present an assortment of challenges to construction. In one such case, the power line approaches Melchers Drive from the north near Solomon Drive. A steep embankment meets Melchers Drive at a blind curve (Figure 277).

**Figure 27: Power line easement at Melchers Drive, where a steep embankment at left meets a blind curve**



Route 1’s right-of-way is often fully built out and expansion would require property acquisition. Where sidewalks exist at all, they are 5-foot sidewalks with occasional 4-foot buffers alongside very high vehicle volumes and speeds (Figure 288). Forbes Street does not have sidewalks and is primarily fronted by individual single-family residential homes. Parts of Leeland Road also lack sidewalks while the sidewalks that do exist are often narrow and forced through tight turns and fence gaps to avoid drainage ditches while crossing side streets near intersections (Figure 299). Deacon Road has painted bike lanes throughout the relevant section for the Stafford Heritage Trail and is also slated to receive a sidewalk on at least one side of the road.

**Figure 28: Route 1 south of Eskimo Hill/American Legion Rd (SR 628)**



The southern end of the Stafford Heritage Trail on this Eastern Alignment is the Belmont-Ferry Farm Trail, which is currently partially complete. The trail begins as an on-road facility on narrow Washington Street in historic Falmouth, becomes a standard width sidewalk along West Cambridge Street, then gradually widens as it crosses under Route 1 into the Port of Falmouth Park. Once there is room for it, the trail reaches 9–10 feet in width and is in good condition. A Stafford Heritage Trail along Route 1 or Forbes Street would most likely connect to this section of the Belmont-Ferry Farm Trail,

**Figure 29: Leeland Road just north of Walnut Farms Parkway, about 1/4 mile south of Conway Elementary School**



using West Cambridge Street (Figure 30) or Gordon Street to reach it. Both routes have steep grades.

Development of a trail extension west of Belmont along the Rappahannock River (known as the Cannon Ridge Extension or the Rappahannock River Scenic Trail) has also been under consideration. Properties along West Cambridge and Washington Streets are built very close to the roadway, limiting space for a shared use path. While the feasibility of such a trail is covered in other plans, a Stafford Heritage Trail that uses the Power Line Easement along this southernmost segment would end at this trail extension, most likely on currently narrow and curbless Lendall Lane or by the river.

**Figure 30: Route 1, left, and West Cambridge Street, right, diverge both horizontally and vertically south of Route 17. West Cambridge Street is a single lane one-way road that is akin to an off-ramp.**





### Potential Spurs: Smith Lake Park, Government Island, Patawomeck Park

The team also visited three parks in the central and northern parts of the county, among other potential spur options.

- Doc Stone Road (SR 659), the only public road to Smith Lake Park, has a quite narrow right of way (approximately 20 feet wide) on a quiet residential street, with deep ditches and steep grades at times (Figure 31). Although narrow, traffic may be calm enough that this could remain a shared facility. The county built a walking trail between the park and the Woodstream community in 2015-6.
- Coal Landing Road (SR 631) to Government Island is relatively calm, but it too has little right-of-way (Figure 322, left). However, almost all land on the northern side of the road is County-owned or undeveloped, so it may be possible to place a trail there, out of the right-of-way.
- Patawomeck Park in the northern part of the County is another potential destination, but again the single road that leads to it, Widewater Road (SR 611), is narrow with MCB Quantico land on its northern side (Figure 322, right). Land to the south of Patawomeck Park is also undeveloped and could be used to carve a trail to the Power Line Easement.

Other large parks and park-like areas that could be potential spur destinations, though the team did not visit them:

- Continuing east on Widewater Road (SR 611) from Patawomeck Park, it is about 3 miles to Widewater on the edge of the Potomac, opposite Malloes Bay-Potomac River National Marine Sanctuary, home of the “Ghost Fleet.” Another 4.5 miles by Arkendale Road (SR 633) and Brent Point Road (SR 658) is Widewater State Park, site of Secretary of the Smithsonian Samuel Langley’s early flight experiments. However, these roads are narrow, with no shoulders, and posted 45 mph; Arkendale Road additionally runs directly alongside the VPRA rail line also used by VRE and Amtrak.
- Crow’s Nest is a large state Natural Area Preserve about two miles east of Brooke Station VRE on the neck between Accokeek Creek and Potomac Creek, two tidal waterways that enter the Potomac River just south of Aquia Creek. However, much like Widewater Road (SR 611), Brooke Road (SR 608) is a narrow, 45 mph road, with no shoulder and mailboxes alternating with drainage ditches along the edge of the pavement.

Figure 31: Doc Stone Road (SR 659) climbing out of Smith Lake Park



Figure 32: Coal Landing Road (SR 631), left, and Widewater Road (SR 611), right





4 FEASIBILITY AND NEEDS ASSESSMENT

4.1 Corridor Feasibility Assessment Approach

Through existing conditions analyses and field research, the team developed a comprehensive understanding of each corridor. Building from this shared understanding, this section evaluates the feasibility of developing trail facilities (and spurs) across the identified Western and Eastern Alignments and their respective segments. Segments along trail corridors are labeled using the lettering scheme in Table 2, with a number to indicate subsegments, generally from north to south. Additional letters are used to identify trail connectors and spurs, as presented in Table 3. These segments are depicted in Figure 333 through Figure 366.

The consultant team conducted a series of internal charette-style workshops to review each corridor and segment — reviewing the Western Alignment on December 14,2023, the northern segments of the Eastern Alignment on December 21, and the five alternatives of the southernmost portion of the Eastern Alignment on December 28.

During these charrettes, the consultant team considered a multitude of factors to determine the feasibility of a new or upgraded typical 12-foot shared use path along the identified trail corridors, connectors, and spur segments. Factors considered included functional classification, vehicle traffic, existing transportation infrastructure, nearby destinations and attractions, existing and potential easements or acquisitions of right-of-way, topographic profiles, and conservation and resource protection areas. A high-level feasibility assessment rating from “Easy” to “Hard” was given for each segment (or subsections of a segment) that was analyzed.

Eastern Alignment

The consultant team combined the multiple options for routing a trail east of I-95 and divided them into segments spanning north to south. The first series of maps depicts options considered for each Gap Analysis Area. Potential trail segments are divided into the following categories:

- **Trail Corridors:** longer north-south segments that could serve as the Eastern Alignment’s mainline; primary decision-making units for each Gap Analysis Area
- **Trail Connectors:** optional segments that may be part of the mainline if the alignment shifts between different trail corridor segments (e.g., between U.S. Route 1 and the power line easement)
- **Trail Spurs:** off-mainline segments that reach key destinations; may be recommended or optional

Trail Corridor segments are labeled in order from north to south and west to east. In the southern part of the county, as the area becomes more developed, the power line forks and more north-south corridors exist; in this area there are not just two but five options that were considered.

Table 2: Stafford Heritage Trail Corridors by Gap Analysis Area

Label	Gap Analysis Area	Trail Corridor Parallel Facility
A	Quantico	Richmond Highway (US 1)
B	Quantico	Power Line Easement
C	North Stafford	Richmond Highway (US 1)
D	North Stafford	Telegraph Road
E	North Stafford	Power Line Easement
F	Aquia Harbour	Richmond Highway (US 1)
G	Aquia Harbour	Power Line Easement
H	Courthouse	Bells Hill Road
I	Courthouse	Richmond Highway (US 1) and Wayside
J	Courthouse	Power Line Easement
K	Central Stafford	Richmond Highway (US 1)
L	Central Stafford	Power Line Easement
M	Southern Gateway	Power Line Easement
N	Southern Gateway	Cambridge Street (US 1)
O	Southern Gateway	Forbes Street
P	Southern Gateway	VRPA railway corridor
Q	Southern Gateway	Leeland and Deacon Roads

Table 3: Additional Analysis Segment Labels

Label	Analysis Segments
AH	Aquia Harbour Trail Connectors
CH	Courthouse TDA Trail Connectors
NS	North Stafford Trail Connectors
S	All Trail Spurs
SG	Southern Gateway Trail Connectors
W	Western Alignment

Note on the Western Alignment

The focus of the preliminary feasibility assignment is on the various options along the Eastern Alignment, as feasibility will be a key factor in determining the ultimate alignment of the Stafford Heritage Trail east of I-95.

The Western Alignment segments are also visible in Figures 32 through 35 and, for the most part, are marked as “Medium” feasibility along existing roads that do not have shared use paths, and “Easy” along unbuilt roads due to the incremental ease of adding a shared use path to a new roadway project as opposed to retrofitting an existing road with a path.

Certain sections of the Western Alignment already have shared use paths, such as the new path along Embrey Mill (segment W6) and substandard paths along Plantation Road (W13) and Hampton Oaks (W4) that will need an upgrade.



Figure 33: Trail Corridor options in Quantico, North Stafford, and northern Aquia Harbour

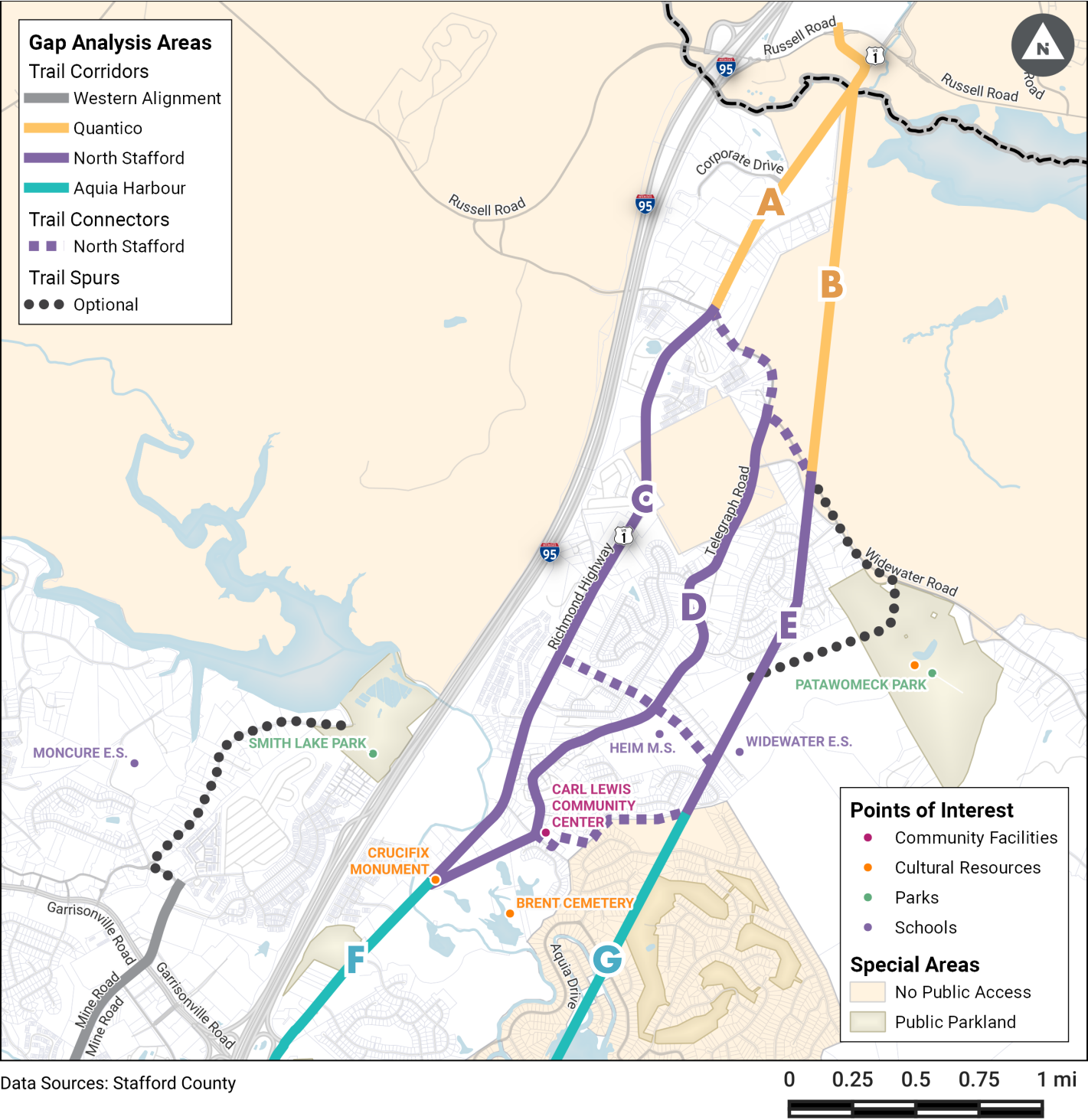


Figure 34: Trail Corridor options in Aquia Harbour, Courthouse, and Central Stafford

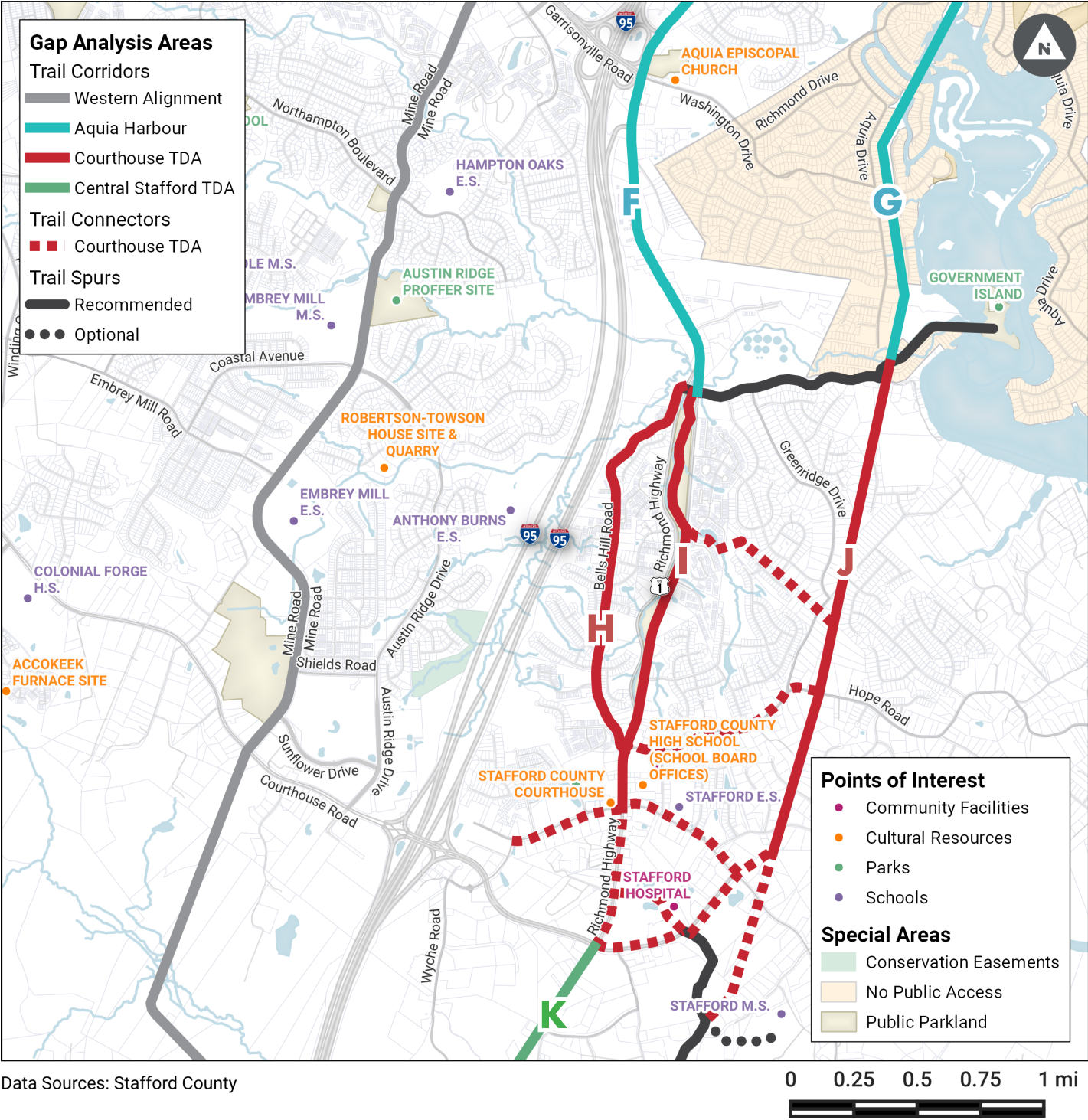




Figure 35: Trail Corridor options in Central and Southern Stafford

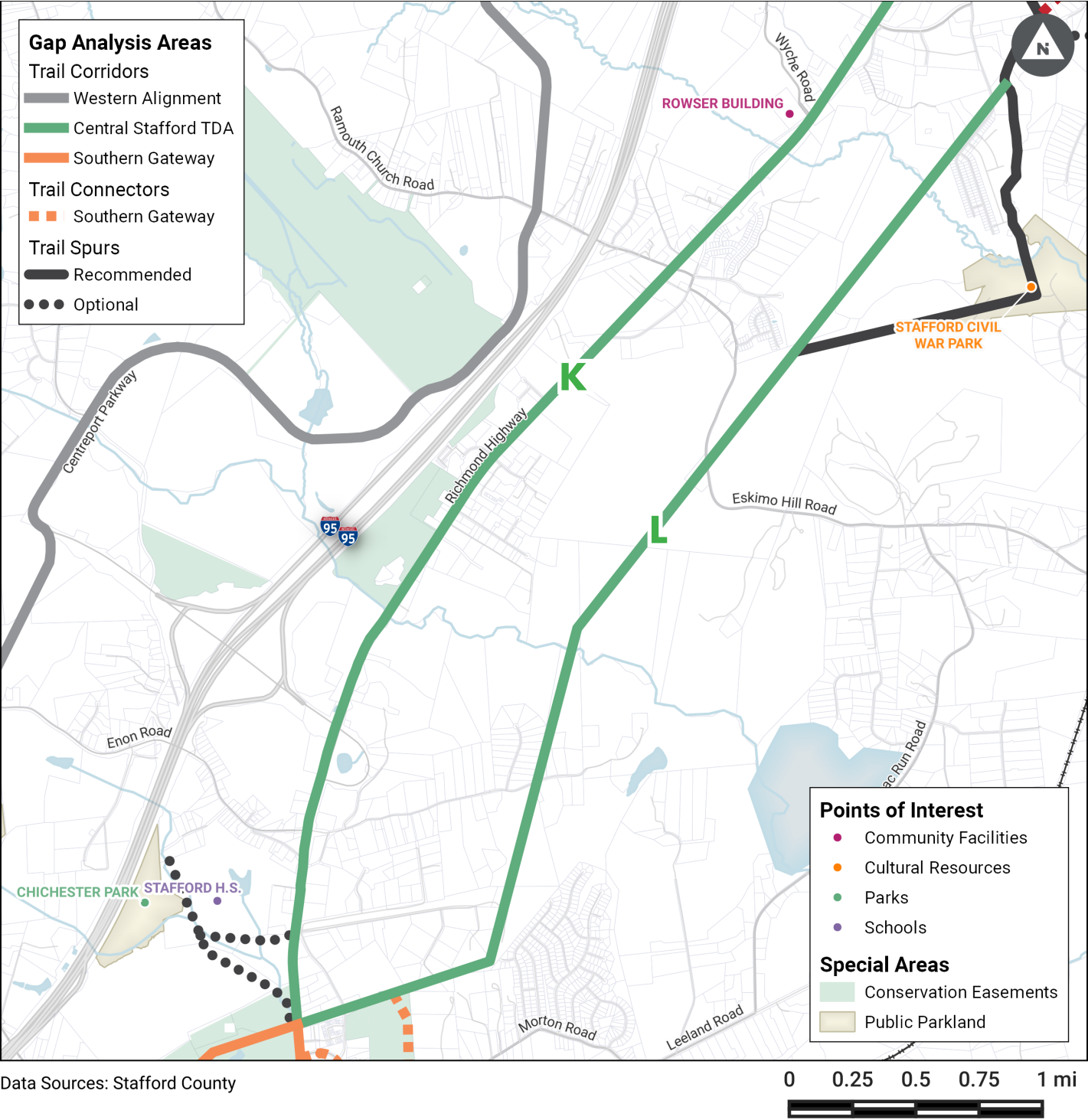
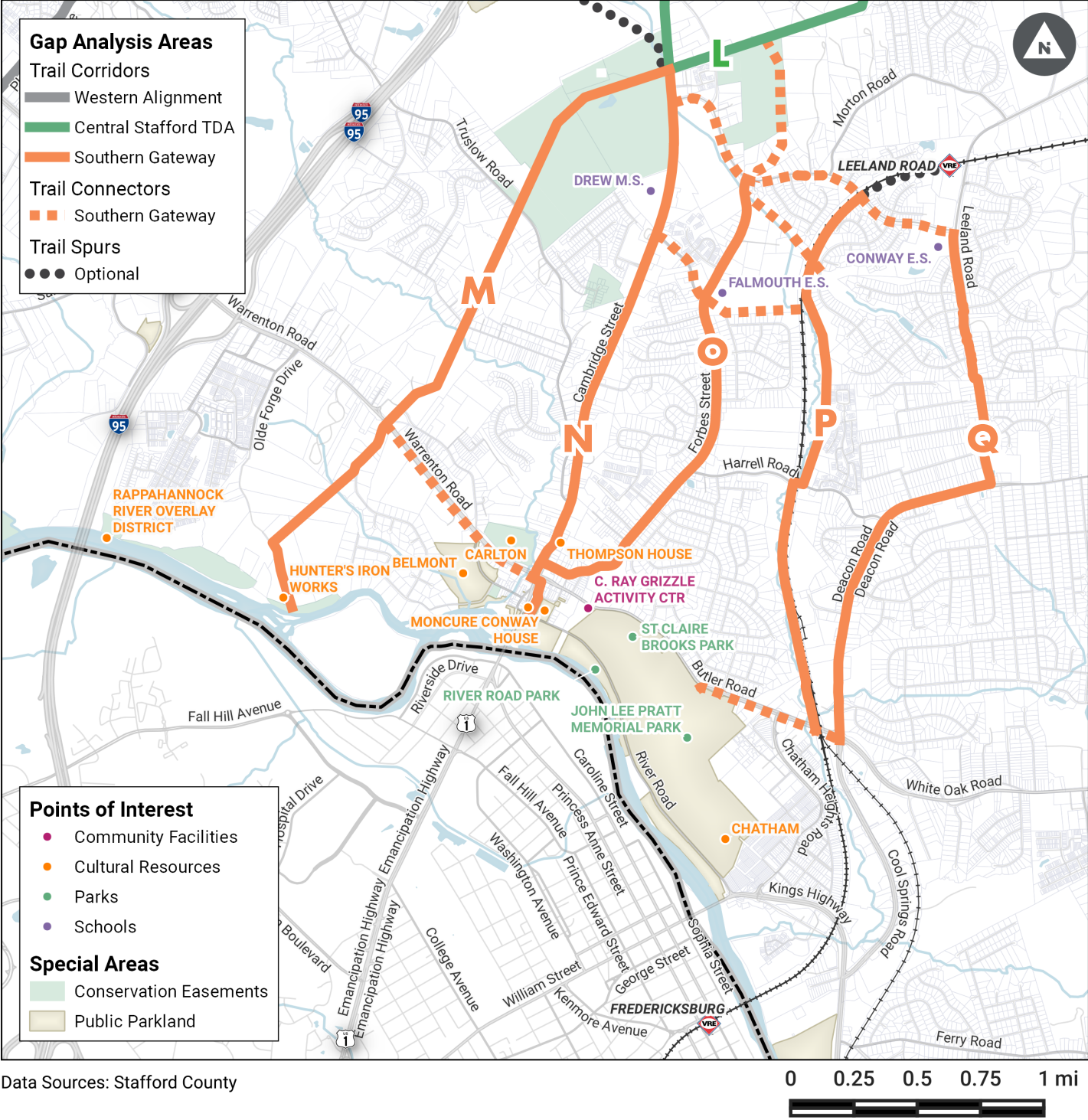


Figure 36: Trail Corridor options in Southern Stafford east of I-95





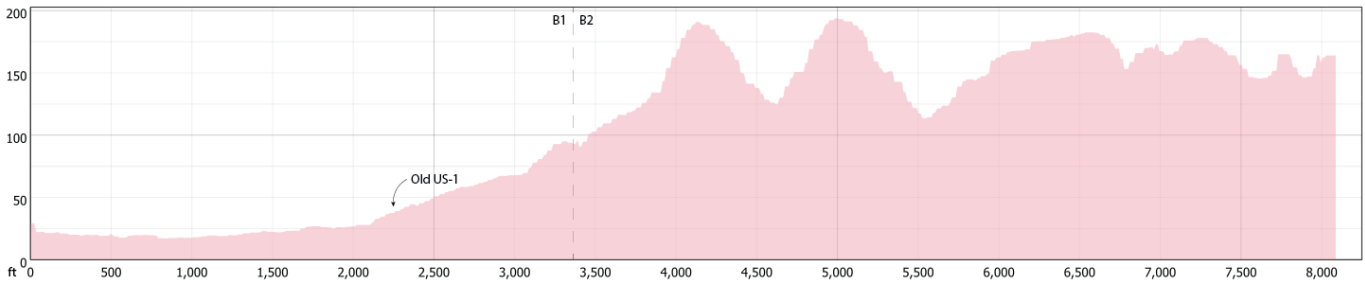
4.2 Preliminary Feasibility Assessment

Gap Analysis Area: Quantico

In the northernmost section, Richmond Highway (US 1) is a wide, relatively high-speed road which is quite heavily traveled, especially as one of only two options for traversing Marine Corps Base (MCB) Quantico. While much of this section is undeveloped and/or MCB land, what is developed is heavily auto-oriented (e.g., car dealerships and gas stations between Old US 1 and Telegraph Road). There appear to be few destinations one would naturally walk or bike to, and the traffic levels and driveway/parking lot interfaces would seem likely to make walking or biking here unpleasant, even with a substantial barrier from the road.

For this reason, the consultant team evaluated the Power Line Easement, which runs almost due south from the intersection of Richmond Highway and Russell Road, close to the connection to the Potomac Heritage Trail in Prince William County’s Locust Shade Park. The section between Old US 1 and Widewater Road appears unlikely to be feasible to grade in such a way as to be accessible as a transportation trail (Figure 37 B2).

Figure 37: Elevation profile of Power Line Easement (segs. B1 & B2) from US 1 (left) to Widewater Road (right)



Gap Analysis Area: North Stafford

Between Boswell’s Corner and the north end of Aquia Harbour, the consultant team considered three options—Richmond Highway (Segment C1), the Power Line Easement (E1), and a route via Telegraph Road (D1–D3). This segment of Richmond Highway is lightly developed, but mostly with auto-oriented uses that seem more likely to create conflicts with than be destinations for trail users. Telegraph Road, especially the central section (Segment D2) is primarily residential, but, like Richmond Highway, the road is largely built out to the extent of its right-of-way; furthermore, Telegraph Road is open-section and lined with drainage ditches on both sides, so a trail would additionally need to either fill or be located on the far side of those ditches, effectively in some homes’ front yards. The Power Line Easement, by contrast, appears to be relatively level in this area and while it passes through some residential areas, the land is primarily owned by one homeowners’ association, making acquisition of right-of-way likely to be less complex.

Gap Analysis Area: Aquia Harbour

However, at the north end of Aquia Harbour the Power Line Easement (segment G1) becomes quite steep again (see Figure 38). At the same time, the south end of Telegraph Road (D3) is also significantly less developed, and it seems likely that both property acquisition and physical construction will be less difficult. South of Telegraph Road, Richmond Highway (F1) continues to be lightly developed; while the I-95 interchange at Garrisonville Road (VA-610) would make the west side challenging, the east side of Richmond Highway appears to have available space for a trail facility, and the historic Aquia Episcopal Church and historic sites associated with Saint William of York Catholic Church could be destinations of significant interest, especially to trail users interested in the history of Stafford County or Virginia more broadly.

Figure 38: Preliminary feasibility assessment of trail alignment options, Quantico to Aquia Harbour

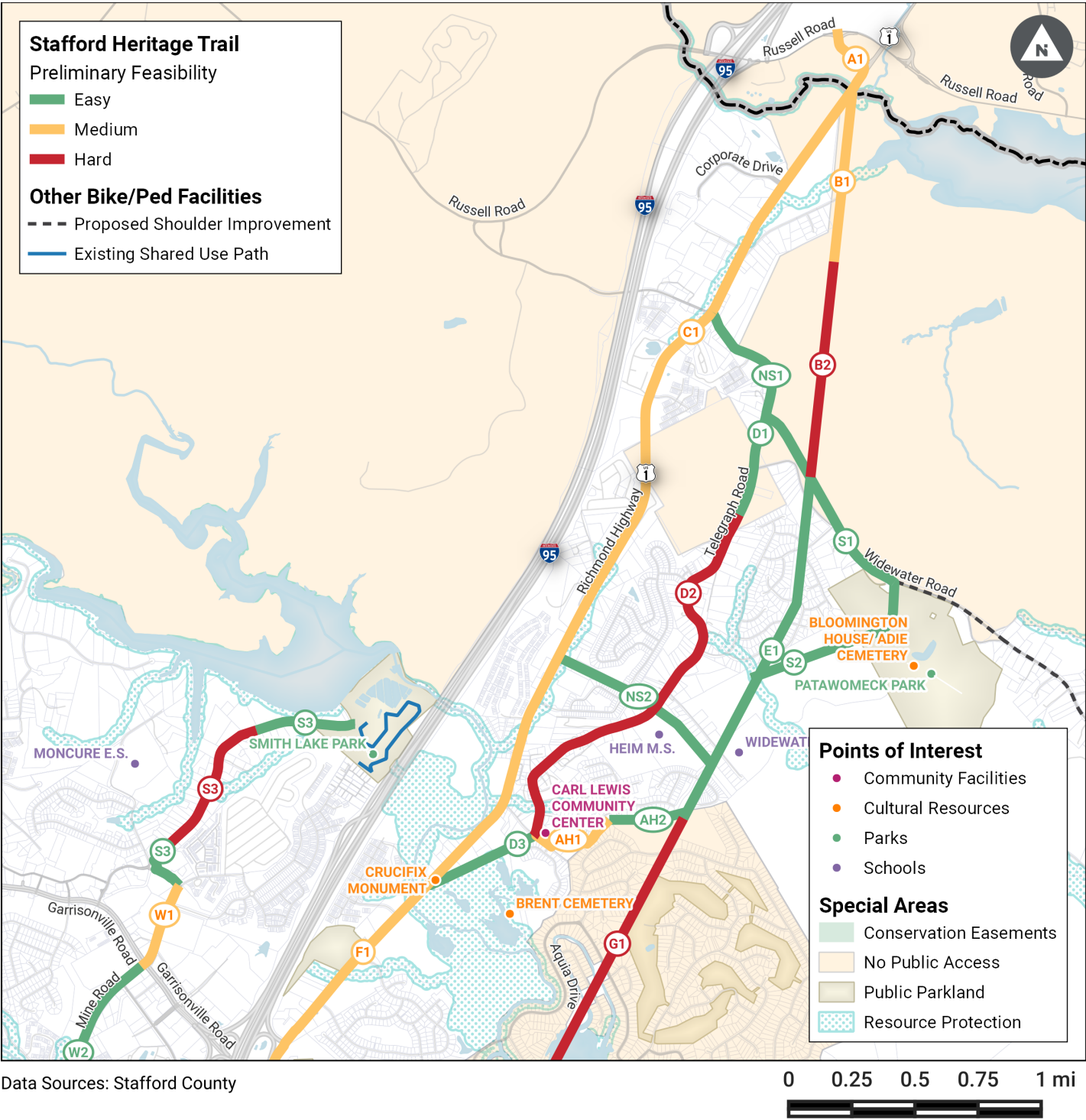
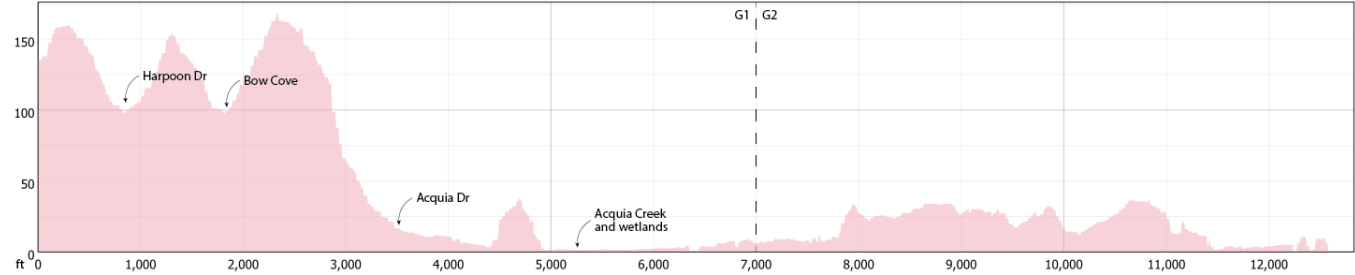




Figure 39: Elevation profile of Power Line Easement in Aquia Harbour (segments G1 and G2), north on left



South of Garrisonville Road/Washington Drive, Richmond Highway (segments F2–F4) gradually becomes more developed; while this includes several auto-oriented motels, gas stations, and car dealerships, there are also several locally-oriented shopping centers—some of which already have sidewalks along the highway, and at least one substantial plot which is being readied for redevelopment. Furthermore, County staff are already considering a potential shared use path from north of Foreston Woods to Coal Landing Road (F4), which could become part of the Stafford Heritage Trail.

**Gap Analysis Area: Courthouse**

Between Coal Landing Road and Stafford Courthouse, there is again a third option beside Richmond Highway (I1–2) and the Power Line Easement (J1): Bells Hill Road (H1–3).

South of Coal Landing Road, northbound and southbound Richmond Highway split, with a wooded area between them known as Wayside that ranges from 100 to nearly 500 feet wide. While the lack of bordering property owners and an existing utility corridor make the northern portion (segment I1) appear easy to access and construct, the southern portion (I2) is significantly narrower, and there is no road which crosses Wayside to provide a southern entry/exit as Coal Landing Road does at the north end. Wayside could serve as a trail spur or simply continue to be an isolated preserve, but it does not seem feasible to use as part of the mainline trail.

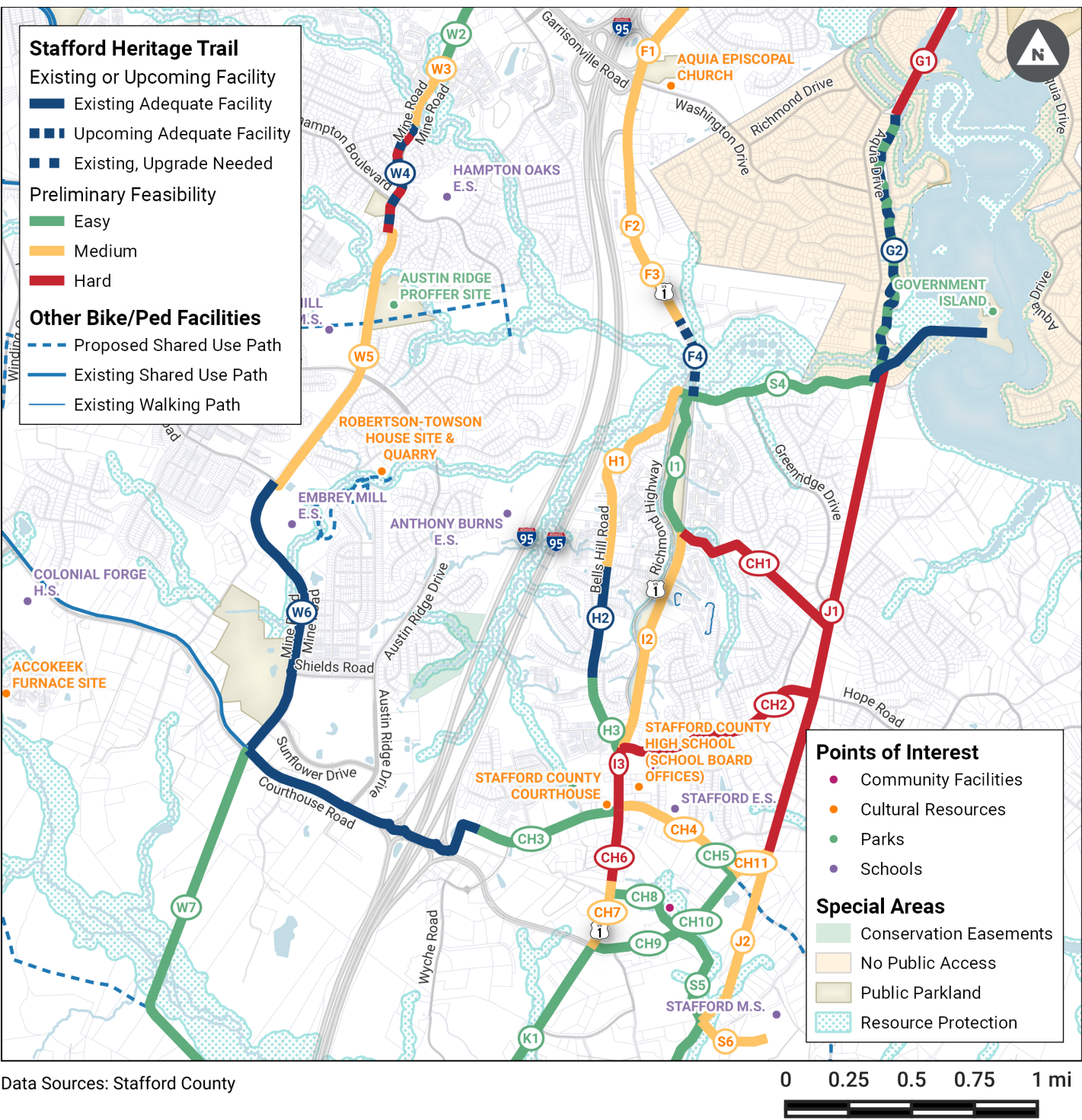
South of Aquia Harbour, the Power Line Easement (J1) cuts through a residential area that has been developed a while back, with individual parcels extending into the easement. Thus, there is less space available in the corridor, much of which seems to pass directly through residential back yards. Though topographically less challenging than other areas of the corridor, the number of property acquisitions or easements with individual landowners that would be required could make building through this segment difficult.

Part of Bells Hill Road (H2) already has a high-quality shared use path, and the southern section (H3) appears to have room to extend it. The northern portion (H1) will be more challenging, as some existing developments are relatively close to the road, such as the townhouses at Belltower Court or the apartments at Belladonna Lane, which are as little as 30 feet from the roadway in a couple places, and the Iglesia Jardin de Delicias church, which is approximately 50 feet from the road.

In Downtown Stafford, the short segment along US 1 south of Bells Hill Road (I3) currently would interact with a number of driveways and parking lots and require some significant access management work. However, many of these properties are owned by the County or appear poised for redevelopment in the relatively near future, which could be leveraged to build out the trail in this segment as has been done elsewhere in the county. Access management is also a potential issue along Courthouse Road east of Richmond Highway (CH4), but an even more significant challenge along Richmond Highway between Courthouse and Stafford Hospital (CH6).

The potential spur along Coal Landing Road from US 1 to Government Island (S4) is primarily composed of land that is currently used by the County for its wastewater treatment plant and a trail could be feasible within the property.

Figure 40: Preliminary feasibility assessment of trail alignment options, Aquia Harbour to Central Stafford





Gap Analysis Area: Central Stafford

In Central Stafford (Figure 42), the choice of alignment is largely between the lightly-developed Richmond Highway (segments K1–5) and the mostly un-developed Power Line Easement (L1–6). Grades in some parts of the Power Line Easement (e.g., L4 on either side of Potomac Creek; see Figure 41) and existing development in others (e.g., L2, L6) could make portions of this corridor more challenging to acquire and construct. The Richmond Highway corridor does have partially-graded utility corridors running alongside in places, and in general could be relatively easy to only moderately difficult to acquire, grade, and construct. However, the corridor will continue to suffer from being adjacent to a rural highway with high speeds, few amenities, and industrial land use – noise, emissions, and other effects of being near the highway will make the trail significantly less attractive to ride.

Building the Stafford Heritage Trail in the Power Line Easement will require constructing new bridges at the Accokeek Creek near the Civil War Park, in segment L1 or S5, and at Potomac Creek in L4. However, roadway volumes and speeds would make using the existing bridges on Richmond Highway untenable and new bridges would be needed for the trail at the same creeks, so using the Route 1 corridor in this part of the County would likely require the same bridge costs.

A trail spur to Stafford High School and Chichester Park (S8) would be desirable given that either trail corridor passes near the high school. Natural areas behind the high school could be an ideal place to build this spur as long as it is compatible with Claiborne Run and the resource protection area surrounding it.

Figure 41: Elevation profile for the Power Line Easement, Segments L3 to L6

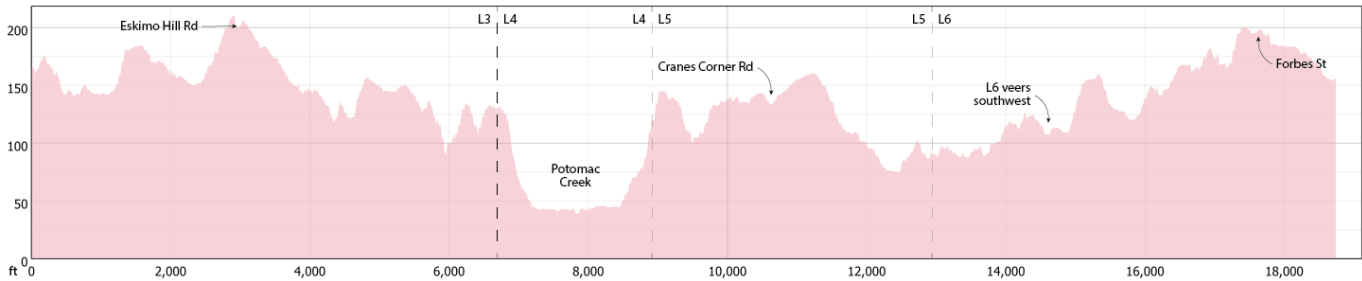
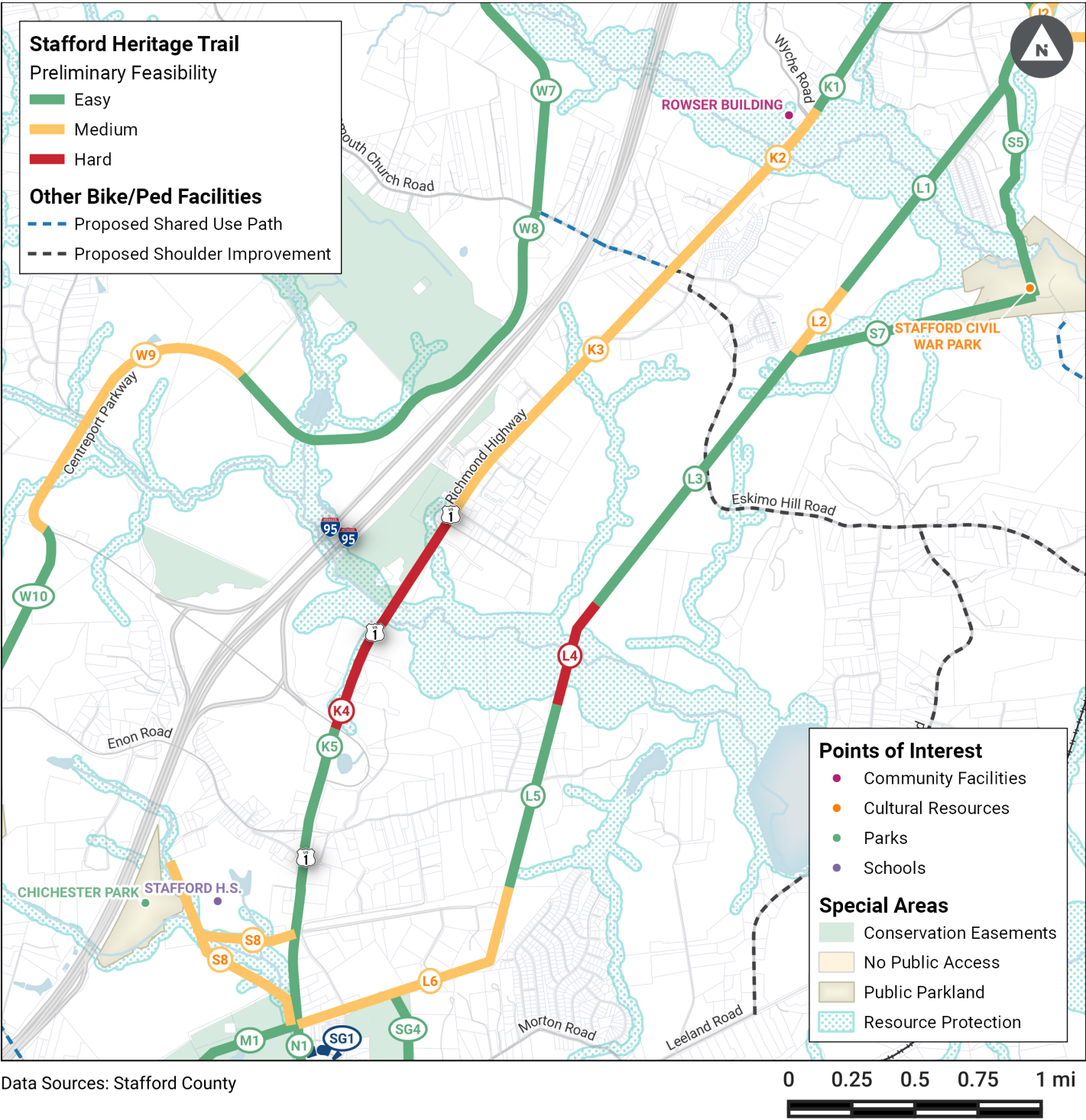


Figure 42: Preliminary feasibility assessment of trail alignment options, Central Stafford



Data Sources: Stafford County



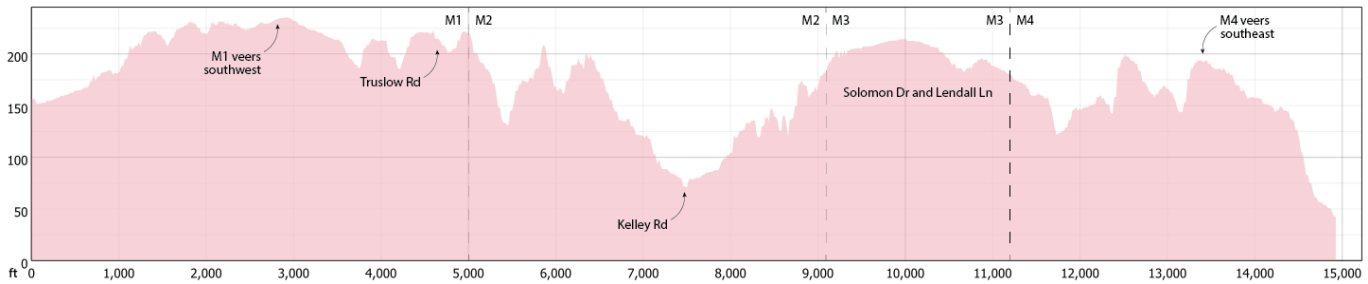
Gap Analysis Area: Southern Gateway

As mentioned previously, in the southernmost part of the county, five options are potentially feasible. Three involve existing roads (from west to east: Cambridge Street/US 1 (segment N1–4), Forbes Street (segment O1–4), and Leeland and Deacon Roads (segment Q1–3)), one involves the Power Line Easement (segment M1–4), and one uses the Virginia Passenger Rail Authority (VPRA)-owned railway corridor (P1–2).

Although parts of Cambridge and Forbes Streets are promising, both are increasingly encroached on by existing development as they approach historic Falmouth. The narrow rights of way, high traffic, and significant grades on Forbes Street would make both of these roads difficult to develop a trail on and would likely result in that trail being unpleasant to use. Similarly, while Leeland and Deacon Roads have the distinction of carrying the county’s first painted bike lanes, those lanes are not all-ages-and-abilities facilities. Existing trails alongside the northern part of Leeland Road (Q1) are quite narrow, hemmed in by fences and the developments that built them. Additionally, at least one trail, on the east side of Leeland Road near Primmer House Road, is explicitly posted as being private property and only for the use of residents and guests. Limited right-of-way on Leeland Road, and the combination of high speeds on and frequent places to turn off of Deacon Road, would make a trail difficult to build and unpleasant to use as well. These facilities may be used for temporary alignments of the Heritage Trail until new shared use paths are built.

Segment M2, starting at distance of 5,000 feet, features several significant drops; there is a large low section between 7,000 and 8,000 feet, encompassing the Kelley Road crossing (Segment M3), and the southernmost section (Segment M4) features multiple steep drops before sloping down to and then dropping off the riverside bluff.

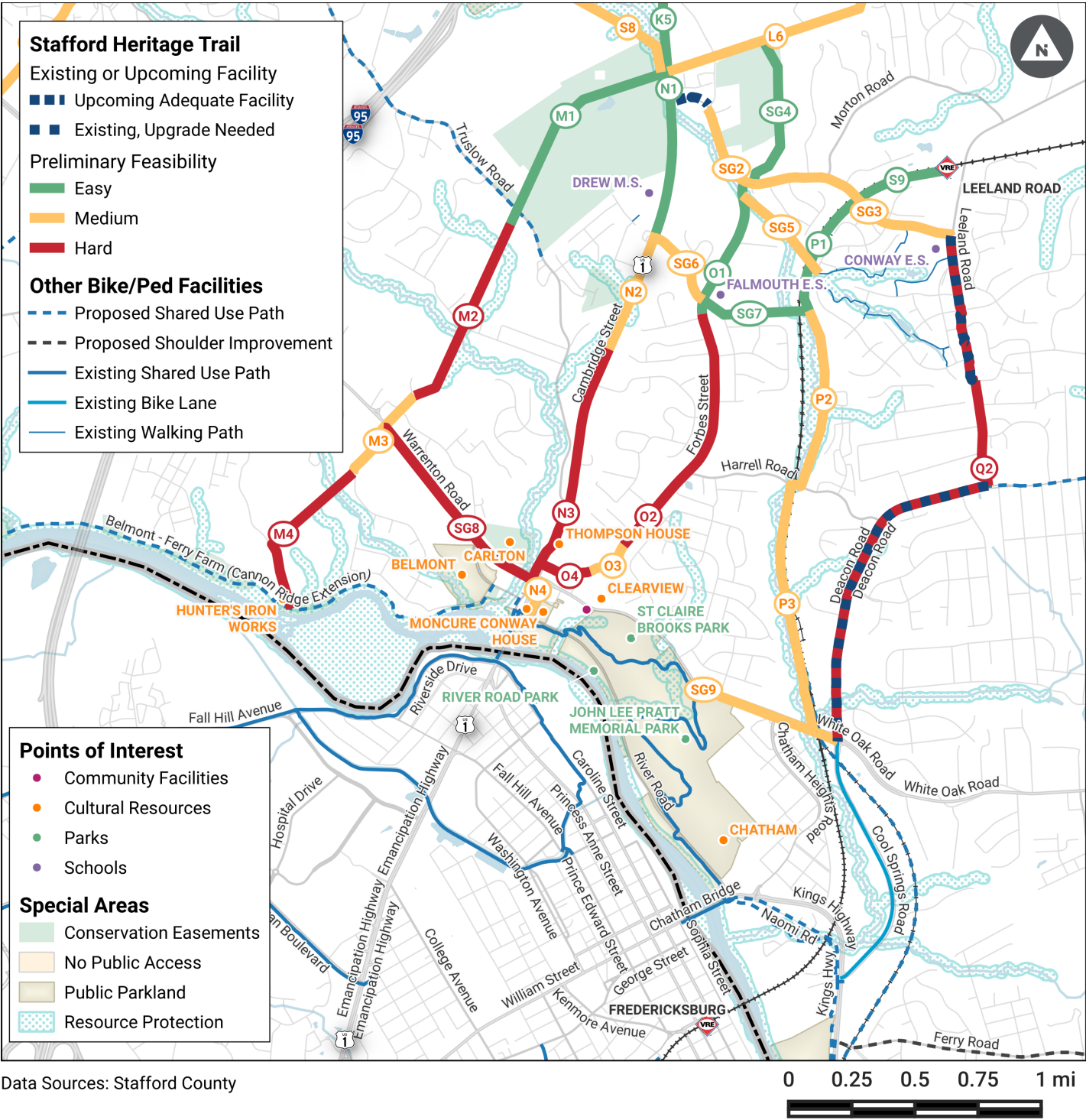
Figure 43: Elevation profile for the Power Line Easement, segments M1 to M4



As depicted in the elevation profile (Figure 43), the Power Line Easement, especially south of Truslow Road as the alignment approaches the Rappahannock River, faces the same topographical challenges seen in the northern sections of the county. Significant regrading or switchbacks would be required to make a trail in this area ADA-accessible.

Parts of the rail corridor south of Primmer House Road seem to already have a goat path running nearby (P2), but far enough away from the railroad, especially to the east of the railroad. In the southern part of the corridor (P3), between Synan Road and Dahlgren Junction, there are a number of industrial facilities which use the rail line, so building a trail in the rail corridor will likely require transitioning from the east side of the railway to the west at Harrell Road.

Figure 44: Preliminary feasibility assessment of trail alignment options, Southern Stafford east of I-95



Data Sources: Stafford County



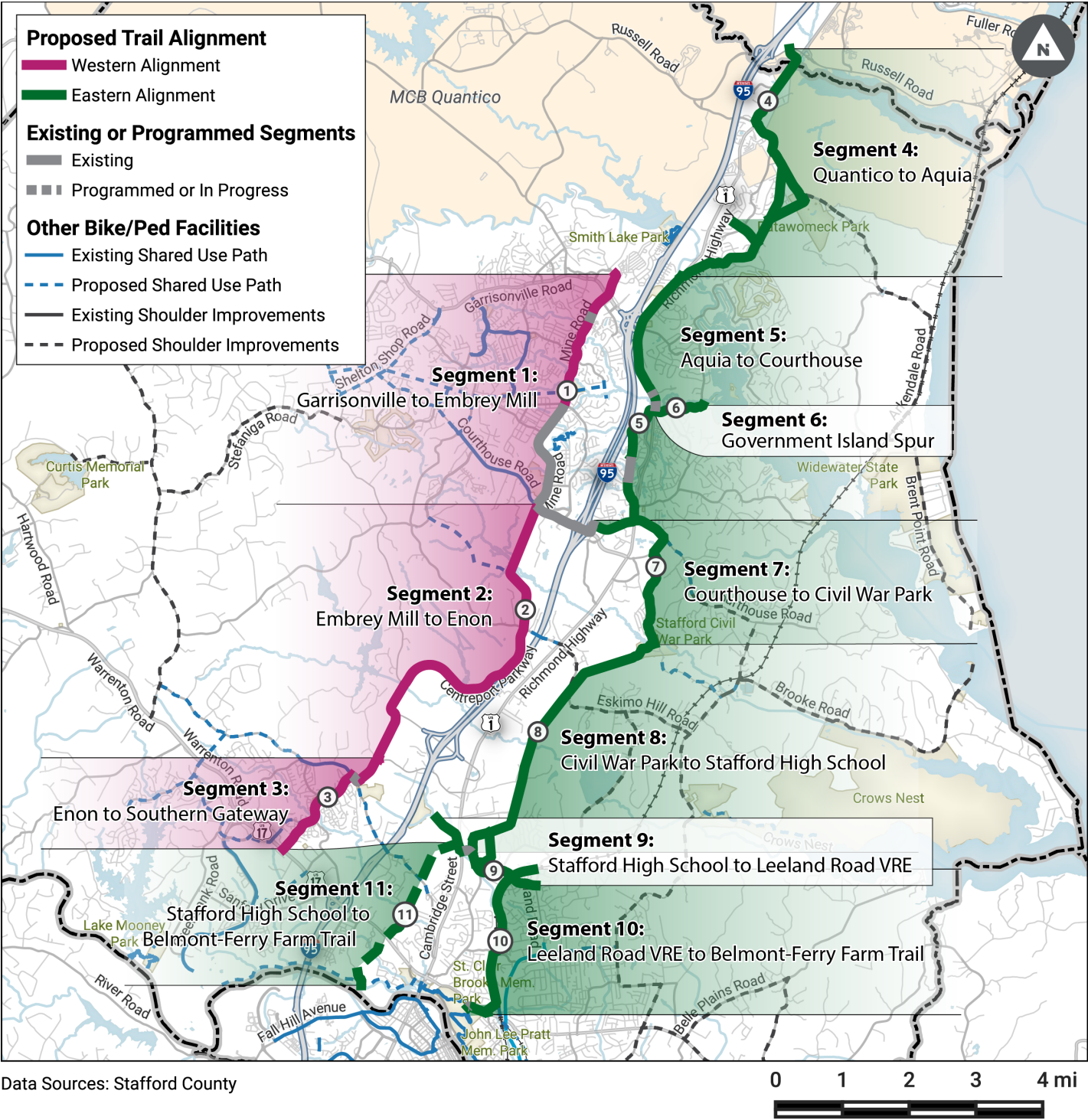
5 PROPOSED ROUTE IDENTIFICATION

5.1 Overview of Proposed Alignment

This section presents the full Draft Alignment route and feasibility analysis of the Stafford Heritage Trail, as depicted in Figure 45. The proposed trail alignment is comprised of a Western and Eastern Alignment. As proposed, the trail will be 40.8 miles in total, with 3.3 miles already existing as adequate 12-foot-wide shared use paths and another 0.5 miles programmed to be built or in design phase.

The sections that follow break the Western and Eastern Alignments into 11 distinct segments and describe them individually. Proposed segments have been named after the areas and destinations they connect rather than specific roads to give the County flexibility if the alignment needed to vary in the future. A discussion of rails-with-trails considerations and case studies provides guidance and examples that can support collaboration with railroad owners to advance the proposed segment in the Falmouth area.

Figure 45: Draft Alignment of the Stafford Heritage Trail broken down into 11 segments





5.2 Western Alignment

The draft Western Alignment of the Stafford Heritage Trail is 12 miles long and parallels existing and future roads to be developed west of the Interstate 95 corridor: Mine Road, Centreport Parkway, Enon Road, and Plantation Drive. Nearly 2 miles of the Western Alignment has been built as an adequately wide 12-foot shared use path in the recently completed Embrey Mill subdivision. The rest of the alignment is unbuilt or needs upgrades, and it can be broken down into three distinct segments.

Segment 1: Garrisonville to Embrey Mill

A. Mine Road from Staffordboro Commuter Lot to Coastal Avenue/Austin Ridge Drive

This 2.2-mile segment of the Western Alignment is in North Stafford, paralleling Mine Road from the Staffordboro Commuter Lot to the Embrey Mill subdivision at Coastal Avenue/Austin Ridge Drive. There are some isolated sections of sidewalk and some longer sections of narrow shared use paths (usually 4-6 feet in width, see figure below), all of which will need to be upgraded to meet current standards for all-ages-and-abilities shared use facilities with wider, modern paths. The southbound side of Mine Road is the recommended side of the road on which to build the trail based on existing and future trail development opportunities, and a more direct connection to the park-and-ride lot and the existing path at Embrey Mill.

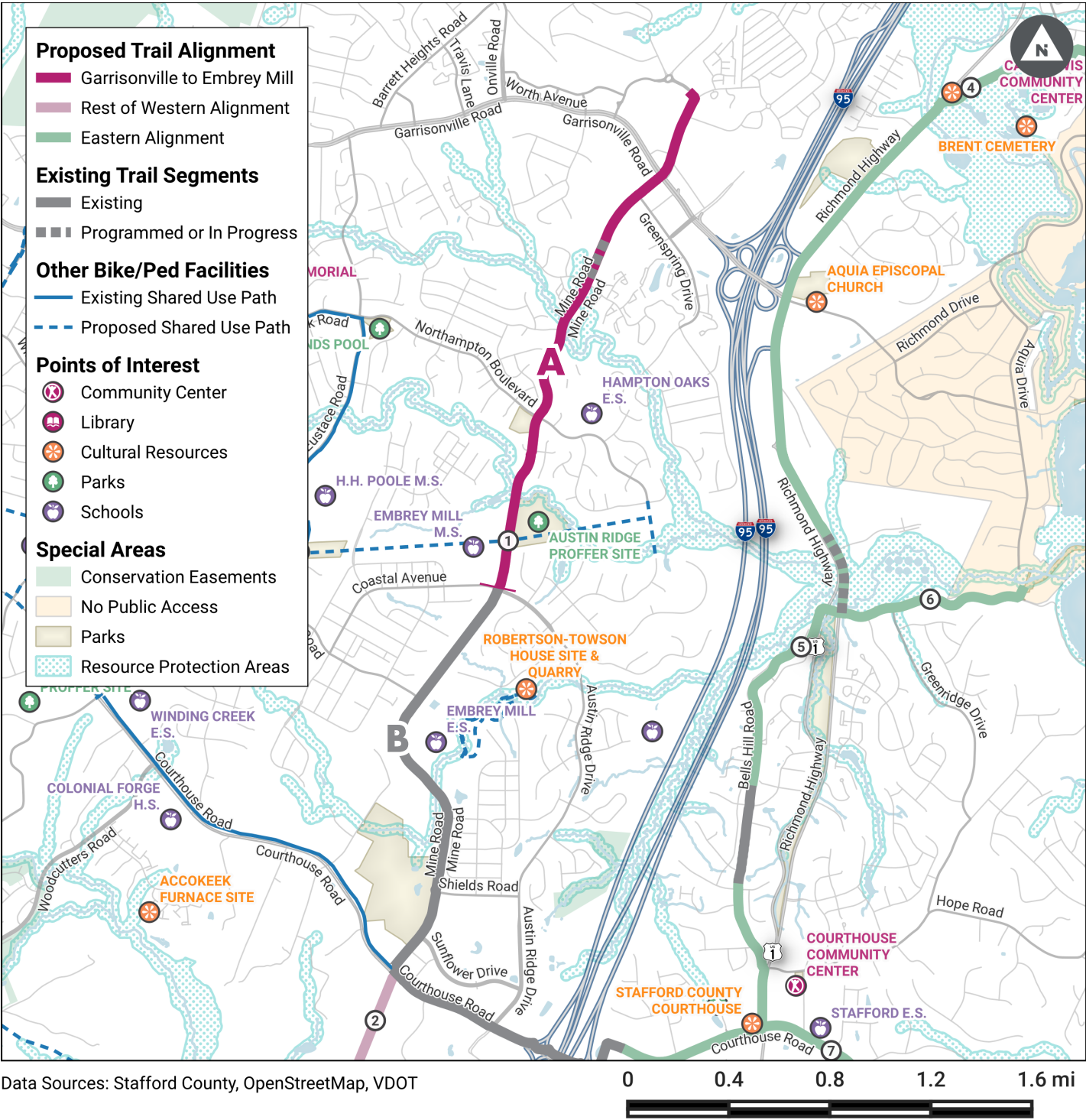
B. Mine Road from Coastal Avenue to Courthouse Road

At Embrey Mill, Mine Road is already served by an adequately wide shared use path (Figure 47, right), which adds an additional 1.8 miles to Segment 1’s length. Spot improvements may be needed at intersections, such as making sure that curb ramps meet current accessibility standards and creating more comfortable pedestrian crossings across Mine Road to reach the trail. The existing shared use path alignment ends at Courthouse Road (SR 630), where future trail users can continue on the Western Alignment along Segment 2 or take the newly built 1.1-mile shared use path along Courthouse Road to cross over I-95 and reach Segment 7 of the proposed Eastern Alignment of the Stafford Heritage Trail.

Figure 46: Narrow shared use path along Mine Road at Northampton Boulevard (left) and wide shared use path along Mine Road at Shields Road (right)



Figure 47: Map of Segment 1 of the Stafford Heritage Trail – Garrisonville to Embrey Mill





Segment 2: Embrey Mill to Enon

This 5.9-mile segment in Central Stafford is the least developed segment of the Western Alignment. It consists of three distinct sections, with two of them are entirely unbuilt and a third section in the middle that has a road but no pedestrian or bike facilities.

A. Mine Road Extension (North) Shared Use Path

Between Courthouse Road and Ramoth Church Road (SR 628), Mine Road Extension has been proposed in Stafford County’s Comprehensive Plan but has not been fully designed. Scopes of work for future engineering phases should include a 12-foot-wide shared-use path on at least one side of each segment, with at least a 4-foot buffer from the road, to provide multimodal connectivity to this growing area of Stafford County.

B. Centreport Parkway from Ramoth Church Road to Mine Road Extension (South)

Sandwiched between the unbuilt sections of Mine Road Extension, Centreport Parkway between Ramoth Church Road and the top of the hill south of Mountain View Road (SR 627) is a two-lane open-section road with no shoulder and significant grades. While there are substantial drainage ditches along both sides of the road, the character and speed of traffic along this road are such that trail users would likely want to be on a shared use path well-buffered from the side of the road. This area likely represents the most significant gap along an existing road on the Western Alignment.

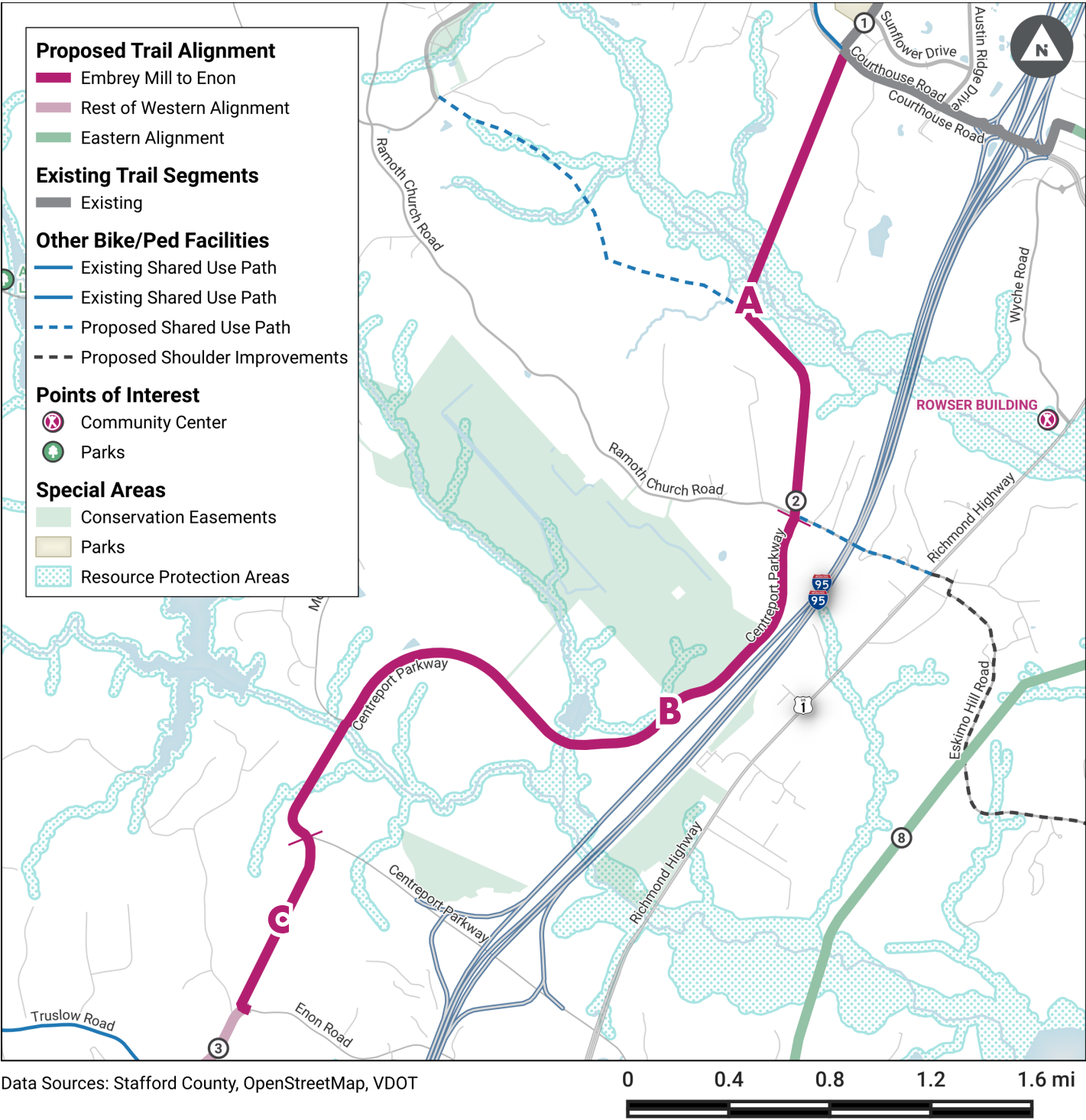
C. Mine Road Extension (South) Shared Use Path

Between the sharp bend on Centreport Parkway closest to the I-95 entry and exit ramps and Enon Road, a southern extension of Mine Road has also been proposed in Stafford County’s Comprehensive Plan, and the approach to building the Heritage Trail on it should follow similarly to the northern extension of Mine Road.

Figure 48: Limited shoulder on Centreport Parkway looking towards Mountain View Road (SR 627)



Figure 49: Map of Segment 2 of the Stafford Heritage Trail – Embrey Mill to Enon





Segment 3: Enon to Southern Gateway

This 2.2-mile segment of the Western Alignment is in the Southern Gateway area, from Enon Road to Warrenton Road (US Route 15). This segment consists of two distinct sections.

A. Enon Road and Truslow Road, from Mine Road Extension to Plantation Drive

The northern part of this segment, along Enon Road and a short segment of Truslow Road, are narrow two-lane open-section roads with no shoulder and no bicycle or pedestrian facilities. Most of the properties on the southbound side of Enon Road have very large setbacks, but a number of them have high berms bisected by driveways (Figure 51, left). On Truslow Road, only the westbound side of the road has properties with setbacks that could allow a trail easement, but the setbacks are not as generous as they are on Enon Road. Currently, Stafford County is investigating the feasibility of adding a shared use path along Enon and Truslow Roads in conjunction with a project to realign the intersection of the two roads and connect to the new Musselman Park.

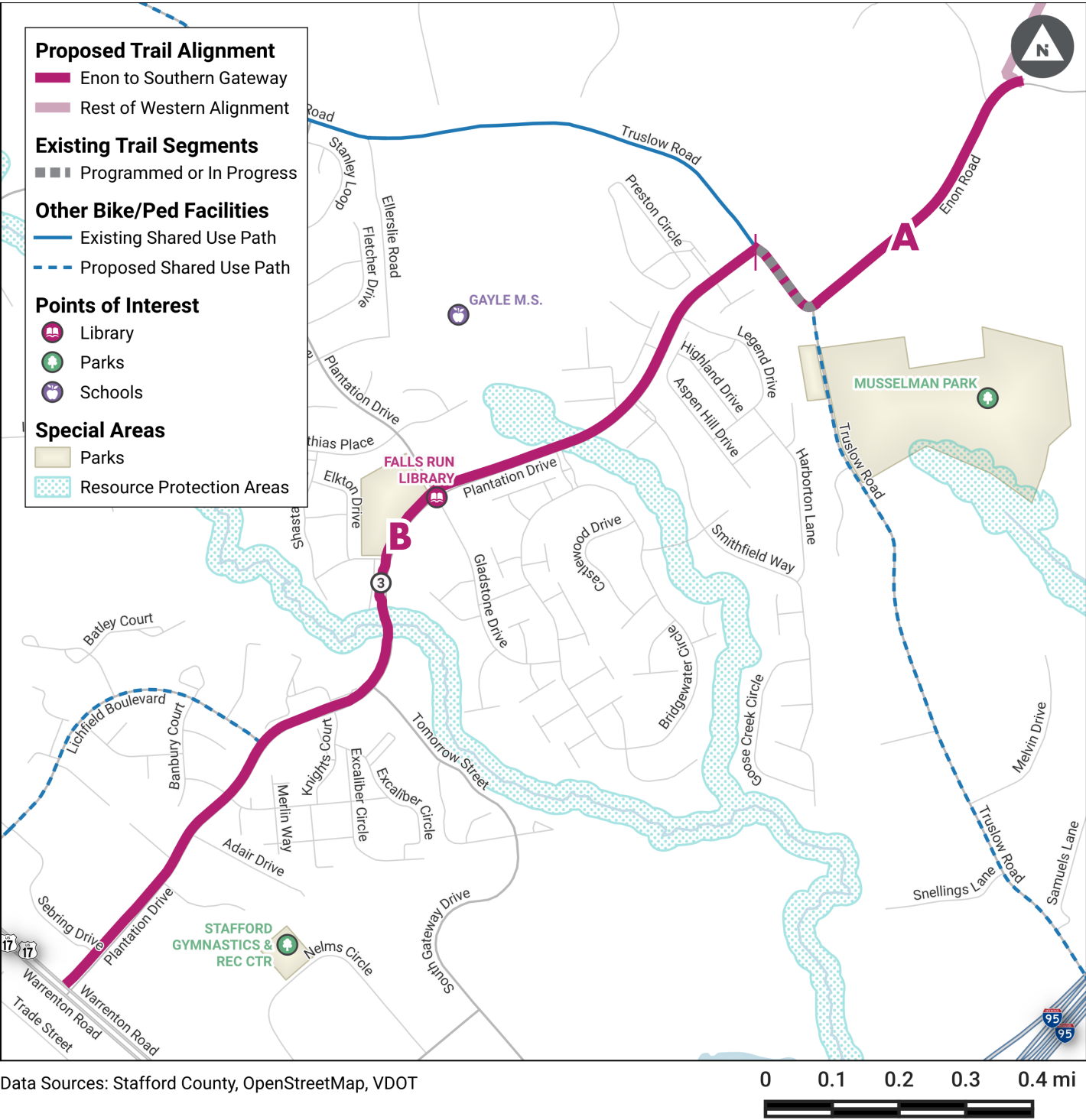
B. Plantation Drive from Truslow Road to Warrenton Road (US 17)

In the southern part, Plantation Drive has intermittent and narrow sidepath sections connected by areas where people walking, rolling, and riding bikes must share the road shoulder with moving vehicles, such as on bridges. As the road approaches the Route 17 intersection, sidewalks become intermittent but there is likely sufficient space to expand sidewalks or build new shared use paths along Plantation Drive to Route 17. This section was also previously evaluated in the GAP-TA Stafford Southern Gateway Bicycle and Pedestrian Study (Stafford County, 2022).

Figure 50: Enon Road by Hulls Memorial Baptist Church (left) and Plantation Drive at Sheffield Street (right)



Figure 51: Map of Segment 3 of the Stafford Heritage Trail – Enon to Southern Gateway





5.3 Eastern Alignment

The draft Eastern Alignment of the Stafford Heritage Trail is 24.4 miles long and has been subdivided into seven separate segments (Segments 4-10), with an additional Segment 11 that can serve as an alternative to Segment 10. The alignments makes use of a Dominion Energy power line easement that runs north-south across Stafford County, veering off onto parallel routes where necessary to avoid challenging topography and areas where public access would be difficult to secure along the easement. Parallel routes used in the draft alignment include US Route 1, Bells Hill Road, and the active rail corridor south of Leeland Road VRE. The alignment also includes several trail spurs to provide access to Patawomeck Park, Government Island, and various public schools and multimodal transportation hubs.

Segment 4: Quantico to Aquia

This 5.2-mile segment of the Stafford Heritage Trail runs from the county’s boundary with Prince William County to the Aquia area. It makes use of the power line easement except in Quantico and Aquia Harbour, where – as described in the “Feasibility and Needs Assessment” section – public access concerns as well as hilly and marshy topography would make a shared-use path difficult to construct. Two spurs totaling 1.3 miles in length provide additional connectivity to Patawomeck Park and Heim Middle School. Segment 4 is hereby described in four smaller subsegments.

A. County Line to Telegraph Road

The northernmost portion of this segment will connect to Prince William County’s segment of the Potomac Heritage National Scenic Trail (PHNST) in Locust Shade Park.<sup>2</sup> From Russell Road at the county line, the trail will run alongside the ramp to and from southbound US 1, and then run south along the western (southbound) side of Route 1 (Richmond Highway).

This area is largely undeveloped woods. However, the handful of properties on the western side of Route 1 are largely auto-oriented, and crossing them could require acquiring significant sections of parking lot. However, it may be possible to route the trail behind many, though not all, of these properties, especially the series of used car lots just north of Telegraph Road.

The eastern side of Route 1 is largely similar, but has several larger properties closer to the roadway, such as the Hilldrup moving company warehouse and maintenance facility. Additionally, the connection with the PHNST will be on the west side of Route 1, the Russell Road bridge has no sidewalk or shoulder, and the only signal which would permit safe crossing of Route 1 between Russell and Telegraph is at the intersection with Corporate Dr and the Hilldrup driveway.

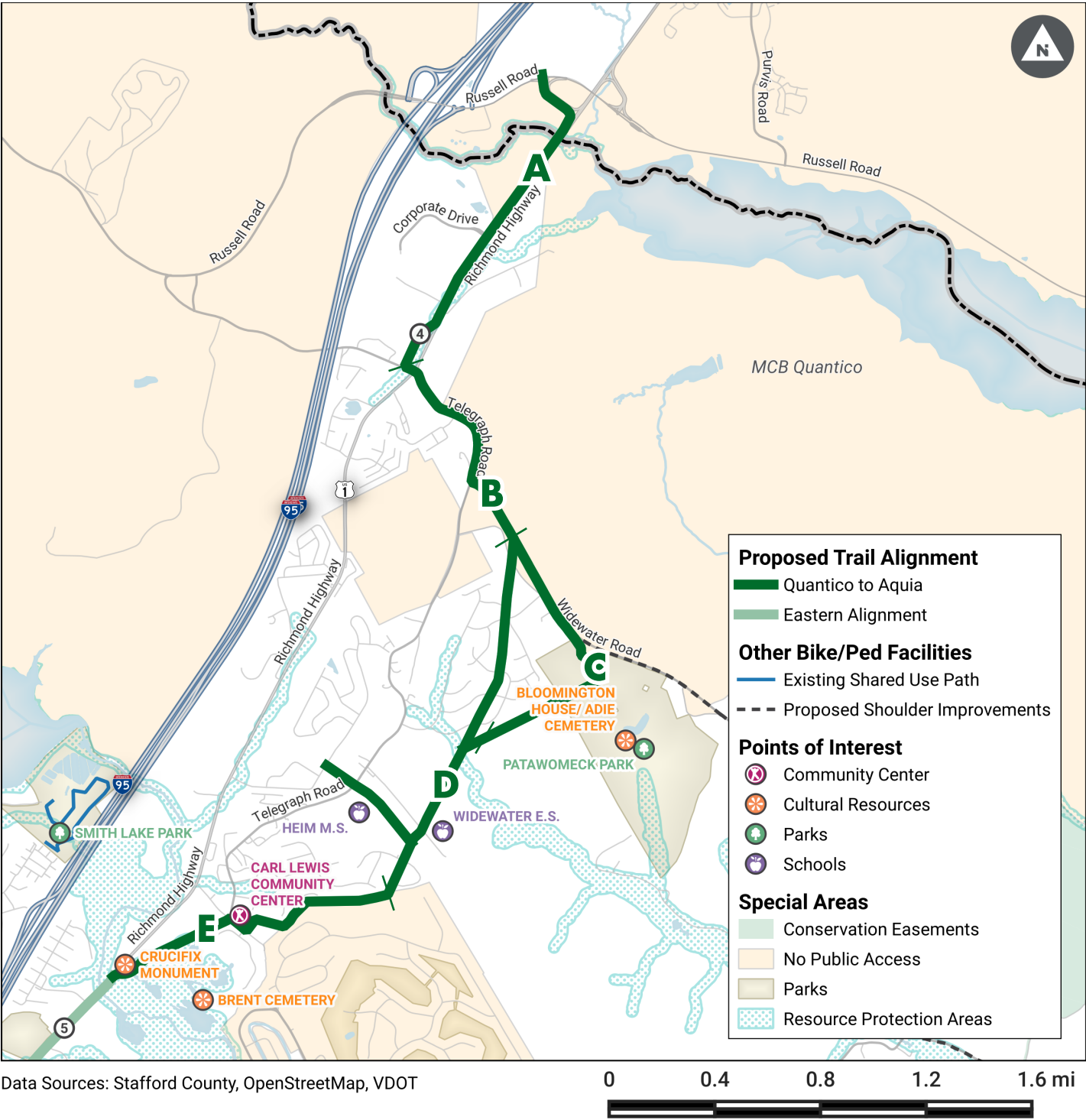
B. Telegraph and Widewater Road

At Boswell’s Corner, the route turns and crosses Route 1 on Telegraph Road, then turns onto Widewater Road, following this at least to the Power Line Easement and as far as Patawomeck Park as part of a trail spur to the park.

The entire north side of this route is Marine Corps Base Quantico property, and there would be no roads to cross other than Widewater itself. Conversely, the south side of this segment is partially MCB Quantico property and partially owned by numerous individual residences, and it would need to cross Telegraph Road and/or Widewater Road at their intersection, plus several other roads and driveways as well. To minimize potential conflicts between vehicles and trail users and easements on private properties, the trail should run on the northbound side of Telegraph Road and the eastbound (south) side of Widewater Road.

2 Nothern Virginia Regional Commission, Potomac Heritage National Scenic Trail 2022 Northern Virginia Corridor Analysis Report, page 12.

Figure 52: Map of Segment 4 of the Stafford Heritage Trail – Quantico to Aquia





**C. Patawomeck Park Trail Spur**

While the mainline of the trail alignment continues south when it reaches the Power Line Corridor, the trail could continue along Widewater Road as a spur to access Patawomeck Park near its main entrance at Chopawamsic Parkway. Excess right-of-way that is likely remaining from a straightening of Widewater Road could be used to access the park near its northernmost tip, and a trail could be carved between the woods to reach the parkway and parallel it. Where the parkway turns left into the parking lot, the trail would continue straight into the woods, reconnecting with the mainline of the Heritage Trail south of Barclay Lane. By providing both a northern and southern access to the park through the proposed trail spur alignment, trail users can choose the entrance that is closest to them and enables a desirable loop route (instead of an out-and-back route) for recreational activities such as jogging.

**D. Power Line Easement from Widewater Road to Aquia Harbour**

Between Telegraph Road and Tamerlane Drive, Widewater Road crosses a wide power line corridor. While the line is owned and maintained by Dominion Energy, the land underneath is generally owned by adjacent landowners or by homeowners’ associations. In this section (and again in Segment 8), we propose to run the Stafford Heritage Trail’s Eastern Alignment within the easement due to its immediate access to schools and residential areas (i.e., potential trail users), existing desire lines, lack of other uses by adjacent landowners, and primary ownership by homeowners’ associations rather than multiple landowners.

Although in many cases this corridor will require re-grading as well as paving (see Figure 53, left), it is generally considered to the benefit of both trail users and power companies to place shared use trails within power line easements. While details will need to be negotiated between Dominion Energy, Stafford County, and individual landowners, a paved trail can provide significantly improved access for maintenance and upkeep of the power line infrastructure for the occasional maintenance vehicle, and the potential for vandalism or other acts against the power line is reduced by providing more visibility and eyes on the infrastructure. For adjacent landowners, a trail can provide an appealing amenity in an area where height and use limitations prevent the construction of other desirable community assets.

South of Den Rich Road, a short trail spur is proposed along an existing narrow paved trail within the Shirley Heim Middle School grounds (Figure 53, right) and wooded right-of-way from Telegraph Road to Olympic Drive to provide east-west access between Widewater Elementary School, the middle school, and Widewater Village. This would expand access to these schools to the surrounding neighborhoods where there currently is no formal connection.

**E. Carl Lewis Community Center and Lower Telegraph Road**

Due to both the private, gated nature of the Aquia Harbour community and the substantial grades the power line easement must mount to traverse it, we have proposed routing the Heritage Trail around Aquia on its western side. The first step in this is to head west along the northern boundary of the community. This will involve picking a path through the woods between properties along Brentsmill Drive and Victoria Drive before exiting onto County-owned property at Carl Lewis Field and Community Center. Alternatively, the trail could make use of existing sidewalks and low-volume roads within the Brentsmill Estates community to reach the community center property, with clear wayfinding signage.

From Woodstock Lane (SR 639), the trail route will turn southwest alongside Telegraph Road (SR 637), as shown in Figure 54. It will need to be wedged between the road and the privacy wall surrounding the Freedom Point subdivision south of Woodstock Lane, and then between the road and the Brent Family Cemetery, but these properties setbacks appear to provide sufficient space to construct a shared use path along the road. A planned redesign and reconstruction of the intersection of Telegraph Road with US Route 1 may provide additional space for the trail. Between the cemetery and the historic marker near the Route 1 and Telegraph Road intersection, the Heritage Trail will provide access to cultural resources that commemorate the county’s religious heritage at a pace where they can be appreciated.

**Figure 53: Power line easement at Stonebridge subdivision (left) and trail by Heim Middle School (right)**



**Figure 54: View of Woodstock Lane (SR 639, left) and Telegraph Road (SR 637, right) by Carl Lewis Field**





Segment 5: Aquia to Courthouse

This 3.8-mile segment of the Eastern Alignment makes use of Route 1 to go around the Aquia Harbour private community and provide connectivity to commercial and cultural resources in this part of Stafford County. The segment also makes use of an existing shared use path on Bells Hill Road and a proposed shared use path on Route 1 to connect these areas together sooner.

A. Richmond Highway from Telegraph Road to Coal Landing Road

Due to the lack of a feasible option through Aquia Harbour, this subsegment of the trail will run along the east side of US 1. Between Telegraph Road and Washington Drive, this area is largely undeveloped, and the properties that are developed (i.e., William of York Catholic and Aquia Episcopal Churches; a car dealership, convenience store, and hotel on either side of Coachman Circle) are set back sufficiently from the road to allow space for the trail.

South of Washington Drive, several commercial developments, including the large Aquia Town Center property and a pair of Marriott hotels, are much closer to the roadway and could prove more challenging. To build the trail, right-turn lanes could be removed or narrowed, parking lots could be reconfigured, or the trail could be routed through a potential redevelopment of the area. In the southernmost portion of this segment, from north of Foreston Woods Drive to Coal Landing Road, the county has a SMART SCALE application to build a shared use path on the east side of Route 1.

B. Bells Hill Road from Coal Landing Road to Courthouse

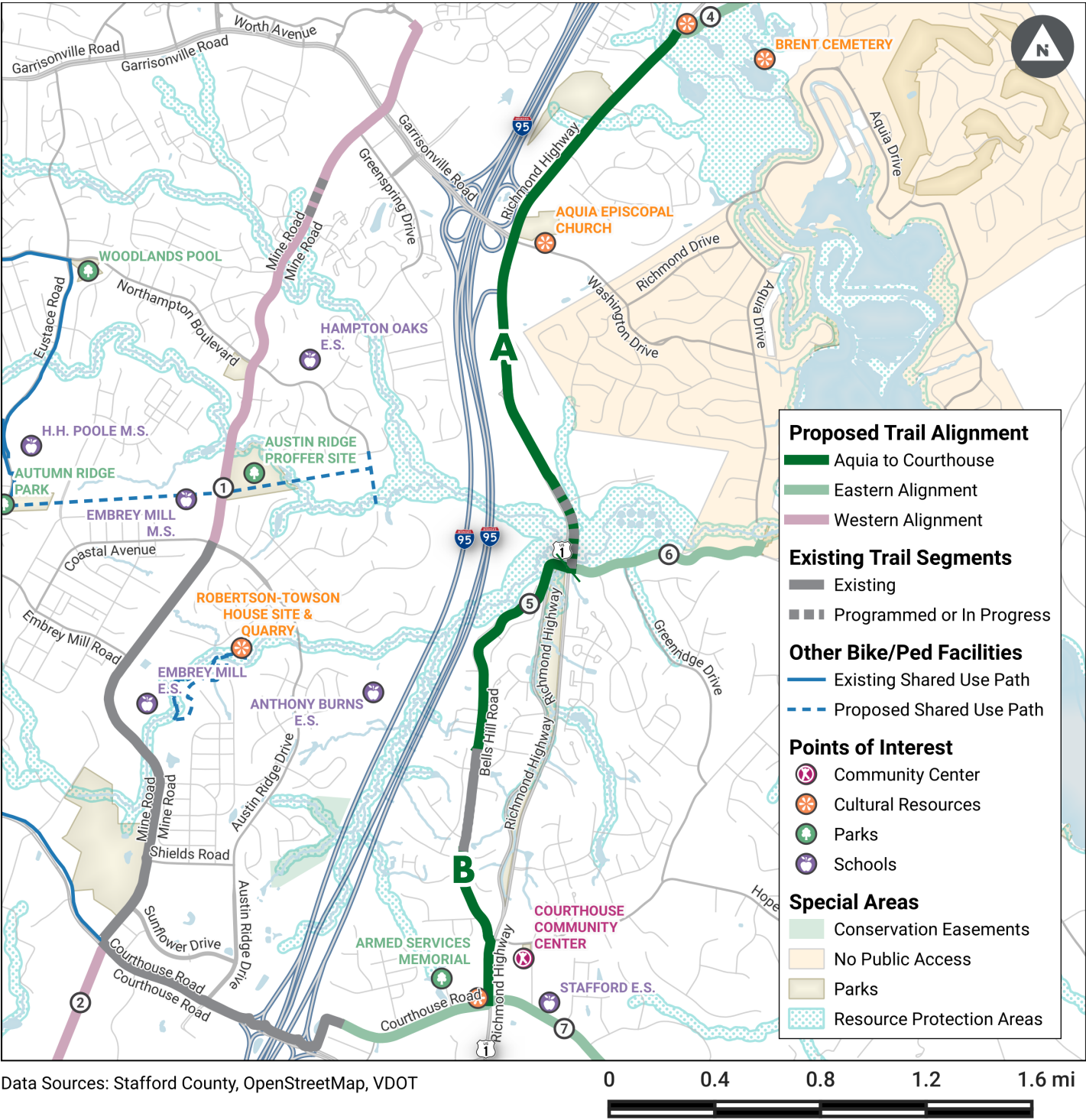
As described in the Task 3 memorandum, there was a choice in this section between the power line easement, Route 1 or the forested strip in the median of Route 1 known as “Wayside,” or Bells Hill Road (SR 631). Unlike in other parts of the county, the power line here runs above various properties’ backyards, making land acquisition and trail construction significantly more complicated than in areas where the easement is undeveloped. A trail through Wayside would have significant issues connecting back out of the middle of Route 1 at the southern end. At minimum, a Wayside trail alignment would result in needing to cross two lanes of a four-lane, 45-mph highway well away from any signal. Therefore, we have chosen a route using the length of Bells Hill Road, specifically the west side of the road, making use of an existing adequate shared use path along the Bells Valley subdivision.

At the north end of Bells Hill Road, there is not a lot of room between the houses and the road, but there should be just enough room to install a shared use path, especially if privacy trees can be moved. Alternatively, it may be possible to route the trail through the undeveloped woodland between these properties and I-95, especially behind the Bells Run Townhomes development, which is quite close to Bells Hill Road.

In the central part of Bells Hill Road, starting approximately 400 feet north of Corin Way, a shared-use path already exists along the west side of the road. This runs about 2,100 feet, to around 250 feet south of Doria Hill Dr. The remainder of Bells Hill Road appears to have ample room alongside in which to extend this trail.

Between Bells Hill Road and Courthouse Road, the trail should run along the west side of Route 1 given that the County owns most of the properties fronting this stretch of the highway and the Courthouse complex currently has a large, well-buffered sidewalk. The sidewalk could be widened to become the Stafford Heritage Trail, or the trail could use the existing sidewalk and be only a signed trail through this historic property.

Figure 55: Map of Segment 5 of the Stafford Heritage Trail – Aquia to Courthouse





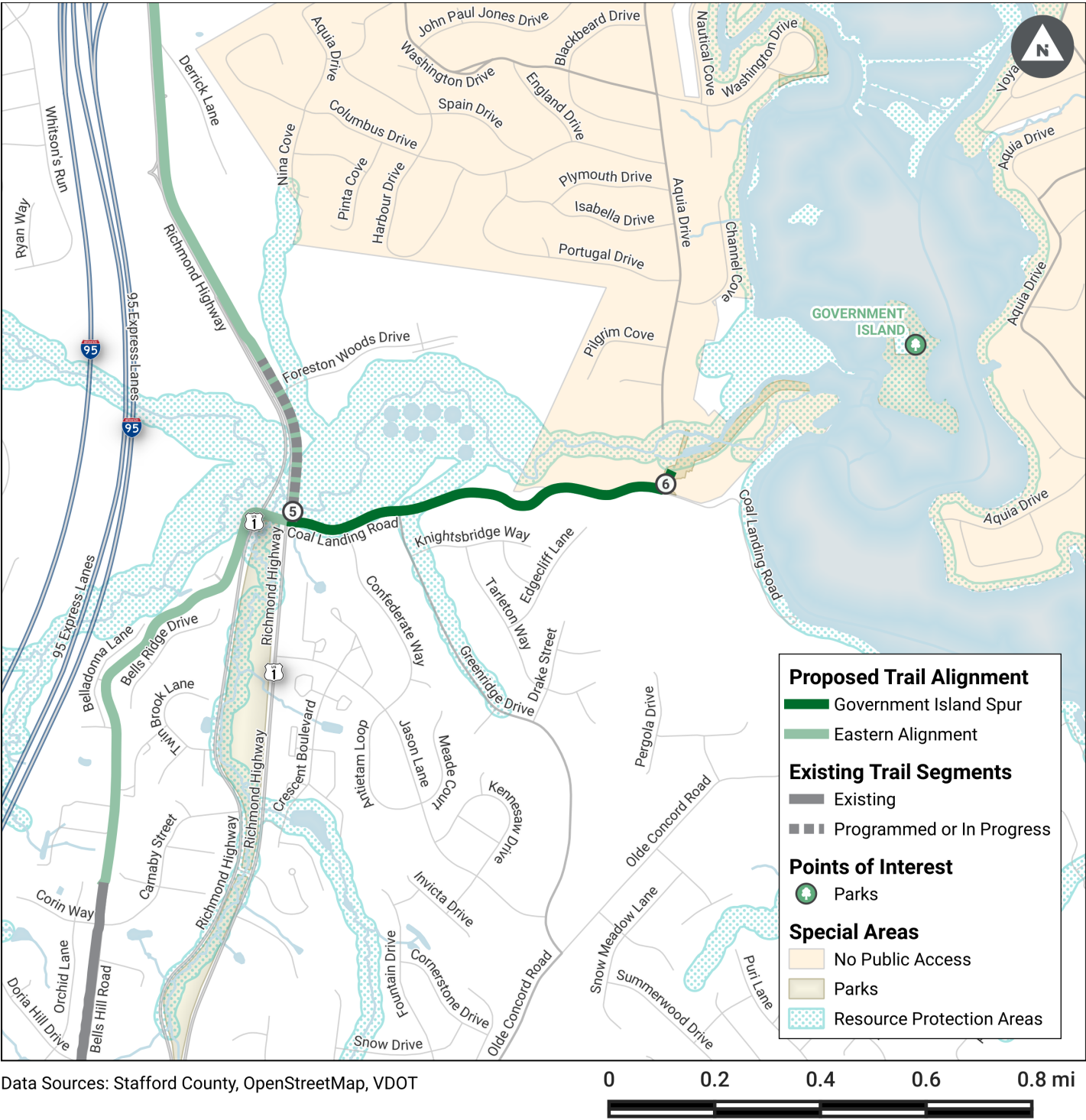
Segment 6: Government Island Spur

Along Coal Landing Road (SR 631), a 0.8-mile trail spur from US Route 1 (Richmond Highway) to Government Island Park could run on the north side of the road. A significant portion of this land is part of the county’s Austin Run Wastewater Treatment Plant, and most of the rest is undeveloped land owned and platted for Aquia Harbour but never developed.

Figure 56: View of Government Island Trail boardwalk towards Aquia Harbour



Figure 57: Map of Segment 6 of the Stafford Heritage Trail – Government Island Spur





Segment 7: Courthouse to Civil War Park

This 2.9-mile segment of the Eastern Alignment travels along Courthouse Road to connect the trail from the Stafford County Courthouse to Stafford Hospital and the Stafford Civil War Park to the east, and the commuter lot and Courthouse Road shared use path across the highway interchange to the west. The segment will provide north-south and east-west multimodal connectivity to a growing part of Stafford County.

A. Courthouse Road and Hospital Center Boulevard

From the intersection of Richmond Highway (US 1) and Courthouse Road (SR 630), the trail would extend west along the south side of Courthouse Road to the VDOT Commuter Lot next to I-95, where it would connect to the existing Courthouse Road shared use path to the Western Alignment of the Stafford Heritage Trail. Most of this land is undeveloped County property.

To the east of the intersection, the trail would run along the north side of Courthouse Road to Hospital Center Boulevard. Although there are some residences relatively close to the road, there is already a sidewalk that could be expanded into a shared use path. The north side also provides a direct connection to Stafford Elementary School. While driveway crossings will need to be carefully designed, the school and trail traffic are likely to have fewer and smaller impacts on each other than the commercial and residential developments on the south side of the road.

Further east, the intersection of Courthouse Road and Hospital Center Boulevard is noted as having poor sightlines and being a difficult place for drivers to turn onto from the northbound leg of the intersection. Intersection improvements, such as a signal or a traffic circle at this intersection, would be beneficial for general traffic safety as well as allow trail users to cross the road safely and then head south on Hospital Center Boulevard along the existing utility corridor.

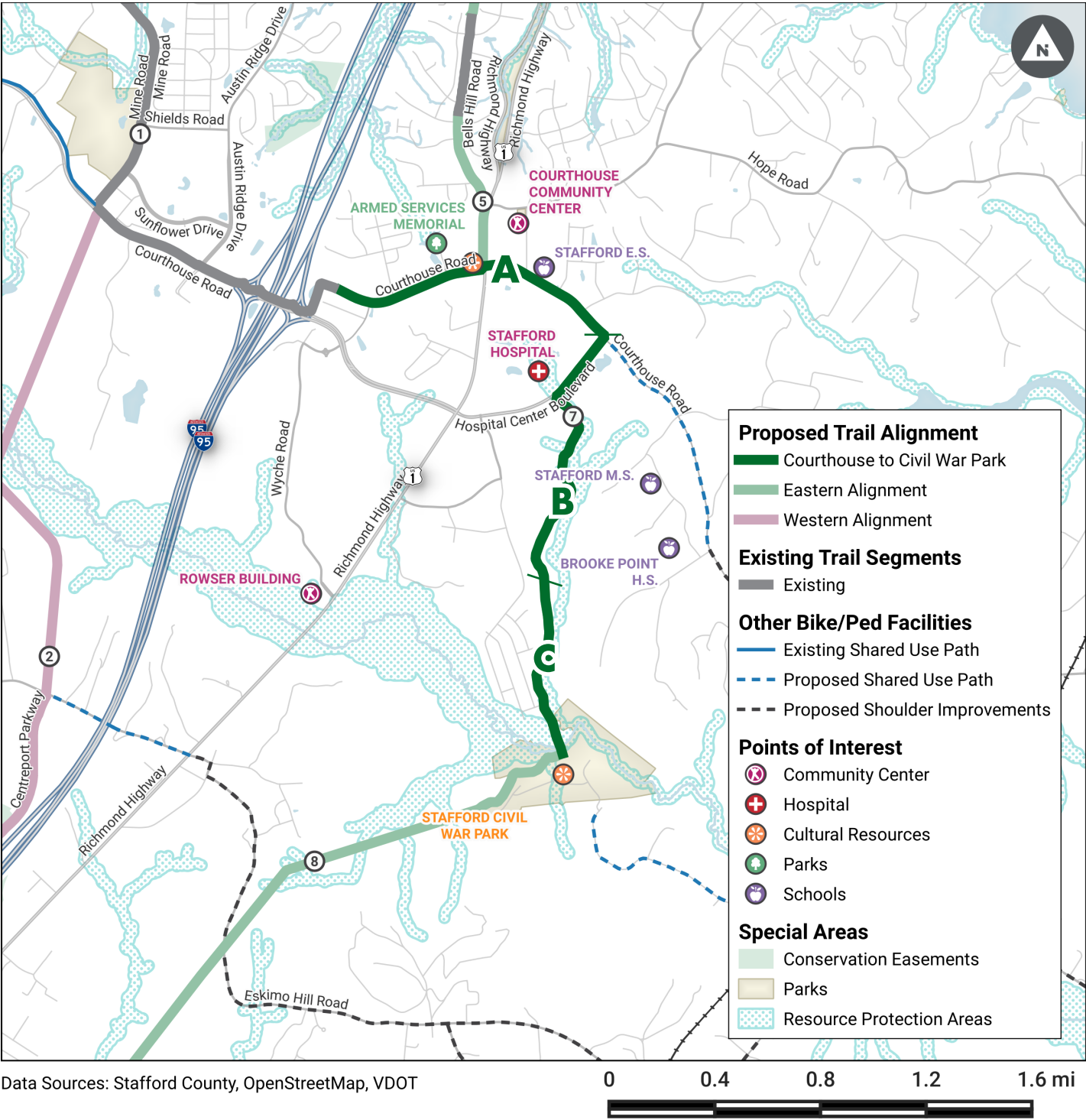
B. Hospital Center Boulevard to Stafford Civil War Park

This is a subsegment that the County largely has a trail easement on. Grading and utility work may be necessary to make sure a trail on this utility easement is accessible. Grading will also be necessary on a potential short spur or trailhead at Spartan Lane on the other side of the power line easement, which could provide desirable connections to Stafford Middle School and Brooke Point High School. Aerial imagery shows an existing path or truck trail that connects Spartan Lane to the easement, so it may be a matter of upgrading this path to accessible trail standards.

C. Stafford Civil War Park Grounds

Segment 7, as currently depicted in the map to the right, has the Stafford Heritage Trail traversing the Stafford Civil War Park along its northwestern boundary to connect the trail’s northern entry point to the park near the historic Daniel Bridge site to its southern entry point near Battery Heights Road. Building this trail, especially as an accessible paved shared use path, might be difficult depending on the historical protections that apply to felling trees, grading, and paving in the park. Additionally, a new bridge will be required to cross Accokeek Creek, whether at Daniel Bridge or elsewhere. A park master planning process should be conducted to balance the historical, cultural, and ecological needs of the park with the increased accessibility and recreational opportunities that a new trail could provide to this hidden gem.

Figure 58: Map of Segment 7 of the Stafford Heritage Trail – Courthouse to Civil War Park





Segment 8: Civil War Park to Stafford High School

This 4.6-mile segment of the Eastern Alignment is running primarily along the power line easement to traverse the vast, less developed expanse of Central Stafford. The alternative, a sidepath along US Route 1, would be similarly challenging to construct while being a less comfortable place to walk or bike given the proximity of a high-speed stretch of highway.

A. Power Line Easement from Civil War Park to Eskimo Hill Road

The Heritage Trail would run from the southwestern end of the Civil War Park in an approximately straight line west-southwest through the woods to reach the power line easement. A trail easement connecting the park to the easement could be part of the considerations adjacent landowners make as they seek to develop in this area. The trail will also have to cross Eskimo Hill Road which, due to the road’s curvature and traffic speed, could be a challenge. A trail alignment should be considered in tandem with a potential realignment of the road to allow for a safer crossing to be built when the trail is built.

B. Power Line Easement from Eskimo Hill Road to Forbes Street

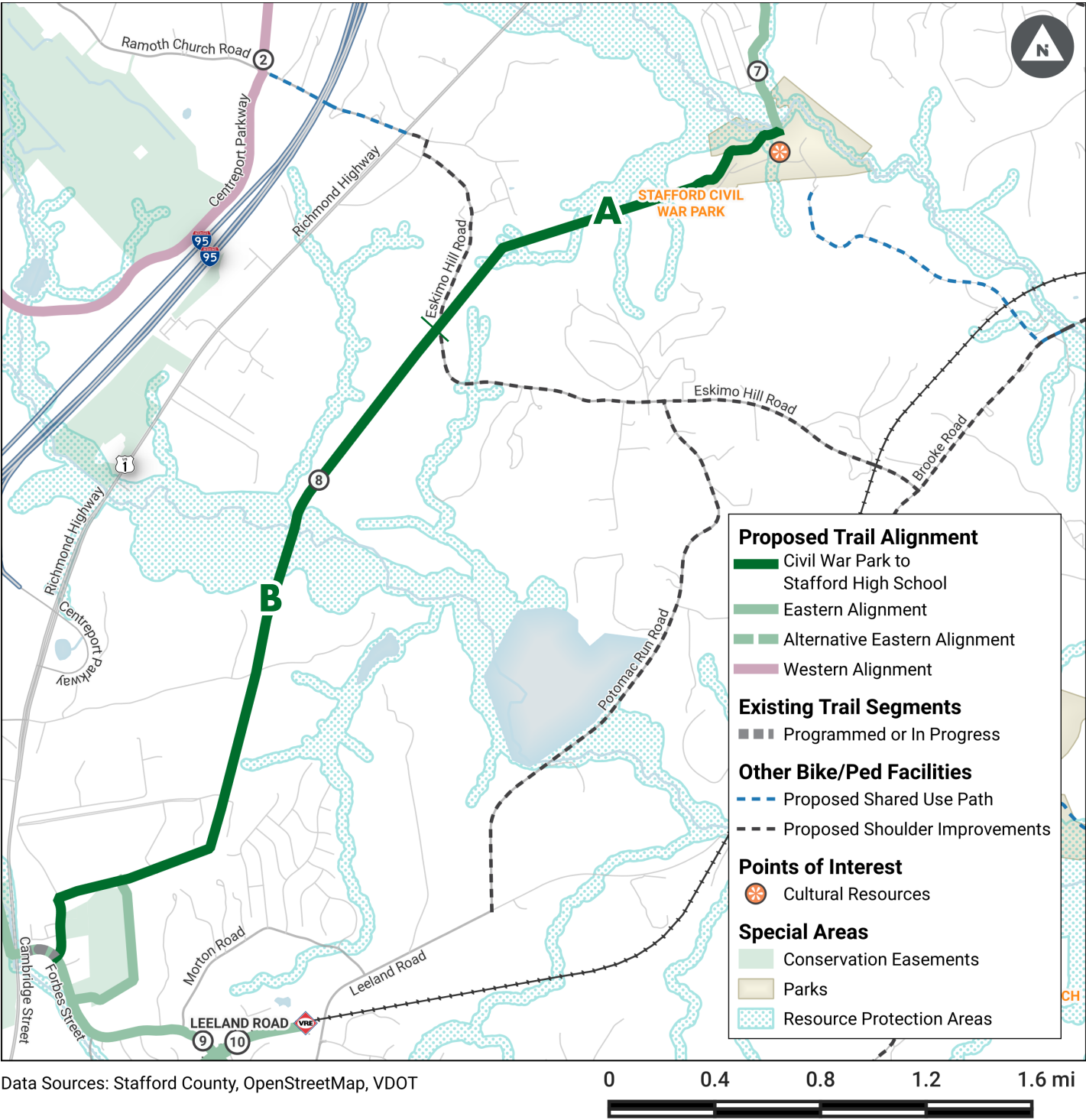
The trail continues on the power line easement, crossing a potential new bridge at Potomac Creek and following the bend of the easement south of Dogwood Airpark, until reaching Forbes Street (SR 627, see figure below). Navigating around the edge of the private airfield at Dogwood Airpark and affiliated homes, some of whose driveways double as taxiways, may pose an interesting challenge. As with other sections of the easement, imagery suggests that unpaved service roads already exist in parts the corridor, though it may be necessary to regrade sections for full accessibility.

Segment 8 continues on the west side of Forbes Street to reach Layhill Road (SR 624), where it meets Segment 9 and uses a spur of that segment to reach Stafford High School and Chichester Park. Another potential spur of Segment 9 which traverses the Stafford Crossing Community Church property could also meet the trail about ¼ of a mile before it crosses Forbes Street, creating a shortcut for trail users that are primarily traveling north-to-south and a loop trail option in a developed part of the county with fewer recreational opportunities.

Figure 59: View of power line easement from Forbes Street (SR 627) across from electrical substation



Figure 60: Map of Segment 8 of the Stafford Heritage Trail – Civil War Park to Stafford High School





Segment 9: Stafford High School to Leeland Road VRE

This 2.7-mile segment of the Eastern Alignment primarily runs on VA 624, which has different street names depending on the part one is travelling on. From Route 1 to Leeland Road (i.e., west to east), VA 624 is comprised of Layhill Road, Forbes Street, Morton Road, and Primmer House Road. This segment uses the north (westbound) side of VA 624 as it has fewer crossings with other active roads and a piece of shared use path is slated to be constructed on the Layhill Road part of VA 624. Segment 9 can be conceived of as being comprised of three separate subsegments.

A. VA 624 from Forbes Street to Leeland Road

From the intersection of VA 624 and Forbes Street, the trail crossed over Forbes to run on the north side of VA 624 until Leeland Road, connecting directly to an entrance to the Leeland Road VRE parking lot and across the street from Conway Elementary School. Sidewalks are presently intermittent along this road, but developments fronting the road appear to be well set back from the right-of-way, and therefore finding space for a sidepath trail is likely to be relatively uncomplicated.

A potential pinch point along this subsegment is the bridge over the railroad. There is currently only a six-foot, unbuffered sidewalk on the north side of the bridge, but travel lanes are quite wide and there is a 12-foot painted median. Thus, there appears to be plenty of space for a protected, shared use facility, pending discussions with VDOT on whether the changes necessary to create a comfortable and appealing trail can be made to this existing overpass. A protected two-way bike lane between the sidewalk and the westbound travel lanes could serve as sufficient buffer along the overpass.

B. Stafford Crossing Community Church Spur

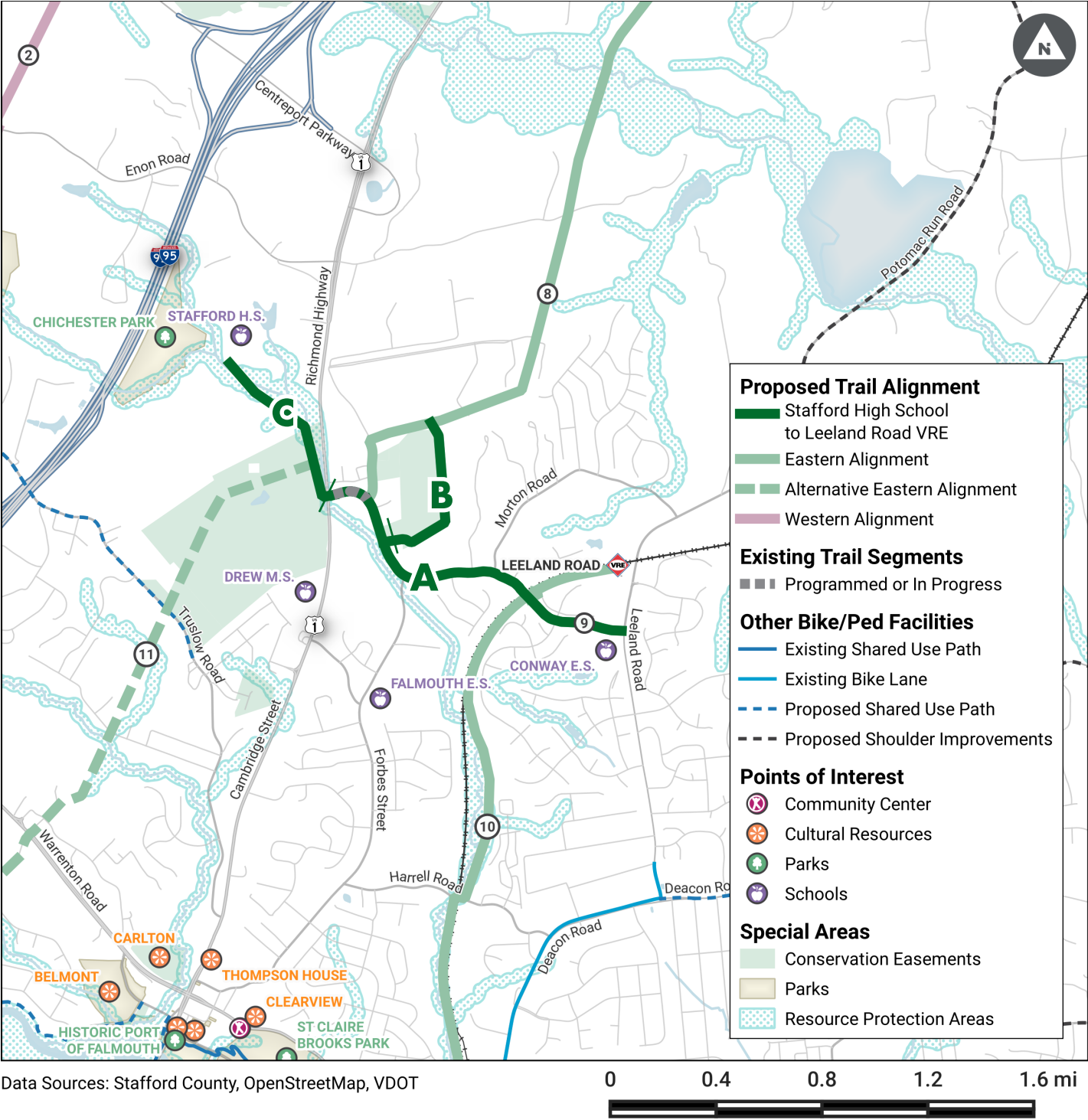
A potential spur of Segment 9 could traverse the south and east sides of the Stafford Crossing Community Church property and meet Segment 8 of the trail on the power line easement, about ¼ of a mile before it crosses Forbes Street. The property has several conservation and right-of-way easements within that could be stitched together to create this subsegment of the trail. This spur would create a shortcut for trail users that are primarily traveling north-to-south, and also create an appealing loop trail option in a developed part of the county with fewer recreational opportunities.

C. Stafford High School Spur

West of the VA 624 at Forbes Street intersection, the trail would continue on the north side of Layhill Road on a shared use path that is slated to be built up to the gas station at Cambridge St (US 1). Crossing the highway at the Layhill Road signal, it would then proceed up alongside Claiborne Run to Stafford High School and Chichester Park through private property where a conservation easement has been secured. This spur is recommended to be built as part of Segment 9, but would be required to be built if the Eastern Alignment uses Segment 11 to reach the Belmont-Ferry Farm Trail instead of using Segment 10.

In addition to Stafford High School and Conway Elementary School, which will be connected by the trail, Falmouth Elementary School and Edward Drew Middle School are located less than ½ a mile away from the proposed alignment. These schools could be connected to the trail with sidewalks or a shared use path along the roads they front, and while there seems to be sufficient space to build a facility to connect them to the trail, the feasibility of these potential facilities have not been thoroughly assessed by this study.

Figure 61: Map of Segment 9 of the Stafford Heritage Trail – Stafford High School to Leeland Road VRE





Segment 10: Leeland Road VRE to Belmont-Ferry Farm Trail

This 3.1-mile segment of the Eastern Alignment formalizes existing natural surface trails and railroad/pipeline maintenance roads that are next to the railroad on which VRE, Amtrak, and CSX trains travel on from Leeland Road Station to Butler Road (VA-218). Tracks on the railroad have been purchased by the Virginia Passenger Rail Authority (VPRA) with the purpose to expand passenger rail in the Commonwealth, and currently there are plans to add a third track throughout this segment. Multimodal access to train stations can support ridership, and information on rails-with-trails project precedents can be found on the following page.

A. Railway Corridor from Leeland Road VRE Station to Harrell Road

Similar to the power line easement, much of the rail corridor along this subsegment appears to have a dirt access road with occasional paved sections. It is likely used by a mix of Leeland Station residents and workers accessing the railroad or the Kinder Morgan-owned petroleum pipeline. Most of the existing path is located on land owned by the Leeland Station Community Association or is County-owned land reserved for future right-of-way. Encroachment on railroad property may still be necessary at various pinch points, such as the area around the Primmer House Road bridge. A trail connector here would link Segments 9 and 10.

B. Railway Corridor from Harrell Road to Butler Road

South of Harrell Road (SR 623), there are a number of industrial facilities immediately adjacent to the east of the railway, including VDOT’s Fredericksburg District Office. Therefore, the trail is recommended to shift to the west side of the railway south of Harrell Road.

The existing rail overpass at Harrell Road is exceptionally narrow and low, with less than 20 feet in width and only 9’-2” of vertical clearance. Additionally, Claiborne Run crosses the rail line in a culvert under Harrell Road. While lightly travelled by vehicles, curves and grades on the road may create difficult conditions for trail users to safely cross the road. However, it is the only railroad crossing in this area. If the Harrell Road railroad overpass is to be improved as part of VPRA improvements, it should be designed in a manner which provides an opportunity for the trail to cross Harrell Road and the railway safely. Alternatively, creative solutions such as new trail user-activated traffic signals or a new trail underpass adjacent to the road may be needed.

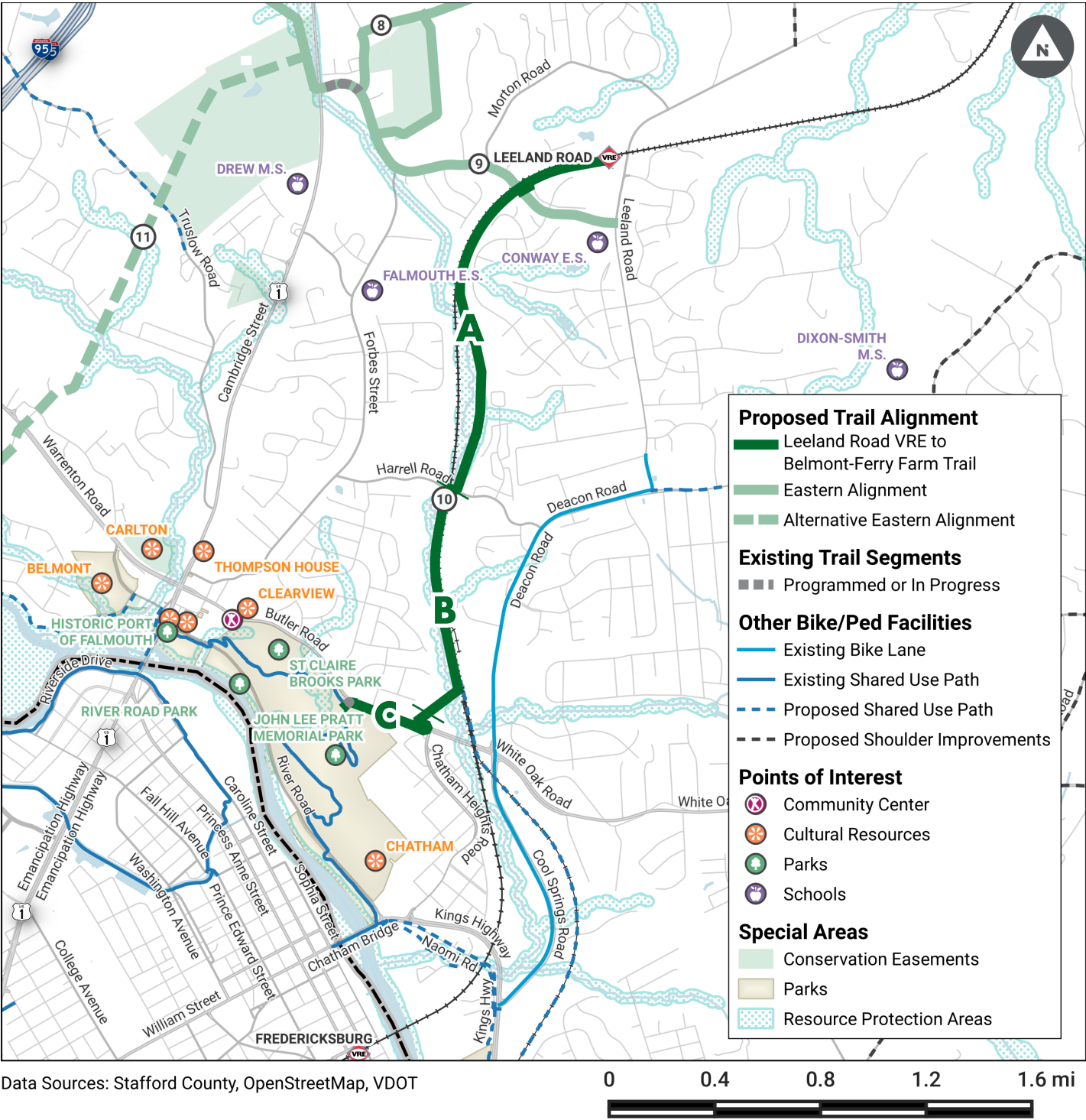
South of Harrell Road, there is typically 200–300 feet of woodland between the railroad and any residential property, with Claiborne Run running a variable distance from the railway. Here, the trail could run between the railway and the stream – solely within railroad property – or between the stream and residences – which would necessitate securing easements with up to a dozen landowners. Either way, it is likely necessary to bridge the winding stream at several points, but existing natural surface trails carved by nearby landowners, extensive tree canopy, and potential Civil War-era trenches suggests high appeal for a trail in this area.

The trail could exit Claiborne Run and reach the north side of Butler Road by routing through two potential properties: 255 Butler Road or the Wawa at 275 Butler Road. Of these two, the 255 Butler Road property is peculiarly shaped as it forms a straight diagonal line between Claiborne Run and Butler Road, which may lead to gentler grades on the trail compared to the Wawa lot. Since it was deeded to the Fredericksburg Rescue Squad Foundation, the property has been off-and-on the market with no buyers.

C. Butler Road to Belmont-Ferry Farm Trail

While the trail exits the railroad corridor on Butler Road’s north side, the trail’s endpoint – the Belmont-Ferry Farm Trail – is located on the south side of the road. To reach it, the trail could cross Butler Road at Castle Rock Drive or Chatham Heights Road. Once on the south side, the trail should find the most direct path to the Rappahannock Area YMCA property, where the alignment of the existing Belmont-Ferry Farm Trail currently traverses the property in a switchback-like configuration between Saint Clair Brooks Park and John Lee Pratt Park. This connection will extend the range where Stafford Heritage Trail users can go as the Belmont-Ferry Farm Trail has planned extensions to the west along the river and to the east towards George Washington’s Ferry Farm and King George County.

Figure 62: Map of Segment 10 of the Stafford Heritage Trail – Leeland Road VRE to Belmont-Ferry Farm Trail





Rails-with-Trails in Virginia

Segment 10 of the Eastern Alignment of the Stafford Heritage Trail parallels the Richmond, Fredericksburg & Potomac (RF&P) Subdivision, an active railroad which serves Amtrak, CSX, and VRE trains. Originally owned by CSX, the Commonwealth of Virginia – through the Virginia Passenger Rail Authority (VPRa) – acquired a permanent land easement along this stretch of the railroad to help separate passenger from freight operations and expand the number of tracks.<sup>1</sup> This summary presents the state of practice and considerations for rail-with-trail projects in Virginia to support the rail-with trail alignment being proposed for Segment 10, as well as relevant case studies of similar RWT projects in the region.

Background

Rail-with trail projects are gaining momentum: FHWA and Federal Rail Administration (FRA)-led research on rail-with trail projects reports a 530% growth in rail-with trail projects nationwide since 2002, with 917 total miles of trails along rail corridors.<sup>2</sup> As communities increasingly advocate for active transportation facilities, rail corridors present desirable and enabling factors for development (and use) including necessarily linear routing with gentle grades, cleared and maintained rights-of-way, separation from other modes, and connectivity between destinations – all of which factored into the decision of routing the Stafford Heritage Trail along the RF&P Subdivision. Liability associated with the proximity to and crossing of active rail remains a top concern for rail-with trail projects, but this risk should be weighed against the comparative risk exposure on alternative trails that require crossing high-volume and high-speed roadways.

The State of Virginia, recognizing interest in rail-with trail projects and associated liability concerns, passed HB2088 in 2009 which required the Department of Rail and Public Transportation (DRPT) assess rail-with trail development needs. The resulting report, Rails with Trails/Pedestrian Crossing Project Initiation, Coordination and Review, outlines the rail-with trail processes with DRPT including proposals, feasibility, design, and legal/liability issues.<sup>3</sup> The following sections apply these recommendations to Segment 10 of the Stafford Heritage Trail.

Siting and Project Initiation

There are two approaches to pursue a rail-with trail project in Virginia: (1) rail-with trail projects identified by the community or other project champion, and (2) rail-with trail opportunities identified through review of proposed rail improvement projects and proposed trail projects (e.g., dig-once opportunities to integrate a trail component).

**Option 1:** Develop and submit a trail proposal (via a Letter of Interest, or LOI) to DCR who will coordinate directly with the host railroad and with partner agencies (DWR and DRPT) to assess the project feasibility.

**Option 2:** Identifying proposed Rail Enhancement Fund (REF) projects and cross-referencing with existing trail proposals, as identified by DCR. For potential trails that are identified through this screening and evaluated as feasible, DCR will work with a local group to submit a trail proposal (LOI – see Option 1). For trails with uncertain feasibility, DRC will work with DWR and the REF applicant to determine feasibility and potential for an LOI.<sup>4</sup>

1 CSX. (2021, April 15). CSX Closes Sale on First Phase of the \$525-Million Rail Transaction with the Commonwealth of Virginia. CSX.com. <https://www.csx.com/index.cfm/about-us/media/press-releases/csx-closes-sale-on-first-phase-of-the-525-million-rail-transaction-with-the-commonwealth-of-virginia/>

2 Federal Highway Administration and Federal Railroad Administration. (2020) Rails with Trails Best Practices and Lessons Learned. <https://railroads.dot.gov/elibrary/rails-trails-best-practices-and-lessons-learned-0>

3 Virginia Department of Rail and Public Transportation. (2022) Virginia Statewide Rail Plan <https://storymaps.arcgis.com/stories/406e42c2573e4e79af8185b7a0a2e539>

4 Virginia Department of Rail and Public Transportation. (2009). RD404 - Rails with Trails/Pedestrian Crossing Project Initiation, Coordination and Review. <https://rga.lis.virginia.gov/Published/2009/RD404>

Case Studies

Virginia’s trail network features several rail-with-trail facilities, totaling approximately 4.5 miles in length. There is a current effort to progress rail-with trail projects as part of the Shenandoah Rail Corridor.

- HUCKLEBERRY TRAIL** Christiansburg, VA. The Huckleberry Trail features several at-grade and grade-separated rail crossings along its route as well as 1.2 miles of grade-separated (ditch and fence) rail-with-trail.



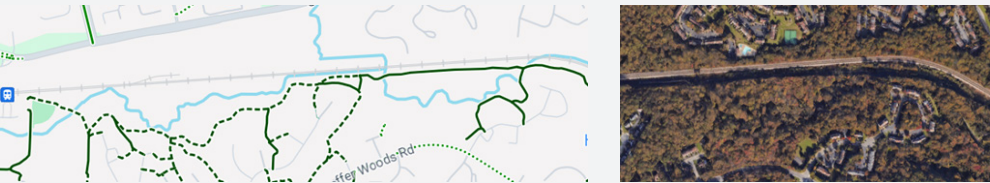
Rail crossing (left) and rail-with-trail section images (center, right) on the Huckleberry Trail, close to Cambria Street. (Source: User photos submitted to TrailLink)

- VIRGINIA CAPITAL TRAIL** Richmond, VA. The Virginia Capital Trail features a 0.5-mile rail-with-trail segment in downtown Richmond. An at-grade crossing is depicted below and features signage, stop lines, and pavement markings on the trail. The adjacent horizontal gate bar and signage alerts trail users to approaching train crossings.



Virginia Capital Trail in Richmond, VA, at a section where there is an at-grade crossing with the active railroad.

- BURKE VRE TRAIL** Burke, VA. The Burke VRE Trail runs parallel to the VRE railway corridor on the Manassas Line for approximately 0.5-miles and connecting to the Burke Centre VRE Station. The rail line is Norfolk Southern’s Washington District line, and it serves Amtrak, VRE, and freight trains. Major parts of the trail project were completed in 2008, while the full connection to the VRE station was completed in 2022.



Burke VRE Trail





**Figure 63: Examples of rail-with-trail projects in different contexts and with different types of separation, setback, and rail service types from Seattle, WA (top left), York, PA (top right), and Minneapolis, MN (bottom left)**

Additional examples of completed rail-with-trail projects are referenced below. For additional examples, including proposed and in-progress projects, visit the Rails-to-Trails Conservancy website and 2013 *America's Rails-with-Trails Report*, or review the 2021 FHWA *Rails-with-Trails - Best Practices and Lessons Learned Report*.

- |   |  |
|---|--|
| ○ <b>CEDAR LAKE TRAIL</b> Minneapolis, MN           | ○ <b>BITTERROOT BRANCH</b> Missoula, MT                                |
| ○ <b>HANK AARON TRAIL</b> Milwaukee, WI             | ○ <b>LANCE ARMSTRONG BIKEWAY</b> Austin, TX                            |
| ○ <b>PORTER ROCKWELL TRAIL</b> Draper City, Utah    | ○ <b>HANK AARON TRAIL</b> Milwaukee, WI                                |
| ○ <b>I-205 MULTI-USE PATH</b> Portland, OR          | ○ <b>ST. JOE TRAIL</b> Hall County, NE                                 |
| ○ <b>SOUTHWEST COMMUTER PATH</b> Madison, WI        | ○ <b>HOCKHOCKING ADENA BIKEWAY</b> Athens County, OH                   |
| ○ <b>DENTON BRANCH RAIL-TRAIL</b> Denton County, TX | ○ <b>MONTOUR RAIL TRAIL</b> Washington County, PA                      |
| ○ <b>INLAND RAIL TRAIL</b> San Diego, CA            | ○ <b>LEHIGH GORGE STATE PARK TRAIL CAPITAL TRAIL</b> Carbon County, PA |

[https://www.railstotrails.org/trail-building-toolbox/rail-with-trail/Rails-to-Trails-Conservancy \(2013\). America's Rails-with-Trails Report](https://www.railstotrails.org/trail-building-toolbox/rail-with-trail/Rails-to-Trails-Conservancy%20(2013).America's%20Rails-with-Trails%20Report). Available at: <https://www.railstotrails.org/resource-library/resources/americas-rails-with-trails-report/>  
Federal Highway Administration and Federal Railroad Administration. (2020) *Rails with Trails Best Practices and Lessons Learned*. <https://railroads.dot.gov/library/rails-trails-best-practices-and-lessons-learned-0>

For identified projects, the FHWA-FRA *Rails-with-Trails Best Practices and Lessons Learned* report identifies several best practices for progressing rail-with-trail projects, summarized to reflect the specific needs of this project's proposed Segment 10.

- Early and ongoing engagement with the railroad right-of-way owner (CSX and VPRA) to identify potential concerns about the corridor, operations, and crossings.
- If the County submits an LOI, DCR will engage CSX and VPRA on behalf of the County to assess feasibility. The County may opt to bring in an intermediary (e.g., DPRT, VDOT) to oversee negotiations with the railroad owners if the project advances.
- The current project has analyzed potential alternative trail routing and ranked feasibility. Future efforts would be led by DCR and would evaluate environmental, funding, and maintenance and considerations. Address environmental regulations and permitting processes prior to any design or acquisition.
- While liability is explicitly not included in the HB2088 report, the report and FHWA-FRA guidance references that peer states established limited liability statutes specific to rail-with-trail projects and notes that railroads (companies) do not feel Virginia's Landowner Liability Law (§ 29.1-509) is not adequate to cover the unique risks of integrating recreational facilities and active rail, a liability wariness echoed in the *Statewide Rail Plan*. This discussion would be especially important to Stafford County as related to potential crossings (at Harrell Road).

### Design Guidance

The DCR Greenways and Trails Toolbox identifies setback and separation as the most safety-critical and fundamental considerations, with specific designs determined by the unique context (topography, sight distance) and operations (type, speed, and frequency of trains; and maintenance requirements).

**Setback Distance:** Setback distance is preferred to be at least 25' with an average distance of 33' and, in areas where this minimum is not available, rail-with-trail projects should use vertical grade separation, fencing, vegetation or drainage ditches to buffer between the active rail and trail users.<sup>5</sup> The proposed Segment 10 follows an existing goat path and that runs parallel to the rail but is separated by a greater than 25' distance and a (natural) tree barrier, with a significant portion of it adjacent to but not directly on railroad-owned right-of-way.

**Routing and Crossings:** Physical and operational constraints that can complicate rail-with-trail projects include the frequency of train service (existing and future) and the number of at-grade crossings. Service on this stretch of railroad is expected to increase over time as VPRA expands the railroad to accommodate more passenger trains. However, all railroad crossings along Segment 10 are grade separated, apart from a few team tracks (small spurs serving industrial customers) that seem to be abandoned on the east side of the railroad south of Harrell Road.

**Drainage:** Any rail-with-trail design must accommodate the drainage and stormwater management requirements of the existing rail right-of-way and existing drainage system. For the proposed alignment, when the trail shifts to the west side of the corridor south of Harrell Road, the trail may be routed between the rail and a nearby stream which will impact drainage.

**Future Rail Plans:** Plans for future rail expansion must be accommodated if applicable. The project team has noted plans to construct a third track on the south and east side of the existing RF&P Subdivision line, about 20 feet from the existing centerline.

Based on the project area conditions, the County should consider submitting to DCR an LOI for the selected corridor alignment and engage CSX and VPRA about rail-with-trail potential in this area, including environmental and operational constraints, future plans, and inviting discussion on liability or other concerns. The current study may serve as a starting point for assessing feasibility and preferred alternatives, and the referenced resources (from DCR, FHWA-FRA, and the Rails-to-Trails Conservancy) should be reviewed in-depth by the County and other project partners.

<sup>5</sup> Virginia Department of Conservation and Recreation. (2011). *Virginia Greenways and Trails Toolbox*. <https://www.dcr.virginia.gov/recreational-planning/document/grcpt04.pdf>



Alternate Segment 11: Stafford High School to Belmont-Ferry Farm Trail

While Segment 10 is the preferred option out of five potential alignments identified in the Falmouth area in the Task 3 memorandum, Segment 11 is included here as an alternate to Segment in the case it is determined to be infeasible to construct a trail alongside the railway. Segment 11 would continue south from the Stafford High spur of Segment 9 along the Power Line Easement to the Rappahannock River, where it would meet the Cannon Ridge Extension of the Belmont-Ferry Farm Trail.

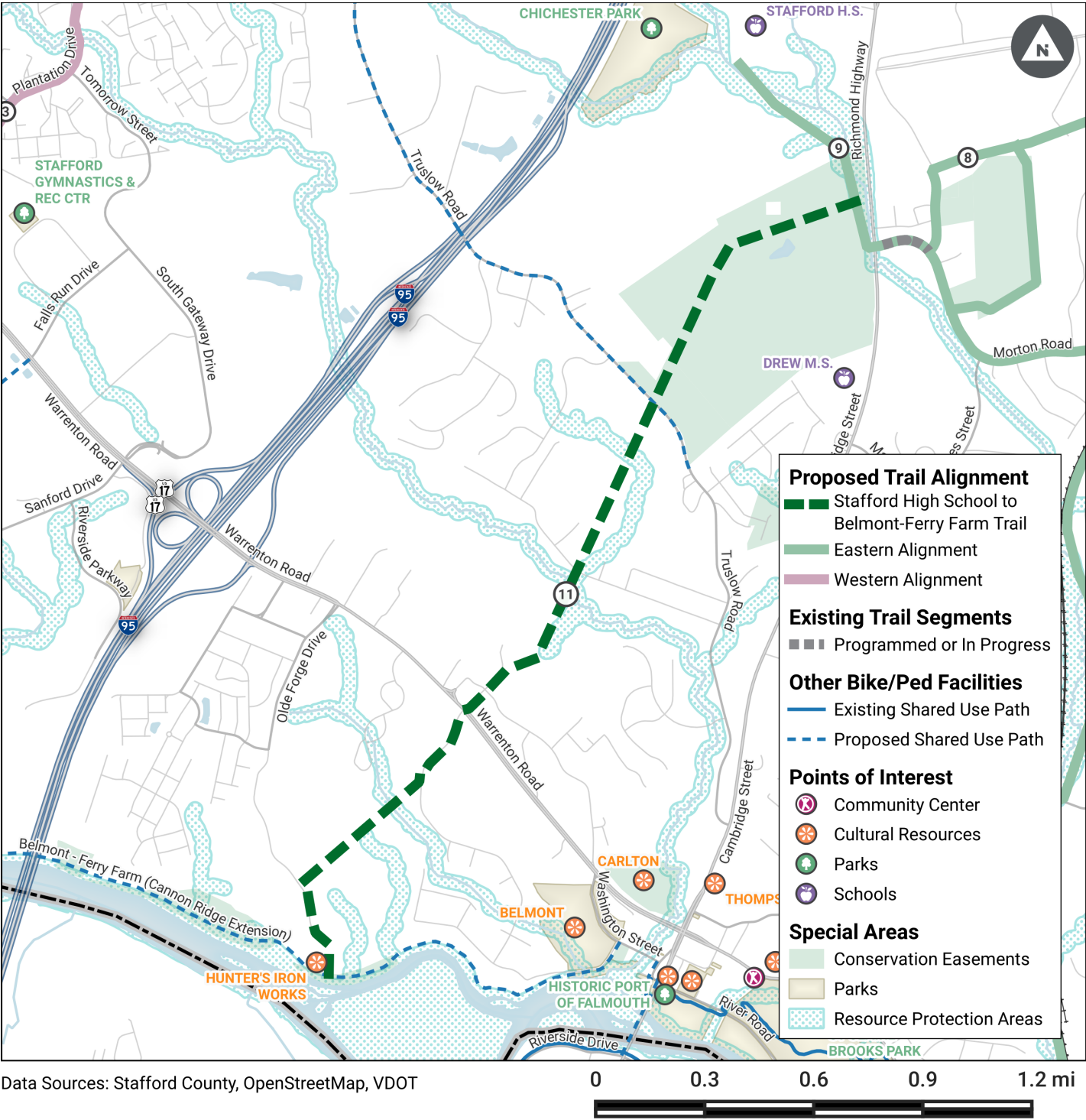
This alternative would have several challenges, including difficult and hilly terrain (see figure below); agricultural, residential, and commercial properties that may be impacted; and needing to find space on Solomon Drive and Lendall Lane to create a safe crossing at Warrenton Road (US-17 Business). However, it would be significantly more constructible than two alternatives considered in the Falmouth area, such as the highly constrained Forbes Street or the constrained and higher-speed Cambridge Street (US Route 1), and more comfortable than the alternative of using existing and future bike lanes and sidewalks on Leeland and Deacon Roads as a trail.

Part of this corridor was also previously evaluated in the GAP-TA Stafford Southern Gateway Bicycle and Pedestrian Study (Stafford County, 2022), which recommended providing a multi-use trail on the utility easement between Truslow Road and the Rappahannock River Trail but noted that doing so “may require circuitous graded routing in some locations due to the utility easement’s hilly topography.”

Figure 64: Power line corridor extending south towards the Rappahannock River at Lendall Lane



Figure 65: Map of Segment 11 of the Stafford Heritage Trail – Stafford High School to Belmont-Ferry Farm Trail





6 GAP PRIORITIZATION AND COSTS

6.1 Prioritization Approach

In order to prioritize the proposed segments of the Stafford Heritage Trail for further study, design, and construction, they were compared against each other on six measures of effectiveness: compatibility with VTrans Mid-term Needs and Priorities, access to points of interest (e.g., schools, parks, historic sites), numbers of residents served, numbers of jobs served, preliminary feasibility, and estimated cost per mile. The results of the exercise could serve to inform phasing of the project and what types of grants to pursue for each segment.

Table 3 shows the results for each measure by proposed segment. For VTrans Mid-term Needs, the proposed alignment was compared with the location of identified bicycle and pedestrian access or infrastructure needs in the InteractVTrans map. For points of interest, population, and jobs, a GIS analysis was performed to count the number of each within a quarter-mile buffer of the proposed alignment. For preliminary feasibility, an average feasibility of all the subsegments (as described in Chapter 4) that comprise each proposed segment was determined based on engineering judgement. Cost estimates were generated using VDOT’s Pre-Quantity Tool (PDT) Version 1.3. These estimates are intended to be general and used by the County in applying for funding. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

The segments were then ranked into top, middle, and bottom thirds and assigned a score from 1-3 for each measure, where 3 is better (e.g., more jobs served, lower cost per mile). An average weighted score for each segment was then computed based on weighting provided by the County, and the segments were ranked from highest to lowest weighted score. Given the emphasis on population and job access in the weighting, segments that traversed more developed parts of the county and had moderate or high scores for feasibility and estimated cost per mile were ranked higher, while segments traversing the county’s less developed and more natural areas were ranked lower in the prioritization exercise.

Table 4: Stafford Heritage Trail Segment Prioritization Measures and Scores

#	Proposed Trail Segment Name	Planned Miles	VTrans Mid-term Need		Points of Interest <sup>1</sup>		Population <sup>1</sup>		Private Jobs <sup>1</sup>		Preliminary Feasibility		Cost Estimate <sup>2</sup>			Weighted Score <sup>3</sup>	Segment Rank
			Need	Score	Total	Score	Total	Score	Total	Score	Average	Score	Total	Per Mile	Score		
1	Garrisonville to Embrey Mill	2.3	Bike, Ped	3	5	2	25,026	3	4,907	3	Medium	2	\$5,072,000	\$2,205,000	3	2.7	3 <sup>rd</sup>
2	Embrey Mill to Enon	5.9	Bike, Ped	3	1	1	11,607	1	1,016	1	Easy	3	\$16,810,000	\$2,849,000	2	1.6	9 <sup>th</sup>
3	Enon to Southern Gateway	2.2	Bike, Ped	3	4	3	12,917	3	4,843	3	Easy-Medium	2.5	\$4,966,000	\$2,257,000	3	2.9	1 <sup>st</sup>
Total Western Alignment (Segments 1-3)		10.4			9		39,490		10,485				\$26,848,000	\$2,582,000			
4	Quantico to Aquia	6.5	Bike	2	7	1	14,702	1	1,936	2	Easy	3	\$19,376,000	\$2,981,000	1	1.7	8 <sup>th</sup>
5	Aquia to Courthouse	3.8	Bike, Ped	3	5	2	26,295	3	4,108	3	Medium	2	\$10,854,000	\$2,856,000	2	2.6	4 <sup>th</sup>
6	Government Island Spur	0.8	Bike	2	1	2	13,883	3	711	3	Easy	3	\$2,085,000	\$2,606,000	3	2.8	2 <sup>nd</sup>
7	Courthouse to Civil War Park	2.9	Bike, Ped	3	5	3	13,217	2	1,802	2	Easy-Medium	2.5	\$8,376,000	\$2,888,000	2	2.3	5 <sup>th</sup>
8	Civil War Park to Stafford High School	4.6	None*	1	2	1	8,228	1	807	1	Medium	2	\$16,669,000	\$3,624,000	1	1.2	11 <sup>th</sup>
9	Stafford High School to Leeland Road VRE	2.7	Bike, Ped	3	4	3	10,424	2	273	1	Medium	2	\$9,957,000	\$3,688,000	1	1.9	6 <sup>th</sup>
10	Leeland Road VRE to Belmont-Ferry Farm Trail	3.1	None*	1	4	3	14,239	2	1,381	2	Medium-Hard	1.5	\$12,131,000	\$3,913,000	1	1.9	7 <sup>th</sup>
11	Stafford High School to Belmont-Ferry Farm Trail	2.8	None*	1	1	1	6,830	1	648	1	Hard	1	\$6,141,000	\$2,193,000	3	1.2	10 <sup>th</sup>
Total Eastern Alignment (Segments 4-10)		24.4			20		54,729		8,892				\$79,448,000	\$3,256,000			
Total Stafford Heritage Trail (excl. Seg. 11)		34.8			29		85,275		17,726				\$106,296,000	\$3,054,000			

[1] Within 1/4-mile of proposed trail alignment, with population counted at the census block group level and jobs counted at the census block level.

[2] Cost estimates were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost. Unit costs are based on 2024 dollars from the VDOT Bid Quantity Unit costs tab. Costs for permitting, inspection, or construction management; landscaping; geotechnical investigation; environmental documentation; special site remediation; escalation; or the cost for ongoing maintenance, is not included. Toole Design Group, LLC makes no guarantees or warranties regarding the cost estimate herein, and costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

[3] Weighting as follows: VTrans Score - 10%, Points of Interest Score - 15%, Population Score - 25%, Private Jobs Score - 25%, Preliminary Feasibility Score - 15%, and Cost Estimate Score - 10%.



