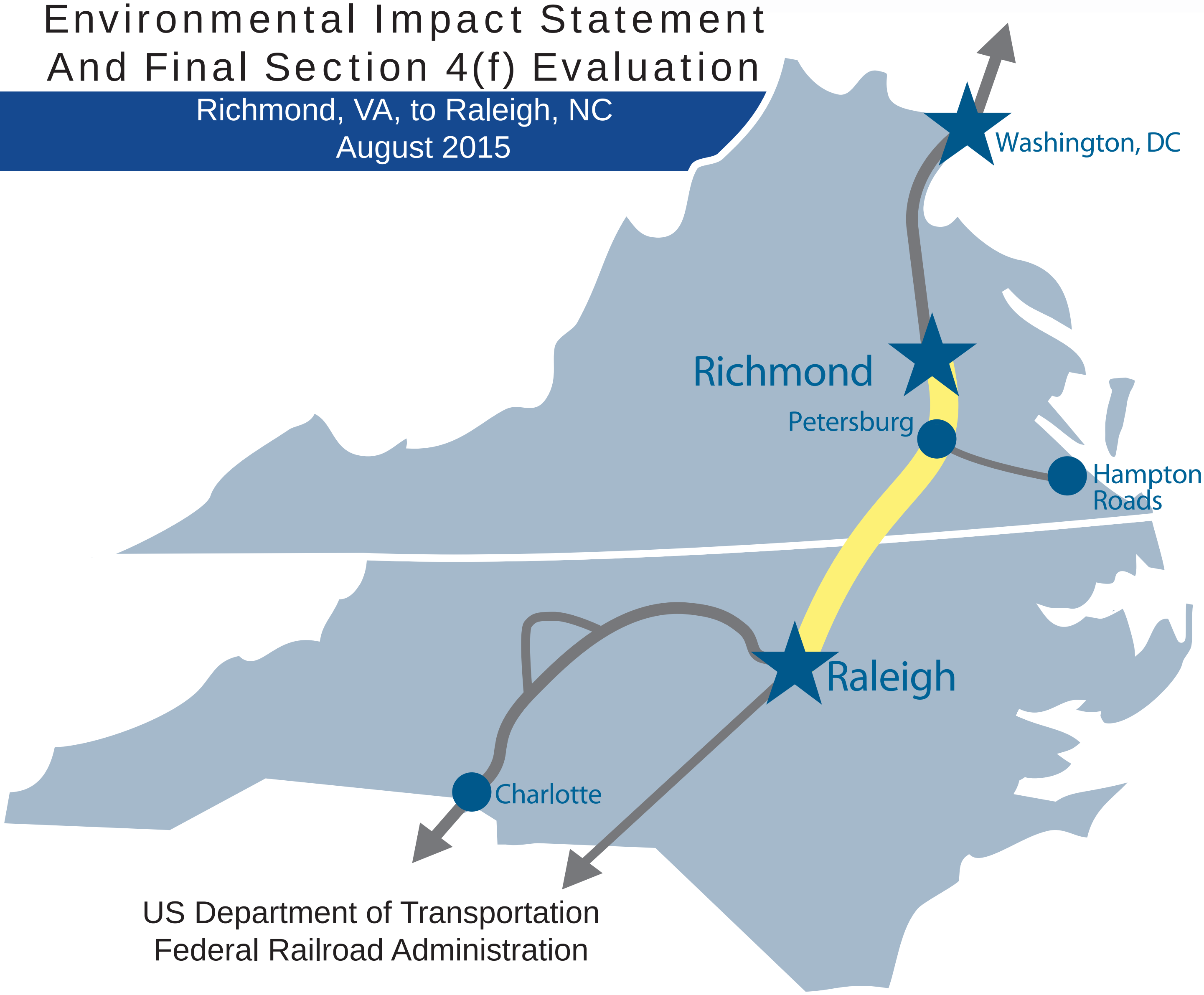
SOUTHEAST HIGH SPEED RAIL

Tier II Final Environmental Impact Statement And Final Section 4(f) Evaluation

Richmond, VA, to Raleigh, NC
August 2015



US Department of Transportation
Federal Railroad Administration

Prepared by:

North Carolina Department of Transportation and
Virginia Department of Rail and Public Transportation

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

NCDOT RAIL

DRPT Virginia Department of Rail and Public Transportation

SOUTHEAST HIGH SPEED RAIL, RICHMOND, VA, TO RALEIGH, NC
North Carolina State Project No. 9.9083002

TIER II FINAL ENVIRONMENTAL IMPACT STATEMENT AND FINAL SECTION 4(F) EVALUATION

August 2015

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8/6/15

SOUTHEAST HIGH SPEED RAIL, RICHMOND, VA, TO RALEIGH, NC
North Carolina State Project No. 9.9083002

TIER II DRAFT ENVIRONMENTAL IMPACT STATEMENT AND FINAL SECTION 4(F) EVALUATION

Submitted Pursuant to National Environmental Policy Act 42 U.S.C. 4332 (2) (C)
by the
U.S. Department of Transportation
Federal Railroad Administration (FRA)

North Carolina Department of Transportation – Rail Division (NCDOT)
And
Virginia Department of Rail and Public Transportation (DRPT)

Cooperating Agencies
U.S. Army Corps of Engineers (USACE), Norfolk District, Wilmington District
U.S. Coast Guard (USCG)
U.S. Environmental Protection Agency (USEPA)
U.S. Fish and Wildlife Service, (USFWS) Virginia Field Office
U.S. Department of Transportation Federal Highway Administration (FHWA)

8/21/15	
Date of Approval	NCDOT
8/13/15	Jennifer Mitchell
Date of Approval	DRPT
9/2/2015	Sarah E Feinberg
Date of Approval	FRA

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Abstract
The proposed project is known as Southeast High Speed Rail (SEHSR), Richmond to Raleigh Section. A Tier I evaluation of the SEHSR corridor from Washington, DC to Charlotte, NC was completed in 2002. This Tier II Environmental Impact Statement addresses the 162 mile segment of the SEHSR Corridor between Richmond, Virginia, and Raleigh, North Carolina.

Comments on this Tier II Final EIS are due 10/18/15 and should be sent to Paul Worley or Jennifer Mitchell at the above addresses.

PROJECT COMMITMENTS

SOUTHEAST HIGH SPEED RAIL (SEHSR)
RICHMOND, VA, TO RALEIGH, NC

North Carolina State Project No. **9.9083002**
North Carolina STIP Project No. **P-3819**

The following special commitments have been agreed to by the Virginia Department of Rail and Public Transportation (DRPT) and the North Carolina Department of Transportation Rail Division (NCDOT Rail):

General Project Commitments

- Coordination with the Virginia Scenic Rivers Board will be required to comply with the Virginia Scenic Rivers Act of 1970 for the new structures on the James and Appomattox Rivers. In addition, the Project Team will coordinate with the Operations Branch of the US Army Corps of Engineers Norfolk District to verify proposed clearances for the new bridge over the James River are acceptable in relation to the federal project channel. The bridge is being planned with the same clearance as the existing bridge, but future plans for the channel may necessitate a change in that clearance, and the new bridge may be required to meet any such future plans even if the existing bridge does not. This coordination will take place during the final design stage of the project.

- A compensatory mitigation plan (compliant with the 2008 EPA/USACE Final Mitigation Rule) will be developed during the 401/404 permitting process.

- The SEHSR Team will address invasive species during post-construction monitoring of mitigation sites. The SEHSR Project Team will continue to coordinate with the US Fish and Wildlife Service (USFWS) related to the ongoing informal Section 7 consultation, as related to:

    - The population of Michaux's sumac (*Rhus michauxii*) in Section D of the project;

    - A pre-construction survey for protected species [Roanoke logperch (*Percina rex*), Dwarf wedgemussel (*Alasmidonta heterodon*), Tar River spinymussel (*Elliptio steinstansana*), and James spinymussel (*Pleurobema collina*)], which will be conducted at locations where listed species were identified during development of the FEIS; and

    - The Chowanoke crayfish (*Orconectes virginiensis*), which has been historically documented in the SEHSR study area. Although the species is currently not listed as threatened or endangered by USFWS, DRPT and NCDOT will review the status of the species during final design to determine if field surveys are necessary.

- The USFWS recently listed the Northern Long-eared Bat (*Myotis septentrionalis*) as "Threatened" and issued an interim species-specific rule under Section 4(d) of the Endangered Species Act of 1973, effective May 4, 2015. Furthermore, this species is included in USFWS's current list of protected species for the project study area. Virginia DRPT and NCDOT will continue working closely with the USFWS to determine how this listing may impact the SEHSR project. Approximately 1,575 acres of trees (see Table 4-26) and numerous structures may be impacted by project construction over the anticipated three-year phased schedule. Prior to project permitting, Virginia DRPT and NCDOT will coordinate with USFWS to determine if this project will incur potential effects to the Northern long-eared bat and how to address these potential effects, if necessary.

Additionally, state wildlife agencies will be consulted on appropriate measures to protect mussel fauna before and during project construction. Finally, stringent erosion controls will be enforced during construction to minimize impacts to the dwarf wedgemussel population downstream of the project crossing at Cedar Creek.

- The SEHSR Project Team will coordinate with the National Park Service (NPS) regarding the need for 30 to 50 feet of right of way along the western portion of the Fort Wadsworth Unit of Petersburg National Battlefield. In a letter dated March 4, 2009, the Petersburg National Battlefield superintendent stated that the project could mitigate potential adverse effects to the Fort Wadsworth Unit with a land exchange. This land exchange will be negotiated during the final design stage of the project and will be subject to all NPS land acquisition procedures.

- Noise and vibration mitigation will be addressed during final design using the Federal Railroad Administration's High-Speed Ground Transportation Noise and Vibration Impact Assessment (September 2012) procedures.

- FRA will consider implementing a community liaison program to address noise and vibration impacts and mitigation when the Detailed Noise Analysis is undertaken during the final design stage of the project.

- Driveway connections to individual properties will be provided during final design based on the existing conditions at the time of construction.

- All of the new bridges will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses. At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and VDOT pedestrian policies. In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists.

- Fencing locations and types, as well as proposed landscaping, will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities. The Section 106 Memorandum of Agreement (MOA) for the project (see Section 4.12 of the FEIS) will address mitigation of visual impacts on historic resources as appropriate.

Permit Related Project Commitments

Throughout project development, final design, and construction, the SEHSR Project Team will coordinate with the regulatory agencies to obtain the necessary permits. The following is a list of permits that may be required for this project. Final determination of permit applicability lies with the regulatory agencies.

- Section 404 (Impacts to Waters of the United States – Clean Water Act)
- Section 401 Water Quality Certification (Clean Water Act)
- Virginia Water Protection Permit (Clean Water Act)
- Virginia Marine Resources Commission Subaqueous Permit
- Section 9 (US Coast Guard Bridge Permit)
- Section 10 (Permit for Work in Navigable Waters – Rivers and Harbors Act)
- Individual State Stormwater Permit

In addition, the SEHSR Project Team has committed to the following:

- Since the SEHSR project would disturb more than 10,000 square feet of land, it must obtain a Virginia Stormwater Management Program (VSMP) general National Pollutant Discharge Elimination System (NPDES) permit through the Virginia Department of Conservation and Recreation (VDCR). A site-specific Stormwater Pollution Prevention Plan (SPPP) will need to be prepared and implemented. The SPPP outlines the steps and techniques the operator will take to comply with the terms and conditions of the permit, including water quality and quantity requirements that are consistent with the VSMP permit regulations, to reduce pollutants in the stormwater runoff from the construction site. The SPPP also includes a description of post development stormwater management measures to be installed, including design calculations. Prior to construction, an erosion and sediment control (ESC) plan and a stormwater management plan (SMP) to ensure compliance with state law and regulations will be prepared and implemented.

- In order to minimize potential impacts to water resources in the project area, the most recent edition of VDCR's Erosion Sediment Control Handbook and NCDOT's Best Management Practices for the Protection of Surface Waters will need to be strictly enforced during the construction phase of the project.

- The SEHSR project is committed to complying with all applicable water quality regulations and permit requirements, as well as to minimizing all impacts to water quality as designs are finalized. This includes complying with the Virginia Erosion and Sediment Control Law and the Virginia Stormwater Management Act.

- Streamside riparian zones within the study area in North Carolina are protected under provisions of the Tar-Pamlico and the Neuse River Basin Riparian Buffer Rules administered by NCDWR. The rules protect two riparian zones: Zone 1 extends 30 feet from stream bank and Zone 2 extends from 30 to 50 feet from the stream bank. Table 4-3 summarizes the potential impacts (in square feet) to each riparian buffer zone for each section of the project in the Tar-Pamlico and Neuse River Basins. Permitting and mitigation for unavoidable impacts to protected riparian zones will be coordinated through NCDWR during the Section 401 Water Quality Certification process.

- The SEHSR Project Team will coordinate with FEMA and local authorities during final design to ensure compliance with applicable floodplain management/development ordinances. Also, the NCDOT Hydraulics Unit and DRPT will coordinate with FEMA to determine if a Conditional Letter of Map Revision (CLOMR) and a subsequent final Letter of Map Revision (LOMR) are required for the project. Floodplain development permits will be obtained from the local jurisdictions and include a no-rise/impact certification for each regulated floodplain/floodway and/or non-encroachment area crossing or a submittal for a CLOMR per 44 CFR Section 65.12.

- A USCG permit will be required for the SEHSR crossing of the James River near I-95 in Richmond, VA, which is subject to tidal influence. The bridge permit will be prepared as the bridge design is developed. Coordination with the USCG has been initiated and will continue throughout the development of the project.

- Detailed methods for mitigating the clearing of nearly 1,163 acres of timberland in the four-county area of VA for the proposed railroad right-of-way corridor will be determined during the permitting phase and will specified in construction documents based on final design and following consultation with the Virginia Department of Forestry and other regulatory and advisory agencies participating in the Virginia Joint Permit Application process.

Section 106-Specific Project Commitments

A "process" Programmatic Agreement (PA) for the Washington DC, to Charlotte, NC, high speed rail corridor, as well as individual Memorandums of Agreement (MOA) for each state, are currently under development and will outline the project commitments under Section 106 of the National Historic Preservation Act. These documents will be included in the forthcoming

Record of Decision for the project. The following commitments were made in the process of determining the effect of the project on specific historic resources in coordination with the respective state historic preservation office:

- Pretlow House – The SEHSR project will make all reasonable efforts during construction to avoid impacts to the existing stone wall and adjacent vegetation.

- North Battersea/Pride's Field Historic District – The SEHSR Project Team will coordinate with the City of Petersburg during final design to identify measures to minimize impacts to this resource.

- Weldon Railroad/Globe Tavern Battlefield – At the request of the NPS Petersburg National Battlefield, the SEHSR project will plant trees on the fill slopes for the proposed bridge to minimize the visual intrusion on the landscape. The SEHSR Project Team will also coordinate with the Virginia Department of Historic Resources (VDHR) regarding the engineering and vegetation plans for this area before construction.

- Williams Bridge Company – Designs for driveways throughout the project corridor will be developed during the final design stage of the project. In this case, however, coordination has taken place with the property owner as part of Section 106 coordination regarding access. Preliminary designs have been developed to the point where it has been determined that a driveway connection to Deepwater Terminal Road can be developed in final design that will allow ingress/egress of the long tractor trailers (in excess of WB-50) used by the business.

- William J. Hawkins House – During the right of way phase of the project, the SEHSR Project Team will coordinate with the property owner about the access issue (i.e., a temporary construction easement would be required to maintain access).

- Cedar Creek Railroad Bridge Piers - The SEHSR project will not remove the historic piers during the construction or life of the project.

- Youngsville Historic District – During construction, the SEHSR project will provide tree protection along Cross Street.

- Glen Royall Mill Village Historic District – The final designs for the SEHSR Project Team must design the pedestrian crossing in a manner that minimizes its opaqueness and fits in with the character of its surroundings.

- Wake Forest Historic District - The Section 106 MOA will specifically address coordination with owners of the four residences for temporary construction easements. In addition, standardized and aesthetic closures of at-grade crossings within the district must be employed (e.g., no guard rails or "T" closures).

- Crabtree Creek Railroad Bridge Piers - The SEHSR project will ensure that the historic piers are not impacted during construction of the new bridge.

- Raleigh Electric Company Power House - The SEHSR project will provide aesthetic treatments for the pedestrian bridge on West Jones Street as outlined in the MOA and in coordination with the consulting parties and property owners in this location.

Project Commitments by Locality

The project has made the following commitments within the specified locality:

- City of Richmond, VA
  - Ruffin Road - The SEHSR project will ensure that adequate access is provided to the apartment complex on the northwest side of the railroad and Ruffin Road. Current designs provide access along the western edge of the complex via an extension of Lynnhaven Avenue. During final design, the SEHSR Project Team will investigate whether access to Ruffin Road can be maintained.
  - Access to the Motiva Property will be further evaluated during the final design stage of the project.
- Ettrick, VA
  - Dupuy Road – Landscaping of the fill slope for the bridge that will carry Dupuy Road over the railroad will be evaluated during final design as mitigation for visual impacts to remaining residents in this area.
- Chesterfield Count, VA
  - Kingsland Road and Dorsey Road intersection – this intersection will be converted from an existing three-leg intersection to a four-leg intersection once the SEHSR project is constructed. Once the project is completed, the predominant traffic flow is anticipated to change from the current north-south to an east-west pattern. During final design, the SEHSR Project Team will coordinate with VDOT and Chesterfield County regarding consideration of making the intersection’s northbound and southbound approaches stop controlled, and the eastbound and westbound approaches free flowing movements with the proposed SEHSR design.
- Town of La Crosse, VA
  - The preferred alternative will impact a private well serving Hillcrest Mobile Home Park, located north of La Crosse, VA in Section I. The Mecklenburg County Health Department has indicated that there is sufficient land available within the Hillcrest property to accommodate relocation of the drinking water well. During final design, a suitable new water source will be identified to ensure a continuous, safe, and sanitary water source for the residents.

- City of Henderson, NC
  - Nicolas Street and Alexander Avenue intersection – during the final design phase of this project, the SEHSR Project Team will coordinate with NCDOT Division 5 and the City of Henderson regarding consideration of converting Nicolas Street to a stopped condition and Alexander Avenue to the free-flow movement.
  - Railroad Street- during the ROW acquisition phase of this project, NCDOT will coordinate with the neighborhood property owners and occupants along Railroad Street, to ensure they are informed of any issues that may arise related to ROW and access as ownership of Railroad Street is confirmed during the ROW process.
- Town of Wake Forest, NC
  - The preferred alternative will impact the Aqua North Carolina well on Ligon Mill Road. It is anticipated that the impact to the Agua North Carolina well can be mitigated with a connection to a public water supply or the well can be relocated. This issue will be addressed during the final design stage of the project, at which time coordination with the owner of the well will take place.
- City of Raleigh, NC
  - Pacific Drive - The SEHSR plans show a general location for a "future bridge constructed by others" that would connect Pacific Drive across the railroad. The SEHSR Project Team will coordinate with the City of Raleigh regarding the possibility of including a City-funded bridge in this location on the construction plans for the SEHSR project.
  - Gresham's Lake Road – The SEHSR plans for a bridge on Gresham's Lake Road over the railroad allow for the City of Raleigh to build a second bridge in the future to carry an additional two lanes of traffic without the need to replace what will be constructed by the SEHSR project. Coordination between NCDOT and the City will take place during final design to ensure that the centerline of Gresham's Lake Road in the SEHSR designs is correctly located for the City's future widening, and that the sidewalk constructed by the SEHSR project is on the correct side of the SEHSR bridge.
  - Millbrook Road – The SEHSR Project Team will coordinate with the City of Raleigh on the design of the vertical abutments for the bridge over Millbrook Road during the final design phase of the project.
  - Neuse River Greenway - The SEHSR bridge at this location will have a covered deck per the City's request for a protected cover to protect patrons from falling debris.

- The downtown grid network is anticipated to be able to service the design year traffic with the proposed SEHSR alignment. However, during final design the SEHSR Project Team will coordinate with the City of Raleigh regarding the following:

    - Accommodations for cyclists (such as identification of an alternate route) for the proposed closure of Hargett Street at-grade crossing. Hargett Street currently services the signed bicycle route Cross Town Route 8.

    - Accommodations for cyclists (such as identification of an alternate route) for Jones Street, which currently serves as a signed bicycle route, Cross Town Route 9. The preferred alternative includes closing the existing at-grade crossing to vehicular traffic, and building a pedestrian bridge with towers.

    - The City of Raleigh is currently in the process of upgrading their City Signal System. The SEHSR Project Team will continue to coordinate with the City related to the signals in the areas of the rail crossing closures and grade separations to service the final reconfigured traffic as well as traffic shifts during construction. Updates may include signal timings as well as signal and signal system equipment including interconnections.

Disclosure Statement

SOUTHEAST HIGH SPEED RAIL, RICHMOND, VA, TO RALEIGH, NC
North Carolina State Project No. 9.9083002:

In accordance with 40 CFR § 1506.5(c), section 8(b) of the Federal Railroad Administration's "Procedures for Considering Environmental Impacts" (64 FR 28545), and the guidance provided in section 17 of the Council on Environmental Quality's "NEPA's Forty Most Asked Questions" memorandum (46 FR 18026; available at http://ceq.hss.doe.gov/nepa/regs/40/40p3.htm), I, as Vice President, North Carolina Office Executive , hereby certify that Michael Baker Engineering, Inc., a Division of Michael Baker International has no financial or other interest in the outcome of the environmental review process or in the implementation of Southeast High Speed Rail, Richmond, VA, To Raleigh, NC .

Signature

Name: Charles L. Flowe, P.E

Title: Vice President, North Carolina Office Executive

Date: 7/27/15

EXECUTIVE SUMMARY

The Federal Railroad Administration (FRA), in partnership with the North Carolina Department of Transportation (NCDOT) and the Virginia Department of Rail and Public Transportation (DRPT) have prepared this Environmental Impact Statement (EIS) for the proposed development of the Southeast High Speed Rail (SEHSR) Corridor between Richmond, VA and Raleigh, NC (Richmond to Raleigh - Tier II EIS or Project) as required by the National Environmental Policy Act (NEPA). This document contains a Tier II Final EIS (FEIS) for the Richmond to Raleigh Project, as a continuation of the Tier II Draft EIS (DEIS), which was published for review in 2010.

DESCRIPTION OF PROPOSED PROJECT

The Project involves the incremental development, implementation, and operation of high speed rail (HSR) passenger service in the approximately 450-mile travel corridor from Washington, DC, through Richmond, VA, and Raleigh, NC, to Charlotte, NC. NCDOT and DRPT, with their Federal partners, FRA and the Federal Highway Administration (FHWA), have been working together since the early 1990s to develop the SEHSR corridor. The Project background is summarized in Section 1.2.

This Project addresses the Richmond, VA to Raleigh, NC portion of the corridor, which is approximately 162 miles long. While there are active freight and passenger rail operations between Richmond, VA, and Petersburg, VA, as well as freight service between Raleigh, NC and Norlina, NC, there is no continuous rail connection between Petersburg, VA, and Raleigh, NC, in the Study Area (approximately 132 miles largely on the CSX S-Line). From Petersburg, VA, to Norlina, NC (approximately 76 miles), right of way (ROW) is largely intact, but rail service was discontinued in the 1980s, and the tracks were removed. From Norlina to Raleigh, NC, there is only minor active freight service (approximately 1-4 trains per day).

PURPOSE AND NEED OF THE PROPOSED PROJECT

NCDOT, DRPT, FRA, and FHWA confirmed the purpose and need of the Project in October 2002. As detailed in Section 1.6, the need for the Project relates to:

- Population growth in Virginia and NC
- Congestion of both roadways and airports
- Lack of a passenger rail option with competitive travel times with air and highway travel
- Connectivity needs
- Air quality concerns
- Perceived gap in safety between passenger rail and other modes of travel
- Need for increased energy efficiency for passenger travel options.

As described in Section 1.7, the purpose of the Project is to:

- Divert trips from air and highways
- Provide a more balanced use of transportation infrastructure in the Study Area
- Increase the safety and effectiveness of the transportation system in the Study Area
- Serve long-distance business and leisure travelers between Virginia and NC, as well as those accessing Amtrak's Northeast Corridor (NEC), which extends from Washington, DC, to New York, NY, and Boston, MA, and allowing patrons in the NEC area to reach destinations to the south.

More information about the purpose of the SEHSR Corridor can be found in the SEHSR Corridor Tier I EIS and on the program's website at www.sehsr.org. A discussion of assumptions used in the Project evaluations is provided in Section 1.4.1.

STUDY AREA

The Study Area defines the boundaries for potential SEHSR rail and associated roadway improvements and includes areas where construction of the Richmond to Raleigh Project could have direct impacts on the environment. Once potential alignments were proposed, corridors approximately 1,000 feet wide were analyzed. Modifications were made to accommodate design changes developed in response to comments on the Tier II Richmond to Raleigh DEIS. Section 1.4 describes the corridor.

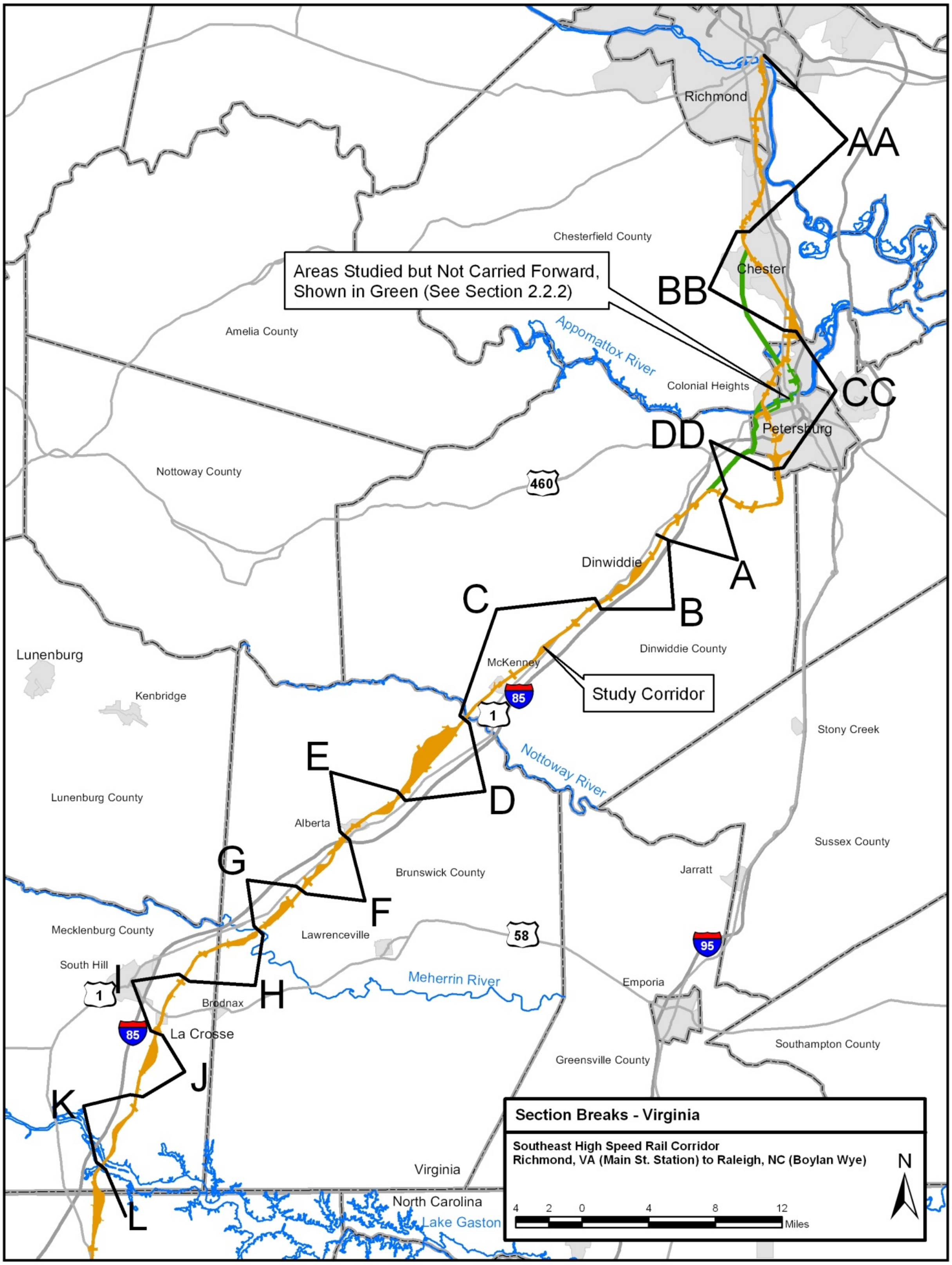
Three alternative railroad alignments were developed initially within each of the 26 sections of the project (described below and shown in Figure ES-1). As presented in the Project Tier II DEIS, the alternatives were named VA1, VA2, and VA3 in Virginia, and NC1, NC2, and NC3 in North Carolina. In order to minimize impacts, throughout much of the Study Area the alternatives are within existing railroad ROW; in many locations the alternatives are on common (concurrent) alignment. Except where otherwise specified, alternative VA3 is concurrent with alternative VA1, and alternative NC3 is concurrent with alternative NC1.

The endpoints of each of the 26 sections are in locations where the alternative alignments are in a common location. This approach allowed for the broadest range of options during evaluation and selection of the preferred alternatives. Joined together, the preferred alternatives form a "best-fit" preferred alternative for the entire Study Area.

The Study Area begins at Main Street Station in Richmond, VA, and extends to the south, following the existing CSX S-line railroad to Centralia, then transitions to the CSX-A line, traveling through Petersburg, VA, crossing the Appomattox River, and continuing south to Collier Yard (a CSX rail yard). At the south end of Collier Yard, the Study Area turns west, following the alignment of the inactive Burgess Connector rail line. At Burgess, the Study Area curves south, rejoining the alignment of the CSX S-line, which it follows into North Carolina.

In North Carolina, the Study Area continues along the inactive S-line through Warren County to the Town of Norlina, NC (where the S-line returns to an active CSX freight railroad). The Study Area follows the S-line to the north side of downtown Raleigh near Capital Boulevard, where it increases to approximately 2,000 feet wide to encompass the existing Norfolk Southern (NS) line through Glenwood Yard (the NS switching yard) on the west side and the CSX S-line through Capital Yard (the CSX switching yard) on the east side. Near Jones Street in downtown Raleigh, the NS line joins the CSX S-line, and the Study area narrows to follow the S-line south for two blocks to the Boylan Wye, the southern terminus of the Project.

Figure ES-1



Continued…

Figure ES-1 Continued

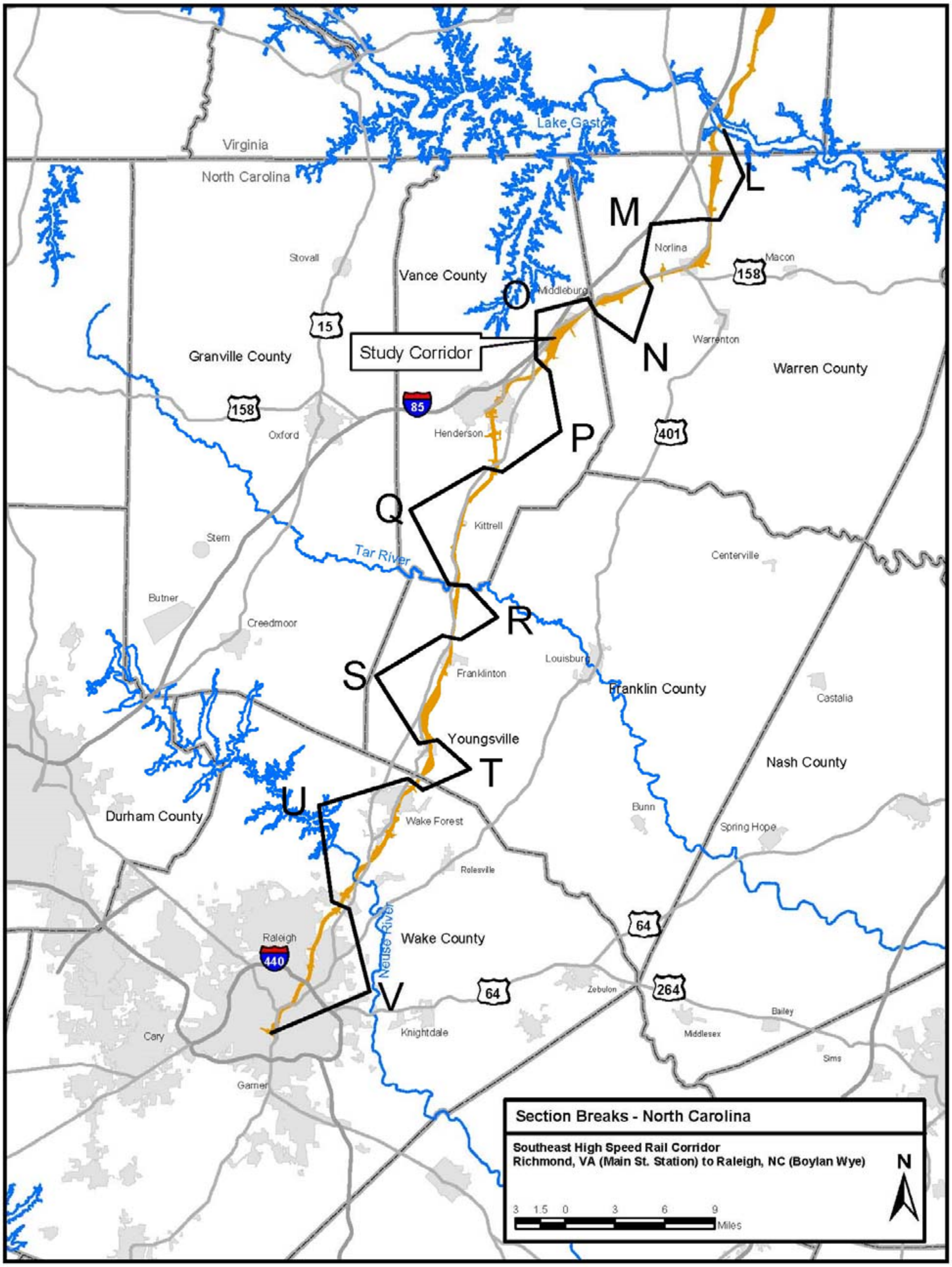


Table ES-1
Preferred Alternative Impact Summary

Section	Stream (linear feet)	Wetland (acres)	Floodplain (acres)	Farmland (acres)	Forest (acres)	Hazardous Waste (sites)	Residential Relocations	Business Relocations	Noise (receptors)	Vibration (structures)
AA	3,919	2.32	25.72	0.0	42.57	59	40	7	0	1
BB	2,078	5.22	11.4	13.3	54.16	10	7	1	0	2
CC	2,405	2.52	6.16	16.4	45.05	20	48	1	11	15
DD	585	2.37	4.63	35.7	62.41	1	2	0	0	0
A	3,094	2.84	4.67	51.8	64.20	1	0	0	5	0
B	760	0.64	0.85	64.8	81.45	3	3	1	13	2
C	2,803	2.17	6.38	86.3	155.05	3	4	8	9	10
D	1,998	2.03	1.31	99.9	101.71	1	3	2	6	2
E	860	1.21	0.85	59.8	52.01	0	2	7	29	9
F	1,004	0.62	3.20	25.0	67.02	0	0	0	6	0
G	510	0.26	0.32	33.1	43.56	0	2	0	2	0
H	2,808	0.35	0.06	82.0	110.64	0	1	0	20	5
I	22	0.00	0.00	57.6	35.53	2	14	0	55	24
J	420	0.22	0.00	72.1	63.06	1	5	0	22	5
K	1,419	0.91	0.19	37.6	79.21	0	0	5	9	1
L	2,502	0.72	0.04	128.5	88.46	1	8	1	21	7
M	442	0.49	0.00	113.5	40.50	0	18	4	47	30
N	386	1.25	0.00	76.1	43.43	1	2	0	4	6
O	3,102	0.30	0.00	124.4	46.22	1	3	0	15	3
P	1,532	0.91	0.00	87	12.86	31	33	8	89	74
Q	1,127	0.03	0.00	96.7	49.22	4	10	0	18	20
R	438	0.00	0.04	25.1	29.45	0	1	0	1	3
S	1,620	0.48	0.42	91.7	92.19	7	4	0	23	22
T	415	0.07	0.00	41.7	25.65	4	5	0	25	5
U	3,394	0.38	0.00	0	71.94	20	8	12	176	45
V	1,036	0.05	1.38	0	17.05	79	0	59	81	4
Total	**40,679**	**28.36**	**67.62**	**1,520.1**	**1,574.6**	**249**	**223**	**116**	**687**	**295**

Project impacts are discussed in Chapter 4; a more detailed breakdown of impacts can be found both within Chapter 4 and in Table ES-5 at the end of this Executive Summary. "Farmland" refers to Prime and Important Farmland impacts. "Noise" includes number of impacted and severely impacted receptors. "Vibration" refers to number of impacted structures (single family, multi-family, and commercial).

RAIL ALIGNMENT

The Project goal was to use existing rail lines and rail right of way (ROW) as much as practicable. Changes were made to minimize impacts and allow for higher speed travel. The Preferred Alternative utilizes approximately 60 percent of the existing rail alignment.

The maximum authorized speed (MAS) for the Project is established as 110 miles per hour (mph) using locomotives powered by fossil fuels. The MAS guided selection of the maximum allowable horizontal and vertical curvature (both set at one degree). In some areas, curves could not be sufficiently straightened, and the MAS was lowered. Speeds were reduced in urban areas.

- Rail designs for the Project use existing rail lines in conjunction with areas of new alignment. The proposed designs for all rail alignment alternatives call for new ballast (the rock surface underneath the railroad ties); concrete ties, and welded steel rails. Throughout the Study Area, the alternatives provide for a combination of high speed passenger service, conventional passenger service, conventional freight, and intermodal freight. Requirements to achieve this shared system differ depending on existing rail operations, as well as existing railroad and rail bed conditions (Figure 1-4); Table 2-1 shows the track configuration in the Study Area. Depending on the location, the proposed rail designs include:
- Construction of new single track with approximate five-mile long passing sidings approximately every ten miles on new segments of the Study Area (CSX S-Line between Collier, VA and Norlina, NC)
- Rebuilding existing single track with approximate five-mile long passing sidings approximately every ten miles on active freight segments of the Study Area (CSX S-Line between Norlina, NC and north of Raleigh, NC)
- Construction of new single track adjacent to existing active freight track, with 30 feet of separation; and crossovers to allow passing for freight and passenger operations on segments with heavy mainline freight traffic (CSX A-Line between Collier, VA and Centralia, VA)
- Rebuilding existing double track, with crossovers to allow passing for shared freight and passenger operations in urban segments of the Study Area near Richmond (CSX S-Line between Centralia, VA and Downtown Richmond).

ROAD ALIGNMENTS

During the Project design process, railroad-roadway crossings were consolidated, to the extent practicable, and grade separated (bridge over road or rail) for safety and ease of operations. Grade separations are proposed to replace at-grade crossings (i.e., locations where railroads and roadways cross at the same elevation) with bridges or underpasses. Section 1.4.1.7 discusses the reason for removing at-grade crossings.

The construction of these grade separations, and the impacts associated with these required improvements, are included in the Project impacts. The locations selected for grade separation are based on: input from local officials and the public; connectivity to the existing road network; minimization of impacts to natural and cultural resources; and constructability.

STATIONS

The Richmond to Raleigh Tier II DEIS modeled five municipal locations for SEHSR stops in the Project service area:, Richmond, VA; Petersburg, VA; and Raleigh, NC; which have existing passenger service and stations, and La Crosse, VA; and Henderson, NC, which do not. All trains are assumed to stop in Richmond, VA; Petersburg, VA; and Raleigh, NC. One daily round trip train stop is assumed to stop in La Crosse, VA; and one in Henderson, NC.

This EIS does not evaluate impacts related to specific station locations. Potential station locations are evaluated generally in terms of accessibility to the larger transportation network. Station locations within municipalities will be determined in the future by the respective municipalities and passenger service operator, and appropriate environmental documentation will be undertaken at that time.

SERVICE

Proposed service consists of four round trips per day between Washington, DC, and Charlotte, NC, and four additional round trips between Raleigh, NC, and Charlotte, NC. Round trips to Washington, DC, are expected to continue on to New York, NY and Boston, MA.

Section 1.5 discusses total patronage (ridership and revenue) estimated for the SEHSR Study Area. The section provides several scenarios that were evaluated for train traffic along the corridor in addition to the proposed Richmond to Raleigh service.

Table ES-2 lists average travel times between cities in the SEHSR Study Area and New York, NY. The travel time for SEHSR service between Richmond, VA, and Raleigh, NC, will be approximately two hours and fourteen minutes. Schedules and travel times may vary in the future due to other corridor constraints.

Table ES-2
Projected Average Travel Time Between Cities
(In Hours : Minutes)

	Current Service	SEHSR (Full Build)
Richmond, VA - Raleigh, NC	**3:36**	**2:14**
New York, NY – Raleigh, NC	9:57	7:25
Washington, DC - Raleigh, NC	5:59	4:22
New York, NY - Charlotte, NC	13:25	10:16
Washington, DC - Charlotte, NC	9:27	7:14
Richmond, VA – Charlotte, NC	7:03	5:07
Raleigh, NC - Charlotte, NC	3:13	2:49

Source: "S-line Trains Only" travel times are derived from the schedules used in the Southeast High Speed Rail Ridership Report, AECOM, 2013

FUNDING

Funding for ROW acquisition and construction of the Richmond to Raleigh Project has not yet been secured or identified. At this time, NCDOT and DRPT anticipate that the states will pursue Federal funding through various methods, including the Passenger Rail Investment and Improvement Act (PRIIA) of 2008, reauthorization of Federal transportation programs, and other Federal funding sources. Public-private partnership funding opportunities may also be sought along with state funding. Decisions regarding future funding of the SEHSR will be made at the completion of the environmental review process for respective segments of the

Study Area. The Richmond to Raleigh Project is not anticipated to be funded by local governments. A more detailed discussion of Project funding is included in Section 1.4.2.

Construction costs for the Richmond to Raleigh portion of the Project were never intended to be fully financed by the system's ridership; however, most long-term operational costs are estimated to be covered through ridership fees.

RIDERSHIP & REVENUE

To meet the purpose and need for the Richmond to Raleigh Project, stops must be placed at reasonable intervals to serve the population centers along the route. The Ridership/Revenue model originally prepared for the SEHSR Tier I EIS was revised in 2013 to provide updated forecasts for service in the Study Area, and feeder line corridors in Virginia and North Carolina (AECOM 2013). The 2013 updated AECOM report is included in Appendix C of the Richmond to Raleigh Tier II FEIS.

Table ES-3 summarizes the proposed service (round trips) for the Baseline ("No Build") and SEHSR ("Full Build") scenarios. Table ES-4 lists the updated ridership and ticket revenue forecasts for Baseline ("No Build") and SEHSR ("Full Build") scenarios for design year 2030 and a SEHSR ("Full Build") scenario forecast for the year 2040. Current Amtrak fares were used with 25 percent higher fares assumed for the faster SEHSR service. The AECOM study projected revenues of the SEHSR system would exceed annual operating costs by the design year (2030); refer to Section 1.5 for additional discussion of updated ridership and revenue projections.

Table ES-3
Proposed Service - Number of Round Trips

	Service	Route[1]	Baseline No Build	SEHSR Full Build[2]
Trains Originating in North Carolina				
Raleigh-Charlotte (Intrastate)	*Piedmont*	NS/NCRR	4	4
Washington-Raleigh-Charlotte	*Carolinian*	CSX A-Line	1	1
Washington-Raleigh	*SEHSR Corridor*	CSX S-Line	-	1
Washington-Raleigh-Charlotte			-	3
Subtotal:			**5**	**9**
Trains Originating in Virginia				
Washington-Richmond	*NEC Regional*	CSX A-Line	2	2
Washington-Richmond-Newport News		CSX A-Line	2	2
Washington-Richmond-Norfolk		CSX A-Line	1	1
Washington-Alexandria-Lynchburg		NS-Crescent	1	1
Subtotal:			**6**	**6**
Amtrak Long Distance Service[3]				
Washington-Richmond-Points South	*Palmetto Silver Meteor*	CSX A-Line	2	2
Washington-Richmond-Raleigh-Points South	*Silver Star*	CSX A-Line	1	-
		CSX S-Line	-	1

Table ES-3 Proposed Service - Number of Round Trips				
	Service	**Route[1]**	**Baseline No Build**	**SEHSR Full Build[2]**
Washington- Alexandria-Lynchburg-Charlotte-Points South	*Crescent*	NS-Crescent	1	1
Subtotal:			**4**	**4**
Total Trains:			**15**	**19**

Source: Southeast High Speed Rail Ridership, AECOM, 2013

1. Trains operating on the CSX S-Line route follow the CSX A-Line in Virginia between Centralia and Collier Yard.
2. The “Full Build” scenario does not include the full implementation of the Richmond-Hampton Roads project. Those trains were modeled separately as “Full Build with Additional Services” in the ridership and revenue assessment. See Appendix C for more information.
3. These do not include the Amtrak auto-train, which travels through Virginia and North Carolina, but does not influence ridership and revenue estimates.

Table ES-4
Summary of Forecast Results

	Base Line[1] (No Build)	SEHSR Corridor[3] (Full Build)	SEHSR Corridor[3] (Full Build)
	Year 2030	Year 2030	Year 2040
Ridership (persons)			
North Carolina Service			
Charlotte/Raleigh Trains	996,100	2,075,500	2,526,900
Virginia Service			
Richmond/Norfolk/Virginia Beach Trains	808,300	805,600	911,100
Lynchburg Trains	241,300	261,600	301,200
Amtrak Long-Distance Trains[2]	241,900	241,900	282,400
Total Ridership	**2,287,600**	**3,384,600**	**4,021,600**
Ticket Revenue (2013 dollars)			
North Carolina Service			
Charlotte/Raleigh Trains	$39,034,000	$138,667,000	$165,575,000
Virginia Service			
Richmond/Norfolk/Virginia Beach Trains	$45,947,000	$57,799,000	$64,867,000
Lynchburg Trains	$15,070,000	$16,474,000	$18,825,000
Amtrak Long-Distance Trains[2]	$30,474,000	$30,460,000	$35,277,000
Total Ticket Revenue	**$130,525,000**	**$243,400,000**	**$284,544,000**

Source: Southeast High Speed Rail Ridership, AECOM 2013

1. Baseline (No Build): NC service includes 5 round trips Raleigh to Charlotte, w/1 round trip (the Carolinian) continuing to NY via the A-Line. VA service includes 6 round trips that begin/end in Virginia including 5 round trips Richmond to NY/Boston, w/ 2 extending to/from Newport News and 1 extending to/from Norfolk, and 1 round trip Lynchburg to NY/Boston; and 4 round trips provided by Amtrak Long-Distance trains that pass though NC and VA
2. Activity from NEC through NC only; includes connecting buses.
3. Full Build scenarios include SEHSR Corridor service for 8 round trips Raleigh to Charlotte, w/3 continuing to NY, and 1 starting in Raleigh and continuing to NY; and 1 (the Carolinian) beginning in Charlotte continuing to NY via the A-Line

SELECTION OF THE PREFERRED ALTERNATIVE

Following the May 2010 publication of the Richmond to Raleigh Tier II DEIS, more than 1,850 individuals and 50 agencies and organizations submitted comments. Many of the comments were several pages in length, and most covered multiple topics. The Project team evaluated impacts to the natural and human environment for each alternative, along with information on speed, cost, and constructability. All Richmond to Raleigh Tier II DEIS comments pertaining to each section were reviewed and discussed, and preferences for alternatives were tallied. In some sections, additional coordination, analysis, or design work was undertaken prior to publishing the SEHSR Richmond to Raleigh Recommendation Report (NCDOT, May 2, 2012).

Chapter 2 discusses the alternative selection process. Section 2.2 lists the Preferred Alternative by section. More detailed information can be found in the following Appendices: Appendix R contains detailed maps of the Preferred Alternative, including associated roadwork; Appendix E contains schematic track charts of the alternative rail designs; and Appendix F contains detailed information on associated road work.

Advanced technologies (where operating speeds average 185 to 200 mph) and solely electric-powered locomotives were evaluated and dismissed in the Tier I EIS. Many comments received from the public on the Richmond to Raleigh Tier II DEIS asked why these alternatives were not still under consideration. Advanced high speed trains were dismissed because they require the construction of an entirely new, separate rail system that cannot be shared with freight, they would involve substantially higher costs and a longer implementation time, and they would cause substantially greater community and environmental impacts. Electrified systems were dismissed because they have substantial initial costs (both monetary and environmental) that made them infeasible at this time, relative to the ridership/revenue projections for the SEHSR corridor, as well as potential negative public reaction to catenary wire systems needed for electric trains.

GREENWAY CORRIDOR PLAN

Section 2.4 of the Richmond to Raleigh Tier II DEIS included discussion of conceptual planning for a greenway corridor, noting that potential greenway impacts would be documented in the Richmond to Raleigh Tier II FEIS. The construction of the greenway was not intended to be funded as part of the Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than its inclusion in the SEHSR FEIS. This will give local jurisdictions (who will ultimately construct the greenway) greater flexibility to pursue various funding options. The details for the greenway will, therefore, not be included in this FEIS, but rather in a separate Greenway Corridor Plan. This document is currently under development, with completion anticipated at the time of the Richmond, VA; to Raleigh, NC; SEHSR Record of Decision (ROD). The SEHSR website will include links to this plan and provide opportunities for its public review and comment.

THE AFFECTED ENVIRONMENT

Chapter 3 summarizes new and updated information pertaining to the affected environment. This includes updated stream and wetland impact delineations, information on water quality monitoring, floodplain mapping, wild and scenic rivers, U.S. Coast Guard waters, soils, farmlands, mineral resources, hazardous waste sites, air quality, noise and vibration, visual environment, natural communities, and protected species. The chapter also updates community information with results from the 2010 U.S. Census and the American Community Survey (ACS). An update on community planning documents in the Study Area is also included.

Chapter 3 also summarizes the extensive evaluation of potential archaeological and historical resources within the SEHSR Study Area (see Section 3.12). These studies identified 18 Virginia archaeological sites that were listed or considered eligible for the National Register of Historic Places (NRHP). No eligible archaeological resources were identified in North Carolina. In Virginia, a total of 64 historical architecture sites were listed or considered eligible for the NRHP. In North Carolina, 75 sites were listed or considered eligible for the NRHP.

The Federal, state, and local parklands, public recreational areas and wildlife refuges located within the vicinity of the study area are also summarized in Chapter 3. These include the Petersburg National Battlefield (a National Park), Staunton River State Park in VA, Kerr Lake

State Recreation Area just north of Henderson, NC, and Falls Lake State Recreation Area just north of Raleigh, NC.

SUMMARY OF IMPACTS FOR THE PREFERRED ALTERNATIVE

The following summarizes primary environmental consequences that may result from the construction and operation of the Project. The impacts presented here are based on the preliminary engineering designs. Specific total impacts for the alternative alignments are listed in Table ES-5.

WATER RESOURCE IMPACTS

Surface Water

The Project may impact approximately 40,679 linear feet (LF) of jurisdictional intermittent and perennial channels, including 3,651 LF of streams listed as impaired under Section 303(d) of the Clean Water Act of 1970 (CWA) as of the 2012 303(d) list. Section 4.1.1.1 discusses stream impacts.

In VA, the Preferred Alternative had the least impacts to streams in each section, with a few exceptions. The Preferred Alternative for Section B was selected, in part, to minimize noise impacts, to reduce business relocations, and to maintain operating speed. In Section D, a new alternative (VA4) was developed to avoid an historic property, avoid impacts to a Federally endangered Michaux's sumac site, and reduce wetland impacts. In all, Project stream impacts to Virginia streams are estimated at 25,182 LF, 3,056 LF of which impact 303(d)-listed streams.

In North Carolina, the Preferred Alternative had the least impacts to streams in each section, with the exceptions of Sections L, O, T, and U. In sections L and O, the Preferred Alternatives avoid historic properties. In Sections T and U, selection of the Preferred Alternative was based on many factors including operating speed, operability, and construction limitations. In North Carolina, the Project stream impacts are estimated at 15,497 LF, 660 LF of which impact 303(d)-listed streams.

Streamside riparian zones within the Study Area in North Carolina are protected under provisions of the Tar-Pamlico and the Neuse River Basin Riparian Buffer Rules administered by North Carolina Division of Water Resources (NCDWR). The rules protect two riparian zones: Zone 1 extends 30 feet from stream bank and Zone 2 extends from 30 to 50 feet from the stream bank. The Preferred Alternative impacts 1,274,249 square feet (sq ft) of riparian buffer: 739,490 sq ft in Zone 1 and 534,759 sq ft in Zone 2. Mitigation will be required for stream and buffer impacts.

Public Water Supplies and Groundwater Wells

The Preferred Alternative is not anticipated to impact public water supplies. The Preferred Alternative impacts one public groundwater well in Section U (Wake Forest, NC) and one private well serving a mobile home park near La Crosse, VA (Section I).

Wetlands

The Preferred Alternative may impact approximately 23.7 acres of jurisdictional wetlands in Virginia and 4.19 acres in North Carolina. Wetland impacts are discussed in Section 4.1.2.

Floodplains and Floodways

FEMA Executive Order 11988, (May, 1977) (Floodplain Management) requires that Federal agencies to avoid long- and short-term adverse impacts associated with the occupancy and modification of flood plains and avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Data from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) were analyzed and the FEMA zone designations were determined for the 100-year FEMA floodplains crossed by the Study Area. The Preferred Alternative impacts 67.6 acres of floodplains and floodways, and a detailed discussion of these impacts is included in Section 4.1.3.

Permits

Because the Preferred Alternative has impacts to jurisdictional streams and wetlands, which are considered to be "Waters of the United States," the Project will require permitting under Section 404 of the CWA (33 USC 1344). "Waters of the United States" are regulated by the US Army Corps of Engineers (USACE). Any action that proposes to dredge or place fill material into surface waters or wetlands is subject to these provisions.

Due to the placement of fill associated with crossing over and filling in "Waters of the United States," it will be necessary to obtain permits for the Project from the USACE, Virginia Department of Environmental Quality (VDEQ), and NCDWR. Section 401 of the CWA requires each state to certify that state water quality standards will not be violated for activities that either involve issuance of a Federal permit or license, or require discharges to waters of the United States. The USACE will not issue a Section 404 permit until a Section 401 certification is issued. Therefore, the Project sponsor must apply to VDEQ and NCDWR for Section 401 Water Quality Certification. A discussion of Federal and state permits required for the Project can be found in Section 4.1.5.

Mitigation

Compensatory mitigation may be accomplished separately for the Virginia and North Carolina portions of the Project, as discussed in Section 4.1.6.

In Virginia, mitigation could be provided through the use of mitigation banks and/or the Virginia Aquatic Resources Trust Fund (VAQRTF). The use of the VAQRTF as a mitigation option is at the discretion of the appropriate regulatory agencies.

In North Carolina, mitigation could be provided through coordination with the North Carolina Ecosystem Enhancement Program (NCEEP). The USACE, NCDOT, and North Carolina Department of Environment and Natural Resources (NCDENR) entered into a Memorandum of Agreement in July 2003 that established procedures for providing compensatory mitigation through NCEEP to offset impacts to streams and wetlands from NCDOT projects.

SOILS

Prime and Other Important Farmlands

As required by the Farmland Protection Policy Act (FPPA) of 1981 (7 CFR Part 658) and State Executive Order Number 96, coordination with the Natural Resources Conservation Service (NRCS) for the Project was initiated by submittal of Form AD-1006, requesting the Farmland Conversion Impact Rating for each jurisdiction. Design changes after publication of the Richmond to Raleigh Tier II DEIS changed the total impacted acres of prime and important farmland, increasing acreage by 28.3 acres of in Virginia, and decreasing the total by 38 acres in North Carolina. Updated AD-1006 forms were developed for Sections D and

G in Virginia and all sections in North Carolina and are included in Appendix D. Prime and Important farmland is discussed in Section 4.3.

MINERAL RESOURCES/HAZARDOUS WASTE SITES

The preferred alternative would purchase land for ROW (called takes) from Vulcan-Greystone Quarry and Carolina Sun Rock L.L.C. in North Carolina. These takes are not anticipated to impact current mining operations.

The Project will not impact Superfund sites in Virginia or North Carolina. Two Resource Conservation and Recovery Act (RCRA) Corrective Action Facility sites, one in Virginia and the other in North Carolina, are impacted by the Preferred Alternative. The Virginia site, the First Energy Corporation (FEC) Bioremediation Facility, is in Section AA and the North Carolina site, Covidien/Mallinckrodt SCC Raleigh, is located in Section U. One polychlorinated biphenyl (PCB) site, owned by the Town of Wake Forest, NC, is located in Section U and is impacted by the Preferred Alternative. Table 4-10 shows hazardous waste impact sites for each section of the Preferred Alternative. Additional information is provided in Appendix Q.

AIR QUALITY

FRA, FHWA, NCDOT, Virginia Department of Transportation (VDOT), and U.S. Environmental Protection Agency (USEPA) guidance manuals were used to analyze the potential air quality impacts. Data sources for the project level analysis in Virginia included VDOT and project traffic data. Data sources for the project-level analysis in North Carolina included NCDOT, NCDENR Division of Air Quality, Capital Area Metropolitan Planning Organization (CAMPO), Triangle Air Quality Partnership, and Project traffic data. Air quality is discussed in Section 4.6.1. Detailed information on highway vehicle air emissions is provided in Appendix M.

<u>Locomotive Emissions</u>

Locomotive operations are subject to Federal air quality conformity regulations (40 CFR 51.853). Based on modeling (detailed in Section 4.6.1), the predicted annual emissions from the Project fall below the level at which additional actions or mitigation are required. Constructing the Project will likely increase the number of intermodal or freight trains in the area. However, from an air quality perspective, these additional trains would result in a regional efficiency improvement as a result of freight providers switching from long haul trucking to intermodal and freight rail (which has lower emissions than long haul trucks).

<u>Highway Vehicle Emissions</u>

The primary concern for emissions from automobiles or trucks relates to carbon monoxide (CO) emissions for areas with large volumes of slow-moving traffic. Areas with high emissions of CO are called CO “hot spots.” Closing and consolidating rail crossings throughout the Study Area will require some vehicles to travel an additional distance to reach a grade-separated crossing. It is likely that the additional emissions caused by the extra distance will be offset by eliminating the vehicle idling that takes place when trains pass through at-grade road crossings. For example, a vehicle idling for one minute will produce approximately 70 grams of CO. The same car traveling two additional miles to use a grade-separated crossing (one mile in each direction), would generate approximately 16 grams of CO. No air quality impacts are anticipated based on highway vehicle emissions.

Construction Emissions

Construction activities will result in temporary increases in air pollution. The greatest increases are likely to occur in the areas where new bridges are proposed for construction. However, it is not expected that increased pollutants from trucks and site equipment will cause violations of air quality standards.

NOISE AND VIBRATION

Noise and vibration impacts are discussed in Section 4.7.1 and Table ES-5. The Richmond to Raleigh Tier II DEIS modelled the impacts of the Project only, not any associated intermodal or freight trains. Mitigation for noise and vibration impacts is discussed in Section 4.7.3.

Most impacted receptors were considered to be classified as Category 2 (e.g., residences, hospitals, hotels). Table 4-14 provides a summary of anticipated noise impacts for the Project. The most impacts (moderate and severe) in Virginia were associated with Section I. The most impacts in North Carolina were associated with Sections P and U. Table 4-16 provides information on impacted noise receptors at each diverted roadway in the Study Area. There were no impacted receptors at diverted roadways in Virginia. In North Carolina, diverted roadways had potential impacted receptors at East Main Street/Holden Road in Youngsville (Section T). Construction noise impacts are discussed in Section 4.7.2.1.

As per FRA guidance, field vibration measurements were taken at 10 locations in the Study Area with active tracks. Measurements were taken of freight train passbys. These field measurements were below FRA reference vibration levels for freight trains, so it was determined that the FRA levels would present a conservative (worst case) way to estimate SEHSR vibration impacts. Section 4.7.1.3 provides background information on vibration testing, results of the analysis are shown in Table 4-18. Section I had the most vibration impacts in Virginia, and Sections P and U had the highest impacts in North Carolina. Construction vibration noise impacts are discussed in Section 4.7.2.2.

VISUAL IMPACTS

The FRA Procedures for Considering Environmental Impacts require an EIS to identify any significant changes likely to occur in the natural landscape and in the developed environment (see Section 4.9.1). Trains are most visible when they pass by a given location, or when trains are idling at sidings. To minimize idling trains, the Project is designed to include double tracks or passing sidings (about five miles long, located approximately every ten miles between ends).

In general, the greatest visual impacts will take place in areas with no active rail service (from the Burgess Connector in Dinwiddie County, VA, southward to Norlina in Warren County, NC). Communities without active rail lines include the Dinwiddie Courthouse area, McKenney, Alberta, and La Crosse in Virginia, and Norlina in North Carolina. Although each of these towns developed along the railroad and had active rail service until the 1980s, the return of rail operations in a community could serve as a visual intrusion, albeit a short and periodic one.

After publication of the Tier II Richmond to Raleigh DEIS, design changes were made that could impact the visual environment in Sections D in Virginia and to reduce impacts to segment R. Visual impacts are summarized in Table 4-23. Potentially high levels of visual impacts were found in portions of Section I in Virginia and in portions of Sections L, M, Q, U, and V in North Carolina.

BIOLOGICAL RESOURCES

Terrestrial Communities

Terrestrial communities are groups of land plants that share a common environment and interact with each other. They are typically classified by the main tree or shrub species that can be easily identified in the field. Terrestrial communities are discussed in Section 4.10.1.1, and Appendix N.

Potential impacts (in acres) for Virginia and North Carolina were summarized into broad groups: "Mixed Forest," "Pine Forest," and "Maintained/Disturbed." Appropriate land cover types were combined to summarize the impacts in Table 4-24. Section C in Virginia has the most impacted forest acres. Section S has the most forest impacts in North Carolina. Potential habitat fragmentation may occur in Section D (VA), where the Preferred Alternative is on new location, bisecting existing forested areas. Habitat fragmentation is also a concern in portions of Sections L and M in North Carolina.

Aquatic Communities

As discussed in Section 4.10.1.2, aquatic habitat in the Study Area will be both directly and indirectly affected by the construction of the Project. Direct impacts will include the destruction of habitat by the placement and replacement of culverts at stream crossings and the clearing and filling of adjacent floodplain and wetlands. Tables 4-1 through 4-7 show impacts of the Preferred Alternative to streams and other waterbodies.

Rare and Protected Species

Biological conclusions regarding potential Project impacts for the nine Federally protected species within the Study Area described in Sections 3.10.2 and 4.10.2 and are summarized in Table 4-25. More detailed information can be found in the natural resource technical reports for the Project.

There are known populations of bald eagle (*Haliaeetus leucocephalus*) west of Petersburg, VA, and a known population of Michaux's sumac (*Rhus michauxii*) in Section D. The Preferred Alternative is anticipated to have no effect on these species, based on coordination with the U.S. Fish and Wildlife Service (USFWS).

Additional surveys for freshwater mussels [dwarf wedgemussel (*Alasmidonta heterodon*), Tar River spinymussel (*Elliptio steinstansana*), and James River spinymussel (*Pleurobema collina*)] and the Roanoke logperch (*Percina rex*) will be scheduled prior to Project construction and coordinated with USFWS.

The USFWS recently listed the Northern Long-eared Bat (*Myotis septentrionalis*) as "Threatened" and issued an interim species-specific rule under Section 4(d) of the Endangered Species Act of 1973, effective May 4, 2015. Furthermore, this species is included in USFWS's current list of protected species for the project study area. Virginia DRPT and NCDOT will continue working closely with the USFWS to determine how this listing may impact the SEHSR project. Approximately 1,575 acres of trees (see Table 4-26) and numerous structures may be impacted by project construction over the anticipated three-year phased schedule. Prior to project permitting, Virginia DRPT and NCDOT will coordinate with USFWS to determine if this project will incur potential effects to the Northern long-eared bat and how to address these potential effects, if necessary.

COMMUNITY RESOURCES

<u>Economic Impacts</u>

Economic consequences of the Project are summarized in Section 4.11.1.1. The proposed Project is not anticipated to cause a significant loss in property values in the Study Area. The Preferred Alternative will impact approximately 2,288 acres of potentially developable land (e.g., farm, forest, open, undeveloped), as shown on Table 4-26.

<u>Economic Benefits</u>

The addition of SEHSR passenger service will provide substantial transportation, environmental, and community benefits to the residents of Virginia and North Carolina, and are summarized in Section 4.11.1.2. Although the economic consequences discussed above are not quantified, the economic benefits of the Project would appear to far exceed any negative economic impacts. Cost benefit study results are presented in Table 4-27, and estimates for annual economic and fiscal impacts are shown in Tables 4-28 and 4-29.

<u>Changes in Economic Activity</u>

In addition to impacts from direct expenditures on system construction and operation, the proposed SEHSR system will increase the flow of travelers between cities along the route and thus enhance economic activity in those communities with station stops.

Previous studies have estimated that, by 2030, over two million riders will be utilizing North Carolina service trains each year. Most of these trips will be for personal and other discretionary travel. Based on current trends and experience along the HSR corridor between New York and Washington, DC, business travel is anticipated to be the fastest growing sector of rail travel.

<u>Neighborhood and Community Impacts</u>

Many types of neighborhoods and communities are found in the Study Area. Section 4.11.2 and Table 4-30 summarizes rail and road impacts and benefits of the Preferred Alternative for communities in the Study Area. For all communities in the Study Area, there is a potential for short-term benefits to the local economy during Project construction and for an increase in manufacturing jobs due to increased/improved freight access.

Negative impacts to neighborhoods and communities include relocations (see Section 4.11.6), noise and vibration effects (see Section 4.7), and community disruption. Other changes are driven by the need to improve the safety of the Study Area, including changes to the transportation network caused by improving existing rail crossings and the need for fencing, especially in urban areas. Maps for each crossing and associated roadway improvement are shown in Appendices F and R. The impacts of the proposed crossing consolidations are summarized in Table 4-31. Impacts to specific communities are summarized in Section 4.11.2.2.

Generalized Benefits for Communities without SEHSR Stops

While some communities in the Study Area are not currently identified as receiving a SEHSR stop, this does not preclude those communities from receiving a stop in the future. Also, communities without a station within their community will have the option for new or improved freight rail service, which will provide economic benefits. The Project will also allow future, conventional passenger rail service for communities without SEHSR stops.

Generalized Benefits for Communities with SEHSR Stops

For communities that have SEHSR stops, potential benefits are anticipated to center primarily in the vicinity of passenger rail stations. Benefits include potential economic development and revitalization around the stations, and creating jobs in the office, commercial, hotel, and housing management industries. It is anticipated that the Project will also increase tourism and reduce the magnitude or timing of improvements to airports or highways, as the number of viable transportation options increase.

Community Facilities and Services Impacts

There are 27 public educational facilities located within the designated communities of the Study Area, with 11 in Virginia and 16 in North Carolina. Table 4-32 provides a summary of the public educational facility impacts associated with the Preferred Alternative by section. Table 4-33 provides a summary of impacts from the Preferred Alternative to the 98 places of worship and cemeteries within the Study Area.

Closing existing at-grade railroad crossings and consolidating access across the Study Area will have some effect on police, fire, and EMS response in the communities along the Project during construction and once the corridor is in operation. Seven current facilities are close to the Study Area and would experience changes in access. In some cases, it would take longer to reach certain areas due to road closings along the corridor. However, "always open" grade-separated crossings would eliminate possible conflicts with emergency vehicles when trains pass through the corridor. Coordination with public response agencies in the Study Area will continue during construction to avoid and minimize disruptions to emergency response. In response to comments design changes were made several locations throughout the Study Area after publication of the Tier II Richmond to Raleigh DEIS. Subsequent to publication of the Tier II Richmond to Raleigh DEIS, designs changed. This resulted in a change to the service area analysis for nearby emergency response facilities at Woods Edge Road in Chesterfield County, VA and Ridgway-Warrenton Road in Warren County, NC. Section 4.11.3.3 presents a new analysis and discussion for these locations in Henderson, NC and Raleigh, NC.

<u>Land Use Planning</u>

Prior to publication of the Tier II Richmond to Raleigh DEIS, many planning documents for communities in the Study Area did not address the Project; however, all of the reviewed local planning documents developed by these communities after publication of the Richmond to Raleigh Tier II DEIS included the Project. The Project impacts on land use and development are generally a function of:

Existing land uses and current zoning;

- Availability of undeveloped land for new development;
- Regional and local markets;
- Proposed station locations;
- Local effect of crossing closures and redirected traffic patterns;
- Potential for existing uses to be redeveloped; and
- Local land use plans, economic development programs and land use controls such as zoning and land development ordinances.

Table 4-34 reviews SEHSR compatibility with future land use plans in VA, while Table 4-35 shows compatibility of the Project with future land use plans in North Carolina. Table 4-36 shows the compatibility of the Project with transportation plans for communities in Virginia, while Table 4-38 shows the compatibility of transportation plans in North Carolina.

VULNERABLE POPULATIONS/ENVIRONMENTAL JUSTICE

Elderly & Disabled Populations

Section 4.11.5.1 states that the Project is not anticipated to introduce any barriers to the elderly or disabled, or to have adverse impacts to either of these special populations.

Environmental Justice (EJ)

Section 4.11.5.2 of the FEIS provides a detailed discussion of this topic. The Project seeks to improve approximately 234 combined miles of road and rail main-line track in the Study Area. Approximately 57 percent of those improvements are located within EJ communities. EJ communities have the potential to receive a disproportionately high level of adverse impacts in comparison to non-EJ communities. On the other hand, EJ communities also have the potential to receive a disproportionately high level of project benefits compared to non-EJ communities.

EJ communities will be subject to a disproportionately high number of at-grade road and rail crossing closures. However, these closures are not considered severe given the maximum reroute distance of approximately one mile. In addition, closures and reroutes were discussed with community representatives to develop the most beneficial and least impactful design. Overall, EJ communities would experience disproportionately high and adverse impacts in the areas of residential relocations, the need for housing of last resort, rail operation noise impacts to Category 2 receptors (residences and buildings where people normally sleep), and rail noise vibration impacts to sensitive receptors.

Residential Relocations & Housing of Last Resort

Of the approximately 223 residential relocations resulting from the Preferred Alternative, 189 (85 percent) are within EJ communities (FEIS Table 4-41). The greatest number of residential displacements in EJ communities will occur in Richmond, VA; Ettrick, VA; and Henderson, NC. Residences located along the existing rail corridor in a developed, urban area are difficult to avoid due to rail engineering standards and constraints that limit flexibility in the proposed designs.

The only communities where housing of last resort may be needed are in EJ communities. As discussed in FEIS Section 4.11.6, housing of last resort will likely be necessary in Sections L (North Carolina -portion), M, N, and Q in Warren and Vance Counties. Where displacements are unavoidable, fair and equitable compensatory mitigation will be implemented in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646).

While residential displacements and the need for housing of last resort are disproportionately high and adverse, the surrounding EJ communities would be served by and will directly benefit from the safety improvements afforded by the Project.

Rail Operations Noise Impacts to Category 2 Receptors

Severe noise impacts to Category 2 receptors (residences and buildings where people normally sleep) would be disproportionately high and adverse in EJ communities. Of the 65 residences identified as severely impacted Category 2 receptors, 42 (65 percent) would be within EJ communities (FEIS Table 4-42). This is due in large part to the presence of properties adjacent to the existing railroad corridor. The towns of Alberta and La Crosse, VA, and Norlina, Henderson, Middleburg, and Kittrell, NC, would receive the greatest number of predicted severe Category 2 noise impacts. In addition, all four of the Category 3 receptors (institutional land uses with primary daytime uses) impacted are located within EJ communities (Alberta, La Crosse, Middleburg, and Kittrell). During the design phase of the Project, a detailed noise assessment will be performed that considers mitigation.

Rail Noise Vibration Impacts to Sensitive Receptors

Of the receptors identified in the Study Area, single-family, multi-family, and commercial receptors would experience disproportionately high and adverse effects of rail noise vibration within EJ communities (FEIS Table 4-43). For single family residences, 135 (75 percent) of the 180 receptors are within EJ communities, with the towns of Norlina and Middleburg, NC; having the greatest number of impacts. For multi-family residences, all seven of the impacts would be within the EJ community of Ettrick, VA. For commercial receptors, 71 (66 percent) of the 108 impacted receptors would be within EJ communities, with Middleburg, NC; having the greatest number of impacts.

Vibration mitigation may be required for the areas where noise vibration impacts exist, and will be assessed during the final design phase of the Project when more detailed data are available. The building damage criteria of 0.50 inch-per-second for rail operation vibrations would not be exceeded at any building in the Study Area due to train passbys. Therefore, the Project is not expected to cause damage due to vibration to any buildings in the Study Area, regardless of EJ applicability.

Mitigation

As presented in FEIS Section 4.11.5.2.11, extensive community outreach efforts resulted in the following mitigation for community impacts, including EJ communities:

- The decision that all new, grade-separated crossings will include room for sidewalks on at least one side of the bridge to accommodate pedestrians.
- The decision to provide, non-vehicular, grade-separated crossings at heavily used pedestrian/cyclist/scooter locations, including:
  - Lincoln Street in Petersburg, VA
  - Burwell Avenue/Peachtree Street in Henderson, NC
  - Mason Street in Franklinton, NC
  - College Street in Franklinton, NC
  - Hawkins Street (Franklinton Elementary School) in Franklinton, NC.
- The two proposed HSR stations are recommended to be located within the EJ communities of La Crosse, VA; and Henderson, NC.
- The Preferred Alternative essentially remains on existing alignment through the EJ communities, thereby minimizing relocation impacts and impacts to EJ community services and facilities.
- All persons, business, and non-profit organizations displaced as a result of the Project would be compensated in a fair and equitable manner in accordance with the Uniform Relocation Assistance and Property Acquisition Policies Act of 1970, as amended, and the North Carolina Relocation Assistance Act (GS-133-5 through 133-18.

<u>Relocations</u>

Table 4-44 presents a summary of the potential residential and business relocation impacts for the Preferred Alternative by section. The highest number of residential relocations would occur in Section AA in Richmond, VA; and Section CC in Petersburg, VA, and Section P in

Henderson, NC. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

Right of Way Costs

Total ROW costs include land and damages, residential and business relocation costs, and acquisition costs. Table 4-45 presents a summary of the estimated ROW costs associated with Preferred Alternative by section. The costs for the Preferred Alternative are the same as those presented in the Tier II Richmond to Raleigh DEIS, except in Sections D and V. As described in Chapter 2, the Preferred Alternatives in these two sections were developed subsequent to the Tier II Richmond to Raleigh DEIS. For Sections D and V, the ROW costs are derived from the 2012 Project Recommendation Report (NCDOT, DRPT, 2012).

ARCHAEOLOGICAL AND HISTORICAL RESOURCES

Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 306108), and implementing regulations (see 36 CFR Part 800) require Federal agencies to consider the effects of their actions on historic properties and to afford the Advisory Council on Historic Preservation an opportunity to comment if the action would result in an adverse effect on the property listed on or eligible for the NRHP. Eligibility criteria for the NRHP are summarized in Section 3.12, and impacts are discussed in Section 4.12 and Chapter 5.

According to the criteria for Effect and Adverse Effect developed by the Advisory Council on Historic Preservation (36 CFR Section 800.5), potential effect is determined based upon the following:

- No Effect - There would be no effect, neither adverse nor beneficial, on potential cultural resources.
- No Adverse Effect - There would be an effect, but it is determined that the effect would not compromise those characteristics that qualify the property for listing on the NRHP. Archeological sites may be "adversely affected" when they are threatened with unavoidable physical destruction or damage.
- Adverse Effect - There would be an effect that would compromise the physical and/or historic integrity of the resource.

Where the Project has been determined to have an adverse effect on historic resources, Section 106 requires that efforts be undertaken to avoid, minimize, or mitigate the adverse effects. As part of this process, consultation has taken place and is ongoing with the Virginia Department of Historic Resources (VDHR), North Carolina State Historic Preservation Office (NC-HPO), Advisory Council on Historic Preservation (ACHP), and other “consulting parties,” such as the National Park Service, local historical societies, and property owners. This consultation will result in Memorandums of Agreement (MOAs) for both Virginia and North Carolina, which outline the agreed-upon measures that the Project will take to avoid, minimize, or mitigate the adverse effects. The MOA will be included in the Record of Decision (ROD) for the Project.

Determinations of effect for archaeological resources in Virginia are listed in Table 4-46. The resources are listed in the order they appear in the Study Area from north to south. There are no eligible or listed archaeological resources in North Carolina; therefore, impacts were not evaluated in North Carolina. Table 4-47 lists effect determinations for historic architectural resources in VA. Table 4-48 lists effects determinations for battlefields in Virginia. Table 4-49 lists effect determinations for historic architectural resources in North Carolina. Both Virginia and North Carolina have concurred with these effects determinations.

PARKLAND, RECREATIONAL AREAS, AND REFUGES

The Study Area includes Federal parklands, city/county parks, and local greenways; Section 4.13 details the potential effects of the Project on these resources. There are no state parks, natural area preserves, forests, wildlife refuges, or recreation areas in the Study Area.

TRANSPORTATION

The Project will become part of the larger transportation network that includes roads, transit, aviation, and other rail. Section 4.14 provides an assessment of potential impacts from the project to that transportation network. Impacts to connectivity across the railroad are evaluated in Section 4.14.2, while impacts to traffic conditions in the communities throughout the Study Area are evaluated in Section 4.14.3. Section 4.14 also summarizes impacts to existing freight and passenger rail operations, local public transit, and aviation facilities.

<u>Roadway</u>

Because the SEHSR is designed to be completely grade separated through the use of bridges or underpasses, it is important to assess the impact from the Preferred Alternative on connectivity (i.e., the ability to move across the Study Area). In addition to the discussion regarding major corridors in Section 4.14.1, designs for all crossings and associated roadwork are included in Appendix F. Maps displaying the proposed roadwork are included in Appendix R.

<u>Traffic</u>

Detailed traffic analyses were performed at locations in the Study Area based on coordination with state and local officials. These analyses were performed as needed to assist the project design team in developing transportation solutions to associated traffic concerns due the effects of rail crossing closures and consolidations on local traffic conditions. The purpose of these analyses, summarized in Section 4.14.2, was to help ensure that traffic operations with the SEHSR Project were comparable to operations without the Project. Appendix P includes figures displaying future traffic configurations (e.g., crossing closures, new bridges/underpasses, new/extended turn lanes) and predicted 2030 traffic volumes with and without the Project.

<u>Rail</u>

The two main Class I railroads operating in Virginia and North Carolina are CSX and NS. A large portion of the existing rail network is single track, which creates bottlenecks in high traffic areas. The Preferred Alternative provides improvements to the rail network through: provision of additional tracks, which increases capacity; through designs for straighter track, which allows increased speeds; and through use of grade-separated crossings, which improves safety. The track charts provided in the Richmond to Raleigh Tier II DEIS have been updated and can be found in Appendix E.

UTILITIES

Utility impacts for the SEHSR Preferred Alternative vary widely throughout the length of the Project. Table 4-147 summarizes the projected costs associated with impacts to utility infrastructure, by section for the Preferred Alternative.

VDOT and NCDOT estimated utility costs for the alternatives in their service areas during development of the Tier II Richmond to Raleigh DEIS. Costs for the Preferred Alternative are shown in Table 4-127 with the exception of Section V (where a new alternative, NC5, was developed based on stakeholder input). NCDOT developed utility costs for the new portion of this alignment in 2011. For the other sections, the design changes were deemed to be insufficient to substantially change the costs estimated in the Tier II Richmond to Raleigh DEIS.

SAFETY AND SECURITY

Passenger rail has consistently been one of the safest ways to travel in the U.S. Since 1970, less than four percent of all transportation fatalities have been related to rail operations, and in most cases, train fatalities are due to collisions with vehicles, or trespassers on railroad ROW. To improve rail safety, SEHSR will grade separate crossings to greatly reduce the potential for rail collisions with vehicles. Fencing that would direct pedestrians to bridges/underpasses may be proposed for some locations in urbanized areas. The location and type of fencing will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities.

SEHSR is proposing the safest design possible by consolidating and grade separating all railroad-roadway crossings. Included in the Project are over 80 new bridges/overpasses/underpasses that, when combined with existing bridges/overpasses and proposed roadway realignments and closures, will create a fully grade-separated system, thereby assuring the highest level of safety to both passengers and the surrounding communities.

The ability of pedestrians to move safely across the Study Area is another important safety consideration. In Virginia, one existing public pedestrian-only underpass will be retained with the Preferred Alternative (there are no existing public pedestrian-only bridges or underpasses in North Carolina). The Preferred Alternative also proposes twelve new pedestrian-only bridges/underpasses to provide increased pedestrian access in certain downtown areas

INDIRECT AND CUMULATIVE EFFECTS

Based on comments received on the Tier II Richmond to Raleigh DEIS, a new assessment of indirect and cumulative effects (ICEs) was developed for the FEIS. The National Environmental Policy Act (NEPA) requires the assessment of direct, indirect, and cumulative impacts as part of the project decision-making process. The Council for Environmental Quality (CEQ) guidelines define direct, indirect, and cumulative impacts as follows:

- Direct effects are caused by the action and occur at the same time and place.
- Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
- Cumulative effects are the impact on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Summaries of concerns relative to the potential for indirect and cumulative effects, as further discussed in this section, are provided in Table 4-128 and Table 4-129, respectively.

ICEs for the Project will be seen at national, regional, and local levels. As one of the ten Federally-designated HSR corridors, the Project will play an important role in modernizing America's transportation system and will promote more energy efficient transport of people and goods through the country.

SEHSR would enhance the existing transportation network in the Washington, DC, to Charlotte, NC, corridor, providing many indirect benefits. It would link cities and major metropolitan areas where highway and airline travel volumes are the greatest, thereby providing a travel alternative that will help ease congestion on the existing highway and airway systems. The proposed SEHSR program would offer an alternative mode of transportation between Virginia and North Carolina.

Despite the importance of national and regional ICEs, ICEs are typically most noticeable on a local level, especially in the vicinity of the railroad stations. The SEHSR Tier I ROD states that future development will occur primarily around these stations, with commensurate levels of noise and traffic associated with the increased use of the stations, as well as with secondary commercial and residential development that may be drawn to the station areas. The chief potential negative impact would be noise and vibration caused by the reintroduction of service along the S-line in VA, where there is presently no rail service.

The project also has the potential to have local effects on natural resources. Impacts to surface waters, wetlands, aquatic and terrestrial communities, and threatened and endangered species are discussed in Sections 4.17.3.2.1 through 4.17.3.2.4, respectively. Cumulative effects from other planned actions are discussed in Section 4.17.4.

RESPONSES TO COMMENTS

A summary of comments received to the Tier II DEIS and responses are provided in Chapter 8.

Impact Matrix
SEHSR Corridor - Preferred Alternative

Summary of Potential Human and Natural Impacts		Summary of Operational & Physical Characteristics	
Topic	**Impacts**	**Topic**	**Impacts**
Federally Listed T&E Species Impacted	0	Mainline Track Length (miles)	158.38
Number of Impacted Stream Segments	232	Limiting Speed**	varies by section
Impacts to Streams (linear feet)	40,679	Operability/Constructability***	neutral
Impacts to Wetlands (acres)	28.36	Roadwork (miles)	78.46
FEMA Floodplain Crossings (acres shown for preferred)	67.62		
Federal/State Designated Rivers (crossings)	7		
Impacts to Prime and Other Important Farmland (acres)	1,520.1		
Forested uplands (acres)	1,574.6	Rail and Road Construction Cost (millions $)	$2,140.30
Hazardous Materials Sites	249	Utility Relocation Cost (millions $)	$52.34
Residential Relocations	223	Right-of-Way Cost (millions $)	$234.79
Business Relocations	116	**TOTAL COSTS** (millions $)	$2,427.43
Public Schools Impacted	0		
Noise (Impacted Receptors)	622		
Noise (Severely Impacted Receptors)	65		
Vibration (Impacted Structures)	295		
Section 4(f) Uses- Historic *	44		
Section 4(f) Uses- Parks *	0		
Section 4(f) De Minimis- Historic *	35		
Section 4(f) De Minimis- Parks *	8		
Section 106 Adverse Effects *	46		

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section AA- All Alternatives on Common Alignment

Summary of Potential Human and Natural Impacts By Section				Summary of Operational & Physical Characteristics By Section			
	SECTION AA				SECTION AA		
Topic	VA1	VA2	VA3	Topic	VA1	VA2	VA3
Federally Listed T&E Species Impacted	0	0	0	Mainline Track Length (miles)	11.31	11.31	11.31
Number of Impacted Stream Segments	20	20	20	Limiting Speed**	N/A	N/A	N/A
Impacts to Streams (linear feet)	3,919	4,518	4,518	Operability/Constructability***	neutral	neutral	neutral
Impacts to Wetlands (acres)	2.32	2.88	2.88	Roadwork (miles)	4.88	4.6	4.6
FEMA Floodplain Crossings (acres shown for preferred)	25.72	18	18				
Federal/State Designated Rivers (crossings)	1	1	1				
Impacts to Prime and Other Important Farmland (acres)	0.00	26.16	26.16				
Forested uplands (acres)	42.57	43.7	43.7	Rail and Road Construction Cost (millions $)	$252.70	$191.60	$191.60
Hazardous Materials Sites	59	59	59	Utility Relocation Cost (millions $)	$20.47	$20.47	$20.47
Residential Relocations	40	40	40	Right-of-Way Cost (millions $)	$28.11	$28.11	$28.11
Business Relocations	7	6	6	**TOTAL COSTS** (millions $)	$301.28	$240.18	$240.18
Public Schools Impacted	0	0	0				
Noise (Impacted Receptors)	0	0	0				
Noise (Severely Impacted Receptors)	0	0	0				
Vibration (Impacted Structures)	1	1	1				
Section 4(f) Uses- Historic *	4	4	4				
Section 4(f) Uses- Parks *	0	0	0				
Section 4(f) De Minimis- Historic *	6	6	6				
Section 4(f) De Minimis- Parks *	2	2	2				
Section 106 Adverse Effects *	4	4	4				

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section BB- All Alternatives on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION BB VA1	SECTION BB VA2	SECTION BB VA3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	15	17	17
Impacts to Streams (linear feet)	2,078	2,991	2,991
Impacts to Wetlands (acres)	5.22	4.53	4.53
FEMA Floodplain Crossings (acres shown for preferred)	11.4	7	7
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	13.3	12.59	12.59
Forested uplands (acres)	54.16	57.39	57.39
Hazardous Materials Sites	10	10	10
Residential Relocations	7	6	6
Business Relocations	1	1	1
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	0	0	0
Noise (Severely Impacted Receptors)	0	0	0
Vibration (Impacted Structures)	2	2	2
Section 4(f) Uses- Historic *	5	5	5
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	4	4	4
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	7	7	7

Summary of Operational & Physical Characteristics By Section

Topic	SECTION BB VA1	SECTION BB VA2	SECTION BB VA3
Mainline Track Length (miles)	6.91	6.91	6.91
Limiting Speed**	N/A	N/A	N/A
Operability/Constructability***	neutral	neutral	neutral
Roadwork (miles)	3.18	2.2	2.2
Rail and Road Construction Cost (millions $)	$89.60	$70.40	$70.40
Utility Relocation Cost (millions $)	$3.87	$3.87	$3.87
Right-of-Way Cost (millions $)	$11.04	$11.04	$11.04
TOTAL COSTS (millions $)	$104.51	$85.31	$85.31

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section CC- All Alternatives on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION CC VA1	SECTION CC VA2	SECTION CC VA3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	19	18	18
Impacts to Streams (linear feet)	2,405	2,047	2,047
Impacts to Wetlands (acres)	2.52	5.21	5.21
FEMA Floodplain Crossings (acres shown for preferred)	6.16	7	7
Federal/State Designated Rivers (crossings)	1	1	1
Impacts to Prime and Other Important Farmland (acres)	16.4	57.56	57.56
Forested uplands (acres)	45.05	51.64	51.64
Hazardous Materials Sites	20	20	20
Residential Relocations	48	44	44
Business Relocations	1	1	1
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	11	11	11
Noise (Severely Impacted Receptors)	0	0	0
Vibration (Impacted Structures)	15	15	15
Section 4(f) Uses- Historic *	6	6	6
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	6	6	6
Section 4(f) De Minimis- Parks *	2	2	2
Section 106 Adverse Effects *	6	6	6

Summary of Operational & Physical Characteristics By Section

Topic	SECTION CC VA1	SECTION CC VA2	SECTION CC VA3
Mainline Track Length (miles)	8.91	8.91	8.91
Limiting Speed**	80	80	80
Operability/Constructability***	neutral	neutral	neutral
Roadwork (miles)	5.66	3.8	3.8
Rail and Road Construction Cost (millions $)	$146.60	$113.20	$113.20
Utility Relocation Cost (millions $)	$4.49	$4.49	$4.49
Right-of-Way Cost (millions $)	$26.14	$26.14	$26.14
TOTAL COSTS (millions $)	$177.23	$143.83	$143.83

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section DD- Alternatives VA1, VA2, VA3 on Different Alignments

Summary of Potential Human and Natural Impacts By Section				Summary of Operational & Physical Characteristics By Section			
	SECTION DD				SECTION DD		
Topic	**VA1**	**VA2**	**VA3**	**Topic**	**VA1**	**VA2**	**VA3**
Federally Listed T&E Species Impacted	0	0	0	Mainline Track Length (miles)	5.66	5.63	5.66
Number of Impacted Stream Segments	6	6	6	Limiting Speed**	75	70	75
Impacts to Streams (linear feet)	720	739	585	Operability/Constructability***	neutral	negative	positive
Impacts to Wetlands (acres)	2.28	2.19	2.37	Roadwork (miles)	1.5	1.5	1.8
FEMA Floodplain Crossings (acres shown for preferred)	0	0	4.63				
Federal/State Designated Rivers (crossings)	0	0	0				
Impacts to Prime and Other Important Farmland (acres)	23.45	22.82	35.7				
Forested uplands (acres)	53.14	53.46	62.41	Rail and Road Construction Cost (millions $)	$77.10	$76.90	$74.60
Hazardous Materials Sites	1	1	1	Utility Relocation Cost (millions $)	$2.59	$2.41	$2.42
Residential Relocations	2	0	2	Right-of-Way Cost (millions $)	$2.72	$2.66	$2.45
Business Relocations	0	0	0	**TOTAL COSTS** (millions $)	$82.41	$81.97	$79.47
Public Schools Impacted	0	0	0				
Noise (Impacted Receptors)	0	0	0				
Noise (Severely Impacted Receptors)	0	0	0				
Vibration (Impacted Structures)	0	0	0				
Section 4(f) Uses- Historic *	1	1	1				
Section 4(f) Uses- Parks *	0	0	0				
Section 4(f) De Minimis- Historic *	6	6	6				
Section 4(f) De Minimis- Parks *	1	1	1				
Section 106 Adverse Effects *	1	1	1				

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section A- Alternatives VA1, VA3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section				Summary of Operational & Physical Characteristics By Section			
	SECTION A				SECTION A		
Topic	VA1	VA2	VA3	Topic	VA1	VA2	VA3
Federally Listed T&E Species Impacted	0	0	0	Mainline Track Length (miles)	4.93	4.95	4.93
Number of Impacted Stream Segments	12	12	12	Limiting Speed**	80	95	80
Impacts to Streams (linear feet)	2,897	3,094	2,897	Operability/Constructability***	negative	neutral	negative
Impacts to Wetlands (acres)	2.37	2.84	2.37	Roadwork (miles)	2.4	1.97	2.4
FEMA Floodplain Crossings (acres shown for preferred)	1	4.67	1				
Federal/State Designated Rivers (crossings)	0	0	0				
Impacts to Prime and Other Important Farmland (acres)	43.71	51.8	43.71				
Forested uplands (acres)	70.85	64.2	70.85	Rail and Road Construction Cost (millions $)	$54.60	$52.80	$54.60
Hazardous Materials Sites	1	1	1	Utility Relocation Cost (millions $)	$0.42	$0.42	$0.42
Residential Relocations	0	0	0	Right-of-Way Cost (millions $)	$0.51	$0.51	$0.51
Business Relocations	0	0	0	**TOTAL COSTS** (millions $)	$55.53	$53.73	$55.53
Public Schools Impacted	0	0	0				
Noise (Impacted Receptors)	4	4	4				
Noise (Severely Impacted Receptors)	1	1	1				
Vibration (Impacted Structures)	0	0	0				
Section 4(f) Uses- Historic *	1	1	1				
Section 4(f) Uses- Parks *	0	0	0				
Section 4(f) De Minimis- Historic *	3	3	3				
Section 4(f) De Minimis- Parks *	0	0	0				
Section 106 Adverse Effects *	1	1	1				

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section B- Alternatives VA1, VA3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION B VA1	SECTION B VA2	SECTION B VA3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	8	9	11
Impacts to Streams (linear feet)	760	496	940
Impacts to Wetlands (acres)	0.64	0.62	0.97
FEMA Floodplain Crossings (acres shown for preferred)	0.85	2	2
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	64.8	40.13	65.40
Forested uplands (acres)	81.45	77.8	82.38
Hazardous Materials Sites	3	2	0
Residential Relocations	3	2	4
Business Relocations	1	1	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	13	16	13
Noise (Severely Impacted Receptors)	0	0	0
Vibration (Impacted Structures)	2	5	2
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	0	0	0
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION B VA1	SECTION B VA2	SECTION B VA3
Mainline Track Length (miles)	5.71	5.80	5.71
Limiting Speed**	110	90	110
Operability/Constructability***	neutral	negative	neutral
Roadwork (miles)	1.44	1	1.5
Rail and Road Construction Cost (millions $)	$69.20	$61.20	$66.70
Utility Relocation Cost (millions $)	$0.26	$0.30	$0.26
Right-of-Way Cost (millions $)	$1.54	$1.30	$1.54
TOTAL COSTS (millions $)	$71.00	$62.80	$68.50

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section C- All Alternatives on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION C		
	VA1	VA2	VA3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	18	21	21
Impacts to Streams (linear feet)	2,803	4,025	4,025
Impacts to Wetlands (acres)	2.17	1.51	1.51
FEMA Floodplain Crossings (acres shown for preferred)	6.38	1	1
Federal/State Designated Rivers (crossings)	1	1	1
Impacts to Prime and Other Important Farmland (acres)	86.3	94.47	94.47
Forested uplands (acres)	155.05	156.56	156.56
Hazardous Materials Sites	3	2	2
Residential Relocations	4	1	1
Business Relocations	8	8	8
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	9	9	9
Noise (Severely Impacted Receptors)	0	0	0
Vibration (Impacted Structures)	10	11	11
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	1	1	1
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION C		
	VA1	VA2	VA3
Mainline Track Length (miles)	10.74	10.75	10.75
Limiting Speed**	110	110	110
Operability/Constructability***	neutral	neutral	neutral
Roadwork (miles)	3.99	4	4
Rail and Road Construction Cost (millions $)	$104.60	$108.40	$108.40
Utility Relocation Cost (millions $)	$1.87	$1.87	$1.87
Right-of-Way Cost (millions $)	$4.34	$4.34	$4.34
TOTAL COSTS (millions $)	$110.81	$114.61	$114.61

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section D- Alternatives VA1, VA3 on Common Alignment, Alternatives VA2 and VA4 on Different Alignments

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION D			
	VA1	VA2	VA3	VA4
Federally Listed T&E Species Impacted	1	0	1	0
Number of Impacted Stream Segments	14	12	14	9
Impacts to Streams (linear feet)	2,050	2,575	2,050	1,998
Impacts to Wetlands (acres)	0.99	7.37	0.99	2.03
FEMA Floodplain Crossings (acres shown for preferred)	0	4	0	1.31
Federal/State Designated Rivers (crossings)	0	0	0	0
Impacts to Prime and Other Important Farmland (acres)	80.45	54.45	80.45	99.9
Forested uplands (acres)	90.99	92.24	90.99	101.71
Hazardous Materials Sites	0	1	0	1
Residential Relocations	3	2	3	3
Business Relocations	2	0	2	2
Public Schools Impacted	0	0	0	0
Noise (Impacted Receptors)	2	3	2	4
Noise (Severely Impacted Receptors)	2	1	2	2
Vibration (Impacted Structures)	3	1	3	2
Section 4(f) Uses- Historic *	2	1	2	1
Section 4(f) Uses- Parks *	0	0	0	0
Section 4(f) De Minimis- Historic *	0	1	0	1
Section 4(f) De Minimis- Parks *	0	0	0	0
Section 106 Adverse Effects *	2	1	2	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION D			
	VA1	VA2	VA3	VA4
Mainline Track Length (miles)	6.07	6.41	6.07	6.17
Limiting Speed**	110	110	110	110
Operability/Constructability***	neutral	neutral	neutral	neutral
Roadwork (miles)	1.6	1.5	1.6	1.96
Rail and Road Construction Cost (millions $)	$67.20	$53.40	$67.20	$63.70
Utility Relocation Cost (millions $)	$1.28	$0.66	$1.28	$1.28
Right-of-Way Cost (millions $)	$1.82	$1.00	$1.82	$1.85
TOTAL COSTS (millions $)	$70.30	$55.06	$70.30	$66.83

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section E- Alternatives VA1, VA3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section				Summary of Operational & Physical Characteristics By Section			
	SECTION E				SECTION E		
Topic	VA1	VA2	VA3	Topic	VA1	VA2	VA3
Federally Listed T&E Species Impacted	0	0	0	Mainline Track Length (miles)	4.21	4.29	4.21
Number of Impacted Stream Segments	5	6	6	Limiting Speed**	110	110	110
Impacts to Streams (linear feet)	860	1,294	1,025	Operability/Constructability***	positive	neutral	positive
Impacts to Wetlands (acres)	1.21	2.41	0.28	Roadwork (miles)	1.66	1.8	1.8
FEMA Floodplain Crossings (acres shown for preferred)	0.85	2	1				
Federal/State Designated Rivers (crossings)	0	0	0				
Impacts to Prime and Other Important Farmland (acres)	59.8	60.71	58.90				
Forested uplands (acres)	52.01	57.07	52.02	Rail and Road Construction Cost (millions $)	$59.60	$59.50	$60.30
Hazardous Materials Sites	0	0	0	Utility Relocation Cost (millions $)	$0.77	$0.77	$0.77
Residential Relocations	2	9	2	Right-of-Way Cost (millions $)	$1.53	$1.39	$1.53
Business Relocations	7	0	7	**TOTAL COSTS** (millions $)	$61.90	$61.66	$62.60
Public Schools Impacted	0	0	0				
Noise (Impacted Receptors)	23	22	23				
Noise (Severely Impacted Receptors)	6	6	6				
Vibration (Impacted Structures)	9	11	9				
Section 4(f) Uses- Historic *	1	1	1				
Section 4(f) Uses- Parks *	0	0	0				
Section 4(f) De Minimis- Historic *	0	0	0				
Section 4(f) De Minimis- Parks *	1	1	1				
Section 106 Adverse Effects *	1	1	1				

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section F- All Alternatives on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION F VA1	SECTION F VA2	SECTION F VA3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	6	6	6
Impacts to Streams (linear feet)	1,004	1,185	1,185
Impacts to Wetlands (acres)	0.62	0.60	0.60
FEMA Floodplain Crossings (acres shown for preferred)	3.20	2	2
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	25.0	21.65	21.65
Forested uplands (acres)	67.02	67.01	67.01
Hazardous Materials Sites	0	0	0
Residential Relocations	0	0	0
Business Relocations	0	0	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	6	6	6
Noise (Severely Impacted Receptors)	0	0	0
Vibration (Impacted Structures)	0	0	0
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	0	0	0
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION F VA1	SECTION F VA2	SECTION F VA3
Mainline Track Length (miles)	4.28	4.28	4.28
Limiting Speed**	110	110	110
Operability/Constructability***	neutral	neutral	neutral
Roadwork (miles)	1.55	1.6	1.6
Rail and Road Construction Cost (millions $)	$45.50	$47.10	$47.10
Utility Relocation Cost (millions $)	$0.41	$0.41	$0.41
Right-of-Way Cost (millions $)	$0.27	$0.27	$0.27
TOTAL COSTS (millions $)	$46.18	$47.78	$47.78

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section G- Alternatives VA1, VA2, VA3, VA4 on Different Alignments

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION G VA1	SECTION G VA2	SECTION G VA3	SECTION G VA4
Federally Listed T&E Species Impacted	0	0	0	0
Number of Impacted Stream Segments	7	7	4	9
Impacts to Streams (linear feet)	654	914	510	1,095
Impacts to Wetlands (acres)	0.21	0.49	0.26	0.21
FEMA Floodplain Crossings (acres shown for preferred)	1	1	0.32	1
Federal/State Designated Rivers (crossings)	1	1	1	1
Impacts to Prime and Other Important Farmland (acres)	25.02	24.96	33.1	49.43
Forested uplands (acres)	45.54	44.59	43.56	47.55
Hazardous Materials Sites	0	0	0	0
Residential Relocations	0	0	2	1
Business Relocations	0	0	0	0
Public Schools Impacted	0	0	0	0
Noise (Impacted Receptors)	0	1	2	2
Noise (Severely Impacted Receptors)	0	0	0	0
Vibration (Impacted Structures)	1	0	0	0
Section 4(f) Uses- Historic *	2	2	2	2
Section 4(f) Uses- Parks *	0	0	0	0
Section 4(f) De Minimis- Historic *	0	0	0	0
Section 4(f) De Minimis- Parks *	0	0	0	0
Section 106 Adverse Effects *	2	2	2	2

Summary of Operational & Physical Characteristics By Section

Topic	SECTION G VA1	SECTION G VA2	SECTION G VA3	SECTION G VA4
Mainline Track Length (miles)	3.61	3.66	3.55	3.62
Limiting Speed**	110	90	110	110
Operability/Constructability***	neutral	negative	positive	positive
Roadwork (miles)	0.7	0.3	0.58	0.91
Rail and Road Construction Cost (millions $)	$35.90	$29.00	$35.50	$40.00
Utility Relocation Cost (millions $)	$0.19	$0.16	$0.19	$0.19
Right-of-Way Cost (millions $)	$0.37	$0.31	$0.53	$0.54
TOTAL COSTS (millions $)	$36.46	$29.47	$36.22	$40.73

Indicates Recommended Preferred Alternative.

* Several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section H- Alternatives VA1, VA3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section				Summary of Operational & Physical Characteristics By Section			
	SECTION H				SECTION H		
Topic	**VA1**	**VA2**	**VA3**	**Topic**	**VA1**	**VA2**	**VA3**
Federally Listed T&E Species Impacted	0	0	0	Mainline Track Length (miles)	5.53	5.58	5.53
Number of Impacted Stream Segments	10	7	6	Limiting Speed**	110	110	110
Impacts to Streams (linear feet)	2,808	2,023	2,005	Operability/Constructability***	positive	neutral	positive
Impacts to Wetlands (acres)	0.35	0.25	0.25	Roadwork (miles)	4.6	4.1	4.7
FEMA Floodplain Crossings (acres shown for preferred)0.	0.06	0	0				
Federal/State Designated Rivers (crossings)	0	0	0				
Impacts to Prime and Other Important Farmland (acres)	82.0	80.20	79.87				
Forested uplands (acres)	110.64	101.45	110.67	Rail and Road Construction Cost (millions $)	$74.90	$74.50	$78.80
Hazardous Materials Sites	0	0	0	Utility Relocation Cost (millions $)	$0.73	$0.71	$0.73
Residential Relocations	1	1	1	Right-of-Way Cost (millions $)	$1.14	$1.11	$1.14
Business Relocations	0	0	0	**TOTAL COSTS** (millions $)	$76.77	$76.32	$80.67
Public Schools Impacted	0	0	0				
Noise (Impacted Receptors)	18	24	18				
Noise (Severely Impacted Receptors)	2	2	2				
Vibration (Impacted Structures)	5	7	5				
Section 4(f) Uses- Historic *	1	1	1				
Section 4(f) Uses- Parks *	0	0	0				
Section 4(f) De Minimis- Historic *	0	0	0				
Section 4(f) De Minimis- Parks *	0	0	0				
Section 106 Adverse Effects *	1	1	1				

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section I- Alternatives VA1, VA3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION I VA1	SECTION I VA2	SECTION I VA3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	1	0	0
Impacts to Streams (linear feet)	22	6	6
Impacts to Wetlands (acres)	0.001	0.00	0.00
FEMA Floodplain Crossings (acres shown for preferred)	0.00	0	0
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	57.6	65.95	57.54
Forested uplands (acres)	35.53	40.08	35.51
Hazardous Materials Sites	2	2	2
Residential Relocations	14	8	14
Business Relocations	0	0	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	50	50	50
Noise (Severely Impacted Receptors)	5	5	5
Vibration (Impacted Structures)	24	21	24
Section 4(f) Uses- Historic *	2	2	2
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	0	0	0
Section 4(f) De Minimis- Parks *	2	2	2
Section 106 Adverse Effects *	2	2	2

Summary of Operational & Physical Characteristics By Section

Topic	SECTION I VA1	SECTION I VA2	SECTION I VA3
Mainline Track Length (miles)	3.78	3.77	3.77
Limiting Speed**	110	110	110
Operability/Constructability***	neutral	neutral	neutral
Roadwork (miles)	3.77	3.8	2.6
Rail and Road Construction Cost (millions $)	$38.10	$46.60	$36.40
Utility Relocation Cost (millions $)	$0.99	$0.92	$0.99
Right-of-Way Cost (millions $)	$1.93	$2.25	$1.93
TOTAL COSTS (millions $)	$41.02	$49.77	$39.32

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section J- Alternatives VA1, VA3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section				Summary of Operational & Physical Characteristics By Section			
	SECTION J				SECTION J		
Topic	**VA1**	**VA2**	**VA3**	**Topic**	**VA1**	**VA2**	**VA3**
Federally Listed T&E Species Impacted	0	0	0	Mainline Track Length (miles)	3.99	4.10	3.99
Number of Impacted Stream Segments	5	2	5	Limiting Speed**	110	110	110
Impacts to Streams (linear feet)	2,061	420	2,061	Operability/Constructability***	positive	neutral	positive
Impacts to Wetlands (acres)	0.00	0.22	0.00	Roadwork (miles)	2.5	2.67	2.5
FEMA Floodplain Crossings (acres shown for preferred)	0	0.00	0				
Federal/State Designated Rivers (crossings)	0	0	0				
Impacts to Prime and Other Important Farmland (acres)	80.43	72.1	80.43				
Forested uplands (acres)	64.27	63.06	64.27	Rail and Road Construction Cost (millions $)	$42.10	$37.00	$42.10
Hazardous Materials Sites	1	1	1	Utility Relocation Cost (millions $)	$0.41	$1.00	$0.41
Residential Relocations	6	5	6	Right-of-Way Cost (millions $)	$1.16	$1.42	$1.16
Business Relocations	0	0	0	**TOTAL COSTS** (millions $)	$43.67	$39.42	$43.67
Public Schools Impacted	0	0	0				
Noise (Impacted Receptors)	11	21	11				
Noise (Severely Impacted Receptors)	1	1	1				
Vibration (Impacted Structures)	5	5	5				
Section 4(f) Uses- Historic *	2	1	2				
Section 4(f) Uses- Parks *	0	0	0				
Section 4(f) De Minimis- Historic *	0	0	0				
Section 4(f) De Minimis- Parks *	0	0	0				
Section 106 Adverse Effects *	2	1	2				

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section K- Alternatives VA1, VA3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION K VA1	SECTION K VA2	SECTION K VA3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	11	10	10
Impacts to Streams (linear feet)	1,419	2,447	1,927
Impacts to Wetlands (acres)	0.91	0.47	0.46
FEMA Floodplain Crossings (acres shown for preferred)	0.19	0	0
Federal/State Designated Rivers (crossings)	1	1	1
Impacts to Prime and Other Important Farmland (acres)	37.6	41.40	36.55
Forested uplands (acres)	79.21	79.94	79.22
Hazardous Materials Sites	0	0	0
Residential Relocations	0	1	0
Business Relocations	5	2	5
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	9	8	9
Noise (Severely Impacted Receptors)	0	0	0
Vibration (Impacted Structures)	1	2	1
Section 4(f) Uses- Historic *	1	3	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	0	1	0
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	3	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION K VA1	SECTION K VA2	SECTION K VA3
Mainline Track Length (miles)	4.96	4.94	4.96
Limiting Speed**	110	100	110
Operability/Constructability***	neutral	negative	neutral
Roadwork (miles)	0.13	0	0.2
Rail and Road Construction Cost (millions $)	$81.80	$77.00	$82.80
Utility Relocation Cost (millions $)	$0.40	$0.40	$0.40
Right-of-Way Cost (millions $)	$1.57	$0.90	$1.57
TOTAL COSTS (millions $)	$83.77	$78.30	$84.77

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section L- Includes Areas in Virginia and North Carolina
Alternatives VA1/NC1 and VA3/NC3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION L		
	VA1/NC1	VA2/NC2	VA3/NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	10	9	14
Impacts to Streams (linear feet)	2,502	1,422	2,809
Impacts to Wetlands (acres)	0.72	0.01	0.57
FEMA Floodplain Crossings (acres shown for preferred)	0.04	0	0
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	128.5	125.95	122.74
Forested uplands (acres)	88.46	73.19	91.32
Hazardous Materials Sites	1	1	1
Residential Relocations	8	17	12
Business Relocations	1	1	1
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	20	32	20
Noise (Severely Impacted Receptors)	1	3	1
Vibration (Impacted Structures)	7	13	7
Section 4(f) Uses- Historic *	1	2	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	0	0	0
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	2	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION L		
	VA1/NC1	VA2/NC2	VA3/NC3
Mainline Track Length (miles)	5.69	5.96	5.75
Limiting Speed**	110	100	110
Operability/Constructability***	neutral	negative	neutral
Roadwork (miles)	4.84	8.1	6.5
Rail and Road Construction Cost (millions $)	$54.50	$71.30	$63.00
Utility Relocation Cost (millions $)	$1.00	$1.34	$1.00
Right-of-Way Cost (millions $)	$5.42	$5.36	$5.42
TOTAL COSTS (millions $)	$60.92	$78.00	$69.42

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section M- Alternatives NC1, NC3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION M NC1	SECTION M NC2	SECTION M NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	2	4	2
Impacts to Streams (linear feet)	442	511	442
Impacts to Wetlands (acres)	0.49	0.00	0.00
FEMA Floodplain Crossings (acres shown for preferred)	0.00	0	0
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	113.5	85.00	90.80
Forested uplands (acres)	40.5	52.7	48.12
Hazardous Materials Sites	0	0	0
Residential Relocations	18	20	21
Business Relocations	4	4	4
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	41	48	41
Noise (Severely Impacted Receptors)	6	1	6
Vibration (Impacted Structures)	30	28	30
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	1	1	1
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION M NC1	SECTION M NC2	SECTION M NC3
Mainline Track Length (miles)	6.14	5.97	6.14
Limiting Speed**	110	80	110
Operability/Constructability***	neutral	negative	neutral
Roadwork (miles)	5.37	7	7.5
Rail and Road Construction Cost (millions $)	$70.70	$74.30	$76.10
Utility Relocation Cost (millions $)	$1.34	$1.34	$1.34
Right-of-Way Cost (millions $)	$5.77	$5.10	$5.77
TOTAL COSTS (millions $)	$77.81	$80.74	$83.21

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section N- Alternatives NC1, NC3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION N NC1	NC2	NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	3	4	3
Impacts to Streams (linear feet)	386	715	385
Impacts to Wetlands (acres)	1.25	0.18	1.25
FEMA Floodplain Crossings (acres shown for preferred)	0.00	0	0
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	76.1	74.38	65.39
Forested uplands (acres)	43.43	44.32	42.61
Hazardous Materials Sites	1	1	1
Residential Relocations	2	7	2
Business Relocations	0	0	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	4	6	4
Noise (Severely Impacted Receptors)	0	1	0
Vibration (Impacted Structures)	6	2	2
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	1	1	1
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION N NC1	NC2	NC3
Mainline Track Length (miles)	3.71	3.77	3.71
Limiting Speed**	110	110	110
Operability/Constructability***	positive	neutral	positve
Roadwork (miles)	2.61	2.8	2.5
Rail and Road Construction Cost (millions $)	$39.80	$42.60	$40.70
Utility Relocation Cost (millions $)	$0.51	$0.46	$0.51
Right-of-Way Cost (millions $)	$2.08	$2.57	$2.08
TOTAL COSTS (millions $)	$42.39	$45.63	$43.29

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section O- Alternatives NC1, NC2, NC3 on Different Alignments

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION O NC1	SECTION O NC2	SECTION O NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	5	6	9
Impacts to Streams (linear feet)	693	915	3,102
Impacts to Wetlands (acres)	0.40	1.63	0.30
FEMA Floodplain Crossings (acres shown for preferred)	0	0	0.00
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	106.22	108.13	124.4
Forested uplands (acres)	25.26	20.91	46.22
Hazardous Materials Sites	2	2	1
Residential Relocations	9	9	3
Business Relocations	0	0	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	26	26	10
Noise (Severely Impacted Receptors)	6	6	5
Vibration (Impacted Structures)	14	11	3
Section 4(f) Uses- Historic *	2	2	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	1	1	1
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	2	2	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION O NC1	SECTION O NC2	SECTION O NC3
Mainline Track Length (miles)	5.09	5.16	4.70
Limiting Speed**	90	80	110
Operability/Constructability***	negative	negative	neutral
Roadwork (miles)	5	5.9	3.94
Rail and Road Construction Cost (millions $)	$69.60	$65.50	$63.30
Utility Relocation Cost (millions $)	$0.20	$0.20	$0.19
Right-of-Way Cost (millions $)	$3.56	$4.19	$3.84
TOTAL COSTS (millions $)	$73.36	$69.89	$67.33

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section P- All Alternatives on Common Alignment

Summary of Potential Human and Natural Impacts By Section			
Topic	SECTION P NC1	SECTION P NC2	SECTION P NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	10	7	7
Impacts to Streams (linear feet)	1,532	1,520	1,520
Impacts to Wetlands (acres)	0.91	0.91	0.91
FEMA Floodplain Crossings (acres shown for preferred)	0.00	0	0
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	87.0	87.83	87.73
Forested uplands (acres)	12.86	16.07	16.07
Hazardous Materials Sites	31	22	22
Residential Relocations	33	18	18
Business Relocations	8	6	6
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	78	78	78
Noise (Severely Impacted Receptors)	11	11	11
Vibration (Impacted Structures)	74	74	74
Section 4(f) Uses- Historic *	3	3	3
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	2	2	2
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	3	3	3

Summary of Operational & Physical Characteristics By Section			
Topic	SECTION P NC1	SECTION P NC2	SECTION P NC3
Mainline Track Length (miles)	7.99	7.99	7.99
Limiting Speed**	80	80	80
Operability/Constructability***	neutral	neutral	neutral
Roadwork (miles)	8.5	10	10
Rail and Road Construction Cost (millions $)	$108.00	$105.30	$105.30
Utility Relocation Cost (millions $)	$2.68	$2.68	$2.68
Right-of-Way Cost (millions $)	$6.97	$6.97	$6.97
TOTAL COSTS (millions $)	$117.65	$114.95	$114.95

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section Q- Alternatives NC1, NC3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION Q		
	NC1	NC2	NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	10	9	9
Impacts to Streams (linear feet)	1,127	1,009	1,009
Impacts to Wetlands (acres)	0.03	0.03	0.03
FEMA Floodplain Crossings (acres shown for preferred)	0.00	0	0
Federal/State Designated Rivers (crossings)	1	1	1
Impacts to Prime and Other Important Farmland (acres)	96.7	84.30	94.78
Forested uplands (acres)	49.22	43.41	48.89
Hazardous Materials Sites	4	4	4
Residential Relocations	10	14	17
Business Relocations	0	0	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	13	13	13
Noise (Severely Impacted Receptors)	5	5	5
Vibration (Impacted Structures)	20	20	20
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	0	0	0
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION Q		
	NC1	NC2	NC3
Mainline Track Length (miles)	7.70	7.73	7.70
Limiting Speed**	110	90	110
Operability/Constructability***	neutral	negative	neutral
Roadwork (miles)	3.32	4.2	4.4
Rail and Road Construction Cost (millions $)	$81.30	$78.30	$77.40
Utility Relocation Cost (millions $)	$0.68	$0.68	$0.68
Right-of-Way Cost (millions $)	$7.94	$6.74	$7.94
TOTAL COSTS (millions $)	$89.92	$85.72	$86.02

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section R- Alternatives NC1, NC3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section				Summary of Operational & Physical Characteristics By Section			
	SECTION R				SECTION R		
Topic	NC1	NC2	NC3	Topic	NC1	NC2	NC3
Federally Listed T&E Species Impacted	0	0	0	Mainline Track Length (miles)	3.21	3.23	3.21
Number of Impacted Stream Segments	2	2	2	Limiting Speed**	110	110	110
Impacts to Streams (linear feet)	438	1,018	475	Operability/Constructability***	positive	neutral	positive
Impacts to Wetlands (acres)	0	0.00	0.00	Roadwork (miles)	0.23	0.3	0.3
FEMA Floodplain Crossings (acres shown for preferred)	0.04	0	0				
Federal/State Designated Rivers (crossings)	0	0	0				
Impacts to Prime and Other Important Farmland (acres)	25.1	12.72	25.83				
Forested uplands (acres)	29.45	21.95	33.78	Rail and Road Construction Cost (millions $)	$19.60	$21.30	$22.80
Hazardous Materials Sites	0	0	0	Utility Relocation Cost (millions $)	$0.02	$0.02	$0.02
Residential Relocations	1	1	0	Right-of-Way Cost (millions $)	$3.18	$0.71	$3.18
Business Relocations	0	0	0	**TOTAL COSTS** (millions $)	$22.80	$22.03	$26.00
Public Schools Impacted	0	0	0				
Noise (Impacted Receptors)	1	1	1				
Noise (Severely Impacted Receptors)	0	0	0				
Vibration (Impacted Structures)	3	2	3				
Section 4(f) Uses- Historic *	1	1	1				
Section 4(f) Uses- Parks *	0	0	0				
Section 4(f) De Minimis- Historic *	0	0	0				
Section 4(f) De Minimis- Parks *	0	0	0				
Section 106 Adverse Effects *	1	1	1				

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section S- Alternatives NC1, NC3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION S NC1	SECTION S NC2	SECTION S NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	10	11	11
Impacts to Streams (linear feet)	1,620	2,720	2,120
Impacts to Wetlands (acres)	0.48	0.07	0.55
FEMA Floodplain Crossings (acres shown for preferred)	0.42	1	1
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	91.7	105.65	94.88
Forested uplands (acres)	92.19	101.43	94.61
Hazardous Materials Sites	7	5	6
Residential Relocations	4	8	6
Business Relocations	0	0	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	22	23	22
Noise (Severely Impacted Receptors)	1	1	1
Vibration (Impacted Structures)	22	22	22
Section 4(f) Uses- Historic *	2	2	2
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	1	1	1
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	2	2	2

Summary of Operational & Physical Characteristics By Section

Topic	SECTION S NC1	SECTION S NC2	SECTION S NC3
Mainline Track Length (miles)	6.88	6.71	6.88
Limiting Speed**	95	95	95
Operability/Constructability***	neutral	neutral	neutral
Roadwork (miles)	2.8	4.1	4.2
Rail and Road Construction Cost (millions $)	$90.00	$85.20	$87.00
Utility Relocation Cost (millions $)	$1.05	$1.01	$1.05
Right-of-Way Cost (millions $)	$6.80	$8.35	$6.80
TOTAL COSTS (millions $)	$97.85	$94.56	$94.85

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section T- Alternatives NC1, NC3 on Common Alignment

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION T NC1	SECTION T NC2	SECTION T NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	3	3	3
Impacts to Streams (linear feet)	415	94	415
Impacts to Wetlands (acres)	0.07	0.00	0.07
FEMA Floodplain Crossings (acres shown for preferred)	0.00	0	0
Federal/State Designated Rivers (crossings)	0	0	0
Impacts to Prime and Other Important Farmland (acres)	41.7	38.45	41.90
Forested uplands (acres)	25.65	20.16	21.61
Hazardous Materials Sites	4	2	1
Residential Relocations	5	2	3
Business Relocations	0	0	0
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	25	25	25
Noise (Severely Impacted Receptors)	0	0	0
Vibration (Impacted Structures)	5	10	5
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	0	0	0
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION T NC1	SECTION T NC2	SECTION T NC3
Mainline Track Length (miles)	2.83	2.96	2.83
Limiting Speed**	110	95	110
Operability/Constructability***	neutral	negative	neutral
Roadwork (miles)	0.55	1.1	0.2
Rail and Road Construction Cost (millions $)	$53.00	$53.60	$50.00
Utility Relocation Cost (millions $)	$0.91	$0.34	$0.90
Right-of-Way Cost (millions $)	$2.96	$2.52	$2.96
TOTAL COSTS (millions $)	$56.87	$56.46	$53.86

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix
Section U- Alternatives NC1, NC2, NC3 on Different Alignments

Summary of Potential Human and Natural Impacts By Section

Topic	SECTION U NC1	SECTION U NC2	SECTION U NC3
Federally Listed T&E Species Impacted	0	0	0
Number of Impacted Stream Segments	19	19	16
Impacts to Streams (linear feet)	3,718	3,010	3,394
Impacts to Wetlands (acres)	0.25	0.21	0.38
FEMA Floodplain Crossings (acres shown for preferred)	1	1	0.00
Federal/State Designated Rivers (crossings)	1	1	1
Impacts to Prime and Other Important Farmland (acres)	0.00	0.00	0.0
Forested uplands (acres)	70.87	70.07	71.94
Hazardous Materials Sites	10	10	20
Residential Relocations	10	8	8
Business Relocations	17	17	12
Public Schools Impacted	0	0	0
Noise (Impacted Receptors)	159	161	159
Noise (Severely Impacted Receptors)	17	17	17
Vibration (Impacted Structures)	45	45	45
Section 4(f) Uses- Historic *	1	1	1
Section 4(f) Uses- Parks *	0	0	0
Section 4(f) De Minimis- Historic *	1	1	1
Section 4(f) De Minimis- Parks *	0	0	0
Section 106 Adverse Effects *	1	1	1

Summary of Operational & Physical Characteristics By Section

Topic	SECTION U NC1	SECTION U NC2	SECTION U NC3
Mainline Track Length (miles)	8.88	8.89	8.88
Limiting Speed**	85	80	85
Operability/Constructability***	neutral	negative	neutral
Roadwork (miles)	4	4	3.67
Rail and Road Construction Cost (millions $)	$88.70	$84.40	$103.30
Utility Relocation Cost (millions $)	$2.11	$2.11	$2.11
Right-of-Way Cost (millions $)	$26.25	$24.61	$26.25
TOTAL COSTS (millions $)	$117.06	$111.12	$131.66

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

Impact Matrix

Section V in Downtown Raleigh- Whittaker Mill Road to Boylan Wye
Alternatives NC1, NC2, NC3, NC5 on Different Alignments

Summary of Potential Human and Natural Impacts

Topic	Downtown Raleigh			
	NC1	NC2	NC3	NC5
Federally Listed T&E Species Impacted	0	0	0	0
Number of Impacted Stream Segments	16	16	15	11
Impacts to Streams (linear feet)	1,105	1,107	1,182	1,036
Impacts to Wetlands (acres)	0.06	0.06	0.05	0.05
FEMA Floodplain Crossings (acres shown for preferred)	4	4	3	1.38
Federal/State Designated Rivers (crossings)	0	0	0	0
Impacts to Prime and Other Important Farmland (acres)	0.00	0.00	0.00	0.0
Forested uplands (acres)	16.92	16.92	17.04	17.05
Hazardous Materials Sites	76	58	58	79
Residential Relocations	0	1	0	0
Business Relocations	23	20	54	59
Public Schools Impacted	0	0	0	0
Total Noise Impacted Receptors	92	92	92	79
Severe Impacts (subset of total)	0	0	0	2
Vibration (Impacted Structures)	48	48	48	4
Section 4(f) Uses- Historic *	4	4	1	2
Section 4(f) Uses- Parks	0	0	0	0
Section 4(f) De Minimis- Historic	2	2	3	1
Section 4(f) De Minimis- Parks	1	1	1	1
Section 106 Adverse Effects *	4	4	3	2

Summary of Operational & Physical Characteristics

Topic	Downtown Raleigh			
	NC1	NC2	NC3	NC5
Mainline Track Length (miles)	9.89	9.91	9.97	9.88
Limiting Speed**	45	45	45	45
Operability/Constructability***	negative	negative	positive	positive
Roadwork (miles)	3	3.1	2.7	2.79
Rail and Road Construction Cost (millions $)	$148.20	$149.40	$157.50	$230.60
Utility Relocation Cost (millions $)	$2.64	$2.64	$2.45	$2.28
Right-of-Way Cost (millions $)	$53.34	$56.47	$90.24	$79.21
TOTAL COSTS (millions $)	$204.18	$208.51	$250.19	$312.09

Indicates Recommended Preferred Alternative.

* Note that several resources protected under Section 106 and/or Section 4(f) span one or more project sections; impacts are reported for each project section. Therefore, the total number of impacts reported across all sections exceeds the total number of protected resources described in Chapter 3 and Chapter 5.

** Limiting Speed is the maximum train speed through the most restrictive curve within the section based on current design assumptions; average running speed through the section could be greater.

*** Positive-negative-neutral denotes significant differences in operability or constructability between the alternatives.

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1. PURPOSE AND NEED FOR THE PROPOSED ACTION

The Federal Railroad Administration (FRA), in partnership with the North Carolina Department of Transportation (NCDOT) and the Virginia Department of Rail and Public Transportation (DRPT) have prepared this Environmental Impact Statement (EIS) for the proposed development of the Southeast High Speed Rail (SEHSR) Corridor between Richmond, VA and Raleigh, NC (Richmond to Raleigh Project) as required by the National Environmental Policy Act (NEPA). This document contains a Tier II Final EIS (FEIS) for the Richmond to Raleigh Project, as a continuation of the Tier II Draft EIS (DEIS), which was published for review in 2010.

The Tier II DEIS and FEIS documents draw upon and summarize the purpose and need from the base Tier I EIS for the SEHSR Corridor between Washington, DC and Charlotte, NC, which was completed in 2002. Public and agency comments on the Richmond to Raleigh Project Tier II DEIS indicated a strong interest in having more information and a fuller discussion on the relation of the Richmond to Raleigh Project to the history of the overall SEHSR Corridor. Specifically, Chapter 1 provides an expanded discussion on the history, benefits/costs, and the purpose and need for the portion of the SEHSR Corridor project covered by this Tier II EIS. In addition, Chapter 1 contains updated ridership and revenue projections and updated project need data. A condensed format was used for this Richmond to Raleigh Project Tier II EIS, as explained in the Executive Summary of this document.

A condensed format was used for this Richmond to Raleigh Project Tier II EIS, as explained in the Executive Summary of this document.

The Tier II DEIS and FEIS documents include an analysis and presentation of the benefits and impacts related to the physical route and operating conditions for the Richmond to Raleigh Project as an independent component of the larger SEHSR Corridor.

1.1 HIGH SPEED RAIL (HSR) HISTORY

1.1.1 NATIONAL HSR PROGRAM

Federal interest dates back at least to 1965, with the passage of the HSGT Act.

Federal interest in high speed rail (HSR) dates back at least to 1965, with the passage of the High Speed Ground Transportation (HSGT) Act, which called for the comprehensive planning, development and demonstration of contemporary and advanced HSGT technologies. Under the HSGT Act, the Federal Railroad Administration (FRA) Office of High Speed Ground Transportation introduced modern HSGT to America in 1969 by deploying the self-propelled Metroliner cars and the Turbotrain in the Northeast Corridor (NEC), which extends from Boston, MA to New York, NY and Washington, D.C. The HSGT program prompted public/private partnerships between freight railroad companies, equipment suppliers, states, localities and the FRA, as well as research and development that benefitted private manufacturers of advanced technologies, such as tracked air-cushion vehicles and linear electric motors.

The Rail Passenger Service Act of 1970 led to the creation of the National Railroad Passenger Corporation (Amtrak) in 1971 as a way of ensuring continued operation of an intercity rail passenger network in the United States. On May 1, 1971, Amtrak took over from the freight railroads the responsibility for operating intercity rail service in most of the United States, including the NEC.

After the HSGT Act appropriations ended in 1975, Congress passed the Railroad Revitalization and Regulatory Reform Act of 1976, which financed billions of dollars for the Northeast Corridor Improvement Project (NECIP), which upgraded and improved the NEC infrastructure to enhance reliability, create shorter trip times (particularly between New York, NY and Washington, D.C.) and increase operating flexibility. The successful completion of the original phases of the NECIP led to the development of Amtrak's maximum 150 mph Acela train service between Boston, MA and Washington, D.C.

With the marketplace success of HSGT in the NEC, Federal HSGT emphasis in the 1980s shifted to studies of other potential HSGT corridors across the country, in an effort to replicate this successful high speed intercity passenger rail service beyond the NEC. Among those efforts was a series of reports on "Emerging Corridors," developed by FRA in conjunction with Amtrak, which were issued in 1980 and 1981. In 1984, as authorized under the Passenger Railroad Rebuilding Act of 1980, Congress set aside grants of $4 million in September 2012 for engineering and design studies of HSGT corridors on the state level. This program funded seven major HSGT analyses in various corridors.

As Federal involvement in HSGT planning continued during the 1980s, state involvement also increased. By 1986, at least six states had formed HSR entities, and ultimately Florida, Ohio, Texas, California, and Nevada awarded franchises to private sector consortia to build and operate intercity HSR or Maglev systems. By 1997, more than 15 states had passed enabling legislation facilitating HSGT activities with some states attempting to implement HSGT, such as the Florida Overland Express.

A key element of Congressional interest in HSGT has been to ensure the safety of new technologies. As such, the Rail Safety Improvement Act of 1988 was adopted to expand the safety provisions of the Federal Railroad Safety Act of 1970 to apply to "all forms of non-highway ground transportation that runs on rails or electromagnetic guideways," including "new technology high speed ground transportation systems." As a result, FRA examined a variety of HSGT safety issues - including collision avoidance and accident survivability, biological effects of Maglev magnetic field exposures, and fire safety - to determine regulatory requirements for HSGT systems.

In 1991, the *Intermodal Surface Transportation Efficiency Act of 1991* (ISTEA) was adopted, authorizing the USDOT and the states to develop nationwide HSR corridors as one component of a nationwide intermodal transportation network (PL102-240, Section 1036). As stated in ISTEA:

"It is the policy of the United States to develop a National Intermodal Transportation System that is economically efficient and environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner."

Section 1036 of ISTEA also funded this National High Speed Ground Transportation Program at $800 million, including $725 million for development of a US-designed Maglev prototype, $50 million for demonstration of new HSGT technologies and $25 million for research and development. Separately, Section 1010 of ISTEA authorized the designation of five HSR corridors by the Secretary of Transportation, and provided $30 million for the elimination of highway/rail grade crossings in these corridors.

The first five originally designated ISTEA HSR corridors included –

- <u>Midwest HSR Corridor</u> - Linking Chicago, IL with Detroit, MI, St. Louis, MO and Milwaukee, WI. (October 15, 1992)

- Florida HSR Corridor - Linking Miami, FL with Orlando, FL and Tampa, FL. (October 16, 1992)
- California HSR Corridor - Linking San Diego, CA and Los Angeles, CA with the Bay Area and Sacramento, CA via the San Joaquin Valley. (October 19, 1992)
- **Southeast HSR Corridor** - Initially connecting Charlotte, NC, Richmond, VA, and Washington, DC. (October 20, 1992). Extended in 1995 from Richmond, VA, to Hampton Roads, VA. Extended again in 1998 from Charlotte, NC, to Greenville, SC, to Atlanta, GA and to Macon, GA, and from Raleigh, NC, to Columbia, SC, to Savannah, GA, and to Jacksonville, FL. Extended again in 2000 from Macon, GA, to Jesup, GA.
- Pacific Northwest HSR Corridor - Linking Eugene, OR and Portland, OR with Seattle, WA and Vancouver, BC, Canada. (October 20, 1992)

In June 1998, the Transportation Equity Act for the 21st Century (TEA-21) (PL 105-178) became law. TEA-21 continued the National High Speed Ground Transportation Program begun with ISTEA. Section 1103 (c) authorized six additional HSR corridor designations, for a total of eleven. Those new corridors included: a Gulf Coast HSR corridor; a Keystone HSR corridor from Philadelphia, PA to Harrisburg, PA; an Empire State HSR corridor from New York, NY to Albany, NY and Buffalo, NY; and several other new and extended corridors.

In 2009, FRA issued the "High Speed Rail Strategic Plan" under the American Recovery and Reinvestment Act of 2009 (ARRA) and Passenger Rail Investment and improvement Act of 2008 (PRIIA). This strategic plan was proposed to help address the nation's transportation challenges by investing in an efficient, high speed passenger rail network of 100 to 600-mile intercity corridors that connect communities across America. This vision (illustrated in Figure 1-1) was built on the successful highway and aviation development models with a 21st century solution that focused on a clean, energy-efficient option. Implementing these corridor projects and programs is intended to serve as a catalyst to promote economic expansion (including new manufacturing jobs), create new choices for travelers in addition to flying or driving, reduce national dependence on oil, and foster livable urban and rural communities.

> Implementing these corridor projects and programs is intended to promote economic expansion, create new choices for travelers, reduce national dependence on oil, and foster livable communities.

The High Speed Rail Strategic Plan has a near-term investment strategy that seeks to:

- Advance new Express High Speed Corridor services (operating speeds above 150 mph on primarily dedicated track) in select corridors of 200–600 miles.
- Develop Emerging and Regional High Speed Corridor services (operating speeds up to 90–110 mph and 110–150 mph respectively, on shared and dedicated track) in corridors of 100–500 miles.
- Upgrade reliability and service on Conventional Intercity Rail services (operating speeds up to 79–90 mph).

Under the High Speed Rail Strategic Plan, FRA identified the SEHSR Corridor as an Emerging Corridor.

1.1.2 SOUTHEAST HIGH SPEED RAIL (SEHSR)

1.1.2.1 *SEHSR CORRIDOR*

As discussed in Section 1.1.1, the SEHSR Corridor is part of the nationwide HSR network being planned by USDOT, the states, and Amtrak. The NCDOT Rail Division and Virginia DRPT, with their Federal partners, FRA and the Federal Highway Administration (FHWA), have been working together since the early 1990s to improve rail transportation options through development of the SEHSR Corridor. By being one of the five originally designated ISTEA HSR corridors, Federal monies may be spent on improvements to the existing rail system in order to achieve higher speed rail service.

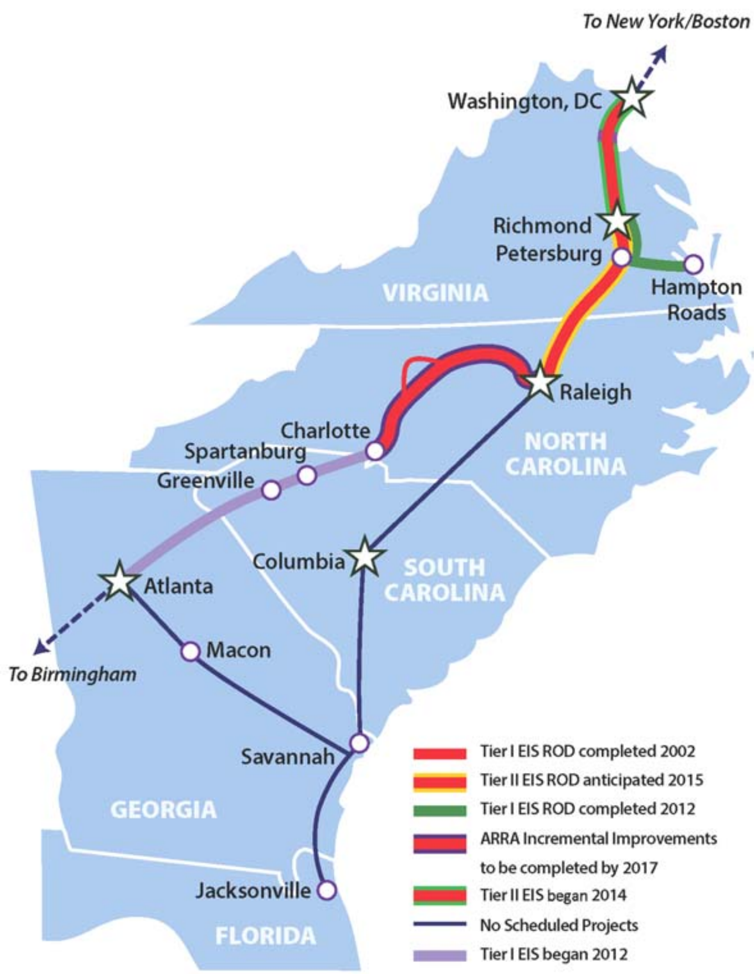
The SEHSR Corridor will extend from Washington, DC, to Jacksonville, FL.

The SEHSR Corridor is currently planned to extend from Washington, D.C. to Jacksonville, FL (see Figure 1-2). Eventually, HSR service is planned to extend south of Atlanta, GA and north of Washington, D.C. to the NEC, which would allow HSR travel to New York, NY, Boston, MA and beyond. As discussed in Section 1.1.2.2, the union of these two high speed corridors would create the greatest trip lengths within the national passenger system, and thus the greatest potential revenues.

Figure 1-1
Vision for High Speed Rail in America

Source: Federal Railroad Administration High Speed Rail Corridor Route Map, 2009

Figure 1-2
Southeast High Speed Rail Corridor



Source: NCDOT, September, 2014

1.1.2.2 *SEHSR STUDIES AND ACTIONS*

1997 SEHSR Market and Demand Study

Between 1995 and 1997, the states of Virginia, North Carolina, South Carolina, Georgia, and Florida prepared a "SEHSR Market and Demand Study" that examined the travel market and forecast travel demand for intercity and HSR service improvements in the Southeastern United States (KPMG, 1997). Key elements of the study included:

- Determining travel preference through the distribution of over 15,000 travel surveys throughout the Southeast. Collection and analysis of responses received from over 3,800 automobile, 650 air, 300 rail, and 50 intercity bus surveys were assembled into a multimodal intercity passenger travel market database that were combined with separate state department of transportation highway surveys that:
  - Quantified existing volumes by mode, origin-destination and trip purpose
  - Provided a sound basis for estimating intercity trips between city pairs

   - Obtained information on traveler characteristics (including trip purpose) and modal preferences to support the development of travel forecasting models.
- Developing new travel forecasting models, based on both revealed preferences (choices) and stated preferences (intentions) that are responsive to different market segments, travel time, travel cost, frequency of service, and other key independent variables.
- Preparing future forecasts of ridership and revenue for a variety of future intercity and HSR service improvement scenarios.
- Providing the Southeastern states (North Carolina, Virginia, South Carolina, Georgia, and Florida) with the necessary software, data, and documentation for the travel demand model forecasting system so that new improvement scenarios could be examined after completion of the study. These models and study results have served as the basis for developing the ridership/revenue model that has been used to date to evaluate different routings through the region, including the 2013 updated ridership/revenue study and forecast prepared for the SEHSR Corridor (AECOM, 2013) to support the Richmond to Raleigh Project Tier II EIS. For additional discussion on updated forecasts, refer to Section 1.5.

1997 High Speed Ground Transportation Commercial Feasibility Study

This commercial feasibility study (CFS) report, prepared by FRA for Congress, examined the costs/benefits and economics of bringing HSGT to well-populated groups of cities throughout the United States (FRA, 1997). The study drew nationwide conclusions from projections of the likely investment needs, operating performance, and benefits of HSGT in a set of illustrative corridors in several regions, including the SEHSR Corridor (using the historic "Atlantic Coast Line," which currently operates as the CSX "A" Line between Richmond, VA and Raleigh, NC). The study looked at HSR from a market-driven, performance-based perspective, recognizing that total trip time (including access to and from stations), rather than just speed, influences passengers' choices among transportation options in a region; and that travelers evaluate each mode in relation to the performance of other available choices.

The CFS report compared the full range of benefits and costs attributable to three optional HSGT systems for the SEHSR Corridor, treating each as an extension of the NEC, including: Accelerail 110 (110 mph to match with Amtrak's existing electrified service in the NEC); and, new HSR or Maglev systems on both the Southeast and Northeast HSR Corridors (required so that both have matching technologies). Note that "Accelerail" is a term used in this 1997 CFS report that refers to a lower cost implementation strategy (compared to construction of an entirely new HSR corridor, or magnetic levitation technology), that would increase speeds and improve operational efficiencies largely by upgrading and improving existing rail corridors.

Table 1-1 summarizes the quantifiable results of the CFS report.

Table 1-1
1997 Projected Costs/Benefits of SEHSR
Summarized by System Type

SEHSR in Year 2020 (Washington – Charlotte)	Accelerail 110 (Extension to NEC)	New HSR (Integrated with NEC)	New Maglev (Integrated with NEC)
Line-haul Travel Time (hr)	5.7	3.0	2.1
Trains/Day, each direction	27	53	65
Ave. Fare per Passenger Mile (dollars)	$0.176	$0.303	$0.327
Passengers, Millions of Trips (2020)	5.7	32.5	36.5
Passenger-Miles (in millions) Attributed to SEHSR Corridor Proper	1,689	2,550	4,100
Total Benefits (in millions)	$6,519	$37,665	$49,920
Total Costs (in millions)	$2,567	$33,197	$39,836
Total Benefits – Total Cost	$3,952	$4,468	$10,085
Total Benefits / Total Cost	**2.54**	**1.1**	**1.3**

The CFS report quantified the following benefits for each system –

- System Revenues
- User's Consumer Surplus - the difference between the amount an individual would be willing to pay for HSGT service and amount actually required for them to pay
- Benefits to the Public at Large (avoiding delays and reducing emissions) – through diversion of travelers from air and highway modes to HSGT.

Other benefits of the systems were not quantified, but were discussed in the study, including:

- Airport Investment Deferrals
- Highway Infrastructure Savings
- Commuter Rail Travel Efficiency Benefits
- Transportation Safety Improvements
- Economic Development Benefits (HSGT Construction and Operation, Station Development Effects, Growth of US HSGT Manufacturing Industry)
- Energy Benefits (reducing dependence of foreign oil).

Costs were quantified in the CFS report for system users as well as the public at large as follows:

- Initial Investment
- Operation and Maintenance
- Continuing Investments.

Major findings and conclusions from the CFS report include:

A. The benefits of the SEHSR Corridor (using the 110 mph option) far outweigh the costs, if fully connected to the NEC through Washington, DC. It was estimated to create $2.54 in benefits for every $1.00 spent to build and operate the SEHSR Corridor. This was substantially greater than the New HSR and New Maglev technologies in the SEHSR Corridor, which only produced $1.10 and $1.30 for every $1.00 spent, respectively.

B. Due to the high cost recovery in system revenues for the Accelerail 110 option on the SEHSR Corridor, the ratio of public benefits to publicly-borne costs are over 200 to 1, or nearly 26 times higher than any other scenario modeled nationwide.

C. Although no HSR corridor in the nation was projected to be commercially feasible (i.e., cover both its capital and operating costs), the Accelerail 110 option on the SEHSR Corridor performed very well on a purely commercial basis, projected to be self-sustaining (independent of public subsidies), once the investment is in place and paid for, covering over 90% if its full costs with systems revenues alone. This is in comparison with other corridors studied across the nation, which showed only between 17% and 39% initial investment covered by surplus.

D. Though having lower speeds, the Accelerail 110 option on the SEHSR Corridor will have more benefits than corridors that invest more public funds to achieve higher speeds.

E. With increased speed and frequencies, revenues from SEHSR Corridor between Charlotte, NC, and Washington, DC, should pay for not only the operations but may also cover much of the capital costs of new equipment, stations and track.

F. Although the projections of system performance for the SEHSR do not meet the traditional private-sector criterion for “commercial feasibility,” they may provide a basis for public/private partnerships.

G. The less expensive Accelerail technologies that rely on upgrading existing rail lines and freight railroad cooperation generally provide higher ratios of benefits to costs (both in total and for the public) than new HSR or new Maglev technologies.

Joint Memorandum of Understanding

In early 1998, FRA, FHWA, NCDOT Rail Division, and Virginia DRPT entered into a joint Memorandum of Understanding (MOU) to coordinate and document each agency’s respective roles and responsibilities in developing environmental documentation for the proposed HSR programs in both states. This cooperation has greatly benefited both Virginia and North Carolina.

1999 Feasibility Study Summary and Implementation Plan

The NCDOT Rail Division’s Southeast High Speed Rail Corridor Feasibility Study Summary and Implementation Plan (April 1999), compiled and summarized the following other SEHSR Corridor planning and engineering studies completed prior to April 1999 and provided recommendations to assist NCDOT on project implementation and future actions:

Engineering Evaluation – In a September 1996 engineering evaluation, NCDOT identified the possible speeds, alignments, and costs for the SEHSR Corridor sections between Charlotte, NC and Raleigh, NC and between Richmond, VA and Raleigh, NC. Between Richmond, VA and Raleigh, NC, NCDOT determined that rebuilding and upgrading the historic “Seaboard Air Line” (a portion of which is currently operated as the CSX “S” Line between Raleigh, NC and Norlina, NC) would be the most cost effective method to achieve 110 mph maximum service between the two state capitals.

Train Performance and Train Dispatch Simulations - These simulations of the routes modeled the speeds of various conventional and high speed train sets on the route to suggest which equipment would work best along the SEHSR Corridor.

Station and Station Area Standards – Standards for the proper planning and construction of HSR stations along the SEHSR Corridor were developed. The specific recommendations on site, location, parking, etc., developed in the study will be used in the future planning and construction of new stations and the renovation of existing stations to high speed standards. (These standards are discussed in Sections 1.4.3 and 4.14.4).

Environmental Screening – In the study, NCDOT also recommended that a detailed EIS be completed of the entire Washington, DC to Charlotte, NC corridor (further discussed in Section 1.2.1).

Demand Modeling and Ridership/Revenue Projections – Demand modeling of potential passenger ridership and revenue from the high speed operations determined that increasing speeds to 100 mph (even along a non-electrified corridor) and adding frequencies (i.e., additional trips per day) would increase ridership by over 300% and revenues by more than 600% (with enhanced fares) over current levels. The projects also demonstrated some of the benefits of HSR to the increased capacity to the overall transportation network and the increased ability for people to travel. The modeling illustrated that improved passenger rail service will reduce auto and air trips along the SEHSR Corridor through trip diversion (which will ease congestion on highways and at airports), as well as have a high level of induced travel (i.e., cause travel that otherwise would not have been undertaken).

Operating Cost and Profitability Analysis – The analysis shows that, with modifications to the current Amtrak cost centers, the SEHSR Corridor will have projected revenues greater than projected annual operation expenses (i.e., it would not require an annual operating subsidy). This concurs with the findings from the 1997 CFS report summarized above, which declared the SEHSR Corridor as the most commercially feasible HSR corridor in the United States. However, this commercial feasibility is dependent upon the extension of HSR to Washington, DC, and the NEC.

> With modifications to the Amtrak cost centers, the SEHSR will have projected revenues greater than projected annual operation expenses.

Economic and Fiscal Impact Analysis – This analysis identified the economic and fiscal impacts of the construction and operations of the SEHSR Corridor as a system. The analysis showed that over $10.5 billion in earnings and over $719 million in state tax revenues would be realized from construction and operation of the SEHSR Corridor alone over a 20 year period (using 1999 dollars). (This is further discussed in Section 4.11.1).

Benefit/Cost Analysis – This modeling exercise (completed in 1998 by Science Application International Corporation and Corporate Strategies) determined the full costs and benefits of the SEHSR Corridor. However, this study measured benefits differently than the CFS report discussed previously. Also, this analysis evaluated the CSX S-Line between Richmond, VA and Raleigh, NC rather than the CSX A-Line as was evaluated in the CFS report. The reason for this difference is that the rebuilding of the CSX S-Line was determined by the 1996

Engineering Evaluation (discussed previously) to be the most cost effective method to achieve 110 mph maximum service. This study determined the value of benefits of the SEHSR Corridor using such factors as time savings and reduced auto emissions, as shown in Table 1-2. This table summarizes the results of this study for one of the scenarios evaluated (#6), which assumed 8 round trips between Charlotte, NC and Raleigh, NC, with 4 extending on the SEHSR Corridor from Raleigh, NC to New York, NY.

Table 1-2
1997 Cost/Benefit Analysis Results for the CSX S-Line (Scenario 6)

SEHSR Corridor	Present Value over 20 Years (1997 dollars)	Distribution of Benefits/Costs
Benefits to Rail Users:		
Time savings and service quality benefits	$800,725,998	65%
Time savings for other rail passengers	$200,081,436	19%
Benefits to Users of Other Modes:		
Time savings, accident reduction, vehicle operating cost	$89,766,679	7%
Accident reductions at grade crossings	$71,449,927	6%
Non-User Benefits:		
Emission reductions	$32,345,322	3%
Capital Costs:		
Infrastructure	($730,745,924)	89%
Rolling Stock	($91,374,182)	11%
Net Present Value	**$412,249,255**	
Benefit-Cost Ratio	**1.46**	
Rate of Return	**5.61%**	

Cost Benefit Analysis of the Piedmont High Speed Corridor, Dec 9, 1998, by Science Application International Corporation and Corporate Strategies (SAIC), as summarized in the Southeast High Speed Rail Corridor (Charlotte – Raleigh – Richmond – Washington DC) Feasibility Study Summary & Implementation Plan, by NCDOT Rail Division, April 1999.

In summary, through this analysis, NCDOT concluded that HSR service from Charlotte, NC to the NEC via the CSX S-Line would have between $317 and $412 million in benefits to the states of North Carolina and Virginia, depending on the level of service. In addition, the SEHSR Corridor will have, depending on number of round trips, $1.39 to $1.46 in benefits for every dollar spent to build and operate the system.

HSR from Charlotte, NC to the NEC via the "S" Line would have between $317 and $412 million in benefits to NC and VA. The SEHSR will have $1.39 to $1.46 in benefits for every dollar spent to build and operate the system.

Public/Private Partnership Study - Alternatives were investigated to determine the various public and private sector partnerships possible for ownership and operation of the SEHSR Corridor. This analysis suggested that advantageous partnerships are possible, particularly in the form of operation and/or use of the corridor for passenger and freight by the private sector.

Analysis of Financing Alternatives – This comprehensive study investigated the various cost centers, revenues, funding and financing scenarios that are possible with the SEHSR Corridor as a system. It determined various revenue, funding and financing scenarios that could be used for the construction and operations of the SEHSR Corridor, with the following conclusions: an operating contract or concession between the State of North Carolina and the private sector is possible; and, private and public financing may be available for construction of the SEHSR Corridor.

Virginia-North Carolina Interstate High Speed Rail Compact

During 2004 legislative sessions in Virginia and North Carolina, the Virginia-North Carolina Interstate High Speed Rail Compact was authorized. The Compact was formed pursuant to 49 USC 24101 to assist in developing a plan for the design, construction, financing, and operation of the SEHSR Corridor. The inaugural meeting of the Compact was held in July 2010.

Richmond to Hampton Roads SEHSR Corridor Tier I EIS

As mentioned earlier, US DOT added the Richmond to Hampton Roads SEHSR Corridor to the Federally-designated SEHSR Corridor in 1995. Since then, Virginia has been investigating a program of rail improvements or new rail that would be necessary to enhance conventional freight and passenger rail operations through the Richmond to Hampton Roads SEHSR Corridor.

In 2009, FRA and Virginia DRPT completed a Tier I DEIS examining the potential routes and possible environmental impacts for the development of the extension of the SEHSR Corridor from Richmond, VA to the Hampton Roads area of Virginia (Richmond/Hampton Roads Passenger Rail Study Tier I EIS) - (Virginia DRPT, FRA, 2009). Under NEPA, the Richmond to Hampton Roads SEHSR Corridor Tier I EIS is considered separate and independent from the SEHSR Corridor Tier I EIS from Washington, DC to Charlotte, NC, as well as this Richmond to Raleigh Project Tier II EIS. Because the Richmond to Hampton Roads SEHSR Corridor Tier I EIS has its own independent utility (i.e., it is a usable and reasonable expenditure separate from the Richmond to Raleigh Project Tier II EIS), and has its own logical termini (i.e. the Richmond to Raleigh Project can accommodate any of the Richmond to Hampton Roads SEHSR Corridor Tier I EIS options), FRA deemed it appropriate for the projects to be studied separately under NEPA.

The Richmond to Hampton Roads SEHSR Corridor Tier I EIS evaluated potential routes for higher speed rail service from Richmond, VA to the Hampton Roads area of Virginia, either sharing the SEHSR Corridor from Richmond, VA to Petersburg, VA, then along the Norfolk Southern (NS) Route 460 corridor to Norfolk, VA (Alternative 1), or the existing Amtrak Corridor from Richmond, VA to Williamsburg, VA to Newport News, VA on the CSX Peninsula Branch along I-64 (Alternative 2). The Richmond to Hampton Roads SEHSR Corridor Tier I EIS has been coordinated with the Richmond to Raleigh Project Tier II EIS to ensure compatibility and connectivity.

Public hearings for the Richmond to Hampton Roads SEHSR Corridor Tier I EIS were held in January 2010. In February 2010, based on the evaluation and public comments received, the Virginia Commonwealth Transportation Board (CTB) recommended Alternative 1 as the preferred alternative for the extension of the SEHSR Corridor between Richmond, VA, Petersburg, VA and Norfolk, VA. Additionally, the CTB recommended the expansion of conventional intercity passenger rail service on the existing Amtrak route to Newport News, VA. Furthermore, the CTB approved $93 million in funding for the incremental reintroduction of conventional passenger rail service from Richmond, VA to Norfolk, VA via Petersburg, VA in June 2010. In December 2012, Virginia DRPT initiated Amtrak NEC Regional service to Norfolk, VA with one daily round trip train extending from Richmond, VA through Petersburg, VA. Virginia DRPT also has plans to extend two more daily round trip trains from Richmond to Norfolk.

FRA approved the Richmond to Hampton Roads SEHSR Corridor Tier I FEIS document in August 2012. In December 2012, FRA issued a Record of Decision (ROD) selecting the route from Richmond Main Street Station through Petersburg, VA to Norfolk, VA (Alternative 1) as the designated extension of the SEHSR Corridor to Hampton Roads. The ROD also selected the route from Richmond Main Street Station through Williamsburg, VA to Newport News, VA along the CSX railroad for expanded conventional passenger rail service to Hampton Roads. (FRA, 2012a). For more information on the Richmond to Hampton Roads SEHSR Corridor project, see http://www.rich2hrrail.info/.

Washington, DC to Richmond Southeast High Speed Rail Tier II EIS

In 2014, FRA and the Virginia DRPT initiated a Tier II EIS for the development of the SEHSR Corridor between Washington, DC and Richmond, VA. This effort will complete the NEPA review and preliminary engineering necessary to expand the capacity on the existing CSX Richmond, Fredericksburg and Potomac (RF&P) corridor between Washington, DC and Richmond, VA to accommodate the existing and planned passenger and freight service on the SEHSR Corridor.

Transportation Planning Report for the Richmond-Charlotte Corridor

In 2004, FRA released this independent engineering study that examined specific infrastructure improvements needed to implement HSR between Richmond, VA and Charlotte, NC, to achieve a travel time goal of 4 hours and 25 minutes. The report supports and complements the findings of the Tier I EIS (see Section 1.2.1). It also provides technical assistance that will be used in developing the Tier II documents for the Corridor (see Section 1.2.2).

1.1.3 OTHER RAIL PROJECTS AND ACTIONS

1.1.3.1 *INITIATIVES BY THE COMMONWEALTH OF VIRGINIA*

Amtrak Virginia

Amtrak Virginia is a program developed by Virginia DRPT and Amtrak to provide more rail travel choices in Virginia. The Commonwealth is investing in intercity passenger rail service through Amtrak to bring new service to Virginia with direct connections to Amtrak's NEC. In order to better serve citizens of the Commonwealth, Amtrak Virginia has expanded service along multiple corridors and to several cities. These services include one daily round trip from Lynchburg, VA to Washington DC; two daily round trips from Richmond, VA to Washington DC; and one daily round trip trains from Norfolk, VA to Washington DC. Virginia DRPT's long range plan includes an expansion of the state-supported services to Lynchburg, VA and Roanoke, VA and Norfolk, VA and Newport News, VA, as described later in this document.

Richmond to Washington Third Track

Virginia DRPT, in cooperation with VRE and CSX, has an initiative to install a third mainline track on the CSX RF&P Corridor between Washington, DC and Richmond, VA. Since 2008, Virginia DRPT has installed approximately 10.5 miles of third track for one fifth of the 50-mile VRE commuter territory on this corridor between Fredericksburg, VA and Washington, DC. The completed third track projects include: 7.6 miles from Alexandria, VA to Franconia/Ravensworth (AF-RW) and 3.1 miles from Fredericksburg, VA to Hamilton, VA (FB-HA). Separately, Virginia DRPT is currently building 2.5 miles from Hamilton, VA to Crossroads (HA-XR) in partnership with VRE, and eleven miles of third track from Arkendale to Powells Creek through an FRA High Speed Intercity Passenger Rail grant. Upon completion of the Hamilton to Crossroads and Arkendale to Powell's Creek Third Track projects, Virginia DRPT, Amtrak, VRE and CSX will have additional capacity on three tracks for nearly half of the 50-mile VRE commuter territory or one quarter of the 109-mile RF&P Corridor between Richmond and Washington.

National Gateway

The CSX National Gateway is a corridor improvement project to clear the route from the Mid-Atlantic and Southeastern States to the Midwest to accommodate double-stack freight trains. The SEHSR Corridor shares the alignment of the CSX National Gateway for most of the route from Raleigh, NC to Washington, DC, primarily the CSX A-Line from south of Petersburg, VA through Richmond, VA to Washington, DC. Virginia DRPT is partnering with CSX to incrementally upgrade bridge and tunnel clearances along the National Gateway freight corridor.

1.1.3.2 *INITIATIVES BY THE STATE OF NORTH CAROLINA*

Raleigh, NC to Charlotte Rail Improvements

Since completion of the SEHSR Corridor Tier I EIS, North Carolina has worked to enhance passenger rail service within the state, particularly on the North Carolina Railroad Company (NCRR) corridor from its intersection with the CSX A-Line in Selma, NC to the connection with the CSX S-Line in Raleigh, NC and onto the Piedmont Corridor between Raleigh, NC, Greensboro, NC and Charlotte, NC. Particularly, NCDOT has invested in incremental infrastructure improvements to the Piedmont Corridor to enhance reliability, reduce travel times, improve safety, and improve station facilities.

At the completion of the SEHSR Corridor Tier I EIS, passenger service on the Piedmont Corridor consisted of two daily round trip trains, including: the *Carolinian*, which operates over the NCRR corridor from Charlotte through Raleigh, NC to Selma, NC and onto the CSX A-Line from Selma, NC to Richmond, VA, Washington, DC, and New York; and the *Piedmont*, which operates solely between Raleigh, NC and Charlotte, NC. Based on recommendations from the Transit 2001 Commission, and completion of SEHSR Corridor Tier I EIS, NCDOT set a long-term goal to reduce to two hours the rail travel time on the Piedmont Corridor, which took approximately three hours and forty-five minutes to travel the 174 miles between Raleigh, NC and Charlotte, NC.

North Carolina Railroad Improvement Program (NCRRIP)

In 2002, NCDOT, NS and NCRR initiated the North Carolina Railroad Improvement Program (NCRRIP) to dramatically improve the quality of passenger rail service over the Piedmont Corridor. The first series of NCRRIP projects from 2003 to 2005, totaled approximately $50 million, including extending sidings, changing the slope of tracks, straightening curves, and installing centralized train control signals. These initial improvements helped alleviate freight and passenger delays on the heavily used corridor and reduced travel time by 30 minutes between Raleigh, NC and Charlotte, NC.

NCDOT continued work on NCRRIP through 2010 with approximately $45 million in additional investments, which have further improved reliability, and supported the addition of a third daily Piedmont Corridor train.

NCDOT Piedmont Improvement Program

Since the passage of the Passenger Rail Investment and Improvement Act of 2008, FRA has awarded approximately $570 million to NCDOT for passenger rail improvements in North Carolina. The majority of the investment includes $520 million for the “Piedmont Improvement Program” from the FRA for additional equipment, station and maintenance facility upgrades, and additional track capacity to support the introduction of the third and fourth frequencies Piedmont Corridor. Through cooperation with NCDOT, NS, NCRR and Amtrak, these improvements will deliver the third and fourth frequency with increased operating speeds, a reduced trip time, and a commitment for on-time performance. In addition, these improvements provide a reserve capacity for up to five Piedmont Corridor trains between Raleigh, NC and Charlotte, NC, with partial capacity for a sixth frequency between Greensboro, NC and Charlotte, NC. FRA and NCDOT advanced the projects in the Piedmont Improvement Program with individual Tier II NEPA reviews under the SEHSR Corridor Tier I EIS. Refer to Section 1.4 for a description of some of these projects.

NCDOT Sealed Corridor Program

NCDOT has also been working with the host railroads and FRA to improve grade-crossing safety through its Sealed Corridor initiative along the Piedmont Corridor since 1994. The Sealed Corridor initiative includes an incremental approach to improve safety at grade-crossings along the corridor through the installation of improved warning devices, construction of grade separations, or elimination through closure or consolidation. Since 1990, NCDOT has reduced the number of grade crossings on the Piedmont Corridor from approximately 208 to 149, with the remaining crossings receiving appropriate warning systems. By 2017, NCDOT intends to have closed an additional 50 crossings.

NCDOT Station Improvements

As part of the NCDOT Rail Program, the department was involved in restoration work on historic passenger stations in the SEHSR Corridor at Salisbury, High Point, and Greensboro, NC. New stations have been constructed in Kannapolis, NC and Durham, NC. In addition, major multimodal transportation centers are currently planned for Charlotte, NC and Raleigh, NC. The station work represents a current investment of over $78 million in the SEHSR Corridor alone. As part of the project to construct a new Raleigh Union Station, NCDOT and the City of Raleigh are rebuilding the intersection of the CSX S-Line and the NCRR H-Line at Boylan Junction. This improvement will support the future installation of the double-track connection with the SEHSR Corridor as presented in this Richmond to Raleigh Tier II EIS.

HSR Engineering Feasibility Studies

NCDOT has also been involved in several efforts to develop the SEHSR Corridor and advocate for Federal funding of HSR. NCDOT has worked with FRA and the states of South Carolina and Georgia, to complete an engineering feasibility study in 2008 for the SEHSR Corridor from Charlotte, NC through Greenville, SC and Spartanburg, SC to Atlanta, GA and Macon, GA. Based on the 2008 feasibility study, FRA has initiated a Tier I EIS to extend the SEHSR Corridor from Charlotte, NC to Atlanta, GA. NCDOT also worked with the Southeastern Economic Alliance (16 Chambers of Commerce from the six states that compose the Alliance), which seeks congressional support for the establishment of a Federal funding program for rail.

1.2 PROJECT BACKGROUND

1.2.1 SEHSR CORRIDOR TIER I ENVIRONMENTAL IMPACT STATEMENT (EIS)

A prime recommendation from the 1999 Feasibility Study discussed in Section 1.1.2.2 was the preparation of an EIS pursuant to the requirements of NEPA, for the portion of SEHSR Corridor between Washington, DC, and Charlotte, NC. Because of the magnitude of the SEHSR Corridor study area (approximately 500 miles long), the numerous alternative study areas, and the conceptual level of project detail, NCDOT, Virginia DRPT, FRA and FHWA chose a "tiered" (or phased) approach in developing the environmental documents for this portion of the SEHSR Corridor (as defined in the NEPA regulations issued by the Council on Environmental Quality (CEQ) (see 40 CFR §§ 1502.20 and 1508.38). In October 1999, these state and Federal agencies began preparation of the first phase of the study – referred to as the Tier I EIS for the SEHSR Corridor. This portion of the SEHSR Corridor would extend HSR service from the NEC southward along a Federally-designated HSR corridor from Washington, DC to Charlotte, NC. The Tier I EIS prepared for the project was, therefore, a program level environmental document that presented a corridor level review of the study area alternatives on an "apples-to-apples" basis. All known potential impacts to environmental resources were presented at the macro level in order to determine the general corridor for further study during subsequent Tier II reviews.

> A prime recommendation from the 1999 Feasibility Study was the preparation of an EIS for the portion of SEHSR between Washington, DC, and Charlotte, NC.

The HSR service evaluated in the Tier I EIS consisted of four round trips per day between Charlotte, NC and Washington, DC and four additional trips between Raleigh, NC and Charlotte, NC. Station stops were not determined, but it was assumed that the SEHSR Corridor would serve all stations where Amtrak currently provides service; however, every train would not stop at all stations. Nine study area alternatives and one no-build alternative were examined for the proposed corridor. The buffer area used to analyze each resource to help identify potential impacts ranged from a width of 300 feet to six miles centered on existing rail rights-of-way. The No Build Alternative included existing and committed improvements to highway, air travel, intercity bus, passenger rail (Amtrak and VRE), public transit, and freight services, without any new HSR passenger service. The estimated end-to-end travel time for the nine build alternatives ranged from 6 hours to 7.5 hours, compared to 10 hours for the no-build alternative. The projected total ridership in 2025 for the nine alternatives ranges from 1.3 million to 1.8 million passengers. Fossil fuel powered trains were proposed to be used with a top operating speed of 110 mph (180 kph).

Through the results of the feasibility studies and modeling discussed in Section 1.1.2.2 of this chapter, Federal and state agencies determined that the SEHSR Corridor should be analyzed and implemented in the Tier I EIS using an "Incremental Approach." A set of basic assumptions of this approach include the following:

- Following the results of the 1997 CFS report (which showed that the SEHSR Corridor could provide substantial benefits relative to costs), transportation service in the SEHSR Corridor would be provided on standard gauge railroad tracks capable of also supporting North American standard heavy-haul freight trains as well as high speed passenger trains.
- By maximizing use of existing infrastructure, the initial capital investment required by the system is reduced.
- While some segments of the high speed service may be operated on tracks dedicated to high speed, much of the route could involve incremental improvements to tracks owned by commercial freight lines operating at conventional speeds.
- Shared trackage will place certain technological requirements and operational limitations on the high speed trainsets and other technology choices.
- Accommodating higher passenger train speeds and increasing the capacity of the existing rail infrastructure to handle additional passenger and freight rail traffic will require modifications to the existing signal and control systems, as well as other improvements at various locations within the travel corridor.
- FRA requires an approved barrier or warning system for at-grade highway crossings on railroads with speeds of 79 to 110 mph, as defined in the Code of Federal Regulations: 49 CFR, Section 213.347. On such high speed railroad corridors, the railroad shall submit, for FRA approval, a complete description of the proposed barrier or warning system to address the protection of the highway traffic and high speed trains.
- At-grade highway crossings are permitted for speeds up to 110 mph. However, FRA guidance (*Highway-Rail Grade Crossing Guidelines for High-Speed Passenger Rail*, FRA 2009) states that public and private crossings where train speeds are between 79 and 110 mph must be equipped with special crossing protection devices, grade separated, or closed. Specific detail is included in the FRA's Track Safety Standards in the Code of Federal Regulation: 49 CFR, Section 213.347.
- The overall safety of the existing rail system would be improved by the implementation of a HSR system, which would upgrade not only the track, crossings and rolling stock, but also the stations and associated facilities.
- This "Incremental Approach" will minimize impacts to both the human and natural environments by using existing rail infrastructure, an established transportation corridor and rail right of way (ROW) as much as possible.

By maximizing use of existing infrastructure, the initial capital investment required by the system is reduced.

The study noted that daily existing freight train traffic peaked at over 40 trains per day in the segments from Richmond, VA, to Selma, NC and from Greensboro, NC, to Charlotte, NC. There were no freight trains on the four segments where track has been removed and there were six segments with fewer than five freight trains per day. For the Raleigh, NC to Greensboro, NC to Charlotte, NC portion of the SEHSR Corridor, proposed improvements included signalization, curve and interlocking improvements, and additional track.

The Tier I DEIS, competed in 2001, examined the purpose and need for the SEHSR Corridor project as well as evaluated the potential impacts on both natural and human environments at a program level of assessment for the nine different Study Area Build Alternatives compared to a No Build Alternative. Public involvement was critical during this phase with 26 public information workshops and 18 public hearings held in North Carolina and Virginia to solicit feedback about the project. Throughout the Tier I EIS process, meetings with the public, political leaders, planners, resource agencies, railroads and other interested parties were held to obtain input on the project.

The Tier I FEIS indicated that the route with the best potential for HSR service and the fewest environmental impacts would be the “S-Line.”

The Tier I FEIS, completed in June 2002, indicated that the route with the best potential for HSR service and the fewest environmental impacts would be: the “S-Line” (which runs from Richmond, VA through South Hill, VA, to Norlina, NC and then Raleigh, NC); plus the NCRR from Raleigh, NC to Greensboro, NC; plus the “K-Line” (which runs from Greensboro, NC to Winston-Salem, NC); plus the WSSB (which runs from Winston-Salem, NC back to the NCRR); and finally, the NCRR (which runs to Charlotte, NC). This recommended alternative from the Tier I EIS, consisting of Alternative B in combination with Alternative A, follows a combination of existing railroads and preserved rail corridors.

FRA and FHWA issued a ROD for the Washington, DC, to Charlotte, NC, SEHSR Tier I EIS in October 2002, approving the preferred corridor route and modal choice for the Corridor, along with its purpose and need.

In October 2002, FRA and FHWA issued a ROD for the Washington, DC, to Charlotte, NC, SEHSR Corridor Tier I EIS, confirming and approving the preferred corridor route and modal choice for the Corridor, along with its purpose and need. In the ROD. FRA and FHWA selected the alternative described above as the Preferred Alternative, rather than the No Build Alternative, to be carried forward into the current Tier II process because of the following benefits that only this Build Alternative would provide:

- Providing the traveling public – particularly special populations such as the elderly and the disabled – with improved transportation choices;
- Helping ease existing and future congestion (air, highway, passenger rail) within the Corridor;
- Improving safety and energy effectiveness within the transportation network;
- Reducing the overall air quality related emissions per passenger mile traveled within the Corridor; and,
- Improving overall transportation system efficiency within the Corridor, with a minimum of environmental impact. The No Build Alternative would not provide these benefits; therefore, it was discarded from further study.

More information about the Tier I preferred route, modal choice, purpose and need and evaluation process can be found on the program’s website at www.sehsr.org.

1.2.2 SEHSR CORRIDOR RICHMOND TO RALEIGH PROJECT TIER II EIS

This current Richmond to Raleigh Project Tier II study builds upon the results of the SEHSR Corridor Tier I EIS (see Section 1.2.1). This Tier II study further evaluates the Preferred Alternative for the portion of the Tier I SEHSR Corridor between Richmond, VA, and Raleigh, NC. Separately evaluating the Richmond, VA to Raleigh, NC portion of the SEHSR Corridor was necessary because the areas south of Raleigh, NC and north of Richmond, VA within the preferred corridor have existing service, which will require a different level of analysis. Ongoing studies and/or active projects are currently under way in these segments of the SEHSR Corridor.

Preparation of the Tier II DEIS began in February 2003 for the portion of SEHSR Corridor between Petersburg, VA and Raleigh, NC. In 2006, the northern study limit was extended to Richmond, VA (approximately 30 miles).

Because this Richmond to Raleigh Project Tier II EIS is part of the second phase of the larger SEHSR Corridor project, it does not revisit or reconsider the results determined during the Tier I study, including the purpose or need for SEHSR Corridor (see Sections 1.6 and 1.7 of this FEIS) or the preferred HSR corridor and modal choice (see Section 1.4 of this FEIS). Additional NEPA environmental documentation (either EA, CE or Tier II EIS documents) will be prepared separately for implementation of the remainder of the Tier I SEHSR Corridor (i.e., south of Raleigh, NC to Charlotte, NC, and north of Richmond, VA area to Washington, DC), as well as the development of each of the proposed stations between Richmond and Raleigh.

The Richmond to Raleigh Project Tier II DEIS was published in May 2010 and included detailed environmental analysis. Copies of the DEIS and maps are available at http://www.sehsr.org/deis/deis.html.

The Richmond to Raleigh Project Tier II DEIS was published in May 2010 and included detailed environmental analysis of the impact of the various project elements, including detailed design, track location, and bridge and roadway work. Copies of the DEIS and maps are available at http://www.sehsr.org/deis/deis.html.

In April 2012, Virginia and North Carolina provided FRA with a Recommendation Report recommending the preferred rail alternatives for each of the 26 sections evaluated in the Richmond to Raleigh Project Tier II DEIS. These recommendations were based on consideration of impacts to the human and natural environment, costs, and operability/constructability, along with the public and agency comments received following the publication of the Tier II DEIS in May 2010. The recommendations in the report addressed only the selection of preferred rail alignments (i.e., it did not address associated roadway changes because those are independent of the selection of rail alternative) and required additional design and engineering.

This Tier II FEIS is based on further evaluation and engineering subsequent to the Recommendation Report and presents FRA's and the Project Sponsors' preferred rail alignment alternatives for the project, as well as all associated roadway changes (see Section 1.4 and Chapter 2). The format of the current document – a Condensed Final Tier II EIS - is further explained in the Executive Summary. It should be noted that the overall Tier II EIS for the SEHSR Corridor Richmond to Raleigh project consists of two parts: 1) this condensed FEIS, and 2) the DEIS, as published in May 2010. For a full understanding of the project, both documents should be reviewed.

1.3 PROJECT TIMELINE

Tier II Draft EIS Published	-	May 2010
8 Public Hearings Held on DEIS (4 in VA, 4 in NC)	-	July 2010
Public Update Meetings (2 in VA and 3 in NC)	-	July 2011 through February 2013
Recommendation Report Published	-	April 2012
Tier II FEIS Published	-	August 2015
Tier II Record of Decision (ROD)	-	January 2016 (Projected)
Design Public Hearing	-	After signature of ROD
Property Acquisition	-	Schedule subject to funding
Construction (with 3-5 year Build Out)	-	Schedule subject to funding, at least two years after ROD
Begin SEHSR Passenger Service	-	Schedule subject to funding

1.4 PROJECT DESCRIPTION

The preferred corridor identified in the SEHSR Corridor Tier I EIS runs from Washington, DC through Richmond, VA, Petersburg, VA, Henderson, NC, Raleigh, NC, and Greensboro, NC, to Charlotte, NC, with a connection to Winston-Salem, NC (NCDOT and Virginia DRPT, 2002). This Richmond to Raleigh Project Tier II EIS evaluation is focused on the portion of the SEHSR Corridor between Richmond, VA, and Raleigh, NC (Figure 1-3).

This evaluation is focused on the SEHSR Corridor between Richmond, VA, and Raleigh, NC

Although there are active freight and passenger rail operations between Richmond, VA, and Petersburg, VA, there is no current rail connection between Petersburg, VA, and Raleigh, NC, in the Richmond to Raleigh Project corridor (approximately 132 miles along the old CSX S-Line). From Petersburg, VA, to Norlina, NC (approximately 76 miles), there is a largely intact right of way, but rail service was discontinued in the mid-1980s and the tracks were removed. From Norlina, NC, to Raleigh, NC, there is only minor active freight service (approximately 1-4 trains per day).

The Richmond to Raleigh Project would provide a completely new, fully road/rail grade separated Class 6 railroad (speeds up to 110 mph) to allow high speed passenger and intermodal freight movement, as well as providing opportunities for conventional passenger service (i.e., same speeds and equipment, but more stopping locations), commuter passenger service, and standard freight service. The nature of this action merits a single EIS under the umbrella of the overall Tier I EIS performed for the whole Washington, DC to Charlotte, NC SEHSR Corridor.

Both Virginia and North Carolina have active rail improvement programs in the remainder of the SEHSR Corridor. There is existing freight and passenger rail service operating within the SEHSR Corridor from Petersburg, VA, north to Washington, DC, and from Raleigh, NC, west to Charlotte, NC. Planned and anticipated rail improvements in these portions of the SEHSR Corridor are needed for safety, capacity, and congestion management, and thus while they facilitate the overall higher speed rail system, they have independent utility from HSR (i.e., they need to be completed whether or not the overall SEHSR Corridor system is developed). Each of these projects will have environmental documentation appropriate to the specific action.

Examples of those current and planned projects and their level of environmental documentation are as follows.

<u>Washington, DC, to Richmond, VA:</u>

- Richmond Area to Washington, DC, Tier II EIS
- Long Bridge Pre-NEPA Study
- Arkendale to Powell's Creek Finding of No Significant Impact (FONSI) to construct of 3rd Main Line and improve Quantico Station
- Categorical Exclusion (CE) to install crossover tracks and improve commuter rail service in Stafford County
- Supplemental environmental document to dismiss the alignment from Main Street Station to Doswell on the former C&O line (Alternative Considered but Dismissed)

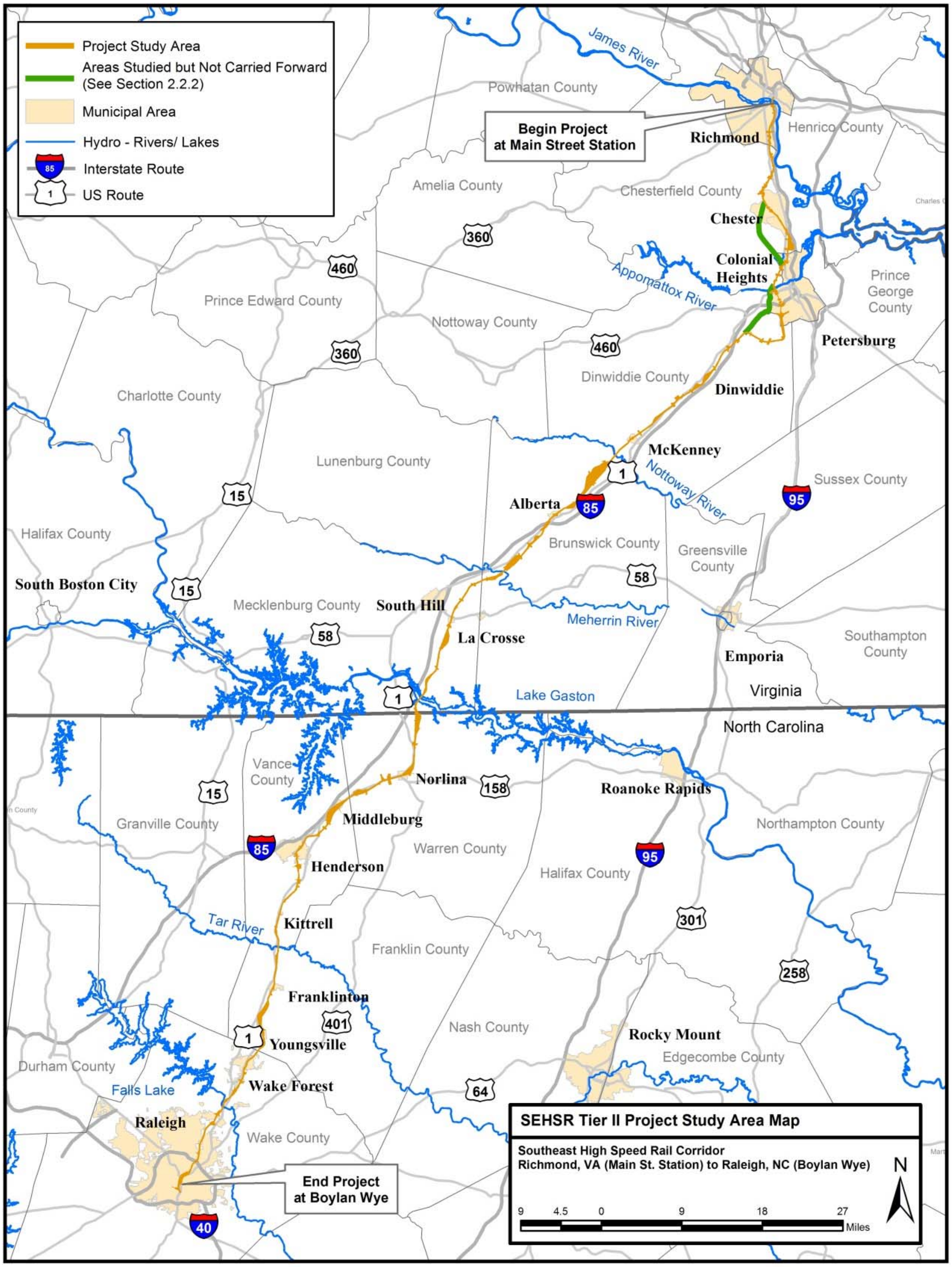
<u>Raleigh, NC, to Charlotte, NC:</u>

- Charlotte Rail Improvement & Safety Program (CRISP) (EA)
- CSXT/NS Mainline Grade Separation (EA)
- Charlotte Sugar Creek Grade Separation (EA)
- Charlotte Rail Maintenance Facility (EA)
- McLeansville Road Grade Separation (EA)
- Haw River Siding (EA)
- Hopson Road Grade Separation (EA)
- Clegg to Nelson Siding and Track Improvement (CE)
- Ethyl Jukebox Crossing Consolidation in China Grove (CE)
- Bowers to Lake, Haydock to Junker, and Reid/North Kannapolis Double Track Projects (EA)
- Klumac Road Grade Separation (EA)
- New Raleigh Union Station (EA)
- CSXT Boylan Crossover and Track Improvement (CE)
- Cary, Kannapolis, High Point and Burlington Station Upgrades (EAs)
- Morrisville Parkway Grade Separation (EA)
- New Locomotives and Passenger Cars (CE)
- Duke Curve Realignment (CE)

<u>Richmond, VA, to Hampton Roads, VA</u>

- Richmond to Hampton Roads Passenger Rail Study Tier I EIS
- CE to construct a multimodal Amtrak station in Newport News

Figure 1-3


Project Study Area
Areas Studied but Not Carried Forward (See Section 2.2.2)
Municipal Area
Hydro - Rivers/ Lakes
Interstate Route
US Route
Begin Project at Main Street Station
End Project at Boylan Wye
SEHSR Tier II Project Study Area Map
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
9 4.5 0 9 18 27 Miles
N
James River
Appomattox River
Nottoway River
Meherrin River
Lake Gaston
Tar River
Falls Lake
Richmond
Chester
Colonial Heights
Petersburg
Dinwiddie
McKenney
Alberta
South Hill
La Crosse
Emporia
South Boston City
Norlina
Middleburg
Henderson
Kittrell
Franklinton
Youngsville
Wake Forest
Raleigh
Roanoke Rapids
Rocky Mount
Virginia
North Carolina
Powhatan County
Henrico County
Amelia County
Chesterfield County
Prince George County
Prince Edward County
Nottoway County
Dinwiddie County
Charlotte County
Lunenburg County
Sussex County
Halifax County
Brunswick County
Greensville County
Mecklenburg County
Southampton County
Vance County
Granville County
Warren County
Halifax County
Northampton County
Franklin County
Nash County
Durham County
Edgecombe County
Wake County
360
460
15
58
1
85
95
158
301
258
401
64
40

1.4.1 PROJECT ASSUMPTIONS

Some assumptions are relevant to the entire SEHSR Corridor, while others are specific to the Richmond to Raleigh Project, as indicated below.

1.4.1.1 *TECHNOLOGY*

The entire SEHSR Corridor is being designed for trains powered by fossil fuel. Early feasibility studies established an "incremental approach" to higher speeds, making use of existing rail ROW and fossil fuel locomotives. This minimizes impacts to both the human and natural environments. By using existing infrastructure, the initial capital investment is reduced.

As determined in the SEHSR Corridor Tier I ROD, the system for the entire SEHSR Corridor is being designed for trains to be powered by fossil fuel. Early feasibility studies established an "incremental approach" to higher speeds, making use of existing rail ROW and fossil fuel locomotives. This approach minimizes the impacts to both the human and natural environments. By using existing infrastructure, the initial capital investment required by the system is also reduced.

It should be noted that the current Richmond to Raleigh Project designs will not preclude conversion to electricity in the future, thus allowing higher speeds. Conversion to electricity and higher speeds would require additional environmental evaluation at the appropriate time. Likewise, the potential use of dual-mode locomotives, which allow trains to operate along routes that are only partially electrified without switching locomotives, will be evaluated in the future as the technology advances.

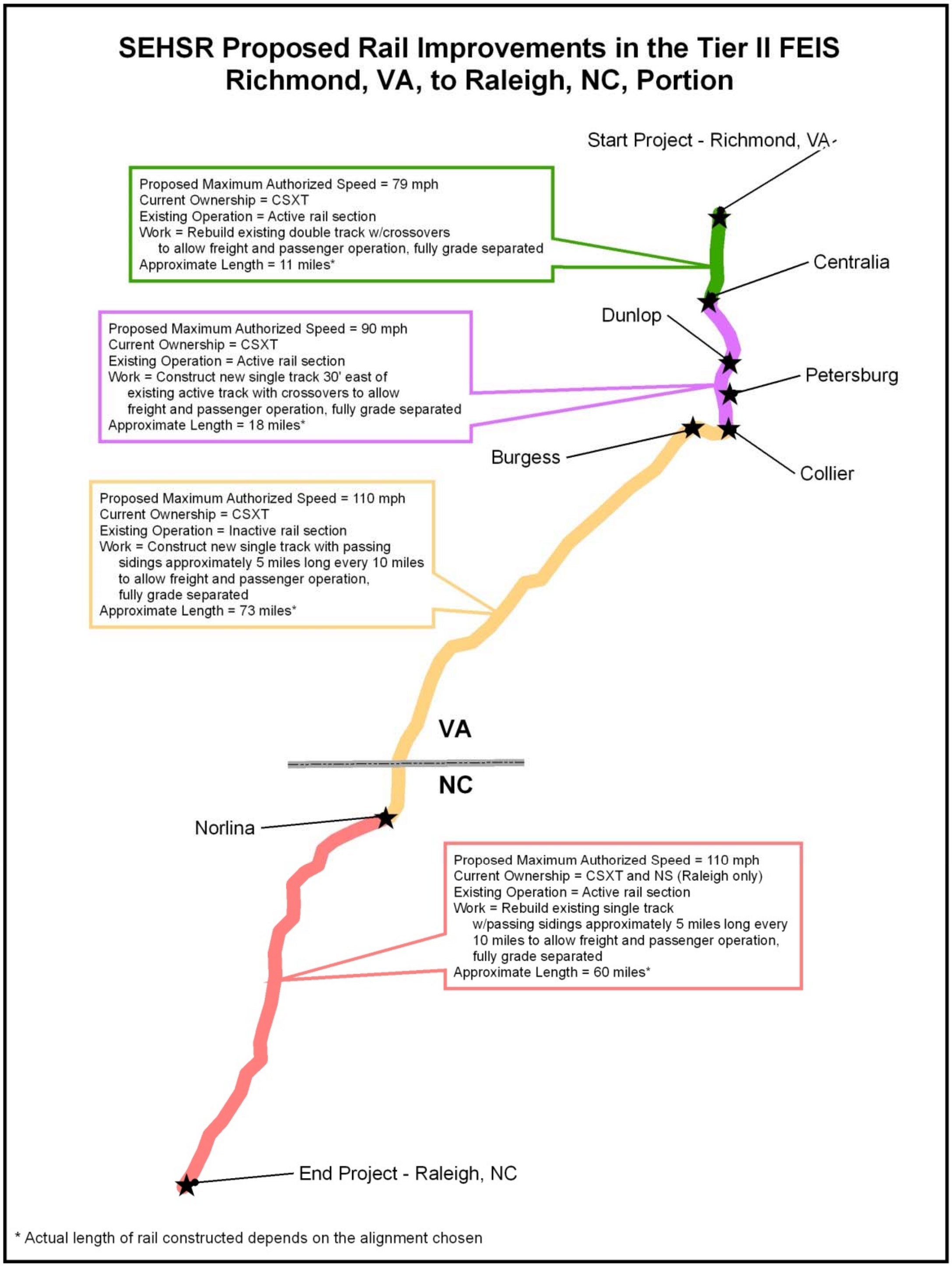
1.4.1.2 *RAIL IMPROVEMENTS*

Rail designs for the Richmond to Raleigh Project use existing rail lines or segments of existing rail lines in conjunction with areas of new alignment. The proposed designs for all rail alignment alternatives call for new ballast (the rock surface underneath the railroad ties); concrete ties, and welded steel rails. Throughout the Richmond to Raleigh Project corridor, the alternatives provide for a combination of high speed passenger service, conventional passenger service, conventional freight, and intermodal freight. The level of work required to achieve this shared system differs depending on the nature of the existing rail operations, as well as the existing conditions of the railroad and rail bed. A schematic map of the proposed rail improvements for the Richmond to Raleigh Project is provided in Figure 1-4. Depending on the location, the proposed rail designs include:

- Construction of new single track with approximate 5 mile long passing sidings approximately every 10 miles - on new segments of the corridor (CSX S-Line between Collier, VA and Norlina, NC)
- Rebuilding existing single track with approximate 5 mile long passing sidings approximately every 10 miles - on active freight segments of the corridor (CSX S-Line between Norlina, NC and north of Raleigh, NC)
- Construction of new single track adjacent to existing active track, with 30 feet of separation; and with crossovers to allow passing for freight and passenger operations – on segments with heavy mainline freight traffic (CSX A-Line between Collier and Centralia, VA)

- Rebuilding existing double track, with crossovers to allow passing for freight and passenger operations – in urban segments of the corridor near Richmond (CSX S-Line between Centralia and Downtown Richmond).

Figure 1-4


SEHSR Proposed Rail Improvements in the Tier II FEIS
Richmond, VA, to Raleigh, NC, Portion
Start Project - Richmond, VA
Proposed Maximum Authorized Speed = 79 mph
Current Ownership = CSXT
Existing Operation = Active rail section
Work = Rebuild existing double track w/crossovers to allow freight and passenger operation, fully grade separated
Approximate Length = 11 miles*
Centralia
Dunlop
Proposed Maximum Authorized Speed = 90 mph
Current Ownership = CSXT
Existing Operation = Active rail section
Work = Construct new single track 30' east of existing active track with crossovers to allow freight and passenger operation, fully grade separated
Approximate Length = 18 miles*
Petersburg
Burgess
Collier
Proposed Maximum Authorized Speed = 110 mph
Current Ownership = CSXT
Existing Operation = Inactive rail section
Work = Construct new single track with passing sidings approximately 5 miles long every 10 miles to allow freight and passenger operation, fully grade separated
Approximate Length = 73 miles*
VA
NC
Norlina
Proposed Maximum Authorized Speed = 110 mph
Current Ownership = CSXT and NS (Raleigh only)
Existing Operation = Active rail section
Work = Rebuild existing single track w/passing sidings approximately 5 miles long every 10 miles to allow freight and passenger operation, fully grade separated
Approximate Length = 60 miles*
End Project - Raleigh, NC
* Actual length of rail constructed depends on the alignment chosen

Information about the rail alternative alignments within each section is presented in Section 2.2.3. This information includes design objectives, new bridges or underpasses, river crossings, and schematic maps. Detailed designs are found in Appendix R.

The proposed rail designs were developed in accordance with FRA regulations, and in coordination with CSX Transportation and Norfolk Southern railroads, to ensure that the proposed designs do not conflict with existing freight and conventional passenger operations. All the project alternatives increase rail capacity, which would enhance existing operations; and would also provide adequate separation of high speed train operations from freight operations in a fully grade separated corridor. The level of increased capacity is expected to be the same for all rail alternatives.

All the project alternatives increase rail capacity, which would enhance existing operations and provide adequate separation of high speed train operations from freight operations in a fully grade separated corridor.

With these improvements, the Richmond to Raleigh Project corridor will support the introduction of four daily round trip SEHSR Corridor trains between Richmond and Raleigh while preserving capacity for the continued operation of the current freight and passenger services on the existing active segments of the corridor.

Note: The segment of the corridor between Collier and Centralia, VA includes the construction of a new HSR track adjacent to the active CSX mainline track to provide additional capacity to support the introduction of the four SEHSR Corridor trains for the Richmond to Raleigh Project only. Where this segment of the corridor is also planned to support the six additional SEHSR Corridor trains for the Richmond to Hampton Roads Project, any additional track capacity required to support that service will be considered in a future Richmond to Hampton Roads Tier II EIS document.

1.4.1.3 *SPEED*

Maximum authorized speed (MAS) is the maximum allowable speed a train may operate based on authorization from the owner of the rail corridor and FRA. Currently, the future MAS for the Project (as shown in Figure 1-4) is anticipated to be:

- Richmond, VA, to Centralia, VFA – 79 mph
- Centralia, VA, to Collier, VA (south of Petersburg) – 90 mph
- Collier, VA, to Raleigh, NC – 110 mph.

MAS is similar to a speed limit on a highway; it represents the highest speed trains are allowed to operate and is based on factors such as curvature, grade, equipment, and host railroad operating policies.

The actual track designs for the Richmond to Raleigh Project will allow for higher speeds in the future with changes in technology and design assumptions. Design speed is the maximum safe speed that can be maintained over a specified section of rail. It is based on several factors such as type of rail equipment, curvature, grade, and superelevation (i.e., cant, camber, or cross slope).

Limiting speed is a subset of design speed. It is the maximum train speed through the most restrictive curve within a section of the Richmond to Raleigh Project corridor based on current design assumptions. Limiting speed was used to evaluate the rail alternatives presented in the Richmond to Raleigh Project Tier II DEIS. In the absence of average running speed, limiting speed is the most useful measure of how well an alternative meets the need of a proposed project to reduce travel time and improve fuel efficiency.

Average running speed is based on the total amount of time it takes a train to go a set distance. It accounts for "dwell time" (such as station stops), schedule recovery time, acceleration and deceleration, and speed restrictions below MAS for curves and other features. The average running speed for the Richmond to Raleigh Project (with 2 intermediate station stops) is anticipated to be 74 miles per hour.

The average running speed for the Project is anticipated to be 74 miles per hour.

1.4.1.4 *NUMBERS OF TRAINS*

The Richmond to Raleigh Project Tier II FEIS assumes the operation of eight new passenger trains per day (four round trips) along the SEHSR Corridor between Richmond, VA, and Raleigh, NC (with most of the trains continuing either south or north). These projected SEHSR Corridor passenger trains are in addition to the number of conventional speed Amtrak trains that were in operation when the Richmond to Raleigh Project Tier II DEIS was published in 2010. This Richmond to Raleigh Project Tier II FEIS also assumes the continued operation of the Amtrak Carolinian service with two conventional passenger trains (one round trip) on the SEHSR Corridor between Petersburg, VA, and Richmond, VA, then following the CSX A-line to continue south. In addition, this Richmond to Raleigh Project Tier II FEIS assumes the continued operation of the Amtrak Norfolk service with two conventional trains (one round trip) on the SEHSR Corridor between Petersburg, VA, and Richmond, VA, extending to Norfolk, VA. See Section 1.4.4.4 below for more information on the routing of the various passenger trains in the SEHSR Corridor.

In areas where there is existing rail service, the SEHSR Corridor trains would be in addition to the existing freight and passenger trains. This Richmond to Raleigh Project Tier II FEIS estimated that up to 29 freight trains per day currently use the CSX A-Line in Virginia between Richmond, VA, and Petersburg. In North Carolina, up to two freight trains per day use the CSX S-Line between Norlina, NC, and Youngsville, NC, and up to four freight trains per day use the CSX S-Line between Youngsville, NC, and Raleigh, NC. The numbers of existing freight trains are estimates only due to the nature of freight service, which does not run on specific, published schedules.

This Tier II FEIS also estimates a total of 24 freight trains operating through downtown Raleigh, including six on CSX and 18 on NS. The CSX estimate includes up to two additional freight trains per day on the CSX S-Line between the CSX rail yard north of downtown Raleigh, NC, through the terminus of the Richmond to Raleigh Project at Boylan Junction. The NS estimate includes up to eight freight trains per day in the NS corridor on a parallel alignment to the CSX S-Line between the NS rail yard north of downtown Raleigh through Boylan Junction. Beyond Boylan Junction, an additional estimated 10 NS freight trains per day extend to points south and west.

The improvements to the rail corridor associated with the Richmond to Raleigh Project are anticipated to induce or attract additional freight (including intermodal) trains to use the SEHSR Corridor. For the purposes of analysis, the Richmond to Raleigh Project Tier II DEIS estimated that eight new intermodal trains would use the full length of the Richmond to Raleigh Project corridor. In addition the Richmond to Raleigh Project Tier II DEIS estimated that two new non-intermodal freight trains per day (one round trip) would use the northern portion of the corridor between Petersburg, VA, and Youngsville, NC; and four new non-intermodal freight trains per day (two round trips) would use the southern portion of the corridor between Youngsville, NC, and Raleigh, NC. In total, 10 additional freight trains would use the Richmond to Raleigh Project corridor between Petersburg, VA, and Youngsville, NC, and 12 would use the corridor between Youngsville, NC, and Raleigh, NC. In Raleigh, NC, it is assumed all additional freight trains would remain in the CSX corridor and not cross over Capital Boulevard with the SEHSR Corridor passenger trains.

The Richmond to Raleigh Project Tier II FEIS recognizes that additional SEHSR Corridor service is envisioned to operate between Richmond, VA, and Newport News/Norfolk, VA, as defined in the Richmond to Hampton Roads SEHSR Corridor Tier I FEIS. However, the operation, schedule, ridership, and revenue impacts of that expanded service is not applied to the forecasts in this Tier II FEIS for the Richmond to Raleigh Project.

1.4.1.5 *FREIGHT TRACKAGE*

The entire SEHSR Corridor system is being designed as a shared system for passenger and freight use. Freight service already exists in most sections, and could be reinstituted by the freight railroads in the currently discontinued section between Petersburg, VA, and Norlina, NC. For the Richmond to Raleigh Project, the design of SEHSR Corridor will vary at different locations, allowing MAS from 79 mph to 110 mph.

The operating efficiency for both passenger and freight service will increase significantly as a result of improvements to the SEHSR Corridor. The overall track upgrades and straightening of curves will allow all trains to operate at higher and more consistent speeds with lower maintenance cost. The Richmond to Raleigh Project includes proposed 5-mile long double track sections approximately every 10 miles that will greatly increase overall corridor capacity, allowing slower freight trains and faster passenger trains to pass each other without the need to come to a complete stop and wait.

> The operating efficiency will increase significantly as a result of improvements to the SEHSR Corridor. The track upgrades and straightening of curves will allow all trains to operate at higher and more consistent speeds with lower maintenance cost.

1.4.1.6 *TRANSPORTATION/MULTIMODAL CONNECTIVITY*

One goal throughout the entire SEHSR Corridor is to plan for connections to other forms of transit, which would enhance regional connectivity. As discussed in Section 3.11.3., at all proposed stations/stops for the Richmond to Raleigh Project there is at least one public bus transit service agency that either currently provides, or is anticipated to be expanded to provide, bus or van services for HSR travelers. Additionally, rail transit plans for the Richmond, VA, region include several commuter rail and light rail lines providing service to Main Street Station, as well as a proposed commuter rail line that could potentially share the same ROW as the Richmond to Raleigh Project corridor between Main Street Station and Petersburg, VA. Rail transit plans for the Raleigh, NC region involve a light rail line that could potentially share the same general corridor as the Richmond to Raleigh Project corridor from north Raleigh to downtown Raleigh, NC.

Equipment specifications and policies related to bicycle transport will be developed later in the project when funding has been secured. Ease of train entry/exit for cyclists is affected by the platform height and train equipment.

1.4.1.7 GRADE SEPARATIONS AND CROSSING CONSOLIDATIONS

The overarching philosophy of the design of the Richmond to Raleigh Project is to consolidate and grade separate all railroad-roadway crossings for safety and operability purposes. Grade separations replace at-grade crossings (i.e., locations where railroads and roadways cross at the same elevation) with bridges or underpasses. The primary reason for removing at-grade crossings is safety; however, there are several other reasons:

The design of the Richmond to Raleigh Project is to consolidate and grade separate all railroad-roadway crossings for safety and operability purposes.

- Absolute collision avoidance: At-grade crossings inherently have risk of train-automobile collisions. A collision at a crossing on a higher speed track is a significant event often causing a death in the vehicle and in the case of larger, heavier trucks, the possible derailment of the train. These accidents also disrupt operation of both the rail and roadway systems for many hours.
- Elimination of railroad/roadway traffic issues: Under normal railroad operation, the event of a train crossing at-grade may cause delay of up to several minutes for vehicular traffic depending on type and speed of train.
- Elimination of possible system failure and associated delays: Crossing signal systems are very complex computer and electronics systems that operate in harsh environments. When a signal system fails, trains are often required to stop at the crossing with a crew member stopping vehicle traffic by flagging.
- Elimination of easy trespasser access: Trespassing is a major safety and security problem for railroads. At-grade crossings provide attractive locations for trespassers to access the railroad right-of-way.
- Elimination of horn noise: Trains are required to sound horns on approach to an at-grade crossing. By eliminating crossings, trains will not be required to whistle, significantly reducing unwanted noise.
- Comparable capital cost to grade-separated structure: On a high speed track, the cost of the signal system, approaches, crossing surface, and lifelong maintenance for an at-grade crossing can approach that of the cost of a grade separated structure.
- Improved long term cost of maintenance: There are many ongoing costs for at-grade crossings with active warning devices, including inspections, replacement of damaged or worn out parts, and replacement of crossing surfaces when a track is surfaced and ties are replaced.
- Allows for future speed increases: FRA regulations require grade separations for speeds above 125 mph.

The Richmond to Raleigh Project proposes to close all existing road/rail at-grade crossings located between proposed and existing grade separations along the study corridor and to re-route vehicular traffic to the nearest grade separation. Grade separations are typically located less than one mile apart. The locations chosen for grade separations were based on input from local officials, connectivity to the existing road network, minimizing impacts to natural and cultural resources, and constructability.

Design of grade separations along the Richmond to Raleigh Project corridor often necessitated changes to the design of adjacent roads. These changes primarily address: (1) realignments of existing roads to accommodate a bridge or overpass, and (2) new roads to maintain connectivity to the existing road network. The proposed roadwork associated with each rail alignment was considered part of that alternative (e.g., VA1, VA2, VA3 in Virginia, and NC1, NC2, NC3 in North Carolina). The impacts associated with the preferred alternatives (Chapter 4) address changes from both rail and roadway alignments.

1.4.1.8 *FENCING AND LANDSCAPING*

The Richmond to Raleigh Project corridor will not be completely sealed from any unauthorized access through the use of fencing. In developed areas along the corridor, fencing may be used to direct pedestrians to bridges/underpasses that have been designed to accommodate pedestrian access. Fencing locations and types will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities.

Along the rail alignment, landscaping will be consistent with what currently exists. Along road work, landscaping will be addressed during final design using VDOT or NCDOT standards/procedures. Details for landscaping in historic districts may be specified under the Section 106 Memorandum of Agreement (with input from property owners and other consulting parties).

1.4.1.9 *PEDESTRIAN ACCOMMODATIONS*

Due to the fact that the Richmond to Raleigh Project returns rail to communities that developed along rail corridors, it will have an effect on community connectivity. Steps have been taken throughout the Richmond to Raleigh Project to minimize negative effects. All of the new bridges will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses. At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and Virginia pedestrian policies. In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists. In addition, throughout the Richmond to Raleigh Project corridor one existing public pedestrian-only underpass has been maintained and twelve new pedestrian-only bridges or underpasses are proposed for construction. The locations of these pedestrian crossings were determined in coordination with local government representatives and in response to comments from the public on the DEIS. Additional requests for pedestrian accommodations will be considered as they are received and added to the final designs where appropriate.

> The new bridges will have sufficient width so as not to create a hazard for pedestrian movement.

It should be noted that Section 4.16 of the DEIS mistakenly stated that all roadway bridge designs would include sidewalks to facilitate pedestrian access. While pedestrians will be able to cross at all roadway bridges, the inclusion of sidewalks will depend on the current NCDOT and Virginia pedestrian policy at the time the Richmond to Raleigh Project is constructed.

1.4.1.10 *USE OF EXISTING BRIDGES*

It is the intention of NCDOT and Virginia DRPT to use existing bridges (both road and rail) wherever possible, unless shown otherwise on the Richmond to Raleigh Project designs (see Appendix R), In most cases, the Richmond to Raleigh Project can utilize the piers and substructure of existing bridges and replace the superstructure (e.g., girders, decking, and track) as necessary. During the final design stage of the Richmond to Raleigh Project, geotechnical studies will be performed to verify that existing structures are safe for continued use. If those studies indicate that any bridges need to be replaced, the proper environmental documentation will be undertaken at that time.

1.4.2 PROJECT FUNDING

Funding has not yet been secured or identified.

Funding for the right of way acquisition and construction of this Richmond to Raleigh Project has not yet been secured or identified. At this time, Richmond to Raleigh Project proponents anticipate that North Carolina and Virginia will pursue Federal funding through the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), reauthorization of Federal transportation programs and other Federal funding sources (which was anticipated by the Federal government as needed as part of the overall Federal HSR investment). Public-private partnership funding opportunities may also be sought along with Federal and state funding. Decisions regarding future funding of the Richmond to Raleigh Project will be made at the completion of the environmental review process. The Richmond to Raleigh Project is not anticipated to be funded by local governments.

It should be noted that the construction costs for the Richmond to Raleigh Project were never intended to be fully financed by the system's ridership; however, most long-term operational costs are estimated to be covered through ridership fees (see Section 1.4.4.2 below). Construction costs for the nationwide HSR system will be a public investment in a new national transportation network, similar to the 1950s when the Federal government created the Interstate Highway System. In developing the vision for the HSR network, the Federal government recognized the substantial economic and environmental benefits such an investment will provide to all elements of the country for decades to come. As was the case for interstate highways, the initial cost to construct such a massive new public transportation system cannot be fully funded by private sources or alone by individual users (riders).

1.4.3 STATIONS

The Richmond to Raleigh Project Tier II DEIS provided background on earlier modeling that was used to identify five municipal locations for SEHSR Corridor stops within the Richmond to Raleigh Project corridor: Richmond, VA, Petersburg, VA, and Raleigh, NC, which have existing passenger service and stations, and La Crosse, VA, and Henderson, NC, which do not currently have passenger service or stations.

The DEIS provided background to identify five municipal locations for SEHSR stops. Richmond, VA, Petersburg, VA, and Raleigh, NC, have existing passenger service and stations, and La Crosse, VA, and Henderson, NC, do not currently have passenger service or stations.

This Richmond to Raleigh Project EIS does not evaluate environmental impacts related to specific station locations within the five municipalities. Potential station locations are evaluated generally in terms of accessibility to the larger transportation network. Specific station locations within municipalities will be determined in the future by the municipalities and passenger service operator, and appropriate levels of environmental documentation will be undertaken at that time.

All proposed rail alternatives have been designed to accommodate operational requirements of 600 feet to 800 feet of straight alignment for station platforms at each stop location. The alternative rail designs also allow for flexibility in final station designs by ensuring the ability to meet Americans with Disabilities Act (ADA) standards for platform design at each stop location.

The public involvement process revealed a strong interest in conventional passenger rail service that would utilize the same equipment and speeds as high speed service, but would provide access opportunities to smaller towns along the route. This option will be given further consideration as the system develops based on user demand along the route.

1.4.3.1 *RICHMOND, VA*

Each high speed train will stop in central Richmond, VA, the northern terminus for the Richmond to Raleigh Project. As discussed in the Richmond to Raleigh Project Tier II DEIS, in 2006 FRA issued a Notice of Intent (NOI) advising the public of a revision to the study corridor for this Tier II EIS (Richmond to Raleigh Project Tier II DEIS Appendix A). As described in the NOI, FRA changed the Northern terminus from Petersburg, VA (Collier Yard) to Richmond, VA (Main Street Station). Main Street Station was opened in 1901 and has remained one of Downtown Richmond's most visible landmarks. The station was closed in 1975 due to a decline in passenger rail service. The historic reopening of Main Street Station in 2003 marked the culmination of years of renovation to this 102-year-old landmark, and the return of passenger train service to downtown Richmond, VA. The importance of Main Street Station to the City of Richmond and to the larger region is illustrated by ongoing regional and local planning efforts as described in Section 3.11.

1.4.3.2 *PETERSBURG, VA*

Each high speed train will stop at a station in the vicinity of Petersburg, VA. The Richmond to Raleigh Project Tier II DEIS identified four potential station locations, including the existing Amtrak Ettrick Station as well as three alternative station locations: Dunlop, Washington Street, and Collier.

FRA has had an historical interest in evaluating alternative station sites in Petersburg, VA. There is a desire to determine whether or not alternative sites could better serve the Petersburg, VA, area by offering greater accessibility.

The current Ettrick Station was erected in the 1950s to allow Atlantic Coast Line (ACL) Florida-bound trains to avoid downtown Petersburg streets as well as the steep grades on the north side of the Appomattox River. Following the 1967 merger between the ACL and the Seaboard Air Line (SAL), passenger trains of both railroads stopped at Ettrick's red brick depot, making it the primary rail station in the Petersburg, VA, area. Passenger use of the Ettrick station continued when Amtrak took over intercity passenger service in 1971. The station currently accommodates ten passenger trains (five round-trip) daily, including: three Amtrak long distance trains (Silver Star, Silver Meteor, and Palmetto); the NCDOT-supported Carolinian; and the Virginia DRPT-supported Amtrak Regional train to Norfolk.

In 2014, the Tri-Cities Area Metropolitan Planning Organization (MPO), the Crater Planning District Commission (CPDC) initiated an Environmental Assessment to select a location for a Tri-Cities Area Multimodal Passenger Station, which will evaluate the feasibility for continued service at the existing Ettrick Station or relocation to a new site in the Tri-Cities area. The FRA is serving as the lead Federal agency for this Project, with support from the

Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) acting as cooperating agencies. While the existing Ettrick Station supports the current Amtrak passenger rail service, additional investment is required to attract and accommodate increased ridership, improve accessibility to the local and regional transportation network, improve ADA accessibility, and provide capacity to support future high speed rail service.

1.4.3.3 *LA CROSSE, VA, AND HENDERSON, NC*

There has been strong public support for HSR stations in Southside Virginia and northern North Carolina. Evaluation and ridership-revenue modeling (see Section 1.5) support one daily train stop in each of these areas. Specific locations of stations in La Crosse, VA, and Henderson, NC, have not been determined. However, sites in both towns have adequate spacing for platforms. All alternatives are on common alignment through these two locations. The local municipalities will develop plans for the stations and conduct the required environmental documentation for these stations.

1.4.3.4 *RALEIGH, NC*

Each high speed train will stop in Raleigh, NC. The southern terminus for this project is the Boylan Wye, in downtown Raleigh, NC. Alternatives NC1, NC2, NC3, and NC5 are on different alignments approaching the terminus, but come together on common alignment along a straight section of the CSX S-line near Jones Street, approximately three blocks north of the Boylan Wye.

The Southern Railway Company built the current Amtrak station in 1950, which is located on the NCRR H-Line south of the Boylan Wye. Southern Railway discontinued passenger service to their Raleigh station in 1964. Service resumed in 1984, when Amtrak moved from the old Raleigh Seaboard station. Amtrak has completed renovations to expand the waiting room and to add a First Class passenger lounge and long-term parking facility to the Raleigh station, one of the busiest in North Carolina and in the South. Unfortunately, the station's location is not desirable for the SEHSR Corridor routing because it would require a backing movement for both southbound and northbound trains. In addition, the station is serving a ridership which far exceeds its waiting area and parking capacity.

Since publication of the Richmond to Raleigh Project Tier II DEIS, the City of Raleigh has made several advancements towards development of a new, larger, multimodal center that would be located within the Boylan Wye. This would allow all existing and proposed intercity and commuter trains to use a single facility. In September 2012, the US Department of Transportation (DOT) announced that the City had been selected for funding under DOT's TIGER (Transportation Infrastructure Generating Economic Recovery) grant program that would partially fund a new Raleigh Union Station, including all the necessary track work. A second DOT TIGER grant was awarded to the City in 2013 to fund the remainder of the station construction cost, and the City agreed to pay the non-Federal matching funds. An EA was approved by FRA in March, 2014, followed by completion of a FONSI document in June, 2014 (NCDOT, 2014). The project to build the station is a partnership among the City, FRA, NCDOT, and Triangle Transit (TT). The City also has partnered with Norfolk Southern, Amtrak and the North Carolina Railroad Company. Project design is complete, and construction will is scheduled to begin in late 2015. The funded portion of the Raleigh Union Station project includes the construction of a new station terminal building with two dedicated passenger tracks on the NCRR H-Line. Additional track and station amenities required to support the SEHSR Corridor trains from the Richmond to Raleigh Project at Raleigh Union Station will require additional funding.

1.4.4 OPERATIONS

1.4.4.1 *OPERATING CHARACTERISTICS*

Operations in the SEHSR Corridor must be consistent from Washington, DC, to Charlotte, NC. Therefore, the general characteristics for service between Richmond, VA, and Raleigh, NC are the same as those that were adopted in the SEHSR Corridor Tier I EIS.

In the SEHSR Corridor Tier I EIS, the operational model assumed a MAS of 110 mph in the SEHSR Corridor, with a desired average speed of 85 to 87 mph. Based on the SEHSR Corridor Tier I EIS analysis, estimated end-to-end travel time for the SEHSR Corridor service from Washington, DC, to Charlotte, NC, ranged from six hours to seven and one-half hours, depending on the design of the system. The SEHSR Corridor Tier I EIS service assumed eight round trips per day between Charlotte, NC, and Raleigh, NC, with four of these trips continuing on to Richmond, VA, Washington, DC, and northward.

Subsequent to publication of the Richmond to Raleigh Project Tier II DEIS, Virginia DRPT and NCDOT updated the conceptual service operation model to more accurately reflect expected speeds, and to be consistent with the NEC Futures planning effort (in cooperation with Amtrak), as well as with the Virginia Corridor Synthesis Report (DRPT, 2009). Although actual schedules will vary in the future, this analysis provided more accurate information for use in updated ridership and revenue forecasting discussed below in Section 1.5.

The train schedules from the updated service operation model, which includes proposed SEHSR Corridor trains and existing Amtrak trains, allow departures approximately every two hours throughout the day in each direction, from approximately 5:00 a.m. to 9:00 p.m. The updated service operation model still evaluated eight round trips on the SEHSR Corridor between Charlotte, NC, and Raleigh, NC, with four round trips extending to Richmond, VA, Washington, DC, and northward. Of the four SEHSR Corridor trains extending to Richmond, VA, and northward, three would originate in Charlotte, NC, and one would originate in Raleigh, NC, to allow better start and end times.

The service operation model assumes that all existing Amtrak stations will receive one or more trains. Potential new stations in La Crosse (South Hill), VA, and Henderson, NC, would initially receive one round trip daily.

Table 1-3 shows average travel times between cities in the SEHSR Corridor and NEC to New York, NY, as estimated by the updated service operation model. The updated model estimates the end-to-end travel time for SEHSR Corridor service from Washington, DC, to Charlotte, NC, will be approximately seven and one-half hours, which is consistent with the highest estimated travel time from the SEHSR Corridor Tier I EIS. The travel time for SEHSR Corridor service between Richmond, VA and Raleigh, NC will be approximately two hours and fourteen minutes. Future improvements on the SEHSR Corridor, either between Washington, DC, and Richmond, VA, and Raleigh, NC, or Raleigh, NC, and Charlotte, NC, could be implemented to further reduce the SEHSR Corridor travel time

The travel time between Richmond and Raleigh will be approximately 2 hours and 26 minutes.

between Washington, DC, and Charlotte, NC. It should be noted that schedules and travel times will vary in the future due to other operating factors or corridor constraints.

Table 1-3
Projected Average Travel Time Between Cities
(In Hours : Minutes)*

	Current Service	SEHSR Corridor (Full Build, S-Line Trains Only)
New York - Raleigh	9:57	7:25
Washington - Raleigh	5:59	4:22
Richmond - Raleigh	3:36	2:14
New York - Charlotte	13:25	10:16
Washington - Charlotte	9:27	7:14
Richmond – Charlotte	7:03	5:07
Raleigh – Charlotte	3:13	2:49

Source: "S-Line Trains Only" travel times are derived from the schedules used in the Southeast High Speed Rail Ridership Report, AECOM, 2013.
* Dwell times at station stops are included in the average travel time. Please note that travel times vary by time of day and direction; therefore, there may be slight differences in travel times between city pairs.

1.4.4.2 *OPERATING COSTS*

Operations on the Richmond to Raleigh Project must be considered within the context of service in the overall SEHSR Corridor. The operating expense projections for the SEHSR Corridor Tier I EIS applied cost factors developed by Amtrak's Intercity Business Unit for the state-supported service pricing model. Amtrak developed this model to assess the performance of and establish state-supported service pricing for individual routes. This model was developed after Section 403(b) of the Rail Passenger Service Act, which previously governed state-supported service pricing, was repealed as part of the Amtrak Reform and Accountability Act of 1997. The base year for all expenses was 1997, and they were inflated to 2000 dollars for the SEHSR Corridor Tier I EIS document using Amtrak inflation rates ranging from 3-5% annually.

For the SEHSR Corridor Tier I EIS, passenger ridership, passenger miles, and ticket revenue were forecast by KPMG (now AECOM Consult, Inc.), using the Southeast Corridor Model, which assumed constant 2000 dollars for two forecast years, 2015 and 2025. The projected operating expense of service in the SEHSR Corridor Tier I EIS between Washington, DC, and Charlotte, NC, was $81.7 million in the year 2015 and $83.75 million in the year 2025. It was projected to have a net operating income (revenues less operating and maintenance costs) of $13.9 million in the year 2015, and $ 21.6 million in the year 2025 (NCDOT and Virginia DRPT, 2002).

Updated cost and revenue information has been prepared for inclusion in this Richmond to Raleigh Project Tier II FEIS using more complete designs (including the Preferred Alternative for the Richmond to Raleigh Project), and revenue forecasts from the 2013 ridership and revenue model update. Operation and maintenance costs were updated for the proposed SEHSR Corridor service, which includes eight round trip trains as described in the SEHSR Corridor (Full Build) scenario in Section 1.5 below. The operating and maintenance costs for these trains are estimated at $193.6 million in 2030 and $263.2 million in 2040, with projected farebox revenues (including food and beverage) of $206.6 million in 2030 and $313.1 million in 2040 (Vanness Company, Inc., 2014).

Based on the updated estimates, the SEHSR Corridor service is projected to have a net operating income (revenues less operating and maintenance costs) of $22.6 million in 2030 and $62.1 million in 2040. It should be noted, however, that this income does not account for future required new or replacement capital investments (such as replacement locomotives). FRA develops Capital Asset Renewal (CAR) estimates to account for such future required investments using a forward-looking method that accounts for when the investments are likely to occur. The CAR estimate for the SEHSR Corridor service is approximately $16.8 million annually through 2040. Accounting for these additional costs results in estimated annual incomes (net operating income less capital investments) of $5.8 million in 2030 and $45.3 million in 2040. More details on these calculations are included in Appendix C.

1.5 PATRONAGE (RIDERSHIP AND REVENUE)

In order to meet the purpose and need for the Richmond to Raleigh Project, stations must be placed at reasonable intervals while still serving the population centers along the route. The SEHSR Corridor Tier I EIS outlined an operational model for proposed service consisting of four round trips per day between Washington, DC, and Charlotte, NC, and four additional round trips between Raleigh, NC, and Charlotte, NC. The service model established that SEHSR Corridor would serve all locations where Amtrak currently provides service. Within the Richmond to Raleigh Project Tier II EIS corridor, the cities of Richmond, VA, Petersburg, VA, and Raleigh, NC, are currently served by Amtrak's conventional passenger trains. Because all proposed stations outside of the Richmond to Raleigh Tier II EIS corridor currently have passenger rail service, there are no actions required outside of the corridor that would impact the ability of the Richmond to Raleigh Project to meet its purpose.

There is no existing passenger rail service within the SEHSR Corridor between Petersburg, VA, and Raleigh, NC, a distance of approximately 138 miles. The Richmond to Raleigh Project Tier II DEIS provided background on the decision that was made by Virginia DRPT and NCDOT subsequent to the SEHSR Corridor Tier I FEIS, to add two intermediate stations as "skip stops" between Petersburg, VA, and Raleigh, NC, to the SEHSR Corridor service. Skip stops ensure that all stations get a daily train, although every train does not stop at every station. Based on feedback from the public involvement process and on the size of the accessible population, Virginia DRPT and NCDOT determined that La Crosse (South Hill), VA, and Henderson, NC, were most suitable for intermediate stations with skip stops.

The ridership and revenue model that was updated in 2013 provides revised forecasts for passenger service in the SEHSR Corridor, and feeder line corridors in Virginia and North Carolina (AECOM 2013). Scenarios were also evaluated to anticipate the addition of further supporting services in both Virginia and North Carolina. Additional services for North Carolina included connecting service to Asheville, NC, and Wilmington, NC; additional services for Virginia included the Richmond to Hampton Roads Project service on the SEHSR Corridor through Richmond, VA and extending Lynchburg, VA service to Roanoke, VA and adding one additional round trip on that route on a parallel NS corridor west of the SEHSR Corridor. Refer to Appendix C for additional information from the update.

The assumptions for a Baseline ("No Build") and the SEHSR Corridor ("Full Build") scenarios used in the ridership and revenue 2013 update are described below:

Baseline (No Build) In summary, the Baseline consists of:

- Conventional service originating in North Carolina, providing five round trips between Raleigh, NC, and Charlotte, NC, with:
  - Four conventional round trips for the current Piedmont service operating solely between Raleigh, NC, and Charlotte, NC
  - One conventional round trip (the current Carolinian service) continuing into Virginia along the CSX A-Line via Selma, NC, to Richmond, VA, Washington, DC, and New York, NY.
- Conventional service originating in Virginia, providing five round trips between Hampton Roads, Richmond, VA, Washington, DC, and points north including:
  - Two round trips originating in Richmond, VA
  - Two round trips originating in Newport News, VA
  - One round trip originating in Norfolk, VA.
- Conventional service originating in Virginia on a parallel NS corridor west of the SEHSR Corridor, except for where it shares the SEHSR Corridor between Alexandria, VA and Washington, DC, including:
  - One round trip originating in Lynchburg, VA, through Alexandria, VA
- Conventional Amtrak Long Distance service originating in Georgia and Florida, providing four round trips that pass through Virginia and North Carolina, including:
  - One round trip Silver Star that would move to the SEHSR Corridor along the CSX S-Line Petersburg, VA, and Raleigh, NC
  - Two round trips of the Silver Meteor and Palmetto that would remain on the CSX A-Line between Petersburg, VA, Selma, NC, and continue to points south
  - One round trip of the Crescent that would remain on its current NS route west of the SEHSR Corridor, except between Alexandria, VA, and Washington, DC, where it shares the SEHSR Corridor.

SEHSR (Full Build) is a combination of the proposed service along with the baseline conventional service that is anticipated regardless of the project.

SEHSR (Full Build) is a combination of the proposed service associated with the implementation of the Richmond to Raleigh Project along with the baseline conventional service that is anticipated regardless of the Project. This scenario supplements the Baseline North Carolina trains with new SEHSR Corridor trains. Note that additional service along the Richmond to Hampton Roads SEHSR Corridor, as well as service to Asheville, NC, Wilmington, NC, and Roanoke, VA, were modeled separately as "Full Build with Additional Services." See Appendix C for details on those model results.

In summary and as shown in Figure 1-5, the SEHSR (Full Build) includes:

- SEHSR Corridor service originating in North Carolina, providing eight round trips between Raleigh, NC, and Charlotte, NC with:
  - Four new round trips continuing into Virginia along the CSX S-Line between Raleigh, NC, and Petersburg, VA, and then to Richmond, VA, Washington, DC, and New York, NY (three of which would originate in Charlotte, NC, and one in Raleigh, NC) – *these trains would use the Preferred Alternative presented in this Richmond to Raleigh Project Tier II FEIS*
  - Four round trips for the Baseline Piedmont service operating solely between Raleigh, NC, and Charlotte, NC

    - One round trip for the current Carolinian service continuing into Virginia along the CSX A-Line via Selma, NC, to Richmond, VA, Washington, DC, and New York, NY.
- SEHSR Corridor and conventional service originating in Virginia, providing five round trips between Hampton Roads, Richmond, VA, and Washington, DC, including:
    - Five round trips between Richmond, VA, Washington, DC, New York, NY, and Boston, MA, with two extending to Newport News, VA, and one extending to Norfolk, VA
- Conventional service originating in Virginia on a parallel NS corridor west of the SEHSR Corridor, but sharing the SEHSR corridor between Alexandria, VA and Washington, DC including:
    - One round trip originating in Lynchburg, VA through Alexandria, VA
- Four conventional Amtrak Long Distance round trips originating in Georgia and Florida, providing three round trips that pass through Virginia and North Carolina, as defined in the Baseline (No-Build) scenario, noting:
    - The Silver Star (one round trip) is assumed to reroute to the S-Line between Petersburg, VA, and Raleigh, NC (i.e., *one additional round trip conventional train on the Preferred Alternative presented in this Richmond to Raleigh Project Tier II FEIS*).

Table 1-4 shows the proposed service (round trips) for the Baseline ("No Build") and SEHSR Corridor ("Full Build") scenarios. Table 1-5 shows the updated ridership and ticket revenue forecasts for Baseline ("No Build") and SEHSR Corridor ("Full Build") scenarios for design year 2030, and a SEHSR Corridor ("Full Build") scenario forecast for the year 2040. Current Amtrak fares were used in the analysis; however 25% higher fares were assumed for the faster SEHSR Corridor service.

Figure 1-5

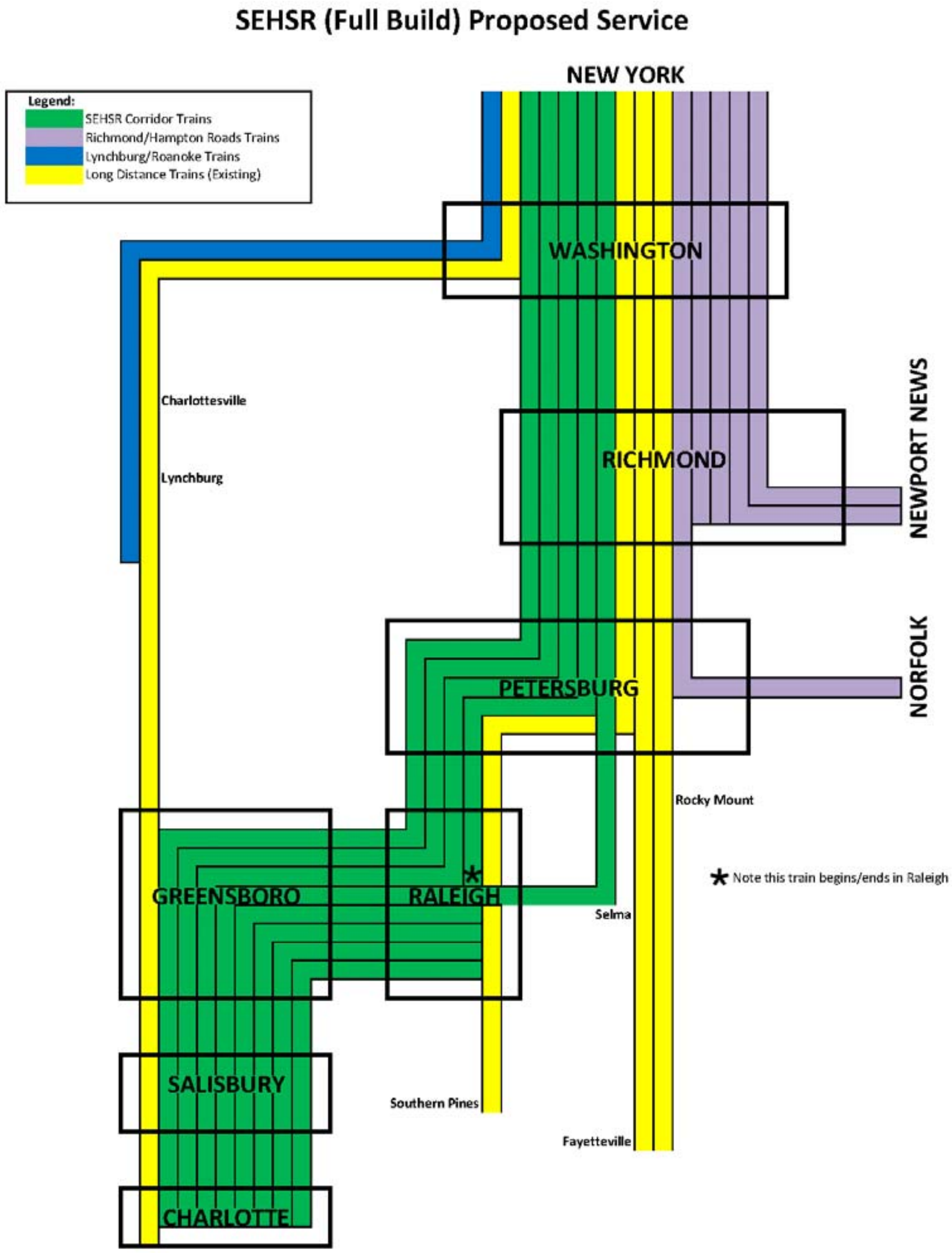

SEHSR (Full Build) Proposed Service
Legend:
SEHSR Corridor Trains
Richmond/Hampton Roads Trains
Lynchburg/Roanoke Trains
Long Distance Trains (Existing)
NEW YORK
WASHINGTON
Charlottesville
Lynchburg
RICHMOND
NEWPORT NEWS
PETERSBURG
NORFOLK
Rocky Mount
GREENSBORO
RALEIGH
* Note this train begins/ends in Raleigh
Selma
SALISBURY
Southern Pines
Fayetteville
CHARLOTTE

Table 1-4
Proposed Service - Number of Round Trips

	Service	Route[1]	Baseline No Build	SEHSR Full Build[2]
Trains Originating in North Carolina				
Raleigh-Charlotte (Intrastate)	*Piedmont*	NS/NCRR	4	4
Washington-Raleigh-Charlotte	*Carolinian*	CSX A-Line	1	1
Washington-Raleigh	*SEHSR Corridor*	CSX S-Line	-	1
Washington-Raleigh-Charlotte			-	3
		Subtotal:	**5**	**9**
Trains Originating in Virginia				
Washington-Richmond	*NEC Regional*	CSX A-Line	2	2
Washington-Richmond-Newport News		CSX A-Line	2	2
Washington-Richmond-Norfolk		CSX A-Line	1	1
Washington-Alexandria-Lynchburg		NS-Crescent	1	1
		Subtotal:	**6**	**6**
Amtrak Long Distance Service[3]				
Washington-Richmond-Points South	*Palmetto Silver Meteor*	CSX A-Line	2	2
Washington-Richmond-Raleigh-Points South	*Silver Star*	CSX A-Line	1	-
		CSX S-Line	-	1
Washington- Alexandria-Lynchburg-Charlotte-Points South	*Crescent*	NS-Crescent	1	1
		Subtotal:	**4**	**4**
		Total Trains:	**15**	**19**

Source: Southeast High Speed Rail Ridership, AECOM, 2013

1. Trains operating on the CSX S-Line route follow the CSX A-Line in Virginia between Centralia and Collier Yard.

2. The "Full Build" scenario does not include the full implementation of the Richmond-Hampton Roads project. Those trains were modeled separately as "Full Build with Additional Services" in the ridership and revenue assessment. See Appendix C for more information.

3. These do not include the Amtrak auto-train, which travels through Virginia and North Carolina, but does not influence ridership and revenue estimates.

As described above, the Baseline ("No Build") reflects current service plus two new planned frequencies between Charlotte and Raleigh. In comparison, the SEHSR ("Full Build") ***supplements*** these Baseline North Carolina trains with four new SEHSR Corridor trains utilizing the proposed SEHSR Corridor improvements (i.e., along the CSX S-Line between Petersburg, VA and Raleigh). Table 1-5 shows that ridership and ticket revenue forecasts increase significantly with the SEHSR Corridor service. The analysis showed that ridership associated with the North Carolina trains increases to more than twice the Baseline, and ticket revenue associated with the North Carolina trains increases more than three-fold. These higher increases in ticket revenue reflect the greater level of improvement through increased frequency and the significantly faster travel times offered by the proposed SEHSR Corridor improvements along with 25% higher fares charged for the improved service. A comparison of how the SEHSR Corridor service compares to other modes of transportation is presented in Table 1-6.

Table 1-5
Summary of Forecast Results

	Base Line[1] (No Build)	SEHSR Corridor[3] (Full Build)	SEHSR Corridor[3] (Full Build)
	Year 2030	**Year 2030**	**Year 2040**
Ridership			
North Carolina Service			
Charlotte/Raleigh Trains	996,100	2,075,500	2,526,900
Virginia Service			
Richmond/Norfolk/Virginia Beach Trains	808,300	805,600	911,100
Lynchburg Trains	241,300	261,600	301,200
Amtrak Long Distance Trains[2]	241,900	241,900	282,400
Total Ridership	2,287,600	3,384,600	4,021,600
Ticket Revenue (2013 dollars)			
North Carolina Service			
Charlotte/Raleigh Trains	$39,034,000	$138,667,000	$165,575,000
Virginia Service			
Richmond/Norfolk/Virginia Beach Trains	$45,947,000	$57,799,000	$64,867,000
Lynchburg Trains	$15,070,000	$16,474,000	$18,825,000
Amtrak Long Distance Trains[2]	$30,474,000	$30,460,000	$35,277,000
Total Ticket Revenue	$130,525,000	$243,400,000	$284,544,000

Source: Southeast High Speed Rail Ridership, AECOM 2013

1. Baseline (No Build): NC service includes 5 round trips Raleigh to Charlotte, w/1 round trip (the Carolinian) continuing to NY via the A-Line. VA service includes 6 round trips that begin/end in Virginia including 5 round trips Rich to NY/Boston, w/ 2 extending to/from Newport News and 1 extending to/from Norfolk, and 1 round trip Lynchburg to NY/Boston; and 4 round trips provided by Amtrak Long Distance trains that pass though NC and VA

2. Activity from NEC through NC only; includes connecting buses. Activity from NEC through NC only; includes connecting buses

3. Full Build scenarios include SEHSR Corridor service for 8 round trips Raleigh to Charlotte, w/3 continuing to NY, and 1 starting in Raleigh and continuing to NY; and 1 (the Carolinian) beginning in Charlotte continuing to NY via the CSX A-Line. Note that additional service associated with the Richmond-Hampton Roads project was modeled separately.

Table 1-6
Transportation Mode Comparison

Travel Corridor	Current / Proposed Travel Mode	Full Cost[1] / Incremental Cost[2] ($)	Line-Haul Travel Time[3] (HH:MM)	Access/ Egress/ Terminal Time[4] (HH:MM)	Service Reliability
Washington to Richmond	Automobile	$ 60/15	02:30	00:00	NA
	Bus	$ 35	03:00	01:40	NA
	Airlines	$ 276	01:49	02:30	67 %
	Rail – conventional	$ 32	02:18	01:50	83 %
	Rail – SEHSR Corridor	$ 40	02:04	01:50	90 %
Richmond to Raleigh	Automobile	$ 102/23	02:43	00:00	NA
	Bus	$ 30	04:00	01:30	NA
	Airlines	$ 233	01:53	02:20	80 %
	Rail – conventional	$ 46	03:36	01:40	74 %
	Rail – SEHSR Corridor service	$ 58	02:26	01:40	90 %
Raleigh to Charlotte	Automobile	$ 91/20	03:16	00:00	NA
	Bus	$ 35	04:00	01:30	NA
	Airlines	$ 163	02:39	02:20	83 %
	Rail – conventional	$ 31	03:13	01:40	73 %
	Rail – SEHSR Corridor	$ 39	02:49	01:40	90 %

Source: Transportation Mode Comparison Table Transmittal, AECOM June, 2014 (see Appendix C)

[1] Internal Revenue Service (IRS) 2014 business trip mileage rate of 55 cents per mile includes gasoline, deductible cost of automobile usage, depreciation, and insurance.
[2] IRS 2014 non-business rate of 15 cents per mile includes gasoline only.
[3] Line-Haul measures time spent on the main travel vehicle (i.e. does not include travel to/from the station).
[4] Includes time for both ends of a trip (i.e. time travel to/from the station).

1.6 NEED FOR THE PROPOSED PROJECT

This section is largely unchanged from the Richmond to Raleigh Project Tier II DEIS as the need for the SEHSR Corridor improvements was established in the Tier I EIS. However, in response to comments on the Richmond to Raleigh Project Tier II DEIS related to the Richmond to Raleigh Project's purpose and need, a new section has been added to this FEIS with updated data and information. Refer to Section 1.8 of this chapter for updated information related to the overall purpose and need for the SEHSR Corridor improvements.

The Tier I EIS for the SEHSR Corridor between Washington, DC, and Charlotte, NC, established the overall need for the SEHSR Corridor project:

- Growth – Population and economic growth rates in Virginia and North Carolina have been higher than national averages over the past several decades and are projected to remain high over the next few decades. If transportation systems do not provide options for reliable and convenient movement of goods and people, the region's economy will suffer.

- Congestion – Population growth and economic development have led to increasing vehicle use on interstates and major highways in the region, as well as increasing demand for air travel. The majority of intercity automobile travel in the Washington, DC, to Charlotte, NC, travel corridor utilizes I-85 and I-95, where daily traffic volumes regularly exceed design capacities. Airport congestion in the corridor has resulted in growing delays. This Raleigh to Richmond Project encompasses portions of both I-95 and I-85, as well as the airports of Richmond, VA and Raleigh, NC.
- Travel Time – Currently, within the SEHSR Corridor, conventional passenger rail travel times are not competitive with travel by airplane or auto. If meaningful reductions in travel time and improvements to equipment are achieved, modeling indicates that the competitiveness of rail passenger service will increase, and travelers will divert from other modes of transportation.
- Connectivity – Implementation of HSR service could enhance regional connectivity. VA and NC have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states. The proposed SEHSR Corridor service would serve as the spine to these added routes, allowing conventional rail service passengers to connect to the proposed SEHSR Corridor service and other points in the Northeast, Southeast, and beyond. The Richmond to Raleigh Project section of the SEHSR Corridor enhances the connectivity through greatly enhanced speed, reliability, and reductions in travel time.
- Air Quality – A number of counties within the SEHSR Corridor are presently experiencing air quality impacts from mobile source emissions. The movement of passengers by HSR offers significantly less pollution per passenger mile traveled than other mobile sources. Diverting some of the traveling public from automobiles to trains will aid in reducing emissions throughout the Corridor.
- Safety – For SEHSR Corridor service to divert travelers from other transportation modes, potential riders must have confidence that the service is not only fast and reliable, but as safe as or safer than other modes. Rail has a safety record similar to air travel, and rail has proven exponentially safer than automobile travel. Figures from the National Safety Council show that Amtrak experienced .04 fatalities per 100 million passenger miles, while automobile fatalities equaled 1.29 fatalities per 100 million passenger miles. Virginia DRPT and NCDOT have been working in their respective states to improve safety along active rail lines within the SEHSR Corridor since the 1990's.
- Energy Efficiency – Additional rail improvements could also result in less energy use and a corresponding decrease in pollution within the SESHR Corridor. Intercity rail is 45% more energy-efficient than domestic commercial airline service and 76% more energy-efficient than general aviation. These numbers reflect Amtrak equipment in use in 1994 - both fossil fuel and electric - and represent BTUs/passenger mile as compared with air travel. As well, passengers traveling by rail use 21% less BTUs per mile on average than those traveling by automobile.

Passengers traveling by rail use 21% less BTUs per mile on average than those traveling by automobile

The Richmond to Raleigh Project proposed improvements address all of the above needs because they would result in a shorter trip with improved connectivity and safer operation for the entire Washington, DC, to Charlotte, NC, SEHSR Corridor. More information about the need for the SEHSR Corridor can be found in the 2002 SEHSR Corridor Tier I EIS and on the program's website at www.sehsr.org.

1.7 PURPOSE OF THE PROPOSED RICHMOND TO RALEIGH PROJECT

This section is largely unchanged from the Richmond to Raleigh Project Tier II DEIS as the purpose of the improvements to the SEHSR Corridor was established in the Tier I EIS. However, in response to comments on the Richmond to Raleigh Project Tier II DEIS related to the Richmond to Raleigh Project's purpose and need, a new section has been added to this FEIS with updated data and information. Refer to Section 1.8 for updated information related to the overall purpose and need for the SEHSR Corridor improvements.

The Richmond, VA, to Raleigh, NC, portion of SEHSR is an integral part of the overall Washington, DC, to Charlotte, NC, SEHSR Corridor. It constitutes 162 miles of the approximately 450-mile SEHSR Corridor that was evaluated in the 2002 Tier I EIS. The purpose for the segment from Richmond, VA to Raleigh, NC is tied to implementation of the larger SEHSR Corridor. Therefore, the purpose of the Richmond to Raleigh Project proposed action is to facilitate the previously approved purpose for the SEHSR Corridor Tier I EIS, which includes the following and is applicable to the Richmond to Raleigh Project section:

- Divert trips from air and highway within the travel corridor, thus reducing the growth rate of congestion (the I-95 portion of the corridor is included in this Richmond to Raleigh Project section and it carries a significant portion of the automobile traffic)
- Provide a more balanced use of the travel corridor's transportation infrastructure
- Increase the safety and effectiveness of the transportation system within the travel corridor
- Serve both long-distance business and leisure travelers between and beyond Virginia and North Carolina, including Amtrak's Northeast Corridor, which extends from Washington, DC, to Boston, MA (with extensions planned beyond Boston), as well as points south (this specific project section serves as the key link for these travelers to the busy Northeast).

More information about the purpose of the SEHSR Corridor can be found in the 2002 SEHSR Corridor Tier I EIS and on the program's website at www.sehsr.org.

1.8 UPDATED PROJECT NEED DATA

As noted above, the Tier I EIS and ROD for the SEHSR Corridor between Washington, DC and Charlotte, NC, established the overall need for the project. This approved need was summarized in the Richmond to Raleigh Project Tier II DEIS, and is repeated in Section 1.6 of this FEIS. In response to the comments and questions received on the Richmond to Raleigh Project Tier II DEIS, updated and additional information about the need for the SEHSR Corridor project is presented in this section. This expanded discussion with more recent data shows that the needs initially demonstrated in the SEHSR Corridor Tier I EIS more than 10 years ago are still present, and re-confirms and substantiates the conclusions made in the SEHSR Corridor Tier I EIS/ROD and Richmond to Raleigh Project Tier II DEIS documents.

1.8.1 GROWTH

The US population is growing rapidly, from 280 million people in 2000 to a projected 364 million in 2030. At the same time, the US population is aging. By 2030, the population of those over 65 years of age is expected to double to 70 million (USDOT, RITA, 2008). In order to go about their daily lives, the aging population may increasingly look to efficient alternatives to motor vehicle transportation, as discussed in the sections below.

1.8.1.1 POPULATION

As shown in Table 1-7, since 1970, population growth rates in Virginia and North Carolina have been higher than the national average. Between 1960 and 2010, the population of Virginia has increased 102% and the population of North Carolina has increased 110%, while the US population increased by 72%. And even with the recent recession, population growth rates in Virginia and North Carolina are projected to remain substantially higher than the US as a whole over the next two decades.

Population growth in VA and NC has been higher than the national average since 1970. Between 1960 and 2010, the population of VA increased 102%, and the population of NC increased 110%, while the U.S. population increased by 72%.

Table 1-7 also shows the 10 year growth rates for the counties and independent cities in the Richmond to Raleigh Project study area. Although many of the counties have shown highly fluctuating growth rates, most of the urban areas continue to show positive growth, with Chesterfield, Dinwiddie, Franklin and Wake Counties showing the greatest growth, with the City of Richmond and the more rural counties (e.g. Brunswick, Mecklenburg, and Warren Counties) showing the slowest growth rates.

1.8.1.2 DEPENDENCY

Dependency is defined as the ratio of the dependent-age population (young or old) to the working-age population. This ratio is the total population of young (under age 20) and old (65 and older) divided by the age of the caretaking population (ages 24 to 64). As demonstrated in Table 1-8, the dependency ratios in North Carolina and Virginia between 2000 and 2010 were less than the US averages. Consistent with the nationwide trend, this table shows that both North Carolina and Virginia have been gaining a greater percentage of old-age dependents as the baby boomers continue to age and retire. The ratio of dependent youth has decreased slightly between 2000 and 2010, but is expected to increase above current levels in the coming decades.

NC and VA project significant increases in the under-20 and over-65 populations between now and 2050. Fewer working age people will be taking care of more dependents, and a greater percentage of the population may depend on others for transportation.

As shown on Figure 1-6, by the year 2050, the youth and old-age dependency ratios nationally are projected to stabilize at 48 and 37, respectively, but not before reaching a total dependency ratio of 85, a 37% increase in overall dependency from 2000. Following this national trend, North Carolina and Virginia are projected to experience significant increases in the under 20 and over-65 populations between now and 2050. This means that fewer and fewer working age people will be taking care of even more dependents in the coming decades, and a greater percentage of the population may be dependent on others for their transportation needs. As discussed further in Section 3.11.1.3, the increase in the over-65 population is especially significant because of the increased mobility within this age group and the resulting increase in demand this will place on public transportation alternatives.

Table 1-7
Population Change / 10 Year Growth Rates

	Census Population Estimates						Population Projections	
	1960(2)	**1970(2)**	**1980(2)**	**1990(2)**	**2000(1)(5)**	**2010(3)**	**2020(1)(4)**	**2030(1)(4)**
UNITED STATES	179,323,175	203,211,926	226,545,805	248,709,873	281,421,906	308,745,538	**335,804,546**	**363,584,435**
		13.3%	11.5%	9.8%	13.2%	9.7%	8.8%	8.3%
Virginia	**3,966,949**	**4,648,494**	**5,346,818**	**6,187,358**	**7,078,515**	**8,001,024**	**8,917,396**	**9,825,019**
		17.2%	**15.0%**	**15.7%**	**14.4%**	**13.0%**	**11.5%**	**10.2%**
Richmond City	219,958	249,621	219,214	203,056	197,790	204,214	187,066	187,066
		13.5%	-12.2%	-7.4%	-2.6%	3.2%	-8.4%	0.0%
Chesterfield County	71,197	76,855	141,372	209,274	259,903	316,236	372,532	430,266
		7.9%	83.9%	48.0%	24.2%	21.7%	17.8%	15.5%
Colonial Heights City	9,587	15,097	16,509	16,064	16,897	17,411	19,204	20,454
		57.5%	9.4%	-2.7%	5.2%	3.0%	10.3%	6.5%
Petersburg City	36,750	36,103	41,055	38,386	33,740	32,420	30,734	30,730
		-1.8%	13.7%	-6.5%	-12.1%	-3.9%	-5.2%	0.0%
Dinwiddie County	22,183	25,046	22,602	20,960	24,533	28,001	33,075	37,563
		12.9%	-9.8%	-7.3%	17.0%	14.1%	18.1%	13.6%
Brunswick County	17,779	16,172	15,632	15,987	18,419	17,434	18,258	18,258
		-9.0%	-3.3%	2.3%	15.2%	-5.3%	4.7%	0.0%
Mecklenburg County	31,428	29,426	29,444	29,241	32,380	32,727	32,511	32,755
		-6.4%	0.1%	-0.7%	10.7%	1.1%	-0.7%	0.8%

	Census Estimates						Population Projections	
	1960[2]	**1970[2]**	**1980[2]**	**1990[2]**	**2000([1][5]**	**2010[3]**	**2020[1][4]**	**2030[1][4]**
North Carolina	**4,556,155**	**5,082,059**	**5,881,766**	**6,628,637**	**8,081,986**	**9,535,483**	**10,616,077**	**11,631,895**
		11.5%	**15.7%**	**12.7%**	**21.9%**	**18.0%**	**11.3%**	**9.6%**
Warren County	19,652	15,810	16,232	17,265	19,900	20,972	20,783	20,557
		-19.6%	2.7%	6.4%	15.3%	5.4%	-0.9%	-1.1%
Vance County	32,002	32,691	36,748	38,892	43,155	45,422	46,922	48,441
		2.2%	12.4%	5.8%	11.0%	5.3%	3.3%	3.2%
Franklin County	28,755	26,820	30,055	36,414	47,636	60,619	72,701	84,586
		-6.7%	12.1%	21.2%	30.8%	27.3%	19.9%	16.3%
Wake County	169,082	228,453	301,327	423,380	633,333	900,993	1,099,385	1,292,106
		35.1%	31.9%	40.5%	49.6%	42.3%	22.0%	17.5%

(1) NC Office of State Budget and Management, County/State Population Estimates and Projections. http://www.osbm.state.nc.us/ncosbm/facts_and_figures/socioeconomic_data/population_estimates/county_projections.shtm

(2) US Census Bureau, County Population Census Counts 1900-90. http://www.census.gov/population/www/censusdata/cencounts/files/nc190090.txt

(3) US Census Bureau, 2010 Census Interactive Population Search. http://www.census.gov/2010census/

(4) Virginia.gov Virginia Workforce Connection, LMI Data, Population Projections. http://www.vawc.virginia.gov/gsipub/index.asp?docid=359

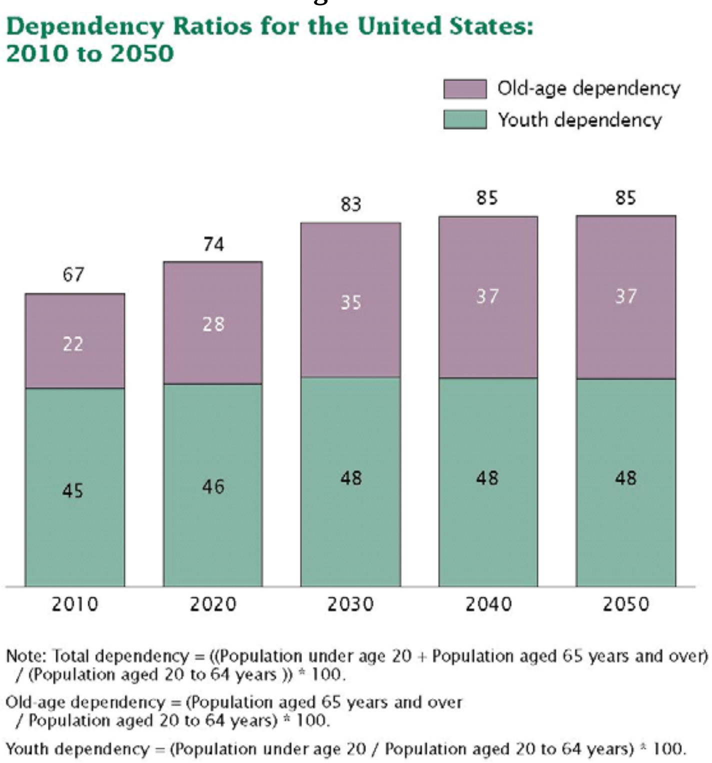
(5) US Census Bureau, PCT001-POPGROUP-Total population; Census 2000 Summary File 1 (SF 1) 100-Percent Data Virginia http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_00_SF1_P001&prodType=table

Table 1-8
Age Dependency Ratios

	2000 Census Estimate			2010 Census Estimate		
	Total	**Youth**	**Old-Age**	**Total**	**Youth**	**Old-Age**
US	61.6	41.5	20.1	58.9	38.2	20.7
VA	55.6	38.2	17.4	54.7	35.9	18.9
NC	57.3	38.4	19.0	58.4	37.9	20.5

NOTES: See Figure 1-6 for definitions. The year 2010 data in Figure 1-6 does not precisely match the 2010 data in Table 1-8, as Figure 1-6 was created using projection data from 4 years prior to the Census results presented in Table 1-8. Also, the projections in Figure 1-6 were based on pre-recession growth rates. Source: US Census Bureau, 2011. Table GCT-T6-R.

Figure 1-6



Source: US Census Bureau, 2010.

1.8.1.3 *ECONOMIC GROWTH*

Based on data from projections of long-term economic growth, Virginia and North Carolina are estimated to have higher than average job growth through 2022 (projections.com, 2015).

Socio-economic characteristics represent the key independent variables in forecasting growth in total travel volumes, irrespective of change in the level of service provided by competing travel modes. The three socio-economic indicators used to estimate travel growth include:

- Population
- Employment
- Per-capita Income

Socio-economic data and forecasts for the updated ridership and revenue forecasts were obtained from AECOM's national vendor, Moody's Economy.com; which provides the forecasting data at annual intervals up to 2040 by county (AECOM, 2013). These county-level forecasts were allocated to sub-county zones, were such geographic detail exists, using US 2010 Census data. Growth in population, employment, and per-capita income are forecast for all the major markets in the SEHSR Corridor. Table 1-9 shows growth forecasts for the year 2030 from the updated ridership/revenue report for selected markets in the SEHSR Corridor. Overall growth rates and annualized growth rates are also shown.

Table 1-9
Population, Employment, and Per-Capita Income Forecasts

Selected Markets	Year 2012	Year 2030	Overall Growth Rate	Annualized Growth Rate
Population (in thousands)				
Charlotte Metro, NC, Rockingham, SC	2,313	3,339	44.36%	2.06%
Raleigh Metro, Henderson, Durham, Chapel Hill, NC	2,016	2,890	43.35%	2.02%
Richmond Metro, VA	1,407	1,644	16.84%	0.87%
Washington Metro, DC, VA, MD, WV	5,652	6,793	20.19%	1.03%
Employment (in thousands)				
Charlotte Metro, NC, Rockingham, SC	1,000	1,387	38.70%	1.83%
Raleigh Metro, Henderson, Durham, Chapel Hill, NC	902	1,271	40.91%	1.92%
Richmond Metro, VA	665	776	16.69%	0.86%
Washington Metro, DC, VA, MD, WV	2,994	3,521	17.60%	0.90%
Per Capita Income				
Charlotte Metro, NC, Rockingham, SC	$33,952	$38,337	12.92%	0.68%
Raleigh Metro, Henderson, Durham, Chapel Hill, NC	$34,230	$40,870	19.40%	0.99%

Table 1-9
Population, Employment, and Per-Capita Income Forecasts

Selected Markets	Year 2012	Year 2030	Overall Growth Rate	Annualized Growth Rate
Richmond Metro, VA	$36,248	$46,161	27.35%	1.35%
Washington Metro, DC, VA, MD, WV	$51,289	$66,480	29.62%	1.45%

1.8.2 CONGESTION

Congestion results when traffic demand approaches or exceeds the available capacity of the system. While this is a simple concept, it is not constant. Traffic demands vary significantly depending on the season of the year, the day of the week, and even the time of day. Also, the capacity, often mistaken as constant, can change because of weather, work zones, traffic incidents, or other non-recurring events (FHWA, 2012).

Both job and population growth have burdened the Virginia and North Carolina airport and highway networks that provide for intercity travel between Richmond and Raleigh, which are experiencing capacity problems that are projected to worsen, despite planned improvements, as detailed in the following subsections. Population trends such as migration from rural to urban areas and aging and more dependent populations also puts additional and unique burdens on the transportation network.

Job and population growth have burdened the VA and NC airport and highway networks between Richmond and Raleigh.

The Richmond, VA to Raleigh, NC intercity travel corridor includes interstate highways I-85 and I-95, as well as the airspace between the Raleigh-Durham (RDU) and Richmond (RIC) international airports. The travel corridor does not include the entire metropolitan areas around Richmond, VA and Raleigh, NC, or the entirety of each county through which the Richmond to Raleigh Project corridor passes. Within this intercity corridor, traffic consists of both intercity travelers who focus their travel on the interstates, as well as local and regional travelers who may use a portion of the interstate for a portion of their trip, but mostly use local arterials and collectors. Although congestion on this intercity corridor may be composed of all three traveler types (i.e., intercity, local and regional), the method of managing this congestion will be different for each travel type. For example, local and regional traffic is mostly composed of commuters who contribute to peak travel congestion because of similar work schedules and who may benefit from improved traffic signalization on arterials and carpool lanes on highways or additional roadway lanes. However, these improvements will not benefit intercity travelers, who are composed mostly of business and leisure travelers, who may be traveling alone. While these travelers also could benefit in the short term from more roadway lanes (where feasible), they are mostly benefitted in the long term by the provision of high capacity public or private transportation options that provide an alternative to driving on the interstates altogether (e.g., airplanes, passenger rail).

Rapid population growth in VA and NC has caused congestion on the transportation network.

Rapid population growth in Virginia and North Carolina has caused congestion on the existing and proposed transportation network. This growth also causes strains on the natural and human environment, and makes it increasingly difficult to increase the capacity of the existing transportation network with an acceptable level of negative impacts. Congestion also decreases safety and reliability on the existing network, while increasing energy consumption and travel times.

As travel demand grows, intercity transportation by air and auto increasingly suffers from congestion and delay, particularly within already congested areas, including metropolitan areas, at and around airports, and during weekend, holiday, and bad weather periods. This congestion causes declining quality of service, which adversely affects intercity travelers, other transportation system users, carriers, the general public, and eventually the economic development of a region. If Virginia and North Carolina's transportation systems do not provide efficient options for reliable and convenient movement of goods and people both between cities as well as within metropolitan areas themselves, the economies of the region will suffer.

1.8.2.1 *AIR TRANSPORTATION*

As evaluated in the 1997 High Speed Ground Transportation Commercial Feasibility Study on the SEHSR Corridor (detailed in Section 1.1.2.2), domestic intercity air travel nationally and in the travel corridor has grown much faster than population and income since 1950. For example, between 1980 and 2005, domestic enplanements (e. g., number of passengers flying on domestic flights) increased from 275 million to 657 million (USDOT, RITA, BTS, 2010). With this expansion, air traffic has far outpaced the growth of airport capacity, which has resulted in the growth of airline flight delays.

According to the Federal Aviation Administration (FAA), delays in the air traffic control system are registered when flights are delayed 15 minutes or longer. As shown in Table 1-10, current data indicate that prior to the economic decline in 2006-2007, flight delays had reached a peak of 36-40% in Richmond and 31-35% in Raleigh, both of which were higher than the national average of 23-24%. The average flight delay was 54-56 minutes during this peak. As shown in Table 1-10, almost all delays are related to issues with the carrier, national aviation system, security or an aircraft arriving late (all affected by constraints to system capacity), and not due to extreme weather.

> Prior to the economic decline in 2006-2007, flight delays had reached a peak of 36-40% in Richmond and 31-35% in Raleigh, both of which were higher than the national average of 23-24%.

Although the percentage of delayed flights had decreased during the 2008-2012 recession, this was related to a decrease in the total number of flights, rather than improved operational performance, with the total number of scheduled flights decreasing from a peak of 7.5 million in 2007 to 6.5 million in 2009 (USDOT, RITA, BTS, 2010). Without substantial improvements in airport capacity, it is anticipated that flight delays will return to pre-recession rates with improvement to the economy in the next 5-10 years.

Flight delays substantially affect operating costs; in 1994, FAA estimated this cost to average $1,587 per hour of delay. Other costs of aircraft delays include environmental impacts of noise and emissions, as well as effects on passengers who increasingly spend more time waiting for delayed flights than actually traveling to their destinations, which affects both leisure and business travelers (including the cost of missed work, meetings, connections and business opportunities). Even with plans to increase capacity by building new airports and

> The FAA considers HSR to be a means of relieving pressure on short-haul air traffic by diverting air trips of 500 miles or less.

expanding and extending runways, the FAA determined that improvements alone would not adequately meet the projected growth in demand at many of the larger metropolitan airports on the East and West Coasts, including Washington-Dulles, Washington National, Raleigh-Durham and Charlotte-Douglas, which are considered "problem airports" with more than 20,000 airline flight delay-hours per year. The FAA considers HSR, including the SEHSR Corridor, to be a potential means of relieving the pressure on short-haul air traffic by diverting air trips of 500-miles or less (USDOT, FRA, 1997).

Table 1-10
Airline Delays

Year	% of Flights Delayed			National Average		
	Richmond	Raleigh	National Average	Total Passenger Flights (thousands)	Ave Minutes of Delay	% Delay Minutes NOT Weather Related
2003	22%	25%	n/a	n/a	n/a	n/a
2004	29%	30%	20%	7,129	51	93%
2005	33%	32%	21%	7,141	52	94%
2006	40%	35%	23%	7,142	54	94%
2007	36%	31%	24%	7,455	56	94%
2008	33%	30%	22%	7,008	57	95%
2009	27%	24%	19%	6,450	54	97%
2010	29%	27%	n/a	n/a	n/a	n/a
2011	29%	25%	n/a	n/a	n/a	n/a
2012*	31%	26%	n/a	n/a	n/a	n/a

Note: * = Through June 2012
Sources: State statistics from USDOT, RITA, 2012. National averages from USDOT, RITA, BTS, 2010 (Table 4-30).

1.8.2.2 *HIGHWAY TRANSPORTATION*

Between 1980 and 1999, the miles of highways in the US increased 1.5% while vehicle miles of travel increased 76%. As shown in Figure 1-7, between 2000 and 2010, the US population increased 10%, while the vehicle-miles traveled increased by 19%. Both measurements reflect a consistent trend in modern America - automobile use continues to expand faster than the rate of population growth, and construction of new highway capacity cannot keep pace with growth in travel demand. These are both signs that roadway congestion will continue to pose a problem for future urban transportation systems.

In 2005, the urban congestion problem in the US (i.e., congestion in 439 metropolitan areas) resulted in 4.2 billion hours of travel delay, 2.9 billion gallons of wasted fuel, and a net urban congestion cost of nearly $80 billion (USDOT, RITA, 2008). In just five years (by 2010), the Texas A&M Transportation Institute estimated that this urban travel delay had increased by 14% to 4.8 billion hours. And, although vehicle-miles traveled had increased by 6%, increases in automotive fuel efficiency had reduced the amount of wasted fuel by 34% to only 1.9 billion gallons (Texas A&M Transportation Institute, 2012). However, the total cost of this congestion had increased by 26%, to $101 billion, reflecting the exceptionally high price of gasoline during this time.

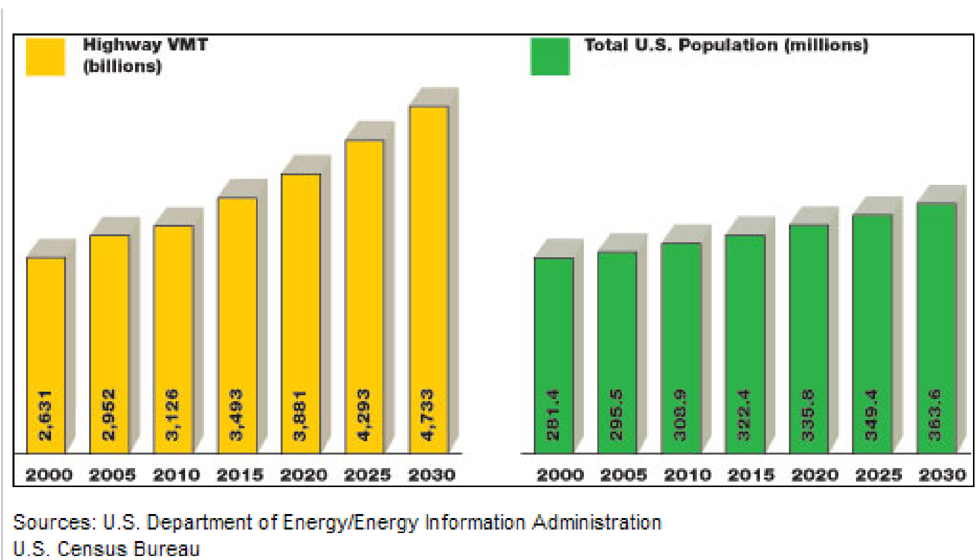
According to the 2010 FHWA Vehicle Miles of Travel Report (FHWA, 2012a), total vehicle miles traveled has been slightly declining over the past several years. As shown in Figure 1-7, per capita highway vehicle miles traveled (VMT) are projected to grow 60%, from 2,952 billion miles traveled in 2005 to 4,733 billion miles traveled by 2030. The volume of freight movement is also forecast to nearly double by 2020 (USDOT, RITA, 2008). According to the USDOT, transit use in the top 50 urbanized areas of the United States has been increasing (USDOT, 2012). During this period, Automobile ownership in the United States has also declined (University of Michigan, 2013).

Per capita highway VMT are projected to grow 60%, to 4,733 billion miles traveled by 2030. The volume of freight movement is also forecast to nearly double by 2020.

Congestion trends for the Richmond, VA, and Raleigh, NC, metropolitan areas between 1985 and 2010 are shown in Tables 1-11 and 1-12. While the numbers of peak commuters in Richmond, VA increased by only 98% between 1985 and 2010, the number of lane miles increased by 108% and the volume of VMT increased by 182%, leading to a 154% increase in congested travel, a 300% increase in the annual number of hours stuck in delays, and a 558% increase in the congestion cost paid by each commuter. Over the same 25 year period in Raleigh, NC peak commuters increased by 265% and the number of lane miles increased by 148% and the volume of VMT increased by 238%, leading to a 188% increase in congested travel, a 178% increase in the annual number of hours stuck in delays, and a 333% increase in the congestion cost paid by each commuter.

Figure 1-7

US Population and Highway Vehicle Miles Traveled (VMT) 2000–2030



Source: USDOT, RITA, 2008. Page 6.

Table 1-11
1985 – 2010 Mobility Data for Richmond, VA
(from the Texas A&M Transportation Institute annual Urban Mobility Report)

	1985	1990	1995	2000	2005	2010
Inventory Measures						
Peak Travelers (1000s)	272	310	347	408	500	539
Peak Commuters (1000s)	255	291	326	383	468	505
Total Daily Vehicle-Miles of Travel (1000s)	7,640	11,285	15,340	17,625	21,440	21,550
Total Freeway & Arterial Lane-Miles	1,600	1,900	2,260	2,750	3,245	3,321
System Performance						
Congested Travel (% of peak VMT)	13%	19%	26%	23%	28%	33%
Congested System (% of lane-miles)	22%	30%	28%	30%	30%	36%
Congested Time (number of "Rush Hours")	N/A	N/A	N/A	N/A	N/A	2.50 hrs
Annual Delay (1000s of person-hours) / Rank	2,087 hrs / 66	3,862 hrs / 60	8,348 hrs / 51	7,457 hrs / 63	11,137 hrs / 59	13,800 hrs / 53
Annual Delay per Peak Auto Commuter (pers-hr) / Rank	5 hrs / 75	8 hrs / 73	16 hrs / 62	13 hrs / 88	17 hrs / 83	20 hrs / 64
Congestion Cost ($ per Peak Auto Commuter) / Rank	$57 / 82	$116 / 77	$278 / 63	$255 / 90	$380 / 88	$375 / 68

Notes:
Peak Commuters – Number of travelers who begin a trip during the morning or evening peak travel periods (6 to 10 a.m. and 3 to 7 p.m.). "Commuters" are private vehicle users unless specifically noted.
Annual Delay per Commuter – A yearly sum of all the per-trip delays for those persons who travel in the peak period (6 to 10 a.m. and 3 to 7 p.m.). This measure illustrates the effect of the per-mile congestion as well as the length of each trip.
Total Delay – The overall size of the congestion problem. Measured by the total travel time above that needed to complete a trip at free-flow speeds. The ranking of total delay usually follows the population ranking (larger regions usually have more delay).
Rank – Annual ranking from 1 to 100 for similar size cities where 1 is the worst performance and 100 is the best.
Source: Texas A&M Transportation Institute, 2012.

Table 1-12
1985 – 2010 Mobility Data for Raleigh-Durham, NC
(from the Texas A&M Transportation Institute annual Urban Mobility Report)

	1985	1990	1995	2000	2005	2010
Inventory Measures						
Peak Travelers (1000s)	175	222	293	391	541	636
Peak Commuters (1000s)	162	206	272	363	503	591
Total Daily Vehicle-Miles of Travel (1000s)	7,135	10,225	13,425	17,300	20,950	24,097
Total Freeway & Arterial Lane-Miles	1,330	1,680	1,980	2,495	2,905	3,303
System Performance						
Congested Travel (% of peak VMT)	17%	26%	34%	40%	47%	49%
Congested System (% of lane-miles)	26%	36%	38%	43%	48%	51%
Congested Time (number of "Rush Hours")	N/A	N/A	N/A	N/A	N/A	4.00 hrs
Annual Delay (1000s of person-hours) / Rank	2,487 hrs / 60	5,698 hrs / 44	8,381 hrs / 49	13,080 hrs / 47	19,777 hrs / 40	19,247 hrs / 40
Annual Delay per Peak Auto Commuter (pers-hr) / Rank	9 hrs / 46	17 hrs / 35	21 hrs / 47	26 hrs / 43	31 hrs / 40	25 hrs / 42
Congestion Cost ($ per Peak Auto Commuter) / Rank	$124 / 46	$274 / 35	$386 / 46	$561 / 41	$762 / 40	$537 / 40

Notes:
Peak Commuters – Number of travelers who begin a trip during the morning or evening peak travel periods (6 to 10 a.m. and 3 to 7 p.m.). "Commuters" are private vehicle users unless specifically noted.
Annual Delay per Commuter – A yearly sum of all the per-trip delays for those persons who travel in the peak period (6 to 10 a.m. and 3 to 7 p.m.). This measure illustrates the effect of the per-mile congestion as well as the length of each trip.
Total Delay – The overall size of the congestion problem. Measured by the total travel time above that needed to complete a trip at free-flow speeds. The ranking of total delay usually follows the population ranking (larger regions usually have more delay).
Rank – Annual ranking from 1 to 100 for similar size cities where 1 is the worst performance and 100 is the best.
Source: Texas A&M Transportation Institute, 2012.

Travel by public transportation riders has also increased 40% since 1982 in the 101 urban areas studied in the report, including Richmond, VA and Raleigh, NC. Transit passenger miles traveled (PMT) increased by 15.8%, from 40.2 billion in 1997 to 46.5 billion in 2004 (Texas A&M Transportation Institute, 2012). In 2004, 41% of PMT was on motorbus, 31% was on heavy rail, 21% was on commuter rail, and 3% was on light rail. To reduce the rate of congestion growth, the USDOT has promoted efforts such as the SEHSR Corridor to increase transit ridership by 2% or more each year (USDOT, RITA, 2008).

This raises the question of why congestion has increased even though there are more roads and more transit service. The Texas A&M Transportation Institute (Institute) annual Urban Mobility Report stated that the answer is slow growth in supply of both roads and public transportation in the last 20 years. After analyzing over 25 years of national urban traffic growth, the Institute concluded that one general trend appears to hold that the more that travel growth outpaces roadway expansion, the more the overall mobility levels decline (Texas A&M Transportation Institute, 2012).

In conclusion, traffic congestion levels nationally and in the Richmond to Raleigh Project area has increased since 1985. Congestion extends to more time of the day, more roads, affects more of the travel and creates more extra travel time than in the past. And congestion levels have risen in all size categories, indicating that even the smaller areas are not able to keep pace with rising demand (Texas A&M Transportation Institute, 2012). In addition to increased delay, travel time and fuel consumption, the costs of roadway congestion include increased vehicle emissions and reduced air quality, increased transportation costs of goods (passed on to consumers) and increased aggravation to drivers (USDOT, FRA, 1997).

To address congestion fully, the Institute concluded that the growth of roadway facilities has to be at a rate slightly greater than travel growth in order to maintain constant travel times. If roadways are added at about the same rate as traffic grows, the growth of congestion will slow, but not be entirely reduced. However, only 13 of the 101 studied urban areas were able to accomplish that rate, given the high financial cost of building additional lane-miles and new highways (Texas A&M Transportation Institute, 2012).

Growth of roadway facilities has to be at a rate slightly greater than travel growth to maintain constant travel times. If roadways are added at the same rate as traffic grows, the growth of congestion will slow, but not be entirely reduced. Only 13 of the 101 studied urban areas were able to accomplish that rate, given the high cost of building additional lane-miles and new highways.

Other solutions that could alleviate the congestion problem include:

- Application of congestion pricing, such as electronic tolling;
- Implementation of intelligent transportation systems; and,
- Provision of intracity and intercity alternatives to the automobile (including high speed rail) (USDOT, FRA, 1997).

1.8.3 TRAVEL TIME/SERVICE RELIABILITY

Travel time and service reliability are key factors that impact the traveling public's choice of transportation mode. Amtrak operates America's current national intercity passenger rail system with 305 weekday trains over 21,100 route-miles, serving 46 states and 3 Canadian provinces. The Amtrak routes through the SEHSR Corridor include:

- North Carolina: Carolinian (Charlotte, NC-New York, NY) and Piedmont service (Raleigh, NC-Charlotte, NC)
- Virginia: Extended Northeast Regional service to Lynchburg, VA and some of the Northeast Regional services to Richmond, VA; new service between Norfolk, VA and Washington, DC, began in December 2012.

As reported in the Tier I EIS, Amtrak's travel times and history of delays have not historically been competitive with travel by airplane or automobile. For example, in North Carolina and Virginia in 1999, the Carolinian arrived more than 10 minutes behind schedule 43.8% to 58.1% of the time, and the Piedmont arrived more than 10 minutes behind schedule 22.2% to 40.8% of the time. (On-time performance was defined as the percentage of trains arriving within 10 minutes of scheduled arrival time.) The Tier I EIS identified these travel delays as due to the increasing volumes of both passenger and freight service within SEHSR Corridor.

Contributing to this is the fact that for 70% of Amtrak's trains (i.e., all of Amtrak's trains outside the NEC), Amtrak contracts with freight railroads for the right to operate over their tracks. These "host railroads" are responsible for the condition of their tracks and for the dispatching on their tracks. Amtrak reports that the total number of delay minutes per 10,000 train miles in 2011 was 347 on Amtrak-responsible routes as compared to 919 minutes on host-responsible routes, a 157% difference. Overall Amtrak performance has declined since 2013 (Washington Post 2014). On-time performance for individual Amtrak lines can be found at http://www.amtrak.com/historical-on-time-performance.

Under current rail passenger service, annual rail ridership along the corridor connecting Washington, DC, with Charlotte, NC, is projected to grow from its current level (2012) of 1.4 million, to approximately 2.34 million in 2030 and to 2.82 million in 2040 or approximately 2.5% per year. Existing and committed rail improvements in Virginia and North Carolina are projected to reduce the rail trip time from Washington, DC, to Charlotte, NC from ten hours to between eight hours thirty minutes and nine hours. The planned improvements to the existing rail lines will improve capacity, reliability and travel times along some segments of the SEHSR Corridor, while other segments will continue to operate at slow speeds and experience delays until such time they can be improved.

Annual rail ridership along the corridor connecting Washington, DC, with Charlotte, NC, is projected to grow to approximately 2.34 million in 2030 and to 2.82 million in 2040.

For the Washington, DC, to Charlotte, NC, traveler, these ongoing, but relatively small, improvements will make rail transportation incrementally more attractive. At the same time, they still will not make the rail system entirely competitive with automobile and air travel on a strictly travel time basis, at least in the short term.

Reductions in travel time and equipment improvements are required for rail passenger service to be more competitive, to divert existing travelers from other modes, and to attract future travelers. An improved rail transportation mode with significantly shorter travel times, increased frequencies, and enhanced reliability should achieve a more balanced use of the overall transportation system.

Meaningful reductions in travel time, along with improvements to equipment, are required for rail passenger service to be more competitive, to divert significant numbers of existing travelers from other modes, and to attract future travelers that otherwise would contribute to the growing congestion in our highway and aviation systems. An improved rail transportation mode with significantly shorter travel times, increased frequencies, and enhanced reliability should achieve a more balanced use of the overall transportation system.

1.8.4 CONNECTIVITY

One goal throughout the entire SEHSR Corridor is to plan for connections to local transit systems in each metropolitan region (e.g., commuter rail, light rail, buses, etc.) to serve a variety of important local origins and destinations located outside of the SEHSR Corridor, which would enhance regional connectivity. This would facilitate system linkages, increasing destinations that could be reached by conventional rail service, and the other modes, through a direct connection with the HSR system. North Carolina and Virginia have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states. The proposed SEHSR Corridor service would serve as the spine to these added routes, allowing conventional rail service passengers to connect to the proposed SEHSR Corridor service and other points in the Northeast, Southeast, and beyond. These new passenger train routes in North Carolina and Virginia would provide linkages to the SEHSR Corridor from parts of eastern and western North Carolina and Virginia not currently served by rail. Passenger rail linkages would also be provided to existing and planned commuter rail services at multimodal stations, allowing for connections to suburbs and airports in Washington, DC; Richmond, VA; Greensboro-High Point-Winston-Salem, NC (the Triad), Raleigh-Durham-Chapel Hill, NC (the Triangle), and Charlotte, NC. The Metrorail in Washington, DC, and Northern Virginia would connect to the SEHSR Corridor at Union Station and Alexandria, VA. The Virginia Railway Express (VRE) in Northern Virginia currently provides daily commuter rail service from Manassas, VA, and Fredericksburg, VA, to Washington, DC, and would connect to the SEHSR in Fredericksburg, VA, Alexandria, VA, and Washington, DC. In North Carolina, the Triangle, Triad, and Charlotte metropolitan areas are currently considering and planning for commuter rail that could potentially connect with the SEHSR Corridor service.

As summarized in Section 3.11.3 of this Richmond to Raleigh Project FEIS, local government and planning agencies in the Richmond to Raleigh Project corridor have been working to plan, fund and develop new and improved local transit systems to link local transit operations with the proposed HSR service. For example, Bus Rapid Transit is being planned for Richmond, VA that would provide connectivity to Main Street Station. In North Carolina, planning is in place to develop transit service to connect Raleigh's planned Union Station, which will serve future SEHSR Corridor trains with the city and the larger region. As mentioned above in Section 1.4, and further discussed in Section 3.11.3 at all proposed stations/stops for the Richmond to Raleigh Project there is currently at least one public bus transit service agency that either currently provides, or is anticipated to be expanded to provide, bus or van services for HSR travelers at the planned station locations. This includes the following bus transit agencies/systems (listed by proposed station location) –

- Richmond, VA - Greater Richmond Transit Company (GRTC)
- Petersburg, VA - Petersburg Area Transit (PAT)
- La Crosse, VA - Lake Area Bus (LAB)
- Henderson, NC - Kerr Area Rural Transportation System (KARTS)
- Raleigh, NC - Capital Area Transit (CAT), Triangle Transit (TT), and Wake Coordinated Transportation System.

Towns that are not designated to receive a HSR stop initially could benefit by the potential for conventional passenger rail service in the future, based upon demand. However, those conventional needs extend beyond the scope of the Richmond to Raleigh Project and therefore, will need to be addressed by separate public transit projects developed through the coordinated activities of various other regional and local transportation planning agencies located along the corridor.

1.8.5 AIR QUALITY

The US Department of Energy reported that between 2004 and 2009 transportation end-users continue to represent the largest US sector related to green-house gas emissions, representing 33% of all emissions (compared to residential at 21%, commercial at 19% and industrial at 26%) (USDOT, RITA, BTS, 2010). As demonstrated in Table 1-14, motor vehicles consistently contribute the vast majority of all greenhouse gas emissions compared to other modes of transportation. A number of counties within the SEHSR Corridor are presently experiencing air quality impacts from mobile source emissions (i.e., motor vehicles). As new standards come into effect and as traffic volumes increase, the need to reduce transportation related mobile emissions will become even more imperative, given that transportation funding is tied to air quality.

The movement of passengers by HSR offers significantly less pollution per passenger mile traveled as compared to auto travel. Diverting some of the traveling public from automobiles to rail will aid in reducing emissions throughout the corridor. HSR provides an alternative that is time competitive with the automobile and produces significantly less pollution, which may facilitate the overall development of the transportation system.

Moving passengers by HSR offers significantly less pollution per passenger mile traveled than auto travel. Diverting some of the traveling public from automobiles to rail will reduce emissions through the corridor.

Table 1-14
National Greenhouse Gas Emissions by Transportation Mode: 2004–2008

Year	Motor Vehicles		Buses		Aircraft		Marine		Rail		Other		Total, All Modes
	CO_2*	% of All Modes	CO_2*	% of All Modes	CO_2*	% of All Modes	CO_2*	% of All Modes	CO_2*	% of All Modes	CO_2*	% of All Modes	
2004	1,549.5	82%	14.8	1%	184.5	10%	39.5	2%	49.7	3%	43.1	2%	1,881.15
2005	1,563.6	82%	11.8	1%	195.9	10%	44.5	2%	50.3	3%	44.1	2%	1,910.23
2006	1,563.9	83%	12.0	1%	171.1	9%	47.7	3%	52.4	3%	44.1	2%	1,891.11
2007	1,572.8	82%	12.1	1%	171.5	9%	54.4	3%	51.6	3%	46.6	2%	1,909.01
2008	1,499.8	83%	11.7	1%	155.5	9%	38.1	2%	47.9	3%	46.5	3%	1,799.42

* = Millions of metric tons of CO_2, domestic activities only
Note – Percentage figures may not total to 100 due to rounding.
Source: USDOT, RITA, BTS, 2010 (Table 5-2).

1.8.6 SAFETY

In order for the proposed Richmond to Raleigh Project improvements to divert travelers from other transportation modes, potential riders must have confidence that the service is not only fast and reliable, but also as safe, or safer, than other modes.

According to the Centers for Disease Control, accidents (unintentional injuries) are the 5th leading cause of death in the US. Transportation accidents account for 31.9% of the accidental deaths reported in 2010. Motor vehicle accidents or highway fatalities are responsible for the largest share, accounting for 93% of transportation-related deaths, as shown in Table 1-15 (Centers for Disease Control, 2012). However, motor vehicle crashes have been trending downward, decreasing by 20.2% over the past 10 years, which has resulted in fewer motor vehicle fatalities and injuries (except for motorcycle fatalities, which have been increasing) (USDOT, NHTSA, 2012a). Many factors have contributed to the improvement in motor vehicles safety, such as safety awareness, education, traffic enforcement, and infrastructure-based and in-vehicle crash avoidance protection technologies. Safety belt and motorcycle helmet use have also increased. However, distracted and drunk driving have been counteracting the gains made in the number of lives saved made by these safety measures, resulting in 18 and 41% of the fatal crashes in 2011, respectively (USDOT, NHTSA, 2012b).

Nationally, passenger rail has consistently been one of the safest ways to travel, as demonstrated in Table 1-15. Since 1970, over 94% of all transportation fatalities have been motor vehicle related, while less than 4% have been related to rail operations (and the majority of those are due to highway-rail collisions or trespassers, as opposed to train accidents that result in passenger fatalities). In 2009, highway accidents made up 99.8% of all transportation accidents and 95.8% of all transportation fatalities, while railroads represented 2% of all fatalities and airlines had 1.6% of all fatalities. The only mode of travel safer was transit, with 0.6% of all fatalities (USDOT, RITA, 2011). The SEHSR Corridor Tier I DEIS, reported that in Amtrak's 30-year history, it only had 100 fatalities, while moving over 600 million passengers. Data for the years subsequent to the publication of the SEHSR Corridor Tier I DEIS shows that passenger rail continues to be one of the safest modes of travel. For the years 2001 through 2013, Amtrak reported 10 passengers killed in train accidents or crossing incidents, while moving over 350 million passengers (FRA, 2014).

In 2009, highway accidents made up 99.8% of all transportation accidents and 95.8% of all transportation fatalities, railroads represented 2% of all fatalities, and airlines had 1.6% of all fatalities.

Expressed differently, the National Safety Council routinely compares the four modes of transportation by passenger mile traveled: scheduled airlines, railroad passenger trains (including Amtrak and commuter rail), buses, and passenger automobiles (excluding vans and pickup trucks). Again, buses, trains and airlines have much lower death rates than automobiles when the risk is expressed as passenger deaths per passenger mile of travel. (Automobile drivers are considered passengers, but operators and crew of planes, trains and buses are not.) In 2008, the national passenger death rate in automobiles was 0.55 per 100 million passenger-miles. The rates for buses, trains and airlines were 0.08, 0.13, and 0.00 respectively (National Safety Council, 2011).

Table 1-15
Transportation Safety in NC and VA

	North Carolina		Virginia		US Total	
	2004	**2010**	**2004**	**2010**	**2004**	**2010**
Automobile						
Total Fatalities	1,557	1,319	925	740	42,636	32,885
Fatality Rate per 100,000 million vehicle-miles traveled	1.60	1.29	1.20	0.90	1.44	1.11
Railroad						
Total No. At-Grade Crossings	7,636	7,186	4,822	4,534	244,196	213,680
Total RR Fatalities	32	19	4	10	898	725
At-Grade Crossing Fatalities	12	1	1	3	368	256
Transit						
Total Fatalities	0	1	2	0	298	314

Source: USDOT, RITA, 2011.

Table 1-16 also shows that railroad safety in the US has steadily improved over the past thirty-plus years despite increases in the volumes of both rail traffic and highway traffic that crosses rail lines at-grade. Between 1975 and 2009, highway-rail at-grade collisions nationally dropped from over 12,000 to 2,000 and related fatalities dropped from over 900 to 250.

Following this national trend, passenger rail has consistently been one of the safest ways to travel in Virginia and North Carolina as well. As demonstrated in Table 1-15 between 2004 and 2010, railroad fatalities declined in North Carolina from 32 to 19 and increased slightly from 4 to 10 in Virginia. When compared to the total transportation fatalities in each state, however, railroad related fatalities represented only 0.1% for both Virginia and North Carolina in 2010. One reason for the reduction in fatalities from at-grade collisions between trains and motor vehicles is the substantial reduction in the total number of at-grade crossings (through closures or creation of grade separations) both nationally and within each state. As shown in Table 1-15, this represents a 12% national reduction, and 6% reduction in both Virginia and North Carolina between 2004 and 2010.

One reason for the reduction in fatalities from at-grade collisions is the substantial reduction in at-grade crossings. This represents a 12% national reduction and a 6% reduction each in VA and NC between 2004 and 2010.

Table 1-16
US Transportation Safety Record (Except Marine and Pipeline)

	Air			Highway			Railroad			Transit			Total Trans. Fatalities
	Fatalities	Accidents	% of All Trans. Fatalities	Fatalities	Accidents	% of All Trans. Fatalities	Fatalities (Total / At-Grade)	Accidents (Total / At-Grade)	% of All Trans. Fatalities	Fatalities	Accidents	% of All Trans. Fatalities	
1970	1,456	4,767	2.6%	52,627	n/a	93.5%	2,225 / 1,440	11,654 / 3,559	3.9% / 2.6%	n/a^	n/a	n/a^	56,308^
1975	1,473	4,232	3.1%	44,525	n/a	93.8%	1,492 / 917	20,117 / 12,076	3.1% / 1.9%	n/a^	n/a	n/a^	47,490^
1980	1,382	3,818	2.6%	51,091	n/a	94.8%	1,417 / 833	18,817 / 10,612	2.6% / 1.5%	n/a^	n/a	n/a^	53,890^
1985	1,595	2,935	3.4%	43,825	n/a	94.3%	1,036 / 582	10,194 / 6,919	2.2% / 1.3%	n/a^	n/a	n/a^	46,456^
1990	866	2,388	1.8%	44,599	6,471,000	94.6%	1,297 / 698	8,594 / 5,715	2.7% / 1.5%	339	58,002	0.7%	47,101
1995	963	2,178	2.2%	41,817	6,699,000	94.0%	1,146 / 579	7,092 / 4,633	2.6% / 1.3%	274	25,683	0.6%	44,470
2000	764	1,985	1.7%	41,945	6,394,000	95.5%	937 / 425	6,485 / 3,502	2.1% / 1.0%	295	24,261	0.6%	43,941
2005	603	1,781	1.3%	43,510	6,159,000	96.2%	884 / 359	6,332 / 3,066	2.0% / 0.8%	236	8,851	0.5%	45,233
2009	547	1,556	1.6%	33,808	5,505,000	95.8%	695 / 249	3,836 / 1,930	2.0% / 0.7%	230	3,513	0.6%	35,280

Notes –
Air includes all types of aviation; Highway includes cars, motorcycles trucks, pedestrians and cyclists; Railroad Total includes passengers, RR workers (Amtrak and freight operations), motor-vehicle collisions, as well as trespassers; Railroad At-Grade includes accidents and incidents occurring at highway-rail crossings resulting from freight and passenger rail operations including commuter rail; Transit includes motor bus, commuter rail, heavy rail, light rail, van pool and other demand response and automated transit systems.
^ - Fatality data was not available, therefore Total Transportation Fatality figures for year 1970-1985 are not included in totals.
n/a – data is not available
Source – USDOT, RITA, BTS, 2010 (Tables1-3 and 1-4)

As reported in the SEHSR Corridor Tier I EIS, Virginia DRPT has been working in cooperation with VDOT to make special efforts to improve crossing safety, including construction of highway and pedestrian bridges over rail lines, expanding the use of protection devices at private crossings, and participating in the testing of active physical barriers to prevent motorists from violating the highway-grade crossing warning devices. For example, in 2002 VDOT completed a grade separation project just north of CSX's Collier Yard. The crossing, located at Halifax Road at the intersection of Vaughan Road at the SCL south of Petersburg, VA was identified for separation due to high crash rates. In addition, some at-grade crossings south of Richmond, VA on the I-95 corridor have been upgraded with safety devices such as Constant Warning Time (CWT) Predictors (which serve to activate warning devices for at-grade crossings at a constant warning time) and Event Recorders.

Likewise, NCDOT has also been working since the early 1990s to improve safety along active rail lines within the SEHSR Corridor. NCDOT and Norfolk Southern began working together in 1994 to “seal” the North Carolina Railroad corridor between Raleigh, NC Greensboro, NC and Charlotte, NC by using traffic control devices to separate all vehicular and rail traffic. CSX also was involved in a segment of the SEHSR Corridor between Raleigh, NC and Cary, NC. As part of this 10 to 12-year “sealed corridor” project, the use of specific devices and technology for particular crossings was based on factors such as intersection geometrics, road width and other local conditions, and evaluations were made on a case-by-case basis. In addition to crossing closures, gates with extended arms, median barriers, and four-quadrant gate projects were implemented, either singularly or in combination. Some 190 of the 216 total at-grade crossings between Charlotte, NC and Raleigh, NC were improved or closed, and studies have estimated that 19 fatalities were prevented as a result of these safety measures. Today, only 149 at-grade crossings remain on the corridor between Raleigh and Charlotte, and NCDOT intends to have closed an additional 50 at-grade crossings by 2017.

At the Sugar Creek Road crossing in Charlotte, NC, replacing standard dual gates with four quadrant gates and installing median separators produced a 98% reduction in crossing violations. In addition, NCDOT has installed video surveillance equipment at some crossing locations and worked with local law enforcement to decrease the number of violators at highway-rail crossings. Along the lower freight density line from Raleigh, NC north to Norlina, NC, NCDOT has worked with CSX and local communities to close 6 crossings since 2000, and to install or upgrade signals and gates at another 13 locations.

Additionally, through the Private Crossing Safety Initiative program (PCSI) NCDOT uses a share of Federal and state funds to provide safety improvements at private crossings on the Raleigh to Charlotte Sealed Corridor. The safety improvements can range from installing signage, signals and gates and locked gates. The ultimate goal of the program is complete removal of the crossing which eliminates the potential for conflict at the crossing. In certain locations, NCDOT has been able to provide alternate access to the users of the private crossing and in return the property owner gives up any right they have to the private crossing. NCDOT then coordinates with the railroad for the physical removal of the private crossing.

The safety improvements discussed above, along with the Richmond to Raleigh Project being fully grade separated, will result in improved overall rail passenger safety within the SEHSR Corridor when compared to existing rail service and other modes of transportation currently serving the area.

1.8.7 ENERGY EFFICIENCY

Energy, its sources, and uses are becoming more critical considerations in government decisions to implement and invest in transportation programs and improvements as well as in private citizen decisions regarding their personal transportation choices. Oil prices have been highly unstable for the past three decades with prices since 2007 nearly tripling from about $50 per barrel in early 2007 to nearly $140 per barrel in mid-July 2008 and back to around $45 per barrel by December 2008. Oil price forecasts show these wide variations for the future as well. Americans have reacted to these high fuel prices by driving less and using public transit more.

Automobiles use 89% of energy consumed on a national basis for transportation purposes, while air uses 8%, freight (rail) uses 2%, transit uses less than 1%, and Amtrak uses around 0.05%.

Table 1-17 and data included in the Tier I EIS show that, even with the high prices and resulting increase in transit use beginning in 2007, automobiles consistently use around 89% of all energy consumed on a national basis for transportation purposes, while air uses 8%, freight (rail) uses 2%, transit uses less than 1%, and Amtrak uses around 0.05%. Previous sections of this chapter demonstrated that all forms of travel in the US are predicted to grow in the future, reaching and exceeding pre-recession levels in the next 5 to 10 years. With this increased travel will be an increase in energy consumption and a resultant increase in air pollutant emissions.

As reported in the Tier I EIS, trains are more energy efficient than aircraft and autos on a per passenger mile basis. This is due to such factors as superior aerodynamics and the low rolling resistance of steel wheels on steel rails. A typical passenger train driven by a diesel locomotive consumes about 350,000 British Thermal Units (BTUs) of energy per mile, whereas a typical automobile uses about 6,200 BTUs of energy per vehicle mile. Because of the higher passenger capacity of the train, it is more efficient than a single occupant vehicle. Further, intercity rail is 45% more energy-efficient than domestic commercial airline service and 76% more energy-efficient than general aviation.

Improving the modal balance in the SEHSR Corridor such that even a small portion of the automobile use is replaced with HSR use could result in a decrease in the amount of energy used for transportation, as well as a decrease in the amount of air pollution produced in the project area.

Table 1-17
Energy Consumption by Mode of Transportation: 2004–2008
(Trillion Btu, domestic activities only)

	2004	2005	2006	2007	2008
Air	2,101	2,128	2,104	2,080	1,970
Highway	22,041	22,243	22,279	22,430	21,728
Transit	143	146	152	157	162
Rail, Class I (freight service)	563	571	585	567	542
Amtrak	11	11	11	11	11
TOTALS	**24,859**	**25,099**	**25,131**	**25,245**	**24,413**

Source: USDOT, RITA, BTS, 2010 (Table 5-7).

1.9 SUMMARY AND CONCLUSION

1.9.1 SUMMARY

Federal interest in HSR dates back at least to 1965, with the passage of the High Speed Ground Transportation Act. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) identified the SEHSR Corridor as one of the first five Federally designated HSR corridors. Sections 1.1 and 1.2 of this chapter provide details on the development of the SEHSR Corridor, including studies of the market and demand for the project.

The preferred corridor identified in the SEHSR Corridor Tier I EIS runs from Washington, DC through Richmond, VA, Petersburg, VA, Henderson, NC, Raleigh, NC, and Greensboro, NC, to Charlotte, NC, with a connection to Winston-Salem, NC. This Richmond to Raleigh Project Tier II FEIS is focused on the portion of the SEHSR Corridor between Richmond, VA, and Raleigh, NC. The project timeline presented in Section 1.3 of this chapter notes that project construction of the Richmond to Raleigh Project will begin no earlier than two years from the signature of the Record of Decision (ROD) and is dependent on the ability of Virginia DRPT and NCDOT to secure project funding.

Studies of other portions of the larger SEHSR Corridor are being completed separately, including the Richmond to Hampton Roads SEHSR Corridor EIS and the Washington, DC to Richmond Southeast High Speed Rail Tier II EIS. Rail improvements are also currently in development between Raleigh, NC and Charlotte, NC. Section 1.4 of this chapter identifies current and planned projects within the SEHSR Corridor and their level of environmental documentation.

Section 1.4 also describes the improvements proposed by the Richmond to Raleigh Project, which would create a fully grade separated rail system (i.e., no at-grade crossings) between Richmond, VA, and Raleigh, NC, with fossil fuel locomotives. Maximum authorized speeds would be 79 mph from Richmond, VA, to Centralia, VA; 90 mph from Centralia, VA, to Collier, VA; and 110 mph between Collier, VA, and Raleigh, NC. This Tier II FEIS assumes the operation of eight new passenger trains per day (four round trips) along the SEHSR Corridor between Richmond, VA, and Raleigh, NC (with most of the trains continuing either south or north).

Five municipal locations have been identified for SEHSR Corridor stops within the Richmond to Raleigh Project corridor: Richmond, VA, Petersburg, VA, and Raleigh, NC, which have existing passenger service and stations, and La Crosse, VA, and Henderson, NC, which do not currently have passenger service or stations.

Patronage (ridership and revenue) information is presented in Section 1.5 of this chapter. The most recent evaluation of ridership and revenue was completed in 2013 and supports previous findings that SEHSR Corridor service would be competitive with other modes of transportation. It also confirms that SEHSR Corridor service is anticipated to generate revenue in excess of operation and maintenance costs.

The Tier I EIS for the SEHSR Corridor between Washington, DC, and Charlotte, NC, established the overall need and purpose for the entire SEHSR Corridor. Sections 1.6 and 1.7 of this chapter present a summary of the purpose and need information included in the SEHSR Corridor Tier I EIS. Section 1.8 of this chapter presents updated and additional information about the need for the SEHSR Corridor in response to the comments and questions received on the Richmond to Raleigh Project Tier II DEIS. This expanded discussion with more recent data shows that the needs initially demonstrated in the SEHSR Corridor Tier I EIS more than 10 years ago are still present, and re-confirms and substantiates the conclusions from the Tier I process. Updated data are included for:

- Growth – population, age-dependency, and economic growth
- Congestion – air and highway transportation
- Travel time/service reliability – on-time performance
- Connectivity – connections to local transit systems
- Air Quality – national greenhouse emissions by transportation mode
- Safety – passenger rail fatalities compared to automobile and transit
- Energy Efficiency – energy consumption by mode of transportation.

1.9.2 CONCLUSION

The history of the Richmond to Raleigh Project, from initial Federal interest in HSGT through multiple studies of the SEHSR Corridor from Washington, DC, to Charlotte, NC supports the need and market demand for the proposed improvements. The Richmond to Raleigh Project will help address the needs identified for the SEHSR Corridor by:

- Providing the traveling public, particularly special populations such as age-dependent (youth and old age) and the disabled, with improved transportation choices;
- Helping ease existing and future congestion (air, highway, passenger rail) within the SEHSR Corridor;
- Improving safety and energy effectiveness within the transportation network;
- Reducing the overall air quality related emissions per passenger mile traveled within the SEHSR Corridor; and
- Improving overall transportation system connectivity and efficiency within the SEHSR Corridor, with a minimum of environmental impact.

2 SELECTION OF THE PREFERRED ALTERNATIVE

All references to "Study Area" and "Project" below pertain to the Richmond to Raleigh Project, unless otherwise noted.

This chapter describes the Study Area for the Project Tier II FEIS, and provides details on the characteristics of the reasonable alternatives that meet the purpose and need for the Project. This chapter also discusses the criteria by which the alternatives were evaluated, the evaluation of alternatives, and presents the FRA's and the Project Sponsors' preferred railroad alternatives and associated roadway work.

Initially, each of the 26 sections of the Project included three alternative railroad alignments (described below and shown in Figure 2-1). As presented in the Project Tier II DEIS, the alternatives were named VA1, VA2, and VA3 in Virginia, and NC1, NC2, and NC3 in North Carolina. In order to minimize impacts, throughout much of the Study Area the alternatives are within existing railroad ROW; in many locations the alternatives are on common (concurrent) alignment. Except where otherwise specified, alternative VA3 is concurrent with alternative VA1, and alternative NC3 is concurrent with alternative NC1. The endpoints of each of the 26 sections are in locations where the alternative alignments are in a common location. This approach allowed for the broadest range of options during evaluation and selection of the preferred alternatives. Joined together, the preferred alternatives form a "best-fit" preferred alternative for the entire Study Area.

> The preferred alternatives form a "best-fit" alternative for the entire Study Area.

In response to comments on the Project Tier II DEIS, an additional fourth or fifth railroad alternative was developed for evaluation in three sections of the Project: Alternative VA4 was developed for Sections D and G in Brunswick County, VA; and Alternative NC5 was developed for Section V in Raleigh, NC. The development of these new alternatives for the Project is described in greater detail later in this chapter.

2.1 STUDY AREA

> Wider widths were narrowed to approximately 1,000 feet. In some areas the Study Area is wider to accommodate associated road work. The Study Area includes small areas of expansion added since the DEIS to accommodate design changes.

The Project Study Area provides boundaries for the proposed SEHSR Corridor railroad and associated roadway alignments and includes areas where construction of the Project could have direct impacts on the environment (Figure 2-1). Initially, the Study Area width was between 1,000 and 6,000 feet, centered primarily on the centerline of the existing railroad ROW. This broad width allowed for the development of alternative alignments. Once potential alignments were proposed, the wider widths were narrowed to approximately 1,000 feet. In some areas the Study Area is wider to accommodate associated roadway work. In addition, the Study Area includes small areas of expansion that were added since the completion of the Project Tier II DEIS to accommodate design changes developed in response to comments on the DEIS.

The Study Area begins at Main Street Station in Richmond, VA, and extends to the south, following the existing CSX S-Line railroad across the James River and through Chesterfield County towards Centralia, VA (Figure 2-1). From Centralia, the Study Area follows the existing CSX A-Line south to Dunlop, VA, south towards Ettrick Station on the west side of Petersburg, and across the Appomattox River. After crossing the river, it continues to follow the CSX A-Line south through Petersburg.

The Study Area initially included an eastern branch through the Petersburg, VA, area that followed inactive railroad ROW (the old CSX AAP-Line) from Dunlop through Colonial Heights, VA into Petersburg, VA to serve the old Union Station. However, as described in the Project Tier II DEIS, this route was excluded from further consideration based on impacts to historic resources, relocations, constructability, and other issues. More information on this evaluation is included in Section 2.3.

South of Petersburg, VA, the Study Area continues to follow the CSX A-line south through Collier Yard, a CSX railroad yard. At the south end of Collier Yard, the Study Area turns west, following the alignment of the inactive Burgess Connector railroad. The tracks have been removed along the Burgess Connector, and small portions of the ROW have been sold. At Burgess, the Study Area curves south, joining again with the alignment of the CSX S-Line. Although the tracks along this section of the CSX S-Line were removed in 1987, CSX retains exclusive ownership, with exceptions, of the CSX S-Line (i.e., fee simple) and leases a portion of the railroad ROW for operation of an underground fiber optic cable. The exceptions are located along the Burgess Connector south of Collier Yard, where portions of the ROW have been sold to individual property owners for driveway access, and in southside Virginia, where sections of the ROW have been sold to adjacent landowners, such as a 1.3 mile long section at the Nottoway River in Dinwiddie County owned by Reedy Creek Farm Associates.

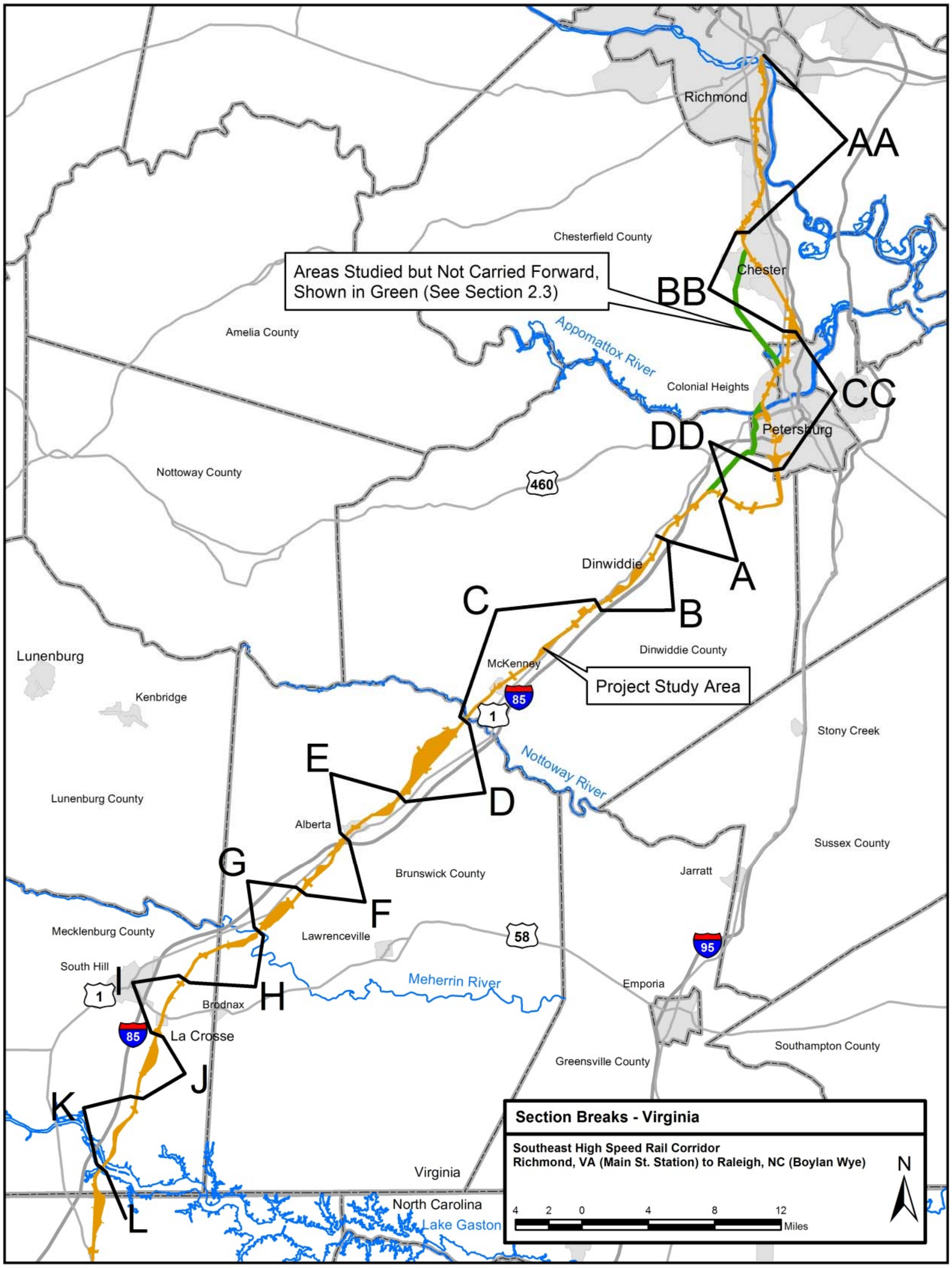
As the Study Area moves through southern Virginia, it passes through the Town of McKenney, VA, where a portion of the ROW has been sold, before crossing the Nottoway River into Brunswick County. The Study Area progresses south through the Town of Alberta, VA, and crosses the Meherrin River before crossing into Mecklenburg County. In Mecklenburg County the Study Area continues to follow the CSX S-line through the Town of La Crosse, VA, and then crosses Lake Gaston, before passing into North Carolina.

In North Carolina, the Study Area continues along the inactive S-line through Warren County to the Town of Norlina, NC, where the CSX S-Line returns to an active freight railroad (CSX). From Norlina, the Study Area follows the active freight line into Vance County and through the towns of Middleburg, Henderson, and Kittrell, NC, before crossing the Tar River into Franklin County; the Study Area then passes through Franklinton and Youngsville before entering into Wake County.

In Wake County, the Study Area passes through the Town of Wake Forest, NC, before crossing the Neuse River, and then into the City of Raleigh. In Raleigh, the southern ten miles of the Study Area includes ROW recently purchased by Triangle Transit (TT) for planned regional commuter light rail service, which will be operated on a separate railroad system.

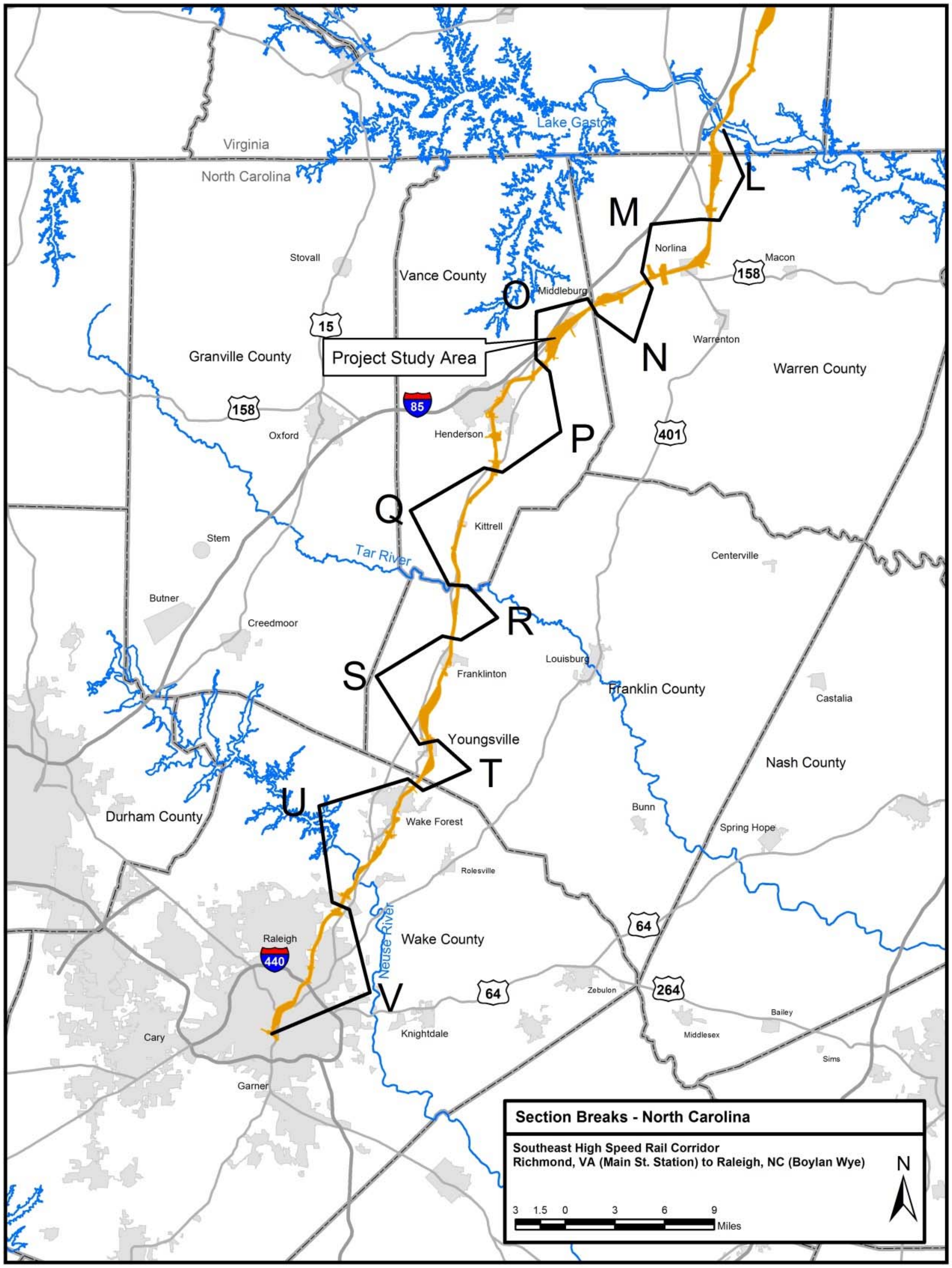
On the north side of Downtown Raleigh near Capital Boulevard, the Study Area widens to approximately 2,000 feet to encompass the existing Norfolk Southern (NS) NS-line through Glenwood Yard (the NS switching yard) on the west side, and the CSX S-Line through Capital Yard (the CSX switching yard) on the east side, and the area between the two. Near Jones Street in Downtown Raleigh, the NS line joins the CSX S-Line, and the Study Area narrows to follow the CSX S-Line south for two blocks to the Boylan Wye, near Boylan Avenue. The Boylan Wye is the southern terminus of the Study Area.

Figure 2-1



continued…

Figure 2-1 continued



2.2 PREFERRED ALTERNATIVE BY SECTION

2.2.1 PROCESS FOR EVALUATION OF ALTERNATIVES

Following the May 2010 publication of the Project Tier II DEIS, more than 1,850 individuals and 50 agencies and organizations submitted comments. Many of the comments were several pages in length, and most covered multiple topics. All comments were read and coded by topic(s) and Project section (where identified) to enable sorting. A series of eight internal decision meetings were held by the Project team (comprised of representatives of NCDOT and Virginia DRPT) to discuss comments received by section. Refer to Chapter 8 for a listing of comments received and responses to those comments.

At the decision meetings, the Project team evaluated and compared impacts to the natural and human environment, and assessed information on speed, cost and constructability for each alternative. All comments on the Project Tier II DEIS pertaining to a section were reviewed and discussed by the Project team, and preferences for alternatives were tallied. The Project team based their recommendations for the preferred railroad alternative by section on all relevant information. In some sections, additional coordination, analysis, or design work was undertaken prior to the Project team making a final recommendation.

The Project team evaluated impacts to the natural and human environment, and assessed information on speed, cost, and constructability for each alternative. All comments were reviewed and discussed by the Project team, and preferences for alternatives were tallied. The Project team based its recommendations for the preferred railroad alternative on all relevant information.

2.2.2 INTRODUCTION TO PREFERRED ALTERNATIVES

Each alternative includes both the railroad alignment and associated roadway work. The overarching philosophy of design for the Project is to evaluate railroad-roadway grade crossings with the goal of consolidating and grade separating all crossings (using bridges or underpasses) for safety and operability purposes as described in Chapter 1.

Maps showing the Preferred Alternative for each of the Project sections (AA-V) are included at the end of this Chapter. In addition, the following discussion contains information about each of the Project sections, including:

- Overview and description of characteristics
- Summary of alternatives and table of impacts
- Preferred alternative and basis for selection
- Public roadway-railroad crossings:
    - Public roads with existing grade separated crossings (bridges or underpasses will be retained, expanded or replaced)
    - Public roads with new grade separated crossings (bridges or underpasses), and description of temporary proposed detour routes
    - Public at-grade crossings to be closed, with traffic re-routed
- River and major creek bridges
- Changes to the preferred alternative subsequent to the Project Tier II DEIS.

Table 2-1 lists the Preferred Alternative by section. More detailed information can be found in the following Appendices: Appendix R contains maps that show a greater level of detail for the Preferred Alternative, including all associated roadwork; Appendix E contains schematic track charts of the alternative railroad designs, and Appendix F contains detailed information on all associated roadway work.

Table 2-2 provides a description of the track configuration upon completion of the Project using approximate geographical reference points (note that the configuration was the same for all alternatives).

Table 2-1
Preferred Alternative
by Section

Section	Appendix R Maps	From	To	Preferred Alternative
AA	001-010	Main Street Station Richmond, VA	Centralia, VA	**VA1**
BB	010-016	Centralia, VA	North of Dunlop, VA	**VA1**
CC	017-028	North of Dunlop, VA	Collier Yard Petersburg, VA	**VA1**
DD	028-033	Collier Yard Petersburg, VA	North of Burgess, VA	**VA3**
A	034-038	North of Burgess, VA	North of Dinwiddie, VA	**VA2**
B	038-043	North of Dinwiddie, VA	South of Dinwiddie, VA	**VA1**
C	044-053	South of Dinwiddie, VA	South of Nottaway River	**VA1**
D	053-062	South of Nottaway River	North of Alberta, VA	**VA4**
E	063-066	North of Alberta, VA	South of Alberta, VA	**VA1**
F	067-070	South of Alberta, VA	South of Tower Road Brunswick County, VA	**VA1**
G	071-074	South of Tower Road Brunswick County, VA	Meherrin River	**VA3**
H	075-080	Meherrin River	North of Wray Road Mecklenburg County, VA	**VA1**
I	080-083	North of Wray Road Mecklenburg County, VA	South of La Crosse, VA	**VA1**
J	084-087	South of La Crosse, VA	North of Bracey, VA	**VA2**

Table 2-1
Preferred Alternative
by Section

Section	Appendix R Maps	From	To	Preferred Alternative
K	087-091	North of Bracey, VA	Roanoke River	**VA1**
L	091-095	Roanoke River	North of Norlina, NC	**VA1/NC1**
M	096-102	North of Norlina, NC	Southwest of Norlina, NC	**NC1**
N	103-106	Southwest of Norlina, NC	North of Middleburg, NC	**NC1**
O	107-111	North of Middleburg, NC	North of Henderson, NC	**NC3**
P	111-118	North of Henderson, NC	North of Kittrell, NC	**NC1**
Q	118-124	North of Kittrell, NC	Tar River	**NC1**
R	124-126	Tar River	North of Franklinton, NC	**NC1**
S	126-132	North of Franklinton, NC	North of Youngsville, NC	**NC1**
T	132-134	North of Youngsville, NC	North of Wake Forest, NC	**NC1**
U	135-142	North of Wake Forest, NC	North Raleigh, NC	**NC1**
V	142-151	North Raleigh, NC	Boylan Wye Raleigh, NC	**NC5**

Table 2-2
Track Configuration

Project Sections	Begin		End		Number of Tracks
	Location (Approximate)	Closest Railroad Mile Post	Location (Approximate)	Closest Railroad Mile Post	
AA	Main St. Station Richmond, VA	S-0	Just South of Maury St. Richmond, VA	S-1	Double (2)
AA	Just South of Maury St. Richmond, VA	S-1	1/2 Mile South of Goodes St. Richmond, VA	S-2	Triple (3)
AA	1/2 Mile South of Goodes St. Richmond, VA	S-2	Old Lane Chesterfield County, VA	A-11	Double (2)
BB/CC	Old Lane Chesterfield County, VA	A-11	North Side Appomattox River Chesterfield County, VA	A-23	Triple (3)
CC	North Side Appomattox River Chesterfield County, VA	A-23	Just North of Washington St. Petersburg, VA	A-24	Double (2)
CC	Just North of Washington St. Petersburg, VA	A-24	North End of Collier Yard Petersburg, VA	A-27	Triple (3)
DD	North End of Collier Yard Petersburg, VA	A-27	South End of Collier Yard Petersburg, VA	A-29/ S-25	Single (1) Adjacent to Yard
DD	South End of Collier Yard Petersburg, VA	S-25	1/2 Mile North of Vaughan Rd. Dinwiddie County, VA	S-27	Double (2)

Table 2-2
Track Configuration

Project Sections	Begin		End		Number of Tracks
	Location (Approximate)	Closest Railroad Mile Post	Location (Approximate)	Closest Railroad Mile Post	
DD	1/2 Mile North of Vaughan Rd. Dinwiddie County, VA	S-27	1/2 Mile North of Duncan Rd. Dinwiddie County, VA	S-29	Single (1)
A	1/2 Mile North of Duncan Rd. Dinwiddie County, VA	S-29	1 Mile South of Quaker Rd. Dinwiddie, VA	S-34	Double (2)
B/C	1 Mile South of Quaker Rd. Dinwiddie, VA	S-34	Just South of Snap Lodge Rd. Dinwiddie, VA	S-43	Single (1)
C	Just South of Snap Lodge Rd. Dinwiddie, VA	S-43	Just North of Doyle Blvd. McKenney, VA	S-48	Double (2)
C/D	Just North of Doyle Blvd. McKenney, VA	S-48	1/4 Mile South of Kress Rd. Brunswick County, VA	S-56	Single (1)
D/E	1/4 Mile South of Kress Rd. Brunswick County, VA	S-56	Church St. Alberta, VA	S-61	Double (2)
E/F/G	Church St. Alberta, VA	S-61	1/2 Mile South of Old Indian Rd. Brunswick County, VA	S-70	Single (1)
H	1/2 Mile South of Old Indian Rd. Brunswick County, VA	S-70	1/4 Mile South of Wilson Rd. Mecklenburg County, VA	S-75	Double (2)

Table 2-2 Track Configuration					
Project Sections	**Begin**		**End**		**Number of Tracks**
	Location (Approximate)	**Closest Railroad Mile Post**	**Location (Approximate)**	**Closest Railroad Mile Post**	
H/I/J	1/4 Mile South of Wilson Rd. Mecklenburg County, VA	S-75	Gaulding Rd. Mecklenburg County, VA	S-84	Single (1)
K	Gaulding Rd. Mecklenburg County, VA	S-84	Just North of Cliffside Dr. Mecklenburg County, VA	S-88	Double (2)
K/L/M	Just North of Cliffside Dr. Mecklenburg County, VA	S-88	1 Mile South of Faulkner Quarter Rd. Warren County, NC	S-96	Single (1)
M	1 Mile South of Faulkner Quarter Rd. Warren County, NC	S-96	Just North of Ridgeway Warrenton Rd. Warren County, NC	S-100	Double (2)
M/N/O	Just North of Ridgeway Warrenton Rd. Warren County, NC	S-100	1/2 Mile North of Carroll St. Middleburg, NC	S-106	Single (1)
O/P	1/2 Mile North of Carroll St. Middleburg, NC	S-106	Just North of US1 Bypass Vance County, NC	S-111	Double (2)
P	Just North of US1 Bypass Vance County, NC	S-111	Just South of Chavasse Ave. Henderson, NC	S-115	Single (1)
P/Q	Just South of Chavasse Ave. Henderson, NC	S-115	Just South of Beechtree Trail Rd. Vance County, NC	S-123	Double (2)

Table 2-2 Track Configuration					
	Begin		End		
Project Sections	Location (Approximate)	Closest Railroad Mile Post	Location (Approximate)	Closest Railroad Mile Post	Number of Tracks
Q/R/S	Just South of Beechtree Trail Rd. Vance County, NC	S-123	1/2 Mile North of Bert Winston Rd. Franklin County, NC	S-133	Single (1)
S/T	1/2 Mile North of Bert Winston Rd. Franklin County, NC	S-133	County Line Franklin County/Wake County, NC	S-139	Double (2)
U	County Line Franklin County/Wake County, NC	S-139	1 Mile North of Durant Rd. Wake County, NC	S-146	Single (1)
U/V	1 Mile North of Durant Rd. Wake County, NC	S-146	Near Boylan Wye Raleigh, NC	S-157	Double (2)

2.2.3 SECTION AA

The section begins at Main Street Station in Richmond, VA, and extends to railroad milepost (MP) A-11 in Centralia, VA, a distance of 11.31 miles (see Section AA map, Figure 2-2). The Study Area follows the CSX S-line in this section, where there is active freight service. The section includes a crossing of the James River and is located entirely within the James River Basin. Detailed maps for this section can be found in Appendix R, maps 001-010.

2.2.3.1 SECTION AA ALTERNATIVES EVALUATED IN THE DEIS

All alternatives are on common alignment in this section. Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost. Operability relates to the ability of the alternative to meet the purpose and need for the Project.

Alternative VA1//VA2/VA3 has the following characteristics:

- Design objectives are to maximize the use of existing ROW and rebuild double tracks where they previously existed (i.e., several areas of this section were reduced to a single track) with crossovers to allow shared freight and passenger operation.
- CSX owns the existing railroad which supports active freight operations.
- The design provides a new railroad bridge over the James River, adjacent to and on the east side of the existing single-track railroad bridge.
- The MAS (described in Section 1.4) is 79 mph. Slower speeds are proposed in the immediate vicinity of Main Street Station in Richmond.

2.2.3.2 SECTION AA PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in this section is the common alignment of Alternatives VA1/VA2/VA3. Henceforth, the preferred alternative for Section AA will be referred to as Alternative VA1.

2.2.3.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- East Main Street - railroad bridge over roadway
- I-95 - roadway bridge over railroad
- East Cary Street - railroad bridge over roadway
- Powhite Expressway Ramps - roadway bridge over railroad
- East Dock Street - railroad bridge over roadway
- East Byrd Street - railroad bridge over roadway
- Manchester Road - railroad bridge over roadway
- I-95 Ramps at Maury Street - roadway bridge over railroad
- Cogbill Road - roadway bridge over railroad
- Chippenham Parkway - roadway bridge over railroad
- Marina Drive - railroad bridge over roadway
- Elliham Avenue - roadway bridge over railroad
- Jefferson Davis Highway - roadway bridge over railroad
- VA 288 - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Maury Street - roadway bridge over railroad; on-site detour
- Goodes Street - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- East Commerce Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Ruffin Road - underpass (roadway under railroad); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- West Bells Road - roadway bridge over railroad; on-site detour
- Station Road - roadway bridge over railroad; on-site detour
- Kingsland Road (existing at-grade crossing closed, road realigned to provide a new grade separated crossing located to the south) - roadway bridge over railroad; construction on new location
- New Public Road (north of Highway 288, connecting Thurston Road on the west side of the railroad to Chester Road on the west) - roadway bridge over railroad; construction on new location

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Dale Avenue
- Brinkley Road
- Old Lane

2.2.3.4 RIVER AND MAJOR CREEK BRIDGES

James River – Heading south out of Main Street Station, the existing single-track railroad bridge is elevated on supports built to accommodate double-track through the triple railroad crossing; it remains elevated and transitions to a single-track width as it passes through a gated opening in a floodwall on the north side of the James River before proceeding to cross the river on a single-track bridge.

The designs for Preferred Alternative VA1 require addition of a second track across the James River. The proposed alignment would include a new bridge adjacent to and on the east side of the existing bridge as well as an enlargement of openings in the floodwalls to accommodate the addition of the proposed double track. The specific configuration for the addition of a second track railroad crossing of the James River, however, will be determined during final design within the limits as defined in the Project Tier II FEIS. The addition of a second track will expand railroad capacity and alleviate congestion at this major choke point.

> The designs for Preferred Alternative VA1 require a second track across the James River. The proposed alignment would include a new bridge adjacent to and on the east side of the existing bridge as well as larger openings in the floodwalls to accommodate the proposed double track.

2.2.3.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

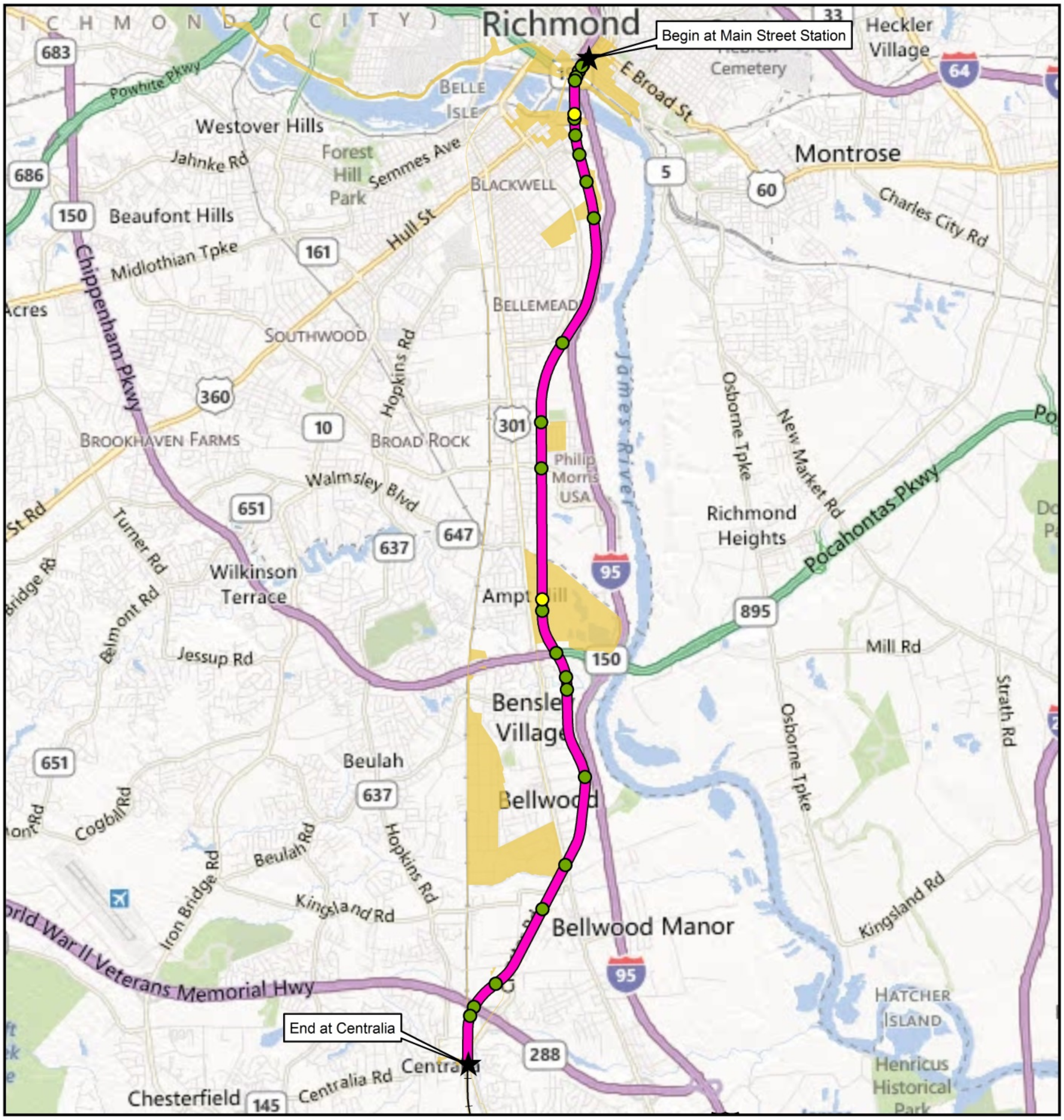
- Maury Street area – Between the publication of the Tier II DEIS and the development of the Tier II FEIS, the Manchester Industrial Historic District's (VDHR No. 127-0457) National Register of Historic Places (NRHP) nomination listing was updated in 2011 and, as a result, the boundary shown at the 2010 public hearings for the Tier II DEIS was increased. This expansion extended the historic district boundary on the north side of Maury Street, as well as one property on the south side of Maury Street. The proposed Maury Street grade separation, as presented in the 2010 Tier II DEIS, impacted contributing elements in the Manchester Industrial Historic District expansion area and the Virginia Department of Historic Resources (VDHR) determined that the designs would result in an adverse effect on the district under Section 106 of the National Historic Preservation Act.

In response to VDHR's determination of adverse effect, and through close coordination with the City of Richmond staff, several modifications were made to the Maury Street designs originally proposed in the DEIS, including the construction of a new road parallel to the existing I-95 ramps and grade separating the crossing of this new road and the rail corridor just north of the existing I-95 ramps bridge, thereby avoiding all property impacts within the expanded Manchester Industrial Historic District boundary. Other means to minimize impacts from the new grade separation include using some of the fill from the original I-95 ramp, in addition to new retaining walls, to right of way needed from the Citgo Petroleum above-ground storage tanks located adjacent to the new roadway.

In addition to this new road and grade separated crossing, the City of Richmond provided their long range transportation plan for adding a roundabout at the Maury Street/I-95 ramps/E. 4th Street intersection to the SEHSR Project Team. The designs included in the FEIS incorporate this plan by providing a roundabout approximately 70-feet west of the existing Maury Street/I-95 ramps/4th Street intersection. To minimize impacts to the operational capabilities of the I-95 ramps from the proposed new road grade separation, the designs propose to relocate the I-95 off-ramp approximately 200-feet west of its existing intersection with Maury Street.

- Commerce Road - The typical section (roadway cross section) has been modified to reflect the designs shown in the City of Richmond's Commerce Road improvement project. A T-turn was also added on the west side of the railroad where pavement will be removed along the old road alignment. Additionally, a median crossover and a turn lane were added to Bellemeade Road at the intersection with Commerce Road.
- Dale Avenue – On both sides of the railroad where the existing at-grade crossing will be closed and pavement will be removed, T-turns were added at the request of the City of Richmond.
- Station Road - In response to comments from Chesterfield County, the alignment was shifted to avoid impacts to the planned Falling Creek Ironworks park/greenway.
- Chester Road - In response to comments from Chesterfield County, turn lanes were added for the intersection of Chester Road with Kingsdale Road, and the intersection of Chester Road and the extension of Park Road.

Figure 2-2



Southeast High Speed Rail, Richmond, VA to Raleigh, NC

SECTION AA

- Preferred Rail Alternative VA1* (Length= 11.31 miles)
- Existing Rail Corridor
- Existing and Proposed Pedestrian Bridges/Underpasses
- Existing and Proposed Bridges/Underpasses
- Historic Resources (Architectural)

* All alternatives were common in this section

0 1 2 Miles

N

2.2.4 SECTION BB

The section begins at railroad MP A-11 in Centralia, VA, and extends to railroad MP A-18, just south of Woods Edge Road, a distance of 6.91 miles (see Section BB map, Figure 2-3). The Study Area follows the CSX A-Line in this section where there is active freight and passenger rail service. The major population center in Section BB is Chester, VA, and the section passes through Chesterfield County. The section is located entirely within the James River Basin and includes a crossing of Falling Creek. Detailed maps for this section can be found in Appendix R, maps 010-016.

2.2.4.1 SECTION BB ALTERNATIVES EVALUATED IN THE DEIS

All alternatives are on common alignment in this section. Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost.

Alternative VA1/VA2/VA3 has the following characteristics:

- Design objectives are to maximize the use of existing ROW by installing a new passenger track approximately 30 feet east of existing track with crossovers to allow shared freight and passenger operation.
- CSX owns the existing railroad ROW, which supports active freight and passenger operations. The newly introduced Amtrak Norfolk service operates over this segment, which is also the preferred alignment for the proposed Richmond to Hampton Roads SEHSR Corridor (described in Section 1.1.2). FRA issued a ROD for the Richmond to Hampton Roads SEHSR Corridor Tier I EIS in December 2012, which includes six round-trip SEHSR Corridor trains from Richmond through Petersburg to Norfolk along a common alignment with the Project.
- The MAS is anticipated to be 90 mph based on the shared operation of the tracks with CSX.

2.2.4.2 SECTION BB PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in this section is the common alignment of Alternatives VA1/VA2/VA3. Henceforth, the preferred alternative for Section BB will be referred to as Alternative VA1.

2.2.4.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- West Hundred Road - roadway bridge over railroad
- Jefferson Davis Highway - railroad bridge over roadway
- Ruffin Mill Road - roadway bridge over railroad

New Bridges or Underpasses for Public Roads

- Centralia Road - roadway bridge over railroad; on-site detour
- Curtis Street - underpass (road under railroad); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- West Street - pedestrian bridge over railroad
- Woods Edge Road - roadway bridge over railroad; on-site detour

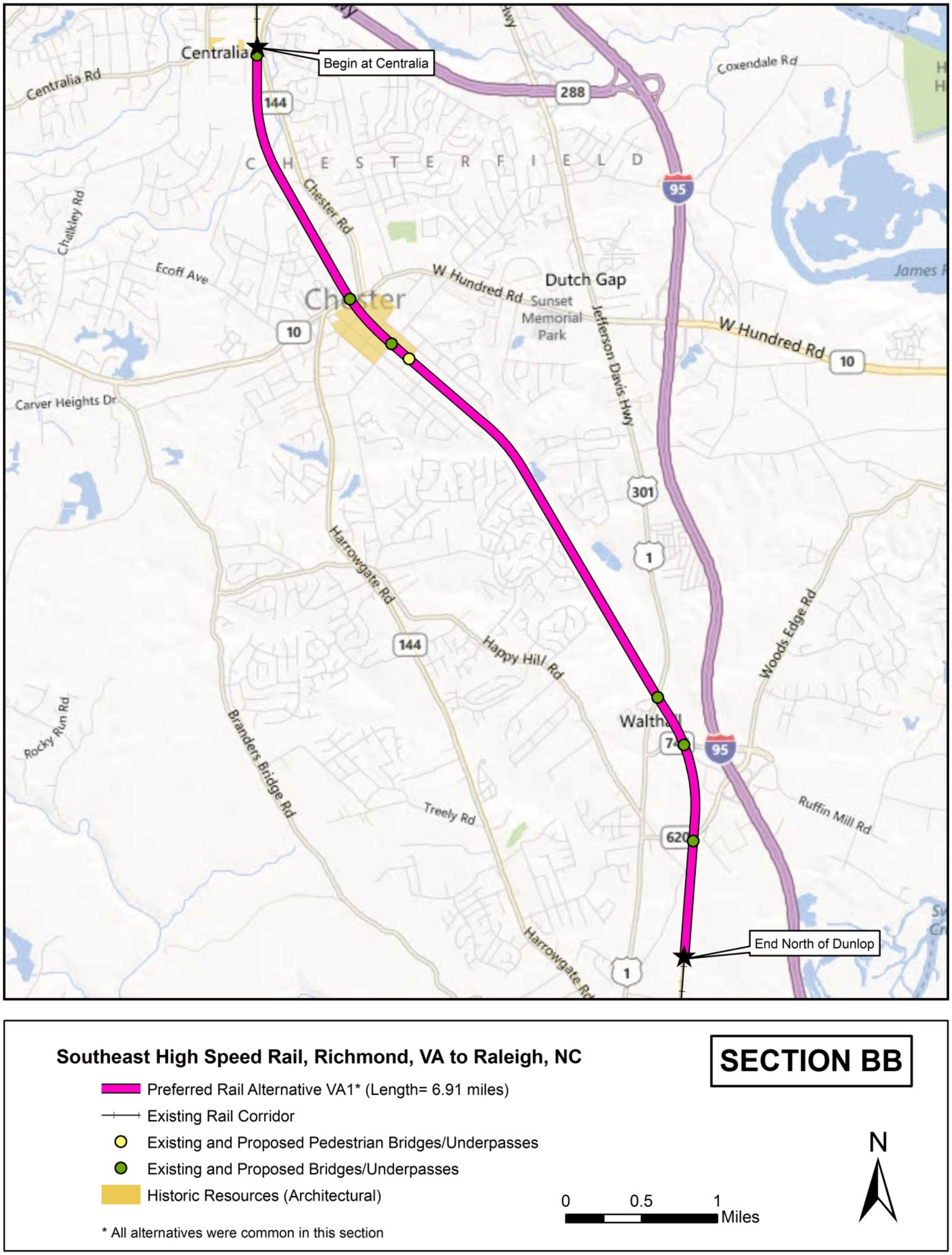
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- West Street

2.2.4.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Centralia and Hopkins Roads - In response to public comments and to help accommodate existing traffic congestion, improvements were developed for the intersection of Hopkins Road and Centralia Road. Hopkins Road was widened to allow the inclusion of a southbound turn lane; in addition, the alignment was shifted slightly westward to avoid impacts to the Ragland House historic resource. The designs for Centralia Road were extended westward and widened to accommodate an eastbound left turn lane at the intersection with Hopkins Road. To avoid impacts to the Ragland House, the Centralia Road alignment was shifted slightly to the south.
- Chester Road - In response to a request from the County to provide for northbound traffic movements for the businesses along the west side of Chester Road, the designs were revised to accommodate U-turn movements at two locations: one to be located at the existing Chester Road/Centralia Road intersection; and one to be located at the new Chester Road/Centralia Road intersection.
- Curtis Street - In response to a request from the County for improved pedestrian accessibility in the area, the curb and gutter typical section shown in the Project Tier II DEIS was extended to accommodate sidewalks.
- West Street - In response to a request from the County for improved pedestrian access in the area, a pedestrian bridge with stair towers was added to the designs. Additional design and analysis is needed to coordinate the implementation of an Americans with Disabilities Act (ADA) compliant pedestrian crossing of the railroad in this location. The Project Team will coordinate the designs and selected access alternatives (e.g., elevators, ramps, or tunnel) with Chesterfield County and VDHR (regarding potential impacts to the Chester Historic District). Refer to the Project Commitments for additional information.
- Woods Edge Road - In response to comments from the public and from the County, the closure that was proposed in the Project Tier II DEIS was eliminated, and replaced with a new design for a roadway bridge over the railroad.
- Walthall Industrial Parkway - The design was revised to provide a connection to the new Woods Edge Road alignment discussed above. In addition, the southward extension shown in the Project Tier II DEIS that was designed to provide property access during construction of the Pine Forest Drive grade separation was eliminated because Pine Forest Drive was redesigned to allow an on-site detour during construction and the extension is no longer needed.
- New public access roads near Woods Edge Road and Walthall Industrial Parkway - Three new (short) access roads were developed in conjunction with the new Woods Edge Road designs to connect the existing road network to the realigned Woods Edge Road.

Figure 2-3


Begin at Centralia
End North of Dunlop
Centralia
Centralia Rd
Coxendale Rd
C H E S T E R F I E L D
Chester Rd
Chalkley Rd
Ecoff Ave
W Hundred Rd
Dutch Gap
Sunset Memorial Park
Chester
Jefferson Davis Hwy
Carver Heights Dr
Harrowgate Rd
Happy Hill Rd
Woods Edge Rd
Rocky Run Rd
Branders Bridge Rd
Treely Rd
Ruffin Mill Rd
James
288
144
10
95
301
1
620
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION BB
Preferred Rail Alternative VA1* (Length= 6.91 miles)
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
* All alternatives were common in this section
0
0.5
1
Miles
N

2.2.5 SECTION CC

The section begins at railroad MP A-18, just south of Woods Edge Road, and extends to Collier Yard at railroad MP A-27.5, a distance of 8.91 miles (see Section CC map, Figure 2-4). The Study Area follows the CSX A-Line in this section where there is active freight and passenger rail service. The major population centers in Section CC are Colonial Heights, VA, and Petersburg, VA. The section includes a new crossing of the Appomattox River, and is located within both the James River Basin and the Chowan River Basin. Detailed maps for this section can be found in Appendix R, maps 017-028.

2.2.5.1 SECTION CC ALTERNATIVES EVALUATED IN THE DEIS

All alternatives are on common alignment in this section. Table ES-5 displays information regarding impacts to the human and natural environment, as well as information about operability, constructability, and cost.

Alternative VA1/VA2/VA3 has the following characteristics:

- Design objectives in this section are to maximize use of existing ROW by installing a new passenger track approximately 30 feet east of existing track with crossovers to allow shared freight and passenger operations, to minimize travel time through Petersburg, and provide track alignment and layout options for a Petersburg area station. Subsequent to the Project Tier II DEIS, the Petersburg area MPO (in partnership with Virginia DRPT, FRA and the City of Petersburg) initiated preparation of an EA NEPA document to select a preferred location for a permanent passenger rail station in the Petersburg area (refer to Section 1.4).
- CSX owns the existing railroad ROW in this section, which supports active freight operations.
- The alternative crosses the Appomattox River on a new railroad bridge, parallel to the existing, active CSX S-Line single-track bridge.
- The design accommodates a turnout (railroad connection) to the NS N&W Beltline upon which the newly introduced Amtrak Norfolk service operates, which is also the preferred alignment for the proposed Richmond to Hampton Roads SEHSR Corridor (described in Section 1.1.2).
- The MAS is anticipated to be 90 mph based on the shared operation of the tracks with CSX; however, the Limiting Speed is 80 mph.

> Design objectives are to maximize existing ROW by installing a new passenger track approximately 30 feet east of existing track, with crossovers to allow shared freight and passenger operations, to minimize travel time through Petersburg, and provide options for a Petersburg-area station.

2.2.5.2 SECTION CC PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in this section is the common alignment of Alternatives VA1/VA2/VA3. Henceforth, the preferred alternative for Section CC will be referred to as Alternative VA1.

2.2.5.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- East Ellerslie Avenue - roadway bridge over railroad

- Boulevard (new railroad bridge to be constructed adjacent to existing railroad bridge); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- River Road/Chesterfield Avenue - roadway bridge over railroad
- Washington Street - railroad bridge over roadway
- Farmer Street (new railroad bridge to be constructed adjacent to existing railroad bridge); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Halifax Street - roadway bridge over railroad
- I-85 - roadway bridge over railroad
- Defense Road; (new railroad bridge to be constructed adjacent to existing railroad bridge); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Halifax Road - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Pine Forest Drive - roadway bridge over railroad; on-site detour
- Branders Bridge Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Dupuy Road - roadway bridge over railroad; on-site detour
- Lincoln Street - pedestrian underpass (pedestrian pathway under railroad)

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Lincoln Street
- Grimes Road

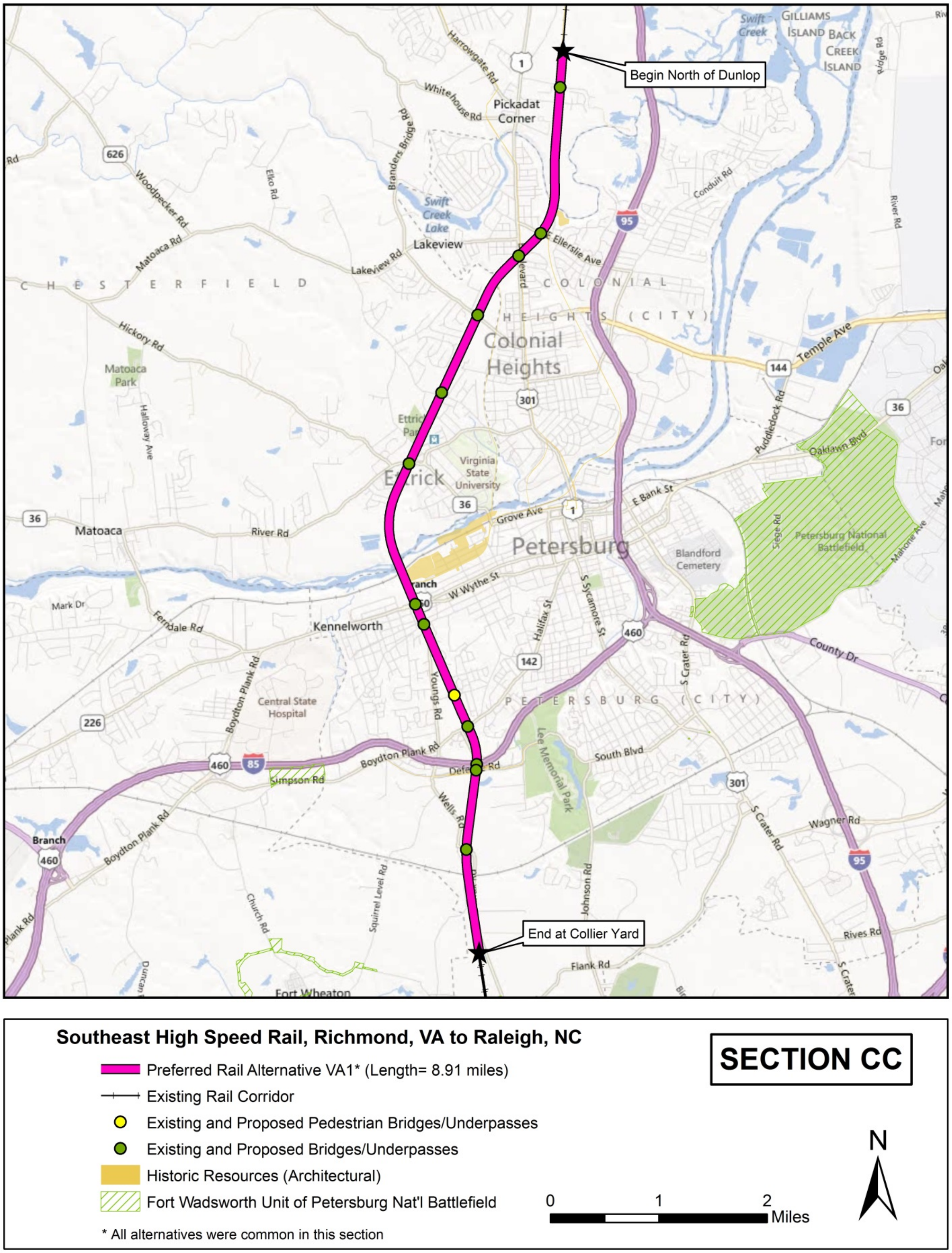
2.2.5.4 RIVER AND MAJOR CREEK BRIDGES

Appomattox River – A new parallel bridge is proposed for high speed passenger trains, located approximately sixty feet to the east of the existing single-track bridge. The existing bridge will continue to be used by freight trains.

2.2.5.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Pine Forest Road - The alignment shown in the Project Tier II DEIS was shifted southward to allow an on-site detour during construction; in addition, the eastward extension that connected to a Walthall Industrial Parkway extension was removed from the designs.
- Pine Forest Access Road – In response to comments, the design shown in the Project Tier II DEIS for a new access road west of the railroad that would connect to Pine Forest Drive at the north, and Mansion Drive to the south, was eliminated. Existing neighborhood access off of Jefferson Davis Highway will be maintained; driveway access to properties along Pine Forest Drive will be determined during the ROW phase of the Project.

Figure 2-4


Begin North of Dunlop
End at Collier Yard
Pickadat Corner
Lakeview
Colonial Heights
Ettrick
Virginia State University
Petersburg
Matoaca
Kennelworth
Central State Hospital
Blandford Cemetery
Petersburg National Battlefield
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
Preferred Rail Alternative VA1* (Length= 8.91 miles)
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
Fort Wadsworth Unit of Petersburg Nat'l Battlefield
* All alternatives were common in this section
SECTION CC
0
1
2
Miles
N

2.2.6 SECTION DD

The section begins at Collier Yard (railroad MP A-27.5) and extends westward along the inactive Burgess Connector to railroad MP S-29, a distance of 5.66 miles for Alternatives VA1 and VA3 and 5.63 miles for Alternative VA2 (see Section DD map, Figure 2-5). The tracks have been removed along the Burgess Connector, and small portions of the ROW have been sold for private property access. Section DD is located primarily in Dinwiddie County, VA, but includes a small area of Petersburg, VA. The section is located within the Chowan River Basin and has no major river crossings. Detailed maps for this section can be found in Appendix R, maps 028-033.

2.2.6.1 SECTION DD ALTERNATIVES EVALUATED IN THE DEIS

The design objectives for all alternatives in this section are to maximize the use of existing railroad ROW in the approach to Collier rail yard. The three alternatives are on common alignment except for one area just south of Collier rail yard where they cross over the CSX A-Line to the Burgess Connector to the west. In this area, the alternatives vary in their curvatures and the length of the bridges used to cross the CSX A-Line. The three variations were developed to address impacts to the Weldon Railroad battlefield (also known as Globe Tavern), which is crossed in this location. The battlefield was determined to be eligible for the NRHP and is protected under Section 106 of NHPA.

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1 has the following characteristics:

- The alternative provides a new track 30 feet east of existing tracks in Collier Yard. It leaves existing ROW as the alignment passes up and over the CSX A-Line tracks on a grade separated railroad bridge to transition to the CSX Burgess Connector ROW.
- Limiting speed is 75 mph.
- The operability and constructability rating is neutral.

Alternative VA2 has the following characteristics:

- The alternative provides a new track 30 feet east of existing tracks in Collier Yard and utilizes a tighter curve than VA1 and VA3. It requires additional piers for construction of the longest bridge to cross over the CSX A-Line tracks (compared to VA1 and VA3) in order to minimize ROW needed from Weldon Railroad/Globe Tavern battlefield.
- Limiting Speed is 70 mph.
- The operability and constructability rating is negative due to bridge pilings that will limit future expansion of the CSX A-Line; limited access for CSX maintenance; and a lower speed.

Alternative VA3 has the following characteristics:

- The alternative provides a new track 30 feet east of existing tracks in Collier Yard and provides a shorter railroad bridge over the CSX A-Line tracks (compared to VA1 and VA2). VA3 also uses a short retaining wall to minimize ROW needed from Weldon Railroad/Globe Tavern battlefield.
- Limiting speed is 75 mph.
- The operability and constructability rating is positive.

2.2.6.2 SECTION DD PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

Alternative VA3 has the shortest bridge length and is the least visually intrusive.

The preferred alternative in Section DD is Alternative VA3. Although all three alternatives were determined to have no adverse effect on the Weldon Railroad/Globe Tavern battlefield during Section 106 coordination, Alternative VA3 (which has the shortest bridge length) is the least visually intrusive to the battlefield. Alternatives VA1 and VA2 would require less ROW from the battlefield, but would have a greater visual impact to the surrounding area. In addition, the ROW required for Alternative VA3 can be landscaped to blend into the surrounding "viewshed." This determination was validated in coordination with historians from the National Park Service (Petersburg National Battlefield).

Table ES-5 shows that Alternative VA3 also has fewer stream impacts than Alternative VA2 (and the same as Alternative VA1); the lowest cost; no relocations; and a positive rating for operability and constructability. Alternative VA3 does have slightly greater wetland impacts (less than a quarter acre more), but those impacts will be fully mitigated. There were no public comments expressing a preference for alternatives in this section.

2.2.6.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Flank Road - new railroad bridge to be constructed adjacent to existing underpass - railroad bridge over roadway

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Unnamed Road south of Collier Yard - underpass (road under railroad); on-site detour
- Vaughn Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Squirrel Level Road - roadway bridge over railroad; on-site detour

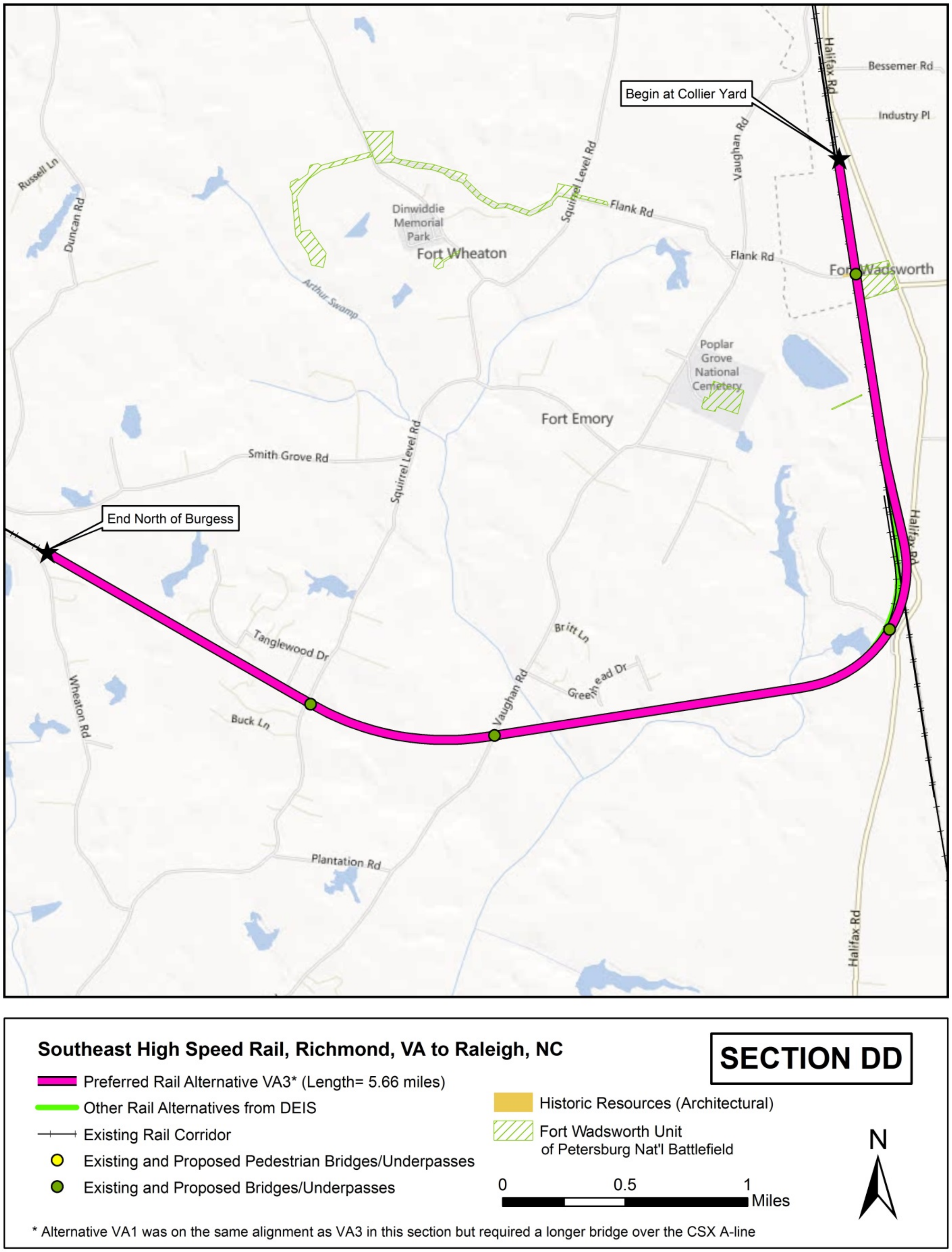
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- None

2.2.6.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Unnamed road south of Collier Yard- The alignment was shifted approximately 20 feet to allow maintenance of traffic during construction.
- Squirrel Level Road - The alignment shown in the Project Tier II DEIS was shifted approximately 100 feet east to allow traffic to be maintained on the existing road during construction of the new bridge. Slight revisions were made to Doe Drive on the north side of the railroad, and Tanglewood Drive on the south side of the railroad, to tie into the revised Squirrel Level Road alignment.

Figure 2-5


Begin at Collier Yard
End North of Burgess
Halifax Rd
Bessemer Rd
Industry Pl
Vaughan Rd
Squirrel Level Rd
Flank Rd
Dinwiddie
Memorial
Park
Fort Wheaton
Fort Wadsworth
Russell Ln
Duncan Rd
Arthur Swamp
Poplar
Grove
National
Cemetery
Fort Emory
Smith Grove Rd
Tanglewood Dr
Britt Ln
Greenhead Dr
Buck Ln
Wheaton Rd
Plantation Rd
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION DD
Preferred Rail Alternative VA3* (Length= 5.66 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
Fort Wadsworth Unit
of Petersburg Nat'l Battlefield
0
0.5
1
Miles
N
* Alternative VA1 was on the same alignment as VA3 in this section but required a longer bridge over the CSX A-line

2.2.7 SECTION A

The section begins at railroad MP S-29 on the inactive Burgess Connector, and extends to the CSX S-Line, north of the Dinwiddie community. The CSX S-Line is inactive between the Burgess Connector and Norlina, NC. The tracks were removed in 1987; however the ROW remains intact throughout most of the Study Area. Alternatives VA1 and VA3 are on common alignment in Section A, with a length of 4.93 miles. Alternative VA2 has a length of 4.95 miles (see Section A map, Figure 2-6). The section is located within the Chowan River Basin and has no major river crossings. Detailed maps for this section can be found in Appendix R, maps 034-038.

2.2.7.1 SECTION A ALTERNATIVES EVALUATED IN THE DEIS

In Section A, the three alternatives are the same except at the transition from the Burgess Connector to the CSX S-Line ROW (see Section A map). Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/VA3 has the following characteristics:

- The design objectives are to maximize the use of existing railroad ROW.
- Limiting Speed is 80 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

Alternative VA2 has the following characteristics:

- The design objectives for Alternative VA2 are to optimize transition speed from the Burgess Connector to the CSX S-Line.
- Limiting speed is 95 mph.
- The operability and constructability rating is neutral.

2.2.7.2 SECTION A PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section A is Alternative VA2. Alternative VA2 has the fewest wetland and stream impacts; similar impacts to historic resources compared to Alternative VA1/VA3; a better operability rating; and accommodates higher speeds. There was one comment from the public expressing a preference for VA1/VA3 based on property impacts.

Alternative VA2 has the fewest wetland and stream impacts; similar impacts to historic resources compared to Alternative VA1/VA3; a better operability rating; and accommodates higher speeds.

2.2.7.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings
(Bridges or Underpasses will be Retained, Expanded or Replaced)

- I-85 - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Duncan Road - roadway bridge over railroad; on-site detour
- Dabney Mill Road - roadway bridge over railroad; on-site detour
- Quaker Road - roadway bridge over railroad; on-site detour

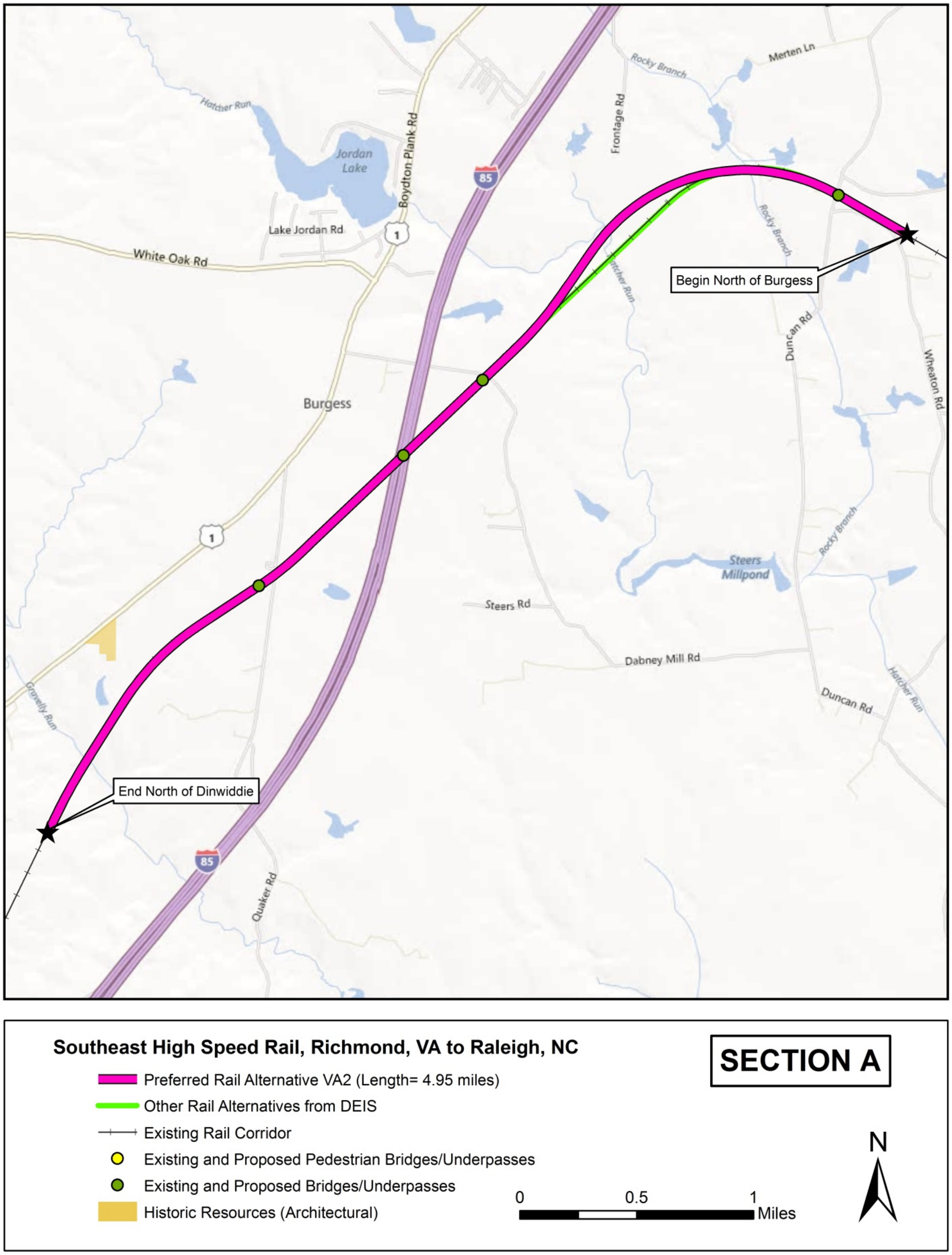
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- None

2.2.7.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Duncan Road- The road alignment and bridge were shifted approximately 60 feet to assist with maintenance of traffic during construction. The Smith Grove Road and Wheaton Road connections were modified accordingly
- Dabney Mill Road Access Road - The access road off Dabney Mill Road presented in the Project Tier II DEIS was removed from the designs in response to a request from the affected property owner; property access will be handled during the ROW phase of the Project.

Figure 2-6


Hatcher Run
Jordan Lake
Boydton Plank Rd
85
Lake Jordan Rd
1
White Oak Rd
Rocky Branch
Merten Ln
Frontage Rd
Rocky Branch
Begin North of Burgess
Hatcher Run
Duncan Rd
Wheaton Rd
Burgess
Steers Millpond
Rocky Branch
1
Steers Rd
Dabney Mill Rd
Duncan Rd
Hatcher Run
Gravelly Run
End North of Dinwiddie
85
Quaker Rd
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION A
Preferred Rail Alternative VA2 (Length= 4.95 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.8 SECTION B

The section begins north of the Dinwiddie community at railroad MP S-34 and extends southward to railroad MP S-40, a distance of 5.71 miles for Alternatives VA1 and VA3, which are on common alignment, and 5.80 miles for Alternative VA2 (see Section B map, Figure 2-7). Detailed maps for this section can be found in Appendix R, maps 038-043.

2.2.8.1 SECTION B ALTERNATIVES EVALUATED IN THE DEIS

Table ES-X displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/VA3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative VA2 has the following characteristics:

- The design objective is to maximize the use of existing railroad ROW.
- Limiting speed is 90 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

2.2.8.2 SECTION B PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section B is the common alignment of Alternatives VA1/ VA3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1. Table ES-5 shows that Alternative VA1 has greater impacts to forested uplands and prime and other important farmland; two more residential relocations; and a larger total cost compared to Alternative VA2. However, Alternative VA2 has had a much lower limiting speed and a negative rating for operability and constructability. In addition, Alternative VA2 has five more potential noise and vibration impacts (compared to Alternative VA1) and one business relocation (whereas Alternative VA1 has none).

It should be noted that the difference in stream and wetland impacts between the alternatives has been significantly reduced from what was presented in the Project Tier II DEIS. In the Project Tier II DEIS, Alternative VA1 had approximately 450 additional feet of stream impacts and 0.35 acres of wetland impacts compared to Alternative VA2. Of these, more than 300 feet of stream impacts and 0.3 acres of wetland impacts associated with Alternative VA1 were attributed to the proposed new access road that intersects Carson Road. Subsequent to the Project Tier II DEIS, this road has been shortened to minimize the stream and wetland impacts. Access to properties affected by the shortened road was addressed through development of a separate new access road off of Boydton Plank Road. The remaining stream and wetland impacts associated with the preferred alternative will be fully mitigated, and the design work will include coordination with the US Army Corps of Engineers (USACE). There was one public comment expressing a preference for an alternative in this section, specifying a preference for

> Alternative VA1 had additional stream impacts and wetland impacts compared to Alternative VA2.

Alternative VA3 with the misunderstanding that it provided a third railroad alignment in the section.

2.2.8.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Courthouse Road - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Hunnicut Road - roadway bridge over railroad; on-site detour
- Carson Road – new roadway bridge over railroad on new location; on-site detour
- Gatewood Road - underpass (road under railroad); on-site detour

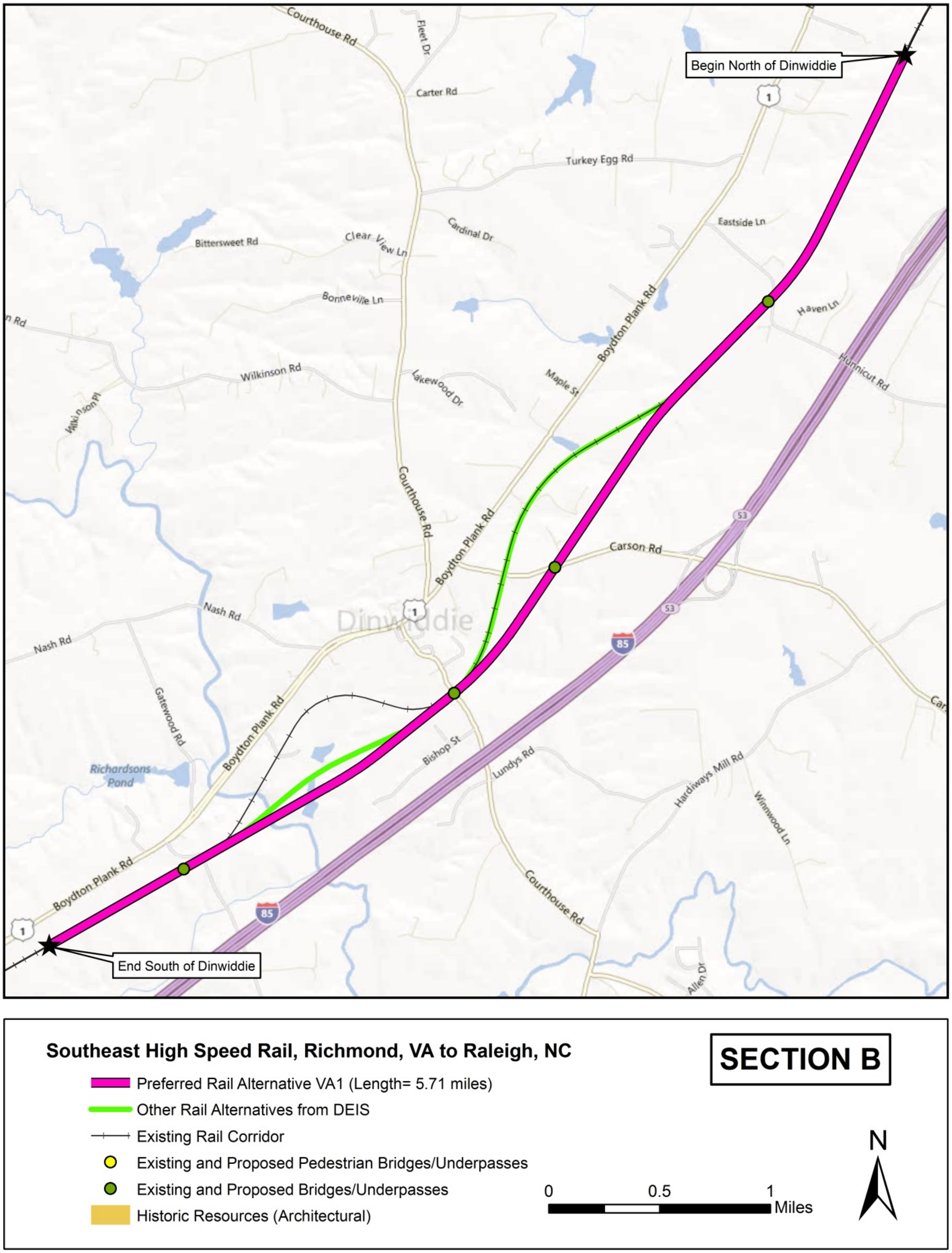
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- None

2.2.8.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- New Access Road off Carson Road- The access road west of the railroad connecting to Carson Road that was shown in the Project Tier II DEIS was shortened to minimize stream and wetland impacts; alternate access to affected properties was developed as described below.
- New Access Road off Boydton Plank Road - A new access road north of Carson Road, connecting to Boydton Plank Road was developed for Richmond to Raleigh Tier II FEIS as a way to provide property access while reducing steam and wetland impacts.

Figure 2-7


Begin North of Dinwiddie
End South of Dinwiddie
Courthouse Rd
Fleet Dr
Carter Rd
Turkey Egg Rd
Eastside Ln
Cardinal Dr
Clear View Ln
Bittersweet Rd
Bonneville Ln
Boydton Plank Rd
Haven Ln
Hunnicut Rd
Wilkinson Rd
Wilkinson Pl
Lakewood Dr
Maple St
Carson Rd
Nash Rd
Dinwiddie
Gatewood Rd
Richardsons Pond
Bishop St
Lundys Rd
Hardiways Mill Rd
Winnwood Ln
Allen Dr
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION B
Preferred Rail Alternative VA1 (Length= 5.71 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.9 SECTION C

The section begins south of the Dinwiddie community at railroad MP S-40 and ends south of the Nottoway River at railroad MP S-51, a distance of 10.74 miles (see Section C map, Figure 2-8). The major population center is the Town of McKenney, VA. The section is located in the Chowan River Basin and includes a crossing of the Nottoway River. Detailed maps for this section can be found in Appendix R, maps 044-053.

2.2.9.1 SECTION C ALTERNATIVES EVALUATED IN THE DEIS

All alternatives are on common alignment. Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost.

Alternative VA1/VA2/VA3 has the following characteristics:

- The design objective was to maximize the use of existing railroad ROW.
- The alternative crosses the Nottoway River on a new bridge using existing piers.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.9.2 SECTION C PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section C is the common alignment of Alternatives VA1/VA2/VA3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1.

2.2.9.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- US-1 /Boydton Plank Road – roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Glebe Road - roadway bridge over railroad and US-1; on-site detour
- Karla Drive - roadway bridge over railroad; on-site detour
- Asbury Road - roadway bridge over railroad; on-site detour
- Doyle Boulevard - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Keelers Mill Road
- Lew Jones Road
- Snap Lodge Road
- Jack Zehmer Road

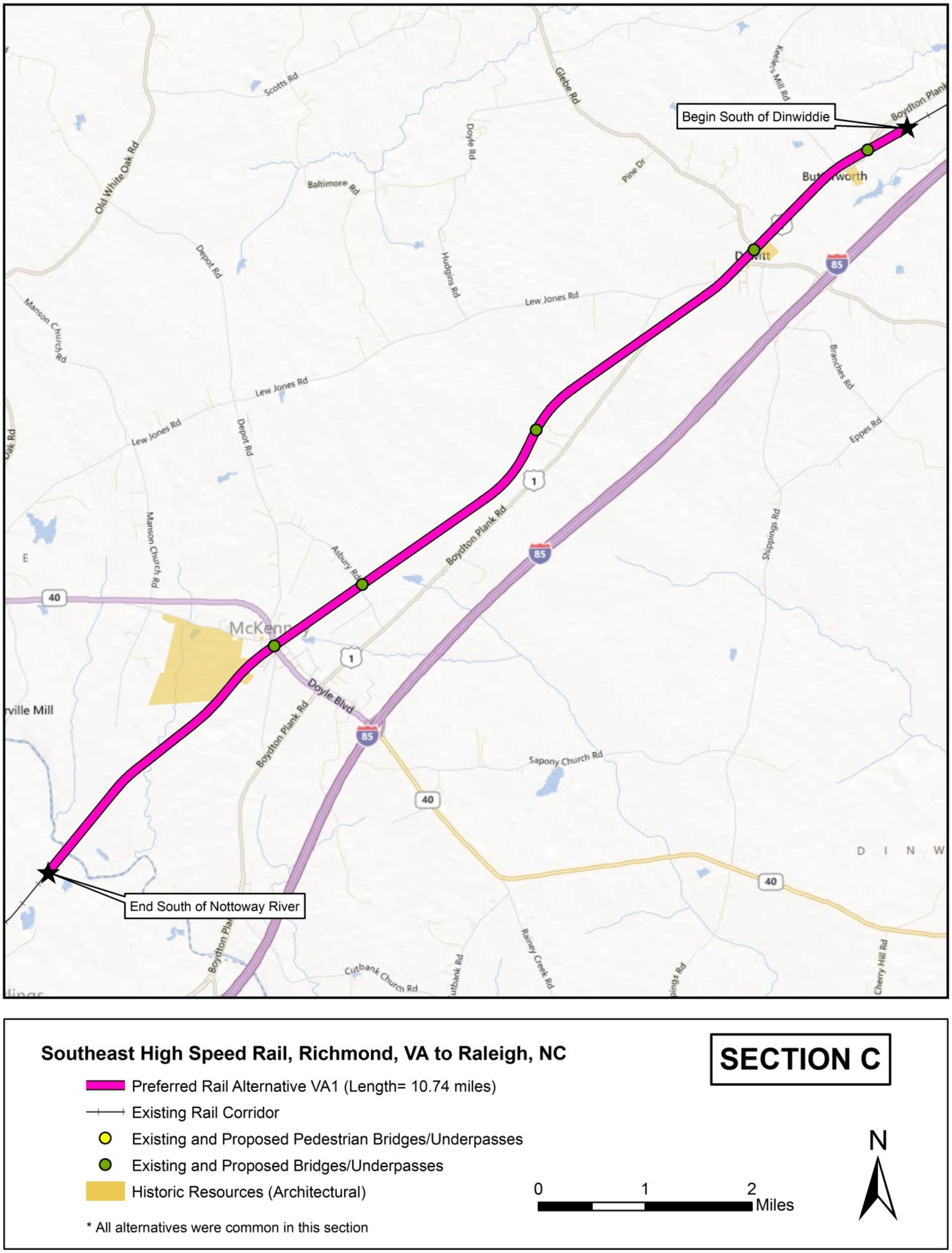
2.2.9.4 RIVER AND MAJOR CREEK BRIDGES

Nottoway River – Although the existing track has been removed throughout this area of the Project, the existing single-track Nottoway River Bridge remains intact. Under Preferred Alternative VA1 the Project intends to utilize the piers and substructure of the existing bridge; and to replace the superstructure (girders, decking and track).

2.2.9.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Keelers Mill Road – The road realignment shown in the Project Tier II DEIS was revised to avoid impacts to a family cemetery; the closure of the at-grade crossing is retained. As part of the new designs, a portion of the old road will be retained for property access. The new designs will result in additional impacts to approximately 271 feet of streams and 0.36 acres of wetlands, which are included in the revised totals in Table ES-5. Attempts were made to avoid these impacts; however, other options would cause substantial property impacts or would not serve the traffic pattern in this area. The change in design was coordinated with the USACE in April 2013.
- Rail Alignment in McKenney - The railroad alignment through McKenney, VA, was revised to shift slightly eastward, away from the NRHP boundary for the Zehmer Farm (referred to as Honeymoon Hill Farm in the Project Tier II DEIS), and further away from the Town's artesian well.
- Jack Zehmer Road Access Road - The new road shown in the Project Tier II DEIS to provide access to the portion of Jack Zehmer Road west of the railroad (which is cut off from the portion east of the railroad due to the closure of the existing at-grade crossing) was revised to minimize impacts to the Zehmer Farm historic resource; the new design intersects Sunnyside Road at the north end, near Sunnyside Elementary School, and then parallels the railroad south which will continue to provide access to the Town of McKenney's waste water treatment plant.

Figure 2-8


Begin South of Dinwiddie
End South of Nottoway River
Boydton Plank Rd
Doyle Blvd
Lew Jones Rd
Depot Rd
Manson Church Rd
Old White Oak Rd
Scotts Rd
Baltimore Rd
Doyle Rd
Hudgins Rd
Glebe Rd
Pine Dr
Keeler's Mill Rd
Branches Rd
Eppes Rd
Shippings Rd
Asbury Rd
Sapony Church Rd
Rainey Creek Rd
Cutbank Church Rd
Cherry Hill Rd
McKenny
85
40
1
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION C
Preferred Rail Alternative VA1 (Length= 10.74 miles)
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
* All alternatives were common in this section
0
1
2
Miles
N

2.2.10 SECTION D

The section begins south of the Nottoway River at railroad MP S-51 and extends to north of Alberta, VA, at railroad MP S-57.5, a distance of 6.07 miles for Alternatives VA1 and VA3, which are on common alignment, and 6.41 miles for Alternative VA2. In response to agency comments, an additional alternative was subsequently developed for this section (Alternative VA4). The section is located within the Chowan River Basin and has no major river crossings. See Figure 2-9 for a map of Section D. Maps with greater detail can be found in Appendix R, maps 053-062.

2.2.10.1 SECTION D ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/VA3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alternative is on new alignment east of the wide curve of the existing railroad ROW beginning at the north end of the section, and rejoins the existing ROW just south of Zero Road.
- The alternative would impact a population of a Federally-listed endangered plant species (Michaux's Sumac).
- The alternative would have an adverse effect on the Wynnhurst historic property under Section 106 of the NHPA and would also require a Section 4(f) use of Wynnhurst.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative VA2 has the following characteristics:

- The design objective is to maximize use of existing railroad ROW, and avoid impacts to the historic Wynnhurst property and the population of the endangered Michaux's Sumac.
- The alternative impacts more than 7 acres of wetlands and more than 500 feet of streams compared to Alternative VA1/VA3.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.10.2 SECTION D ALTERNATIVES DEVELOPED SUBSEQUENT TO THE DEIS

Alternative VA4 was developed after the completion of the public comment period for the Project Tier II DEIS, through coordination and consultation with the USACE, the Virginia Department of Historic Resources (VDHR), US Fish and Wildlife Service (USFWS), and the Virginia Division of Environmental Quality (VDEQ). During discussions with these agencies, it was determined that none of the existing alternatives would satisfy the conflicting concerns of the agencies (endangered species and historic resources on Alternative VA1/VA3 and wetland impacts on Alternative VA2).

> Alternative VA4 was developed through coordination with the USACE, the VDHR, USFWS, and the VDEQ. None of the existing alternatives would satisfy the concerns of the agencies.

Alternative VA4 has the following characteristics:

- The design objectives are to reduce impacts to wetlands (compared to Alternative VA2), while avoiding a Section 4(f) use of Wynnhurst historic resource and impacts to the population of Michaux's Sumac.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

A Project update meeting was held in Alberta, VA, on July 14, 2011, to provide the public and local officials an opportunity to learn about VA4 in Section D (as well as a newly developed alternative VA4 in Section G). The public was informed that all alternatives were still under consideration, and they were asked to provide comments. Approximately 60 people attended the meeting. A meeting summary can be found in Appendix B.

2.2.10.3 SECTION D PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

Alternative VA4 does not require a Section 4(f) use of the Wynnhurst historic property, avoids impacts to the Michaux's Sumac, and minimizes wetland impacts.

The preferred alternative in Section D is Alternative VA4. Alternative VA4 does not require a Section 4(f) use of the Wynnhurst historic property, avoids impacts to the delineated population of the Michaux's Sumac, and minimizes wetland impacts (compared to Alternative VA2). This alternative was determined to be an acceptable preferred alternative by USACE, VDHR, USFWS, and VDEQ at an interagency meeting held on April 12, 2011.

Following the Project Tier II DEIS, six comments were received from the public expressing preference for an alternative: two were in favor of Alternative VA1/VA3 and four were in favor of Alternative VA2 (based on property impacts). Following the July 2011 Project update meeting where Alternative VA4 was introduced, six comments were submitted regarding a preference for an alternative: five comments were in favor of VA4 and one comment was in favor of VA1.

2.2.10.4 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Rawlings Road - roadway bridge over railroad; on-site detour
- Kress Road - roadway bridge over railroad; on-site detour
- Flat Rock Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes

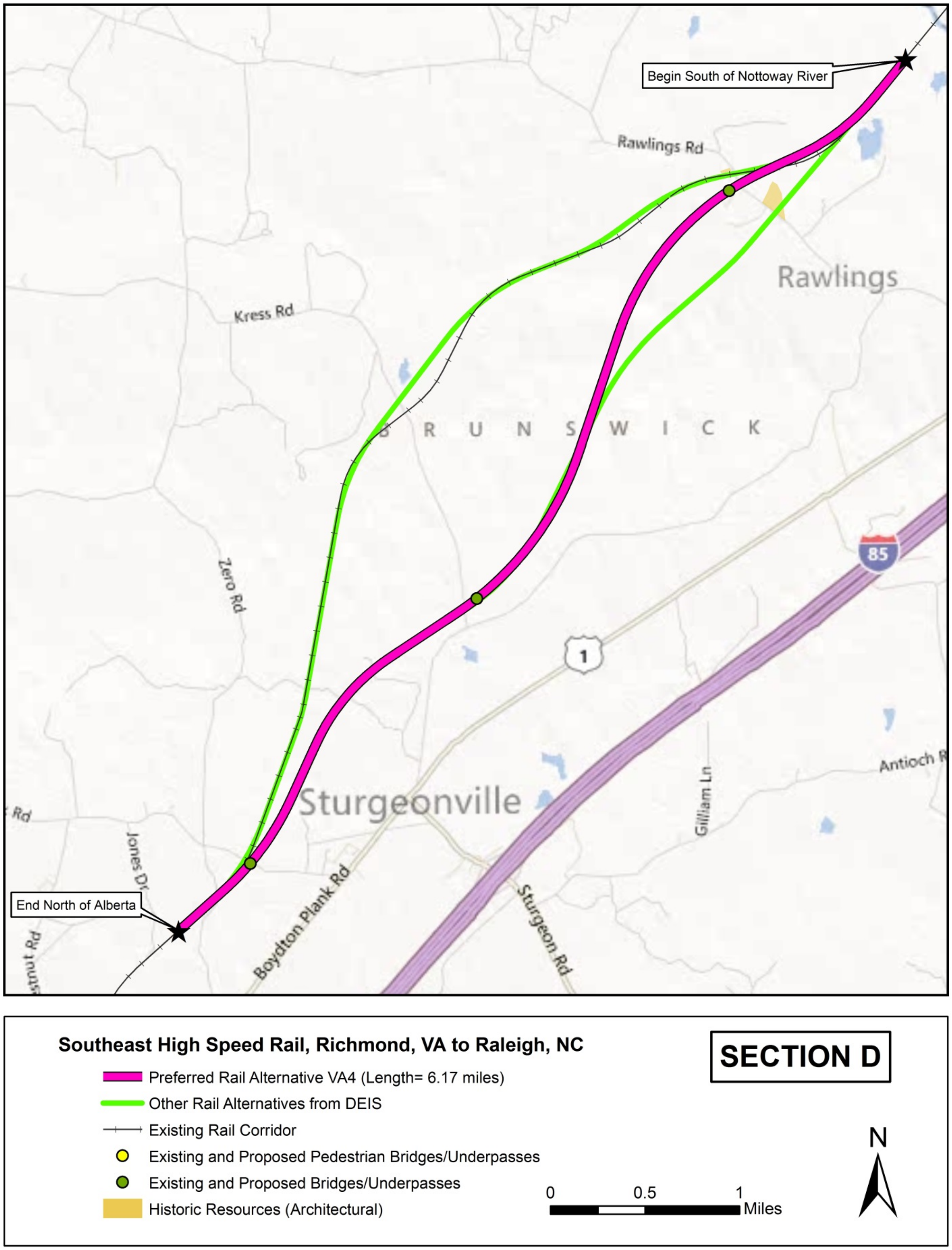
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Zero Road

2.2.10.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

The entire railroad alignment for Preferred Alternative VA4 and the associated road work was developed subsequent to publication of the Project Tier II DEIS. Detailed maps can be found in Appendix R, maps 053-062. No changes have been made to Alternative VA4 since the alternative was presented to the public at the Project update meeting in July 2011.

Figure 2-9


Begin South of Nottoway River
Rawlings Rd
Rawlings
Kress Rd
BRUNSWICK
Zero Rd
85
1
Antioch R
Sturgeonville
Gilliam Ln
Jones Dr
End North of Alberta
Boydton Plank Rd
Sturgeon Rd
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
Preferred Rail Alternative VA4 (Length= 6.17 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
SECTION D
0
0.5
1
Miles
N

2.2.11 SECTION E

The section begins north of Alberta, VA, at railroad MP S-57.5 and extends to south of Alberta at railroad MP S-62, a distance of 4.21 miles for Alternatives VA1 and VA3, which are on common alignment, and 4.29 miles for Alternative VA2 (see Section E map, Figure 2-10). Alberta is the major population center for the section. The section is located within the Chowan River Basin and has no major river crossings. Detailed maps for this section can be found in Appendix R, maps 063-066.

2.2.11.1 SECTION E ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost.

Alternative VA1/VA3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The design flattens the curve in existing railroad ROW near Chestnut Road to a greater degree compared to Alternative VA2, then follows existing railroad ROW through the Town of Alberta, VA
- Limiting speed is 110 mph.
- The operability and constructability rating is positive.

Alternative VA2 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The design also flattens the curve in existing railroad ROW near Chestnut Road, but requires more curvature and alignment length than VA1/VA3.
- The alternative is on common alignment with VA1/VA3 on existing railroad ROW through the Town of Alberta, VA.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.11.2 SECTION E PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

> VA1 has fewer impacts compared to Alternative VA2, as well as a lower cost. It also has a better operability and constructability rating.

The preferred alternative in Section E is the common alignment of Alternative VA1/VA3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1. Table ES-5 shows that VA1 has fewer wetland and stream impacts, residential relocations, and vibration impacts when compared to Alternative VA2, as well as a lower cost. Alternative VA1 also has a better operability and constructability rating. There were no public comments expressing a preference for alternatives in this section; however, three comments from regulatory and resource agencies stated a preference for Alternative VA1.

2.2.11.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Planned Tobacco Heritage Trail on the Old Virginian Railroad ROW – pedestrian underpass, railroad bridge over trail

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Chestnut Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Littlemont Road/Church Street - roadway bridge over railroad; on-site detour
- Second Avenue (existing crossing closed, road realigned to provide a new Grade Separated crossing located to the north) - roadway bridge over railroad; on-site detour
- Main Street - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes

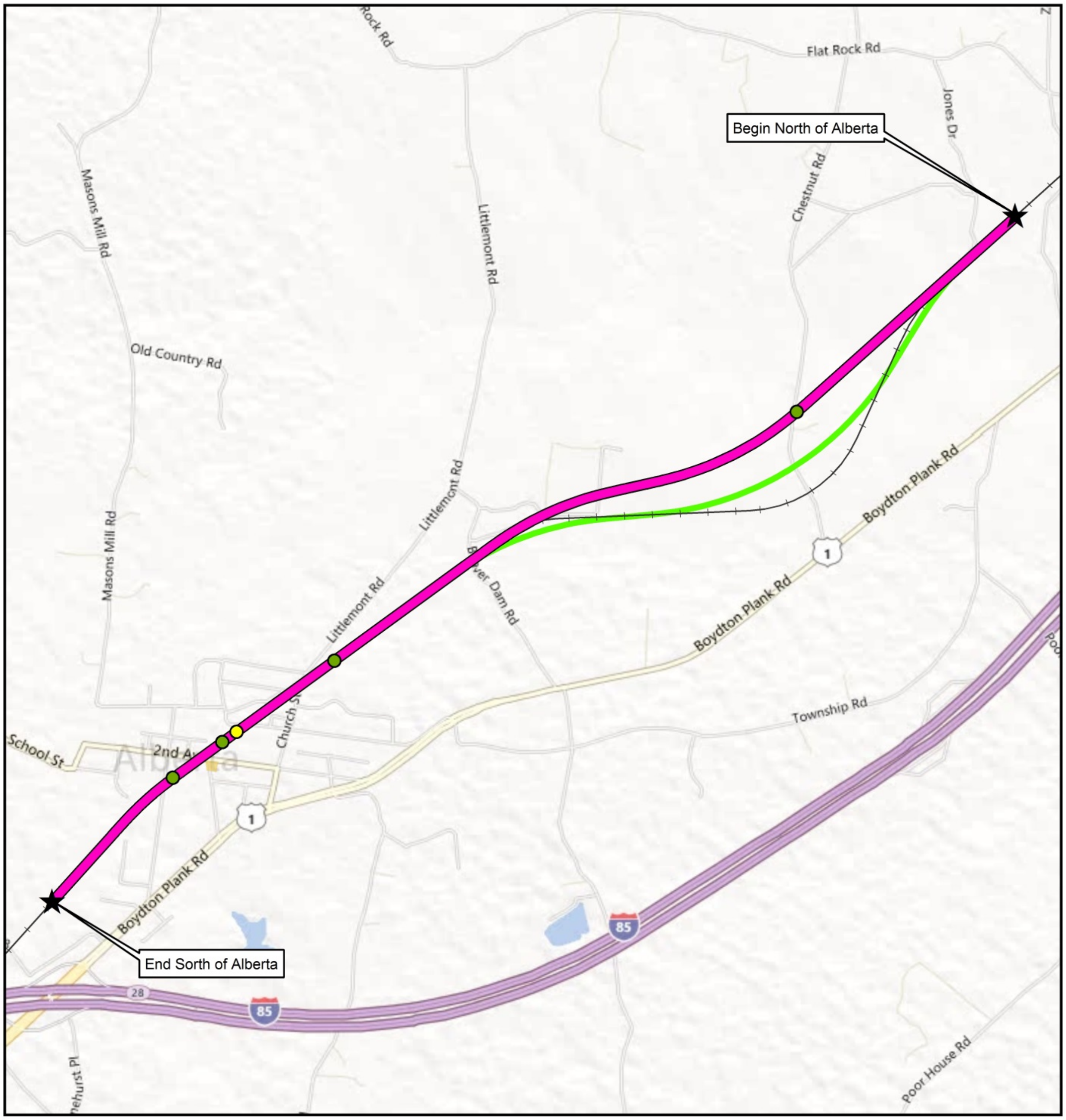
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Beaver Dam Road
- Virginia Avenue

2.2.11.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

No changes were made subsequent to the Project Tier II DEIS.

Figure 2-10



Southeast High Speed Rail, Richmond, VA to Raleigh, NC

SECTION E

- Preferred Rail Alternative VA1 (Length= 4.21 miles)
- Other Rail Alternatives from DEIS
- Existing Rail Corridor
- Existing and Proposed Pedestrian Bridges/Underpasses
- Existing and Proposed Bridges/Underpasses
- Historic Resources (Architectural)

0 0.5 1 Miles

N

2.2.12 SECTION F

The section begins south of Alberta, VA, at railroad MP S-62 and ends south of Tower Road at railroad MP S-66.5, a distance of 4.28 miles (see Section F map, Figure 2-11). The greatest population density is located at the northern portion of the section in the vicinity of Alberta. The section is located in the Chowan River Basin and there are no major river crossings. Detailed maps for this section can be found in Appendix R, maps 067-070.

2.2.12.1 SECTION F ALTERNATIVES EVALUATED IN THE DEIS

All alternatives are on common alignment in this section. Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost.

Alternative VA1/VA2/VA3 has the following characteristics:

- The design objective is to maximize the use of existing railroad ROW.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.12.2 SECTION F PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section F is the common alignment of Alternatives VA1/VA2/VA3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1.

2.2.12.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- I-85 - roadway bridge over railroad
- Boydton Plank Road - (new roadway bridge over railroad to be constructed for realigned southbound lanes); on-site detour
- Christanna Highway - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Rosebud Lane - roadway bridge over railroad; on-site detour
- Millville Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes

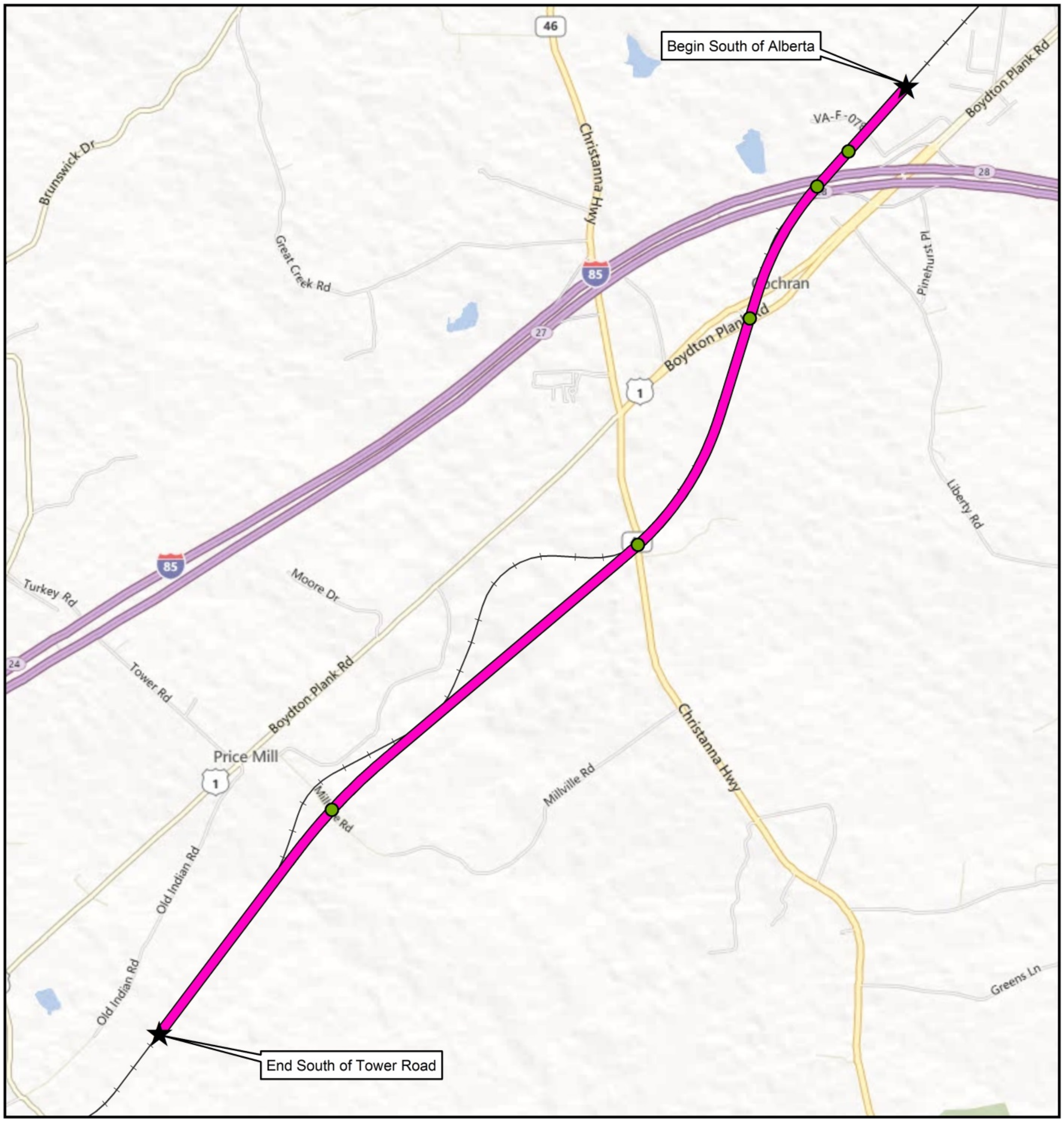
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- None

2.2.12.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

No changes were made subsequent to the Project Tier II DEIS.

Figure 2-11



Southeast High Speed Rail, Richmond, VA to Raleigh, NC

SECTION F

- Preferred Rail Alternative VA1* (Length= 4.28 miles)
- Existing Rail Corridor
- Existing and Proposed Pedestrian Bridges/Underpasses
- Existing and Proposed Bridges/Underpasses
- Historic Resources (Architectural)

* All alternatives were common in this section

0 0.5 1 Miles

N

2.2.13 SECTION G

The section begins south of Tower Road at railroad MP S-66.5 and extends to the Meherrin River at railroad MP S-70, a distance of 3.61 miles for Alternatives VA1, 3.66 miles for Alternative VA2, and 3.55 miles for Alternative VA3. In response to agency comments and revised information regarding a historic resource, an additional alternative was developed for this section (Alternative VA4). A description of Alternative VA4 is provided below. The existing railroad ROW follows a series of sharp reverse (i.e., "S") curves through this section. The section is located within the Chowan River Basin and includes the Meherrin River crossing. See Figure 2-12 for a map of Section G. Maps with greater detail can be found in Appendix R, maps 071-074.

Alternative VA4 was developed in response to agency comments and revised information regarding a historic resource.

2.2.13.1 SECTION G ALTERNATIVES EVALUATED IN THE DEIS

Initially, Alternative VA1 and Alternative VA2 were developed to straighten the "S" curves through the section while generally following the existing inactive railroad ROW (with Alternative VA2 more closely following the railroad ROW than Alternative VA1). Subsequent cultural resource investigations determined that both alternatives would impact the Oak Shades historic resource, which is eligible for the NRHP. Alternative VA3 was developed in an attempt to avoid impacts to Oak Shades; however, an additional historic resource (the Tourist Guest House) was later identified along the VA3 alignment. Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost.

Alternative VA1 has the following characteristics and potential impacts and benefits:

- The design objectives are to improve train performance by straightening curves, but more closely follow the existing railroad ROW compared to Alternative VA3
- The alternative has no effect on the Tourist Guest under Section 106 of the NHPA, but has an adverse effect on the Oak Shades historic property and also requires a use of the Oak Shades resource under Section 4(f).
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative VA2 has the following characteristics and potential impacts and benefits:

- The design objective is to improve train performance by straightening curves.
- Of all the alternatives, it most closely follows the existing railroad ROW.
- The alternative has no effect on the Tourist Guest House historic property, but has an adverse effect on the Oak Shades historic property and also requires a use of the Oak Shades resource under Section 4(f).
- Limiting speed is 90 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

Alternative VA3 has the following characteristics and potential impacts and benefits:

- The design objectives are to avoid impacts to the Oak Shades historic property and to improve train performance by straightening curves.

- The alternative is on new alignment west of the existing railroad ROW, providing the best train performance (compared to Alternative VA1 and Alternative VA2) because it has the straightest alignment through the section.
- The alternative has an adverse effect on the Tourist Guest House under Section 106 of the NHPA and would require a Section 4(f) use of the resource (the Tourist Guest House was identified as a historic resource eligible for the NRHP during the development of Alternative VA3).
- Limiting speed is 110 mph.
- The operability and constructability rating is positive.

2.2.13.2 SECTION G ALTERNATIVES DEVELOPED SUBSEQUENT TO THE DEIS

Alternative VA4 was developed after publication of the Project Tier II DEIS based on the impacts associated with the other three alternatives and input from the public and resource agencies. Four comments were received from the public expressing preference for an alternative presented in the Project Tier II DEIS: three people indicated a preference for Alternative VA1, and one person indicated a preference for Alternative VA2. However, at the July 15, 2010, public hearing in Alberta, VA, several members of the public expressed concerns about the property impacts associated with Alternative VA3. Although Alternative VA3 would not relocate any residences, it would require substantial ROW acquisition from several large family farms.

Alternative VA4 was developed based on the impacts of the other three alternatives and input from the public and resource agencies.

At a September 27, 2010, interagency meeting, USACE and VDEQ expressed concerns that Alternative VA2, which was presented in the Project Tier II DEIS as a possible Section 4(f) avoidance alternative for Section G, had the greatest stream and wetland impacts compared to Alternatives VA1 and VA3. Based on the discussion at this meeting VDHR requested additional research into the history of the Tourist Guest House to validate the appropriateness of the recommended NRHP-eligible boundary, which at that time encompassed the entire 55-acre tax parcel. On November 17, 2010, VDHR concurred with research completed by the Project team proposing a smaller eligible boundary for the Tourist Guest House that only encompasses the areas known to have been used during its period of historic significance. Based on this revised boundary, the Project team determined that a new alternative could potentially be developed to avoid a Section 4(f) use, minimize property impacts (compared to Alternative VA3), reduce stream and wetland impacts (compared to Alternative VA2), and provide similar train performance to Alternative VA3. Alternative VA4 was the result of this effort.

Alternative VA4 has the following characteristics and potential impacts and benefits:

- It provides similar train performance compared to Alternative VA3
- The design calls for construction of a new single-track, and potentially a second track for a passing siding if required through this location
- The alternative requires no Section 4(f) use of the Tourist Guest House or Oak Shades historic properties, and is favorably located closer to the rear of the properties it crosses compared to Alternative VA3; however, it would require a Section 4(f) use of the Orgain House (identified after the alternative was developed; see below).
- The alternative has the greatest amount of stream impacts of all of the alternatives
- Limiting speed is 110 mph.
- The operability and constructability rating is positive.

A Project update meeting was held in Alberta, VA, on July 14, 2011, to provide the public and local officials an opportunity to learn about VA4 in Section G (as well as the newly developed alternative VA4 in Section D). The public was informed that all alternatives were still under consideration, and they were asked to provide comments. Approximately 60 people attended the meeting. Following the meeting, four comments were submitted regarding a preference for an alternative: one was opposed to Alternative VA4, while three were in favor of Alternative VA4. Refer to Appendix B for a meeting summary.

In response to a comment about historic resources received at the Project update meeting, additional surveys were completed to ensure all resources eligible for the NRHP were identified within the Study Area in Section G. As a result of those surveys, a previously un-surveyed historic resource, the Orgain House, was identified as eligible for the NRHP. It was determined that Alternative VA4 would have an adverse effect on the Orgain House under Section 106 of the NHPA. It would also require a Section 4(f) use of the resource.

It should be noted that the Section 106 effect determination for the Oak Shades property was revised from "no adverse effect" as presented in the Project Tier II DEIS based on additional information and coordination with VDHR. During a review of all Project alternatives in October 2011, VDHR noted that although the railroad tracks for Alternative VA2 would be located down a steep escarpment from the Oak Shades main house, theVA2 alignment does not follow the historic location of the railroad and intrudes within the established NRHP-eligible boundary by approximately 100 feet, thus moving the railroad bed closer to the historic core of Oak Shades.

2.2.13.3 SECTION G PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section G is Alternative VA3. Through the development of Project alternatives, it was determined that there is no prudent and feasible alternative that can avoid a Section 4(f) use of all historic resources. Therefore, a "least overall harm" analysis was completed. This determination is made by balancing the factors listed in 23 CFR 774.3(c):

> The preferred alternative is Alternative VA3. There is no alternative that can avoid a Section 4(f) use of all historic resources. Therefore, a "least overall harm" analysis was completed.

i. The ability to mitigate adverse impacts of each Section 4(f) property (including any measures that result in benefits to the property);

ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;

iii. The relative significance of each Section 4(f) property;

iv. The views of the official(s) with jurisdiction over each Section 4(f) property;

v. The degree to which each alternative meets the purpose and need for the Project;

vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and

vii. Substantial differences in costs among the alternatives.

The following factors were included in the "least overall harm" analysis:

- Alternative VA1 – Section 106 adverse effect and Section 4(f) use of Oak Shades; 654 feet of stream impacts; neutral rating for operability and constructability (operability is related to the ability of the alternative to meet the purpose and need for the Project); total cost of $36.46 million

- Alternative VA2 – Section 106 adverse effect and Section 4(f) use of Oak Shades; 914 feet of stream impacts; negative rating for operability and constructability; total cost of $29.47 million
- Alternative VA3 – Section 106 adverse effect and Section 4(f) use of Tourist Guest House; 500 feet of stream impacts; positive rating for operability and constructability; total cost of $36.92 million
- Alternative VA4 – Section 106 adverse effect and Section 4(f) use of Orgain House; 1,095 feet of stream impacts; positive rating for operability and constructability; total cost of $40.73 million.

Input from the cultural and natural resource agencies was also used to evaluate the alternatives. In a discussion with VDHR on October 11, 2011, it was determined that:

- Alternative VA4 would have the most substantial impact to historic resources (because the main house on the Orgain property is within its construction limits)
- Alternative VA1 would have the second most substantial impact (because it would bring the railroad alignment within 50 feet of the main house on the Oak Shades property)
- The impacts of Alternative VA2 (to Oak Shades) and Alternative VA3 (to the Tourist Guest House) can be mitigated. Such mitigation could include landscaping to shield visual impacts.

From a water resources perspective, the resource agencies endorsed Alternative VA3. In a correspondence dated May 25, 2011, VDEQ noted that while they "recognize the problems associated with impacting the Tourist Guest House and/or Oak Shades," they identified Alternative VA3 as "the least environmentally damaging option that preserves the operational purpose of the Project, followed by VA1." Subsequently, in a letter dated June 29, 2011, USACE stated that they believe Alternative VA3 is the "least environmentally damaging practicable alternative" in Section G and noted that if another alternative was selected, "further avoidance and minimization will have to be incorporated into the Project to reduce the impacts to aquatic resources of the selected alternative to a level comparable to or less than those of VA3 in order for [them] to consider authorizing it."

> The resource agencies endorsed Alternative VA3.

Based on the above, Alternative VA3 was selected as the preferred alternative in Section G because it is possible to mitigate the impacts to the Tourist Guest House; the impacts to historic resources are not as severe (compared to Alternative VA2 and VA4); it minimizes impacts to streams (of all alternatives); and it meets the purpose and need for the Project to the greatest degree (compared to Alternatives VA1 and VA2, which do not have positive operability and constructability).

> Alternative VA3 is the preferred alternative because it is possible to mitigate the impacts to the Tourist Guest House; impacts to historic resources are not as severe; it minimizes impacts to streams; and it meets the purpose for the project the greatest degree.

2.2.13.4 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Grandy Road - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Old Indian Road at railroad MP S-68.5 - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Old Indian Road at railroad MP S-69.5 - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- None

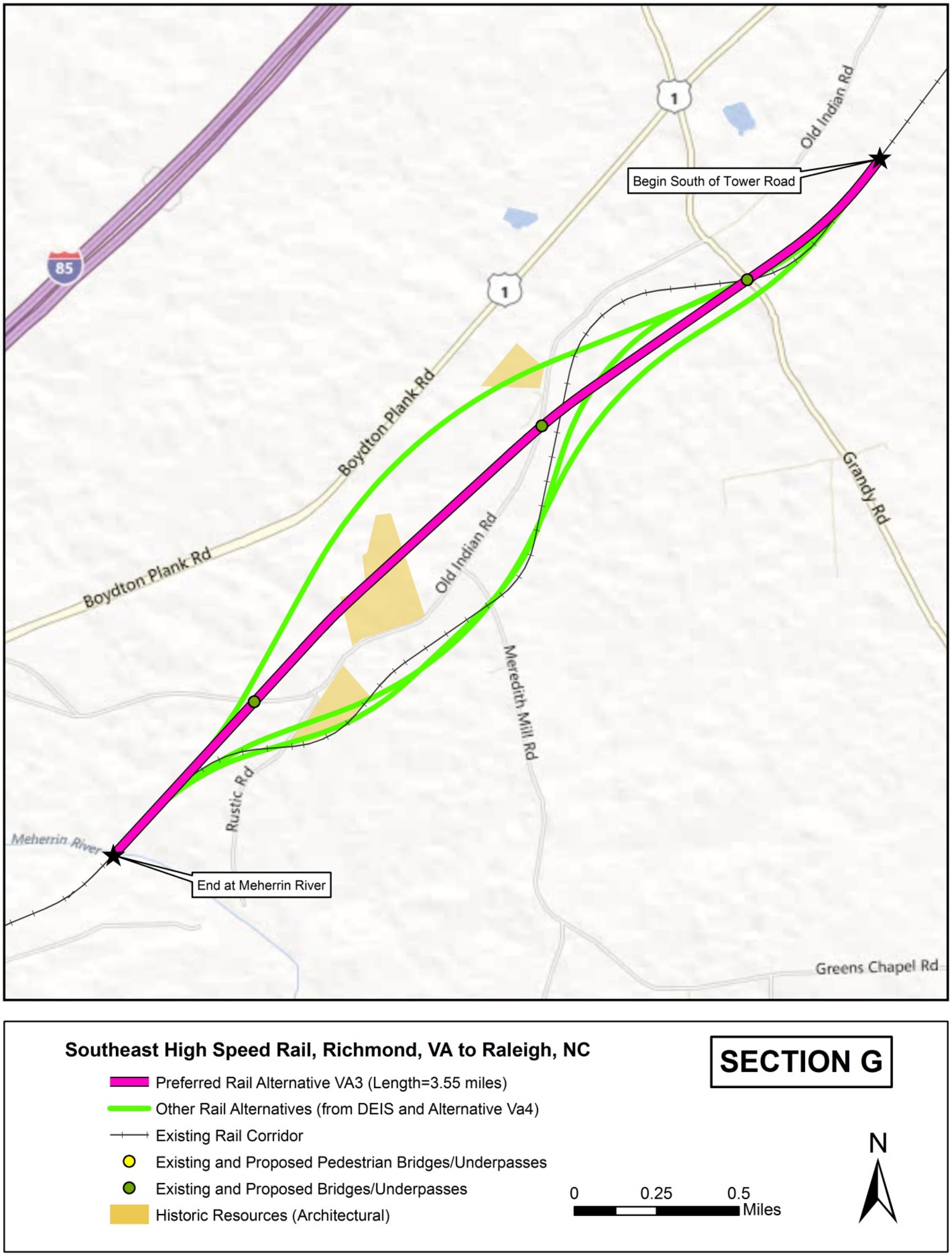
2.2.13.5 RIVER AND MAJOR CREEK BRIDGES

Meherrin River – Although the existing track has been removed throughout this area of the Project, the existing concrete ballast deck single-track bridge, built in 1975, is in good condition. Under Preferred Alternative VA3 the Project intends to utilize the piers and substructure of the existing bridge, as well as the superstructure (girders and decking).

2.2.13.6 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

No changes were made subsequent to the Project Tier II DEIS.

Figure 2-12



1
85
Old Indian Rd
Begin South of Tower Road
Boydton Plank Rd
Boydton Plank Rd
Old Indian Rd
Grandy Rd
Meredith Mill Rd
Rustic Rd
Meherrin River
End at Meherrin River
Greens Chapel Rd
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION G
Preferred Rail Alternative VA3 (Length=3.55 miles)
Other Rail Alternatives (from DEIS and Alternative Va4)
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.25
0.5
Miles
N

2.2.14 SECTION H

The section begins at the Meherrin River at railroad MP S-70 and extends to north of Wray Road at railroad MP S-76, a distance of 5.53 miles for Alternatives VA1 and VA3, which are on common alignment, and 5.58 miles for Alternative VA2 (see Section H map, Figure 2-13). The section is located within the Chowan River Basin and includes a portion of the Meherrin River crossing. Detailed maps for this section can be found in Appendix R, maps 075-080.

2.2.14.1 SECTION H ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/VA3 has the following characteristics:

- The design objectives are to improve train performance by straightening curves and provide a faster design speed compared to Alternative VA2.
- The alternative has a straighter alignment through the northern end of the section in Brunswick County compared to Alternative VA2.
- Limiting speed is 110 mph.
- The operability and constructability rating is positive.

Alternative VA2 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alternative is on common alignment with Alternative VA1/VA3 from near the Brunswick County/Mecklenburg County line, southward to the end of the section.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.14.2 SECTION H PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section H is the common alignment of Alternative VA1/VA3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1. Alternative VA1 is the preferred alternative in Section H because it has fewer impacts to streams, prime and important farmland, and forested uplands; along with fewer noise and vibration impacts (Table ES-5). Although Alternative VA1 has a somewhat higher total cost, the long-term maintenance cost will be lower compared to Alternative VA2. This is due to the fact that the more abundant curves in the Alternative VA2 create a curvier and longer alignment, which would face greater wear and be more costly to maintain over time. This is reflected in the positive operability and constructability rating for Alternative VA1. There were no public comments indicating a preference for a particular alternative within this section.

> Alternative VA1 has fewer impacts to streams, important farmland, and forested uplands; along with fewer noise and vibration impacts.

2.2.14.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Tanner Town Road - underpass (road under railroad); on-site detour
- Wilson Road - roadway bridge over railroad; on-site detour

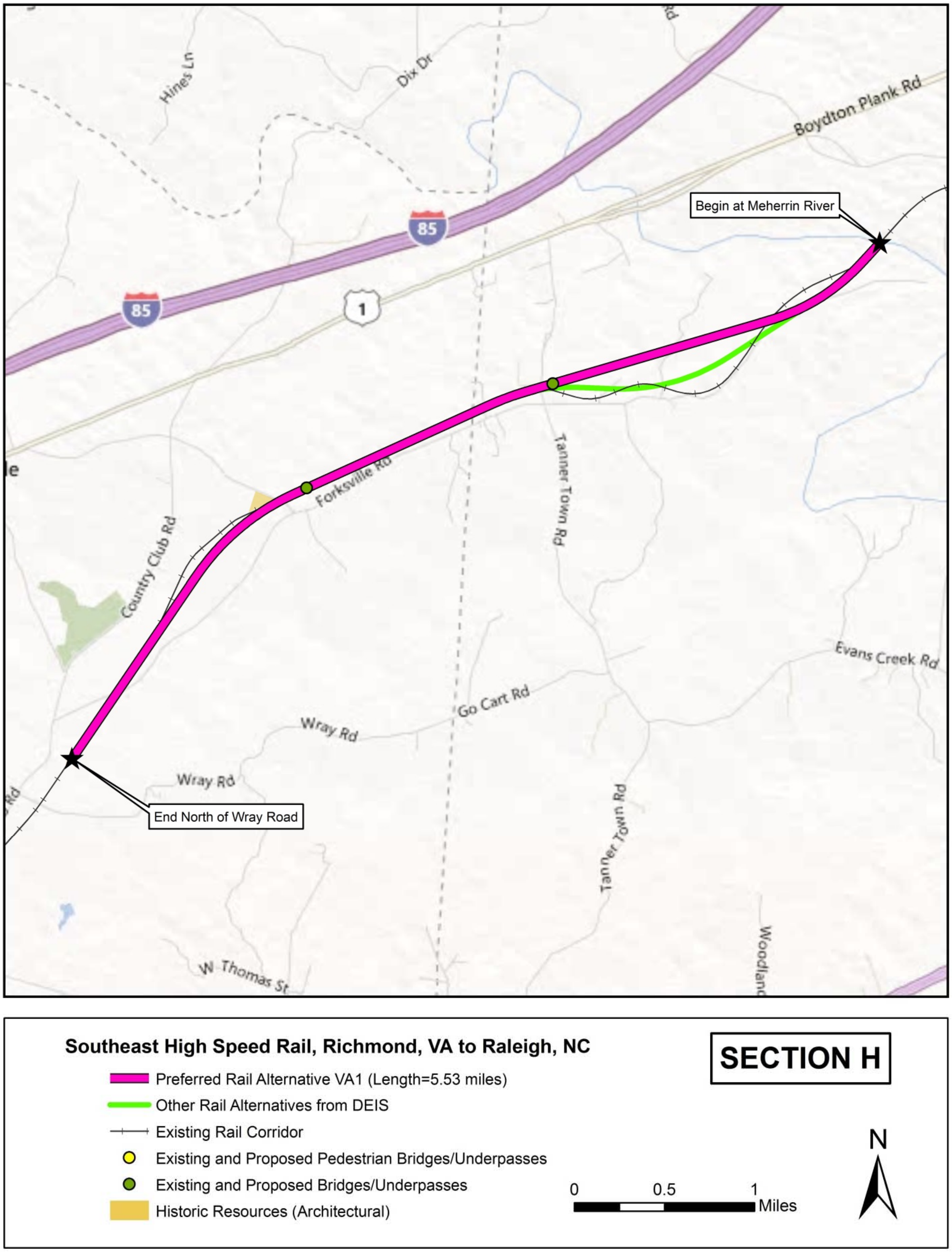
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Forksville Road

2.2.14.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

No changes were made subsequent to the Project Tier II DEIS.

Figure 2-13


Hines Ln
Dix Dr
Boydton Plank Rd
85
85
1
Begin at Meherrin River
Forksville Rd
Tanner Town Rd
Country Club Rd
Evans Creek Rd
Go Cart Rd
Wray Rd
Wray Rd
End North of Wray Road
Tanner Town Rd
W Thomas St
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION H
Preferred Rail Alternative VA1 (Length=5.53 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.15 SECTION I

The section begins north of Wray Road at railroad MP S-76 and extends to south of La Crosse, VA, at railroad MP S-80, a distance of 3.78 miles for all the alternatives (see Section I map, Figure 2-14). Alternatives VA1 and VA3 are on common alignment throughout the section. The section is located within the Chowan River Basin and the Roanoke River Basin and includes no major stream crossings. The Town of La Crosse, VA, is the major population center for the section. Detailed maps for this section can be found in Appendix R, maps 080-083.

2.2.15.1 SECTION I ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/VA3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alternative follows a straighter line compared to Alternative VA2 to straighten a reverse (i.e., “S”) curve in the existing railroad ROW.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative VA2 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alternative is on common alignment with Alternative VA1/VA3 except for north of La Crosse where different designs are used to straighten a reverse (i.e., “S”) curve in the existing railroad ROW.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.15.2 SECTION I PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section I is the common alignment of Alternatives VA1/ VA3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1. Table ES-5 shows that Alternatives VA1 and VA2 have identical impacts to water resources with nominal stream impacts and no wetlands impacts. However, Alternative VA1 has fewer impacts to prime and important farmland and forested uplands and a lower cost. While Alternative VA1 has six more residential relocations compared to Alternative VA2, there appears to be comparable housing and vacant land available in the vicinity of the displaced residences, so it is anticipated that suitable relocation sites would be identified within the surrounding community. (Refer to Section 4.11 for more information on comparable housing.) There was one public comment in support of Alternative VA2, and one public comment in support of Alternative VA1/VA3.

> Alternative VA1 has fewer impacts to important farmland and forested uplands and a lower cost. While Alternative VA1 has six more residential relocations compared to Alternative VA2, relocation sites would be identified within the surrounding community.

2.2.15.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Wray Road - roadway bridge over railroad
- US-58 - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- To Be Named (new roadway on new location, less than on quarter mile north of the existing Northington Road at-grade crossing) - underpass (road under railroad); construction on new location
- Planned Tobacco Heritage Trail - pedestrian underpass (pedestrian pathway under railroad)
- Marengo Road/Jones Street - underpass (road under railroad); on-site detour

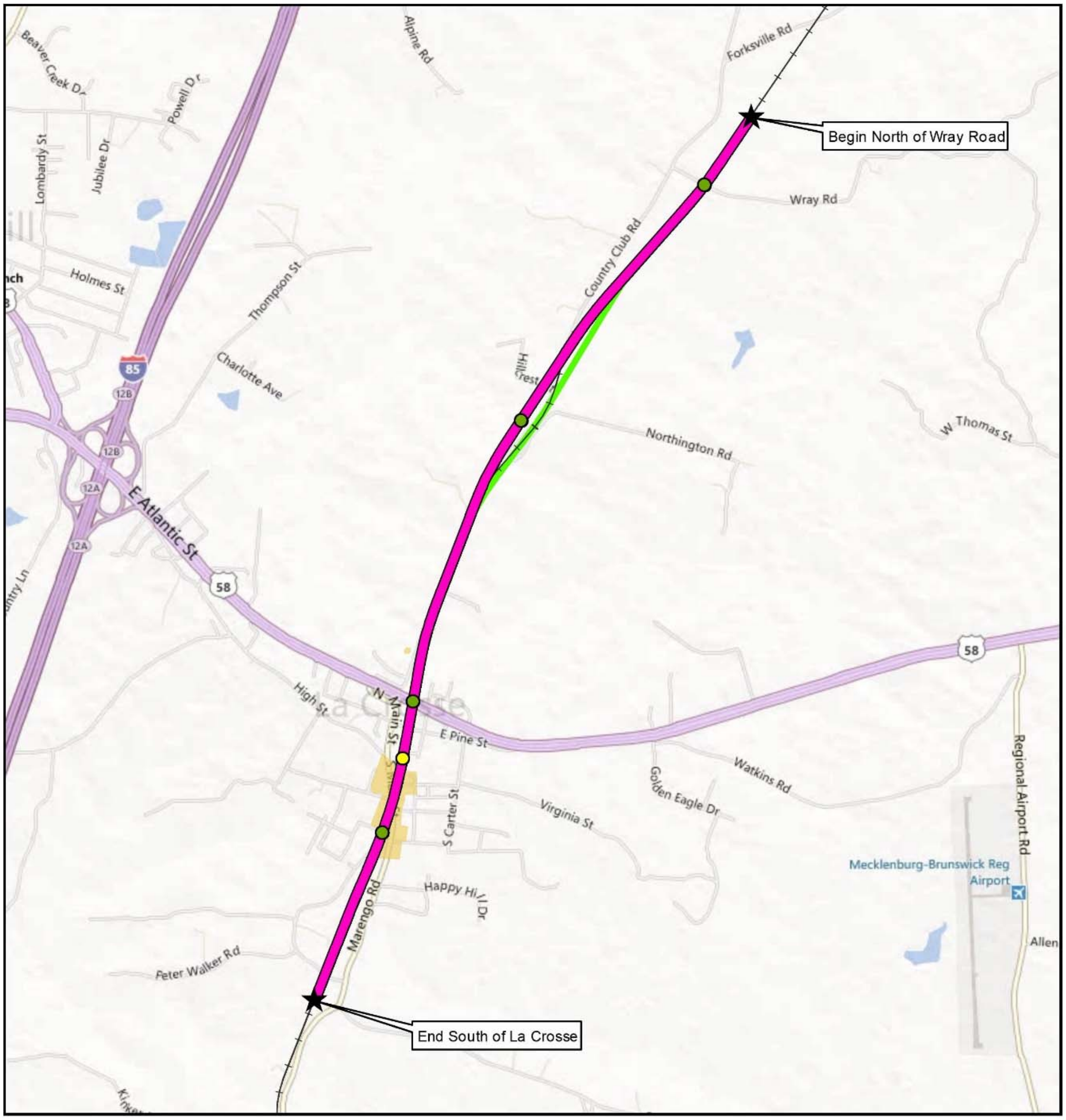
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Northington Road
- Pine Street
- Hillcrest Road
- Main Street
- Morris Town Circle

2.2.15.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Central Avenue - The alignment was shortened on the north end to avoid impacts to the La Crosse Hotel historic resource.
- Marengo Road – The road under the railroad was widened to three lanes, with curb and gutter, which will accommodate a sidewalk along the underpass.

Figure 2-14



Southeast High Speed Rail, Richmond, VA to Raleigh, NC

SECTION I

- Preferred Rail Alternative VA1 (Length=3.78 miles)
- Other Alternatives from DEIS
- Existing Rail Corridor
- Existing and Proposed Pedestrian Bridges/Underpasses
- Existing and Proposed Bridges/Underpasses
- Historic Resources (Architectural)

0 0.5 1 Miles

N

2.2.16 SECTION J

The section begins south of La Crosse, VA, at railroad MP S-80 and extends to north of Bracey, VA, at railroad MP S-84, a distance of 3.99 miles for Alternatives VA1 and VA3, which are on common alignment, and 4.10 miles for Alternative VA2 (see Section J map, Figure 2-15). The section is located within the Roanoke River Basin and includes no major stream crossings. Detailed maps for this section can be found in Appendix R, maps 084-087.

2.2.16.1 SECTION J ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/VA3 has the following characteristics:

- The design objectives are to improve train performance by straightening curves and provide a faster design compared to Alternative VA2.
- The alternative would have an adverse effect on the Wright Farmstead historic resource under Section 106 of the NHPA and would also require a Section 4(f) use of the property.
- Limiting speed is 110 mph.
- The operability and constructability rating is positive.

Alternative VA2 is the Section 4(f) avoidance alternative and minimizes impacts to streams, prime and important farmlands, and forested uplands.

Alternative VA2 has the following characteristics:

- The design objectives are to improve train performance by straightening curves, and to avoid impacts to the Wright Farmstead historic property.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.16.2 SECTION J PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section J is Alternative VA2. Alternative VA2 is the Section 4(f) avoidance alternative in this section and minimizes impacts to streams, prime and important farmlands, and forested uplands (see Table ES-5). Comments from the resource and regulatory agencies indicated a preference for Alternative VA2, while one individual indicated a preference for Alternative VA1/VA3.

2.2.16.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Bellfield Road - roadway bridge over railroad; on-site detour
- Marengo Road - roadway bridge over railroad; on-site detour
- Gaulding Road - roadway bridge over railroad; on-site detour

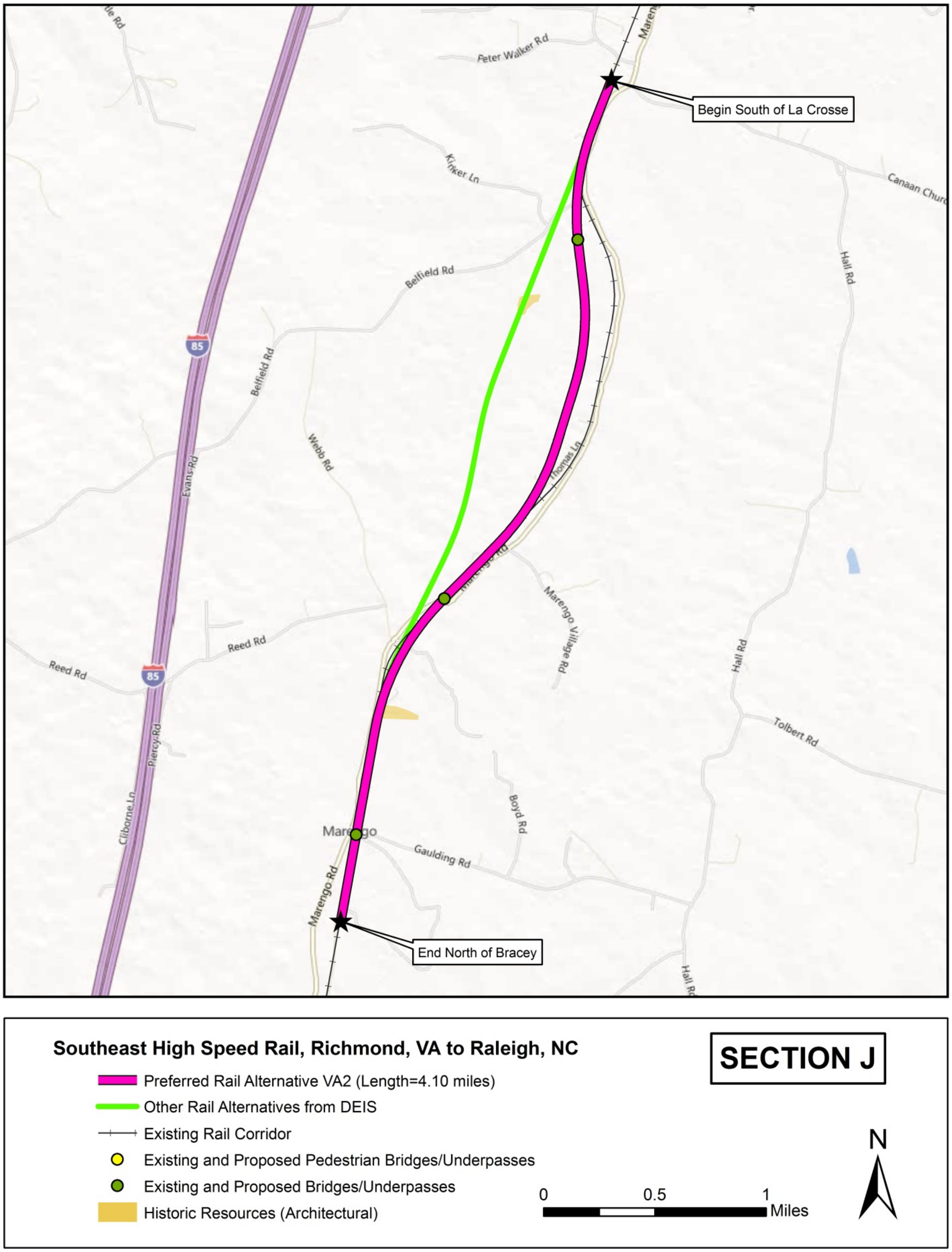
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- None

2.2.16.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Gaulding Road – The proposed road alignment with roadway bridge over the railroad was shifted approximately 100 feet north to allow traffic to be maintained on the existing road during construction.

Figure 2-15


Peter Walker Rd
Begin South of La Crosse
Kinker Ln
Canaan Church
Hall Rd
Bellfield Rd
85
Belfield Rd
Webb Rd
Evans Rd
Thomas Ln
Marengo Village Rd
Reed Rd
Reed Rd
Piercy Rd
Cliborne Ln
Tolbert Rd
Boyd Rd
Marengo
Gaulding Rd
Marengo Rd
End North of Bracey
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
Preferred Rail Alternative VA2 (Length=4.10 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
SECTION J
0
0.5
1
Miles
N

2.2.17 SECTION K

The section begins north of Bracey, VA, at railroad MP S-84 and extends to the Roanoke River/Lake Gaston at railroad MP S-89, a distance of 4.96 miles for Alternatives VA1 and VA3, which are on common alignment, and 4.94 miles for Alternative VA2 (see Section K map, Figure 2-16). The section is located within the Roanoke River Basin and includes the crossing of the Roanoke River. Detailed maps for this section can be found in Appendix R, maps 087-091.

2.2.17.1 SECTION K ALTERNATIVES EVALUATED IN THE DEIS

The design objectives for all alternatives in this section are to improve train performance by straightening curves. All alternatives would also cross the Roanoke River/Lake Gaston in the location of the existing bridge and plans are to use the existing bridge piers (pending results of a detailed bridge investigation that would occur prior to final design). Table ES-5 displays information regarding impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/ VA3 has the following characteristics:

- The design provides a faster design speed compared to Alternative VA2.
- The alternative avoids impacts to the Bracey Historic District.
- Limiting speed is 110 mph.
- Has a neutral operability and constructability rating.

Alternative VA2 has the following characteristics:

- The design also straightens curves near Bracey to achieve improved design speed, but its use of the existing Highway 903 over the railroad results in a design that has a lower limiting speed.
- The alternative has an adverse effect on the Bracey Historic District under Section 106 of the NHPA and would require a Section 4(f) use of the resource.
- Limiting speed is 100 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, likely resulting in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

2.2.17.2 SECTION K PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section K is the common alignment of Alternatives VA1/VA3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1. Alternative VA1 is the Section 4(f) avoidance alternative in Section K and minimizes impacts to streams, wetlands, and prime and important farmlands (see Table ES-5). Alternative VA1 also has a better operability and constructability rating, which would result in lower long-term maintenance for the rails and train equipment compared to Alternative VA2. There was one comment from an individual stating a preference for Alternative VA2.

> Alternative VA1 is the Section 4(f) avoidance alternative that minimizes impacts to streams, wetlands, and important farmlands. It has a better operability and constructability rating, which would result in lower long-term maintenance.

2.2.17.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Marengo Road - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Highway 903 - roadway bridge over railroad; on-site detour

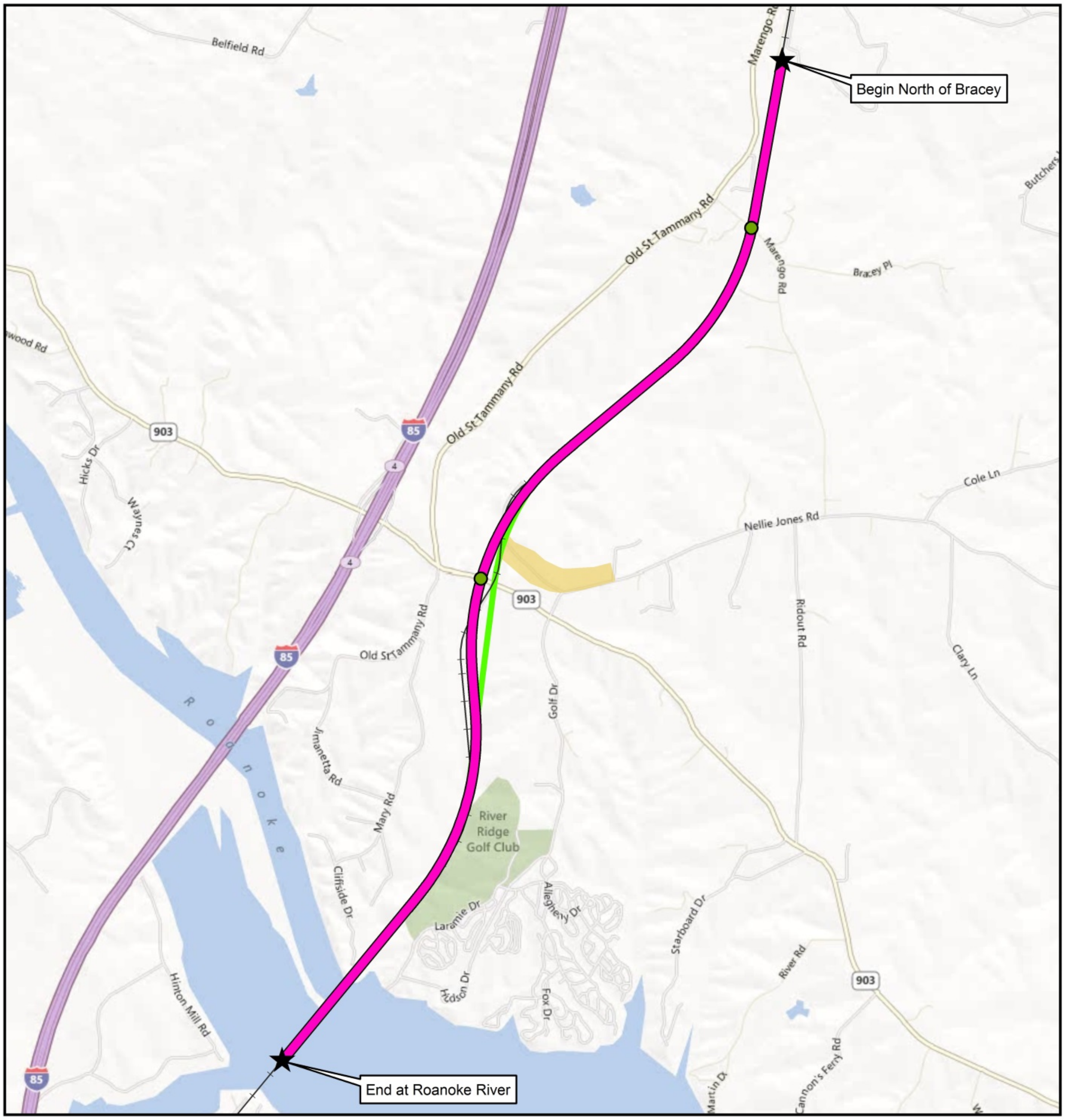
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- None

2.2.17.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

No changes were made subsequent to the Project Tier II DEIS.

Figure 2-16



Southeast High Speed Rail, Richmond, VA to Raleigh, NC

SECTION K

- Preferred Rail Alternative VA1 (Length=4.96 miles)
- Other Rail Alternatives from DEIS
- Existing Rail Corridor
- Existing and Proposed Pedestrian Bridges/Underpasses
- Existing and Proposed Bridges/Underpasses
- Historic Resources (Architectural)

0 0.5 1 Miles

N

2.2.18 SECTION L

The section begins at the Roanoke River/Lake Gaston bridge (railroad MP S-89) and extends into North Carolina, ending north of Norlina, NC, at railroad MP S-95, a distance of 5.75 miles for Alternatives VA1/NC1 and VA3/NC3, which are on common alignment, and 5.96 miles for Alternative VA2/NC2 (see Figure 2-17). The section is located within the Roanoke River Basin and includes the crossing of the Roanoke River. Detailed maps for this section can be found in Appendix R, maps 091-095.

2.2.18.1 SECTION L ALTERNATIVES EVALUATED IN THE DEIS

The design objectives for all alternatives in this section are to improve train performance by straightening curves. Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative VA1/NC1/VA3/NC3 has the following characteristics and potential impacts and benefits:

- The design provides a faster design speed compared to Alternative VA2/NC2 by straightening the large eastward curve of the existing railroad that begins just north of the Virginia/North Carolina state line.
- The alternative avoids impacts to the Granite Hall/Fitts House historic property, which is located in Virginia just north of the North Carolina state line.
- The "new location" portion of the railroad alignment for this alternative crosses through a network of stream tributaries before rejoining the existing railroad ROW near Wise Five Forks Road.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative VA2/NC2 has the following characteristics and potential impacts and benefits:

- The design straightens curves, but to a lesser degree than Alternative VA1/VA3/NC1/NC3, by maximizing use of the existing railroad ROW.
- The alternative stays within existing railroad ROW near the Granite Hall/Fitts House historic resource. However, the proposed road realignment and bridge construction along Paschall Road would result in an adverse effect on the property under Section 106 of the NHPA and require a Section 4(f) use of the resource.
- Limiting speed is 100 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, likely resulting in increased long-term maintenance for the rails and train equipment, and a lower speed and longer alignment. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

2.2.18.2 SECTION L PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section L is the common alignment of Alternatives VA1/NC1/VA3/NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative VA1/NC1. Alternative VA1/NC1 is the Section 4(f) avoidance alternative in Section L. Table ES-5 shows that Alternative VA1/NC1 has greater stream and wetland impacts compared to VA2/NC2, but fewer impacts to prime and important farmlands, less residential relocation, fewer noise and vibration impacts, and a lower total cost. In addition, it has a neutral constructability and operability rating (compared to a negative rating for

Alternative VA1/NC1 has greater impacts compared to VA2/NC2, but fewer impacts to prime and important farmlands, less residential relocation, fewer noise and vibration impacts, and a lower total cost.

Alternative VA2/NC2) and has better support from the public. Seven public comments indicated a preference for Alternative VA1/NC1 compared to two for Alternative VA2/NC2.

During Project coordination, USACE expressed concerns regarding the greater stream and wetland impacts on Alternative VA1/NC1 (2,809 feet of stream impacts and 0.57 acres of wetland impacts compared to 1,422 feet of stream impacts and 0.01 acres of wetland impacts for Alternative VA2/NC2). In a letter to USACE dated January 6, 2011, the Project team explained the differences between the alternatives. Based on the information in the letter, as well as previously submitted related information, USACE stated on January 13, 2011, that if the Project team assessed that Alternative VA2/NC2 is "not practicable due to residential displacements, cost, and operability, then [USACE] can concur with your assessment based on the information submitted." Due to residential displacements, cost, and operability, as well as public sentiment, noise and vibration impacts, and impacts to prime and important farmlands, the Project team finds that Alternative VA2/NC2 is not practicable. The impacts to streams and wetlands will be fully mitigated, and the design work will include coordination with USACE.

2.2.18.3 PUBLIC ROAD/RAIL CROSSINGS

Due to residential displacements, cost, and operability, as well as public sentiment, noise and vibration impacts, and impacts to prime and important farmlands, Alternative VA2/NC2 is not practicable. The impacts to streams and wetlands will be fully mitigated, and the design work will include coordination with USACE.

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Paschall Road- roadway bridge over railroad; on-site detour
- Wise Five Forks Road- roadway bridge over railroad; on-site detour

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Felts Road
- Faulkner Quarter Road

2.2.18.4 RIVER AND MAJOR CREEK BRIDGES

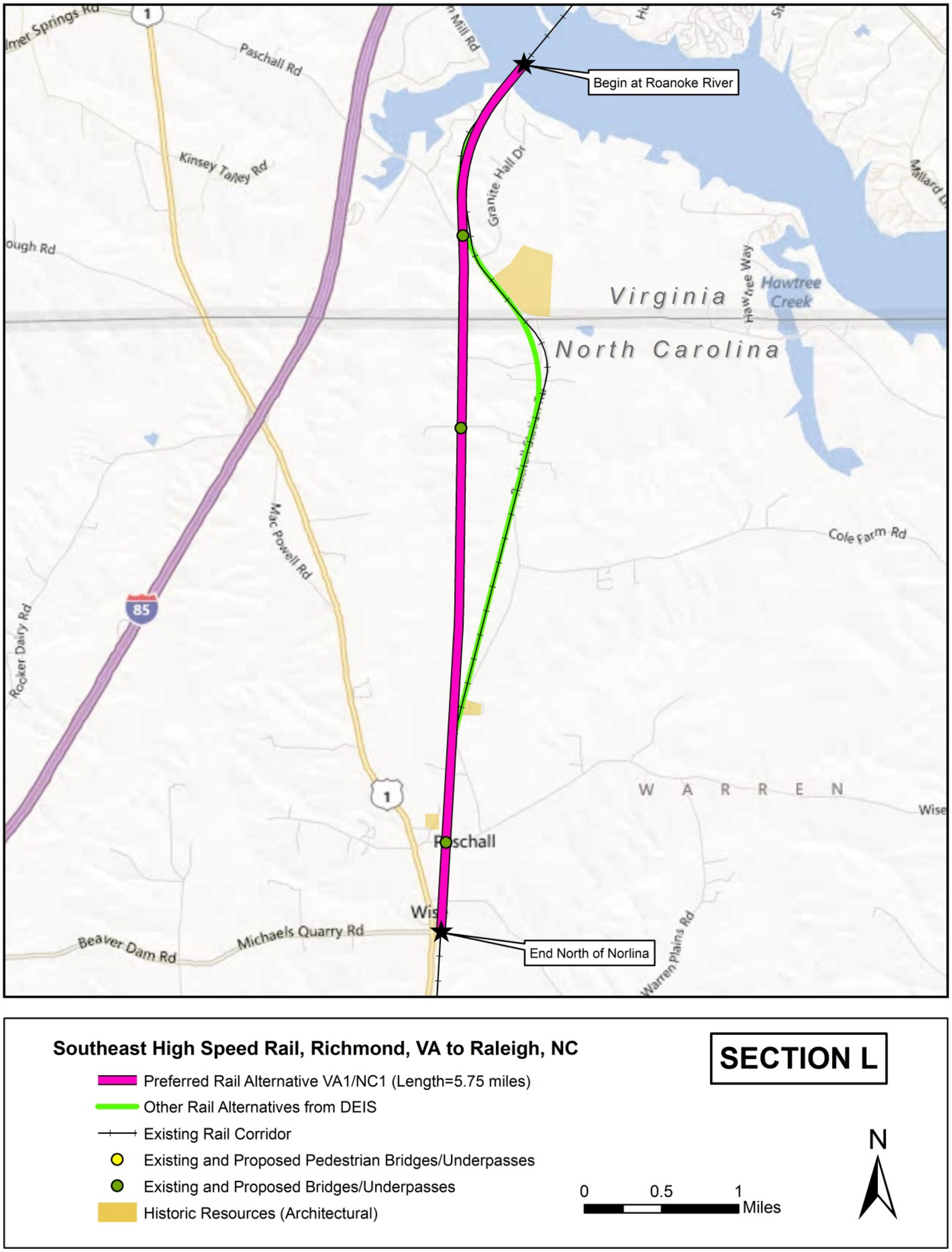
Roanoke River/Lake Gaston – Although the existing track has been removed throughout this area of the Project, the existing single-track bridge remains intact. Under Preferred Alternative VA1/NC1 the Project intends to utilize the piers and substructure of the existing bridge, as well as the superstructure (girders and decking).

2.2.18.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Felts Road – The proposed roadway bridge over the railroad shown in the Project Tier II DEIS has been removed from the designs; the Project proposes to close this crossing, and construct a T-turn on the east side of the railroad. Additional evaluation subsequent to the Project Tier II DEIS led to a decision to eliminate the grade separation due to: low traffic volumes, and the fact that properties on the west side of the railroad that that bridge was designed to serve would receive adequate access via the new access road (west of the railroad, connecting Felts Road at the north end to US1 at the south).

- New Access Road (west of the railroad, connecting Felts Road at the north end to US-1 at the south) – In response to comments, the alignment at the southern end was revised to reduce property impacts by shifting closer to an existing pathway, which moves the intersection further away from the intersection of US-1 and Carrie Dunn Road. In addition, the alignment was shifted slightly at the north end due to elimination of the proposed Felts Road bridge (described above).
- Faulkner Quarter Road - The Project Tier II DEIS designs showed changes to the elevation of Faulkner Quarter Road in order to connect to the proposed new access road parallel to, and east of, the railroad. In order to reduce property impacts along Faulkner Quarter Road, the elevation of the new access road was raised (as shown in the Richmond to Raleigh Tier II FEIS) such that changes to Faulkner Quarter Road are no longer required. Note, however, that the Faulkner Quarter Road existing at-grade railroad crossing is still proposed to be closed.

Figure 2-17


Begin at Roanoke River
End North of Norlina
Paschall Rd
Kinsey Tatey Rd
Granite Hall Dr
Virginia
North Carolina
Hawtree Creek
Hawtree Way
Mac Powell Rd
Cole Farm Rd
Rocker Dairy Rd
85
1
W A R R E N
Paschall
Wise
Michaels Quarry Rd
Beaver Dam Rd
Warren Plains Rd
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION L
Preferred Rail Alternative VA1/NC1 (Length=5.75 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0 0.5 1 Miles
N

2.2.19 SECTION M

The section begins north of Norlina, NC, at railroad MP S-95 and extends to southwest of Norlina, NC at railroad MP S-101, a distance of 6.14 miles for Alternatives NC1 and NC3, which are on common alignment, and 5.97 miles for Alternative NC2 (see Section M map, Figure 2-18). From the Ridgeway community southward to Raleigh, NC, the CSX S-Line tracks remain in place and there is active freight service. The section is located within both the Roanoke River Basin and the Tar-Pamlico River Basin and includes no major stream crossings. Norlina, NC, is the major population center in this section. Detailed maps for this section can be found in Appendix R, maps 096-102.

2.2.19.1 SECTION M ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative NC1/NC3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alignment provides better train performance due to a smoother curve in the approach to Norlina, NC at the north end of the section compared to Alternative NC2.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative NC2 has the following characteristics:

- The design objective is to maximize the use of existing railroad ROW, and more closely follow the existing curve in the approach to Norlina.
- Limiting speed is 80mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

2.2.19.2 SECTION M PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

Alternative NC1 minimizes stream impacts and has fewer impacts to forested uplands. Alternative NC1 does not impact a repeater tower. The limiting speed for Alternative NC1 is 30 mph faster than the limiting speed of Alternative NC2.

The preferred alternative in Section M is the common alignment of Alternatives NC1 and NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative NC1. Table ES-5 shows that Alternative NC1 minimizes stream impacts and has fewer impacts to forested uplands compared to Alternative NC2. Neither alternative would impact wetlands. Alternative NC1 also does not impact a repeater tower that is a contributing element to the Raleigh and Gaston Railroad Corridor (a historic resource protected by Section 106 of the NHPA), whereas Alternative NC2 would require its relocation. In addition, the limiting speed for Alternative NC1 (110 mph) is 30 mph faster than the limiting speed of Alternative NC2, and Alternative NC1 has a neutral operability and constructability rating compared to a negative rating for Alternative NC2.

Compared to Alternative NC2, Alternative NC1 has the same number of business relocations, one additional residential relocation, and fewer potentially impacted noise receptors. However, Alternative NC1 has a greater number of severely impacted noise receptors and a slightly greater number of structures potentially impacted by vibration compared to Alternative NC2. There were 11 comments received from the public expressing preference for an alternative based on property impacts. Seven people preferred Alternative NC1 and four people preferred Alternative NC2.

2.2.19.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- US-158- replace existing bridge, construct new railroad bridge over roadway

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Warren Plains Road - roadway bridge over railroad; on-site detour
- Ridgeway Drewry Road - roadway bridge over railroad; on-site detour

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Weldon Road (close at railroad located on new location)
- Town and Country east neighborhood entrance(close at railroad located on new location)
- Town and Country west neighborhood entrance (close at railroad located on new location)
- Ridgeway Warrenton Road

2.2.19.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Washington Street – In the Town of Norlina, a connection between Town and Country Road, and Washington Street has been added to the designs.

In response to comments, several modifications were made to the proposed roadwork for the area around the Ridgeway community (refer to Appendix R, map 102). The changes outlined below were made in coordination with Warren County, Kerr-Tar Council of Governments (the Rural Planning Organization) and the NCDOT Transportation Planning Branch to better serve the needs of both the local community and the county as a whole.

- St. Tammany Road/Ridgeway Warrenton Road - The Project Tier II DEIS designs, which showed closure of the existing Ridgeway Warrenton Road at-grade crossing and a realignment and roadway bridge over the railroad with a connection to St. Tammany Road on the north side of the railroad, have been eliminated. However, the existing at-grade crossing will still be closed under the current designs and traffic will be re-routed less than one half mile to the southwest to a new roadway bridge over the railroad for Ridgeway Drewry Road.
- Ridgeway Drewry Road - A roadway bridge over the railroad for Ridgeway Drewry Road has been added to the designs. The road will be shifted approximately 650 feet to the northeast to cross over US-1 and the railroad on a bridge, and will connect to a new alignment for Axtell Ridgway Road on the south side of the railroad. The existing intersection between US-1 and Ridgeway Drewry Road will be retained and a short section of the old road will be used to provide a connection between US-1 and the new road and bridge.

- Ridgeway Warrenton Road/Ed Petar Road/Axtell Ridgeway Road – The designs shown in the Project Tier II DEIS that were developed to provide a connection between Ridgeway Warrenton Road and Axtel Ridgeway Road have been revised. The new alignment retains connections to those roads on both ends, but is shifted away from the railroad in the middle section to accommodate an intersection with the new Ridgeway Drewry Road.

Figure 2-18


Begin North of Norlina
End Southwest of Norlina
Michaels Quarry Rd
Beaver Dam Rd
Oine Rd
Oine
Burton Rd
Heaven St
Bowen Rd
Paynter Plains Rd
Hawks Rd
Bessie Hicks Rd
St Tammany Rd
Bob White Rd
Walker Ave
Weldon Rd
Warren Plains Norlina Rd
Gaines St
N Rose St
Stockyard Rd
Yancey Rd
Rodgers Pl
Wycoff Rd
Baxter Rd
Grant Ln
Rose St
Elm St
High St
Dortch Rd
Lewis Mustian Rd
Wise
Branch
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION M
Preferred Rail Alternative NC1 (Length=6.14 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.20 SECTION N

The section begins southwest of Norlina, NC, at railroad MP S-101 and extends to north of Middleburg, NC, at railroad MP 105, a distance of 3.71 miles for Alternatives NC1 and NC3, which are on common alignment, and 3.77 miles for Alternative NC2 (see Section N map, Figure 2-19). In all of Section N and southward to Raleigh, NC, the CSX S-Line tracks remain in place and there is active freight service. The section is located within both the Roanoke River Basin and the Tar-Pamlico River Basin and includes no major stream crossings. Detailed maps for this section can be found in Appendix R, maps 103-106.

2.2.20.1 SECTION N ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative NC1/NC3 has the following characteristics:

- The design objective is to improve train performance by straightening a series of curves in the railroad ROW beginning near Soul City Boulevard.
- Limiting speed of 110 mph.
- The operability and constructability rating is positive due to a faster design speed compared to Alternative NC2.

Alternative NC2 has the following characteristics:

- The design objective is to improve train performance by straightening the same series of curves in the railroad ROW beginning near Soul City Boulevard, but to a lesser degree than Alternative NC1/NC3, by maximizing use of the existing railroad ROW.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.20.2 SECTION N PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section N is the common alignment of Alternatives NC1 and NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative NC1. Table ES-5 shows that Alternative NC1 minimizes impacts to streams, prime and important farmlands, and forested uplands compared to Alternative NC2. Alternative NC1 also has fewer residential relocations, fewer potentially impacted noise receptors, and a positive operability and constructability rating. There were no public comments expressing a preference for alternatives in this section.

> Alternative NC1 minimizes impacts to streams, prime and important farmlands, and forested uplands. It has fewer residential relocations and potentially impacted noise receptors, and a positive operability and constructability rating.

2.2.20.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Soul City Boulevard - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of proposed detour routes
- Kimball Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of proposed detour routes

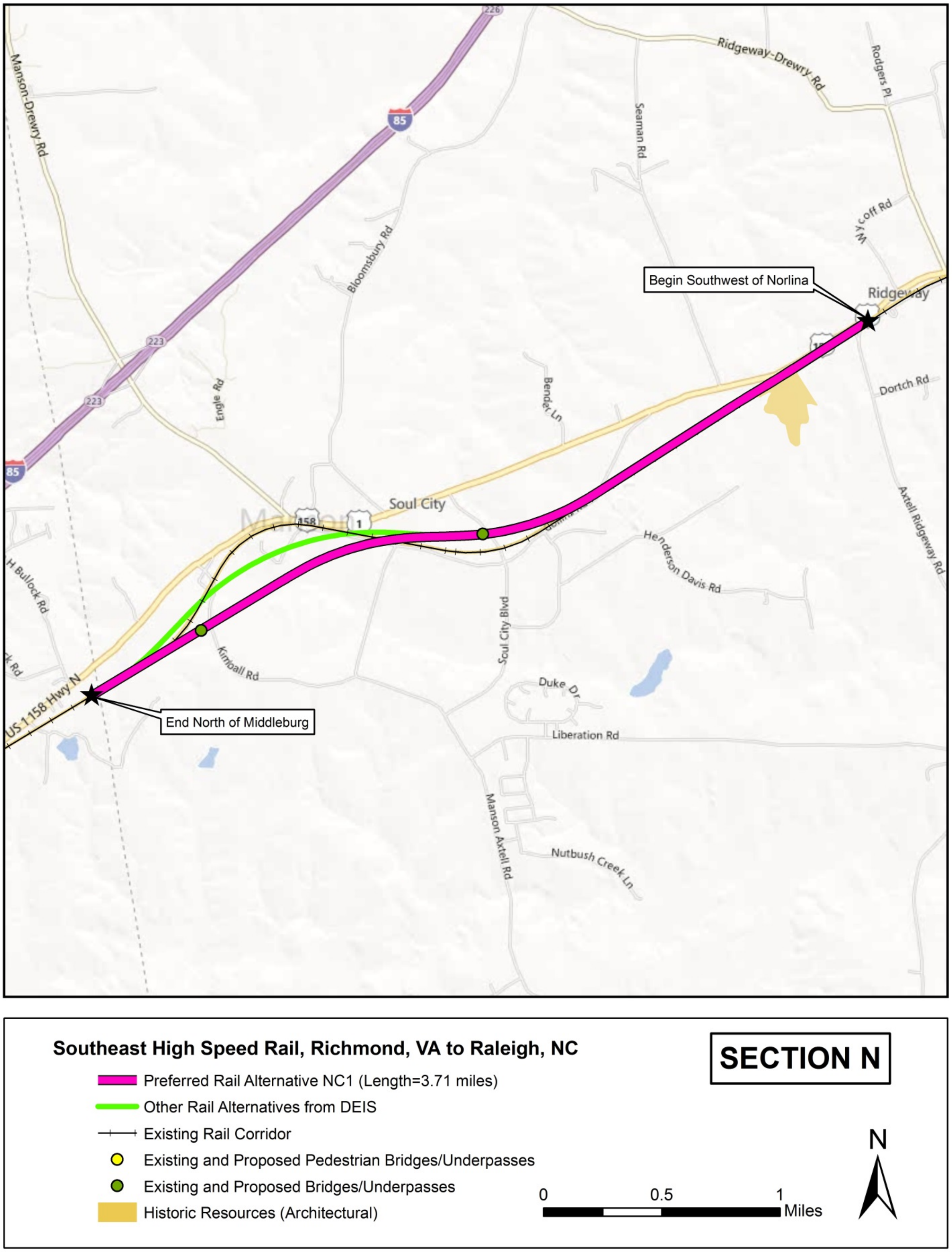
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Axtell Ridgeway Road
- Collins Road, east of Crescent Drive
- Collins Road, west of Manson Axtell Road (close road at railroad located on new location)

2.2.20.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Kimball Road - The designs in the Project Tier II DEIS for the preferred alternative showed that Kimball Road would cross the new railroad alignment on a bridge, and would include a small westward shift in the existing road alignment. In addition, a new access road on the south side of the railroad was designed to intersect Kimball Road approximately 700 feet south of the railroad. The Project Tier II FEIS shows a revision that was developed to allow access to the nearby Manson Baptist Church during construction of the new road and roadway bridge over the railroad.

Figure 2-19


Manson-Drewry Rd
85
226
Ridgeway-Drewry Rd
Rodgers Pl
Seaman Rd
Bloomsbury Rd
Wycoff Rd
Begin Southwest of Norlina
Ridgeway
Dortch Rd
223
Engle Rd
Bender Ln
Soul City
158
1
Henderson Davis Rd
Axtell Ridgeway Rd
H Bullock Rd
Kimball Rd
Soul City Blvd
Duke Dr
US 1 158 Hwy N
End North of Middleburg
Liberation Rd
Manson Axtell Rd
Nutbush Creek Ln
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION N
Preferred Rail Alternative NC1 (Length=3.71 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.21 SECTION O

The section begins north of Middleburg, NC, at railroad MP S-105 and extends to the Greystone Quarry north of Henderson, NC, at railroad MP S-110; a distance of 5.09 miles for Alternative NC1, 5.16 miles for Alternative NC2, and 4.70 miles for Alternative NC3 (see Section O map, Figure 2-20). Middleburg is the major population center for this section. The section is located within both the Roanoke River Basin and the Tar-Pamlico River Basin and includes no major stream crossings. Detailed maps for this section can be found in Appendix R, maps 107-111.

2.2.21.1 SECTION O ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative NC1 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- Limiting speed is 90 mph.
- The alignment stays within existing railroad ROW through the Town of Middleburg, then swings east to straighten the large curves south of town.
- The alternative requires ROW from the Holloway Farm historic property, which is located to the east of the large curves south of Middleburg. As a result, Alternative NC1 would result in an adverse effect on the Holloway Farm under Section 106 of the NHPA and would require a Section 4(f) use of the resource.
- The alternative has a faster design speed than Alternative NC2, but a slower design speed than Alternative NC3 and a limiting speed of 90 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

Alternative NC2 has the following characteristics:

- The design objective is also to improve train performance by straightening curves, but to a lesser degree than Alternative NC1. Alternative NC2 is on common alignment with Alternative NC1 through Middleburg and also shifts to the east to straighten the large curves in the existing railroad ROW south of town, but stays closer to the existing railroad ROW than Alternative NC1.
- Similar to Alternative NC1, Alternative NC2 would result in an adverse effect on the Holloway Farm under Section 106 of the NHPA and require a Section 4(f) use of the resource
- Limiting speed is 80 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

Alternative NC3 has the following characteristics:

- The design objectives are to avoid impacts to the Holloway Farm historic property and improve train performance by straightening curves.
- Limiting speed is 110 mph.

- The alternative leaves the existing railroad ROW at the north end of the section, traversing to the east of Middleburg and east of the Holloway Farm historic property, before rejoining the existing railroad ROW just north of the Greystone Quarry.
- The operability and constructability rating is neutral.

2.2.21.2 SECTION O PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section O is Alternative NC3, which is the Section 4(f) avoidance alternative in this section. Table ES-5 shows that this alternative also minimizes wetland, noise, and vibration impacts, and has the fewest residential relocations. It does have greater stream and riparian buffer impacts, but those impacts will be fully mitigated, and the design work will include coordination with USACE. Alternative NC3 also had greater public support. Seven people indicated a preference for Alternative NC3, three people preferred Alternative NC1, and one person preferred Alternative NC2.

> Alternative NC3 minimizes wetland, noise, and vibration impacts and has the fewest residential relocations.

2.2.21.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Carol Street - roadway bridge over railroad; on-site detour
- Brookston Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Greystone Road - roadway bridge over railroad; on-site detour

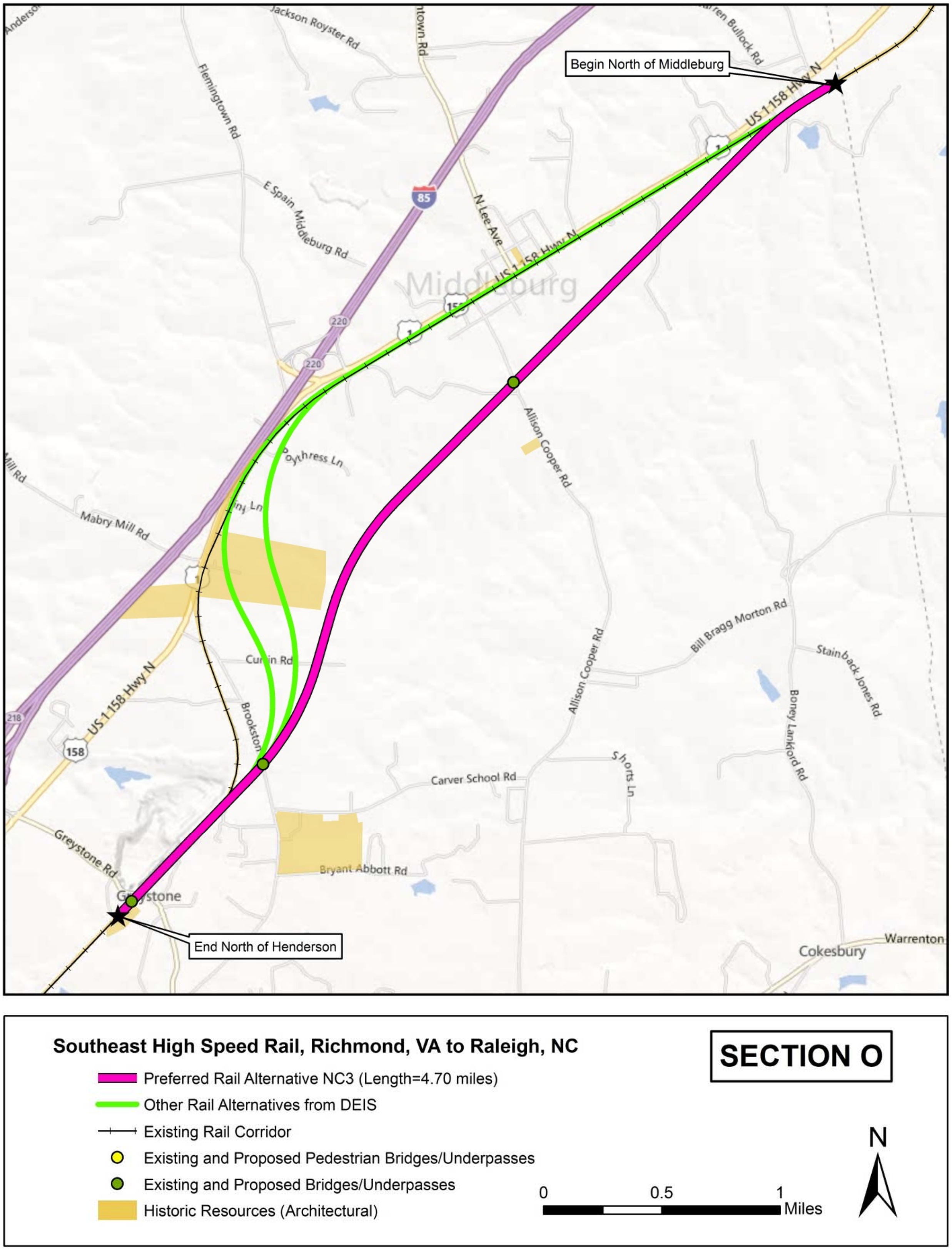
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Currin Road (close at railroad located on new location)

2.2.21.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

No changes were made subsequent to the Project Tier II DEIS.

Figure 2-20


Begin North of Middleburg
End North of Henderson
Middleburg
Greystone
Cokesbury
Warrenton
US 1 158 Hwy N
Jackson Royster Rd
Flemingtown Rd
E Spain Middleburg Rd
N Lee Ave
Allison Cooper Rd
Poythress Ln
Mabry Mill Rd
Curtin Rd
Brookston
Carver School Rd
Bryant Abbott Rd
Greystone Rd
Bill Bragg Morton Rd
Stainback Jones Rd
Boney Lankford Rd
Shorts Ln
85
220
158
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION O
Preferred Rail Alternative NC3 (Length=4.70 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.22 SECTION P

The section begins north of Henderson, NC, at railroad MP S-110 and ends north of Kittrell, NC, at railroad MP S-118, a distance of 7.99 miles (see Section P map, Figure 2-21). The City of Henderson is the major population center in this section. The section is located within both the Roanoke River Basin and the Tar-Pamlico River Basin and there are no major river crossings. Detailed maps for this section can be found in Appendix R, maps 111-118.

2.2.22.1 SECTION P ALTERNATIVES EVALUATED IN THE DEIS

All alternatives are on common alignment in this section. Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost.

Alternative NC1/NC2/NC3 has the following characteristics:

- The design objective is to maximize the use of existing railroad ROW through Henderson.
- The limiting speed is 80 mph.
- The operability and constructability rating is neutral.

2.2.22.2 SECTION P PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section P is the common alignment of Alternatives NC1/NC2/NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative NC1.

2.2.22.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- US-1 Bypass (north end) - roadway bridge over railroad
- Charles Street- underpass, railroad bridge over roadway
- US-1 Bypass (south end) - roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Warrenton Road- underpass (road under railroad); on-site detour.
- Main Street - underpass (road under railroad); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Andrews Avenue - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Peachtree Street - pedestrian underpass (pedestrian pathway under railroad)
- Alexander Avenue - roadway bridge over railroad; construction on new location
- JP Taylor Road - roadway bridge over railroad; on-site detour
- Bear Pond Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Oliver Drive
- Harris Street
- Unnamed crossing south of Crozier Street
- Rock Spring Street

- Montgomery Street
- Winder Street
- Orange Street
- East Spring Street
- Chavasse Avenue
- Miriam Avenue/St. Matthews Street
- Welcome Avenue
- East Minerals Road

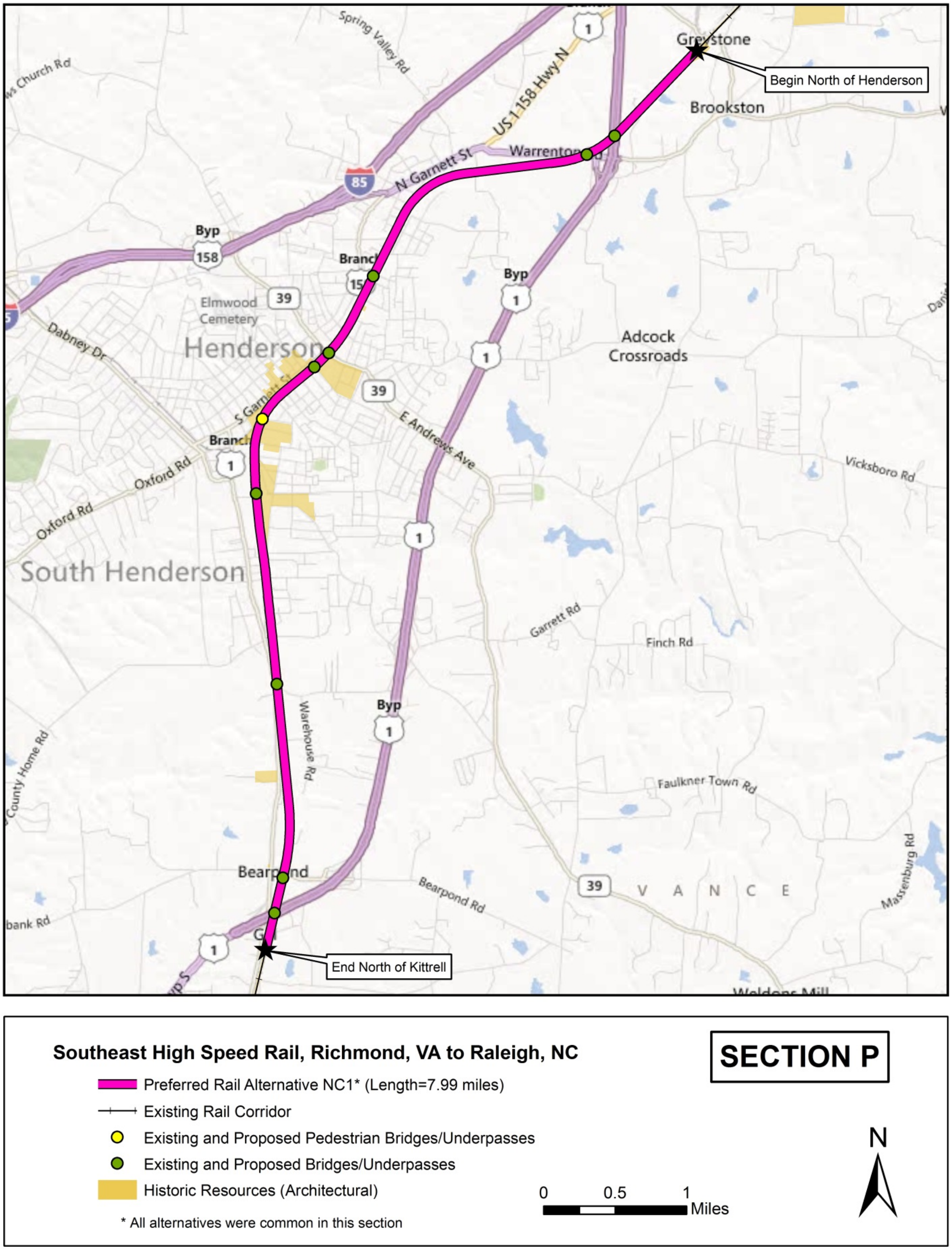
2.2.22.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

In response to comments from the City of Henderson on the Project Tier II DEIS, several changes were made to the road work designs and are presented in the Richmond to Raleigh Tier II FEIS. The revisions are to road work only, and did not affect selection of the preferred railroad alternative. A Project update meeting was held in Henderson, on September 11, 2012, to provide the public an opportunity to learn about the road work revisions and provide comments. Attendance at the meeting was 110 and 16 written comments were received; refer to Appendix B for a summary of comments. No changes were made to the revisions subsequent to the Project update meeting. The revisions presented in the Project Tier II FEIS are outlined below.

- New roundabout in Downtown Henderson - In response to comments on the Project Tier II DEIS from the public and from the City of Henderson, a new roundabout was developed for the downtown area west of the railroad tracks. As was shown for the Project Tier II DEIS, an underpass will be constructed for Main Street (the railroad will cross over the road on a bridge). However, with the revision, Main Street and N. Beckford Drive will connect to the roundabout and provide east-west connectivity; N. Chestnut Street and N. Garnett Street will connect to the roundabout and provide north-south connectivity. In addition, the new designs eliminate the need for the revisions to John's Street that were shown in the Project Tier II DEIS.
- Andrews Avenue - The designs were revised on the west side of the railroad such that the proposed retaining walls were shortened and associated new access roads on the north side of Andrews Avenue were eliminated. Designs in this area are constrained by the close proximity of the surrounding development situated on small lots. The longer retaining walls shown in the Project Tier II DEIS protected more properties from fill dirt associated with the approach to the roadway bridge over the railroad; however, driveway access along Andrews Avenue was not retained. Instead, alternative new access from the rear of the properties was included for the properties on the north side of Andrews Avenue. Analysis subsequent to the Project Tier II DEIS showed that similar new rear access will need to be developed for the properties on the south side of Andrews Avenue. Based on the additional costs associated with constructing the longer retaining walls and the potentially unfavorable property impacts to the properties on both sides of Andrews Avenue that the retaining walls were attempting to protect, it was determined that the retraining walls should be shortened and the residential properties assumed to be potential relocations. Additionally, in response to comments from the City of Henderson, an eastbound left turn lane was added to Andrews Avenue at Rowland Street.
- Alexander Avenue - In response to comments from the City and from the public, the Alexander Avenue design was revised to allow Nicholas Street to connect on the east side of the railroad, thereby retaining existing north-south connectivity.

- J P Taylor Road - In response to comments on the Project Tier II DEIS received from the City and nearby businesses regarding impacts to the existing road network, revisions were made to the J P Taylor Road design and several other nearby roads. The alignment for JP Taylor Road was shifted to provide a less expensive way for traffic to be maintained during construction. Nicholas Street on the east side and parallel to the railroad was extended southward to connect to J P Taylor Road across from Warehouse Road, providing north-south connectivity. These new designs eliminated the need for the King Street and Welcome Avenue extensions proposed in the Project Tier II DEIS.
- Raleigh Road at Belmont Drive and Belmont Drive - In response to comments from the City, these roads were widened to accommodate turn lanes.
- Raleigh Road at Bear Pond Road - Raleigh Road was widened to accommodate turn lanes; this design was shown on the Project Tier II DEIS public hearing maps, but did not appear in the Project Tier II DEIS Appendix R Map Book.

Figure 2-21


Greystone
Begin North of Henderson
Brookston
Spring Valley Rd
US 1-158 Hwy N
Warrenton Rd
N Garnett St
85
Byp
158
39
1
Elmwood Cemetery
Henderson
Dabney Dr
S Garnett St
Adcock Crossroads
E Andrews Ave
Vicksboro Rd
Oxford Rd
South Henderson
Garrett Rd
Finch Rd
Warehouse Rd
Faulkner Town Rd
Bearpond Rd
V A N C E
Massenburg Rd
End North of Kittrell
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION P
Preferred Rail Alternative NC1* (Length=7.99 miles)
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
* All alternatives were common in this section
0 0.5 1 Miles
N

2.2.23 SECTION Q

The section begins north of Kittrell, NC, at railroad MP S-118 and extends to the Tar River at railroad MP S-125.75, a distance of 7.70 miles for Alternatives NC1 and NC3, which are on common alignment, and 7.73 miles for Alternative NC2 (see Section Q map, Figure 2-22). The Town of Kittrell is the major population center in this section. The section is located in the Tar-Pamlico River Basin and includes the Tar River crossing. Detailed maps for this section can be found in Appendix R, maps 118-124.

2.2.23.1 SECTION Q ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative NC1/NC3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alternative is on common alignment with Alternative NC2, except south of Kittrell, where the alignment shifts east to flatten a curve in the existing railroad ROW.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative NC2 has the following characteristics:

- The design objective is to maximize the use of existing railroad ROW.
- The alternative is on common alignment with Alternative NC1/NC3, except south of Kittrell, where alignment follows the curve of the existing railroad, compared to Alternative NC1/NC3, which shifts eastward to flatten the curve.
- Limiting speed is 90 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

2.2.23.2 SECTION Q PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section Q is the common alignment of Alternatives NC1 and NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative NC1.

Table ES-5 shows that Alternative NC1 has slightly greater impacts to prime and important farmland and forested uplands, and three more residential relocations compared to Alternative NC2, but otherwise the impacts are comparable between alternatives. Based on the lower limiting speed and negative rating for operability and constructability for Alternative NC2, Alternative NC1 is the preferred alternative. There were no public comments expressing a preference for alternatives in this section.

> Alternative NC1 has greater impacts to important farmland and forested uplands and more residential relocations. Based on the lower limiting speed and negative rating for operability and constructability for Alternative NC2, Alternative NC1 is the preferred alternative.

2.2.23.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- S. Chavis Road - underpass, railroad over roadway

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Wildlife Lane - underpass (road under railroad); construction on new location
- Edwards Road (Extension) - underpass (road under railroad); construction on new location
- McClannahan Street/To Be Named - roadway bridge over railroad; construction on new location
- Oak Ridge Church Road - underpass (road under railroad); on-site detour

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Peter Gill Road
- Chavis Road
- Main Street
- Beechtree Trail

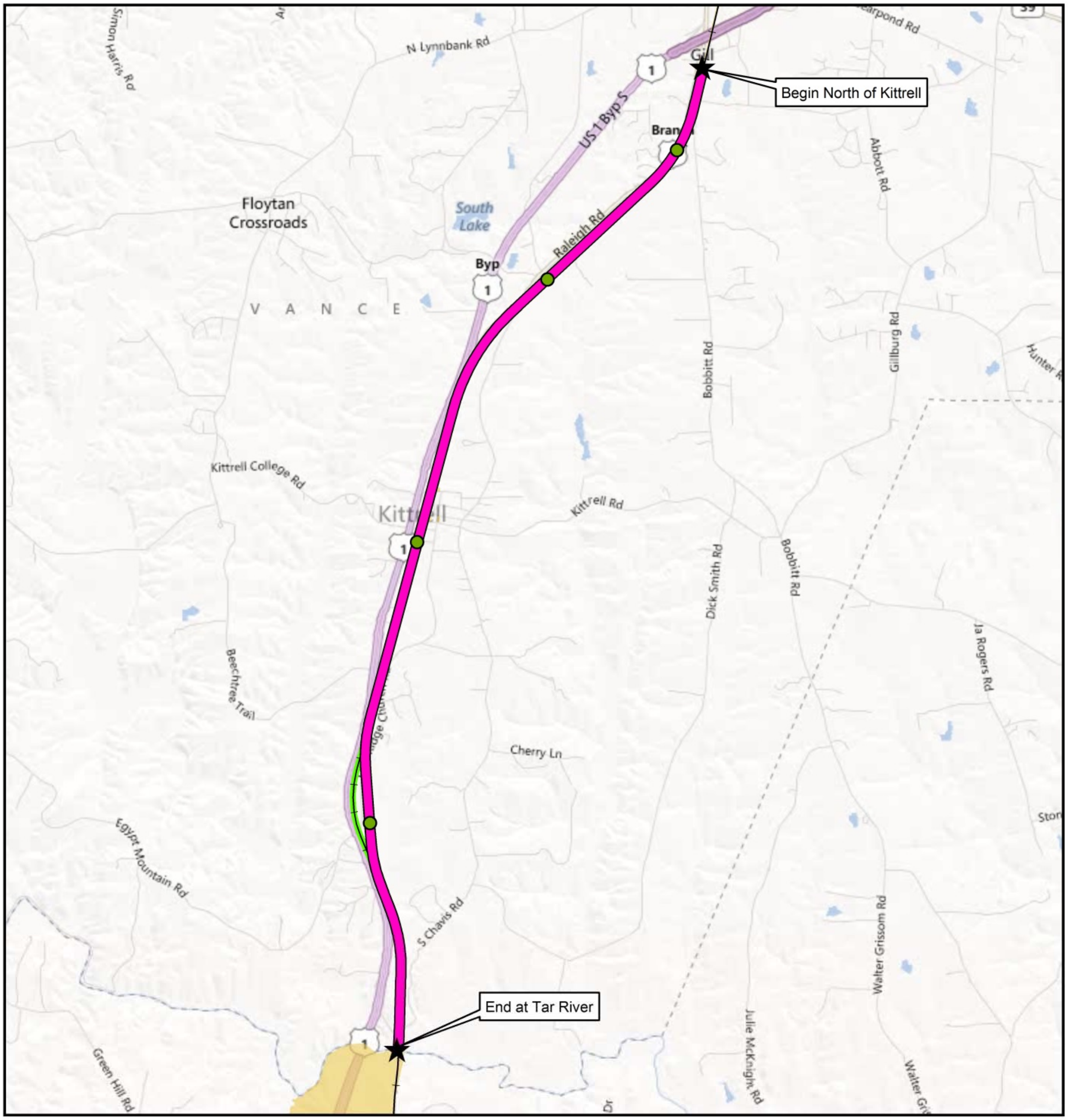
2.2.23.4 RIVER AND MAJOR CREEK BRIDGES

Tar River - Under Preferred Alternative NC1 the Project intends to utilize the piers and substructure of the existing single-track bridge, as well as the superstructure (girders, and decking). There is active freight service in this location, and the existing concrete ballast single-track bridge built in 1975 is in good condition. There will be no impact to the historic Raleigh and Gaston Railroad bridge piers which are located in close proximity to the existing railroad bridge, but are no longer in use.

2.2.23.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Extension of North Chavis Road (north of Kittrell) - In response to a property owner request, the public road will terminate approximately 250 feet south of the location presented in the Project Tier II DEIS; private driveway access will be determined during ROW acquisition.
- Downtown Kittrell - Based on a request from the Town of Kittrell, the design shown in the Project Tier II DEIS for an extension of Church Street and roadway bridge over the railroad, and realignment of Williams Road, was eliminated and replaced with a design for a roadway bridge over the railroad further south at a realigned McClannahan Street. The new designs call for the road to be extended south to Kittrell Vance Avenue on the west side of the railroad, and extended north to Main Street on the east side of the railroad. In addition, Raleigh Road has been widened to accommodate turn lanes at the intersection with the new McClannahan Street extension.

Figure 2-22



Southeast High Speed Rail, Richmond, VA to Raleigh, NC

SECTION Q

- Preferred Rail Alternative NC1 (Length=7.70 miles)
- Other Rail Alternatives from DEIS
- Existing Rail Corridor
- Existing and Proposed Pedestrian Bridges/Underpasses
- Existing and Proposed Bridges/Underpasses
- Historic Resources (Architectural)

0 1 2 Miles

N

2.2.24 SECTION R

The section begins at the Tar River at railroad MP S-125.75 and extends to north of Franklinton, NC, at railroad MP S-129, a distance of 3.21 miles for Alternatives NC1 and NC3, which are on common alignment, and 3.23 miles for Alternative NC2 (see Section R map Figure 2-23). The section is located in the Tar-Pamlico River Basin and includes the Tar River crossing. Detailed maps for this section can be found in Appendix R, maps 124-126.

2.2.24.1 SECTION R ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative NC1/NC3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alignment follows a straighter line east of the curve in the existing railroad ROW near Winston Street compared to Alternative NC2.
- Limiting speed is 110 mph.
- The operability and constructability rating is positive.

Alternative NC2 has the following characteristics:

- The design objective is to maximize the use of existing railroad ROW.
- The alignment also straightens the curve in the railroad near Winston Street, but follows the existing railroad ROW more closely.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

2.2.24.2 SECTION R PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The recommendation is based on the more favorable operability and constructability rating, coupled with a similar degree of impacts to the environment

The preferred alternative in Section R is the common alignment of Alternatives NC1 and NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative NC1. The recommendation is based on the more favorable operability and constructability rating, coupled with a similar degree of impacts to the human and natural environment compared to Alternative NC2. As shown in Table ES-5, Alternative NC1 will impact approximately 500 fewer feet of streams than Alternative NC2, but will impact more than 10 acres of additional forested uplands and prime and important farmland. There was no difference in public support between alternatives.

It should be noted that Table ES-5 shows no residential relocations for NC1. However, in straightening the existing railroad curve, the railroad alignment shown in the Project Tier II DEIS crossed properties on Cornerstone Drive in a subdivision that was developed after the ROW and relocation reports for the Project Tier II DEIS were completed in 2008. As described below, these impacts were avoided by a shift in the railroad alignment near Cornerstone Drive that was developed subsequent to the Project Tier II DEIS.

The rail alignment crossed properties on Cornerstone Drive. These impacts were avoided by a shift in the rail alignment near Cornerstone Drive.

2.2.24.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- To be Named (new road located approximately 0.3 miles north of Eric Medlin Road, connecting US-1 to Montgomery Road) - roadway bridge over railroad; construction on new location

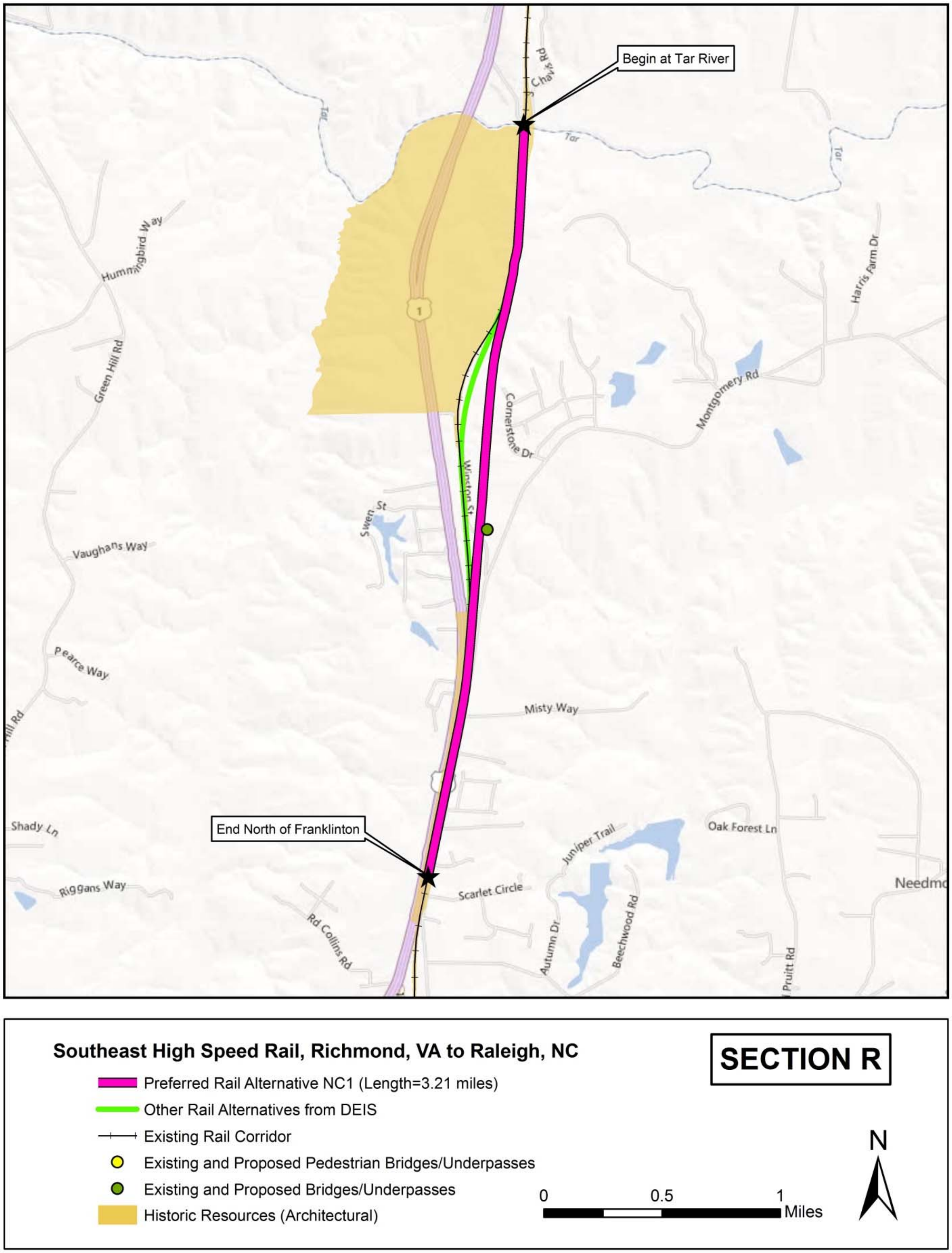
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Winston Street (close at railroad located on new location)
- Eric Medlin Road

2.2.24.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Rail Alignment near Cornerstone Drive - The railroad alignment was shifted slightly westward to reduce impacts to a residential development that was constructed after the designs presented in the Project Tier II DEIS had been developed.
- To be named (new road located north of Eric Medlin Road) - The bridge location was shifted to the west due to the revised railroad alignment described above.

Figure 2-23



Begin at Tar River
End North of Franklinton
Tar
Chalk Rd
Hummingbird Way
Green Hill Rd
Harris Farm Dr
Montgomery Rd
Cornerstone Dr
Winston St
Swen St
Vaughans Way
Pearce Way
Misty Way
Shady Ln
Oak Forest Ln
Juniper Trail
Riggans Way
Scarlet Circle
Collins Rd
Autumn Dr
Beechwood Rd
Pruitt Rd
Needmo
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION R
Preferred Rail Alternative NC1 (Length=3.21 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.25 SECTION S

The section begins north of Franklinton, NC, at railroad MP S-129 and extends to north of Youngsville, NC, at railroad MP S-136, a distance of 6.88 miles for Alternatives NC1 and NC3, which are on common alignment, and 6.71 miles for Alternative NC2 (see Section S map, Figure 2-24). The Town of Franklinton is the major population center of this section. The existing railroad ROW follows a series of reverse (i.e., “S”) curves south of Franklinton. The section is located in the Tar-Pamlico River Basin and includes a crossing of Cedar Creek. Detailed maps for this section can be found in Appendix R, maps 126-132.

2.2.25.1 SECTION S ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative NC1/NC3 has the following characteristics:

- The design objective is to improve train performance by straightening curves throughout the section
- South of Franklinton, the alignment flattens a series of reverse (i.e., “S”) curves and crosses Cedar Creek on a new bridge east of the existing railroad bridge.
- Limiting speed is 95 mph.
- The operability and constructability rating is neutral.

Alternative NC2 has the following characteristics:

- The design objectives are to improve train performance by straightening curves throughout the section, utilizing a faster design speed than Alternatives NC1/NC3.
- The alternative is on common alignment with Alternative NC1/NC3 through the Town of Franklinton, then south of town the alignment provides an alternative approach to flattening a series of reverse (i.e., “S”) curves compared to Alternative NC1/NC3, and crosses Cedar Creek on a new bridge on the other side (west side) of the existing bridge.
- Limiting speed is 95 mph.
- The operability and constructability rating is neutral.

2.2.25.2 SECTION S PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section S is the common alignment of Alternatives NC1 and NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative NC1. The recommendation is based on strong public support (267 for Alternative NC1 compared to 3 for Alternative NC2) and a smaller impact to streams. Table ES-5 shows that overall the alternatives have a similar degree of impacts to the human and natural environment.

The recommendation is based on public support and a smaller impact to streams.

2.2.25.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Green Street- replace existing railroad bridge over roadway; off-site detour, refer to Appendix G for a map of temporary proposed detour routes

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- To Be Named (new road on new location north of Franklinton Town Limits) - underpass (road under railroad); construction on new location
- Mason Street - pedestrian underpass with ramp and stair access (pedestrian pathway under railroad)
- College Street - pedestrian underpass (pedestrian pathway under railroad)
- New pedestrian crossing near Hawkins Street - pedestrian underpass (pedestrian pathway under railroad)
- Cedar Creek Road - roadway bridge over railroad; on-site detour
- Bert Winston Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of proposed roads
- Future NC 96 Bypass - roadway bridge over railroad; construction on new location

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Pearce Street
- Joyner Street
- Mason Street
- College Street
- Hawkins Street
- Northbrook Drive (close at railroad located on new location)

2.2.25.4 RIVER AND MAJOR CREEK BRIDGES

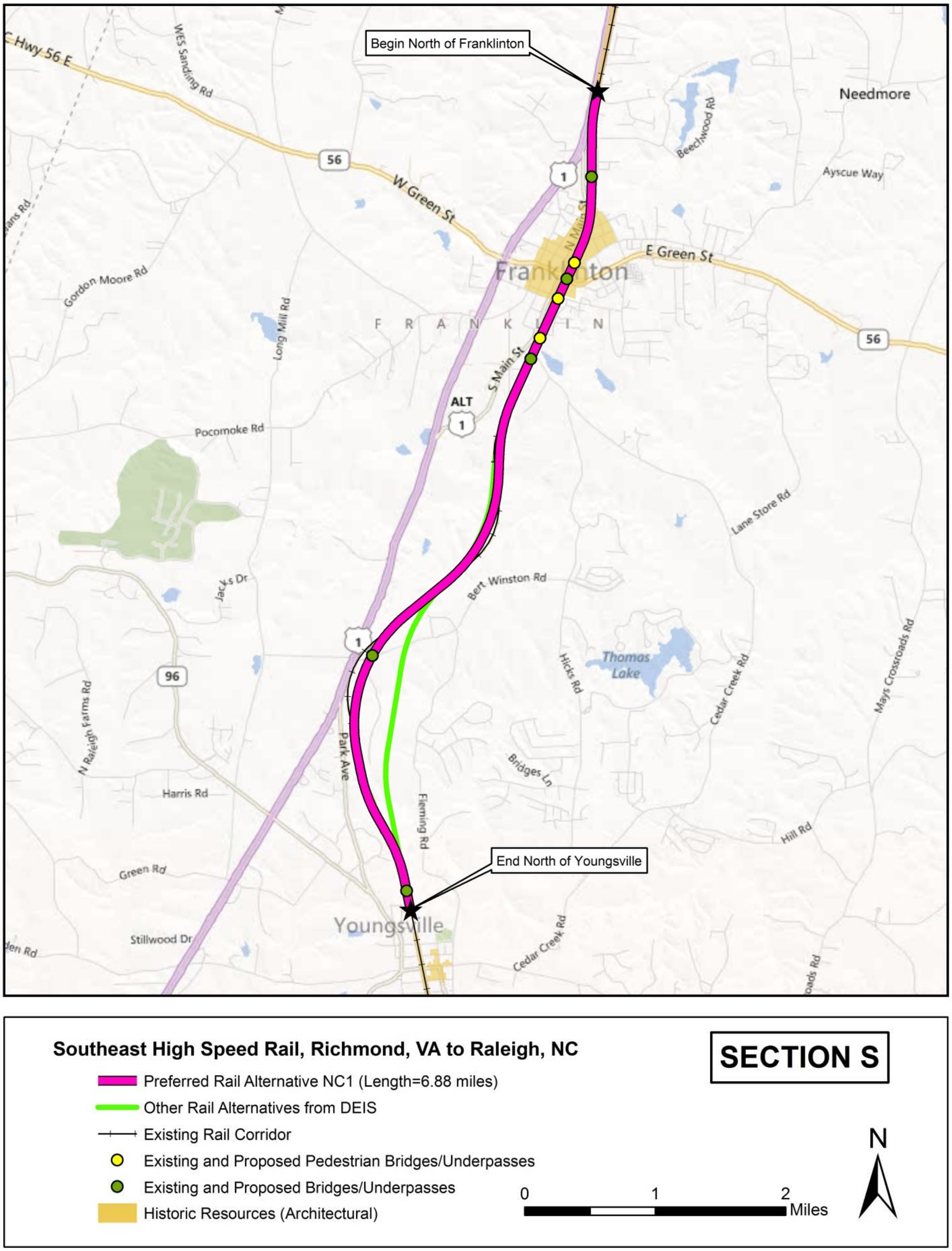
Cedar Creek – There is active freight service in this location, however all alternatives presented in the Project Tier II DEIS require construction of a new roadway bridge over the creek in order to straighten a series of “s” curves in the existing railroad alignment.

Under Preferred Alternative NC1, the Project will require construction of a new bridge on new piers east of the existing bridge. The historic Cedar Creek Railroad Bridge and Raleigh and Gaston Railroad bridge piers lie within the existing railroad ROW, but will not be impacted by the proposed Project alternatives.

2.2.25.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Tanyard Street - In response to comments from the public, the proposed improvements to Tanyard Street were removed from the Project designs. An alternative design was developed for a north-south connection between East Green Street and East College Street near the eastern boundary of the Sterling Mill historic resource.
- Mason Street - As a result of continued coordination with the Town of Franklinton, and the Capital Area Metropolitan Planning Organization (CAMPO), and in consultation with the North Carolina State Historic Preservation Office (NC-HPO), the design for a pedestrian bridge with towers that was shown in the Project Tier II DEIS was revised to provide a pedestrian underpass with ramps and stairs.
- Northbrook Drive- In response to new information, the alignment was shifted to reduce impacts to the existing industrial development on Northbrook Drive.
- Future NC 96 Bypass - The alignment of this new location road was shortened in conjunction with revisions made to Cross Street, described below in Section T.

Figure 2-24



Begin North of Franklinton
End North of Youngsville
Needmore
Franklinton
Youngsville
FRANKLIN
Thomas Lake
W Green St
E Green St
N Main St
S Main St
Beechwood Rd
Ayscue Way
Gordon Moore Rd
Long Mill Rd
Pocomoke Rd
Lane Store Rd
Bert Winston Rd
Hicks Rd
Cedar Creek Rd
Mays Crossroads Rd
N Raleigh Farms Rd
Harris Rd
Park Ave
Fleming Rd
Bridges Ln
Hill Rd
Green Rd
Stillwood Dr
WES Sanding Rd
Jacks Dr
56
1
ALT
96
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION S
Preferred Rail Alternative NC1 (Length=6.88 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
1
2
Miles
N

2.2.26 SECTION T

The section begins north of Youngsville, NC, at railroad MP S-136 and extends to north of Wake Forest, NC, at railroad MP S-139, a distance of 2.83 miles for Alternatives NC1 and NC3, which are on common alignment, and 2.96 miles for Alternative NC2 (see Section T map, Figure 2-25). The Town of Youngsville is the major population center of this section. The section is located in both the Tar-Pamlico River Basin and the Neuse River Basin, and includes no major stream crossings. Detailed maps for this section can be found in Appendix R, maps 132-134.

2.2.26.1 SECTION T ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives.

Alternative NC1/NC3 has the following characteristics:

- The design objective is to improve train performance by straightening curves.
- The alignment follows the existing railroad ROW through the center of Youngsville, NC, where the grade of the railroad would be lowered through town. South of town, the alignment flattens the wide curve of the existing railroad ROW near the industrial development at Nomaco Drive by following a straighter line on new ROW to the west.
- Limiting speed is 110 mph.
- The operability and constructability rating is neutral.

Alternative NC2 has the following characteristics:

- The design objectives are to improve train performance by straightening curves, but use more existing railroad ROW than Alternatives NC1/NC3.
- The alternative is on common alignment with Alternatives NC1/NC3 through the center of Youngsville where the railroad grade would be lowered; south of town the alignment provides some improvement to the wide curve in the existing railroad ROW, but stays more closely aligned with the existing rail.
- Limiting speed is 95 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

2.2.26.2 SECTION T PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

Alternative NC2 has slightly fewer impacts to streams, riparian buffers, wetlands, farmland, and forested uplands.

The preferred alternative in Section T is the common alignment of Alternatives NC1 and NC3. Henceforth, the preferred alternative for this section will be referred to as Alternative NC1.

Alternative NC2 has a lower limiting speed and a negative rating for operability and constructability. Alternative NC1 is the preferred alternative.

Table ES-5 shows that Alternative NC2 has slightly fewer impacts to streams, riparian buffers, wetlands, farmland and forested uplands than Alternative NC1. However, Alternative NC2 has a lower limiting speed and a negative rating for operability and constructability. Based upon these considerations, Alternative NC1 is the preferred alternative. It should be noted that the greater stream and wetland impacts for Alternative NC1 (approximately 300 feet of stream and less than 0.1 acre of wetlands) are not significant in light of the entire Project and will be fully mitigated. Further, there would likely be 100 feet more stream impacts associated with Alternative NC2 as a result of a railroad detour route required during construction, so the effective difference in stream impacts is closer to 200 feet. Alternative NC1 also had greater public support: three people indicated a preference for NC1, while one person preferred NC2.

2.2.26.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- None

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Franklin Street Extension - pedestrian bridge with ramp access over rail
- Main Street - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Pine Street - pedestrian bridge over railroad with ramp access

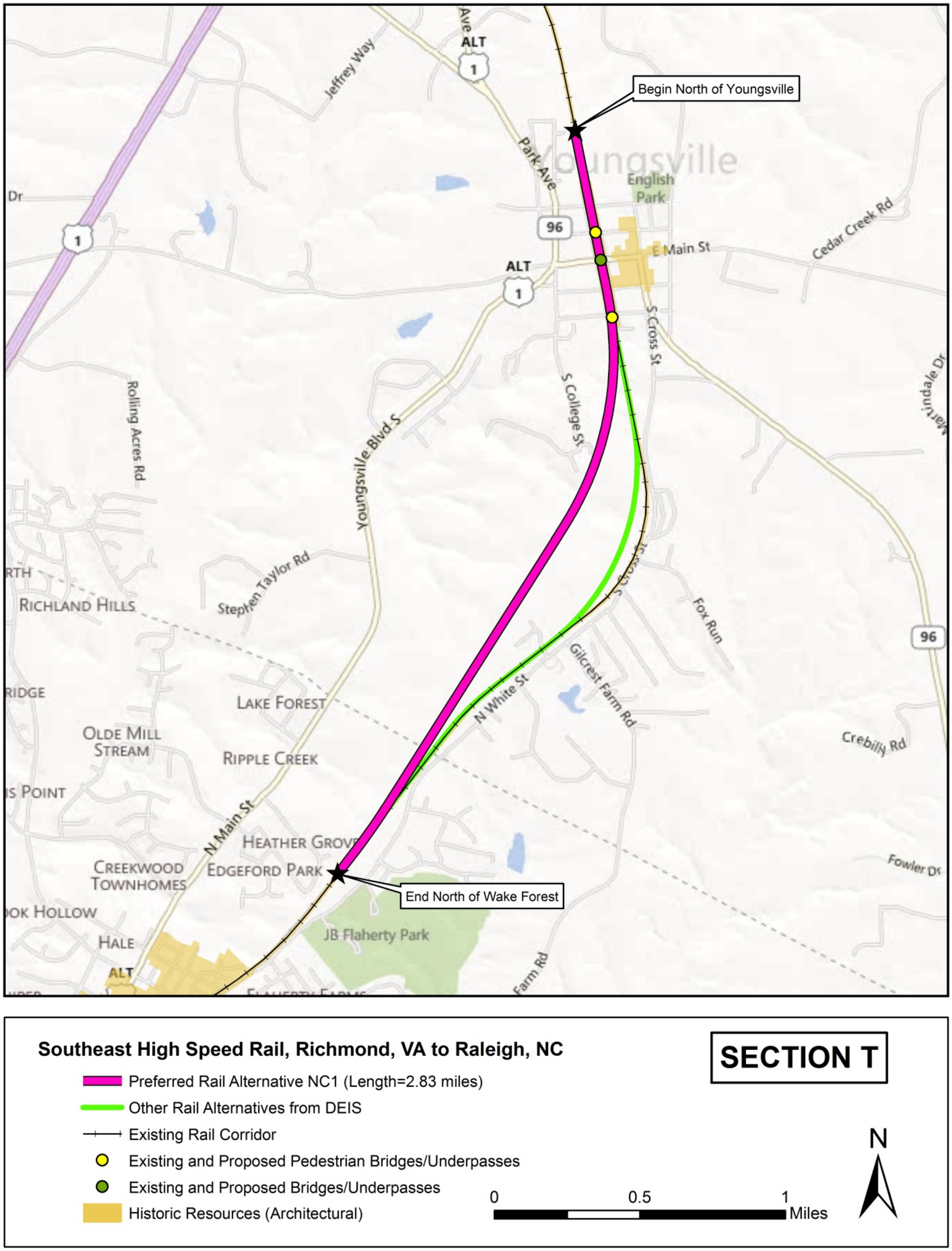
Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Winston Street
- Pine Street

2.2.26.4 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

- Cross Street - In response to comments from the public and from the Town of Youngsville, the improvements to Nassau Street shown in the Project Tier II DEIS have been eliminated. Instead, Cross Street will be extended northward to intersect the Future NC 96 Bypass alignment, and will be used for the detour route during construction of the Main Street roadway bridge over the railroad.
- Pine Street - The Project Tier II DEIS showed a closure of the at-grade crossing at Pine Street. In response to comments from the public and from the Town of Youngsville, a pedestrian bridge with ramps has been added to the designs at this location.

Figure 2-25


Begin North of Youngsville
Youngsville
English Park
E Main St
Cedar Creek Rd
Park Ave
ALT 1
96
S Cross St
S College St
Youngsville Blvd S
Rolling Acres Rd
Stephen Taylor Rd
Richland Hills
Lake Forest
Olde Mill Stream
Ripple Creek
N White St
Gilcrest Farm Rd
Fox Run
Crebilly Rd
Fowler Dr
N Main St
Heather Grove
Creekwood Townhomes
Edgeford Park
End North of Wake Forest
JB Flaherty Park
Hale
Jeffrey Way
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION T
Preferred Rail Alternative NC1 (Length=2.83 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
0.5
1
Miles
N

2.2.27 SECTION U

The section begins north of Wake Forest, NC, at railroad MP S-139 and extends to north Raleigh, NC (near Gresham Lake), at railroad MP S-148, a distance of 8.88 miles for Alternative NC1, 8.89 miles for Alternative NC2, and 8.88 miles for Alternative NC3 (see Section U map, Figure 2-26). Wake Forest is the major population center of this section, but the section also includes a populated area of North Raleigh. The section is located in the Neuse River Basin and includes a crossing of the Neuse River. Detailed maps for this section can be found in Appendix R, maps 135-142.

2.2.27.1 SECTION U ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives. The alternatives are on common alignment through Downtown Wake Forest, primarily on existing railroad ROW.

South of downtown the existing railroad follows a series of reverse (i.e., “S”) curves. All three alternatives improve train performance by straightening these curves; however, they differ in the way they impact dual constraints posed by the Thales Academy, a one-building private K-12 school, to the east, and baseball fields associated with The Factory, an extensive private multi-sports complex, to the west.

Alternative NC1 has the following characteristics:

- The design objectives are to improve train performance by straightening curves while minimizing impacts to the private baseball fields to the greatest extent possible (i.e., provide the needed reduction in railroad curvature but without fully avoiding impacts to the private school).
- Limiting speed is 85 mph.
- The operability and constructability rating is neutral.

Alternative NC2 has the following characteristics:

- The design objectives are to improve train performance by straightening curves while minimizing impacts to both the private school and the private baseball fields (requiring ROW from both properties).
- Limiting speed is 80 mph.
- The operability and constructability rating is negative due to a sharper curvature in the railroad alignment, which would likely result in increased long-term maintenance for the rails and train equipment, and a lower speed. This would cause deceleration and acceleration through the curves and lead to increased schedule time and fuel use.

Alternative NC3 has the following characteristics:

- The design objectives are to improve train performance by straightening curves and to avoid impacts to the private school to the greatest extent possible, but allow greater impacts to the private baseball fields compared to Alternative NC2.
- Limiting speed is 85 mph.
- The operability and constructability rating is neutral.

2.2.27.2 SECTION U PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section U is Alternative NC1 based primarily on balancing the degree of impacts to The Factory and the Thales Academy private school. While all three alternatives have some degree of impact on the baseball complex, Alternative NC1 will be least harmful to its operation. Although The Factory is a private facility, its construction costs were defrayed by a grant from Wake County, NC, in recognition of the financial contributions of visitors attending annual tournaments. The facility is required to host baseball and softball tournaments throughout each year as a condition of the grant. Additionally, Alternative NC1 will avoid impacts to a large planned apartment complex located along Rogers Road. It is assumed the Thales Academy will be able to relocate within the community; no comments were received following the Project Tier II DEIS public hearings from the Town of Wake Forest, the school, or the public requesting that the Project avoid impacts to the school.

The preferred alternative is Alternative NC1, based on balancing the impacts to The Factory and the Thales Academy private school.

Table ES-5 shows that, overall, the three alternatives have a similar level of impacts to the natural and human environment. Although Alternative NC2 minimizes impacts to streams (by approximately 460 feet), as well as to riparian buffers, the impacts for Alternative NC1 are not significant in light of the entire Project and will be fully mitigated. Alternative NC1 also has a higher limiting speed and operability and constructability rating compared to Alternative NC2 (and the same as Alternative NC3). There were five public comments on the Project Tier II DEIS that indicated a preference for an alternative in this section: two favored Alternative NC1 and three favored Alternative NC2.

Comments about the preferred alternative were received at a Project update meeting that was held on May 15, 2012, to provide the public an opportunity to learn about revisions that had been made to road work in Section U subsequent to the Project Tier II DEIS. Eleven people were opposed to impacts to Thales Academy brought about by NC1, while four comments were provided in support of NC1. The meeting is described in greater detail below in 2.2.27.5.

2.2.27.3 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- Roosevelt Avenue- underpass, railroad over roadway
- NC 98 Bypass – roadway bridge over railroad
- Capital Boulevard/US-1 – roadway bridge over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Pedestrian Crossing near Cedar Avenue - pedestrian bridge over railroad with ramp access
- Elm Avenue - pedestrian bridge over railroad
- Holding Avenue - underpass (road under railroad); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Rogers Road - roadway bridge over railroad; on-site detour
- Ligon Mill Road - roadway bridge over railroad; on-site detour
- Durant Road - roadway bridge over railroad; on-site detour

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Brick Street
- Elm Avenue

- Friendship Chapel Road
- Seawell Drive

2.2.27.4 RIVER AND MAJOR CREEK BRIDGES

Neuse River - There is active freight service in this location, and the existing single-track bridge with concrete ballast deck built in the early 1970s is in good condition. Under Preferred Alternative NC1, the Project intends to utilize the piers and substructure of the existing bridge, as well as the superstructure (girders and decking). The proposed work will not impact the historic Raleigh and Gaston Railroad bridge piers which are located in close proximity to the existing Neuse River railroad bridge, but are no longer in use.

2.2.27.5 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

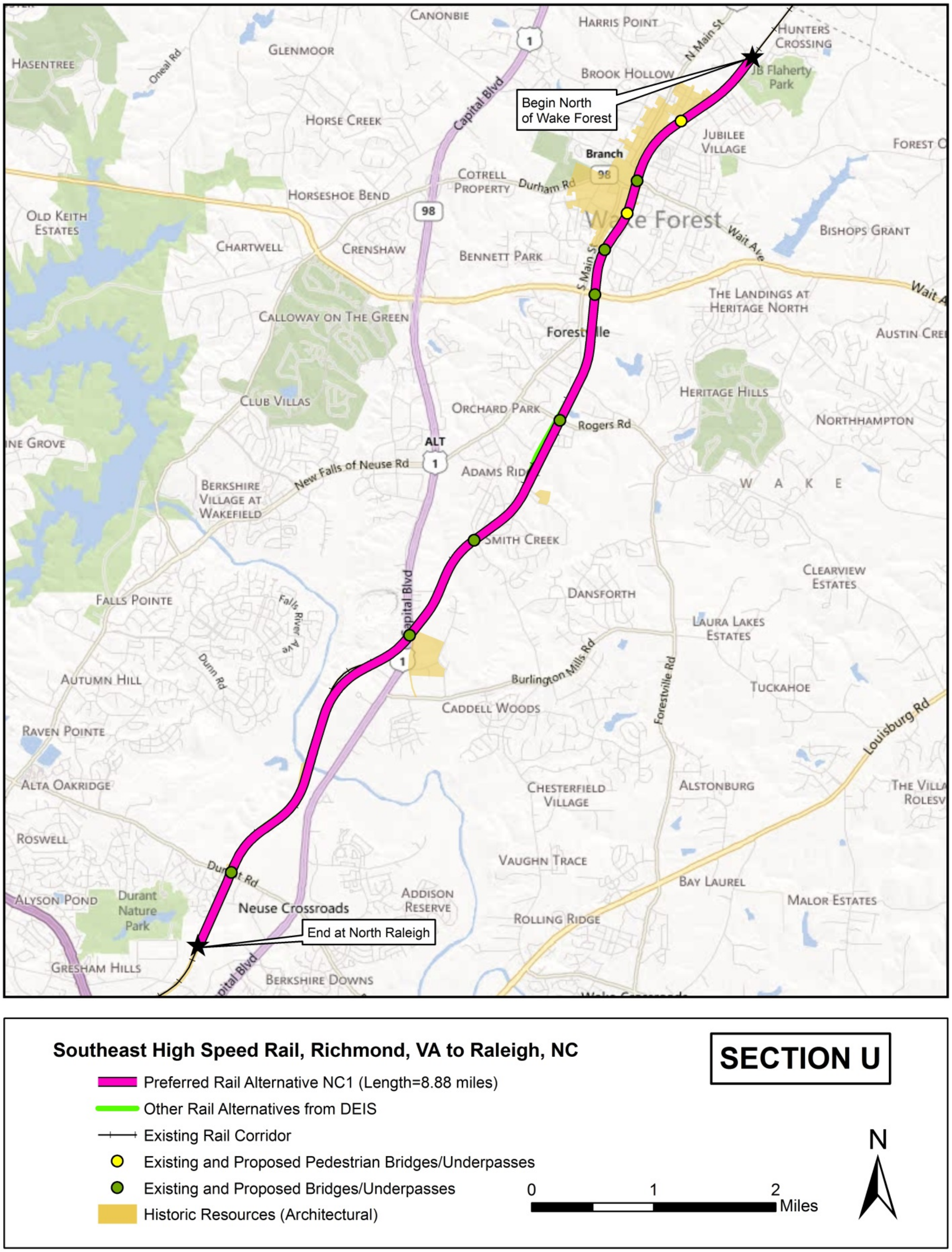
A Project update meeting was held in North Raleigh, on May 15, 2012, to provide the public an opportunity to learn about revisions that had been made to road work in Wake Forest and North Raleigh subsequent to the Project Tier II DEIS, and to provide comments. Attendance at the meeting was 166, and 49 written comments were received. Refer to Appendix B for a summary of the meeting. All of the design changes discussed below were presented at the Project update meeting, except for Elm Avenue in Wake Forest where subsequent design changes were made in response to comments provided at the meeting.

- Elm Avenue - The area around Elm Avenue presents several design constraints including topography, dense development, and the surrounding Downtown Wake Forest Historic District. The Project Tier II DEIS called for the existing at-grade crossing at Elm Avenue to be closed. Comments on the Project Tier II DEIS from the public and the Town of Wake Forest indicated a strong desire to maintain access across the railroad at Elm Avenue, if not vehicular, at least pedestrian. This led to the design of a pedestrian underpass, developed in coordination with the Town and the NC-HPO. The new design also included development of alternative access for properties on the northwest side that will lose the existing illegal access off of Elm Avenue along Railroad Street which lies within the railroad ROW. The new designs were presented at the May 2012 Project update meeting. Strong opposition to the property impacts associated with the designs led to their elimination. Following the update meeting, additional coordination with the Town and the NC-HPO led to the development of a design for a pedestrian bridge with stairs. Additional design and analysis is needed to coordinate the implementation of an Americans with Disabilities Act (ADA) compliant pedestrian crossing of the railroad in this location. The Project Team will coordinate the designs and selected access alternatives (e.g., elevators, ramps, or tunnel) with the Town of Wake Forest and NC-HPO (regarding potential impacts to the Downtown Wake Forest Historic District). Refer to the Project Commitments for additional information.
  As part of the consultation with the NC-HPO, it was determined that although the Project will not necessarily prevent access with the pedestrian bridge nor require enforcement of the railroad ROW, loss of access to Railroad Street is a foreseeable consequence of the Project ; therefore, the Project will need to address access to Railroad Street. The pedestrian bridge and associated new access to the properties on Railroad Street are included in the Project designs.
- Rogers Road – The designs have been revised to show a connection to Rogers Road for Grandmark Street and Heritage Brand Road.
- Steeple Run Drive - In response to requests from property owners, the road was redesigned. The road alignment was shifted westward, closer to the railroad to minimize

property impacts and minimize impacts to a family cemetery. Adjustments to property access at the northern end will be handled during the ROW phase of the Project.

- New Access from Ligon Mill Road into the Smith Creek Neighborhood - In response to public comments on the Project Tier II DEIS, an alternative design for access into the neighborhood was developed.
- Rail Alignment South of the Neuse River - A slight shift in the railroad alignment was made to ensure adequate industrial access.
- Durant Road - In response to comments from the public and local officials, a revised bridge and road alignment was designed for this location. The road alignment and roadway bridge over the railroad has been shifted to the north, away from the residential and commercial development on the south side of Durant Road. This northward shift will take the road alignment through City of Raleigh property where Raleigh Fire Station No. 22 is located, requiring the fire station to be relocated. This design revision has been coordinated with the City of Raleigh.

Figure 2-26


Begin North of Wake Forest
End at North Raleigh
Wake Forest
Forestville
Neuse Crossroads
Capital Blvd
New Falls of Neuse Rd
Durham Rd
Rogers Rd
Burlington Mills Rd
Forestville Rd
Louisburg Rd
Durant Rd
S Main St
N Main St
Wait Ave
Falls River Ave
Dunn Rd
Oneal Rd
Canonbie
Harris Point
Hunters Crossing
JB Flaherty Park
Brook Hollow
Hasentree
Glenmoor
Horse Creek
Jubilee Village
Branch
Cotrell Property
Horseshoe Bend
Old Keith Estates
Chartwell
Crenshaw
Bennett Park
Bishops Grant
The Landings at Heritage North
Calloway on The Green
Austin Creek
Heritage Hills
Club Villas
Orchard Park
Northhampton
Adams Ridge
Berkshire Village at Wakefield
W A K E
Smith Creek
Clearview Estates
Dansforth
Falls Pointe
Laura Lakes Estates
Autumn Hill
Tuckahoe
Caddell Woods
Raven Pointe
Chesterfield Village
Alstonburg
Alta Oakridge
Roswell
Vaughn Trace
Bay Laurel
Alyson Pond
Durant Nature Park
Addison Reserve
Malor Estates
Rolling Ridge
Gresham Hills
Berkshire Downs
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION U
Preferred Rail Alternative NC1 (Length=8.88 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0
1
2
Miles
N

2.2.28 SECTION V

The section begins in north Raleigh, NC, near Gresham Lake at railroad MP S-148 and extends to the Boylan Wye in Downtown Raleigh at railroad MP S-157.5, a distance of 9.89 miles for Alternative NC1, 9.91 miles for Alternative NC2, 9.97 miles for Alternative NC3, and 9.92 miles for Alternative NC5. (A "wye" is a triangle-shaped arrangement of railroad tracks with a switch at each corner that allows for trains to pass from one line to another or can be used for trains to reverse direction.) In response to the many comments received for Section V following publication of the Project Tier II DEIS, a new railroad alternative, Alternative NC5, was subsequently developed to provide an alternative alignment for the downtown area. Raleigh is the major population center of this section. The section is located in the Neuse River Basin and includes a crossing of Crabtree Creek. See Figure 2-27 for a map of Section V. Maps with greater detail can be found in Appendix R, maps 142-151.

A new railroad alternative, Alternative NC5, was developed to provide an alignment for the downtown area.

2.2.28.1 SECTION V ALTERNATIVES EVALUATED IN THE DEIS

Table ES-5 displays information regarding potential impacts to the human and natural environment, as well as information about operability, constructability, and cost for the alternatives presented in the Project Tier II DEIS (NC1, NC2, and NC3) for the entire section. All alternatives are on common alignment from the beginning of the section south to Whittaker Mill Road in Downtown Raleigh. The differences in impacts in Section V are between Whittaker Mill Road and the Boylan Wye. Table ES-5 displays the same categories of information for this area for all the alternatives, including the newly developed alternative NC5.

Alternatives NC1 and NC2 have the following characteristics:

- The design objectives for Alternatives NC1 and NC2 are to maximize the use of existing CSX railroad ROW through Downtown Raleigh.
- There are minor differences between the NC1 and NC2 road and railroad alignments near the Boylan Wye. The differences reflect alternative approaches to facilitating the movement of freight traffic through the wye.
- Limiting speed is 45 mph.
- Both NC1 and NC2 have a negative operability and constructability rating. The negative rating is due to the fact that the designs create a permanent at-grade crossing between passenger and freight operations at Edgeton (near Whittaker Mill Road) and require SEHSR Corridor passenger trains to share tracks with active freight yard switching. Such at-grade crossings and shared use in the vicinity of the yard are not desirable because significant delays can occur to the freight and passenger trains due to overlapping operations. In addition, Alternatives NC1 and NC2 require a reconfiguration of the CSX Capital Yard to avoid conflicts with proposed Triangle Transit light rail tracks on the east.

Alternative NC3 has the following characteristics:

- The design objectives for Alternative NC3 are to respond to a request by the City of Raleigh to minimize disruption of traffic and pedestrian patterns in the congested area around Jones Street and Glenwood South presented by Alternatives NC1 and NC2.
- The alternative is common with Alternatives NC1, NC2, and NC5 north of downtown. Through downtown, Alternative NC3 uses both NS ROW (from south of Whitaker Mill Road to Jones Street) and CSX ROW (south of Jones Street).

- Limiting speed is 45 mph.
- The operability and constructability rating is positive.

2.2.28.2 SECTION V ALTERNATIVES DEVELOPED SUBSEQUENT TO THE DEIS

Following the Project Tier II DEIS and public hearing, there were 320 comments received from the public expressing preference for an alternative in Section V: 188 preferred Alternative NC1; 57 preferred Alternative NC2; and 75 preferred Alternative NC3. Additionally, an iterative series of alternative design proposals (dubbed "NC4" and "hybrid") were submitted by citizens during the public comment period. The intent was to find a way to combine aspects of Alternatives NC1, NC2, and NC3 in a way that would minimize impacts to neighborhoods, the downtown area, and the freight railroad yards. Based on concerns expressed by members of the public, community organizations, and NS about the potential impacts of Alternative NC3, the Raleigh City Council held a public hearing on September 1, 2010, to hear from the public and ask additional questions of the Project team. The hearing was attended by more than 200 people. Afterward, the City Council requested that NCDOT analyze the possibility of developing a "hybrid" approach through Downtown Raleigh.

> The "hybrid" designs were given careful consideration, but were not feasible from an engineering perspective. The general concept led to the development of Alternative NC5.

The "hybrid" designs proposed by the public were given careful consideration, but were not feasible from an engineering perspective. However, the general concept of these proposals led to the development of Alternative NC5.

Alternative NC5 has the following characteristics:

- Alternative NC5 is common with Alternatives NC1, NC2, and NC3 north of downtown, then follows CSX ROW from Whitaker Mill Road southward (similar to Alternatives NC1 and NC2, but with the SEHSR Corridor railroad on the west side of the existing CSX tracks, further from residential areas, and grade separated with NS). The alternative crosses Capital Boulevard on a new bridge (near Wade Avenue) and then continues south to Jones Street adjacent to the NS tracks but on separate ROW (similar to Alternative NC3, but with the SEHSR Corridor railroad on the east side of the existing NS tracks, further from residential areas). South of Jones Street, Alternative NC5 follows CSX ROW similar to the other Project alternatives.
- Alternative NC5 provides the benefit of avoiding both the CSX Capital Yard and the NS Glenwood Yard, which minimizes impacts to freight operations in Downtown Raleigh. It also avoids impacts to the Raleigh Electric Company Power House and Carolina Power and Light Company Car Barn historic properties (which would be impacted by Alternatives NC1 and NC2) and the Roanoke Park Historic District (which would be impacted by Alternative NC3).
- Limiting speed is 45 mph.
- The operability and constructability rating is positive.

A Project update meeting was held in Raleigh, NC, on September 27, 2011, to provide the public an opportunity to learn about NC5 in Downtown Raleigh between Whitaker Mill Road and the Boylan Wye. Because all alternatives are on common alignment through Section V north of Whitaker Mill Road, the review was limited to the changes through Downtown Raleigh. In the weeks preceding the Project update meeting, a preliminary review of NC5 was provided to members of the City of Raleigh's Passenger Rail Task Force, the City Council, and state legislators representing the area. Local government officials and members of the public were informed that all alternatives were still under consideration, and they were asked to provide comments. Approximately 212 people attended the Project update meeting.

2.2.28.3 SECTION V PREFERRED ALTERNATIVE AND BASIS FOR SELECTION

The preferred alternative in Section V is Alternative NC5. This decision is based on the fact that it minimizes impacts to neighborhoods, freight operations, and historic resources, and was endorsed by the Raleigh City Council on October 4, 2011. Table ES-5 shows that NC5 has the least impacts to streams, no residential relocations, fewer business relocations compared to NC3 (but greater than NC1 and NC2), and only one severely impacted noise receptor (compared to 40 for the other alternatives). Additionally, apart from the impact to the historic Raleigh and Gaston Railroad Corridor that is common among all alternatives, Alternative NC5 has no additional impacts to historic resources. Each of the other alternatives (NC1, NC2, and NC3) would have an adverse effect on at least one resource protected under Section 106 of the NHPA, and also require a Section 4(f) use of those properties.

> Alternative NC5 minimizes impacts to neighborhoods, freight operations, and historic resources, and was endorsed by the Raleigh City Council.

NC5 is also favored by the public. Following the Project update meeting, 61 comments were submitted by the public expressing preference for an alternative: three were in favor of NC1 (with no specific reason stated); three were in favor of NC2 (based partially upon cost considerations); three were in favor of NC3 (based upon railroad designs, interaction with freight railroads, and downtown connectivity); while 52 expressed a preference for NC5 (based primarily upon minimized impacts to neighborhoods, freight operations, and historic resources).

2.2.28.4 PUBLIC ROAD/RAIL CROSSINGS

Public Roads with Existing Grade Separated Crossings (Bridges or Underpasses will be Retained, Expanded or Replaced)

- I-540 - roadway bridge over railroad
- Old Wake Forest Road - roadway bridge over railroad
- Spring Forest Road - railroad bridge over roadway
- Atlantic Avenue - railroad bridge over roadway
- I-440 - roadway bridge over railroad
- Six Forks Road - railroad bridge over roadway
- Hodges Street – railroad bridge over roadway
- Peace Street - a new separate parallel railroad bridge will be built east of existing NS railroad bridges, to span Peace Street, W. Johnson Street, Tucker Street, and North Street
- W. Johnson Street a new separate parallel railroad bridge will be built east of existing NS railroad bridges, to span Peace Street, W. Johnson Street, Tucker Street, and North Street
- Tucker Street a new separate parallel railroad bridge will be built east of existing NS railroad bridges, to span Peace Street, W. Johnson Street, Tucker Street, and North Street
- North Street a new separate parallel railroad bridge will be built east of existing NS railroad bridges, to span Peace Street, W. Johnson Street, Tucker Street, and North Street

- Hillsborough Street- roadway bridge over railroad
- Morgan Street - replacement/expansion of the existing roadway bridge over the railroad will utilize an offsite detour; refer to Appendix G for a map of temporary proposed detour routes
- Boylan Avenue - roadway over railroad

Public Roads with New Grade Separated Crossings (Bridges or Underpasses)

- Gresham Lake Road - roadway bridge over railroad; off-site detour utilizing a temporary new at- grade crossing, refer to Appendix G for a map of temporary proposed detour routes
- Millbrook Road - underpass (road under railroad); off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- New Hope Church Road - roadway bridge over railroad; on-site detour with staged construction
- Wolfpack Lane - roadway bridge over railroad and Atlantic Ave; on-site detour
- Whitaker Mill Road - roadway bridge over railroad; off-site detour, refer to Appendix G for a map of temporary proposed detour routes
- Capital Boulevard - underpass (road under railroad)
- Old Williamson Road - underpass (road under railroad)
- Capital Boulevard - underpass (road under railroad bridge that will span both Capital Boulevard and West Street)
- West Street - underpass (road under railroad bridge that will span both West Street and Capital Boulevard)
- Jones Street - pedestrian bridge over railroad with elevator access

Public At-Grade Crossings to be Closed and Traffic Re-Routed

- Jones Street
- Hargett Street

2.2.28.5 RIVER AND MAJOR CREEK BRIDGES

Crabtree Creek - There is active freight service in this location utilizing an existing single-track bridge with a concrete ballast deck that was built in the early 1970’s and is in good condition. A new bridge is proposed to be constructed adjacent to the existing single-track bridge. The new structure will span (but not touch) the historic Raleigh and Gaston bridge pier that lies within the drip line of the existing bridge.

2.2.28.6 CHANGES TO PREFERRED ALTERNATIVE SUBSEQUENT TO THE TIER II DEIS

As discussed above, a Project update meeting was held in Raleigh, on May 15, 2012, to provide the public an opportunity to learn about and comment on revisions that had been made to road work in Wake Forest, NC, and north Raleigh, NC (north of Whittaker Mill Road) subsequent to the Project Tier II DEIS. Two alternative designs were presented for the New Hope Church Road area and Wolfpack Lane. The alternatives were developed to address numerous public comments requesting a grade separated crossing (for the sake of accessibility for neighborhoods on the east side of the railroad), or a bicycle/pedestrian crossing at Wolfpack Lane. Both alternatives included a small southward shift for New Hope Church Road, to allow more lanes of traffic to remain open during construction and to provide room for bike lanes.

<u>Alternative A</u> included a realignment and roadway bridge over the railroad at Wolfpack Lane, along with associated changes to the surrounding roads.

<u>Alternative B</u> retained the closure of Wolfpack Lane that was shown in the Project Tier II DEIS, but included improvements for traffic mitigation. These improvements consisted of additional turn lanes at the intersection of Atlantic Avenue and New Hope Church Road, and realignment of Saint Albans Drive across from Craftsman Drive to allow an intersection with full traffic movements.

Attendance at the meeting was 166 and 49 written comments were received. Of the 21 comments that indicated a preference at Wolfpack Lane, 17 were in favor of Alternative A, and 4 were in favor of Alternative B. Refer to Appendix B for a summary of the meeting.

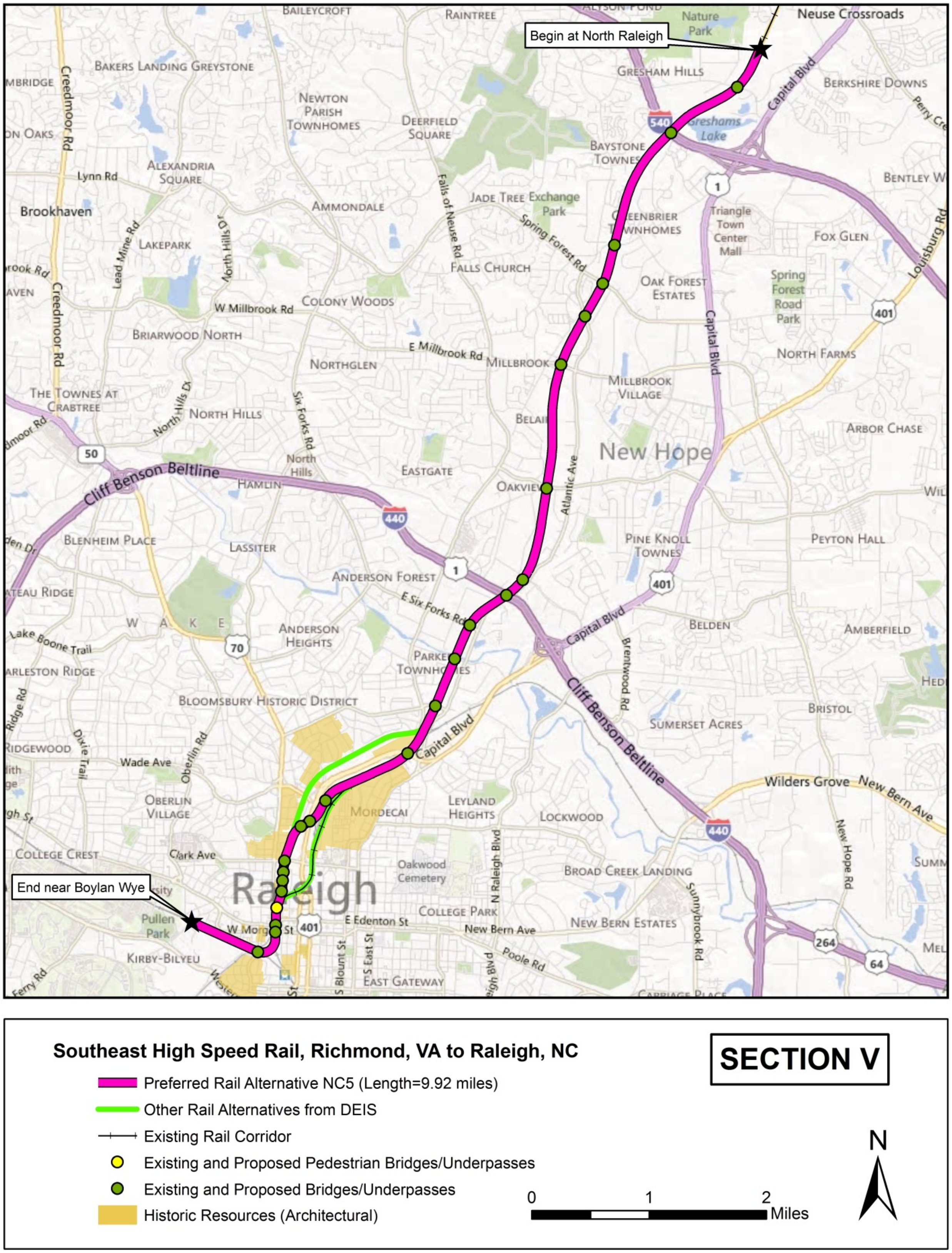
Based on favorable response from the public and from the City of Raleigh, Alternative A was selected and has been included in the designs presented in the Richmond to Raleigh Tier II FEIS.

Lacy Street - In addition to the changes contained in the two alternatives described above, a small change was made to the Lacy Street intersection with Millbrook Road. The designs presented in the Project Tier II DEIS mistakenly, did not show a connection to Lacy Street on the north side or that the south side connection to Lacy Street will be eliminated. The designs shown in the Richmond to Raleigh Tier II FEIS have been corrected.

Gresham Lake Road – In response to comments received from the City of Raleigh, the designs for this road have been modified to provide curb and gutter on one side. This will allow the bridge to be widened in the future in accordance with the City's plans for this road.

Downtown Raleigh - The entire railroad alignment south of Whittaker Mill Road and associated road work for Preferred Alternative NC5 was developed subsequent to publication of the Project Tier II DEIS, as described above. Detailed maps can be found in Appendix R, maps 148-151. No changes were made to Alternative NC5 since the alternative was presented to the public at the Project update meeting in September 2011.

Figure 2-27


Begin at North Raleigh
End near Boylan Wye
Raleigh
New Hope
Southeast High Speed Rail, Richmond, VA to Raleigh, NC
SECTION V
Preferred Rail Alternative NC5 (Length=9.92 miles)
Other Rail Alternatives from DEIS
Existing Rail Corridor
Existing and Proposed Pedestrian Bridges/Underpasses
Existing and Proposed Bridges/Underpasses
Historic Resources (Architectural)
0 1 2 Miles
N

2.3 ALTERNATIVES CONSIDERED, BUT NOT CARRIED FORWARD

The Project Tier II DEIS described three other alternative alignments that were considered, but subsequently excluded from further analysis (Figure 2-28). These alternatives and the reasons they were not carried forward are summarized in the sections below. For more detailed information, refer to Section 2.2.2 and Appendix G of the Project Tier II DEIS.

It should also be noted that advanced HSR (where operating speeds average 185 to 200 mph), as well as electric trains as options for the SEHSR Corridor, were evaluated and dismissed in the SEHSR Corridor Tier I EIS. Many comments received from the public on the Project Tier II DEIS asked why these alternatives were not still under consideration. Advanced high speed trains were dismissed because they require the construction of an entirely new separate railroad system that cannot be shared with freight (which would not meet the need of the Project to connect major urban centers), they would involve substantially higher costs and longer implementation time, and they would cause substantially greater community and environmental impacts. Electrified systems were dismissed because they have substantial initial costs (both monetary and environmental) that made them infeasible at this time, relative to the ridership/revenue projections for the SEHSR Corridor.

2.3.1 ABANDONED S-LINE, FROM NEAR CENTRALIA TO LYNCH

In the Chester, VA, area, the portion of the Seaboard Air Line Railway S-line from near Centralia (MP S-12.3) through Lynch (MP S-20) was considered as a possible alternative to the CSX A-Line (Figure 2-28) in the early feasibility studies for the overall SEHSR Corridor. In this area, the railroad ROW is no longer intact and extensive development has taken place within the old ROW, including the Chester Linear Park. Based on relocation impacts, impacts to a public park, and lack of compatibility with county plans, the alternative was dropped from further consideration.

2.3.2 S-LINE, FROM APPOMATTOX RIVER TO BURGESS

In Petersburg, VA, the former S-line south of the Appomattox River (MP S-24) to Burgess (MP S-30) was considered as an alternative based on previous studies by both FRA and the states of Virginia and North Carolina (Figure 2-28). Early field work and public involvement revealed considerable issues with this alternative, notably impacts to two properties. The alignment would impact the Chaparral Steel processing plant in Dinwiddie County, VA. Chaparral Steel is the largest employer in Dinwiddie County with approximately 450 employees. The alignment would also impact the Petersburg Breakthrough Battlefield Historic District at Pamplin Historic Park, which is listed on the NRHP, and is both a Virginia Historic Landmark and a National Historic Landmark. In a joint letter dated June 23, 2006, the National Park Service Petersburg National Battlefield, Pamplin Historical Park, Civil War Preservation Trust, Chaparral Steel, and Dinwiddie County, recommended that the SEHSR Corridor should not be built using the former CSX S-Line ROW. The letter stated they anticipated "devastating impacts on historic resources," as well as economic, safety, cultural, and environmental repercussions. They argued that the presence of HSR would "grossly compromise the battlefield's historic integrity." Based on the reasons outlined above, the alternative using the former CSX S-Line from south of Ettrick Station (MP S-24) to Burgess (MP S-30) was dropped from further consideration.

2.3.3 ALTERNATIVES SERVING OLD UNION STATION IN PETERSBURG

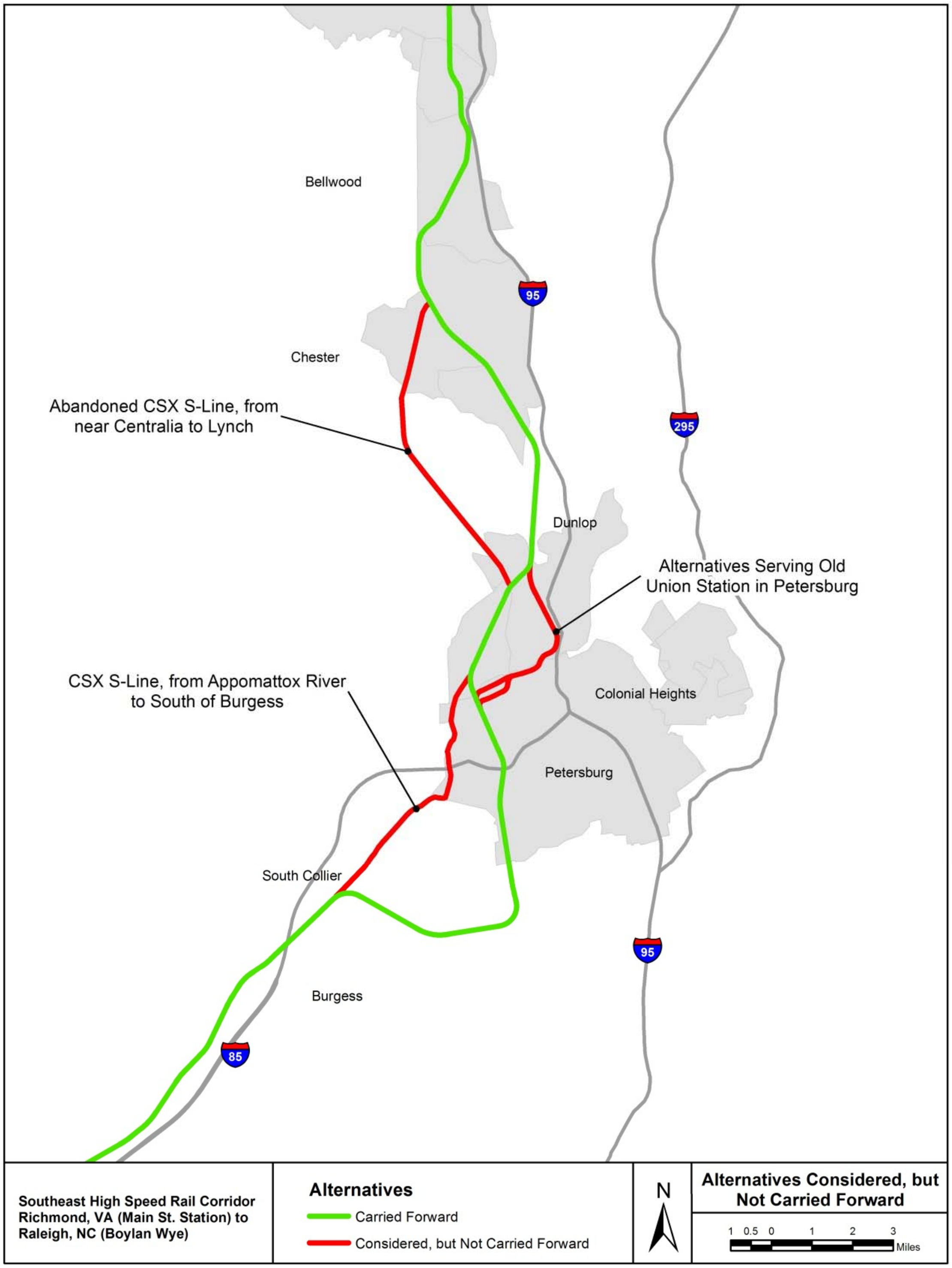
Early planning efforts by FRA developed railroad alignments that would serve old Union Station in Downtown Petersburg, VA. The routing used the former CSX AAP-line (Appomattox Lead) from Dunlop through Colonial Heights, VA, into Petersburg, VA (Figure 2-28). Two versions of the concept were developed; both crossed the Appomattox River near old Union Station on the east side of Petersburg, then paralleled the Appomattox River to the west and rejoined the CSX A-Line near Washington Street in Petersburg, VA. The alignments varied on the south side of the Appomattox River. One used the NS N-line ROW until curving south on a bridge to re-connect with the CSX A-Line. The other followed the NS N-line ROW until reaching the inactive CSX S-Line, where it crossed over the NS N-line on a bridge to follow the CSX S-Line ROW (past old Commerce Street Station) before re-connecting with the CSX A-Line.

Design efforts, environmental evaluation, and public involvement identified the following issues associated with the alignments serving old Union Station:

- Conformity with Local Plans/Local Support - Coordination with local officials from the cities of Colonial Heights and Petersburg, VA, indicated that the alternatives serving old Union Station would be in conflict with development plans in the region and face local opposition (refer to Appendix G of the Project Tier II DEIS).
- Cultural Resources - The alternatives serving old Union Station would have adversely impacted several cultural resources protected under Section 4(f) of the Department of Transportation Act of 1966. These resources include the Battersea plantation, North Battersea/Pride's Field Historic District, and Petersburg Old Town Historic District.
- Residential and Business Relocations - Due to the sale of the former CSX AAP-line ROW and subsequent redevelopment, there would have been a significant number of relocations along this route.
- Travel Time - The additional length of the route through Downtown Petersburg (a distance of approximately one mile), combined with the reduced train speed due to the curves in this area, would increase travel time compared to other Project alternatives.
- Engineering Issues and Cost - The alternatives serving old Union Station were also identified to have significant construction issues due to constraints through Downtown Petersburg. These constraints include historic properties and districts, utilities (e.g., a substation), and the Appomattox River. As a result, the alternatives would require the use of retaining walls, additional service roads, and bridges, which add extra expense, ROW requirements, and construction complexity.

As a result of these issues, the alternatives serving old Union Station in Petersburg, VA, were excluded from further consideration.

Figure 2-28


Bellwood
95
Chester
Abandoned CSX S-Line, from
near Centralia to Lynch
295
Dunlop
Alternatives Serving Old
Union Station in Petersburg
CSX S-Line, from Appomattox River
to South of Burgess
Colonial Heights
Petersburg
South Collier
95
Burgess
85
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to
Raleigh, NC (Boylan Wye)
Alternatives
Carried Forward
Considered, but Not Carried Forward
N
Alternatives Considered, but
Not Carried Forward
1 0.5 0 1 2 3
Miles

2.4 NO BUILD ALTERNATIVE

The No Build Alternative was evaluated in the Tier I EIS. This alternative consisted of the existing transportation network in the Southeast travel corridor. Included in this alternative were:

- Major highways that make up the roadway network
- Air travel
- Existing conventional passenger rail service (Amtrak)
- Intercity bus services
- Local public transit services
- Commuter rail services
- Freight railroad services

The No Build Alternative also included existing and committed highway, rail, and airport improvements.

The SEHSR Corridor Tier I Record of Decision (ROD) rejected the No Build Alternative because it did not meet the purpose and need of the proposed action. It did not account for growth or alleviate congestion; it did not improve travel times, connectivity, energy efficiency, or air quality; and it did not improve safety within the preferred SEHSR Corridor. The SEHSR Corridor Tier I ROD found that under the No Build scenario, commuter and freight traffic would face increased delays; planned improvements to air facilities and major highways would not meet projected increases in demand; safety concerns would continue along areas of railway that lacked grade separations; and there would be an increase in congestion and air pollution concerns in Study Area of the SEHSR Corridor.

It was concluded that the No Build Alternative did not meet the purpose and need of the SEHSR Corridor project; therefore the No Build Alternative is not carried through in the Tier II EIS. However, “no-build” conditions are evaluated for comparison in numerous resource areas, such as air quality, noise, and traffic.

2.5 GREENWAY CORRIDOR PLAN

The process of developing environmental documentation for greenway has changed. FRA, FHWA, and the states of VA and NC have determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan.

Section 2.4 of the Project Tier II DEIS was titled “Multiuse Greenway Concept” and included discussion of conceptual planning for a greenway located parallel to the Project from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC). The discussion noted that potential impacts associated with the Greenway Concept would be documented in the Project Tier II FEIS. The rationale for including the greenway in the Project Tier II FEIS was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Project, the process of developing the environmental documentation for greenway has changed since publication of the Project Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than it being included in the Richmond to Raleigh Tier II FEIS, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within the Project Tier II FEIS, but rather in a separate Greenway Corridor Plan. This document is currently under development by DRPT and NCDOT, with completion anticipated at the time of the ROD for this Project Tier II FEIS. The SEHSR website will provide additional details on this separate plan and opportunities for its public review and comment.

The details for the greenway will not be contained within this FEIS, but in a separate Greenway Corridor Plan.

3 EXISTING ENVIRONMENT

A condensed format was used for this Final Environmental Impact Statement (EIS), as clarified in the Executive Summary of this report.

The following discussion on the existing environment describes existing conditions associated with the natural environment, land features, air quality, noise, visual conditions, cultural and community resources, transportation, and infrastructure within the Southeast High Speed Rail (SEHSR) Richmond to Raleigh Project Study Area. The Study Area for the natural and physical environment, cultural resources, and infrastructure varies from 300 to 1,000 feet in width depending on the resource, and is centered about the existing rail line or right of way (ROW). In areas where the existing railroad curves do not meet the design standards for high speed rail, the Study Area expands to approximately 500 feet outside of the proposed rail realignments.

The Study Areas for the human environment, noise, and air quality are generally larger than the Project area boundaries. The larger Study Areas are defined by regions of influence in which a resource may potentially have noticeable project-related impacts. Regions of influence for human resources account for factors such as community sizes, geographical and political boundaries, and census boundaries. These human resources include social and economic issues, community resources, and land use planning. The air quality Study Area is influenced by local and regional atmospheric conditions. The noise Study Area is determined by the limit of noise intrusions associated with the project.

All references to "Study Area" and "Project" below pertain to the Richmond to Raleigh Project, unless otherwise noted.

3.1 WATER RESOURCES

Before determinations can be made on the potential of the Project to impact water resources, it is necessary to review those resources within the Study Area. This section provides discussions on surface waters, wetlands, floodplains and floodways, and Wild and Scenic rivers.

3.1.1 SURFACE WATER

Numerous waterbodies, including streams, unnamed tributaries, lakes, ponds, reservoirs, and swamps/marshes are located in the Study Area. The surface waters in Virginia and North Carolina are summarized in Table 3-1, and are depicted in the maps included in Appendix R. Streams in the Study Area range from headwater tributaries with undefined, braided channels to streams with well-defined, steep side slopes. These streams, including some intermittent ones, had flowing water during the survey periods. Within the Study Area, much of the existing rail line follows the ridgelines that divide watersheds. As a result, most of the potential impacts are at the headwaters of tributaries.

Much of the existing rail line follows the ridgelines that divide watersheds. Most of the potential impacts are at the headwaters of tributaries.

Table 3-1
Summary of Streams, Wetlands, and Other Surface Waters within Study Area by State

Section	River Basin	Streams (feet)	Wetland (acres)	Other Waters (acres)
Virginia				
AA	James	3,919	2.3	0.7
BB	James	2,078	5.2	0.4
CC	James	2,405	1.2	0.03
	Chowan	0	1.4	0
DD	Chowan	827	2.4	1.7
A	Chowan	3,094	2.8	0.4
B	Chowan	760	0.6	0
C	Chowan	2,803	2.2	0
D	Chowan	1,998	2	0.2
E	Chowan	860	1.2	0.01
F	Chowan	1,004	0.6	0
G	Chowan	510	0.3	0
H	Chowan	2,808	0.4	0.06
I	Chowan	0	0.001	0
	Roanoke	22	0	0
J	Roanoke	420	0.2	0
K	Roanoke	1,419	0.9	0.1
L	Roanoke	497	0.0002	0.3
	Virginia Total	**25,182**	**23.70**	**3.90**
North Carolina				
L	Roanoke	2,005	0.7	1.3
M	Roanoke	442	0	0
	Tar-Pamlico	0	0	0
N	Roanoke	42	0	0
	Tar-Pamlico	344	1.2	0
O	Roanoke	53	0	0.2
	Tar-Pamlico	3,049	0.3	0
P	Roanoke	777	0.5	0.03
	Tar-Pamlico	755	0.4	0.001
Q	Tar-Pamlico	1,127	0.03	0
R	Tar-Pamlico	438	0	0.002
S	Tar-Pamlico	1,620	0.5	0.01
T	Tar-Pamlico	0	0	0

Table 3-1 Summary of Streams, Wetlands, and Other Surface Waters within Study Area by State				
Section	**River Basin**	**Streams (feet)**	**Wetland (acres)**	**Other Waters (acres)**
	Neuse	415	0.1	0
U	Neuse	3,394	0.4	0.2
V	Neuse	1,036	0.1	0
North Carolina Total		**15,497**	**4.23**	**1.74**
Study Area Total		**40,679**	**27.93**	**5.64**

The Virginia Department of Environmental Quality (VDEQ) and the North Carolina Division of Water Resources (NCDWR) use different conventions for identifying streams. Appendix H lists streams in the Study Area by name, river basin, hydrologic unit code, and regulatory classification. More detailed identification of the nature of affected streams (e.g. perennial/intermittent classification) will take place during Section 401 Water Quality Certification and Section 404 permitting required by of the Clean Water Act (CWA) (33 USC 1344).

The determination of compensation ratios for stream mitigation has varied by state, and USACE District. In addition these ratios have changed over the duration of the SEHSR Tier-I EIS and Richmond-Raleigh Project Tier-II DEIS and FEIS. Federal and state protocols for quantifying stream impacts and mitigation for Section 404/401 purposes are still in flux; therefore, it is premature to base NEPA stream impact avoidance decisions on anything other than the basic dimension of the resource (length). Impact minimization and mitigation for NEPA decisions regarding streams are similarly limited by the recent and continuing changes in regulatory approach, which will be refined during the permitting process.

3.1.1.1 *DRAINAGE BASINS*

One way to study a river system is to look at the area drained by the water body. This is called a watershed. A drainage basin is the watershed of the largest river in an area. Often, these drainage basins are divided into smaller watersheds called subbasins. Subbasins can describe a tributary or a portion of a large river. For the purposes of this document, US Geological Survey (USGS) 8-digit cataloging units (CU) are used to describe the subbasins in the Study Area.

> The Study Area lies within the James, Chowan, and Roanoke River Basins of VA and the Roanoke, Tar-Pamlico, and Neuse River Basins of NC.

The Study Area lies within the James, Chowan, and Roanoke River Basins of Virginia and the Roanoke, Tar-Pamlico, and Neuse River Basins of North Carolina. Table 3-2 and Figure 3-1 list and illustrate, respectively, the basins in relation to the Study Area. The percentage of the river basins within the Study Area was determined using a geographic information system (GIS) analysis.

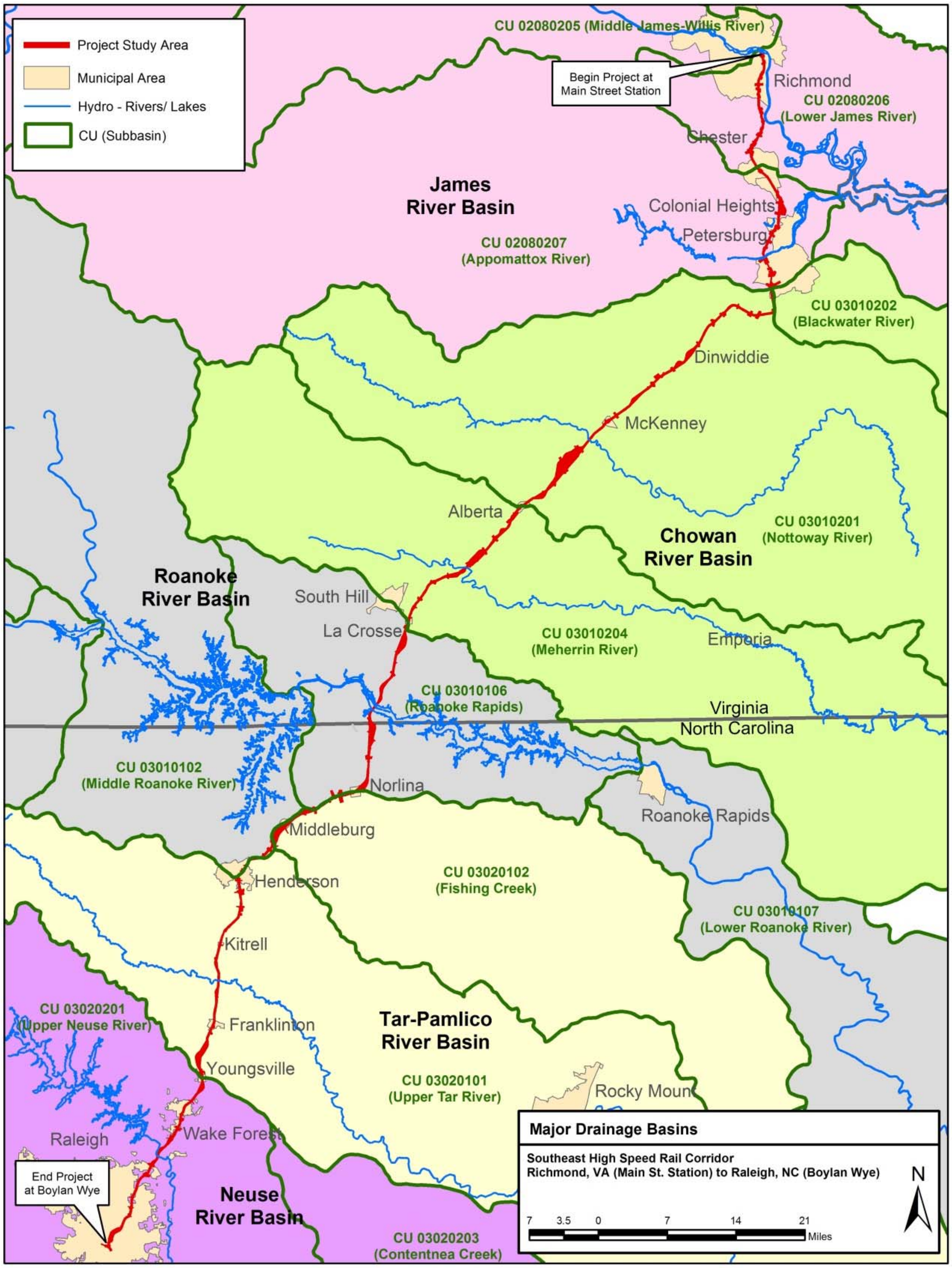
Drainage basins within the Study Area ultimately flow into coastal bays and sounds that outlet into the Atlantic Ocean. A discussion of these basins is included below.

Table 3-2
Major River Basins in the Study Area

Major River Basins	Drainage Area of Entire Basin (sq. mi.)	Subbasins within Study Area	Percent of Study Area
James	10,265	Appomattox River Lower James Middle James-Willis River	16%
Chowan	4,908	Blackwater River Meherrin River Nottoway River	35%
Roanoke	6,981	Middle Roanoke River Roanoke Rapids	16%
Tar-Pamlico	6,417	Fishing Creek Upper Tar River	22%
Neuse	6,062	Upper Neuse River	11%

Source: NCDOT and Virginia DRPT, 2004a, 2008

Figure 3-1


Project Study Area
Municipal Area
Hydro - Rivers/ Lakes
CU (Subbasin)
CU 02080205 (Middle James-Willis River)
Begin Project at Main Street Station
Richmond
CU 02080206 (Lower James River)
Chester
James River Basin
Colonial Heights
Petersburg
CU 02080207 (Appomattox River)
CU 03010202 (Blackwater River)
Dinwiddie
McKenney
Alberta
Chowan River Basin
CU 03010201 (Nottoway River)
Roanoke River Basin
South Hill
La Crosse
CU 03010204 (Meherrin River)
Emporia
CU 03010106 (Roanoke Rapids)
Virginia
North Carolina
CU 03010102 (Middle Roanoke River)
Norlina
Middleburg
Roanoke Rapids
Henderson
CU 03020102 (Fishing Creek)
CU 03010107 (Lower Roanoke River)
Kitrell
CU 03020201 (Upper Neuse River)
Franklinton
Tar-Pamlico River Basin
Youngsville
CU 03020101 (Upper Tar River)
Rocky Mount
Raleigh
Wake Forest
End Project at Boylan Wye
Neuse River Basin
CU 03020203 (Contentnea Creek)
Major Drainage Basins
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
7 3.5 0 7 14 21
Miles
N

3.1.1.1.1 JAMES RIVER BASIN

The James River Basin is Virginia's largest river basin, covering approximately 25% of the state's land area. The James River originates in the Allegheny Mountains, along the Virginia/West Virginia state line. The basin continues southeast through the state towards Hampton Roads and ultimately the Chesapeake Bay. The Study Area includes approximately 28 acres in the Middle James-Willis River (CU 02080205), 2,293 acres in the Lower James River (CU 02080206), and 3,034 acres in the Appomattox River (CU 02080207) subbasins.

The Study Area includes approximately 28 acres in the Middle James-Willis River, 2,293 acres in the Lower James River, and 3,034 acres in the Appomattox River subbasins.

The northern terminus of the Study Area, in the City of Richmond, lies within the Middle James-Willis River subbasin. It then continues into the Lower James River subbasin, where it crosses the James River, Walker Creek, Goode Creek, Grindall Creek, Falling Creek, Kingsland Creek, Proctors Creek, and Great Branch. Continuing south towards the City of Colonial Heights, the Study Area enters the Appomattox River subbasin. It crosses Timsbury Creek, Swift Creek, Oldtown Creek, Fleets Branch, and the Appomatox River before entering the City of Petersburg. Continuing south, the Study Area crosses unnamed tributaries to Lieutenant Run and Rohoic Creeks.

Virginia's Chesapeake Bay Preservation Act (CBPA) was enacted in 1988 to improve water quality in the Chesapeake Bay and its tributaries by requiring the use of effective conservation planning and pollution prevention practices when using and developing environmentally sensitive lands. The CBPA established a cooperative relationship between the Virginia Department of Conservation and Recreation (VDCR) and local governments within Tidewater Virginia. Under the CBPA, localities in Tidewater are those with waters that drain into the Chesapeake Bay. In the vicinity of the Project, the cities of Richmond, Colonial Heights, and Petersburg, as well as Chesterfield County are considered within Tidewater Virginia and fall under the requirements of the CBPA.

The VDCR states that the CBPA addresses non-point source pollution by identifying and protecting certain lands called Chesapeake Bay Preservation Areas. The lands that make up Chesapeake Bay Preservation Areas are those that have the potential to impact water quality most directly: Resource Protection Areas (RPAs) and Resource Management Areas (RMAs). RPAs are meant to protect and benefit water quality and include tidal waters, tidal wetlands, or perennial streams and related wetlands. RMAs are lands that, without proper management, have the potential to damage water quality and include highly erodible soils, highly permeable soils, steep slopes, non-tidal wetlands not included in the RPA, lands within the 100-year floodplain, and include at least the 100-foot area contiguous to the RPA.

3.1.1.1.2 CHOWAN RIVER BASIN

The Chowan River Basin is located in the northeastern Coastal Plain of southeastern Virginia. Approximately 76% of the drainage basin lies in Virginia and the remainder lies in North Carolina. The Study Area includes approximately 156 acres in the Blackwater River (CU 03010202), 8,171 acres in the Nottoway River (CU 03010201), and 3,573 acres in the Meherrin River (CU 03010204) subbasins.

The Study Area includes approximately 156 acres in the Blackwater River, 8,171 acres in the Nottoway River, and 3,573 acres in the Meherrin River subbasins.

The Study Area traverses a small portion of the Blackwater River subbasin near the City of Petersburg before it enters the Nottoway River subbasin. It then crosses waters within the Nottoway River subbasin from south of the City of Petersburg to north of Dinwiddie County. Major stream crossings in this part of the Study Area include Arthur Swamp, Rocky Branch, Hatcher Run, Gravelly Run, and Little Cattail Creek.

From north of Dinwiddie County south to the Town of Alberta in Brunswick County, the Study Area crosses the southernmost section of the Nottoway River subbasin. Major stream crossings in this section include Stony Creek, Snap Lodge Branch, Sappony Creek, Buckskin Creek, Great Creek, Nottoway River, Great Branch, Waqua Creek, and Sturgeon Creek.

From the Town of Alberta to the Town of La Crosse in Mecklenburg County, the Study Area crosses waters within the Meherrin River subbasin. Major stream crossings in this area include Gum Branch, Roses Creek, Great Creek, Briery Branch, Shining Creek, Meherrin River, and Taylors Creek.

The Meherrin River, which originates in Virginia, is the only major tributary to join the Chowan in North Carolina. Anadromous fish spawning areas have been identified in the main streams of the Meherrin and Chowan Rivers; however, no anadromous fish areas have been located within a one-mile vicinity of the Study Area. Anadromous fish are those like salmon, which hatch in fresh water, mature in the ocean, and return to fresh water to spawn. The Meherrin River in Brunswick County, VA, was designated a state Scenic River in June 2006.

3.1.1.1.3 ROANOKE RIVER BASIN

The Roanoke River Basin arises from the eastern slopes of the Blue Ridge Mountains and upper Piedmont of west central Virginia. In Virginia, the basin covers approximately 6,380 square miles or about 16% of the state. The Study Area includes approximately 4,341 acres in the Roanoke Rapids (CU 03010106) and 584 acres in the Middle Roanoke River (CU 03010102) subbasins. Within the Study Area, the Roanoke River main stream is impounded by the Kerr Reservoir-Lake Gaston complex located along the Virginia/North Carolina state line. The Roanoke River continues southeastward through North Carolina towards the Albemarle Sound.

The Study Area includes approximately 4,341 acres in the Roanoke Rapids and 584 acres in the Middle Roanoke River subbasins.

Surface waters within the Study Area from the Town of La Crosse, VA, to Norlina, NC, drain into Lake Gaston, located in the Roanoke Rapids subbasin. Lake Gaston is a 49,000-acre impoundment used as water supply for the towns of Roanoke Rapids and Weldon and the City of Virginia Beach, and for recreation and hydroelectricity. Major stream crossings in the Virginia portion of the Study Area include Parham Creek, Hewey Creek, Roanoke River (Lake Gaston), and Smith Creek (Lake Gaston).

Anderson Swamp Creek is the southernmost stream to drain into the Middle Roanoke subbasin. Its confluence is at the Kerr Scott Reservoir.

3.1.1.1.4 TAR-PAMLICO RIVER BASIN

The Tar-Pamlico River Basin is the fourth largest in North Carolina and is one of four basins located entirely within the state. The Tar-Pamlico River system originates in the Piedmont of north central North Carolina and continues eastward towards the Pamlico Sound. The Study Area includes approximately 4,069 acres in the Upper Tar River (CU 03020101) and 2,398 acres in the Fishing Creek (CU

The Study Area includes approximately 4,069 acres in the Upper Tar River and 2,398 acres in the Fishing Creek subbasins.

03020102) subbasins.

All surface waters within this basin are given a supplemental classification of Nutrient Sensitive Waters (NSW) (NCDWQ, 2000). This designation is given to waterbodies that are prone to excessive growth of macroscopic or microscopic vegetation (e.g., algal blooms) that can damage aquatic life. NCDWQ has developed certain management processes to limit the amount of nutrients entering these subbasins, thereby reducing the excessive growth. The Tar-Pamlico River Basin Nutrient Sensitive Waters Management Strategy includes a rule to maintain and protect riparian buffers in the basin (15A NCAC 02B .0259). A riparian buffer is a vegetated (usually forested) area adjacent to a stream that helps shade and partially protects a stream from the impact of nearby land uses by removing pollutants and runoff.

The City of Henderson is on the boundary of the Tar-Pamlico and Roanoke River Basins. The Study Area passes through downtown Henderson and closely follows US-1 to the Vance County line on the ridge between Long Creek to the west and Buffalo Creek to the east. The Vance/Franklin County boundary is the Tar River.

Between the Vance County line and Franklinton, the Study Area crosses Taylor's Creek and an unnamed tributary to the Tar River. The Study Area passes through the town of Franklinton. Just south of Franklinton it crosses Cedar Creek. Cedar Creek is a major tributary to the Tar River.

The southernmost subbasin in the Tar River Basin is Brandy Creek. Brandy Creek does not have a NCDWQ data collection site within the watershed.

3.1.1.1.5 NEUSE RIVER BASIN

The Study Area includes approximately 3,568 acres in the Upper Neuse River subbasin.

The Neuse River Basin is the third largest river basin in North Carolina and is one of four basins located entirely within the state. The Neuse River system originates from the headwaters of the Flat and Eno Rivers and continues eastward towards the Pamlico Sound. The Study Area includes approximately 3,568 acres in the Upper Neuse River (CU 03020201) subbasin.

Like the Tar-Pamlico Basin, all surface waters within the Neuse Basin have been given a supplemental classification of NSW by NCDWQ (NCDWQ 2000). North Carolina has adopted the Neuse Basin Nutrient Sensitive Waters Management Strategy that includes a rule to maintain and protect riparian buffers in the basin (15A NCAC 2B .0233).

South of Youngsville and north of Wake Forest, the Study Area enters the Neuse River Basin at the eastern headwaters of Richland Creek watershed. This watershed is located within a rapidly developing area near Wake Forest. To the east of the Study Area is the Smith Creek Watershed.

The southernmost section of the Study Area lies within the City of Raleigh in the Crabtree Creek watershed. Streams in and around Raleigh have been severely impacted by urbanization.

3.1.1.2 *WATER QUALITY*

Under the Federal Clean Water Act (CWA), as amended in 1972, states were required to develop water quality standards (WQS). These standards are used to identify water quality problems and support efforts to achieve and maintain protective water quality conditions. A WQS consists of four basic elements:

- The designated uses of a waterbody (e.g., recreation, water supply, aquatic life, agriculture) are those uses that society, through public hearings offered by various units of government, determines should be attained and maintained in the waterbody

- Water quality criteria are descriptions of the conditions in a waterbody necessary to support the designated uses
- Anti-degradation policies protect the existing uses of waters and maintain waterbodies with qualities above those needed to meet established standards and/or exceeds levels necessary to protect aquatic life and recreational uses
- General policies address implementation issues such as low flows, variances, mixing zones (United States Environmental Protection Agency (USEPA), 2004)

States are required to assess the health of surface waters and to report the extent to which WQS are met as established under Section 305(b) of the CWA. When a waterbody cannot meet one of more of its assigned designated uses, it is listed as impaired under Section 303(d) of the CWA. To restore these waters, the state must establish total maximum daily loads (TMDLs) that are designed to reduce contamination to the level where designated uses can be met (Hoskinson et al., 2003).

Sensitive surface waters include those used for water supplies and those listed as impaired under Section 303(d) of the Clean Water Act.

Surface waters that could be especially sensitive to impacts by the proposed Project include those used for water supplies and impaired waters that are listed on the CWA Section 303(d) list (see Tables 3-3 and 3-4). In the Richmond to Raleigh Project Tier II DEIS, Section 303(d) waters for Virginia were from the state's 2008 list and waters for North Carolina were from the state's 2006.

Since the publication of the Richmond to Raleigh Project Tier II DEIS, the following waterbodies in the Study Area have been added to the Virginia CWA Section 303(d) list: No Name Creek, Ashton Creek, Timsbury Creek, Blackwater River (Second Swamp), Unnamed Tributary (UT) to Buckskin Creek, Nottoway River, Meherrin River, Taylors Creek, Evans Creek, and Little Genito Creek. The following waterbodies in the Study Area have been added to the North Carolina CWA Section 303(d) list since publication of the Richmond to Raleigh Project Tier II DEIS: Fishing Creek, Tar River, and Smith Creek (in the Neuse River Basin). Additionally, Perry Creek is no longer included in the North Carolina Clean Water Act Section 303(d) list.

Table 3-3
Water Supply Surface Waters within Study Area

State	Stream Name	Basin	Classifications
VA	Ashton Creek and unnamed tributaries	James	PWS
VA	Timsbury Creek and unnamed tributaries	James	PWS
VA	Swift Creek and unnamed tributaries	James	PWS
VA	Unnamed tributaries to Lieutenant Run	James	PWS
VA	Unnamed tributary to Flat Creek	Roanoke	PWS
VA	Unnamed tributary to Little Genito Creek	Roanoke	PWS
VA	Parham Creek and unnamed tributaries	Roanoke	PWS
VA	Hewey Creek and unnamed tributaries	Roanoke	PWS
VA	Roanoke River (Lake Gaston) and unnamed tributaries	Roanoke	PWS
VA	Smith Creek (Lake Gaston)	Roanoke	PWS
VA	Unnamed tributaries to Reedy Branch	Roanoke	PWS
NC	Anderson Swamp Creek and unnamed tributaries	Roanoke	WS-III
NC	Tar River and unnamed tributaries	Tar-Pamlico	WS-IV

Table 3-3 Water Supply Surface Waters within Study Area			
State	**Stream Name**	**Basin**	**Classifications**
NC	Unnamed tributary to Taylor's Creek	Tar-Pamlico	WS-IV

Sources: North Carolina Department of Environment and Natural Resources; 2000,
Virginia State Water Control Board; 2003.
Notes:
PWS - VA Public Water Supply
WS-III - NC waters listed as water supplies that are generally in low to moderately developed watersheds
WS-IV - NC waters listed as water supplies that are generally in moderately to highly developed watersheds

Table 3-4 CWA 303(d) List of Impaired Surface Waters within Study Area		
State	**Stream Name**	**Basin**
VA	Goode Creek	James
VA	Broad Rock Creek	James
VA	No Name Creek	James
VA	Kingsland Creek	James
VA	Proctors Creek	James
VA	Ashton Creek	James
VA	Timsbury Creek	James
VA	Oldtown Creek	James
VA	Appomattox River	James
VA	Rohoic Creek	James
VA	Lieutenant Run	James
VA	Second Swamp	Chowan
VA	Rowanty Creek and Tributaries	Chowan
VA	Arthur Swamp	Chowan
VA	Buckskin Creek	Chowan
VA	Hatcher Run	Chowan
VA	Nottoway River	Chowan
VA	Roses Creek	Chowan
VA	Great Creek	Chowan
VA	Briery Branch	Chowan
VA	Meherrin River	Chowan
VA	Taylors Creek	Chowan
VA	Shining Creek	Chowan
VA	Little Genito Creek	Chowan
NC	Fishing Creek	Tar
NC	Tar River	Tar
NC	Perry Creek (Greshams Lake)	Neuse
NC	Marsh Creek	Neuse
NC	Crabtree Creek	Neuse

Table 3-4
CWA 303(d) List of Impaired Surface Waters within Study Area

State	Stream Name	Basin
NC	Pigeon House Branch	Neuse

Sources: North Carolina Department of Environment and Natural Resources, 2012;
Virginia Department of Environmental Quality, 2010
The 303(d)-listed streams are also described below, including the type of impairment.

The 303(d)-listed streams in the Study Area are also described below, including the type of impairment.

3.1.1.2.1 JAMES RIVER BASIN

In the Lower James subbasin, streams that are on Virginia's 303(d) list of impaired streams include Goode Creek (cause of impairment: *Escherichia coli (E. Coli)*), Broad Rock Creek (*E. coli*), No Name Creek (*E. Coli*), Kingsland Creek (*E. coli* and pH), Proctors Creek (E. coli and benthic macroinvertebrates), Ashton Creek (E. Coli), and Timsbury Creek (pH). Notable streams in the Appomattox River subbasin that are on Virginia's 303(d) list of impaired streams include Oldtown Creek (benthic macroinvertebrates and fecal coliform), the Appomattox River (fecal coliform and PCB in fish tissue), Rohoic Creek (*E. coli*), and Lieutenant Run (*E. coli)*.

3.1.1.2.2 CHOWAN RIVER BASIN

Thirty streams in the SEHSR study area are on the NC or VA 303(d) list of impaired waters. High *E. coli* levels were the leading cause of impairment.

Second Swamp in the Blackwater River subbasin is listed on the Virginia 303(d) list of impaired streams due to *E. coli*, dissolved oxygen, and mercury in fish tissue. Streams in the Meherrin River subbasin on Virginia's 303(d) list include Taylor's Creek (*E. coli*), Shining Creek (*E. coli*), Briery Branch (*E. coli*), Little Genito Creek (benthic macro-invertebrates), Great Creek (*E. coli*), Roses Creek (*E. coli*), and the Meherrin River (*E. coli*). Streams in the Nottoway River subbasin that are on Virginia's 303(d) list of impaired streams include the Nottoway River (*E. coli*), Buckskin Creek (*E. coli*), Arthur Swamp (dissolved oxygen, mercury in fish tissue), Rowanty Creek and tributaries (dissolved oxygen), and Hatcher Run (dissolved oxygen, mercury in fish tissue).

3.1.1.2.3 ROANOKE RIVER BASIN

Lake Gaston (including the Roanoke River and Smith Creek arms) is on Virginia's 303(d) list of impaired streams for dissolved oxygen and PCBs in fish tissue in the Roanoke Rapids subbasin. Also on the Virginia 303(d) list are Hagood Creek (*E. coli*) and Smith Creek above Lake Gaston (dissolved oxygen, pH, and *E. coli*). Smith Creek and Nutbush Creek in the North Carolina portion of this basin have impaired biological integrity.

3.1.1.2.4 TAR-PAMLICO RIVER BASIN

Fishing Creek, south of Middleburg, is listed as impaired for aquatic life due to low dissolved oxygen. The Tar River is listed as impaired due to turbidity.

3.1.1.2.5 NEUSE RIVER BASIN

The southernmost section of the Study Area lies within Raleigh, NC in the Upper Neuse River and Crabtree Creek watershed. Streams in and around Raleigh have been severely impacted by urbanization. These streams, which have impaired biological integrity, include Perry Creek (Gresham's Lake) and Crabtree Creek, Pigeon House Branch, and Marsh Creek.

3.1.2 WETLANDS

US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, USGS 7.5-minute topographic quadrangle maps, US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil surveys, and recent color aerial photography were reviewed prior to field reconnaissance to identify potential wetland locations. Wetlands within the Study Area were delineated from October 2003 to January 2004, from March 2007 to May 2007, and in October and November 2012. Wetlands were delineated based on criteria established in the United States Army Corps of Engineers Wetlands Delineation Manual (United States Army Corps of Engineers (USACE), 1987). Within North Carolina, wetlands were also evaluated based on criteria established in the Guidance for Rating the Values of Wetlands in North Carolina (NCDEHNR, 1995).

474 wetland systems were identified within the Study Area, with 425 located in VA and 49 in NC.

Criteria used to delineate jurisdictional wetlands include evidence of hydric soils, hydrophytic vegetation, and hydrology. A total of 474 wetland systems were identified within the Study Area, with 425 located in Virginia and 49 in North Carolina. Wetlands subject to potential impact from the Project are listed in Appendix I and depicted on the maps included in Appendix R. A total of 810.5 acres of wetlands (760.8 acres in Virginia and 49.7 acres in North Carolina) were delineated within the Study Area. Jurisdictional wetland determinations were approved by USACE for application of impact avoidance and minimization protocols and field verified in 2013 for the preferred alternative.

810.5 acres of wetlands (760.8 acres in VA and 49.7 acres in NC) were delineated within the Study Area.

NCDWQ wetland ratings ranged from 14 to 90 (out of a possible 100 score) for wetlands in North Carolina. Wetlands in Virginia were similar to those found in North Carolina but were not rated using the NCDWQ rating protocol. Wetland communities are distinguished primarily by vegetation type and duration of hydrology.

Based on the Cowardin Classification (Cowardin et al., 1979), there are four primary wetland categories in the Study Area: palustrine forested (PFO), palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine unconsolidated bottom (PUB).

- Forested wetland occurs in narrow bands associated with rivers and streams and topographically low areas. Cowardin et al. (1979) typically identify this community as a Palustrine Forested Broad-leaved Deciduous habitat with temporary to seasonal flooding (PFO1A and PFO1C).
- Palustrine emergent communities occur most often within the Study Area in or near man-made or beaver-influenced ponds. These emergent wetlands are typically identified as Palustrine Emergent semi-permanently flooded habitats (PEM1F).
- Shrubs, young trees, and trees or shrubs that are small or have been stunted due to environmental conditions are all likely species to occur in a scrub-shrub wetland (Cowardin et al., 1979). This community within the Study Area is typically identified by Cowardin et al. (1979) as Palustrine Scrub-shrub Broad-leaved Deciduous habitat with temporary to seasonal flooding (PSS1A and PSS1C).
- Most of the unconsolidated bottom communities (PUB) are farm ponds located near the headwaters of small drainages where the flow of water has been obstructed by man-made dams. They are typically identified by Cowardin et al. (1979) as PUBHh or PUBHx.

The Cowardin Classification system is used and described on the NWI maps. However, some wetlands depicted on the NWI maps did not meet "jurisdictional" status within the Study Area. Also, many wetlands within the Study Area that were delineated in the field were not depicted on the NWI maps and did not have a Cowardin Classification.

The majority of wetlands in the Study Area in both Virginia and North Carolina are headwater forests, which may be of high quality. The NCDWQ rating scores for these wetland types in North Carolina ranged between 50 and 90. A more detailed description of the wetland types found in the Study Area is located in the Natural Resources Technical Report (NRTR) and Addendum prepared for the Project (NCDOT and Virginia DRPT, 2004a, 2008). A summary of wetlands delineated within the Study Area by section and state is provided in Table 3-1.

The need for specific identification of wetland functions or quality (beyond that established during the jurisdictional determination process) will be resolved during the Section 404 permitting process. If USACE determines the need for impacted wetland functional/quality analysis in order to evaluate mitigation options, then an appropriate method will be applied. Similar to the stream assessment approach (Section 3.1.1), determination of wetland impact avoidance, minimization, and mitigation for the purposes of NEPA decision-making is most efficiently approached by applying the basic dimension of the resource (area). More detailed approaches (such as the NC Wetland Assessment Methodology, NCWAM) to determine wetland function, quality, and value may be applied during the Clean Water Act Section 404 and 401 permitting processes in order to refine the mitigation requirement. This assessment has no bearing on the selection of the preferred alternative.

3.1.3 FLOODPLAINS AND FLOODWAYS

The Federal Emergency Management Agency (FEMA) defines a floodplain as any land area susceptible to being inundated by floodwater from any source during a 100-year flood event (also called a 1% flood). FEMA regulations provide management criteria for states and localities to follow in these areas. To assist states in determining 100-year floodplains, FEMA is involved in extensive mapping activities to delineate these areas (United States Department of Interior (US DOI) 1994)).

A floodplain is composed of two parts, the floodway and the floodway fringe. FEMA defines the regulatory floodway as the "channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the entire Base Flood (100-year flood) discharge can be conveyed with no greater than a 1.0-foot increase in the base flood elevation (BFE)" (FEMA, 2002). The floodway fringe is the area between the floodway boundary and the 100-year floodplain boundary.

Data from FEMA Flood Insurance Rate Maps (FIRMs) were analyzed and the FEMA Zone designations were determined for the 100-year FEMA floodplains that cross the Study Area. All of the FEMA floodplain crossings identified in the Study Area are shown on Figures 3-2 and 3-3. These flood zone crossings fall into three designations: Zone A, AE, or A1-A30. Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the Flood Insurance Study by approximate methods of analysis. Because detailed hydraulic analyses are not performed for such areas, no BFE or depths are shown within this zone. Zones AE and A1-A30 are the flood insurance rate zones that correspond to the 1-percent annual chance floodplains that are determined in the Flood Insurance Study by detailed methods of analysis. In most instances, BFE derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

The FEMA floodplain data were obtained from two different sources. The floodplain data for Virginia were obtained from the FEMA Map Service Center (USDOI, 2013). The floodplain data for North Carolina were obtained from the North Carolina interactive mapping site (North Carolina Floodplain Mapping Program, 2008).

Figure 3-2

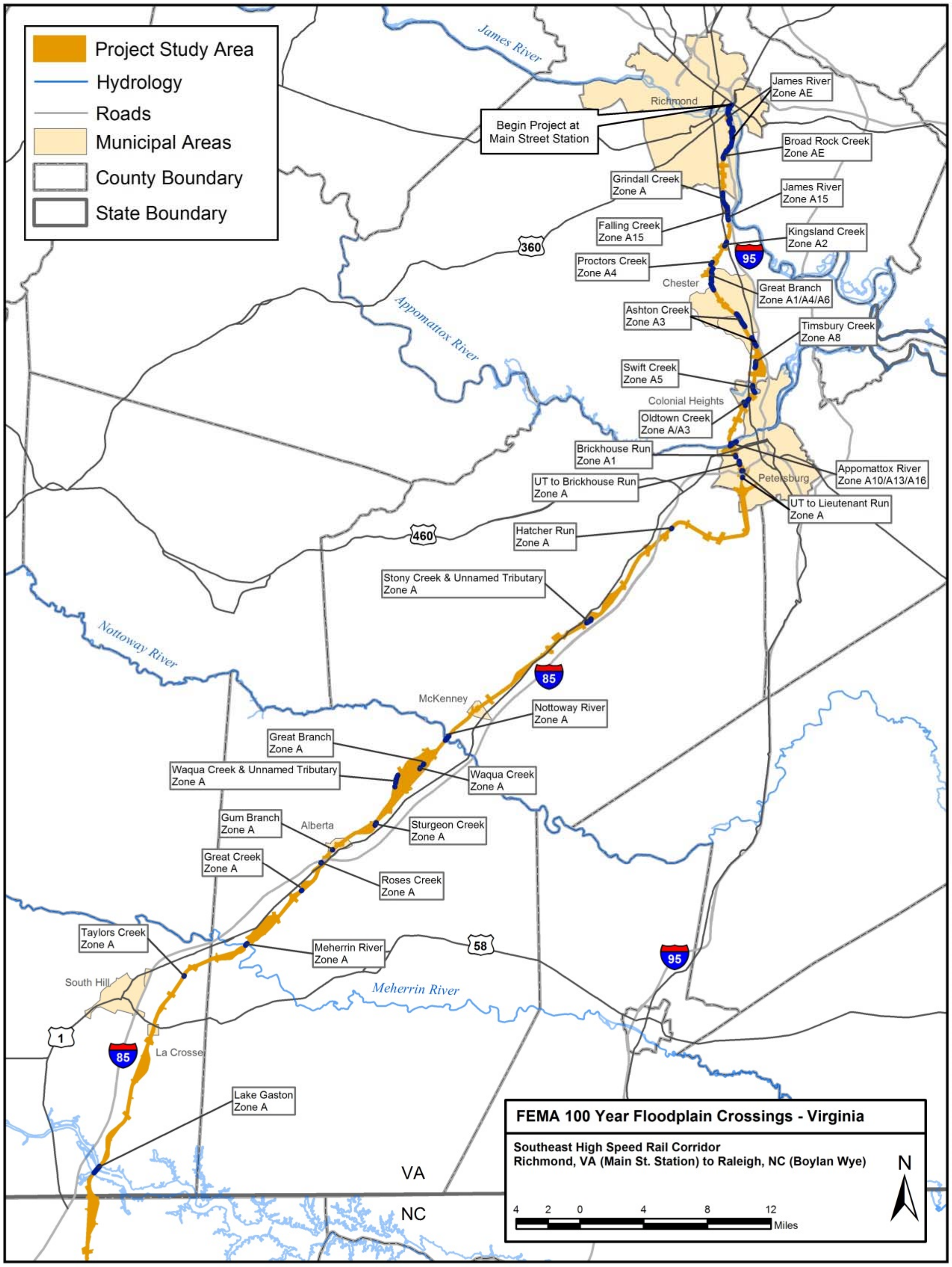
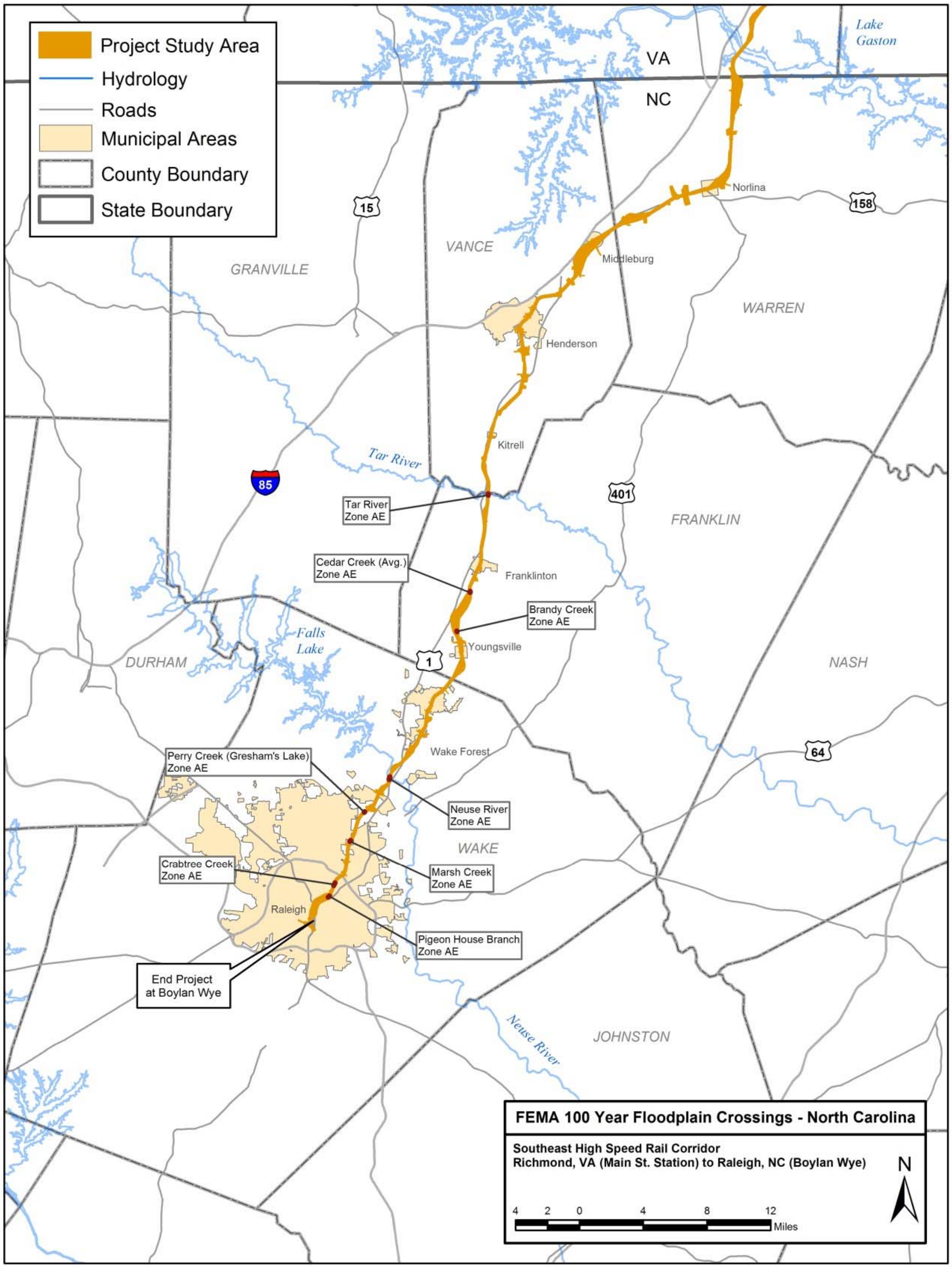

Project Study Area
Hydrology
Roads
Municipal Areas
County Boundary
State Boundary
James River
Richmond
Begin Project at Main Street Station
James River Zone AE
Broad Rock Creek Zone AE
Grindall Creek Zone A
James River Zone A15
Falling Creek Zone A15
Kingsland Creek Zone A2
Proctors Creek Zone A4
Chester
Great Branch Zone A1/A4/A6
Ashton Creek Zone A3
Timsbury Creek Zone A8
Appomattox River
Swift Creek Zone A5
Colonial Heights
Oldtown Creek Zone A/A3
Brickhouse Run Zone A1
Appomattox River Zone A10/A13/A16
UT to Brickhouse Run Zone A
Petersburg
UT to Lieutenant Run Zone A
Hatcher Run Zone A
Stony Creek & Unnamed Tributary Zone A
Nottoway River
McKenney
Nottoway River Zone A
Great Branch Zone A
Waqua Creek & Unnamed Tributary Zone A
Waqua Creek Zone A
Gum Branch Zone A
Alberta
Sturgeon Creek Zone A
Great Creek Zone A
Roses Creek Zone A
Taylors Creek Zone A
Meherrin River Zone A
Meherrin River
South Hill
La Crosse
Lake Gaston Zone A
VA
NC
360
95
460
85
58
1
FEMA 100 Year Floodplain Crossings - Virginia
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
N
4 2 0 4 8 12
Miles

Figure 3-3



Project Study Area
Hydrology
Roads
Municipal Areas
County Boundary
State Boundary
VA
NC
Lake Gaston
Norlina
158
15
VANCE
GRANVILLE
Middleburg
WARREN
Henderson
Kitrell
Tar River
85
Tar River Zone AE
401
FRANKLIN
Cedar Creek (Avg.) Zone AE
Franklinton
Brandy Creek Zone AE
Youngsville
Falls Lake
DURHAM
1
NASH
Wake Forest
64
Perry Creek (Gresham's Lake) Zone AE
Neuse River Zone AE
WAKE
Crabtree Creek Zone AE
Marsh Creek Zone AE
Raleigh
Pigeon House Branch Zone AE
End Project at Boylan Wye
Neuse River
JOHNSTON
FEMA 100 Year Floodplain Crossings - North Carolina
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
N
4 2 0 4 8 12
Miles

3.1.4 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§ 1271-1287) mandates that "[i]n all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas." The act establishes Wild Rivers as those which:

- Are free of impoundments (manmade dams)
- Have unpolluted waters
- Have watersheds or shorelines that are essentially primitive and undeveloped
- Are inaccessible except by trails

Scenic Rivers meet the first three of the above criteria; however, they can be accessible by roadways. Recreational Waters are readily accessible by road or railroad, have undergone some development along their shorelines, and may have undergone some impoundment or diversion in the past.

To meet requirements under Section 5(d) of this act, the National Park Service has established and maintains a Nationwide Rivers Inventory (NRI) of river segments that potentially qualify as a national Wild, Scenic, or Recreational river area. The NRI qualifies as a comprehensive plan under Section 10(a) (2) (A) of the Federal Power Act. To be listed in the NRI, a river must be free-flowing and possess one or more outstandingly remarkable values (ORVs). ORVs relate to such attributes as the scenery, recreational opportunities, and habitat provided.

Under provisions of the Wild and Scenic Rivers Act, if a Federal action compromises the designation of a Wild and Scenic River or forecloses the possibility of future designation (for rivers currently in the NRI), the implementation of the Federal action must be coordinated with the US Department of the Interior (USDOI). Applicable state standards for scenic rivers include the Commonwealth of Virginia Scenic Rivers Act and the North Carolina Natural and Scenic Rivers Act.

> Four rivers in the Nationwide Rivers Inventory (NRI) are also designated as Virginia Scenic Rivers in the Study Area. The James River (Historic Falls of the James) segments that are on the NRI are outside the Study Area. Tributaries to Lake Gaston (the Dan River, Bannister River, and Staunton River) are listed as Virginia Scenic Rivers upstream

There are four rivers in the NRI that are also designated as Virginia Scenic Rivers in the Study Area (see Table 3-5). However, the James River (Historic Falls of the James) segments that are listed on the NRI are outside the Study Area. Tributaries to Lake Gaston (the Dan River, Bannister River, and Staunton River) are listed as Virginia Scenic Rivers upstream of the Study Area. It should be noted that the Virginia Scenic River designation does not "preclude the Commonwealth or a local government body from constructing, reconstructing, operating, or performing necessary maintenance on any road or bridge project."

Two waterbodies in North Carolina (Fishing Creek, Neuse River) that pass through the Study Area are also listed in the NRI. However, the listed segments of these streams are located outside of the Study Area, and their potential listing would not be impacted by this Project.

Table 3-5
Streams in the Study Area Included in the Nationwide Rivers Inventory

River	Location	Listed ORV	DOI Comments
James River	Big Island to Gladstone Railyard; east of Glasgow to east of Buchanan; Mogarts Beach to Hopewell; west of Buchanan to Eagle Rock, Above Bosher dam to Bremo Bluff;	S, G, R, H, O	Cliffs, diverse scenery, undeveloped reaches west of Richmond, historic sites at Bremo and Midway Mill, rare plant communities
Appomattox River	Headwaters to Lake Chesdin (outside of the Study Area)	H,O	Wild river (longest, largest, least developed river in the Upper Piedmont of Virginia, passes through Appomattox Court House and Wigwam Historic Sites
Nottoway River	Fort Nottoway to Nottoway Reservoir, Sussex, Greenville, Dinwiddie, Brunswick, and Nottoway Counties, VA	O	Wild River, corridor and surrounding watersheds largely undeveloped
Meherrin River	Emporia, VA, to US-1, Greenville, Brunswick, Mecklenburg, and Lunenburg Counties, VA	O	Wild River, corridor and surrounding watersheds essentially undeveloped
Tar River	River Mile 99, SR 1933 Bridge to River Mile 192, Nash, Franklin, Vance, Granville, and Person Counties, NC	C, F, G, H, R, S, W	Attractive stream with several whitewater segments; secluded picturesque ravines and gorges.

Source: US DOI,2013
Notes:
O-Listed for other, unspecified reasons
C-Cultural resources
F-Fish resources
G-Geologic resources
H-Historic resources
R-Recreational resources
S-Scenic resources
W-Wildlife resources

3.1.5 US COAST GUARD WATERS

The United States Coast Guard (USCG) has jurisdiction over navigable waters. According to 33 C.F.R. 2.05-25, navigable waters are defined as waters subject to the ebb and flow of tide; or any water that is presently used and/or is susceptible to use in its natural condition, or by reasonable improvement, as a means to transport interstate and foreign commerce. A bridge permit from the USCG may be required for projects that construct a new bridge or reconstruct an existing bridge over navigable water.

The Project crossing of the James River in Richmond is the only waterway in the Study Area subject to USCG jurisdiction.

In a letter dated November 5, 2009, the USCG determined that the Project crossing of the James River in Richmond is the only waterway in the Study Area subject to USCG jurisdiction (Richmond to Raleigh Project Tier II DEIS Appendix A). The crossings of the Appomattox River (near Ettrick, VA), Nottoway River (near McKenney, VA), Meherrin River (vicinity of US-1 near South Hill, VA), Tar River (vicinity of US-1 at the border of Vance County, NC, and Franklin County, NC), and Neuse River (near Capital Boulevard just north of Raleigh) are not under USCG jurisdiction because they are not subject to tidal influence (Giese et al., 1985) nor are they used for interstate commerce. These rivers have active recreational use (e.g., kayaks and canoes), but cannot support commercial watercraft at these locations.

3.2 TOPOGRAPHY, GEOLOGY, AND SOILS

3.2.1 TOPOGRAPHY

The natural regions of Virginia and North Carolina are differentiated by the interaction of topography, geology, and soils. The northern portion of the Study Area (Richmond to Petersburg) lies within the Southeastern Plains ecoregion (USEPA, 2007a). The Cretaceous or Tertiary-age sands, silts, and clays of the region contrast geologically to the older igneous and metamorphic rocks of the Piedmont, and the older limestone, chert, and shale found in the Interior Plateau. Streams in this area are relatively low-gradient and sandy-bottomed (Purdue University, undated). The remainder of the Study Area lies within the Piedmont Physiographic Province. This physiographic province is generally characterized by broad uplands with low to moderate slopes and elevations between 130 to 600 feet above mean sea level. The slopes along the existing rail line range from 0 to 3%.

3.2.2 GEOLOGY

Bedrock within the Piedmont consists mainly of a variety of igneous and metamorphic rocks. There are some discrete zones of sedimentary rocks. Quaternary to Tertiary sandy clay and sandy saprolite with rock outcrops and joint-block boulders are located within the Study Area. In addition, much older Cambrian gneiss, schist, metavolcanic rock, and metamudstone are likely to occur within the Study Area. Mica schist is a typical source of parent material in the Piedmont, and soils are usually deep, rich in weathering products (clays and iron oxides), and have a red matrix color. Certain soils in the Study Area have a high shrink-swell potential. When these soils are wet, certain minerals will absorb large quantities of water, allowing the soil to expand or swell. As the soil dries, the clay minerals release the water and shrink. Shrink-swell potential is an important consideration when siting new structures.

3.2.3 SOILS

The process of soil development depends upon both biotic and abiotic influences. These influences include past geologic activities, nature of parent material, environmental and human influences, plant and animal activity, time, climate, and topography. The Study Area has been divided into the soil associations of each respective county. A soil association is a landscape that has a distinctive, proportional pattern of soils consisting of one or more major soils and at least one minor soil. The soils within an association can vary in slope, depth, stoniness, drainage, and other characteristics (United States Department of Agriculture (USDA), 1995).

These soil associations are described based on information obtained from USDA through published soils surveys, field technical guides, and unpublished information gathered from visits to NRCS county offices. The soil survey for City of Richmond was published in 2009 (NRCS, 2009). However, as stated in the Richmond to Raleigh Project Tier II DEIS, communication with NRCS revealed that USDA no longer maps soil associations, therefore descriptions are not available for this portion of the project Study Area. It should also be noted that the general soil descriptions for Franklin County are derived from a preliminary map obtained from the Geographical Information Systems unit of NRCS. Detailed descriptions of soil associations and individual soil units within the Study Area are located within the Project's Natural Resource Technical Report (NRTR) (NCDOT and Virginia DRPT, 2004a, 2008). Table 3-6 shows the soil associations for counties within the Study Area.

Table 3-6
Soil Associations Found in Counties within the Study Area

County	State	Most Common Soil Association	Description	Drainage	Comments
Chesterfield	VA	Faceville-Gritney-Kempsville	Dominantly clayey or loamy; moderate to moderately slow permeability	Well drained	Moderate shrink-swell potential
		Bourne-Aquults-Tetotum	Have a fragipan (subsoil layer consisting of high bulk density, brittle when moist and very hard when dry) or loamy or clayey; moderate to moderately slow permeability	Moderately well drained	Variable soils, High water table
		Tetotum-Bourne	Dominantly loamy or have a fragipan; moderate to moderately slow permeability	Moderately well drained	High water table
		Gritney-Atlee-Lenoir	Clayey to loamy; moderately slow to slow permeability	Well drained to somewhat poorly drained	Moderate shrink-swell potential
		Lucy-Orangeburg-Rumford	Dominantly loamy; moderate to moderately rapid permeability	Well drained to somewhat excessively drained	Silty, erodible
		Ochrepts and Udults-Vaucluse	Dominantly loamy; slow permeability	Excessively well drained to well drained	Highly variable soils
Colonial Heights and Petersburg	VA	Appling-Cecil	Sandy loam to clayey loam; Moderate permeability	Well drained	Low shrink swell potential
		Mattaponi-Appling-Cecil	Dominantly clayey texture; Moderately permeable to permeable	Moderately well drained to well drained soils	

Table 3-6
Soil Associations Found in Counties within the Study Area

County	State	Most Common Soil Association	Description	Drainage	Comments
		Roanoke-Slagle-Mattaponi	Clayey to loamy texture; Low to moderate permeability	Poorly to moderately well drained soils;	Moderate shrink swell potential
Dinwiddie	VA	Mattaponi-Appling-Cecil	Dominantly clayey texture; Moderately permeable to permeable	Moderately well drained to well drained soils	
		Roanoke-Slagle-Mattaponi	Clayey to loamy texture; Low to moderate permeability	Poorly to moderately well drained soils;	Moderate shrink swell potential
		Emporia-Mattaponi-Slagle	Loamy subsoil; Moderate permeability	Moderately well drained to well drained	Moderate shrink swell potential
		Appling-Cecil	Sandy Loam to clayey loam; Moderate permeability	Well drained	Low shrink swell potential
		Herndon-Georgeville	Silty to clayey loam surface, silty loam subsurface; Moderate permeability	Well drained	
Brunswick	VA	Cecil-Appling	Sandy loam to clayey loam; Moderate permeability	Well drained	Low shrink swell potential
		Appling-Helena	Clayey soils; Low to moderate permeability	Well drained to moderately well drained	
Mecklenburg	VA	Appling-Wedowee-Louisburg	Sandy loam to clayey loam; Moderate to High permeability	Well drained	
		Cecil-Hiwassee-Pacolet	Clayey loam; Moderate to moderately high permeability	Well drained	
		Cecil-Madison-Enon	Sandy loam surface, clayey subsurface; Moderate permeability	Well drained	Moderate shrink swell potential

Table 3-6
Soil Associations Found in Counties within the Study Area

County	State	Most Common Soil Association	Description	Drainage	Comments
Warren	NC	Pacolet-Cecil	Sandy loam or loam surface, clayey subsurface; Moderate permeability	Well drained	Low shrink swell potential
		Cecil-Appling	Sandy loam to clayey loam; Moderate permeability	Well drained	
		Pacolet-Wedowee	Sandy loam to clayey loam; Moderate permeability	Well drained	Low shrink swell potential
		Vance-Helena	Sandy loam surface, clayey subsurface; Moderate permeability	Well drained	
		Pacolet-Saw	Sandy loam surface, clayey to coarse loamy subsurface; Moderate to high permeability	Well drained to excessively drained	
Vance	NC	Appling	Loamy surface, clayey subsurface; Moderate to moderately high permeability	Well drained	Low shrink swell potential
		Wedowee-Louisburg-Pacolet	Sandy to loamy surface, clayey to loamy subsurface; Moderate to high permeability	Well drained to excessively drained	Low shrink swell potential
Franklin	NC	Wedowee-Helena	Loamy surface, clayey subsurface; Moderate to moderately high permeability	Well drained to moderately well drained	
		Wake-Wedowee-Wateree	Sandy or loamy surface, sandy, loamy or clayey subsurface; Very low to moderate permeability	Well drained to excessively drained	
		Cecil-Pacolet	Loamy surface, clayey subsoil; Moderate permeability	Well drained	Low shrink swell potential

Table 3-6
Soil Associations Found in Counties within the Study Area

County	State	Most Common Soil Association	Description	Drainage	Comments
		Appling-Vance-Helena	Sandy or loamy surface, clayey subsurface; Low to moderately high permeability	Well drained	
		Winnsboro-Wilkes	Loamy surface, clayey subsurface; Very low to moderate permeability	Well drained	
Wake	NC	Cecil -Appling	Loamy surface, loamy to clayey subsurface; Moderate permeability	Well drained	Low shrink swell potential
		Cecil	Loamy surface, clayey subsurface: Moderate permeability	Well drained	Low shrink swell potential
		Appling-Louisburg-Wedowee	Friable sandy loam to firm clay subsurface: Moderate to moderately high permeability	Well drained to excessively drained	Low shrink swell potential

3.3 PRIME AND OTHER IMPORTANT FARMLAND

Prime farmland" is defined as soils best suited for producing food, feed, fiber, forage, and oil seed crops.

"Unique farmlands" are used for production and specific high-value food or fiber crops.

"Statewide importance" and "locally important" are terms that are defined by the appropriate state or local government agency as soils important in the agriculture of an individual county.

The Farmland Protection Policy Act (FPPA) of 1981 (7 U.S.C. 4202(a)) requires all Federal agencies to consider the impact of their activities on prime, unique, statewide, and locally important farmland soils, as defined by the USDA NRCS. The NRCS, in cooperation with state and local agencies, developed a listing of Prime and Statewide Important Farmland for Virginia and North Carolina by county.

"Prime farmland" is defined as soils best suited for producing food, feed, fiber, forage, and oil seed crops. These soils are favorable for all major crops common to the county, have a favorable growing season, and receive the available moisture needed to produce high yields on an average of eight out of every ten years. Land already in or committed to urban development or water storage is not considered prime farmland. In addition, the classification for a particular soil unit may be limited to only those lands that are drained and/or only those lands that are protected from or not frequently flooded.

"Unique farmlands" are used for production and specific high-value food or fiber crops. They have the special combinations of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed.

"Statewide importance" and "locally important" are terms that are defined by the appropriate state or local government agency as soils important in the agriculture of an individual county. These definitions are based on measures of the capacity of the soil to support productive farm activity, not of current cultivation.

To determine prime and other important soils in the Study Area, soils data were collected for each of the Project counties and GIS analyses were used to identify FPPA soils. Table 3-7 lists the approximate acres of prime and other important soils within each of the counties in the Study Area. It is important to note that although areas of water, or urban or built-up land uses are not considered prime farmland by definition, NRCS does not spell out exactly the manner in which they determine these areas. Therefore, there is the potential that Table 3-7 overstates the amounts of prime farmland soils in the Study Area.

Table 3-7
Acres of Prime and Other Important Farmland Soils within Study Area

Location	Prime	Prime if drained	Prime if drained and protected from/not frequently flooded	Prime if protected from/not frequently flooded	Statewide Importance	Local Importance
Richmond, VA	60	0	0	< 1	0	0
Chesterfield County, VA	931	223	0	0	116	0
Colonial Heights, VA	29	0	0	0	20	0
Petersburg, VA	503	0	0	0	54	0
Dinwiddie County, VA	3,096	0	0	0	785	0
Brunswick County, VA	2,533	29	486	0	788	0
Mecklenburg County, VA	1,883	0	0	0	1,332	0
Subtotal – VA	9,035	252	486	< 1	3,095	0
Warren County, NC	2,464	0	0	0	641	0
Vance County, NC	2,393	0	0	0	514	0
Franklin County, NC	1,304	0	49	0	486	0

Table 3-7
Acres of Prime and Other Important Farmland Soils within Study Area

Location	Prime	Prime if drained	Prime if drained and protected from/not frequently flooded	Prime if protected from/not frequently flooded	Statewide Importance	Local Importance
Wake County, NC	1,040	0	0	0	1,000	74
Subtotal – NC	6,948	0	49	0	2,131	72
Total – Study Area	15,983	252	535	< 1	5,226	72

3.4 MINERAL RESOURCES

Mineral resources have played an important role in the growth and development of North Carolina and Virginia since their settlement. According to the USGS, the estimated value of non-fuel mineral production for Virginia was $1.13 billion in 2008 and the estimated value for North Carolina in 2009 was $846 million. In 2008, Virginia ranked twenty-first among the 50 states in total non-fuel mineral production value and North Carolina ranked twenty-fourth in 2009(USGS, 2012; USGS, 2013).

Crushed stone is, by value, the leading non-fuel mineral in both Virginia and North Carolina

Crushed stone is, by value, the leading non-fuel mineral in both Virginia and North Carolina, accounting for about 59% of Virginia's total non-fuel mineral production value and about 69% of that of North Carolina. Construction gravel and sand was the second leading non-fuel mineral, followed by Portland cement, lime, and zirconium concentrates. These five mineral commodities represented 87% of the State's total nonfuel mineral value (USGS, 2012). In North Carolina, phosphate rock was second based on value, followed by construction sand and gravel and industrial sand and gravel, dimension stone, and feldspar (USGS, 2012, and USGS, 2013).

Based on a review of the USGS Mineral Resources Data System (MRDS) online database and the North Carolina Permitted Active and Inactive Mines database, there are three listed mines in Virginia and four in North Carolina within the Study Area. These mines are:

- Carter Sand and Gravel Company, located in Richmond, VA (listed as past producer)
- McGowan Quarry, located in Richmond, VA (listed as past producer)
- Rowlings Quarry, located in Brunswick County, VA (listed as past producer)
- Vulcan-Greystone Quarry, located in Vance County, NC
- Franklin Quarry, located in Franklin County, NC
- Raleigh Quarry, located in Wake County, NC
- Rowland Mine in Wake County, NC (listed as past producer) (USGS, 2008).

3.5 HAZARDOUS MATERIAL

Several Federal laws, including the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), regulate hazardous materials use and hazardous waste sites. RCRA defines hazardous waste as a material that "because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or otherwise managed" 42 U.S.C. §§6901-6992k.

Hazardous wastes can exist as solids, sludge, liquids, or vapors. Hazardous waste sites can include landfills, industrial facilities, lagoons, underground and aboveground storage tanks, solvent disposal sites, shooting ranges, and wood treatment plants.

Environmental Data Resources (EDR) conducted a review of records in several state and Federal databases to gather data on sites that are listed in various hazardous waste inventories for the Petersburg to Raleigh corridor in 2004 and for the Richmond to Petersburg corridor in 2008. The purpose of this review was to determine if sites listed in these inventories were located within the proposed Study Area. The following Federal databases included information on sites within the Study Area:

- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)/ Toxic Substances Control Act (TSCA) Tracking System
- Corrective Action Report – CORRACTS
- Formerly Used Defense Sites – FUDS
- EDR Proprietary Manufactured Gas Plants Database
- Integrated Compliance Information System (ICIS)
- Resource Conservation and Recovery Information System (RCRIS)
- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
- CERCLIS No Further Remediation Action Planned (CERCLIS-NFRAP)
- Polychlorinated Biphenyl (PCB) Activity Database (PADS)
- Hazardous Materials Information Reporting System (HMIRS)
- Emergency Response Notification System (ERNS)
- Mines Master Index File (MINES)
- Toxic Substances Control Act (TSCA)
- FIFRA/TSCA Tracking System Administrative Case Listing (HIST-FTTS)
- RCRA Conditionally Exempt Small Quantity Generators (CESQG)
- RCRA – NRL-Non-generator)
- Material Licensing Tracking System (MLTS)
- Facility Index System/Facility Identification Initiative Program Summary Report (FINDS)
- Toxic Release Inventory System (TRIS) (EDR, 2004, 2008)

Based on the EDR review, the following state databases provided information on sites within the Study Area:

- Hazardous Substance Disposal Site (HSDS) – NC
- State Dry Cleaners Database – NC
- State Dry Cleaners Database – VA
- Comprehensive Environmental Data System – CEDS
- Leaking Underground Storage Tank (LUST) State Trust Fund Database – NC
- Voluntary Remediation Program – VA
- Voluntary Remediation Program, Brownfields – VA
- Registered Petroleum Storage Tanks - NC, VA
- Inactive Hazardous Sites Inventory – NC

- Incident Management Database – NC
- LUST Information System - NC, VA
- Solid Waste Management Facilities - NC, VA
- Pollution Complaint Database – VA
- Registered Petroleum Storage Tanks – VA
- Permitted Air Facility List – VA
- Petroleum Underground Storage Tank Database – NC
- Leaking Petroleum Storage Tanks - VA (EDR, 2004, 2008).

254 potentially hazardous sites in Virginia and 809 in North Carolina are within 2,000 feet of the SEHSR corridor. A vast majority of the sites were concentrated between Richmond and Petersburg in VA and in Wake County, NC.

The sites found by the EDR query are shown in Appendix J of the Richmond to Raleigh Project Tier II DEIS. Sites were included if they were located within American Society for Testing and Materials (ASTM) recommended distances to the Study Area. This distance extends 2,000 feet from the Study Area. There were 254 sites within Virginia and 809 in North Carolina. A vast majority of the sites were located between Richmond and Petersburg (225 sites) and in Wake County (602, of which 543 sites were within the Raleigh area). A number of the sites in Wake County are registered petroleum storage tanks (Appendix J, SEHSR Richmond to Raleigh Project Tier II DEIS) (EDR, 2004, 2008).

In September 2010, Mallinckrodt, Inc., doing business as Covidien, informed NCDOT that one of its facilities is located in the Study Area. The site, located in Wake County at the intersection of Capital Boulevard and Durant Road, has operations on each side of the existing CSX S-Line, but was not identified during development of the Richmond to Raleigh Project Tier II DEIS. The parcels on which the site is located are large, and the georeferenced coordinates for the site were outside the boundary of the Study Area. The portion of the Covidien site within the Study Area includes transfer material lines, application fields, monitoring wells, stormwater retention basins, and fencing, impacts to this site are discussed in Chapter 4, Section 5 of this FEIS.

Based on a review of the information queried by EDR, the list of potentially contaminated sites should be considered as a screening level study. There are some important caveats to these data. In some databases, sites that have completed the remediation process may be included with sites that require cleanup. Other data sources, such as petroleum tank listings or brownfield inventory databases, may list sites that are not contaminated. Some sites were listed in multiple databases, and in some cases there was repetition of sites in the same database. For some entries, the names for sites at the same latitude and longitude differ. When this occurs, it is not always possible to determine if the sites are unique. Additional research would be required to fully evaluate the potential Project construction and operation to impact these sites.

3.6 AIR QUALITY

Transportation sources generate varying amounts of ozone (O3) and its precursors; nitrogen oxides (NOX); hydrocarbons (HC) (specifically volatile organic compounds (VOCs)); particulate matter (PM); and/or carbon monoxide (CO) emissions, all of which are concerns for human and environmental health.

Ozone is a highly reactive pollutant that damages lung tissue, causes congestion, reduces vital lung capacity, and can also damage vegetation. Nitrogen oxides are an important precursor both to ozone and acid rain, and may affect both terrestrial and aquatic ecosystems. The major mechanism for the formation of NO2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO). NOX plays a major role with VOCs to produce O3. The two major emissions sources are transportation and stationary fuel combustion sources, such as electric utilities and industrial boilers.

PM is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Particles less than 10 micrometers in diameter (PM10) pose a health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter (PM2.5) are referred to as "fine" particles and are believed to pose the largest health risks. CO is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks (USEPA, undated).

3.6.1 REGULATORY SETTING

This section describes the applicable state and Federal regulations governing air quality in the Study Area. It also discusses the progress Virginia and North Carolina have made toward achieving air quality standards in the Study Area.

3.6.1.1 *NATIONAL AMBIENT AIR QUALITY STANDARDS (40 CFR PART 50)*

The Clean Air Act (CAA) and 1990 Clean Air Act Amendments (CAAA) required the USEPA to establish NAAQS for pollutants considered harmful to public health and the environment. The NAAQS are implemented by USEPA in the Code of Federal Regulations (CFR) under 40 CFR Part 50. The CAA established two types of national air quality standards. Primary standards set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Table 3-8 lists the primary and secondary standards.

Table 3-8
National Ambient Air Quality Standards

Pollutant [final rule cite]	Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]	Primary and Secondary	Rolling 3 month average	0.15 μg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9.2010] [61 FR 52852, Oct 8, 1996]	Primary	1-hour	100 μg/m^3	98th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb (2)	Annual mean
Ozone [73 FR 16436, Mar 27, 2008]	Primary and Secondary	8-hour	0.075-hour (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution Dec 14, 2012 — $PM_{2.5}$	Primary	Annual	12 μg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual	15 μg/m^3	Annual mean, averaged over 3 years

Table 3-8
National Ambient Air Quality Standards

Pollutant [final rule cite]	Primary/ Secondary	Averaging Time	Level	Form
	Primary and Secondary	24-hour	35 $\mu g/m^3$	98^{th} percentile, averaged over 3 years
PM_{10}	Primary and Secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per years on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]	Primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA; December 14, 2012
(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
(2) The official level of the annual NO2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

3.6.1.2 *CLEAN AIR ACT AMENDMENTS – TITLE I*

Title I of the CAAA addresses nonattainment issues related to O_3, CO, and PM_{10}. Nonattainment areas are progressively ranked according to the severity and type of their air pollution problems. Each category of nonattainment has a label such as severe or moderate and a date for meeting the NAAQS.

3.6.1.3 *CLEAN AIR ACT AMENDMENTS – TITLE II*

Title II of the CAAA addresses mobile sources and stipulates more stringent emission standards for cars, trucks, and buses. This title also regulates fuel quality (such as gasoline volatility and diesel sulfur content); requires reformulated gasoline in the highest O_3 areas and oxygenated fuels in the highest CO areas; and requires clean-fueled vehicles for certain fleets and other pilot programs.

3.6.1.4 *CLEAN AIR ACT CONFORMITY*

The CAAA require Federal agencies to ensure that their actions conform to the appropriate State Implementation Plan (SIP). States are required to develop SIPs that explain how they will meet the requirements of the CAA. The SIP is a plan for implementation, maintenance, and enforcement of the NAAQS, and includes emission limitations and control measures to attain the standards. States must involve the public in the development of the SIP through hearings and opportunities to comment. In Virginia, the State Air Pollution Control Board administers the SIP. In North Carolina, the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Air Quality administers the SIP.

Conformity to a SIP, as defined in the CAAA, means conformity to a SIP's purpose of reducing the severity and number of violations of the NAAQS to achieve attainment of such standards. The Federal agency responsible for the action is required to determine if its action conforms to the applicable SIP. The USEPA has developed two sets of conformity regulations:

- Transportation projects developed or approved under the Federal Aid Highway Program or Federal Transit Act are governed by the "transportation conformity" regulation (40 CFR Part 3, Subpart A)

Other projects, which include the Federal action planned for the Project, are governed by the "general conformity" regulations. The regulations for *Determining Conformity of General Federal Actions to State or Federal Implementation Plans* were published in the *Federal Register* on November 30, 1993. The general conformity regulation (40 CFR Part 93, Subpart B) became effective January 31, 1994. In Virginia, general conformity criteria and procedures are set forth in 9VAC5-10-20. In North Carolina, these criteria and procedures are set forth in 15 NCAC.200-.2004

The regulations require that funding for construction be identified before a project can be included in a conformity analysis. Projects that are "Exempt from Regional Emissions Analysis" are listed in 40 CFR Part 93.126, and include "Planning and technical studies." Because the Project is currently funded only at the planning level and does not have a dedicated funding source for construction, it falls under the exempt status.

The conformity regulations apply to Federal actions occurring in air basins designated as nonattainment areas for pollutants in the NAAQS (Table 3-8) or in attainment areas subject to maintenance plans (maintenance areas). Federal actions occurring in air basins that are in attainment with criteria pollutants are not subject to the conformity rule.

The regulations require that funding for construction be identified before a project can be included in a conformity analysis. Projects that are "Exempt from Regional Emissions Analysis" are listed in 40 CFR Part 93.126 (Tables 2 and 3), and include "Planning and technical studies." Because the Project is currently funded only at the planning level and does not have a dedicated funding source for construction, it falls under the exempt status. Once funding is secured for ROW purchase and construction, conformity analyses will be performed in accordance with 40 CFR Part 93.

3.6.1.5 *CLEAN AIR NONROAD DIESEL RULE*

In June 2004, as part of the Clean Air Nonroad Diesel Rule, USEPA finalized new requirements for nonroad diesel fuel that will decrease the allowable levels of sulfur in fuel used in locomotives by 99%. Since sulfur damages exhaust emission control devices, these fuel improvements will reduce PM from existing engines. Diesel fuel currently has a sulfur content of about 3,000 ppm. The new rule cut that amount to 15 ppm in 2014.

3.6.1.6 *MOBILE SOURCE AIR TOXICS (MSATS) RULE*

In February 2007, USEPA finalized a rule to reduce hazardous air pollutants from mobile sources (Control of Hazardous Air Pollutants from Mobile Sources, February 26, 2007). The rule limited the benzene content of gasoline and reduced toxic emissions from passenger vehicles and gas cans. At that time, USEPA estimated that in 2030 this rule would reduce total emissions of mobile source air toxics by 330,000 tons and VOC emissions (precursors to ozone and $PM_{2.5}$) by over 1 million tons.

USEPA has adopted many mobile source emission control programs that, in addition to controlling pollutants such as hydrocarbons, particulate matter, and nitrogen oxides, will also result in large air toxic reductions. Examples of these control programs include the following:

- Heavy-duty Onboard Diagnostic Rule (PDF) (74 FR 8310, 119 pp, 825K, published February 24, 2009)
- Small SI and Marine SI Engine Rule (PDF) (73 FR 59034, 347 pp, 3.69MB, October 8, 2008)
- Locomotive and Commercial Marine Rule (PDF) (73 FR 25098, 255 pp, 2.08MB, published May 6, 2008)
- Clean Air Nonroad Diesel Rule (PDF) (69 FR 38957, 316 pp, 1,87K, published June 29, 2004)
- Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements (PDF) (66 FR 5002, 192pp, 1.71MB, published January 18, 2001)
- Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements (PDF) (65 FR 6698, 173 pp, 1.14MB, published February 10, 2000)

USEPA has developed additional diesel-related programs to reduce diesel particulate matter under the National Clean Diesel Campaign, which encompasses a variety of programs to reduce diesel emissions.

3.6.1.6.1 LOCOMOTIVE AND COMMERCIAL MARINE RULE

In May 2008, USEPA published the final rule adopting a comprehensive program to dramatically reduce pollution from locomotives, applying to all types of locomotives. This final rule completes an important step in USEPA's ongoing National Clean Diesel Campaign (NCDC) by adding new programs for locomotives and marine diesel engines to the clean diesel initiatives that have been already undertaken for highway, other nonroad, and stationary diesel engines in 2004. It significantly strengthens the locomotive and marine diesel programs proposed in April 2007, especially in controlling emissions during the critical early years through the early introduction of advanced technologies and the more complete coverage of existing engines. When fully implemented, this coordinated set of new programs will reduce harmful diesel engine emissions to a small fraction of their previous levels.

Today, locomotives and marine diesel engines account for about 20% of mobile source NO_X emissions and 25% of mobile source diesel $PM_{2.5}$ emissions in the U.S. Absent this final action, by 2030 the relative contributions of NOx and $PM_{2.5}$ from these engines would have grown to 35 and 65%, respectively.

On a nationwide annual basis, these reductions will amount to 800,000 tons of NO_X and 27,000 tons of PM by the year 2030. For locomotives, the reduction from existing standards in PM Tiers 0 through 4 locomotives will be approximately 60, 50, 50, 50, and 90%, respectively. The reduction in NO_X for range year Tiers 0 through 4 will be approximately 20, 20, 20, 20, and 80%, respectively. All Tier idle emissions are predicted to be reduced by 50% for both PM and NO_X.

3.6.1.7 *PM HOT-SPOT ANALYSIS*

On March 10, 2006, USEPA published a final rule (40 CFR 93.116) that establishes transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. The rule was followed by a March 29, 2006, guidance document issued jointly by USEPA and the Federal Highway Administration (FHWA), which provides information for state and local agencies to meet the hot-spot requirements established in the final transportation conformity rule. The USEPA published a final rule on January 15, 2013 (effective March 13, 2013), making revisions to $PM_{2.5}$ standards. The annual standard was lowered from 15.0 micrograms per cubic meter to 12.0. Corresponding revisions were also made to the data handling conventions and to the ambient air monitoring, reporting and network design requirements.

Hot-spot analyses are not required for projects in $PM_{2.5}$ or PM_{10} attainment area or if they are exempt from regional transportation conformity according to 40 CFR93.126 or 93.128.

3.6.2 AFFECTED ENVIRONMENT

Potential air quality impacts of the proposed Project include:

- Changes in rail-related emissions due to an increase in train operations each day and a change in equipment
- Changes in the overall emissions from transportation sources
- Changes in local (microscale) ambient air quality emissions, including changes from locomotive passbys, changes at various crossings that could handle additional traffic due to nearby highway-railroad crossing closures, and changes in vehicular delay due to increased traffic resulting from increased ridership

In this section, existing ambient air quality conditions and emissions in the Project corridor and at specific locations are identified.

3.6.2.1 *AMBIENT AIR QUALITY IN THE STUDY AREA*

3.6.2.1.1 ATTAINMENT/NONATTAINMENT/MAINTENANCE DESIGNATIONS

The USEPA, VADEQ, and NCDENR maintain a network of monitoring stations that sample ambient air pollutant concentrations and provide data to assess the impact of control strategies. Monitoring data from these stations are stored in the USEPA Air Quality System (AQS) database (http://www.epa.gov/ttn/airs/airsaqs/). There are no ambient monitoring stations in the Virginia section of the Study Area. However, there are two stations in Chesterfield County that monitor various pollutants west of the Study Area. There is a PM2.5 monitor at 6700 Strathmore Road and an ozone monitor at the intersection of County Roads 655 and 654. There is also a nearby CO monitor in the City of Richmond, at the Science Museum of Virginia at the intersection of DMV Drive and W Leigh Street. Within the North Carolina section of the Study Area, there are two stations in Wake County and one station in Franklin County. Of the Wake County stations, the closest to the Study Area is located in Raleigh on Spring Forest Road. The Franklin County station is located on South Hillsborough Street.

In the following section, AQS data for the transportation-related pollutants from 2012 (the last available full year) are presented and compared to the air quality standards in Table 3-8. The pollutants relevant to the Project are those emitted from transportation sources, including 8-hour O_3, CO, NO_X, and $PM_{2.5}$.

3.6.2.1.1.1 *8-HOUR OZONE*

From 1980 to 2010, there was a 28% decrease in the 8-hour design value O_3 concentrations in the United States. A design value is a statistic that describes the air quality status of a

In the project area, both VA and NC are listed as maintenance areas for the ozone standard. In 2012, the 8-hour O3 standard was exceeded 3 days in Chesterfield County, VA, 1 day in Franklin County, NC, and 3 days in Wake County, NC given area relative to the level of the National Ambient Air Quality Standards (NAAQS).

In the Project area, both Virginia (Richmond-Petersburg) and North Carolina (Raleigh-Durham-Chapel Hill) are listed as maintenance areas for the ozone standard.

The 8-hour standard was exceeded 3 days in 2012 at the intersection of County Roads 655 and 654 in Chesterfield County, VA.

The 8-hour standard was exceeded 3 days in 2012 at the Spring Forest Road station in Raleigh, NC, in Wake County.

The 8-hour standard was exceeded 1 day in 2012 at the South Hillsborough Street station in Franklin County, NC.

3.6.2.1.1.2 *CARBON MONOXIDE*

From 2000 to 2010, there was an 82% decrease in the annual 2nd maximum 8-hour average, which is the second highest 8-hour average concentration of CO in a year. Currently, there are no nonattainment areas in the United States.

The Project is in areas currently designated as being in attainment of the standard in VA and are in areas designated as maintenance for Wake and Franklin counties in NC.

The Project is in areas that are currently designated as being in attainment of the standard in Virginia and are in areas designated as maintenance for Wake and Franklin counties in North Carolina. The 8-hour (9 ppm) and 1-hour (35 ppm) CO standard was not exceeded at any of the Study Area monitoring stations during 2012 and there are currently no nonattainment areas in the United States.

3.6.2.1.1.3 *NITROGEN DIOXIDE*

From 1980 to 2010, there was a 52% decrease in the annual NO_2 average (i.e., arithmetic mean) in the United States.

The Project is in areas that are currently designated as being in attainment of the standard. There are no NO_2 monitoring stations in the Study Area.

3.6.2.1.1.4 *PARTICULATE MATTER*

From 1990 to 2010, there was a 38% decrease in the design value PM10 concentration averages. From 2000 to 2010, there was a 27% decrease in the design value PM2.5 concentration averages in the United States.

The Project is in areas that are currently designated as being in attainment of the $PM_{2.5}$ (15 µg/m^3 annual mean, 35 µg/m^3 24-hour average) standards. These standards were not exceeded at any of the Study Area monitoring stations during 2012.

The Project is in areas that are currently designated as being in attainment of the $PM_{2.5}$ standards. These standards were not exceeded at any of the Study Area monitoring stations during 2012.

3.6.2.1.2 AIR QUALITY INDEX

The USEPA created the Air Quality Index (AQI) to enhance the public's understanding of air pollution. Previously known as the Pollutant Standards Index, this uniform air quality index is used by state and local agencies for reporting on daily air quality to the public. The AQI provides general information to the public about air quality and associated health effects. It provides information on pollutant concentrations for ground-level O_3, PM, CO, SO_X, and NO_X. The AQI is "normalized" across pollutants so that a value of 100 represents the level of health protection associated with the health-based standard for each pollutant and a value of 500 represents the significant harm level.

An AQI value between 0 and 50 is considered "good." Within this range, air quality is considered satisfactory, and air pollution poses little or no risk. Values between 51 and 100 are considered "moderate." "Moderate" air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to O_3 may experience respiratory symptoms. AQI values between 101 and 150 are considered "unhealthy for sensitive groups." This means they are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to O_3, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range. AQI values greater than 150 are considered "unhealthy." This includes the AQI categories unhealthy, very unhealthy, and hazardous. In general, very few locations across the United States ever have days in the very unhealthy or hazardous categories.

There are 3 AQI monitoring stations in the Study Area. All 3 stations were rated good more than 85% of the time.

There are three AQI monitoring stations in the Study Area. AQI summaries for 2012 for these stations are presented in Table 3-9.

Table 3-9
2012 Air Quality Index Summary

County	Percent of Days			
	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy
Chesterfield County, VA	89%	10%	1%	0%
Franklin County, NC	90%	10%	<0.5%	0%
Wake County, NC	85%	14%	1%	0%

Source: USEPA, 2012 AQI Reports

3.6.2.2 *EXISTING AMBIENT POLLUTANT CONCENTRATIONS AT SELECTED SITES*

This section describes the existing ambient pollutant conditions at selected sites within the Study Area. Carbon monoxide was chosen for microscale assessment because it is a site-specific pollutant, with higher concentrations generally found adjacent to roadways.

In VA and NC, the 1-hour and 8-hour ppm CO standards were not exceeded in the Project area for 2012.

In contrast, ozone, and its precursors NO_X and HC, are not site-specific; rather, they are of regional concern and, therefore, were not considered in the microscale analysis.

$PM_{2.5}$ analysis was not performed since the Project is in areas that are in attainment of the standard.

3.6.2.2.1 **CARBON MONOXIDE**

In Virginia and North Carolina, the 1-hour and 8-hour ppm CO standards (35 and 9 ppm, respectively) were not exceeded in the Project area for 2012.

Microscale CO analyses are presented in Chapter 4 for the worst-case signalized intersections in Virginia and North Carolina where traffic will be routed as a result of the consolidation of existing at-grade rail crossings to grade separations (see Section 2.2.1.2 for more information). The location of these intersections was chosen based on the worst Level-of-Service (LOS) and predicted traffic volumes. The LOS of an intersection is a qualitative measure of capacity and operating conditions and is directly related to vehicle delay. LOS is given a letter designation from A to F, with LOS A representing very short delays and LOS F representing very long delays. In the North Carolina portion of the Project, the worst-case intersection is New Hope Church Road and Atlantic Avenue in Wake County. In the Virginia portion of the Project, the worst-case intersection is Centralia Road and Chester Road in Chesterfield County.

Microscale CO concentrations were predicted with the USEPA approved MOVES and CAL3QHCR computer models for the peak 1-hour and 8-hour time periods, corresponding to the averaging periods of the NAAQS.

3.6.2.2.2 PARTICULATE MATTER

Projects can initially be screened out and a conformity determination made if they do not fall within a $PM_{2.5}$ or PM_{10} nonattainment area or if they are exempt from regional transportation conformity according to 40 CFR93.126 or 93.128.

As mentioned above, the Project is in areas that are currently designated as being in attainment of the PM standards. These standards were not exceeded at any of the Study Area monitoring stations during 2012. Therefore, based on this information, no PM hot-spot analysis is required.

> The Project is in areas that are currently designated as being in attainment of the PM standards. These standards were not exceeded at any of the Study Area monitoring stations during 2012. Therefore, no PM hot-spot analysis is required.

3.7 NOISE AND VIBRATION

This section describes the basic terminologies of noise and vibration used in this report, which is consistent with the Federal Transit Administration's Transit Noise and Impact Assessment (FTA, 2006) methodology. This information will provide background for the assessment procedures described in the later sections.

3.7.1 NOISE DESCRIPTORS

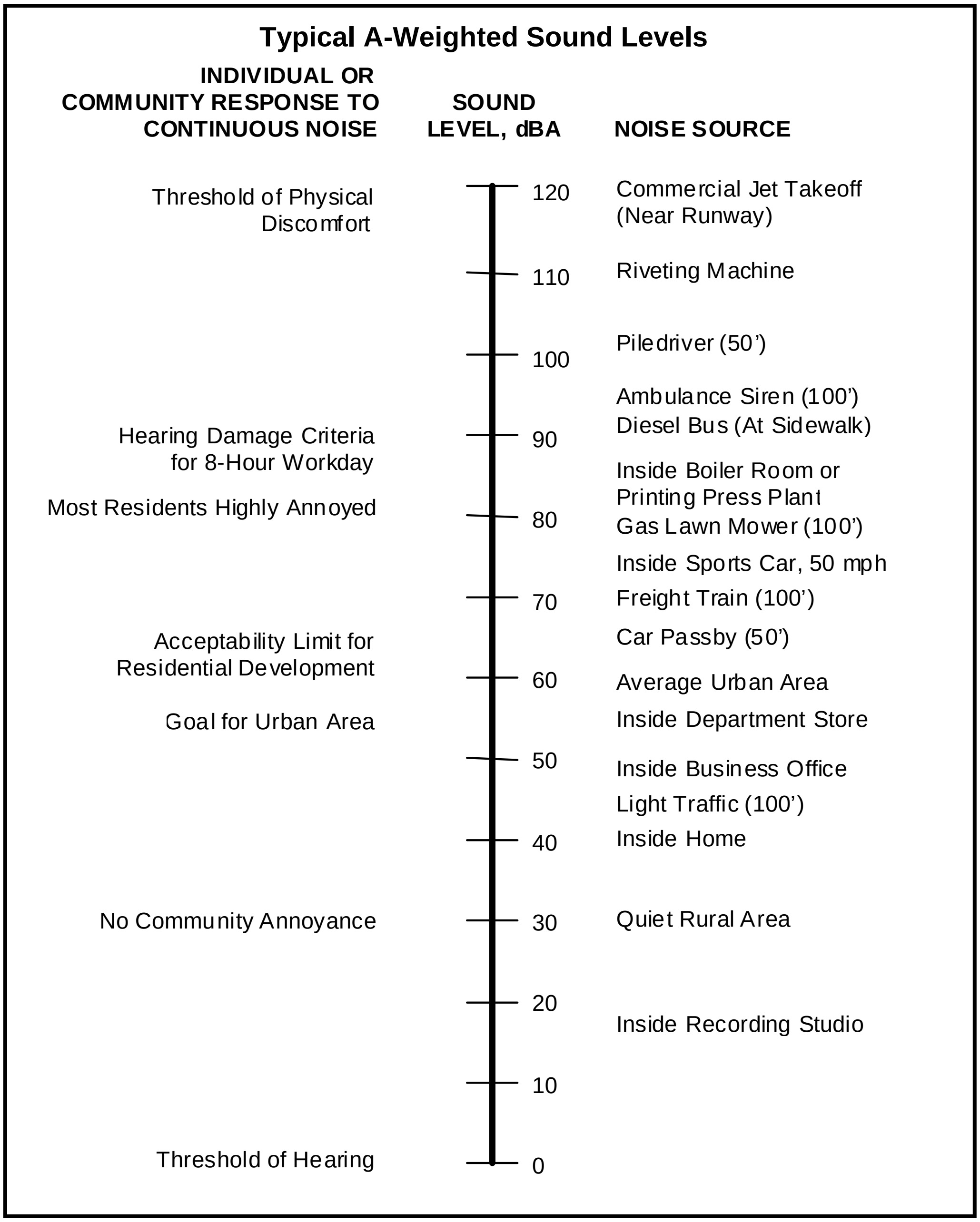
Noise is usually defined as sound that is undesirable because it interferes with speech communication and hearing, or is otherwise annoying. Under certain conditions, noise may cause hearing loss, interfere with human activities, and in various ways may affect people's health and well-being.

The decibel (dB) is the accepted standard unit for measuring the amplitude of sound because it accounts for the large variations in sound pressure amplitude. When describing sound and its effect on a human population, A-weighted (dBA) sound pressure levels are typically used to account for the response of the human ear. The term "A-weighted" refers to a filtering of the noise signal in a manner corresponding to the way the human ear perceives sound. The A-weighted noise level has been found to correlate well with people's judgments of the noisiness of different sounds and has been used for many years as a measure of community noise. Figure 3-4 illustrates typical A-weighted sound pressure levels for various noise sources.

Community noise levels usually change continuously during the day. The equivalent continuous A-weighted sound pressure level (L_{eq}) is normally used to describe community noise. The L_{eq} is the equivalent steady-state A-weighted sound pressure level that would contain the same acoustical energy as the time-varying A-weighted sound pressure level during the same time interval. The maximum sound pressure level (L_{max}) is the greatest instantaneous sound pressure level observed during a single noise measurement interval.

Another descriptor, the day-night average sound pressure level (L_{dn}), was developed to evaluate the total daily community noise environment. The L_{dn} is a 24-hour average sound pressure level with a 10-dB time-of-day weighting added to sound pressure levels that occur during the nine nighttime hours from 10:00 p.m. to 7:00 a.m. This nighttime 10-dB adjustment is an effort to account for the increased sensitivity to nighttime noise events. The Federal Railroad Administration (FRA) uses L_{dn} and L_{eq} to evaluate train noise impacts at the surrounding communities. (FRA, 2012)

Figure 3-4



Source: Parsons

3.7.2 VIBRATION DESCRIPTORS

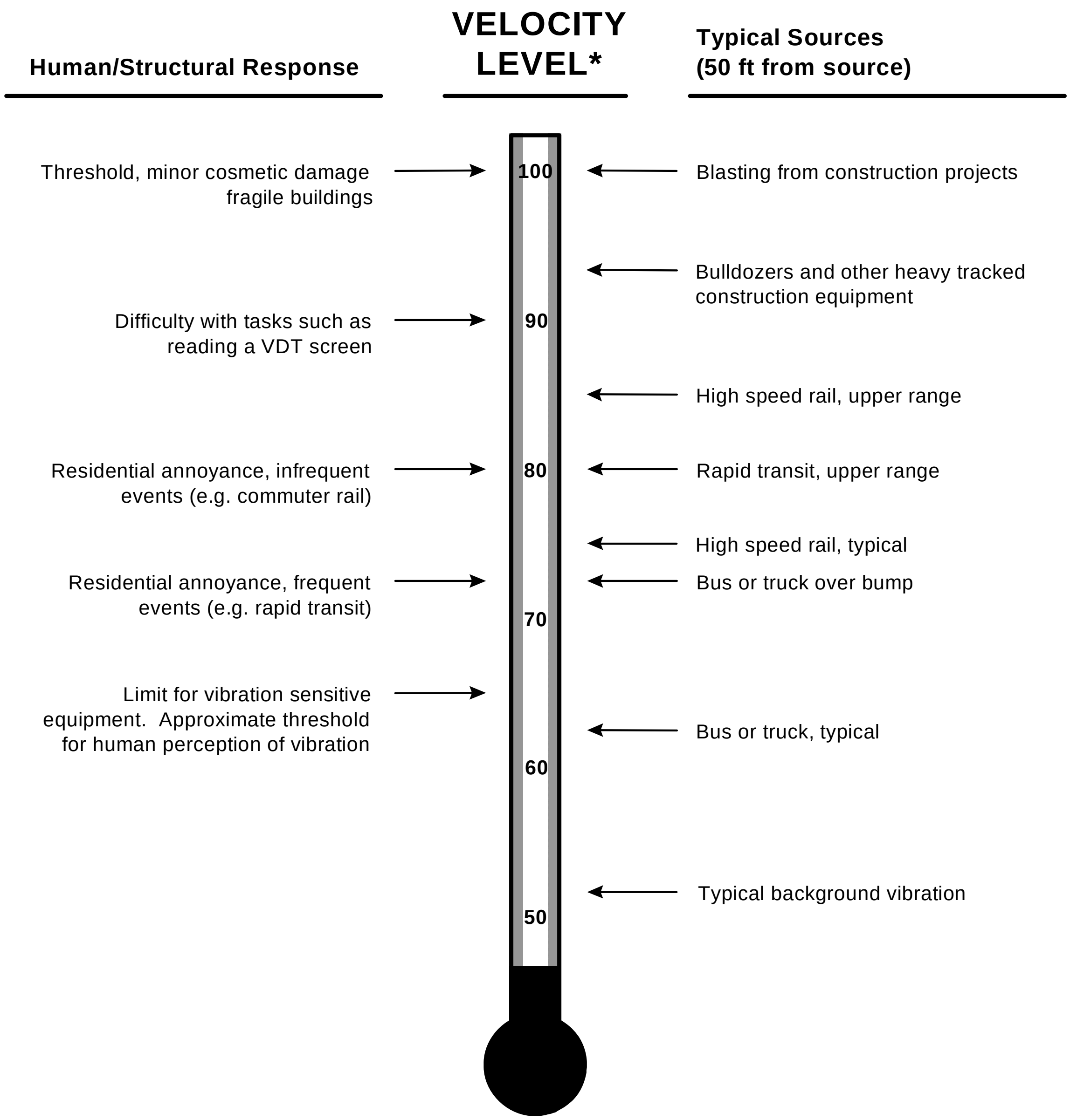
Vibration is an oscillatory motion, which can be described in terms of displacement, velocity, or acceleration. Displacement, in the case of a vibrating floor, is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement, and acceleration is the rate of change of the speed. The response of humans, buildings, and equipment to vibration is normally described using velocity or acceleration. In this report, velocity will be used in describing ground-borne vibration.

Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is used to evaluate the potential for building damage. It is defined as the maximum instantaneous peak of the vibration signal. PPV is not considered the appropriate measurement for evaluating the human response to vibration. RMS is used to evaluate human response, since it takes some time for the human body to respond to vibration signals. The RMS of a signal is the average of the squared amplitude of the signal. For sources such as trucks or motor vehicles, PPV levels are typically 6 to 14 dB higher than RMS levels. FRA uses the abbreviation, "VdB", for vibration decibels to reduce the potential for confusion with sound decibel. (USDOT, 2005)

Decibel notation acts to compress the range of numbers required in measuring vibration. Similar to the noise descriptors, L_{eq} and L_{max} can be used to describe the average vibration and the maximum vibration level observed during a single vibration measurement interval.

Figure 3-5 illustrates common vibration sources and the human and structural responses to ground-borne vibration. As shown in Figure 3-5, the threshold of perception for human response is approximately 65 dB; however, human response to vibration is not usually significant unless the vibration exceeds 70 dB. Vibration tolerance limits for sensitive instruments such as MRI or electron microscopes could be much lower than the human vibration perception threshold.

Figure 3-5



* *RMS Vibration Velocity Level in dB relative to 10^{-6} inches/second*

Source: High Speed Ground Transportation Noise and Vibration Impact Assessment.
U.S. DOT Federal Railroad Administration, 1988

3.7.3 EXISTING SETTING

Sensitive receptors were selected by their proximity to the alignment and by land use. In general, the southern (between Henderson and Raleigh) and northern (between Richmond and Petersburg, VA) portions of the Project area have a higher concentration of commercial land use and residential development. The central portion (between Petersburg, VA, and Henderson, NC) is more rural, with a sizable number of residences being farmhouses. Throughout Virginia and North Carolina, there are a significant number of historic and archaeological sites including many associated with the American Civil War. The Study Area generally adheres to a late 1800's (post-Civil War) railroad alignment. For this reason, portions of the alignments are adjacent to historical and archaeological sites.

Aerial photos and site visits were used to identify the noise and vibration receptor sites evaluated in this study and to select representative sites to conduct background measurements throughout the corridor. Noise and vibration field measurements were conducted between September 13 and 16, 2004, and May 18 and 29, 2009.

The southern and northern portions of the Project area have a higher concentration of commercial land use and residential development. The central portion is more rural, with a sizable number of residences being farmhouses. Throughout VA and NC, there are a significant number of historic and archaeological sites. The Study Area generally adheres to a late 1800's railroad alignment. Portions of the alignments are adjacent to historical and archaeological sites.

3.7.4 NOISE MEASUREMENTS

Noise measurements were conducted using the following ANSI Type 1 instrumentation: Larson Davis (LD) Model 870 environmental noise monitors and LD Model 820 integrating sound level meters. The microphones used with these systems were LD Model 2559 and Bruel and Kjaer (B&K) Model 4134. All noise measurement systems were calibrated using LD Model CA250 acoustical calibrators. The instruments were calibrated and operated according to the manufacturer's specifications.

The purpose of measuring existing noise levels is to determine the appropriate impact criteria based on the FRA noise impact guidelines. A total of six long-term and ten short-term measurements were taken in 2004 and 17 long-term measurements were taken in 2009. Long-term measurement equipment was left overnight to record day-night levels (L_{dnm}, also known as DNL). Short-term measurements, 20 minutes in length, were used to determine L_{eq} at representative sites. The noise measurement sites with results are listed in Table 3-10 and the locations of the measurement sites are shown on Figure 3-6. The measured values were used to estimate existing noise levels at all other sensitive receptors along the alignment.

3.7.5 VIBRATION MEASUREMENTS

Vibration measurements were conducted using a GeoSonic 3000EZplus portable seismograph. Vibration levels were measured on the vertical, transverse, and longitudinal axes, and the highest of the three was used for this analysis. The seismograph has an internal calibration sequence and was operated according to the manufacturer's specifications. Peak particle velocity vibrations (in inches per second) were recorded to assess potential building damage impacts based on FRA procedures and guidelines. When converting from peak particle velocity measurements into VdB a correction factor of -12 VdB was added to the passby measurements and a correction factor of -6 VdB was added to the background measurements.

A total of 18 vibration measurements were taken. The locations of the measurement sites with the background vibration measurements are listed in Table 3-11 and shown in Figure 3-6. Table 3-12 presents the results of the vibration measurements from train passbys.

Figure 3-6

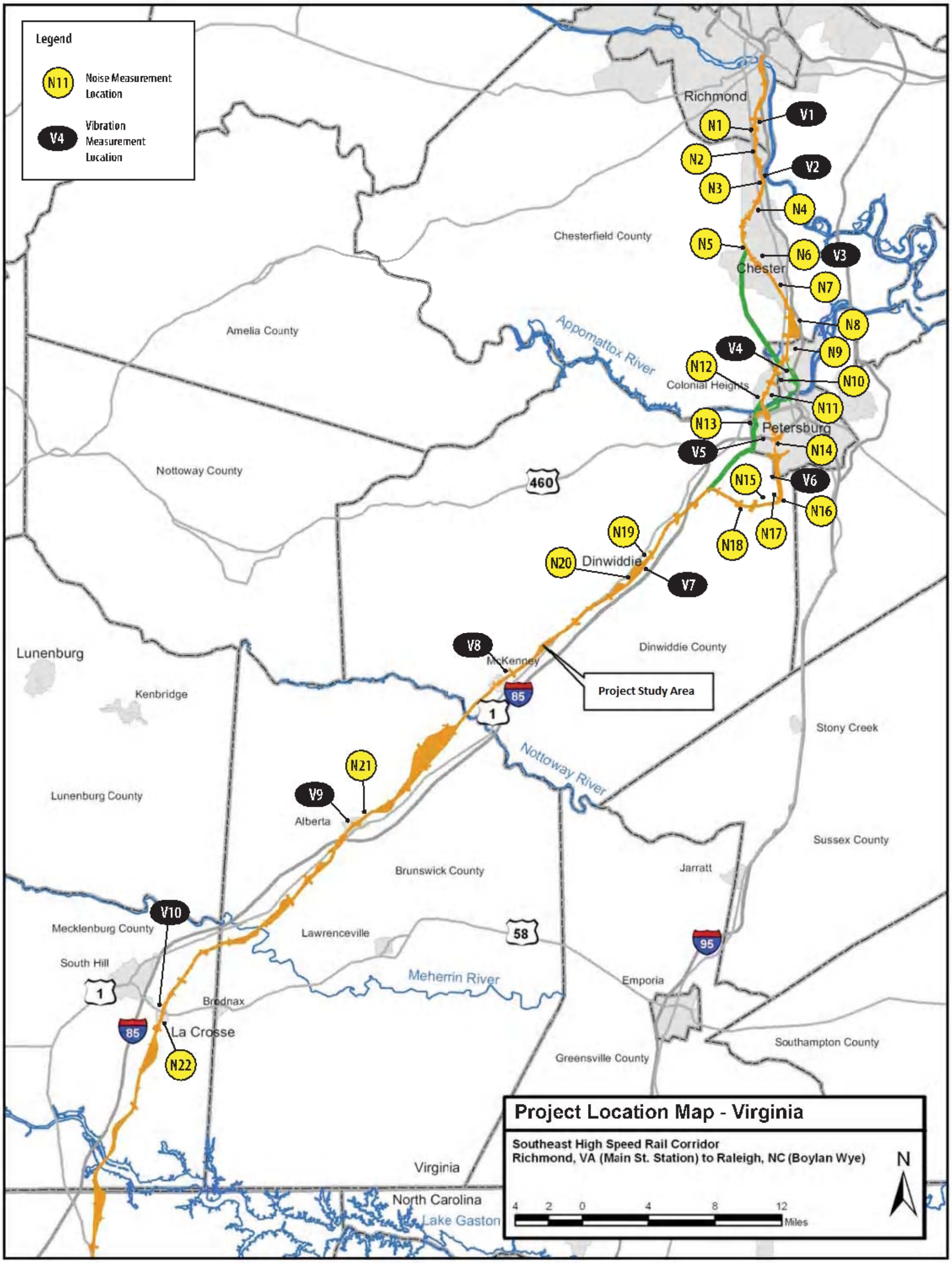

Legend
N11 Noise Measurement Location
V4 Vibration Measurement Location
Richmond
Chester
Colonial Heights
Petersburg
Dinwiddie
McKenney
Alberta
South Hill
Brodnax
La Crosse
Lawrenceville
Emporia
Jarratt
Stony Creek
Kenbridge
Chesterfield County
Amelia County
Nottoway County
Dinwiddie County
Lunenburg
Lunenburg County
Brunswick County
Mecklenburg County
Sussex County
Greensville County
Southampton County
Appomattox River
Nottoway River
Meherrin River
Lake Gaston
Virginia
North Carolina
Project Study Area
Project Location Map - Virginia
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
N
4 2 0 4 8 12
Miles

Figure 3-6 (continued)

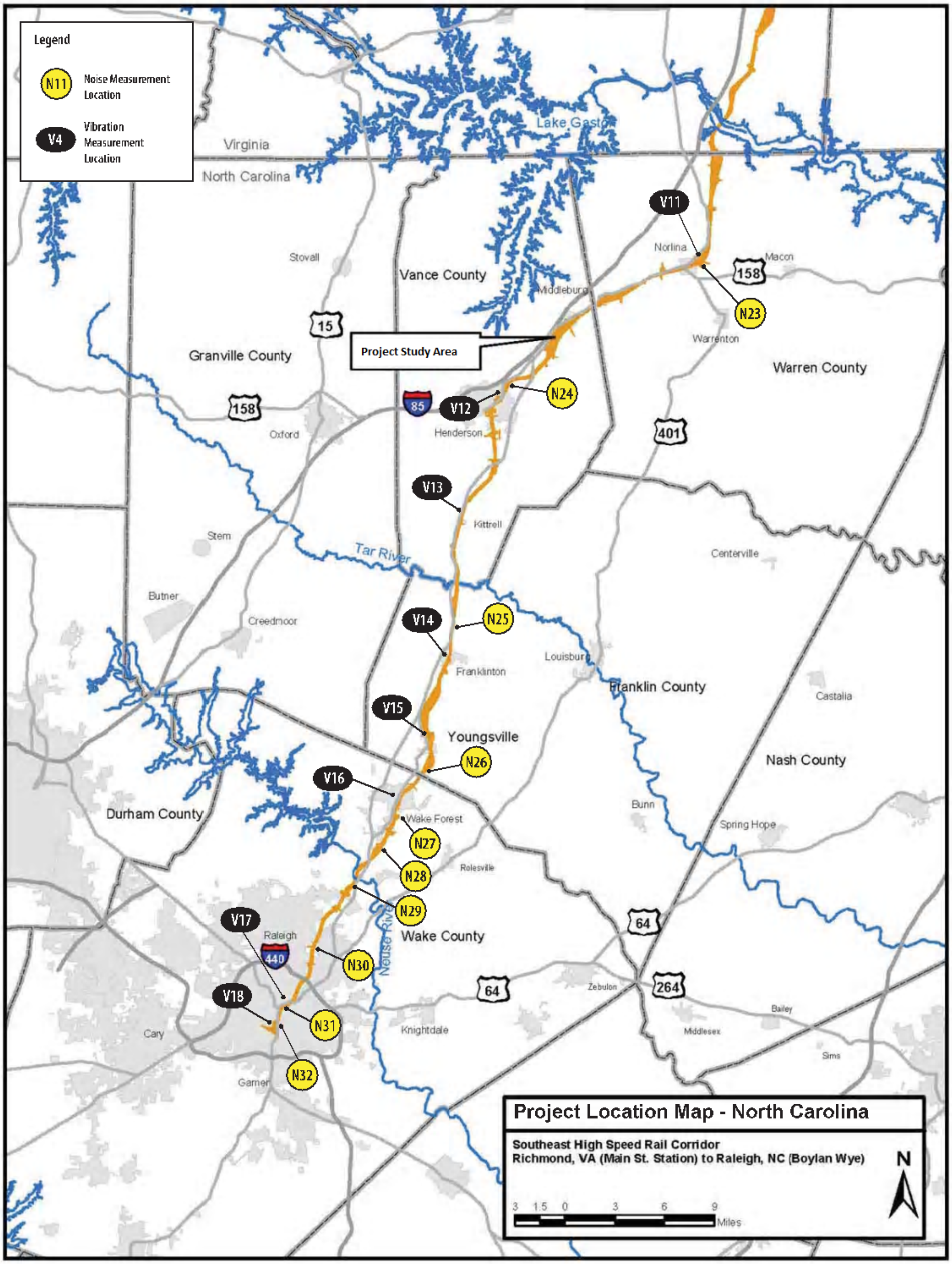


Table 3-10
Noise Measurement Sites

Site No.	Location	Location/Site Description	Type of Measurement	Date	Start Time	Duration	L_{eq}	L_{dn}[1]
N-1	Richmond	3000 Krouse Street	Long Term	5/18/09	11:56 AM	24 hours	74	65
N-2	Richmond	3431 Keighly Street	Long Term	5/18/09	12:43 PM	24 hours	77	72
N-3	Richmond	2501 Alcott Street	Long Term	5/18/09	4:49 PM	24 hours	64	65
N-4	Chester	9025 Chester Road	Long Term	5/19/09	1:48 PM	24 hours	71	68
N-5	Chester	11435 Great Branch Drive	Long Term	5/19/09	4:57 PM	25 hours	68	72
N-6	Chester	11542 Chester Station Drive	Long Term	5/19/09	3:23 PM	24 hours	70	71
N-7	Chester	12818 Winfree Street	Long Term	5/20/09	2:00 PM	24 hours	69	72
N-8	Colonial Heights	16111 Happy Hill Road	Long Term	5/20/09	9:58 AM	24 hours	74	76
N-9	Colonial Heights	17010 Lansmill Drive	Long Term	5/20/09	4:44 PM	24 hours	81	79
N-10	Colonial Heights	31115 Farris Avenue	Long Term	5/26/09	3:49 PM	24 hours	61	63
N-11	Ettrick	20218 Loyal Avenue	Long Term	5/21/09	2:23 PM	24 hours	80	80
N-12	Ettrick	3923 River Road	Long Term	5/21/09	9:01 AM	25 hours	72	72
N-13	Petersburg	20914 Brick House Drive	Long Term	5/21/09	11:28 AM	26 hours	75	74
N-14	Petersburg	1742 Montgomery Avenue	Long Term	5/26/09	12:22 PM	27 hours	69	69
N-15	Petersburg	9313 Southwood Drive	Long Term	5/27/09	2:23 PM	33 hours	63	61
N-16	Petersburg	7706 Halifax Road	Long Term	5/27/09	1:45 PM	45 hours	60	59
N-17	Petersburg	Petersburg National Battlefield – Fort Wadsworth	Short Term	9/16/04	9:30 AM	20 minutes	52	-
N-18	Petersburg	Vaughan Road	Short Term	9/16/04	10:31 AM	20 minutes	50	-
N-19	Dinwiddie	State Highway 703	Short Term	9/16/04	11:30 AM	20 minutes	56	-
N-20	Dinwiddie	State Highway 656	Short Term	9/16/04	12:10 PM	20 minutes	49	-
N-21	Alberta	136 1st Avenue – Alberta Town Office	Long Term	9/16/04	4:46 PM	20.5 hours	50	47
N-22	La Crosse	La Crosse Town Office	Long Term	9/16/04	3:42 PM	23.0 hours	59	52

Table 3-10
Noise Measurement Sites

Site No.	Location	Location/Site Description	Type of Measurement	Date	Start Time	Duration	L_{eq}	L_{dn}[1]
N-23	Norlina	202 Liberty Street	Short Term	9/15/04	1:45 PM	20 minutes	53	-
N-24	Henderson	574 Williams Street	Short Term	9/15/04	12:43 PM	20 minutes	57	-
N-25A	Franklinton	Cambridge Drive and U.S Route 1	Short Term	9/15/04	10:11 AM	20 minutes	62	-
N-25B	Franklinton	20 Misty Way	Long Term	5/27/09	8:54 AM	24 hours	64	55
N-26	Youngsville	123 Railroad Lane	Long Term	9/16/04	3:32 PM	18.0 hours	64	57
N-27	Wake Forest	332 Railroad Lane	Short Term	9/15/04	8:49 AM	20 minutes	59	-
N-28	Wake Forest	2705 Steeple Run Drive (Smith Creek)	Long Term	9/16/04	5:02 PM	18.1 hours	61	56
N-29	Raleigh	8401 Hobhouse Circle (Windsor Forest)	Short Term	9/14/04	11:51 AM	20 minutes	47	-
N-30	Raleigh	Devonshire Apartments	Long Term	9/15/04	4:40 PM	16.8 hours	57	54
N-31	Raleigh	327 Mulberry	Long Term	9/15/04	1:57 PM	20.2 hours	59	56
N-32	Raleigh	620 West Hargett Street	Short Term	9/14/04	9:42 AM	20 minutes	62	-

Note: 1. Ldn for long-term measurements only

Table 3-11
Vibration Sensitive Receptor Sites with Background Vibration Measurements

Site No.	Site Description/Location	Side of Alignment	Land Use[1]	Date	Time	Distance to Near Track Centerline, feet	Max RMS Velocity Level, VdB	PPV in/sec		
								Long	Vert	Trans
V-1	3021 Commerce Rd., Richmond, VA	East	COM	Existing Train Passby Vibration Measurement – See Table 3-12						
V-2	FTY Group Warehouse, Richmond, VA	East	COM	Existing Train Passby Vibration Measurement – See Table 3-12						

Table 3-11
Vibration Sensitive Receptor Sites with Background Vibration Measurements

Site No.	Site Description/Location	Side of Alignment	Land Use[1]	Date	Time	Distance to Near Track Centerline, feet	Max RMS Velocity Level, VdB	PPV in/sec		
								Long	Vert	Trans
V-3	11542 Chester Station Dr., Chester, VA	East	SFR	Existing Train Passby Vibration Measurement – See Table 3-12						
V-4	2801 Boulevard, Colonial Heights, VA	East	COM	Existing Train Passby Vibration Measurement – See Table 3-12						
V-5	1510 W Washington St Petersburg, VA	East	COM	Existing Train Passby Vibration Measurement – See Table 3-12						
V-6	Civil War Earthworks, (Petersburg National Battlefield), Petersburg, VA	East	HST	9/16/04	11:21 AM	600	68	0.005	0.005	0.005
V-7	B.T. Hargrave Hardware Store, Dinwiddie, VA	West	HST	9/16/04	12:16 PM	37	72	0.005	0.008	0.008
V-8	20714 First St (TrueValue Hardware Store), McKenney, VA	East	COM	9/15/04	4:30 PM	180	68	0.005	0.005	0.005
V-9	194 Connelly St. (Trinity St. Mark Episcopal Church), Alberta, VA	West	Church	9/15/04	3:06 PM	222	68	0.005	0.005	0.005
V-10	1950 Carter Rd. (La Crosse Baptist Church), La Crosse, VA	East	Church	9/15/04	2:37 PM	122	68	0.005	0.005	0.005
V-11	Junction Park (Junction Park Museum), Norlina, NC	West	HST	9/15/04	12:11 PM	67	74	0.010	0.008	0.01
V-12	611 North Garnett Rd. (The Rock of Reach Ministry Church), Henderson, NC	West	Church	9/15/04	10:29 AM	95	72	0.008	0.008	0.008
V-13	Confederate Graveyard, Kittrell, NC	East	HST	9/16/04	3:30 PM	102	68	0.005	0.005	0.005
V-14	Franklin Commerce Center, Franklin, NC.	East	HST	Existing Train Passby Vibration Measurement – See Table 3-12						

Table 3-11
Vibration Sensitive Receptor Sites with Background Vibration Measurements

Site No.	Site Description/Location	Side of Alignment	Land Use[1]	Date	Time	Distance to Near Track Centerline, feet	Max RMS Velocity Level, VdB	PPV in/sec		
								Long	Vert	Trans
V-15	204 Railroad St. Youngsville Cabinet Company, Youngsville, NC	East	COM	9/14/04	3:07 PM	75	68	0.005	0.005	0.005
V-16	237 Friendship Chapel Rd. (Friendship Chapel Baptist Church), Wake Forest, NC	East	Church	9/14/04	1:30 PM	57	68	0.005	0.005	0.005
V-17	Amtrak Station, Raleigh, NC	South	COM	Existing Train Passby Vibration Measurement – See Table 3-12						
V-18	1101 Haynes St. (Pilot Mill), Raleigh, NC	East	HST	Existing Train Passby Vibration Measurement – See Table 3-12						

Note: 1. SFR = Single Family Residences; COM = Commercial Property; HST = Historic Site.

Table 3-12
Existing Train Passby Vibration Measurements

Site No.	Location	Date	Time	Distance to Near Track Centerline, feet	Max RMS Velocity Level, VdB	PPV[1], in/sec
V-1	3021 Commerce Rd., Richmond, VA	5/19/09	10:53 AM	51	85	0.068
V-2	FTY Group Warehouse, Richmond, VA	5/20/09	1:57 PM	55	74	0.020
V-3	11542 Chester Station Dr., Chester, VA	5/21/09	3:20 PM	118	78	0.030
V-4	2801 Boulevard, Colonial Heights, VA	5/22/09	12:04 PM	85	79	0.035
V-5	1510 W Washington St Petersburg, VA	5/27/09	11:38 AM	63	82	0.048
V-14	Franklin Commerce Center, Franklin, NC	9/14/04	5:04 PM	98	74	0.020
V-17	Amtrak Station, Raleigh, NC	9/13/04	5:56 PM	30	87	0.090
V-18	1101 Haynes St. (Pilot Mill), Raleigh, NC[2]	9/14/04	11:19 AM	37	73	0.018

Notes:
1. The PPV is the highest measured peak particle velocity from all passby events at a particular location.
2. Train passby measurement was taken at a train exchange yard with the engine moving at low speeds.

3.8 ENERGY

Because transportation accounts for a high percentage of the United States' energy consumption, transportation choices are key elements in national energy conservation strategies. The SEHSR Corridor Tier I EIS established the benefits of the Project in terms of energy savings.

Energy is commonly measured in terms of British thermal units, or BTUs. A BTU is defined as the amount of heat required to raise the temperature of one pound of water by 1° Fahrenheit. For transportation projects, energy usage is predominantly influenced by the amount of fuel used. Table 3-13 shows U.S. Department of Energy estimates for average national energy use per passenger mile for the three primary transportation modes that operate within the Study Area The table shows that intercity passenger rail is 19% more efficient than domestic airline travel and 52% more efficient than auto travel on a per-passenger-mile basis.

Table 3-13
Passenger Energy Use - 2011

Transportation Mode	BTUs per Passenger Mile
Intercity Rail	2,214
Car	3,364
Commercial Airline	2,638

Source: U.S. Department of Energy, Transportation Energy Data Book Edition 32 Released July 31,2013

3.9 VISUAL ENVIRONMENT

No changes have been made to the description of the visual environment for the Richmond to Raleigh Project Tier II FEIS. The visual environment is a critical element in people's daily experience and is often a defining factor of their quality of life. Major transportation projects and facilities can affect the visual environment in many ways and to varying degrees. Impacts can range from aesthetic enhancements to an area, such as landscaping and stream restoration to detrimental impacts such as impaired vistas of open space, natural features or local landmarks.

The visual environment of the Study Area ranges from undeveloped natural areas and small towns to large-scale industrial development and vibrant urban districts. A portion of the Study Area contains active freight and passenger rail service, while part of the Study Area follows an inactive rail corridor.

The visual environment of the Study Area ranges from undeveloped natural areas and small towns to large-scale industrial development and vibrant urban districts. A portion of the Study Area contains active freight and passenger rail service, while part of the Study Area follows an inactive rail corridor.

3.9.1 VIRGINIA

3.9.1.1 *CITY OF RICHMOND*

Throughout Richmond, VA the Study Area follows the active CSX S-Line railroad; Amtrak also operates passenger service along these tracks. The northern terminus of the Study Area is the historic Main Street Station, built in 1901. The station building has been restored and its architecture is visually striking, making it one of the most visually distinctive landmarks within the Study Area.

The area surrounding the station consists of elevated highway and rail structures, the James River floodwall, industrial land uses, and the Shockoe Bottom area – a former industrial area evolving into an entertainment district with residential lofts and apartments in converted warehouses.

The corridor follows the CSX S-Line across the James River, which is listed on the National Rivers Inventory; a listing of free-flowing river segments possessing one or more "outstandingly remarkable" natural or cultural values of national significance. The segment of the James River within Richmond is listed as both "Historic" and "Recreational."

South of the James River, much of the Study Area includes large-scale industrial facilities, including above-ground storage tanks. The Study Area includes stretches of I-95 before turning southwest, where it runs between highways US-1 and I-95 through more industrialized areas.

3.9.1.2 *CHESTERFIELD COUNTY*

Within Chesterfield County, the Study Area continues through industrial land uses as the active CSX S-Line runs south between US-1 and I-95. In the area of Bellwood, VA the Study Area passes the Defense Supply Center Richmond (DSCR) to the west, which includes a small forested elk refuge. The Study Area then turns to the southwest where the railroad passes under US-1. The Study Area includes the parallel Chester Road for a short distance before crossing highway 288 then joins the CSX A-Line railroad at Centralia, VA. From Centralia, the corridor curves to the southeast and passes through the community of Chester, VA. At this point, the corridor passes through the original "downtown" core area of Chester, which developed around Chester Station, a 19th century rail stop. As the Study Area continues to the southeast, it begins to traverse suburban and transitioning-to-suburban (from rural) areas. The Study Area continues to follow the CSX A-Line railroad as it crosses over US-1, Jefferson Davis Highway and then turns south, moving through industrial areas. The corridor traverses a short section of Colonial Heights, VA (described below) before reaching Ettrick Station. Ettrick Station is a one story brick building constructed in 1955; it is currently in use by Amtrak for passenger rail service to the Petersburg, VA area. The Study Area continues southward, passing just to the west of the Virginia State University campus and its associated land uses, then curves to the southeast, passing by the University's agricultural research fields before crossing the Appomattox River into Petersburg, VA.

3.9.1.3 *CITY OF COLONIAL HEIGHTS*

Approaching Colonial Heights, VA, land uses within the Study Area become more suburban in nature, and include fragmented woodlands, before transitioning to industrial use just north of Ellerslie Avenue, in the area of Dunlop, VA. At Dunlop, the Study Area begins to follow the active CSX A-line in a southwesterly direction through wooded and suburban areas. The Study Area crosses US-1, and then the alignment of an abandoned section of the CSX S-Line before reaching Ettrick Station, in Chesterfield County.

3.9.1.4 *CITY OF PETERSBURG*

In Petersburg, VA as the Study Area continues south along the CSX A-Line the surrounding land use becomes mostly industrial, transitioning to suburban residential, before crossing I-85.

South of I-85, the Study Area parallels or includes Halifax Road through an area of large-scale industrial properties and woodlands. The corridor crosses Halifax Road, which is on a bridge over the CSX A-Line railroad, then an active east-west NS freight rail line, before entering CSX's Collier Yard and Dinwiddie County. Fort Wadsworth, a Civil War-era Union fort, was built on the site of the Battle of the Weldon Railroad. Fort Wadsworth is visible as a series of earthen embankments to the east of CSX's Collier Yard.

3.9.1.5 *DINWIDDIE COUNTY*

In Dinwiddie County, the Study Area continues along the CSX A-Line to the southern end of Collier Yard, where the north-south alignment transitions from the CSX A-Line to the CSX S-Line along CSX's inactive east-west Burgess Connector rail corridor. Upon entering the county, the visual environment also shifts from urban industrial to rural agricultural. The area around Burgess, VA, is primarily scattered residential development and woodlands. Near Burgess, the Study Area begins to follow the existing but inactive CSX S-Line ROW. Along this segment of the Study Area, the surrounding land uses are a mix of agriculture and rural residential development. There are several important Civil War battlefields associated with the Siege of Petersburg found throughout this area of Dinwiddie County.

Between Burgess and the community of Dinwiddie, VA, the Study Area crosses I-85 and contains views of the commercial corridor along one side and farmlands along the other. Near the community of Dinwiddie until it crosses under US-1, the Study Area is heavily wooded and the rail ROW is generally at a lower grade than nearby residential and commercial development.

Between Dinwiddie and McKenney, VA, a rural landscape with scattered residential development predominates. Within McKenney, the Study Area passes a few commercial and industrial structures, a school, and a few residential areas, then returns to a mostly rural environment before crossing the Nottoway River into Brunswick County. The Nottoway River is listed on the National Rivers Inventory as "Wild," meaning the river corridor and surrounding watershed area are largely undeveloped.

3.9.1.6 *BRUNSWICK COUNTY*

In Brunswick County, the Study Area passes through mostly forests and farms, along with small rural communities such as Rawlings, Kress and Warfield.

Midway through the county, the Study Area passes through the town of Alberta, VA, and crosses an inactive NS rail corridor, close to the town core. At the time of this document many of the commercial buildings are vacant and houses exist in varying states of maintenance, however the town has received substantial Federal funding for downtown revitalization efforts.

South of Alberta, the Study Area crosses both I-85 and US-1, moving through more woodlands. The Study Area then crosses the Meherrin River in the location of the existing railroad bridge. The Meherrin River is also listed on the National Rivers Inventory as "Wild," meaning the river corridor and surrounding watershed area are largely undeveloped.

3.9.1.7 *MECKLENBURG COUNTY*

Within the northern part of the county, the Study Area passes through mostly forested areas with some farmlands and occasional residential development. Near the Forksville community, the Study Area comes close to some residential areas before curving to the south. The rail ROW remains at a distance from Country Club Road until a few miles north of La Crosse, VA. Most of this area is wooded or agricultural.

As the Study Area nears La Crosse, the rail ROW moves closer to Country Club Road. The South Hill Country Club golf course, which is located west of the road, and residential development along the road become more visible. The Study Area runs through the middle of the town center so the visual environment is that of a small town- mostly residential but with a small amount of commercial, institutional and industrial development present.

Within the southern part of the county, the Study Area passes through mostly forested areas and some agricultural lands. Through the Marengo, VA, community, the rail ROW runs parallel with Marengo Road. This area contains several abandoned houses. Near Bracey, VA, the Study Area passes by commercial and trucking operations along VA 903. As the Study Area approaches the Lake Gaston area, it passes between lake-oriented subdivisions, a golf course and a wastewater treatment facility.

The Study Area then crosses the Roanoke River/Lake Gaston along the existing railroad bridge, and includes views of the lake, dispersed shoreline residential development and the I-

85 highway bridges. After crossing the lake, the Study Area curves southeast where it crosses and then follows Paschall Road.

3.9.2 NORTH CAROLINA

3.9.2.1 *WARREN COUNTY*

At the North Carolina border, the surrounding area is largely agricultural as the Study Area widens to accommodate an alternative that avoids the Granite Hall historic property, and straightens a curve in the inactive CSX S-Line ROW. Moving southward into the community of Wise, NC, the corridor narrows, and again follows the CSX S-Line ROW through agricultural lands mixed woodlands and scattered residential development; the rail ROW then begins to parallel US-1 into Norlina, NC.

Within Norlina's town core, the CSX S-Line becomes an active railroad, and turns westward. Norlina is an old railroad town; therefore, views are of older, often rail-oriented buildings in a small town setting.

After leaving Norlina, the Study Area continues to follow the CSX S-Line as it runs in close proximity to US-1 through the Ridgeway and Manson communities, passing through agricultural areas, wooded areas and scattered residential and small-scale commercial and industrial development.

3.9.2.2 *VANCE COUNTY*

Within Vance County, the visual environment remains mostly agricultural lands and forests until the Study Area approaches Middleburg, NC. The corridor widens through Middleburg to accommodate an alternative that avoids the Holloway Farm historic property, and alternatives that improve train performance by straightening curves in the CSX S-Line. Through Middleburg, the corridor includes mostly commercial and some industrial uses. As the Study Area approaches the town of Henderson, NC, it moves through an industrial area before crossing US-1 and heading west into Henderson.

Within Henderson, the Study Area curves west and southwest, and the active CSX S-Line begins to parallel North Garnett Street, which serves as the "main street" for downtown Henderson (despite another road named Main Street). The visual environment in this area is that of a small city downtown; although for the most part the view is of the rear facades of downtown. Near Chevasse Avenue, the CSX S-Line curves to the south where it runs roughly parallel with Old Raleigh Road/US-1 Business. Much of this area has heavy commercial and industrial uses, along with some older neighborhoods. This pattern continues well outside of Henderson until the corridor intersects US-1. South of this point the CSX S-Line runs parallel with US-1 through areas that are agricultural or wooded, with some scattered residential development, and into the town of Kittrell, NC.

Kittrell is a small, older community with several houses and churches adjacent to the railroad, including a Civil War era graveyard containing both soldiers and slaves. Leaving Kittrell, the visual environment of Southern Vance County is mostly rural with woods, fields, and occasional residences. The Study Area then crosses the Tar River along the CSX S-Line railroad bridge, and into Franklin County. The Tar River is listed on the National Rivers Inventory; and in Vance County, the Tar River is listed as "Wild."

3.9.2.3 *FRANKLIN COUNTY*

South of the Tar River, the Study Area widens to accommodate an alternative that avoids the Person-McGhee Farm historic property. This northern part of Franklin County is currently a mostly rural visual environment. In some places, large tracts are being cleared, both for agricultural lands and pre-development. Franklin County is transitioning from a predominately rural area to a bedroom community for employment centers in the Triangle region (Raleigh-Durham-Chapel Hill area). Through the northern part of the county, the CSX S-Line parallels US-1 into Franklinton, NC. North of Franklinton, new subdivisions are visible east of the Study Area.

Franklin County is transitioning from a predominately rural area to a bedroom community for employment centers in the Triangle region.

Franklinton is an old railroad town, and the CSX S-Line passes through the town core, so views are of older buildings in a small town setting of grid streets, small yards and large canopy trees. South of town, the Study Area moves away from US-1 through mostly wooded areas.

North of Youngsville, NC, the corridor passes through an area that is mostly rural in nature with scattered residential development. The corridor then passes through the Youngsville Industrial Park on the north end of the town, then through the Youngsville town core. The dominant views are of industrial areas to the west and wooded areas to the east, in addition to aging core and residential areas.

South of Youngsville the Study Area is largely wooded, interspersed with industrial and residential development.

3.9.2.4 *WAKE COUNTY*

As the Study Area crosses into Wake County it approaches the town of Wake Forest, NC. In this rapidly suburbanizing area, the current views north of town include some commercial and residential development interspersed with woodlands and agricultural lands. Shortly before crossing Chestnut Street, the Study Area enters the town proper. Here the active CSX S-Line ROW abuts White Street to the east, as it passes through established neighborhoods and then runs immediately behind the commercial buildings of the town core. This core area and several nearby neighborhoods are listed on the National Register of Historic Places. On the south side of town, the CSX S-Line moves away from White Street and begins running parallel with US-1-A. Much of this area consists of commercial uses with some wooded areas and open lands along with occasional clusters of housing.

South of Wake Forest, the Study Area passes through an area of subdivisions and shopping centers. After crossing Friendship Chapel Road, the CSX S-Line moves away from the US-1-A corridor so that the predominant views are of wooded areas, along with the backs of subdivisions and occasional commercial developments. After passing Ligon Mill Road, the Study Area crosses US-1 and its commercial and industrial development. The Study Area then curves almost due south, passing between commercial development to the east and wooded areas to the west before crossing the Neuse River.

South of the Neuse River, the Study Area passes between a landfill and a chemical operation's tanks and lagoons. As it crosses Durant Road, the Study Area enters Raleigh, NC, passing through subdivisions, commercial land uses, and the former Cheviot Hills golf course. As it approaches I-540, the Study Area passes through a heavy industrial area and by Gresham Lake. After crossing I-540, the Study Area curves south and passes through several miles of industrial and heavy commercial areas, eventually crossing the I-440 beltline.

Inside of the I-440 beltline, the industrial and heavy commercial development pattern continues. Shortly after passing over Whitaker Mill Road, the active CSX S-Line passes over Capital Boulevard. At this point, the Study Area widens to include both the CSX S-Line, on the east side of Capital Boulevard; and the Norfolk Southern NS-Line on the west side of Capital Boulevard. The CSX S-Line runs parallel with the highway along a ridge behind the commercial development along Capital Boulevard. The historic Mordecai neighborhood sits adjacent to the tracks along the east side, as does the historic Pilot Mill buildings and surrounding new urbanist Pilot Mill Village. On the west side of Capital Boulevard, the NS-Line enters Glenwood Yard, the NS rail yard, which is bordered by residential and commercial development. The Study Area then curves south as it passes through the CSX rail yard and the redeveloping Seaboard district, where old industrial buildings have been converted to commercial uses. The corridor then crosses Peace Street as it enters downtown Raleigh.

The initial view is of the state government office complex with the downtown Raleigh skyline in the background, although immediately adjacent to the Study Area are parking garages. The Study Area then passes through what is currently a mixed light industrial, commercial and back office district that is transitioning towards office, entertainment and housing. On the west side of the corridor, is the developing Glenwood South entertainment district. The NS-Line lies parallel to and west of the Study Area is at a higher grade, and crosses the downtown streets on bridges. The two rail lines meet at Jones Street, where the Study Area includes the Powerhouse Square entertainment district, a redeveloped former industrial area. Due to substantial grade changes, the rail line moves along a recessed corridor behind the adjacent commercial development, passing under Hillsborough and Morgan Streets. At this point, the Study Area enters the Boylan Wye area, where the Project terminates. The immediate view to the east is of older brick buildings within the Warehouse District (another industrial area transitioning towards entertainment and office uses) with the Raleigh skyline behind. The view to the south is of the Amtrak station with the Boylan Heights National Register District on the hill behind. The view to the west is of an older neighborhood, the Boylan Avenue bridge and both NS and North Carolina Railroad (NCRR) rail corridors.

3.10 BIOLOGICAL RESOURCES

The Study Area passes through several natural communities of associated plants and animals. These natural communities are defined by their dominant flora and fauna and how these biotic components relate to their environment. A brief discussion of natural communities in the Project area is provided in Section 3.10.1.

Throughout the United States, there are populations of flora and fauna declining either as a result of natural forces or human impacts on the environment. Some of these declining species are protected under Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884). North Carolina and Virginia have also established endangered species lists. Threatened and endangered species listed for each city and county in the Study Area are described in Section 3.10.2.

3.10.1 NATURAL COMMUNITIES

Natural communities provide habitat for a variety of mammals, birds, reptiles, and amphibians. Generally, the most commonly found plants are used to classify natural communities. There are both terrestrial and aquatic natural communities in the Study Area. The terrestrial communities include mixed forest, pine forest, and maintained/disturbed systems. Wetlands, man-made and beaver ponds, streams, and river floodplains comprise the aquatic communities in the Study Area.

3.10.1.1 TERRESTRIAL COMMUNITIES

Terrestrial communities in the Study Area include natural and manmade systems that are characterized as mixed forest, pine forest, and maintained/disturbed systems.

Maintained/disturbed communities account for about 53% of the terrestrial Study Area.

Mixed forests account for about 30% of the terrestrial Study Area.

Pine forest systems are located in fragmented areas throughout the Study Area and comprise about 17% of the total land.

Terrestrial communities in the Study Area include natural and manmade systems that are characterized as mixed forest, pine forest, and maintained/disturbed systems. Naturally forested uplands are located upslope of the forested wetland and floodplain systems. Forested wetland and floodplain systems typically associated with the mixed forest and pine forest systems are described in the Aquatic Communities (Section 3.10.1.2).

Biologists inventoried terrestrial communities in the Study Area. Field observations and additional research were compiled to assess areas of each system type in the Study Area. This assessment is included in the Project NRTR (NCDOT and Virginia DRPT, 2004a, 2008).

Maintained/disturbed communities account for about 53% of the terrestrial Study Area. This community includes habitats that have recently been or are currently impacted by human disturbance, such as residential lawns, maintained roadside and railroad ROW, agricultural fields, and utility line easements.

Mixed forests account for about 30% of the terrestrial Study Area. In general, mixed forest systems are typically found adjacent to agricultural fields and residential development and consist of a variety of hardwood species.

Pine forest systems are located in fragmented areas throughout the Study Area and comprise about 17% of the total land area. Loblolly pine (*Pinus taeda*) is the dominant plant species in this system. The fragmented nature of this community is likely due to past hardwood timbering activities.

Table 3-14 provides a list of representative terrestrial community flora and fauna species that may be found in the Study Area. Table 3-15 summarizes the acreage of terrestrial communities for localities in the Study Area.

Table 3-14
Terrestrial Community Representative Flora and Fauna

Common Name	Scientific Name	Terrestrial Community System		
		Mixed Forest	Pine Forest	Maintained/ Disturbed
Flora				
American beech	*Fagus grandifolia*	●	●	●
black gum	*Nyssa sylvatica*	●	●	
black oak	*Quercus velutina*	●	●	
highbush blueberry	*Vaccinium corymbosum*	●	●	●
loblolly pine	*Pinus taeda*	●	●	●
netted chain fern	*Woddwardia areolata*	●	●	
northern red oak	*Quercus rubra*	●	●	

Table 3-14
Terrestrial Community Representative Flora and Fauna

Common Name	Scientific Name	Terrestrial Community System		
		Mixed Forest	Pine Forest	Maintained/ Disturbed
red maple	*Acer rubrum*	●	●	●
royal fern	*Osmunda regalis*	●	●	
shag bark hickory	*Carya ovata*	●	●	●
southern red oak	*Quercus falcata*	●	●	●
sweetgum	*Liquidambar styraciflua*	●	●	●
sycamore	*Platanus occidentalis*	●		●
tulip poplar	*Liriodendron tulipifera*	●	●	●
Virginia chain fern	*Woodwardia virginica*	●		
white oak	*Quercus alba*	●	●	●
Fauna				
American toad	*Bufo americanus*	●	●	
box turtle	*Terrapene carolina*	●	●	
Carolina chickadee	*Poecile carolinensis*	●	●	●
eastern cottontail	*Sylvilagus floridanus*	●	●	●
eastern garter snake	*Thamnophis sirtalis*	●	●	●
northern cardinal	*Cardinalis cardinalis*	●	●	●
rat snake	*Elaphe obsoleta*	●	●	●
whitetail deer	*Odocoileus virginianus*	●	●	●
wild turkey	*Meleagris gallopavo*	●	●	●

Source: NCDOT and Virginia DRPT, 2004a, 2008

Table 3-15
Terrestrial Communities Summary

Location	State	Mixed Forest (Acres)	Pine Forest (Acres)	Maintained/Disturbed (Acres)
Richmond	VA	2.02	0	95.88
Chesterfield	VA	109.48	13.13	241.03
Colonial Heights	VA	3.31	0	17.41
Petersburg	VA	15.16	1.33	54.63
Dinwiddie	VA	225.66	132.23	173.3
Brunswick	VA	190.93	136.84	160.72
Mecklenburg	VA	147.50	104.28	154.27
Warren	NC	88.6	59.31	227.53
Vance	NC	75.16	33.55	364.53
Franklin	NC	69.21	77.43	104.27
Wake	NC	51.89	37.76	261.49

Source: NCDOT and Virginia DRPT, 2004a, 2008

3.10.1.2 *AQUATIC COMMUNITIES*

The aquatic communities in the Study Area include wetlands, man-made and beaver ponds, streams, and river floodplains.

There are 720 waterbodies including streams, unnamed tributaries, and man-made and beaver ponds within the Study Area (462 in Virginia and 258 in North Carolina).

Wetland systems within the Study Area are closely associated with floodplain systems.

The aquatic communities in the Study Area include wetlands, man-made and beaver ponds, streams, and river floodplains. These aquatic communities may provide habitat cover and breeding opportunities for fish, aquatic organisms, amphibians, birds, reptiles, and mammals. In addition, these aquatic communities may provide food sources for terrestrial fauna. Aquatic communities also remove nutrients from the water, buffering adverse effects of upstream impacts to downstream water quality.

As described in Section 3.1.1, there are 720 waterbodies including streams, unnamed tributaries, and man-made and beaver ponds within the Study Area (462 in Virginia and 258 in North Carolina). Streams throughout the Study Area range from headwater tributaries with undefined braided channels to streams with well-defined moderate, moderately sloping, or steep side slopes. A more detailed description of waterbodies within the Study Area is provided in the Project NRTR (NCDOT and Virginia DRPT, 2004a, 2008).

As described in Section 3.1.2, wetland systems can be divided into four general palustrine categories: PFO, PSS, PEM, and PUB. Wetland systems are typically located along the streams and include a combination of headwater forest, seeps, freshwater emergent marsh, and bottomland depressions. These well-saturated forested wetlands exist along small headwater stream bottoms and seeping toe-slopes and are characterized by braided channels. Wetland systems within the Study Area are closely associated with floodplain systems.

Wetland and floodplain systems are located down slope of terrestrial communities and have production export functions as a result of organic litter development from high densities of vegetation. A more detailed description of wetland and floodplain systems within the Study Area is provided in the Project NRTR. Table 3-16 provides a list of representative aquatic community flora and fauna species that may be found in the Study Area.

Table 3-16
Aquatic Community Representative Flora and Fauna

Common Name	Scientific Name	Aquatic Community System						
		Wetlands				Flood-plain	Stream	Man-Made / Beaver Pond
		PFO	PSS	PEM	PUB			
Flora								
American beech	*Fagus grandifolia*	●				●		
black gum	*Nyssa sylvatica*	●				●		
highbush blueberry	*Vaccinium corymbosum*	●	●	●		●		
loblolly pine	*Pinus taeda*	●	●	●		●		
netted chain fern	*Woodwardia areolata*	●	●	●		●		
northern red oak	*Quercus rubra*	●				●		
possom-haw	*Viburnum nudum var. nudum*	●	●	●		●		
red maple	*Acer rubrum*	●	●	●		●		
river birch	*Betula nigra*	●	●			●		
royal fern	*Osmunda regalis*	●	●	●		●		
shag bark hickory	*Carya ovata*	●				●		
smooth alder	*Alnus serrulata*	●	●	●		●		
southern red oak	*Quercus falcata*	●	●	●		●		
sweetgum	*Liquidambar styraciflua*	●	●	●		●		
sycamore	*Platanus occidentalis*	●	●	●		●		
tulip poplar	*Liriodendron tulipifera*	●	●	●		●		
Virginia chain fern	*Woodwardia virginica*	●	●	●		●		
white oak	*Quercus alba*	●	●	●		●		
Fauna								
American toad	*Bufo americanus*	●	●		●	●	●	●
bluegill	*Lepomis macrochirus*				●		●	●
box turtle	*Terrapene carolina*	●	●		●	●		●
Carolina chickadee	*Poecile carolinensis*	●	●	●				
common carp	*Cyprinus carpio*				●		●	●
eastern cottontail	*Sylvilagus floridanus*	●	●	●		●		

Table 3-16
Aquatic Community Representative Flora and Fauna

Common Name	Scientific Name	Aquatic Community System						
		Wetlands				Flood-plain	Stream	Man-Made / Beaver Pond
		PFO	PSS	PEM	PUB			
eastern garter snake	*Thamnophis sirtalis*	●	●	●		●		
green frog	*Rana clamitans*	●	●	●	●	●	●	●
mallard	*Anas platyrhynchos*				●			●
mud salamander	*Pseudotriton montanus*	●	●	●	●	●	●	●
northern cardinal	*Cardinalis cardinalis*	●	●					
rat snake	*Elaphe obsoleta*	●	●	●				
snapping turtle	*Chelydra serpentina*				●			●
swamp darter	*Etheostoma fusiforme*				●		●	●
two lined salamander	*Eurycea bislineata*				●		●	●
whitetail deer	*Odocoileus virginianus*	●	●	●				
wild turkey	*Meleagris gallopavo*	●	●					
wood duck	*Aix sponsa*				●			●

Source: NCDOT and Virginia DRPT, 2004a, 2008

3.10.2 RARE AND PROTECTED SPECIES

Natural causes or human impacts can contribute to the declines in some populations of plants and animals. Under Federal law, any action that could potentially have a negative impact on plant or animal species classified as Endangered (E), Threatened (T), Proposed Endangered (PE), or Proposed Threatened (PT) is subject to review by the USFWS under Section 7 provisions of the Endangered Species Act (ESA) of 1973. The National Marine Fisheries Service (NOAA Fisheries) also has regulatory authority under the ESA; however, the species regulated by NOAA Fisheries are not found in the Study Area. The Virginia and North Carolina USFWS field offices have listed ten Federally protected species for counties in the Study Area.

Biologists conducted field surveys to inventory natural resources, wildlife communities and habitats, for threatened and endangered species. Assessments of wildlife community composition involved general qualitative habitat evaluations based on the existing vegetative communities. Table 3-17 summarizes the Federally listed species and provides a habitat assessment for these species in the Study Area. A detailed description of the threatened and endangered species survey performed for each Federally listed species is provided in the Project NRTR (NCDOT and Virginia DRPT, 2004a, 2008). It should be noted that a population of an endangered plant (Michaux's sumac) was discovered within the existing rail ROW in Brunswick County. Field work was not conducted for the Northern long-eared bat, because it was listed after completion of field surveys.

Table 3-17
Federally Protected Species Listed for Counties in the Study Area

Scientific Name	Common Name	Status	County/State	Species Habitat	Habitat Present
Haliaeetus leucocephalus	bald eagle	BGPA	Richmond, Chesterfield, Mecklenburg/ VA Warren, Vance, Wake/ NC	mature forests near large bodies of water	Yes
Picoides borealis	red-cockaded woodpecker	E	Wake/ NC	mature open pine forests (mainly longleaf pine)	No
Myotis septentrionalis	Northern long-eared bat	T	Richmond, Colonial Heights, Chesterfield, Dinwiddie, Brunswick, Mecklenburg /VA Wake/NC	Live and dead trees of at least 3-inch diameter at breast height, caves, mines, barns, sheds, old buildings, bridges, and large culverts	Yes
Percina rex	Roanoke logperch	E	Dinwiddie, Brunswick/VA	medium to large streams and rivers with moderate gradient and relatively silt-free substrates	Yes
Alasmidonta heterodon	dwarf wedgemussel	E	Dinwiddie, Brunswick/VA Warren, Vance, Franklin, Wake/NC	streams with a slow to moderate current; clean, nearly silt free, well-oxygenated water with a firm sand, gravel, or muddy sand substrate	Yes
Elliptio steinstansana	Tar River spinymussel	E	Warren, Franklin/NC	fast-flowing rivers and large streams with well oxygenated riffles; relatively silt-free gravel and/or coarse sand substrate	Yes
Rhus michauxii	Michaux's sumac	E	Dinwiddie, Brunswick/ VA Franklin, Wake/NC	rocky or sandy open woods, woodland edges, and roadsides; dependent on disturbance; needs full sunlight	Yes
Ptilimnium nodosum	harperella	E	Mecklenburg/ VA	rocky or gravel shoals and margins of clear, swift-flowing stream sections; edges of intermittent pineland ponds in the Coastal Plain	No

Table 3-17
Federally Protected Species Listed for Counties in the Study Area

Scientific Name	Common Name	Status	County/State	Species Habitat	Habitat Present
Aeschynomene virginica	sensitive joint-vetch	T	Chesterfield/ VA	fresh to slightly brackish tidal river shores and estuarine river marsh borders.	No
Echinacea laevigata	smooth coneflower	E	Chesterfield, Mecklenburg/ VA	openings in woods, such as cedar barrens and clear cuts, along roadsides and utility line rights-of-way, and on dry limestone bluffs	No
Helonias bullata	swamp pink	T	Chesterfield/ VA	forested wetlands that are groundwater influenced and are perennially water-saturated with a low frequency of inundation	No

Source: USFWS, 2012
Notes:
E Endangered. A taxon "in danger of extinction throughout all or a significant portion of its range."
T Threatened. A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."
BGPA Bald and Golden Eagle Protection Act

Individual states may provide additional protections for rare plant and animal species, such as Federal Species of Concern (FSC), which are not afforded Federal protection under the ESA. FSC species that are listed as Endangered, Threatened, or Special Concern (SC) on the Virginia Department of Conservation and Recreation (VDCR) and North Carolina Natural Heritage Program (NCNHP) lists of Rare Plant and Animal Species are afforded protection under state laws (the Endangered Plant and Insect Species Act of Virginia of 1979, the Virginia Wildlife Diversity and Fisheries Regulations, and the North Carolina Plant Protection and Conservation Act of 1979). Currently, these laws do not apply to state transportation projects; however, the North Carolina Wildlife Resources Commission has requested that transportation projects include a listing of Federal or state designated threatened, endangered, or special concern species (NC Wildlife Resources Commission, 1997).

The VA and NC USFWS field offices list 20 FSC species for the counties in the Study Area.

The Virginia and North Carolina USFWS field offices list 20 FSC species for the counties in the Study Area. Project Team biologists conducted habitat surveys throughout the Study Area for FSC species habitat. Table 3-18 summarizes FSC species listed for counties in the Study Area and states whether habitat was found present for the species during the survey. Additional information on protected plant and animal species is included in the Project NRTR (NCDOT and Virginia DRPT, 2004a, 2008).

Table 3-18
Federal Species of Concern Listed for Counties in the Study Area

Scientific Name	Common Name	NCNHP Status	VDCR Status	County/State	Habitat Present
Aimophila aestivalis	Bachman's sparrow	SC	NL	Warren, Wake/NC	Yes
Etheostoma collis lepidinion	Carolina darter	SC	NL	Wake/NC	No
Heterodon simus	southern hognose snake	SC	NL	Wake/NC	Yes
Lythrurus matutinus	pinewoods shiner	W2	NL	Warren, Vance, Franklin, Wake/NC	Yes
Myotis austroriparius	southeastern myotis	SC	NL	Wake/NC	Yes
Noturus furiosus	Carolina madtom	T	NL	Vance, Franklin, Wake/NC	Yes
Anguilla rostrata	American eel	NL	NL	Franklin, Vance, Warren, Wake/NC	Yes
Ambloplites cavifrons	Roanoke bass	SR	NL	Franklin, Warren, Wake/NC	Yes
Elliptio lanceolata	yellow lance	E	NL	Warren, Vance, Franklin, Wake/NC	Yes
Fusconaia masoni	Atlantic pigtoe	E	LT	Dinwiddie, Brunswick, Mecklenburg/VA Warren, Franklin, Wake/NC	Yes
Lampsilis cariosa	yellow lampmussel	E	NL	Vance, Franklin/NC	Yes
Lasmigona subviridus	green floater	E	NL	Wake/NC	Yes
Speyeria diana	Diana fritillary butterfly	W2	NL	Wake/NC	Yes
Juncus caesariensis	New Jersey rush	NL	LT	Dinwiddie/VA	Yes
Lindera subcoriacea	bog spicebush	SR-T	NL	Wake/NC	No
Monotropsis odorata	sweet pinesap	SC-V	NL	Wake/NC	Yes
Phacelia covillei	buttercup phacelia	SR-T	NL	Vance/NC	Yes
Lotus unifoliolatus var. helleri	prairie birdsfoot-trefoil	SC-V	NL	Warren/NC	Yes
Sagittaria weatherbiana	grassleaf arrowhead	E	NL	Wake/NC	Yes

Table 3-18
Federal Species of Concern Listed for Counties in the Study Area

Scientific Name	Common Name	NCNHP Status	VDCR Status	County/State	Habitat Present
Trillium pusillum var. virginianum	Virginia least trillium	E	NL	Wake/NC	Yes

Source: USFWS, 2012; NCNHP, 2013; VADCR, 2013
Notes:
E Endangered. Any native or once-native species of wild animal whose continued existence as a viable component of NC's fauna is determined by NCWRC to be in jeopardy or any species of wild animal determined to be an 'endangered species' pursuant to the NC Endangered Species Act. (Article 25 of Chapter 113 of the NC General Statutes; 1987).
"Any species or higher taxon of plant whose continued existence as a viable component of the State's flora is determined to be in jeopardy" (NCGS 19B 106: 202.12).
T Threatened. "Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the NC Endangered Species Act." (Article 25 of Chapter 113 of the NC General Statutes; 1987).
LT Listed Threatened (VA)
SC Special Concern. "Any species of wild animal native or once-native to NC which is determined by the NCWRC to require monitoring but which may be taken under regulations adopted under the provisions of this Article." (Article 25 of Chapter 113 of the NC General Statutes; 1987).
SC-V Special Concern-Vulnerable. "Any species or higher taxon of plant which is likely to become a threatened species within the foreseeable future" (NCAC 02 NCAC 48F .0401).
SR Significantly Rare. Any animal species which has not been listed by the NCWRC as an Endangered, Threatened, or Special Concern species, but which exists in North Carolina (or recently occurred in North Carolina) in small numbers and has been determined by the NCNHP to need monitoring.
SR-T Significantly Rare-Throughout. The species is rare throughout its range (fewer than 100 populations total).
W2 Watch Category 2. Rare, but taxonomically questionable. Any other species believed to be rare and of conservation concern in North Carolina but not warranting active monitoring at this time.
NL Not Listed

Migratory birds are those that fly long distances from their winter habitats to summer nesting grounds and back to their over-wintering grounds annually. The Migratory Bird Treaty Act (MBTA) is included in 50 CFR 10.13 and provides a list of species of birds protected by the Act. The USFWS interprets migratory bird protections under MBTA to extend to structures and trees that are being actively used by migratory birds for nesting. At those times, it is illegal to destroy migratory bird nests (including trees with nests) that contain eggs or young or cause an adult to abandon its nest due to disturbances from any sort of construction. However, it is not illegal to prevent birds from nesting during or prior to the construction period.

Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires Federal agencies to take action to implement the MBTA. Appropriate actions include evaluating the effect agency actions have on migratory birds and identifying impacts with a measureable negative effect on migratory bird populations. If such actions are identified, the Federal agency must mitigate the effects and consult with USFWS prior to initiating the action.

There are more than 800 species of birds covered under the MBTA; however, the Project is not located near a major bird migration flyway.

There are more than 800 species of birds covered under the MBTA; however, the Project is not located near a major bird migration flyway. The closest flyway is the Atlantic Flyway, the main branch of which passes over the North Carolina and Virginia coast. However, several species of birds may migrate through the Study Area, while other migratory birds live in the North Carolina and Virginia Piedmont and Virginia Coastal Plain during winter or summer. Examples of some of the more common species and when they are present in the Mid-Atlantic Piedmont are listed in Table 3-19.

Table 3-19
Migratory Bird Species of the North Carolina and Virginia Piedmont

Common Name	Scientific Name	Residence
wood duck	*Aix sponsa*	Yearlong
ring-necked duck	*Athya collaris*	Winter
red-tailed hawk	*Buteo jamaicensis*	Yearlong
mourning dove	*Zenaida macroura*	Yearlong
yellow-billed cuckoo	*Coccyzus americanus*	Summer
chimney swift	*Chaetura pelagic*	Summer
ruby-throated hummingbird	*Archilochus colubris*	Summer
belted kingfisher	*Ceryle alcyon*	Yearlong
red-headed woodpecker	*Melanerpes erythrocephalus*	Yearlong
yellow-bellied sapsucker	*Sphyrapicus varius*	Summer
eastern wood-pewee	*Contopus virens*	Summer
eastern phoebe	*Sayornis phoebe*	Yearlong
purple martin	*Progne subis*	Summer
blue jay	*Cyanocitta cristata*	Yearlong
American crow	*Corvus brachyrhynchos*	Yearlong
Carolina chickadee	*Poecile carolinsis*	Yearlong
red-breasted nuthatch	*Sitta Canadensis*	Winter
Carolina wren	*Thryothorus ludovicianus*	Yearlong
ruby-crowned kinglet	*Regulus calendula*	Winter
eastern bluebird	*Sialia Sialis*	Yearlong
American robin	*Turdus migratorius*	Yearlong
northern mockingbird	*Mimus polyglottos*	Yearlong
northern parula	*Parula Americana*	Spring/fall migrant
black-throated blue warbler	*Dendroica caerulescens*	Spring/fall migrant
scarlet tanager	*Piranga olivacea*	Summer
northern cardinal	*Cardinalis cardinalis*	Yearlong
indigo bunting	*Passerina cyanea*	Summer
field sparrow	*Spizella pusilla*	Yearlong
red-winged blackbird	*Agelaius phoeniceus*	Yearlong

Source: North Carolina Division of Parks and Recreation, 2009

3.11 COMMUNITY RESOURCES

This section has been revised to include updated information on established communities and other elements of the human environment existing within the Study Area. The Community Resources section helps define the context and character of the Study Area and the varied communities and neighborhoods within it. Documenting these elements of the human environment helps create an understanding of the values and needs of the communities in the Study Area. Incorporating these values and needs into the decision-making process allows transportation projects to be compatible with the human environment and become an asset to communities and neighborhoods affected by the Project, as well as to the region as a whole.

Community resources are discussed by topical subsection and, where applicable, these are further defined by geographic subsections. Community resource subsections include:

- Demographics – by political groupings and Census areas, by race and ethnicity, by age bracket, and by income group.
- Economics – current economic resources and conditions within each community and the Project region.
- Land Use and Planning – adopted plans and related guides for development and infrastructure.
- Neighborhoods and Communities – social and cultural elements that create and define the human environment.
- Community Facilities and Services – existing social infrastructure and services that support people and communities.

3.11.1 DEMOGRAPHICS

The 2010 Census data became available subsequent to the release of the Richmond to Raleigh Project Tier II DEIS. This section uses 2000 and 2010 Census data and American Community Survey (ACS) 5-Year Summary File estimates to examine population and demographic data, including race, English-speaking ability, age, income, and poverty. For this Project, the Demographic Study Area was defined as the census block groups within or adjacent to the rail Study Area. Data for this area are compared with the same measures for the city or county and for the state. Note that the use of 2010 data resulted in some changes to the list of census tract and block group numbers in the Demographic Study Area that were used in the Richmond to Raleigh Project Tier II DEIS; the 2010 census tracts and block groups in the Demographic Study Area are shown in Appendix J.

As of the 2010 Census, the population increased by 7.6% to 219,845 people in the demographic Study Area. While there is an overall increase in population in the demographic Study Area, the growth rate is lower than that of the combined localities (26.8%) during the same period.

The Project traverses urban state capitals to booming suburbs to rural and small town areas with stable or declining populations. At the time of the 2000 Census, a total of 204,345 people were living in the Demographic Study Area. As of the 2010 Census, the population increased by 7.6% to 219,845 people in the Demographic Study Area. While there is an overall increase in population in the Demographic Study Area, the growth rate is lower than that of the combined localities (26.8%) during the same period. (Table 3-20).

Table 3-20
Population and Minority Changes: 2000 and 2010 Comparison in VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	2000 Pop.Total	2010 Pop. Total	% Change 2000 to 2010	2000 White (Alone) Not Minority	2010 White (Alone) Not Minority	% Change 2000 to 2010	2000 Minority (All Categories)	2010 Minority (All Categories)	% Change 2000 to 2010
Virginia	7,078,515	8,001,024	13.0%	5,116,929	5,186,450	1.4%	1,961,586	2,814,574	43.5%
				72.3%	64.8%	-7.5%	27.8%	35.2%	7.4%
Richmond City	197,790	204,214	3.2%	76,204	79,813	4.7%	121,586	128,082	5.3%
				38.5%	41.7%	3.2%	61.6%	58.3%	-3.3%
Demographic Study Area	10,646	15,954	49.9%	2,835	4,394	55.0%	7,811	11,560	48.0%
				26.60%	27.5%	0.9%	73.4%	72.5%	-0.9%
Chesterfield County	259,903	316,236	21.7%	198,872	206,792	4.0%	61,031	109,444	79.3%
				76.5%	65.4%	-11.1%	23.4%	34.6%	11.2%
Demographic Study Area	38,142	44,568	16.8%	25,165	23,352	-7.2%	12,977	21,216	63.5%
				66.00%	52.4%	-13.6%	34.0%	47.6%	13.6%
Colonial Heights City	16,897	17,411	3.0%	15,148	14,020	-7.4%	1,749	3,391	93.9%
				89.6%	80.5%	-9.1%	10.3%	19.5%	9.2%
Demographic Study Area	7,875	8,303	5.4%	6,648	6,202	-6.7%	1,329	2,101	58.1%
				84.4%	74.7%	-9.7%	15.4%	25.3%	9.9%
Petersburg City	33,740	32,420	-3.9%	6,212	4,902	-21.1%	27,528	27,518	0.0%
				18.4%	15.1%	-3.3%	81.7%	84.9%	3.2%
Demographic Study Area	12,098	12,655	4.6%	1,620	1,764	8.9%	10,478	10,891	3.9%
				13.4%	13.9%	0.5%	86.5%	86.1%	-0.4%
Dinwiddie County	24,533	28,001	14.1%	15,913	17,617	10.7%	8,620	10,384	20.5%
				64.9%	62.9%	-2.0%	35.3%	37.1%	1.8%
Demographic	11,517	13,608	18.2%	6,996	8,463	21.0%	4,521	5,145	13.8%

Table 3-20
Population and Minority Changes: 2000 and 2010 Comparison in VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	2000 Pop.Total	2010 Pop. Total	% Change 2000 to 2010	2000 White (Alone) Not Minority	2010 White (Alone) Not Minority	% Change 2000 to 2010	2000 Minority (All Categories)	2010 Minority (All Categories)	% Change 2000 to 2010
Study Area				60.70%	62.2%	1.5%	39.3%	37.8%	-1.5%
Brunswick County	18,419	17,434	-5.3%	7,723	6,943	-10.1%	10,696	10,491	-1.9%
				41.9%	39.8%	-2.1%	58.0%	60.2%	2.2%
Demographic Study Area	7,067	8,471	19.9%	2,680	3,067	14.4%	4,378	5,404	23.4%
				37.9%	36.2%	-1.7%	61.8%	63.8%	2.0%
Mecklenburg County	32,380	32,727	1.1%	19,190	19,215	0.1%	13,190	13,512	2.4%
				59.3%	58.7%	-0.6%	40.7%	41.3%	0.6%
Demographic Study Area	5,595	6,141	9.8%	3,235	3,708	14.6%	2,360	2,433	3.1%
				57.8%	60.4%	2.6%	41.6%	39.6%	-2.0%
North Carolina	8,049,313	9,535,483	18.5%	5,802,165	6,223,995	7.3%	2,247,148	3,311,488	47.4%
				72.1%	65.3%	-6.8%	27.9%	34.7%	6.8%
Warren County	19,972	20,972	5.0%	7,793	7,971	2.3%	12,179	13,001	6.7%
				39.0%	38.0%	-1.0%	61.0%	62.0%	1.0%
Demographic Study Area	5,205	5,768	10.8%	2,113	2,205	4.4%	3,092	3,563	15.2%
				40.6%	38.2%	-2.4%	59.4%	61.8%	2.4%
Vance County	42,954	45,422	5.7%	20,778	19,101	-8.1%	22,176	26,367	18.9%
				48.4%	42.1%	-6.3%	51.6%	58.0%	6.4%
Demographic Study Area	25,432	26,032	2.4%	10,925	9,232	-15.5%	14,507	16,800	15.8%
				43.0%	35.5%	-7.5%	57.0%	64.5%	7.5%
Franklin County	47,260	60,619	28.3%	31,290	38,478	23.0%	15,970	22,141	38.6%

Table 3-20
Population and Minority Changes: 2000 and 2010 Comparison in VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	2000 Pop.Total	2010 Pop. Total	% Change 2000 to 2010	2000 White (Alone) Not Minority	2010 White (Alone) Not Minority	% Change 2000 to 2010	2000 Minority (All Categories)	2010 Minority (All Categories)	% Change 2000 to 2010
				66.2%	63.5%	-2.7%	33.7%	36.5%	2.8%
Demographic Study Area	14,471	17,516	21.0%	9,821	11,635	18.5%	4,650	5,881	26.5%
				67.9%	66.4%	-1.5%	32.1%	33.6%	1.5%
Wake County	627,846	900,993	43.5%	453,928	560,536	23.5%	173,918	340,457	95.8%
				72.3%	62.2%	-10.1%	27.8%	37.8%	10.0%
Demographic Study Area	66,297	60,829	-8.2%	44,466	35,196	-20.8%	21,831	25,633	17.4%
				67.1%	57.9%	-9.2%	32.9%	42.1%	9.2%
VA/NC Localities Combined	1,321,694	1,676,449	26.8%	853,051	975,388	14.3%	468,643	704,788	50.4%
				64.5%	58.2%	-6.4%	35.5%	42.0%	6.6%
VA/NC Demographic Study Area	204,345	219,845	7.6%	116,504	109,218	-6.3%	87,934	110,627	25.8%
				57.0%	49.7%	-7.3%	43.0%	50.3%	7.3%

Source: Census 2000 and Census 2010 Summary File 1; QTP4

3.11.1.1 *RACE*

Minorities are defined as all race/ethnicity categories except non-Hispanic White persons.

The combined population of the localities along the project is 42% minority. However, the population within the demographic Study Area is a greater percentage minority at 50.3%. The demographic Study Area location with the highest percentage of minority residents is Petersburg, VA, where 86.1% of the demographic Study Area is non-white or mixed race.

Based on the 2010 Census, the combined population of the localities along the project is 42% minority. However, the population within the Demographic Study Area is a greater percentage minority at 50.3%. The Demographic Study Area location with the highest percentage of minority residents is Petersburg, VA, where 86.1% of the Demographic Study Area is non-white or mixed race. Conversely, the locality with the lowest percentage of minority residents is directly to the north in Colonial Heights, VA, where 80.5% of the overall population is white. In the Demographic Study Area portion of Colonial Heights, 74.7% of the population is white. Racial diversity within the Study Area is presented in Tables 3-20 and 3-21. Black or African Americans make up the largest minority group throughout the Study Area.

As shown in Table 3-20, the percentage of minority populations is increasing in Virginia and North Carolina as a whole. This trend is even more pronounced in the Study Area localities and in the census block groups adjacent to or within the Project corridor.

Table 3-21
2010 Race: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Total Population	White (Alone)	Black or African American (Alone)	American Indian and Alaska Native (Alone)	Asian (Alone)	Native Hawaiian and Other Pacific Islander (Alone)	Some Other Race (Alone)	Hispanic or Latino	Multi-Racial
Virginia	8,001,024	5,186,450	1,523,704	20,679	436,298	5,061	15,338	631,825	181,669
	100%	64.8%	19.0%	0.3%	5.5%	0.1%	0.2%	7.9%	2.3%
Richmond City	204,214	79,813	102,264	514	4,679	93	367	16,484	3,681
	100%	41.7%	53.4%	0.3%	2.4%	0.0%	0.2%	0.1%	1.9%
Demographic Study Area	15,954	4,394	9,118	74	475	13	52	1,532	296
	100%	27.5%	57.2%	0.5%	3.0%	0.1%	0.3%	9.6%	1.9%
Chesterfield County	316,236	206,792	68,196	849	10,219	142	606	22,864	6,568
	100%	65.4%	21.6%	0.3%	3.2%	0.0%	0.2%	7.2%	2.1%
Demographic Study Area	44,568	23,352	14,605	166	834	32	91	4,495	993
	100%	52.4%	32.8%	0.4%	1.9%	0.1%	0.2%	10.1%	2.2%
Colonial Heights City	17,411	14,020	1,732	63	570	8	14	674	330
	100%	80.5%	9.9%	0.4%	3.3%	0.0%	0.1%	3.9%	1.9%
Demographic Study Area	8,303	6,202	1,152	25	320	6	3	417	178
	100%	74.7%	13.9%	0.3%	3.9%	0.1%	0.0%	5.0%	2.1%
Petersburg	32,420	4,902	25,419	87	263	12	31	1,216	490

Table 3-21
2010 Race: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Total Population	White (Alone)	Black or African American (Alone)	American Indian and Alaska Native (Alone)	Asian (Alone)	Native Hawaiian and Other Pacific Islander (Alone)	Some Other Race (Alone)	Hispanic or Latino	Multi-Racial
City	100%	15.1%	78.4%	0.3%	0.8%	0.0%	0.1%	3.8%	1.5%
Demographic Study Area	12,655	1,764	10,157	30	56	2	11	449	186
	100%	13.9%	80.3%	0.2%	0.4%	0.0%	0.1%	3.5%	1.5%
Dinwiddie County	28,001	17,617	9,134	83	122	7	18	674	346
	100%	62.9%	32.60	0.3%	0.4%	0.0%	0.1%	2.4%	1.2%
Demographic Study Area	13,608	8,463	4,489	32	67	2	6	351	198
	100%	62.2%	33.0%	0.2%	0.5%	0.0%	0.0%	2.6%	1.5%
Brunswick County	17,434	6,943	9,944	35	47	4	9	298	154
	100%	39.8%	57.0%	0.2%	0.3%	0.0%	0.1%	1.7%	0.9%
Demographic Study Area	8,471	3,067	5,109	27	22	1	3	147	95
	100%	36.2%	60.3%	0.3%	0.3%	0.0%	0.0%	1.7%	1.1%
Mecklenburg County	32,727	19,215	11,958	73	213	10	22	806	430
	100%	58.7%	36.5%	0.2%	0.7%	0.0%	0.1%	2.5%	1.3%
Demographic Study Area	6,141	3,708	2,019	14	31	1	5	273	90
	100%	60.4%	32.9%	0.2%	0.5%	0.0%	0.1%	4.4%	1.5%
North Carolina	9,535,483	6,223,995	2,019,854	108,829	206,579	5,259	15,088	800,120	155,759
	100%	65.3%	21.2%	1.1%	2.2%	0.1%	0.2%	8.4%	1.6%
Warren County	20,972	7,971	10,911	1,026	49	3	21	692	299
	100%	38.0%	52.0%	4.9%	0.2%	0.0%	0.1%	3.3%	1.4%
Demographic Study Area	5,768	2,205	3,240	35	14	3	4	198	69
	100%	38.2%	56.2%	0.6%	0.2%	0.1%	0.1%	3.4%	1.2%
Vance County	45,422	19,101	22,477	79	199	7	41	3,518	46
	100%	42.1%	49.5%	0.2%	0.4%	0.0%	0.1%	7.7%	0.1%
Demographic Study Area	26,032	9,232	14,076	49	80	1	30	2,316	248
	100%	35.5%	54.1%	0.2%	0.3%	0.0%	0.1%	8.9%	1.0%
Franklin County	60,619	38,478	15,995	253	272	5	67	4,776	773
	100%	63.5%	26.4%	0.4%	0.4%	0.0%	0.1%	7.9%	1.3%
Demographic Study Area	17,516	11,635	4,136	68	128	2	19	1,293	235
	100%	66.4%	23.6%	0.4%	0.7%	0.0%	0.1%	7.4%	1.3%

Table 3-21
2010 Race: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Total Population	White (Alone)	Black or African American (Alone)	American Indian and Alaska Native (Alone)	Asian (Alone)	Native Hawaiian and Other Pacific Islander (Alone)	Some Other Race (Alone)	Hispanic or Latino	Multi-Racial
Wake County	900,993	560,536	182,793	2,537	48,287	317	1,755	87,922	16,846
	100%	62.2%	20.3%	0.3%	5.4%	0.0%	0.2%	9.8%	1.9%
Demographic Study Area	60,829	35,196	14,748	167	1,402	34	97	8,013	1,172
	100%	57.9%	24.2%	0.3%	2.3%	0.1%	0.2%	13.2%	1.9%
VA/NC Localities Combined	1,676,449	975,388	460,823	5,599	64,920	608	2,951	139,924	29,963
	100%	58.2%	27.5%	0.3%	3.9%	0.0%	0.2%	8.4%	1.8%
VA/NC Demographic Study Area Combined	219,845	109,218	82,849	687	3,429	97	321	19,484	3,760
	100%	49.7%	37.7%	0.3%	1.6%	0.0%	0.2%	8.9%	1.7%

Source: Census 2010 Summary File 1; QTP4.

3.11.1.2 *LIMITED ENGLISH PROFICIENCY*

> The highest percentages of Limited English Proficiency (LEP) within the Demographic Study Area are in Mecklenburg County, VA, and Wake County, NC. The Hispanic or Latino population makes up the

Limited English Proficiency (LEP) occurs when a person or population speaks English less than "very well." The 2010 census indicates that 5.7% of Virginia and 2.8% of North Carolina residents are classified as LEP (Table 3-22). Table 3-22 also presents the LEP percentages for the localities along the Project corridor and the Demographic Study Area. The highest percentages within the Demographic Study Area are found in Mecklenburg County, VA, and Wake County, NC. Based on the race data provided in Table 3-21, the Hispanic or Latino population makes up the majority of LEP individuals.

3.11.1.3 *AGE*

According to the 2010 Census, 23% of Virginians were under age 18, while 12% were age 65 or older. In North Carolina, 23.9% were under age 18, while 12.9% were age 65 or older (Table 3-23). The age dependency ratio is the ratio of dependent-age population to the working age population and is derived by dividing the combined under 18 and 65-and-over populations by the 18-to-64 population and multiplying by 100 (US Census Bureau, 2012). The higher the ratio, the greater the support burden is for those working. The age dependency ratio is 54.7:100 in Virginia and 58.4:100 in North Carolina, compared to 58.9:100 in the United States. As the data Table 3-23 demonstrate, the Study Area ranges from urban centers with large working age populations to rural counties with

> The age dependency ratio is 54.7:100 in VA and 58.4:100 in NC, compared to 58.9:100 in the United States.

higher proportions of younger and older residents.

3.11.1.4 *INCOME AND POVERTY*

The Study Area is not monolithic nor does it represent a single economic region. To paint a more detailed picture along the corridor, state and local household and per capita income measures are compared with those of the highest and lowest block groups within each locality.

For 2010, the US Census Bureau established the poverty threshold for a household/family of four as $22,314. Based on the 2010 Census, 429,533 Virginia households (14.4%) and 755,625 North Carolina households (20.8%) were found to live below the poverty threshold (Table 3-24). In the Virginia portion of Study Area, both urban centers and rural counties had poverty levels higher than the state average, while suburban counties had lower poverty rates. In the North Carolina portion of Study Area, the urban center had poverty levels lower than the state average, adjacent suburban counties had a poverty rate equivalent with the state average, and rural counties had higher poverty levels. With the exception of Chesterfield County, VA, and Wake County, NC, all Study Area localities had lower median household than their respective states. Only Wake County exceeded the state per capita income of Study Area localities. Overall, Demographic Study Area tends to have a greater percentage of households below the poverty threshold than do the localities within which they are located.

> With the exception of Chesterfield County, VA, and Wake County, NC, all Study Area localities had lower median household than their respective states. Only Wake County exceeded the state per capita income of Study Area localities. Demographic Study Area tends to have a greater percentage of households below the poverty threshold than do the localities within which they are located.

Federal poverty rates are based in large part on the available food budget with the result that most high poverty areas are also more rural. Recent studies indicate that in urban and suburban areas housing costs, followed by transportation, are more indicative of poverty levels. To this end, rates of home ownership and households without vehicles are documented in Table 3-25. In Virginia and North Carolina, the lowest percentages of owner occupied housing are in the Demographic Study Area within the cities of Richmond and Raleigh. This is not surprising given that house prices are typically greater per square foot in urban areas than in rural areas. Similarly, the highest percentages of households without vehicles are also in Richmond and Raleigh. While this is a reflection of low-income households, the lack of vehicle ownership is somewhat offset by the availability of public transportation in these urban areas. In rural areas, the lack of a vehicle is more onerous as public transportation is often not available, compounding the cycle of rural poverty.

Table 3-22
Limited English Proficiency: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Population by Age Group Who Speak English Less Than "Very Well"								
	Ages 5-17		Ages 18-64		Ages 65 and over		Total Population Ages 5 and over		% Population Ages 5 and over Who Speak English Less than "Very Well"
	Estimate	Standard Error (SE)	Estimate	Standard Error (SE)	Estimate	Standard Error (SE)	Estimate	Standard Error (SE)	
Virginia	41,250	2,710	336,330	4,789	37,817	1,069	7,335,505	488	5.7%
Richmond City	931	232	6,963	670	281	101	188,805	11	4.3%
Demographic Study Area	51	491	722	261	11	501	13,799	761	5.7%
Chesterfield County	1,439	447	10,742	598	815	158	288,569	19	4.5%
Demographic Study Area	285	725	1,844	620	72	783	37,364	940	5.9%
Colonial Heights City	86	35	377	165	65	133	16,608	19	3.2%
Demographic Study Area	42	316	271	245	65	344	7,615	393	5.0%
Petersburg City	31	157	195	146	62	109	30,246	52	1.0%
Demographic Study Area	13	482	78	480	13	482	11,218	632	0.9%
Dinwiddie County	22	121	311	69	16	113	25,875	57	1.3%
Demographic Study Area	12	463	118	412	12	457	11,960	575	1.2%
Brunswick County	0	0	144	0	27	0	16,847	N/A	1.0%
Demographic Study Area	0	353	80	290	27	353	8,628	503	1.2%
Mecklenburg County	79	95	452	81	52	78	31,133	38	1.9%

Table 3-22
Limited English Proficiency: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Population by Age Group Who Speak English Less Than "Very Well"								
	Ages 5-17		Ages 18-64		Ages 65 and over		Total Population Ages 5 and over		% Population Ages 5 and over Who Speak English Less than "Very Well"
	Estimate	Standard Error (SE)	Estimate	Standard Error (SE)	Estimate	Standard Error (SE)	Estimate	Standard Error (SE)	
Demographic Study Area	11	797	75	360	362	0	5,369	413	8.3%
North Carolina	58,675	2,346	161,324	3,189	18,570	1,004	8,649,307	390	2.8%
Warren County	29	134	242	58	47	3,624	19,643	57	1.6%
Demographic Study Area	0	309	117	253	0	299	4,161	432	2.8%
Vance County	188	151	850	222	10	3,625	41,825	1	2.5%
Demographic Study Area	162	654	740	615	10	668	24,364	977	3.7%
Franklin County	316	206	1,756	264	72	108	54,556	24	3.9%
Demographic Study Area	59	358	399	328	0	401	14,557	598	3.1%
Wake County	6,872	952	42,246	1,607	3,050	3,468	786,528	2	6.6%
Demographic Study Area	346	784	2,962	523	62	840	51,316	1,330	6.6%

Source: 2010 ACS 5yr Estimate. Population by Age Group Who Speak English Less Than Very Well – BG B16004.

Table 3-23
Age: VA and NC Localities and Demographic Study Area (Within Each Locality)

Virginia			North Carolina		
Location	Under Age 18	Age 65 or Older	Location	Under Age 18	Age 65 or Older
Virginia	23.0%	12.0%	**North Carolina**	23.9%	12.9%
Richmond City	18.6%	11.1%	Warren County	20.3%	18.9%
Demographic Study Area	21.4%	6.3%	Demographic Study Area	18.9%	15.2%
Chesterfield County	26.1%	10.4%	Vance County	25.4%	14.1%
Demographic Study Area	25.1%	9.4%	Demographic Study Area	26.3%	12.3%
Colonial Heights City	22.3%	19.6%	Franklin County	24.5%	12.7%
Demographic Study Area	22.8%	18.5%	Demographic Study Area	26.4%	10.6%
Petersburg City	20.7%	15.0%	Wake County	26.0%	8.5%
Demographic Study Area	19.5%	15.3%	Demographic Study Area	24.0%	8.2%
Dinwiddie County	22.8%	13.7%			
Demographic Study Area	22.1%	14.7%			
Brunswick County	19.3%	16.5%			
Demographic Study Area	21.7%	17.5%			
Mecklenburg County	19.5%	20.7%			
Demographic Study Area	20.9%	21.0%			

Source: 2010 Census Summary File 1; Detailed Table P12.

Table 3-24
Income and Poverty: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Median Household Income				Per Capita Income				Households Below Poverty Level (1)				
	Low*		High*		Low*		High*						
	Low Estimate	Low Estimate SE	High Estimate	High Estimate SE	Low Estimate	Low Estimate SE	High Estimate	High Estimate SE	Total # Households	Standard Error (SE)	# Households Below Poverty Level Estimate	Standard Error (SE)	% Households Below Poverty Level Estimate
Virginia	$61,406		143 SE		$32,145		95 SE		2,974,481	5,858	429,533	2,818	14.4%
Richmond City	$38,266		533 SE		$26,034		428 SE		83,498	657	23,260	620	27.9%
Demographic Study Area	$17,368	5,380	$54,000	4,297	$10,684	1,159	$46,387	7,840	6,044	210	1,845	222	30.5%
Chesterfield County	$71,321		712 SE		$31,711		278 SE		112,404	452	9,271	418	8.2%
Demographic Study Area	$12,031	10,015	$91,923	15,939	$8,310	819	$44,186	2,704	14,940	310	2,118	459	14.2%
Colonial Heights City	$50,571		2548 SE		$26,115		741 SE		7,075	137	938	111	13.3%
Demographic Study Area	$36,522	6,299	$52,593	10,470	$18,966	1,277	$27,302	1,401	3,272	141	663	129	20.3%
Petersburg City	$36,449		1208 SE		$19,142		521 SE		12,305	222	3,125	222	25.4%
Demographic Study Area	$21,192	1,883	$61,413	10,503	$9,186	1,703	$28,895	2,184	4,626	203	1,129	221	24.4%
Dinwiddie County	$51,459		1942 SE		$23,423		744 SE		9,800	154	1,449	160	14.8%

Table 3-24
Income and Poverty: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Median Household Income				Per Capita Income				Households Below Poverty Level (1)				
	Low*		High*		Low*		High*						
	Low Estimate	Low Estimate SE	High Estimate	High Estimate SE	Low Estimate	Low Estimate SE	High Estimate	High Estimate SE	Total # Households	Standard Error (SE)	# Households Below Poverty Level Estimate	Standard Error (SE)	% Households Below Poverty Level Estimate
Demographic Study Area	$41,618	8,176	$56,354	10,414	$23,105	1,981	$26,212	2,671	4,763	197	791	167	16.6%
Brunswick County	$35,184		1753 SE		$16,739		835 SE		6,086	229	1,644	169	27.0%
Demographic Study Area	$29,556	4,333	$47,500	7,774	$12,721	1,300	$21,077	1,924	3,509	202	1,109	135	31.6%
Mecklenburg County	$36,431		1245 SE		$20,162		790 SE		12,594	249	3,533	228	28.1%
Demographic Study Area	$20,625	5,607	$60,625	30,045	$15,846	1,113	$24,815	2,194	2,320	148	749	133	32.3%
North Carolina	$45,570		125 SE		$24,745		71 SE		3,626,179	5,799	755,625	3,568	20.8%
Warren County	$30,641		2,137 SE		$17,838		1,119 SE		7,835	217	2,776	206	35.4%
Demographic Study Area	$21,143	5,272	$35,196	5,276	$17,599		2,351 SE		1,776	154	718	149	40.4%
Vance County	$34,025		1019 SE		$17,622		607 SE		16,473	261	5,154	295	31.3%
Demographic Study Area	$9,583	4,643	$47,366	8,106	$9,620	1,596	$27,345	2,495	9,012	311	3,115	281	34.6%

Table 3-24
Income and Poverty: VA and NC Localities and Demographic Study Area (Within Each Locality)

<table>
<tr><th rowspan="3">Location</th><th colspan="4">Median Household Income</th><th colspan="4">Per Capita Income</th><th colspan="5" rowspan="2">Households Below Poverty Level (1)</th></tr>
<tr><th colspan="2">Low*</th><th colspan="2">High*</th><th colspan="2">Low*</th><th colspan="2">High*</th></tr>
<tr><th>Low Estimate</th><th>Low Estimate SE</th><th>High Estimate</th><th>High Estimate SE</th><th>Low Estimate</th><th>Low Estimate SE</th><th>High Estimate</th><th>High Estimate SE</th><th>Total # Households</th><th>Standard Error (SE)</th><th># Households Below Poverty Level Estimate</th><th>Standard Error (SE)</th><th>% Households Below Poverty Level Estimate</th></tr>
<tr><td>Franklin County</td><td colspan="2">$43,710</td><td colspan="2">1,170 SE</td><td colspan="2">$21,331</td><td colspan="2">407 SE</td><td>22,765</td><td>332</td><td>4,884</td><td>297</td><td>21.5%</td></tr>
<tr><td>Demographic Study Area</td><td>$38,269</td><td>8,114</td><td>$70,754</td><td>6,382</td><td>$19,410</td><td>1,709</td><td>$25,229</td><td>1,576</td><td>6,286</td><td>223</td><td>1,186</td><td>154</td><td>18.9%</td></tr>
<tr><td>Wake County</td><td colspan="2">$63,770</td><td colspan="2">447 SE</td><td colspan="2">$32,592</td><td colspan="2">210 SE</td><td>325,486</td><td>971</td><td>39,413</td><td>898</td><td>12.1%</td></tr>
<tr><td>Demographic Study Area</td><td>$11,094</td><td>6,719</td><td>$83,698</td><td>8,422</td><td>$2,913</td><td>483</td><td>$48,512</td><td>4,638</td><td>22,980</td><td>412</td><td>4,312</td><td>423</td><td>18.8%</td></tr>
</table>

Sources: Census 2010 SF1: Owner Occupied Housing – H11. 2010 ACS 5-Year Estimates: Median Household Income – B19013; Per Capita Income – DP03; Households Below Poverty Level – B19001

(1) Households below the poverty level were determined based on the 2010 ACS 5yr Estimates and 2010 Census Bureau poverty threshold of $22,314 for a family/household of four persons.

* Of the Census Block Groups or Census Tracts in the Study Area within the county.

Table 3-25
Vehicle and Home Ownership: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Total Households		No Vehicle Household			Owner Occupied Housing (1)
	#	Standard Error (SE)	Estimate	Standard Error (SE)	% No Vehicle Households Estimate	
Virginia	2,974,481	5,858	102,149	1,861	3.4%	68.9%
Richmond City	83,498	657	8,283	501	9.9%	43.7%
Demographic Study Area	6,044	210	1,044	140	17.3%	26.0%
Chesterfield County	112,404	452	1,848	258	1.6%	78.4%
Demographic Study Area	14,940	310	465	220	3.1%	66.0%
Colonial Heights City	7,075	137	177	86	2.5%	65.4%
Demographic Study Area	3,272	141	177	139	5.4%	49.9%
Petersburg City	12,305	222	702	159	5.7%	45.1%
Demographic Study Area	4,626	203	365	141	7.9%	43.3%
Dinwiddie County	9,800	154	285	91	2.9%	76.5%
Demographic Study Area	4,763	197	261	84	5.5%	74.6%
Brunswick County	6,086	229	205	90	3.4%	72.2%
Demographic Study Area	3,509	202	205	91	5.8%	68.1%
Mecklenburg County	12,594	249	380	97	3.0%	70.9%
Demographic Study Area	2,320	148	32	81	1.4%	77.2%
North Carolina	3,626,179	5,799	104,197	1,876	2.9%	67.8%

Table 3-25
Vehicle and Home Ownership: VA and NC Localities and Demographic Study Area (Within Each Locality)

Location	Total Households		No Vehicle Household			Owner Occupied Housing (1)
	#	Standard Error (SE)	Estimate	Standard Error (SE)	% No Vehicle Households Estimate	
Warren County	7,835	217	216	55	2.8%	72.1%
Demographic Study Area	1,776	154	30	18	1.7%	66.3%
Vance County	16,473	261	705	157	4.3%	61.4%
Demographic Study Area	9,012	311	653	165	7.2%	56.8%
Franklin County	22,765	332	309	97	1.4%	74.2%
Demographic Study Area	6,286	223	30	111	0.5%	78.2%
Wake County	325,486	971	9,577	541	2.9%	68.2%
Demographic Study Area	22,980	412	1,593	240	6.9%	50.7%

Sources: Census 2010 SF1: Owner Occupied Housing – H11; 2010 ACS 5-Year Estimates: No Vehicle Household – B09141

(1) Owner Occupied Housing was determined from 2010 Census Summary File 1 data. All other determinations were derived from 2010 ACS 5yr Estimates.

3.11.2 ECONOMICS

3.11.2.1 *COMMUNITY ECONOMIC PROFILE*

The Study Area traverses three distinct macro-regions across two states (Table 3-26). Within these regions are smaller areas and communities ranging from city centers and suburbs to small towns and rural areas. Some of these areas are bustling job centers or booming bedroom communities, while others may be stable or declining.

The 2007-2011 American Community Survey 5-Year Estimates (Source File DP03) data on Selected Economic Characteristics was used to update the employment data presented in the Richmond to Raleigh Project Tier II DEIS for the cities, counties, and communities described in Table 3-27.

Table 3-26
State Profile Comparisons

Selected Economic Characteristic	Virginia	North Carolina
Civilian Labor Force (2011)	4,210,000	4,723,000
Labor Force Participation Rate (2011)	66.6%	63.0%
Total Employment (2011)	3,962,000	4,275,000
Total Unemployment (2011)	247,000	448,000
Unemployment Rate (2011)	5.9%	9.5%
High School Graduates – 25+ years (2011)	86.6%	84.1%
College Graduates – 25+ years (2011)	34.4%	26.5%
Per Capita Income (2011)	$31,746	$23,955
Median Family Income (2011)	$75,962	$57,171
Population (2011-Projected)	8,064,574	9,658,876

North Carolina Department of Commerce, State to State Comparisons, 2013

Table 3-27
Percent Employment by Sector by Community

State	Area	Employment Sector								
		Construction	Financial	Government	Information	Manufacturing	Mining	Services	Trade: Combined (Wholesale and Retail)	Transportation/Utilities
Virginia	Richmond City	6.1%	8.4%	16.5%	2.1%	6.1%	0.3%	21.0%	8.3%	4.2%
	Chesterfield County	6.9%	9.5%	19.4%	2.0%	8.9%	0.3%	13.9%	14.9%	5.4%
	Colonial Heights	8.9%	5.6%	20.9%	0.7%	9.4%	0.2%	19.1%	16.8%	5.2%
	Petersburg City	5.50%	3.5%	26.2%	0.7%	10.4%	0.4%	24.9%	14.4%	4.3%
	Dinwiddie County	10.8%	3.8%	23.1%	0.8%	12.6%	2.3%	17.3%	18.4%	6.1%
	Brunswick County	9.3%	4.5%	25.9%	1.6%	12.6%	2.9%	24.7%	14.3%	4.1%
	Mecklenburg County	8.8%	3.8%	21.7%	1.9%	11.7%	3.8%	19.0%	14.5%	7.2%
North Carolina	Warren County	6.5%	3.0%	24.9%	0.7%	12.5%	4.5%	19.6%	15.4%	4.9%
	Vance County	6.0%	3.7%	20.7%	0.4%	16.1%	1.3%	21.5%	17.2%	3.9%
	Franklin County	12.5%	4.9%	16.6%	1.5%	13.4%	2.3%	14.90 %	15.8%	4.7%
	Wake County	6.5%	7.3%	15.6%	3.2%	9.4%	0.4%	13.0%	13.3%	3.5%

Source: U.S. Census Bureau, American Fact Finder. Selected Economic Characteristics: 2007-2011 American Community Survey. Source File DP03.

3.11.2.1.1 VIRGINIA

3.11.2.1.1.1 *RICHMOND*

Richmond, Chesterfield County, Colonial Heights, and Petersburg, and Dinwiddie County are part of the Richmond-Petersburg metropolitan statistical area (MSA). In each of these areas, the 3 of the top 4 employers are the government, wholesale/retail trade, and the service industry.

Richmond is the largest city within the Richmond-Petersburg metropolitan statistical area (MSA) and, as the state capital, state government is one of the city's largest employers, second only to the service industry. The city is also a major financial center and wholesale and retail trade center.

Major manufacturing employers include International Paper Company and Philip Morris USA. Other major employers include Chippenham Medical Center, Dominion Resources Inc., Federal Reserve Bank of Richmond, Virginia Commonwealth University (VCU), Medical College of Virginia (MCV) Hospitals, UPS Freight, SunTrust Banks, and Verizon. Recent closings, reductions and layoffs have affected building products, back office operations, medical supplies and food products manufacturing.

3.11.2.1.1.2 *CHESTERFIELD COUNTY*

Chesterfield is located between Richmond and Petersburg/Colonial Heights and is one of the fastest growing communities in the state. The area has attracted a highly skilled labor force and the county has a substantial inventory of available commercial and industrial properties. Similar to Richmond, government is one of the largest employers, followed by wholesale/retail trade and the service industry.

Major manufacturing employers are Alcoa, Alstom Power Inc., Armkel, EI DuPont Inc., Hill PHOENIX Inc., and Philip Morris. Other major employers include Capital One, CJW Medical Center, Defense Supply Center Richmond (DSCR), Food Lion Inc., JC Penney, Ukrop's Super Markets, and UPS. Recent closings, reductions and layoffs have affected fabric manufacturing and tobacco products.

3.11.2.1.1.3 *COLONIAL HEIGHTS*

Colonial Heights directly abuts Petersburg and these two cities function as a single economic entity. Colonial Heights serves as the retail center for the area. Government, the service industry, and wholesale/retail trade account for the majority of employment.

Major manufacturing employers are Metal Building Components Inc., Mundet Inc., Roslyn Converters Inc., Sun Chemical Corp, and The Antioch Company. Other major employers include Colonial Heights Convalescent Co, JC Penney, Ukrop's Super Markets, and Wal-Mart.

3.11.2.1.1.4 *PETERSBURG*

Petersburg directly abuts Colonial Heights and these two cities function as a single economic entity. Petersburg serves as the industrial center for the area. As the site of a critical Civil War battle, Petersburg has numerous historic sites and buildings, and heritage tourism is a growing part of the economy. Like Colonial Heights, government, the service industry, and wholesale/retail trade account for the majority of employment.

Major manufacturing employers are BI Chemicals Inc., Boars Head Provisions, Brenco Inc., and Inland Temple Container. Other major employers include BP Short and Son Paving

Company, Roper Bros Lumber, Southside Regional Medical Center, the Fort Lee Army Base, Virginia State University and Virginia T's.

3.11.2.1.1.5 *DINWIDDIE COUNTY*

Dinwiddie County is part of the Petersburg/Colonial Heights economic region such that roughly twice as many county residents commute to jobs outside the county as work within it. Much of the northern Dinwiddie is associated with the Petersburg National Battlefield. As with the communities to the north, government, the service industry, and wholesale/retail trade account for the majority of employment.

Major manufacturing employers are Chaparral Virginia Inc., Philip Morris USA and Tindal Concrete Co. Other major employers include Central State Hospital and Wal-Mart.

3.11.2.1.1.6 *BRUNSWICK COUNTY*

Brunswick and Mecklenburg counties are part of Southside Virginia. Agriculture, manufacturing, government, service, and wholesale/retail trade are important industries in this area.

Brunswick County is part of the south-central Piedmont Region of Virginia, which is also known as Southside Virginia. This is an agricultural area between the Richmond-Petersburg region in Virginia and the Triangle region (Raleigh-Durham-Chapel Hill area) in North Carolina. Recreation associated with Lake Gaston accounts for some of service and trade employment. Almost as many residents commute to work outside the county as remain within it, with about a third of these commuting to jobs in Mecklenburg County. Government, the service industry, and wholesale/retail trade account for the majority of employment.

Major manufacturing employers include Brick and Tile Corp, Brunswick Box Co, Hyponex Corp, Virginia Carolina Forest Inc., and Vulcan Materials. Other major employers include Brunswick Correctional Center, Southside Virginia Community College, and St. Paul's College.

3.11.2.1.1.7 *MECKLENBURG COUNTY*

Mecklenburg County is part of the south-central Piedmont Region of Virginia, which is also known as Southside Virginia. This is traditionally an agricultural area between the Richmond-Petersburg region in Virginia and the Triangle region in North Carolina, although manufacturing has increased in importance. Recreation associated with Lake Gaston and Kerr Lake (also known as Buggs Island Lake) accounts for some of service and trade employment. Government, the service industry, and wholesale/retail trade account for the majority of employment.

Major manufacturing employers include American Building Company, Brodnax Mills Inc., Carlisle Motion Control, International Veneer Company, Lawson Mardon Wheaton Inc., Sherwood Foods Inc., Virginia Homes Manufacturing, and Virginia Quilting Inc. Other major employers include Community Memorial Health Center, Huss Inc., Mecklenburg Electric Cooperative, Parker Oil Co., and The DRS Group. Recent closings, reductions and layoffs have affected textiles and clothing-related operations.

3.11.2.1.2 NORTH CAROLINA

3.11.2.1.2.1 *WARREN COUNTY*

The Raleigh-Durham MSA starts in Warren County and continues through Vance and Franklin counties before reaching Wake County, becoming more urban towards the south. Government, the service industry, and wholesale/retail trade account for the majority of employment.

Warren County is a peripheral part of the Triangle region. This is traditionally an agricultural area, although manufacturing has increased in importance. Recreation associated with Lake Gaston accounts for some of service and trade employment. Government, the service industry, and wholesale/retail trade account for the majority of employment.

Major manufacturing employers include Elberta Crate and Box Company, Temple Inland, Glen Raven Mills, and Cast Stone Systems. Other major employers include Cochrane Furniture Co and Data Services America.

3.11.2.1.2.2 *VANCE COUNTY*

Vance County is also a peripheral part of the Triangle Region. Recreation associated with Lake Gaston accounts for some of service and trade employment. Service, government, and wholesale/retail trade account for the majority of employment in the area.

Major manufacturing employers include Wal-Mart distribution center, Pacific Coast Feather Co, Saint-Gobain Containers, Purolator Products, Handcrafted Homes and IAMS. Other major employers include Variety Stores, Royal Home Fashions, mental health services and Corporate Express.

3.11.2.1.2.3 *FRANKLIN COUNTY*

Franklin County is a suburbanizing county within the Triangle Region. Along with its own employment base much of the county's recent population growth has been fueled by proximity to jobs in Wake County and Research Triangle Park. Government, service, and wholesale/retail trade account for the majority of employment in the area.

Major manufacturing employers include Flextronics International, Novozymes NA, Nomaco K-Flex, Hon Industries, Food Lion distribution center, and Captive-Aire Systems. Other major employers include Sprint, Franklin Regional Medical Center, Wal-Mart and Louisburg College.

3.11.2.1.2.4 *WAKE COUNTY*

Wake County is the most populous county within the Raleigh-Durham MSA and is, along with Research Triangle Park, a hub of the Triangle region. Government, wholesale/retail trade, and the service industry account for the majority of employment in the area.

Major manufacturing employers include Cisco Systems, Eaton Corp, Waste Industries, and Food Lion distribution center. Other major employers include WakeMed, SAS Institute, Rex Healthcare, Progress Energy, Verizon Wireless, First Citizens Bank, Longistics, and Misys Healthcare Systems.

3.11.2.2 *AGRICULTURE*

The Virginia and North Carolina Departments of Agriculture statistics indicate that agriculture is an important element of the state economies. The Virginia Department of

Agriculture and Consumer Services states agriculture is the largest industry by far, with no other business sector even a close second. The agriculture industry has an economic impact of $52 billion annually and provides more than 357,000 jobs in Virginia. Agriculture and forestry combined have a total economic impact of almost $70 billion. The total employment impact was approximately 414,700 employees. Every job in agriculture and forestry supports 1.6 jobs elsewhere in the Virginia economy (VDACS, 2013).

The North Carolina Department of Agriculture and Consumer Services states that North Carolina's agricultural industry, including food, fiber, and forestry; contributes $70 billion annually to the State's economy; accounts for 18% of the State's income; and employs over 17% of the work force (NCDACS, 2013).

Agriculture is a minor element of the economy within the Richmond metropolitan area. It employs only about 0.3% of the Richmond, Petersburg, and Chesterfield County workforce, and 0.2% of Colonial Heights. Agricultural employment increases in suburban fringe Dinwiddie County to 2.3% and in more rural Brunswick and Mecklenburg Counties to 2.9% and 3.8%, respectively.

In NC, agriculture employs 4.5% of the workforce in rural Warren County. In suburban fringe Vance and Franklin counties, agricultural employment drops to 1.3% and 2.3%, respectively. Much like metropolitan Richmond, only 0.4% of the workforce in urban Wake County is involved with agriculture.

Cities and counties within the Study Area vary from urban state capitals to suburban bedroom communities to rural areas; therefore, the relative economic importance of agriculture varies substantially. Agriculture is a minor element of the economy within the Richmond metropolitan area. It employs only about 0.3% of the Richmond, Petersburg, and Chesterfield County workforce, and 0.2% of Colonial Heights. Agricultural employment increases in suburban fringe Dinwiddie County to 2.3% and in more rural Brunswick and Mecklenburg Counties to 2.9% and 3.8%, respectively (US Census Bureau, American Fact Finder, 2013).

In North Carolina, agriculture employs 4.5% of the workforce in rural Warren County. In suburban fringe Vance and Franklin counties, agricultural employment drops to 1.3% and 2.3%, respectively. Much like metropolitan Richmond, only 0.4% of the workforce in urban Wake County is involved with agriculture (US Census Bureau, American Fact Finder, 2013).

While agriculture does not employ many people within the overall Study Area, in places it makes a substantial contribution to the local economy. Based on the most recent 2007 Census of Agriculture, the agricultural market value of products sold in rural and exurban counties in Virginia was $12.6 million in Dinwiddie County, $32.2 million in Brunswick County, and $32.2 million in Mecklenburg County. In North Carolina, the agricultural market value of products sold was $22.9 million in Warren County and $48.1 million in Franklin County. 2007 data for Vance County was not disclosed (USDA, 2007).

3.11.2.3 *TOURISM*

Tourism within the Study Area is as varied as the local economies. Tourist activities include arts, recreation, sporting events, and historical sites.

Tourism within the Study Area is as varied as the local economies. Tourist activities include arts, recreation, sporting events, and historical sites.

3.11.2.3.1 VIRGINIA

As the state Capital of Virginia, the **Richmond metropolitan area** is home to numerous museums and arts centers, including the Science Museum of Virginia, Virginia Museum of Fine Arts, Virginia Historical Society, Virginia Performing Arts Center, Children's Museum of Richmond, the Museum of the Confederacy and the Chesterfield Museum Complex. Other attractions include numerous historic houses, plantations and districts; regional battlefields; the Lewis Ginter Botanical Gardens; various theaters and performing arts companies; ethnic festivals ranging from the Richmond Highland Games to a "Taste of India," and the Metro Richmond Zoo. University cultural and sporting events are also important tourist draws, as are minor league professional sports. Several major universities are located in Richmond, including Virginia Commonwealth University, the University of Richmond, and Virginia Union University, as well as several community colleges. Richmond is also home to minor league professional soccer, baseball, and ice hockey clubs. Both the Richmond International Raceway and Southside Speedway bring National Association for Stock Car Auto Racing (NASCAR) fans to the area. Richmond Region Tourism estimates over 6 million visitors come to the region each year and spend over $1.93 billion annually (Richmond Region Tourism, 2013).

The central focus of visitors to the **Petersburg-Dinwiddie area** is Civil War history associated with the Siege of Petersburg. Within the region are various battlefields and historic sites, such as Pamplin Park and the Petersburg National Battlefield Park. Related attractions include the National Museum of the Civil War Soldier, Siege Museum, Blandford Church and Centre Hill Museum. Fort Lee houses the Army Quartermaster and Army Women's Museums. In addition, Petersburg continues to revitalize its downtown as an arts and entertainment district. For example, the Shockoe Bottom Arts Center recently relocated there from Richmond. There are also local theater groups, a symphony, and a ballet company. The popular Artfest (previously called the Poplar Lawn Arts Festival) is held in the spring. The Virginia Motorsports Park also brings drag racing fans to the area. Virginia State University is located in Ettrick across the Appomattox River from Petersburg.

Tourism in **Brunswick and Mecklenburg counties** is primarily associated with Lake Gaston, especially for activities such as bass fishing tournaments. However, visitors are also drawn to the Brunswick County Lake, Great Creek Lake, Nottoway River reservoir and Buggs Island Lake. In Mecklenburg County, other attractions include MacCallum More Museum and Gardens and the Roanoke River Museum in the Prestwould Plantation house.

3.11.2.3.2 NORTH CAROLINA

Vance and Warren counties also depend heavily on Lake Gaston and Kerr Lake, as well as other water-related recreation destinations, to attract visitors. In Warren County, other attractions include the Lakeland Cultural Arts Center, Norlina Train Museum and Medoc Mountain State Park. Vance County is home to the East Coast Drag Times Hall of Fame, which includes the annual Corbitt Truck Show and "Show, Shine, Shag and Dine Car Show." Harper's Motor Speedway is located near Kittrell.

Tourism is a very minor economic activity in **Franklin County**. Agri-tourism is the most common activity, as well as some arts and crafts activities.

As a state capital, the **Raleigh metropolitan area** is home to the North Carolina Museum of History, Museum of Science and Art, and Marbles Kids Museum, among others. Other attractions include historic sites and houses, the JC Raulston Arboretum, Progress Energy Center for the Performing Arts, Time Warner Cable Music Pavilion at Walnut Creek, Booth Amphitheater, and various other theaters and performing arts companies, as well as festivals ranging from St. Patrick's Day to Lazy Daze Arts and Crafts. Raleigh is home to the Carolina Hurricanes hockey team, as well as the athletic and cultural events of North Carolina State University, Peace College, Shaw University, Meredith College, Saint Augustine's College and other schools. The Greater Raleigh Convention and Visitors Bureau estimates approximately 12.4 million visitors to the region contributed over $1.9 billion to the economy in the 2012-2013 fiscal year (GRCVB, 2013).

3.11.3 LAND USE AND TRANSPORTATION PLANNING

This section identifies the entities responsible for the oversight of general land development planning and transportation planning in and around the SEHSR Study Area. Updated information has been added to summarize the most recent adopted plans and studies from each agency (as relevant to the Project), as well as an expanded discussion of relevant planning activities by state, regional and local agencies. Connectivity to other modes of transportation is an important aspect of planning for existing and future passenger rail stations. Refer to Section 1.4.3 for additional discussion regarding local planning efforts related to development of stations, which are being undertaken separately, outside of this Project.

3.11.3.1 *STATE PLANNING*

The following section identifies existing state improvement plans in the Study Area. The intent of the Project is not to build local, planned improvements along in its path; however, the designs for the preferred alternative (as discussed further throughout this Richmond to Raleigh Project Tier II FEIS) were developed to ensure that they would include improvements that either worked in conjunction with other plans, or assure that the Project would not preclude future planned improvements.

The intent of the Project is not to build local, planned improvements along its path; however, the designs for the preferred alternative were developed to ensure that they would include improvements that either worked in conjunction with other plans, or assure that the Project would not preclude future planned improvements.

3.11.3.1.1 VIRGINIA

Virginia 2035 Surface Transportation Plan (VSTP) (April 2013) This plan identifies deficiencies in Virginia's transportation systems, and recommends improvements including capacity expansion and spot improvements, as well as intelligent transportation systems and transportation demand management solutions. No projects requiring detailed coordination with the Project were identified in the VSTP 2035.

Virginia Statewide Rail Plan (2013) This newly updated business plan issued by the Virginia DRPT is intended to provide a defined vision for rail transportation in the Commonwealth of Virginia through 2040. The SEHSR Corridor alignment is shown on the Passenger Rail map (Figure ES-6) as a route under study. Section ES.3.4 provides a discussion of SEHSR Corridor planning efforts, including the SEHSR Corridor Tier I EIS; this Richmond to Raleigh Project Tier II EIS; the Richmond to Hampton Roads SEHSR Corridor Tier I FEIS ; and the Washington, DC to Richmond Southeast High Speed Rail Tier II EIS.

3.11.3.1.2 NORTH CAROLINA

NCDOT Draft State Transportation Improvement Program: 2013-2023 (STIP) (September 2012) The following projects from the STIP in the vicinity of the rail corridor were identified:

- R-2587 – US-158, Warren and Halifax Counties. I-85 to SR 1405 east of Littleton - Widen to multi-lanes with bypasses of Norlina, Macon, and Littleton. The proposed Project alignment would intersect with the R-2587 new location section east of US-1 and south of the Town of Norlina. Currently, R-2587 is unfunded and in the planning stage, and as such, has no approved alignment.

- *U-5307 – US-1, Wake County*. Corridor improvement project from I-540 to NC 98 - there is one crossing of US-1 and the Project alignment in this area; the crossing location has an existing grade separation.

North Carolina Strategic Highway Corridors NCDOT has identified specific facilities throughout the State as critical mobility corridors. Three North Carolina Strategic Highway Corridors were identified in the Study Area:

- US-1 (Warren, Vance, Franklin, Wake County)
- I-440 (Wake County)
- I-540 (Wake County)

North Carolina Statewide Transportation Plan, From Policy to Projects 2040 Plan (NCDOT August 2012) This plan is a policy-based document intented to set investment and policy priorities for the State's transportation system. The Richmond to Raleigh Project portion of the SEHSR Corridor is identified as an underserved market; and SEHSR Corridor service is identified as the largest future passenger rail expenditure.

3.11.3.2 *REGIONAL PLANNING*

Regional planning in both states is performed by a regional planning agency tasked to promote the orderly and efficient development of the physical, social, and economic elements of the region by planning, encouraging and assisting governmental subdivisions to plan for the future. In Virginia, this task is performed by Planning District Commissions (PDC) and in North Carolina it is performed by Councils of Government (COG).

Regional transportation planning is performed by a Federal and state designated organization called a Metropolitan Planning Organization (MPO). An MPO is a transportation policy-making organization made up of representatives from local government and transportation authorities. In 1962, the US Congress passed legislation that required the formation of an MPO for any urbanized area with a population greater than 50,000. In North Carolina's rural counties, Rural Planning Organizations (RPOs) are the rural equivalent of MPOs. MPOs and RPOs are responsible for preparing the Federally-required regional long-range 20-year Comprehensive Transportation Plan (CTP), the Transportation Improvement Program (TIP) (which provides a four-year program of Federal, state, and locally funded transportation projects for which MPO/RPO approval is required), regional transit (including bus) planning, and related plans and studies. The regional PDC or COG often administers the MPO or RPO in its area. Areas of authority for regional land use and transportation agencies in the Study Area are provided in Figures 3-7 through 3-11.

As mentioned in Chapter 1, Virginia and North Carolina have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states to allow proposed SEHSR Corridor service to serve as the spine to these added routes, connecting conventional rail service passengers to the proposed SEHSR Corridor service and other points in the Northeast, Southeast, and beyond.

3.11.3.2.1 VIRGINIA REGIONAL PLANNING

In Virginia, each PDC is made up of professional staff and is directed by elected officials and citizens appointed by its member local governments. The Study Area traverses three PDC regions – Richmond Regional, Crater, and Southside.

3.11.3.2.1.1 *RICHMOND REGIONAL PDC*

The Richmond Regional Planning District Commission (RRPDC) focuses on regional transportation, land use planning, housing, community development, environmental planning, and local technical assistance and information services including demographic and geographic information systems. The RRPDC serves the Town of Ashland; City of Richmond; and counties of Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, and Powhatan. Relative to the Study Area, the Richmond Regional PDC serves all of Richmond and all but the southern portion of Chesterfield County.

The RRPDC focuses on regional transportation, land use planning, housing, community development, environmental planning, and local technical assistance and information services including demographic and geographic information systems.

The RRPDC's Urban Transportation Planning Division's staff, with staff from the PDC's other two divisions, provide administrative support to RAMPO.

The RRPDC's Urban Transportation Planning Division's staff, with staff from the PDC's other two divisions, provide administrative support to the Richmond Area Metropolitan Planning Organization (RAMPO). RAMPO's geographic coverage extends to that area which is projected to be urbanized within the next 20 years; it includes approximately two-thirds of the Richmond Regional Planning District (see Figure 3-7).

Figure 3-7

Richmond Area MPO Study Area

Source: Richmond Regional Planning District Commission, 2012

RAMPO has recently produced several transportation planning documents pertinent to the Project, including:

Plan 2035: RRPDC Regional Long Range Transportation Plan (adopted July 12, 2012) Portions of the plan pertinent to the Project are:

- *Rail in the Richmond Region* (Chapter 10) - summarizes the National Rail Policy, Virginia's Statewide Rail Policy, the role of the CSX and Norfolk Southern in statewide goods movement, and HSR. This Plan identified a variety of potential rail investment projects important to Virginia, including Class I and short-line railroads, the Port of Hampton Roads, passenger rail initiatives, and HSR initiatives. The Plan also states that with the return of passenger rail service to Main Street Station in 2003, continued investments in the rail system will be required in order to fully realize the potential of center-city to center-city rail service envisioned in the National Rail Policy.
- *Summary of the 2008 Virginia Statewide Rail Plan* (Chapter 10) – Included in the summary is a reference to the Project in noting that higher-speed rail will operate in Virginia in the near future (*Note that as described above, the Virginia Statewide Rail Plan was updated in 2013*).
- *Rail System Investments* (Chapter 10) - A chart of rail system investments includes infrastructure improvements for HSR between Richmond and the North Carolina state line, and between Richmond and Hampton Roads; projects that are both in progress.
- *Regional Transit* (Chapter 7) – The chapter describes Greater Richmond Transit Company (GRTC) transit system, the principal mass transit option for travel within the Richmond metropolitan area. GRTC provides bus fixed route services to the Cities of Richmond and Petersburg, and the Counties of Henrico and Chesterfield as well as paratransit service on demand through the CARE program and a van and carpool service (i.e. Ridefinders). GRTC is the local bus service provider for the proposed SEHSR Corridor station (Main Street Station) in Richmond.
- *Fiscally Constrained Project List* (Chapter 17) – The projects within the Project corridor are listed below:
    - Project 5 - Replace Bridge on US-1 near VA 145 (Chester Road)
    - Project 74 - Add center turn lane to Commerce Road from Bells Road to Bellemeade Road; the Project alignment currently crosses Commerce Road at an existing at-grade crossing
    - High-Speed Intercity Rail - Listed under Transit Type, Rail Improvements Project, Richmond (Main Street Station) to Raleigh Termini; it notes the cost is to be determined via mix of Federal, state and local funds, with completion date of 2018-2022.
- *Unconstrained Project List* (Chapter 21) – Other projects within the study corridor are listed below:
    - Widen Centralia Road to three lanes from Nott Lane to Chester Road
    - Construct E/W Freeway from Route 360 (Hull Street Road) to I-95.

The Transportation Improvement Program (TIP) FY12-15 (Amended September 20, 2012) The TIP is multimodal, and includes highway and public transit projects as well as bicycle, pedestrian, air, rail (mostly improving at-grade crossings), port and freight-related projects.

Although the TIP does not specifically include Project elements, it does state that RAMPO is "working to fund projects to benefit implementation of high-speed rail in region".

Regional Transportation Priority Projects (2013) There are no roadway improvement projects on this list that need to be coordinated with the Project design; however, two Main Street Station projects are listed. Although Main Street Station planning is not part of the

None of the roadway improvement projects on the *Regional Transportation Priority List 2013* need to be coordinated with the SEHSR design; however, the list includes two projects at Main Street Station, which is the northern terminus of the SEHSR project.

Project, it is the northern terminus for this Richmond to Raleigh Project Tier II FEIS:

- *Restoration/Construction of Main Street Station, Phase 3* - This is the final phase of a joint city/state project that totaled $79.8 million with projected completion in 2017. The project is intended to create a multimodal transportation center that will accommodate the SEHSR Corridor as well as serve Amtrak trains, GRTC buses, airport shuttles, taxis, and tour buses, with bicycle and pedestrian access at one centralized location in downtown Richmond.
- *Extension of Main Street Station Platforms*

In addition, the list includes the Virginia DRPT/FRA SEHSR/Intercity Passenger Rail, Richmond (Main Street Station) to Washington D.C. project (Washington, DC to Richmond Southeast High Speed Rail). The MPO supports the extension of the SEHSR Corridor from Washington D.C. to Richmond (Main Street Station). The description notes that the project covers a critical section of the SEHSR Corridor, and includes a discussion of the connection at Main Street Station to the Richmond to Raleigh portion of the SEHSR Corridor studied by this Richmond to Raleigh Project Tier II FEIS.

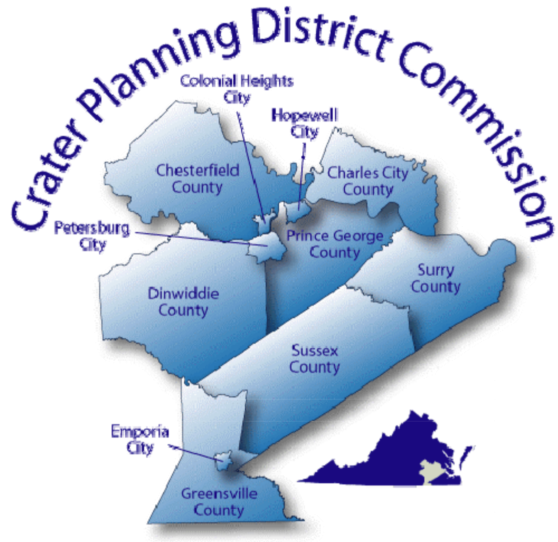
RRPDC 2035 Rural Long Range Transportation Plan (LRTP) (2011) The 2035 Rural LRTP was developed to guide planning of the rural transportation network in the Richmond planning area. Recommendations for the rural district plans also serve as a component of the overall Surface Transportation Plan described previously.

3.11.3.2.1.2 *CRATER PDC*

The Crater PDC is a regional entity serving the counties of Charles City, Chesterfield, Dinwiddie, Greenville, Prince George, Surry and Sussex, and the Cities of Colonial Heights, Petersburg, Emporia and Hopewell (Figure 3-8). Relative to the Study Area, the Crater PDC serves all of Colonial Heights, VA and Petersburg, VA but only the southern portion of Chesterfield County. Transportation planning for the urbanized area of the Crater PDC is performed by the Tri-Cities MPO (Figure 3-9).

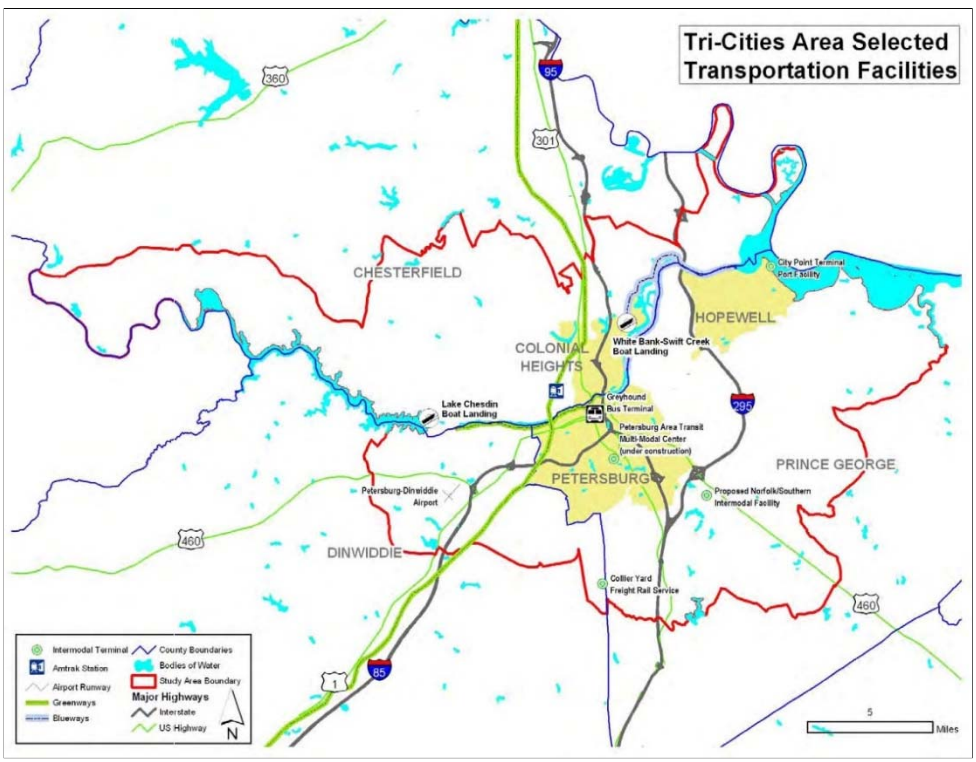
> Relative to the Study Area, the Crater PDC serves all of Colonial Heights, VA and Petersburg, VA but only the southern portion of Chesterfield County. Transportation planning for the urbanized area of the Crater PDC is performed by the Tri-Cities MPO

Figure 3-8



Source: Crater Planning District Commission, 2012

Figure 3-9



Source: Crater Planning District Commission, 2012

The Crater PDC and Tri-Cities MPO have produced the following transportation planning documents pertinent to the Project:

Tri-Cities Area (TCA) Year 2035 Transportation Plan (June 2012) The intent of the 2035 TCA Plan is to meet future-oriented, multimodal transportation needs of the region, such as autos, transit, marine, rail, bicycling and pedestrians. The plan references the Project, describes the approved alignment through the Tri-Cities region, and provides a link to the Project website.

The *Tri-Cities Area Year 2035 Transportation Plan* references the SEHSR project, describes the approved alignment through the Tri-Cities region, and provides a link to the SEHSR project website.

The plan notes that intercity passenger rail service in the Tri-Cities area is provided by Amtrak, and that the existing Amtrak Ettrick Station serves the Tri-Cities portion of the Richmond area providing an important modal connection. Planning is included for PAT, the fixed-route public transportation system operating within the Tri-Cities area. The plan further references the Tri-Cities Multimodal Station Study, which was anticipated but not yet under way at the time the TCA was released. This plan has since been completed, and is referenced below.

The plan also outlines the ongoing planning assistance provided to the rural portion of the Crater Planning District, noting ongoing coordination with the Project.

Tri-Cities Multimodal Station Study (August 2012) This pre-NEPA study was developed by Virginia DRPT in cooperation with the Tri-Cities MPO to present comparative data for two alternate station sites in the Petersburg, VA area: the existing Amtrak Station at Ettrick, VA, and a site near the CSX Collier Rail Yard south of Petersburg, VA. Section 1.4 contains information about the planning work for the project, which began in August 2014. Currently, and Environmental Assessment is under development that will be used to select the preferred location for a multimodal station in the Petersburg, VA area

Crater Planning District Regional Planning District Commission 2035 Long Range Transportation Plan (2011) This plan was developed to guide planning of the rural transportation network in the Crater planning area. Recommendations for the rural district plans also serve as a component of the overall VSTP. Portions of the plan pertinent to the Project include three projects in Dinwiddie County:

- *Project 7* - VA 40 from VA 1009 to US-1. Mid-term: Widen to 4 lanes.
- *Project 15* - VA 646 from VA 647 to US-1. Long-term: Reconstruct road to address geometric deficiencies (10-foot lanes).
- *Project 23* - VA 613 from VA 1 South to VA 670 West. Long-term: Reconstruct road to address geometric deficiencies (12-foot lanes).

3.11.3.2.1.3 SOUTHSIDE PDC

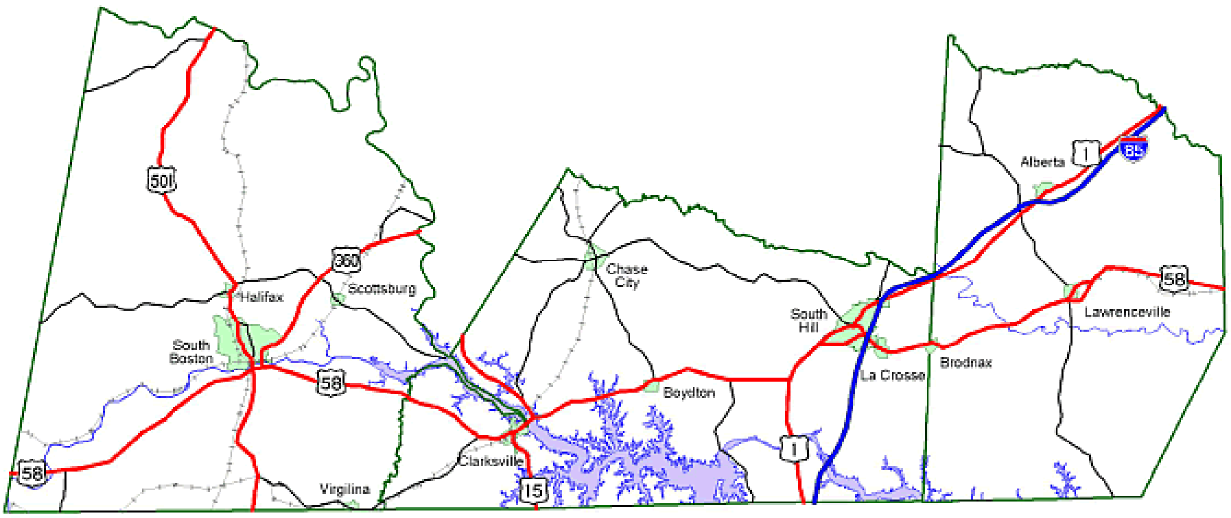
The Southside PDC is a regional entity serving the counties of Brunswick, Halifax, and Mecklenburg and the Towns of South Boston and South Hill (Figure 3-10). The Southside PDC lacks any sizable urbanized areas; therefore, this region does not have an MPO. Transportation planning within this region is the responsibility of the Virginia Department of Transportation (VDOT) in coordination with the local governments.

The Southside PDC is a regional entity serving Brunswick, Halifax, and Mecklenburg counties and the Towns of South Boston and South Hill

Transportation planning within this region is the responsibility of VDOT in coordination with the local governments.

Figure 3-10

Southside Planning District Commission Study Area



Source: Southside Planning District Commission 2012

VDOT worked with the Southside PDC and its local governments to produce the following transportation planning document pertinent to the Project:

Southside PDC 2035 Regional Long Range Transportation Plan (April, 2011) This plan was developed to guide planning of the rural transportation network in the Southside planning area. Recommendations for the rural district plans also serve as a component of the overall state-wide Surface Transportation Plan. The plan states that there is currently no intercity rail or commuter rail service within the region, and that the nearest Amtrak services are provided in Danville (10 miles west of the region) on the New York to New Orleans Crescent Service and in Petersburg (25 miles northeast of the region).

Southside PDC's *2035 Regional Long Range Transportation Plan* references the SEHSR. Portions of the plan pertinent to the SEHSR project include four projects in Dinwiddie County and one project in Mecklenburg County.

The plan references the SEHSR Corridor, stating that "one of the most anticipated rail projects in the Commonwealth is the planned SEHSR" that is planned to traverse the region in a corridor that follows the CSX line which parallels I-85 and US-1. The plan notes that regionally preferred locations for SEHSR Corridor rail stops include Alberta and La Crosse.

The plan also covers the public transportation systems operating within the Southside PDC area, including Lake Area Bus (LAB), which operates within Mecklenburg County, La Crosse, and Alberta.

Portions of the plan pertinent to the Project include four projects in Dinwiddie County, and one project in Mecklenburg County.

Brunswick County Projects –

- *Project 35 - VA 630 (Sturgeon Road) from I-85 to US-1-* Long-term: reconstruct road to address geometric deficiencies.

- *Project 36 - VA 629 from VA 630 to US-1*- Long-term: reconstruct road to address geometric deficiencies.
- *Project 38 - VA T-628 (Church Street) from VA 136 to VA T-106* - Long-term: reconstruct road to address geometric deficiencies.
- *Project 39 - VA T-1404 (Virginia Avenue) VA T-606 (Virginia Avenue) to VA T-628 (Church Street)* - Long-term: reconstruct road to address geometric deficiencies

Mecklenburg County Projects –

- *Project 38- VA T-618 from southern city limits of La Crosse to VA T-1507* - Long-term: widen to urban two-lane roadway.

3.11.3.2.2 NORTH CAROLINA REGIONAL PLANNING

Within North Carolina, each COG is a political subdivision made up of elected officials appointed by its member local governments. The Study Area traverses two COG regions, Kerr-Tar (Region K) and Triangle J (Region J) COGs.

3.11.3.2.2.1 *KERR-TAR REGIONAL COG*

The Kerr-Tar Regional COG serves Warren, Vance, Franklin, Granville, and Person Counties and the municipalities within these counties. Transportation planning for the Kerr-Tar Regional COG is performed by the Kerr-Tar RPO.

The Kerr-Tar Regional COG serves Warren, Vance, Franklin, Granville, and Person Counties and the municipalities within these counties. Transportation planning for the Kerr-Tar Regional COG is performed by the Kerr-Tar Rural Planning Organization (RPO).

Kerr-Tar Area Rural Transportation System Authority (KARTS) - KARTS provides public transit throughout these region K counties: Franklin, Granville, Vance and Warren Counties. Planning for KARTS is partially funded by the state through the STIP, and is undertaken by the Kerr-Tar COG.

The Kerr-Tar RPO has worked with NCDOT and the local governments to develop the following transportation planning documents that contain projects pertinent to the Project:

Warren County Comprehensive Transportation Plan (CTP) (adopted June 2008; Technical Report dated March 2010) This plan replaced the 2004 Norlina, NC Thoroughfare Plan and covers the entire county. The planning was a joint effort between the Town of Norlina, NCDOT, and the Kerr-Tar RPO. The plan includes a description of the SEHSR Corridor and includes the following relevant elements:

The Warren County CTP includes the SEHSR project in its transportation improvement plans.

- *Public Transportation and Rail Map* – The alignment of the Project preferred alternative is shown along with a recommended station and park and ride facility in Norlina, NC.
- *Rail Recommendations* - As part of improvements for the Project, a grade separated crossing of Ridgeway Rd. (SR 1107), west of Norlina, to be constructed and to re-align Ridgeway Rd. (SR 1107) with St. Tammany Rd. (SR 1210) to create a continuous route to I-85 from US-401 as referenced below.
- *US-158 Bypass* – A recommended primary route improvement is a bypass of US-158, extending along a new location from the existing US-158 to US-1 just north of SR 1210 (St. Tammany Road) was originally included in the 2004 Norlina Plan, and then

carried forward into the Warren County CTP. Both plans call for the bypass to intersect the Project rail corridor by-way of a grade separated crossing.

- *US-401/Warrenton Loop* – A recommended primary route improvement is for US-401 to be rerouted around Warrenton and Norlina, intersecting the Project rail corridor.

Vance County CTP, Draft (June, 2012) The Vance County CTP plan was a joint effort between Vance County, its municipalities, NCDOT, and the Kerr-Tar RPO. The Vance County CTP replaced the 2002 Henderson Thoroughfare Plan (which was used to develop the Project designs shown in the Richmond to Raleigh Project Tier II DEIS) when it was adopted in 2012.

The CTP acknowledges the planned SEHSR Corridor through the county along the current CSX S-Line, and addresses the initial recommendations from the Richmond to Raleigh Project Tier II DEIS, including the locations of grade separations and road connections.

The CTP acknowledges the planned SEHSR Corridor through the county along the current CSX S-Line, and addresses the initial recommendations from the Richmond to Raleigh Project Tier II DEIS, including the locations of grade separations and road connections. It notes that the proposed road crossings and grade separations are not final and are subject to change, and that they were coordinated with the local governments and the NCDOT Rail Division. The updated CTP, however, does not include the Main Street Extension project previously shown in the Henderson, NC Thoroughfare Plan.

- *Proposed road closings due to the Project* - The plan shows road closings at the following locations along the Project railroad alignment:
    - Oak Ridge Church Road
    - Beechtree Trail Road
    - McClanahan Street, (Kittrell, NC)
    - Main Street
    - North Chavis Road
    - Cole Lane
    - Bobbitt Road
    - Eastern Minerals Road
    - Welcome Avenue
    - Warehouse Road (does not cross railroad)
    - Miriam Street
    - Chavasse Avenue
    - West Spring Street
    - Orange Street
    - Winder Street
    - Montgomery Street
    - Rock Spring Street
    - Harris Street
    - North Oliver Drive
    - Currin Road
- *Proposed grade separated crossings due to the Project* - The plan shows proposed grade separated crossings at the following locations along the Project alignment:
    - Oak Ridge Church Road
    - Egypt Mountain Road
    - Church Street
    - Edwards Road
    - Wild Life Lane
    - Bear Pond Road

  - JP Taylor Road
  - Dabney Drive to Alexander Avenue
  - NC39
  - Beckford Drive
  - Warrenton Road
  - Brookston Road
  - Greystone Road
- *Public Transportation and Rail Map and Highway Map* – These maps show the Project alignment through downtown Kittrell, NC, Henderson, NC, and Middleburg, NC with a recommended rail stop and intermodal connector in Henderson on US-158 Business (Garnett Street).
- *KARTS bus transit system*- Several changes are proposed to the KARTS bus transit system ("Around Town Shuttle") in Henderson due to the proposed Project road closings.

Franklinton Thoroughfare Plan (1997) This plan was the basis for the traffic analysis conducted for the Richmond to Raleigh Project Tier II DEIS. Projects in the plan pertinent to the Project include:

- *South Franklinton Connector* - proposed to extend from NC 56 east of SR 1118 (Lane Store Road) to US-1 south of SR 1127 (Pocomoke Road). The plan calls for the Connector to intersect the rail corridor by way of a grade separated crossing. Subsequently, the 2012 Franklin County CTP was adopted and is described below.

Franklin County Comprehensive Transportation Plan (July 2011) This plan was a joint effort between all the municipal and county areas in Franklin County, NCDOT, the Capital Area Metropolitan Planning Organization (CAMPO), and the Kerr-Tar RPO. The plan was coordinated with the Project team, and includes the grade separated crossings that are presented in the Richmond to Raleigh Project Tier II FEIS designs.

The CTP maps were adopted by Franklin County and the Towns of Centerville, NC and Louisburg, NC and endorsed by the Kerr-Tar RPO and the Towns of Bunn, NC, Franklinton, NC, and Youngsville, NC. The CTP maps contain the following notation: "*Exact rail alignment, grade separation locations and other corresponding projects to be determined by SEHSR project study*." Specific details of the CTP maps include:

- *Public Transportation and Rail Map* - shows the Project alignment through downtown Franklinton and Youngsville with no recommended rail stops.
- *Highway Map Inset for Franklinton* - shows proposed grade separations of the Project corridor at these locations:
  - Winston Street
  - Mason Street
  - South of existing Cedar Creek Road
  - Planned Bypass Expressway
  - Bert Winston Road new alignment
- *Highway Map Inset for Youngsville* - shows proposed grade separations of the Project corridor at these locations:
  - Proposed NC 98 bypass
  - Main Street.
- *Franklin County Projects* - projects pertinent to the Project include:
  - Project 100 – Future commuter rail with stops at Franklinton and Youngsville

- Project 101-104 – Provide a grade-separated pedestrian crossing across the railroad per the Project plan at the following locations: College Street, Hillsborough/Hawkins Street, Franklin Street, and Mason Street
- Project 111 – Improve existing grade separations over railroad (Project alignment) at NC 56
- Project 112 – Provide grade separation for NC 96.

Kerr-Tar Regional Planning Organization (KTRPO) Project Priority Listing (2014-2020)
The following projects from the KTRPO are within the Study Area:

- *Project 5* - Widen Warrenton Road (SR 1001) to 12-foot lanes
- *Project 7* - Continuation of Western Outer Loop
- *Project 12* - Create southbound movements from I-85 to US-1
- *Project 14* - Upgrade SR 1151
- *Project 24* - Widen US-1 Business from Peter Gill Road (SR 1548) to Dabney Drive (SR 1267)
- *Project 31* - Widen US-1/US-158 through Vance County to four lanes.

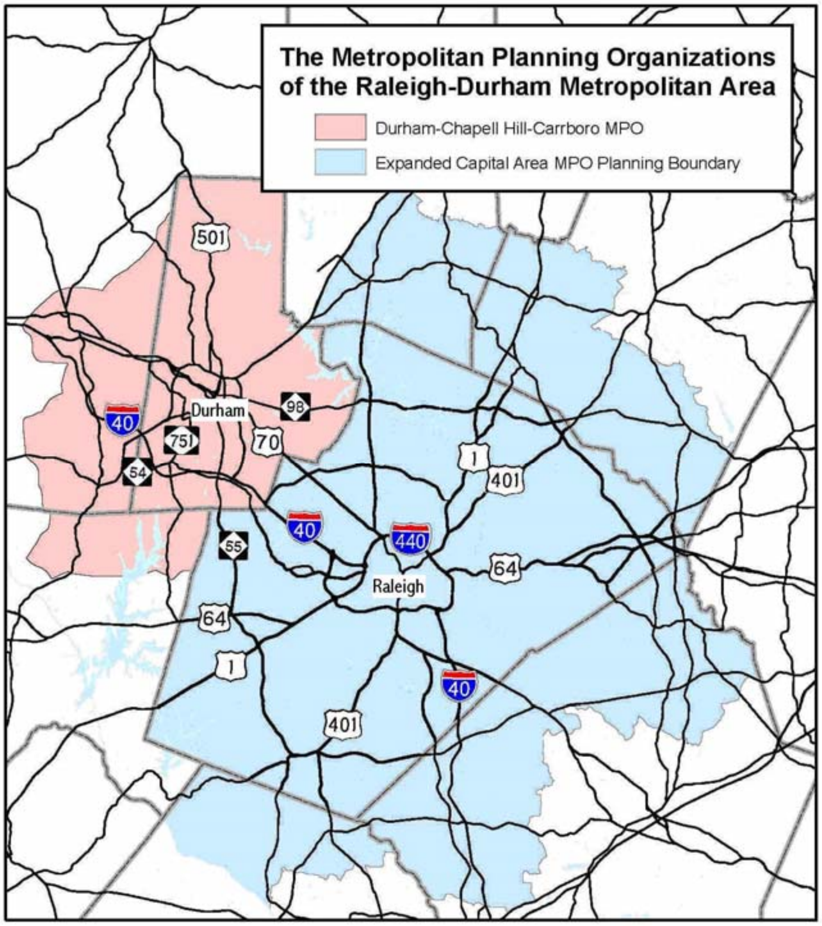
The Triangle J COG is a regional entity serving Chatham, Durham, Johnston, Lee, Moore, Orange, and Wake counties. Transportation planning for the urbanized areas of the COG is performed by CAMPO and the adjacent Durham-Chapel Hill-Carrboro MPO. CAMPO serves the portion of the region within the Study Area, including Wake County and the southern portion of Franklin County.

3.11.3.2.2.2 *TRIANGLE J COG*

The Triangle J COG is a regional entity serving Chatham, Durham, Johnston, Lee, Moore, Orange, and Wake counties. Transportation planning for the urbanized areas of the COG is performed by CAMPO and the adjacent Durham-Chapel Hill-Carrboro MPO (Figure 3-11). CAMPO serves the portion of the region within the Study Area, including Wake County and the southern portion of Franklin County.

Figure 3-11

CAMPO Study Area



Source : North Carolina Capital Area Metropolitan Planning Organization, 2012

CAMPO has recently produced several transportation planning documents pertinent to the Project, including:

US-1 Corridor Study - CAMPO prepared a two-phased report with the involvement of the affected localities and Franklin, Vance and Wake Counties. It is a comprehensive multimodal transportation and growth plan intended to preserve the functional characteristic of the corridor, manage the overall growth within the area, enhance the quality of life of its surrounding communities, while providing for the local and regional transportation needs along US-1, which closely parallels the Project corridor.

- *Phase I (September 2006)* – The Phase I study includes 13 miles of US-1 in Wake and Franklin Counties, between I-540 in Raleigh and the northern intersection of US-1/ Park Avenue (US-1A) in Youngsville.
- *Phase II Study (Draft Report December 2012)* – The Phase II Study is a continuation of the Phase I Study, and includes sections of the US-1 (Capital Boulevard) corridor through Franklin County and the Town of Franklinton, starting from Park Avenue in Youngsville and ending at the Vance County line to the north, with planned implementation between years 2015 and 2050.

Phase II recommends a land use vision and phased multimodal transportation improvements that are consistent with regional transportation and land use plans, including the proposed Project alignment.
The study also recommends long range roadway, highway, transit, bicycle and transit improvements needed to facilitate proposed future land uses in the corridor, including industrial and economic development in the immediate vicinity of the Project corridor, to take advantage of enhanced freight access.

The CAMPO/DCHCMPO LRTP specifically supports the SEHSR project as well as "any other passenger rail initiatives that the MPO might designate in the future" with a clear goal of prioritizing transit facilities and services, including bus and rail, to create a more modally balanced and interconnected system.

CAMPO and Durham-Chapel Hill-Carrboro MPO (DCHCMPO) 2035 Joint Long Range Transportation Plan (March 2011) The proposed Project alignment crosses a number of projects identified on mapping for the CAMPO 2035 Joint LRTP:

- *A-126a - Ligon Mill Road Widening from Burlington Mills Road to US-1A* - currently an at-grade crossing of the rail corridor.
- *A-10 - Widening of Old Wake Forest Road from Litchford Road to Capital Boulevard (US-1)* - Currently, SR 3555 (Old Wake Forest Road) crosses over the proposed rail corridor via a two-lane bridge.
- *F-11 - US-1 - Upgrade to Freeway* - US-1 crosses the proposed Project alignment via two two-lane bridges.

The Plan specifically supports the development of the SEHSR Corridor as well as "any other passenger rail initiatives that the MPO might designate in the future" with a clear goal of prioritizing transit facilities and services, including bus and rail, to create a more modally balanced and interconnected system.

The plan also includes a focus on the connection between transportation and land use, including transit station area development, roadway access management and developing "complete streets" to allow a variety of transportation modes. The plan incorporates a "Regional Transit Vision Plan" developed by a Special Transit Advisory Commission that includes plans for linking major activity centers to regional and intercity rail services (such as the SEHSR Corridor). Bus service within the CAMPO area is currently provided by the City of Raleigh, the Town of Cary, NCSU and TT. These bus service providers currently cover these areas: Raleigh, Cary, Morrisville, Wake Forest, Garner, Apex, Durham, Chapel Hill, Carrboro and Hillsborough

The plan includes TT proposed light rail service between Durham, Raleigh and North Raleigh, which is planned to operate within existing railroad ROW, some portions of which are adjacent and parallel to the Project proposed ROW.

2012-2018 Metropolitan Transportation Improvement Program (TIP) (September 2011) The CAMPO TIP includes the following projects pertinent to this Project:

- *P-3819 SEHSR between Charlotte, NC and the Virginia state line*, including environmental study, preliminary engineering, ROW, design, and construction.
- *TE-4903 Fixed Guideway – Alternatives Analysis for Major Transit Corridor Projects*- in Durham, Orange and Wake Counties.

Capital Area Bus Transit Development Plan (TDP) Final Report (October 2011) This 2040 Transit Development Plan was prepared for CAMPO and the City of Raleigh/Capital Area Transit (CAT), along with partner agencies TT, Cary Transit, North Carolina State University

Wolfline, and Wake County. The TDP is intended to serve as a guide in developing a transit vision for the entire CAMPO area. The City of Raleigh's planned Union Station multimodal transportation center (which includes plans to serve future SEHSR Corridor trains) is included in Recommended Capital Facility Enhancements.

3.11.3.2.2.3 TRIANGLE TRANSIT (TT)

Planning for the Wake County TT transit corridor is on-going, and has included extensive coordination with the NCDOT Rail Division and the Project team.

TT (formerly, Triangle Transit Authority) operates regional bus and shuttle service throughout the CAMPO area, and has been planning for a regional fixed guideway system of transit since the 1980. Plans have continued to evolve since a 2003 Federal Transit Administration (FTA) ROD on the Phase I Regional Rail System FEIS (Triangle Transit, 2013). TT's current focus for regional light rail is on Orange and Durham Counties, which are outside the Project Study Area. Planning for the Wake County TT transit corridor, which includes ROW adjacent and parallel to the proposed Project ROW is on-going, and has included extensive coordination with the NCDOT Rail Division and the Project team.

3.11.3.3 COUNTY AND MUNICIPAL PLANNING

3.11.3.3.1 VIRGINIA LOCAL PLANNING

In Virginia, cities are independent from counties in that residents from cities are not considered part of the surrounding county. Residents in Virginia cities, therefore, cannot vote for county representatives, are not able to receive county services, nor are they subject to county taxes. In Virginia, towns are different from cities, in that towns are not independent from counties. Residents of Virginia towns are still residents of the county in which the town is located and are therefore able to vote for county representatives, may have to pay for (and receive) county services and are subject to county taxes as well as any town taxes.

All localities (cities and counties) in Virginia are required to prepare and adopt a plan to guide the physical development of land within their jurisdictions, and to review the plan at least every five years and update as necessary. The planning or development department within each locality is responsible for developing and updating the locality's long range plans. The following summarizes the most pertinent sections of the long range land use plans for the localities in the Study Area.

3.11.3.3.1.1 CITY OF RICHMOND

Richmond Master Plan 2000-2010 (2000) This plan is out of date, and as such, includes the renovation and return to operations for Main Street Station as a goal. Subsequently, Main Street Station has re-opened and is currently serving two round-trip Amtrak passenger trains per day to Newport News (4 daily trains). The plan does incorporate the concept behind the Project by including goals for establishment of HSR passenger service connections to the northeast corridor, south to Charlotte, NC, as well as connections to eastern and western parts of the state. In addition, the Transportation and Roadway improvements map shows a HSR alignment that follows the SEHSR Corridor.

Richmond Connects (Richmond's Strategic Multimodal Transportation Plan) (July 2013) This 20-year plan for transportation within Richmond, VA describes actions and plans that Richmond will take over the next 20 years to implement the plan's vision of a truly multimodal transportation system that will support economic development, tourism and sustainability goals.

Richmond Connects recommends using Main Street Station as the City's multimodal hub, with the SEHSR's Preferred Alternative connecting to the Station along the HSR Corridor.

The plan's implementation strategies were developed to support the following guiding principles: Safety, System Preservation, Multimodal Linkages, Complete Streets, Equity and Accessibility, Regional Coordination, sustainable Transportation, Alternative Mode Support, Historic Character, and Innovation. The Plan's Transit and Rail Recommendations includes Main Street Station as the city's "Multimodal Hub," with the SEHSR Corridor's Preferred Alternative connecting to Main Street Station along the "High Speed Rail Corridor". These planned transit improvements also include the Richmond BRT (Bus Rapid Transit) (discussed below), Priority Transit Corridors, Local Route Improvements and Extensions as well as Transfer Centers. The plan includes the following implementation tasks and investment strategies for intercity passenger rail: Coordinate closely with Virginia DRPT and regional entities to ensure the City has a seat at the table during the planning process for expanding passenger rail services; continue to promote the enhancement of Main Street Station as multimodal hub for passenger rail services; and, Continue coordination with state and Federal agencies to incrementally improve intercity passenger rail service.

Richmond Downtown Plan (July 2009) This plan notes that in 2003, Main Street Station was fully restored and re-opened to limited Amtrak service, serving two trains per day to Newport News, VA. A key recommendation of this Plan is to consider Main Street Station as a multimodal transportation hub.

Richmond Riverfront Plan (November 2012) As a continuation of the 2009 Downtown Plan, the Riverfront Plan provides a strategy to revitalize a 2.25 mile long stretch of the James River, from the Lee Bridge to Rocketts Landing, extending at least 200 feet inland from both banks of the river. The plan shows the CSX S-Line railroad (utilized by the Project) and bridge over the James River.

Broad Street Bus Rapid Transit Study (BRT) Greater Richmond Transit Company (GRTC) oversees planning for the City's transit system. GRTC is working in partnership with Virginia DRPT to plan for bus rapid transit along the Broad Street corridor in Richmond, VA. Broad Street BRT is a 7.6 mile proposed project to provide rapid transit service along the Broad Street corridor of Richmond. This project was recommended in the Richmond Connects Plan, described above. The project begins at Willow Lawn in Henrico County in the west and extends on Broad Street through the City of Richmond to 14th Street, then continues from 14th on Main Street where buses will continue at limited BRT stops to the eastern terminus at Rocketts Landing. Within the corridor, a median-running guideway for BRT buses only will be provided from Thompson Street to Adams Street, and a dedicated curb lane for all buses will be provided on Broad from 4th Street to 14th Street. In total, buses will run on dedicated lanes for about half of the corridor and in mixed traffic for the remainder. A total of 14 BRT stations are planned, including a stop at Main Street Station, the northern terminus of this Richmond to Raleigh Project Tier II FEIS. A locally preferred alternative was selected in June, 2014 and the study project is moving toward the preliminary design phase. Current estimates of project completion show the project opening at the end of 2017 or beginning of 2018.

3.11.3.3.1.2 *CHESTERFIELD COUNTY*

Comprehensive Plan for Chesterfield County (October 2012) includes the following regarding passenger rail service in the County:

- *Chapter 13- Transportation*- The plan indicates that Ettrick Station is the passenger rail station in the county and is owned by CSX Transportation and leased by Amtrak, which operates daily service via the Carolinian/Piedmont service between New York, NY and Charlotte, NC, and the Silver Star/Palmetto, serving New York, NY to Miami, FL. The plan also acknowledges Ettrick Station would have a stop for the new passenger service to Norfolk, VA, which began in December 2012.
  The plan references ongoing planning for the SEHSR Corridor authorized under the Intermodal Surface Transportation Efficiency Act of 1991, and shows the location of the SEHSR Corridor as "Potential High Speed Rail" on the Rail Facilities Figure.

> The Comprehensive Plan for Chesterfield County acknowledges Ettrick Station would have a stop for the new passenger service to Norfolk, VA, which began in December 2012. The Plan indicates that expanded rail service provided by SEHSR would have a positive economic impact, could potentially increase housing demand, and would benefit the growth and expansion of Virginia State University (adjacent to the existing Ettrick Station).

- *Chapter 10 Land Use* – The plan acknowledges the Richmond to Raleigh Project Tier II EIS study, indicating that expanded rail service would have a positive economic impact, and would potentially increase housing demand, and would benefit the growth and expansion of Virginia State University (adjacent to the existing Ettrick Station).

Ettrick Village Plan (adopted 2004) work is currently underway to update this plan. The 2004 plan recommends using the existing local street network around the Ettrick Station to accommodate traffic from the SEHSR Corridor. It also notes that the proposed conservation and recreation area along the Appomattox River should not interfere with SEHSR Corridor river crossing. Refer to Section 4.13 for additional discussion related to parks within the Study Area. Work is underway to update this plan

3.11.3.3.1.3 *CITY OF COLONIAL HEIGHTS*

City of Colonial Heights Comprehensive Plan 2044 (Updated January 2015) The plan makes no specific reference to the Project. The update does not mention the SEHSR Corridor, but does reference the existing Amtrak Ettrick Station located nearby.

3.11.3.3.1.4 *CITY OF PETERSBURG*

Petersburg Comprehensive Plan (adopted 2011) This plan supports HSR in the region, and references passenger rail as follows:

- *Proposed high speed rail service along the east coast rail corridor through the City of Petersburg includes possible facilities for the city* - "The City of Petersburg should position itself a transit ready City by adopting policies that 1) combine land use and transportation, 2) promote the current transit service and facilities, and 3) encourage transit oriented development at preferred location of pending HSR station. This would include developing a specific Transit Oriented Development (TOD) overlay zoning ordinance that clearly defines the appropriate densities, uses, and types of development that must occur within the zone for HSR to be feasible. Without such market inducing actions, the City risks being over-looked by Amtrak as a viable station area."
- *Multimodal transit center* – The plan describes the City's new multimodal transit center that houses bus lines from PAT, GRTC and Greyhound Bus Lines. In addition, shuttle buses provide service to the Petersburg Amtrak Station in Ettrick. The plan notes that the

transit center shelters riders in a multimodal, multi-purpose facility and enables travelers to move between local, regional, and national travel routes from one central location.

Petersburg Area Transit (PAT) Planning for PAT is undertaken by the City of Petersburg.

3.11.3.3.1.5 *DINWIDDIE COUNTY*

Dinwiddie County Comprehensive Land Use Plan (adopted 2007) This plan also covers the communities of Dinwiddie, VA and McKenney, VA, and supports passenger and freight rail as well as an integrated multimodal transportation system, and specifically mentions actions needed to plan for the SEHSR Corridor, as follows:

- Objectives of the Transportation Chapter include:
    - "Encourage the use of alternative modes of transportation to provide for an efficient, intermodal transportation system." (1d)
    - "Study / plan for public transportation." (1j)
    - "Study the potential impact of high speed rail on Dinwiddie County." (1m)
    - "Study the development of a zoning overlay district for the proposed high speed rail corridor." (1p)
    - "Promote the utilization of railways for economic and industrial growth." (2b).
- *Map X-3, Dinwiddie Corridor Plan*, identifies the "Potential High Speed Rail Corridor" along the alignment of the Project corridor.

3.11.3.3.1.6 *BRUNSWICK COUNTY*

Vision 2015 Brunswick County, 2006 Comprehensive Land Use Plan Update This plan, which covers the Town of Alberta (and others outside the Study Area), references the SEHSR Corridor as well as the importance of rail freight to the county, as follows:

- *Support the development of existing rail and air facilities and encourage the development of additional rail and air service* – This support is outlined within the Transportation Element of the plan as a strategy for promoting a balanced transportation system that supports growth.
- *Southeast High Speed Rail* – The SEHSR Corridor is discussed under the Parks and Recreation Element of the plan as it pertains to the planned Tobacco Heritage Trail. Refer to Section 3.14 for additional discussion related to parks located within the SEHSR Corridor.

3.11.3.3.1.7 *MECKLENBURG COUNTY*

Mecklenburg County Strategic Economic Development Plan (adopted in 2010) This plan establishes a goal of assisting in implementing the SEHSR Corridor from Richmond to Raleigh, with a station in La Crosse, VA.

Mecklenburg 2035 Comprehensive Plan (adopted in October 2012) This plan, which covers the county as well as the Towns of South Hill and La Crosse (and others outside the Study Area), supports the SEHSR Corridor as follows:

- *Proposed SEHSR Corridor map* - The Existing Transportation Section includes a map from the Richmond to Raleigh Project Tier II DEIS showing the proposed Project corridor; also included is the Section I location map from the Project Recommendation Report (NCDOT, Virginia DRPT, 2012) which shows the alignment of the preferred alternative through La Crosse.

- *Challenges and Opportunities, Item 1* - states "The most significant opportunity that can affect transportation in the future is the construction of the high speed rail line between Charlotte and Richmond."
- *Potential Action Items, Infrastructure Planning* - states "Careful land use management along transportation (arterial and high-speed rail) corridors will ensure effective movement of traffic and attractive business areas that enhance the image of Mecklenburg County."
- *Policies and Action Strategies* - "Champion construction of the high speed rail line between Charlotte and Richmond, with a dedicated stop in La Crosse."

3.11.3.3.2 NORTH CAROLINA LOCAL PLANNING

Unlike Virginia, municipal corporations (also referred to as cities, towns or villages) in North Carolina are not independent from the counties wherein they reside. Residents of North Carolina's municipalities are also residents of the county in which the city or town is located; therefore, they are able to vote for county representatives, may have to pay for (and receive) county services and are subject to county taxes as well as city or town taxes.

Municipal corporations (also referred to as cities, towns or villages) in NC are not independent from the counties wherein they reside.

Local governments (or localities) in North Carolina (which refers to both counties and cities) are empowered to prepare and adopt plans to guide the physical development of land. While state law does not require localities to adopt a land development plan, for a transportation plan to be adopted, localities must have a land development plan adopted no more than five years earlier. Likewise, a North Carolina locality is not required to have zoning regulations, but if it does, those regulations must be made in accordance with a comprehensive plan.

The county planning department is responsible for providing planning services, including developing and updating the county's long range plans, to the unincorporated portions of their county; however, some counties also provide these services to their smaller towns. The city planning department is responsible for providing planning services, including developing and updating the city's long range plans, for its incorporated areas as well as its extra-territorial jurisdiction (ETJ), a special zoning area outside of its current municipal boundary, in order to plan for future expansion and growth. The following summarizes the most pertinent sections of the long range land use plans for the localities in the Study Area.

3.11.3.3.2.1 *WARREN COUNTY*

Warren County 2022 Comprehensive Development Plan (adopted 2002) This plan covers the Town of Norlina (and other towns outside the Study Area) as well as the unincorporated portions of the county, and indicates support for the SEHSR Corridor through the stated goal of creating and updating the County Thoroughfare Plan with consideration of the SEHSR Corridor.

3.11.3.3.2.2 *VANCE COUNTY*

Vance County Land Use Plan (adopted 1996 and amended August 2010) This plan covers the unincorporated portions of the county as well as the Towns of Middleburg and Kittrell (and other towns outside the Study Area). The plan includes a summary and schedule of the SEHSR Corridor in the Transportation Resources Section, noting the SEHSR Corridor

The *Vance County Land Use Plan* notes that the project has "the potential to provide great benefit and exposure to Vance County and may include a passenger stop in downtown Henderson."

would "utilize portions of existing rail lines and would involve building overpasses or underpasses at virtually all intersections of the rail line and roads within the county" and that the SEHSR Corridor has "the potential to provide great benefit and exposure to Vance County and may include a passenger stop in downtown Henderson." The plan also states that "with the timetable for this project inside of 10 years, it is important that the county is prepared for the development pressures which could be a result of the rail line."

3.11.3.3.2.3 *CITY OF HENDERSON*

Henderson 2030 Comprehensive Plan (adopted May 2010) This plan includes consideration of the SEHSR Corridor, stating that "[a] portion of the proposed Southeast High Speed Rail Corridor from Raleigh to Petersburg VA is planned along the CSX rail line, with a planned stop in Henderson. One of the major challenges facing the city is to maintain safe and convenient access across the railroad tracks."   The plan includes two goals related to the Project:

- *Identify economic development opportunities related to proposed HSR station.*
- *Develop land conservation plan for the proposed SEHSR Corridor.*

3.11.3.3.2.4 *FRANKLIN COUNTY*

Franklin County Comprehensive Land Use Plan (adopted 2000) This plan also covers the Towns of Youngsville and Franklinton (and other towns outside the Study Area). The Plan makes no specific reference to the SEHSR Corridor, which is expected, given its age. The Plan does, however, recommend industrial land uses to be located along existing rail corridors for future freight access.

3.11.3.3.2.5 *TOWN OF FRANKLINTON*

Franklinton Comprehensive Land Use Plan (adopted in 1989 and updated in 2006) This plan makes no reference to the SEHSR Corridor.

3.11.3.3.2.6 *TOWN OF YOUNGSVILLE*

Youngsville 2000-2010 Land Use Plan (adopted October 2000) This plan references the SEHSR Corridor, noting that plans are underway to include HSR on the CSX railroad corridor within the Town limits. The Plan's Implementation Measure A states that, "The Planning Board strongly recommends that the town officials meet with the Department of Transportation to study the needs of the growing area and to learn and plan for the future plans of the state concerning improvements in the roadway system in and about Youngsville. Included in this study should be the proposed high-speed train and its effect on the road system."

3.11.3.3.2.7 *WAKE COUNTY*

Wake County Transportation Plan (adopted April 2003) This plan covers unincorporated portions of the county, which are not impacted by the Project. The Study Area is located within areas of the county that fall within the planning jurisdictions of the Town of Wake Forest and the City of Raleigh, rather than greater Wake County.

3.11.3.3.2.8 *TOWN OF WAKE FOREST*

Wake Forest Community Plan (adopted September 2009) This plan incorporates and updates previously adopted town-wide plans, including the Land Development Plan, 2020 Community Comprehensive Plan, and Downtown Renaissance Plan.

The *Wake Forest Community Plan* notes that the SEHSR corridor is not expected to seriously impact existing developments or land uses in the vicinity. The Plan also notes that typical concerns associated with HSR through a community include noise and traffic conflicts, but also notes that the high speed trains will pass through the community so quickly that noise and interruption of traffic should be of short duration.

The plan identifies the SEHSR Corridor as following a general alignment with the existing rail line with only minor changes and realignments, noting that the realignments are not expected to seriously impact existing developments or land uses in the vicinity. The plan indicates that the SEHSR Corridor trains are expected to pass through the town without stopping.

The plan notes that typical concerns associated with HSR through a community include noise and traffic conflicts, but also notes that the high speed trains will pass through the community so quickly that noise and interruption of traffic should be of short duration. The plan discusses the fact that at-grade intersections with local streets are viewed with particular concern by rail officials and that there are often initiatives undertaken to permanently close such crossings. Additionally:

- *Policy RT-1 (Regional Transportation in the Growth Management Section)* - states that, "the Town should continue to anticipate and plan for the impacts of new High Speed Rail Service as it passes through Wake Forest en route to major urban centers north and south along the east coast."

NC 98 Bypass Corridor Master Plan (approved August 2003) The Master Plan does not specifically mention the SEHSR Corridor, but the Railroad Crossings Section contains the following recommendations:

- *Pedestrian bridge* – a pedestrian crossing is needed at the NC 98 Bypass railroad crossing because the highway bridge over the railroad does not include sidewalks.
- *Vehicular and pedestrian grade-separated crossing* - is needed to provide a safe crossing of the railroad in the southern area of downtown.

The Wake Forest Transportation Plan (Updated July 2010) This plan is considered both a comprehensive planning element, as well as the Federally required 20-year CTP. The Plan includes a section describing the SEHSR Corridor and proposed service through town, noting that there is no planned stop in Wake Forest.

- *Transit connection to Raleigh Station* - in reference to the fact that there is no planned stop for Wake Forest, the Plan calls for existing bus service between downtown Wake Forest and downtown Raleigh to be modified to include a stop at the proposed Raleigh Union Station.
- *Comments on the Richmond to Raleigh Project Tier II DEIS* - the Plan includes a reiteration of the Town's comments on the Richmond to Raleigh Project Tier II DEIS (which have been responded to in Chapter 8 of this Richmond to Raleigh Project Tier II FEIS).

3.11.3.3.2.9 *CITY OF RALEIGH*

2030 Comprehensive Plan for the City of Raleigh (adopted Oct 2009, last amended October 2013) This plan references high speed intercity passenger rail, and includes several elements that pertain to the proposed SEHSR Corridor, including:

- *Growth Framework Map* – a description of the Downtown Regional Center notes the area's most intense growth and highest levels of transit, bicycle, and pedestrian access and "a true hub for a rapidly growing region, served by highways, rail transit, high-speed intercity rail, and local and express bus." The planned multimodal transportation center is identified as the heart of this Center, and would serve SEHSR Corridor trains.

- *Transportation Element* - policies and action elements pertinent to the SEHSR Corridor including:
    - Map T-5, Future Interchange Locations, shows proposed new grade separations along the CSX S-Line alignment at these locations:
        - Durant Road
        - Gresham Lake Road
        - Millbrook Road
        - New Hope Church Road
        - Whittaker Mill Road
    - Action T 4.1 calls for the City to pursue the development of a multimodal transportation center in downtown Raleigh, linking multiple travel modes including local, regional, and long-distance bus; regional, commuter, and long-distance rail (Amtrak); taxis, cars, and downtown transit circulators. Note that subsequent to the adoption date of this report that advancements have been made on development of the Raleigh Union Station multimodal transportation center. Construction is scheduled to begin in 2015; refer to Section 1.4 for additional information on this project which is a joint undertaking by the City of Raleigh, the NCDOT, and FRA.
    - Policy T 8.2 states that outside of the downtown street grid, the City should "seek additional opportunities to provide grade-separated street connections across the City's passenger and freight rail corridors, and look to grade separate existing crossings where feasible and desirable."

The plan also provides policies and strategies guiding growth of the CAT transit system, including those related to coordination with future regional commuter and long-distance passenger rail.

Small Area Plans The Richmond to Raleigh Project Tier II DEIS reported that most small area plans acknowledge that the SEHSR Corridor generally follows the existing CSX rail line through Raleigh; however, these plans either simply document the existence of the rail corridor or predicate any land use classifications on current freight or proposed regional commuter rail services. The Glenwood South small area plan does not reference the SEHSR Corridor specifically, but makes frequent references to pedestrian and transit options to reduce dependence on automobiles within this mixed-use district. This plan calls for extending pedestrian connections between the West Street area and Glenwood South "to strengthen pedestrian and land use connections" (City of Raleigh, 2007). The SEHSR Corridor passes through this "Pedestrian Business Overlay District", which was put in place subsequent to the Richmond to Raleigh Project Tier II DEIS.

Capital Area Transit In addition to long-range planning contained in the 2040 TDP referenced above in the regional planning section, short range planning for the CAT system is conducted by the City of Raleigh.

Many of Richmond's historically industrial and commercial districts are transitioning to mixed-use areas. Adaptive reuse projects are converting former industrial spaces to condominiums, art galleries, restaurants, and entertainment venues.

3.11.4 NEIGHBORHOODS AND COMMUNITIES

This section has been repeated in its entirety from the Richmond to Raleigh Project Tier II DEIS and describes the urban residential areas, small towns and distinct neighborhoods within the Study Area. Industrial and commercial areas, subdivisions, scattered rural development, and farmlands are documented elsewhere in this chapter.

3.11.4.1 *VIRGINIA*

3.11.4.1.1 CITY OF RICHMOND

The neighborhoods adjacent to Main Street Station are Shockoe Bottom and Shockoe Slip. Historically an industrial area, they now comprise an emerging district of high end condominiums, art galleries, restaurants and entertainment venues. For example, Tobacco Row in Shockoe Bottom is an adaptive reuse project turning former warehouses into a grocery, pharmacy, and condos. According to the 2010 Census, the area includes one of Richmond's fastest growing census tracts.

The area below the James River is often called the Southside of Richmond, which should not be confused with the Southside Virginia region along the North Carolina border. Much of this area is industrial and heavy commercial with the exception of Old Manchester, located west of the railroad. Old Manchester is a largely industrial and heavy commercial district that is transitioning to mixed use. Adaptive reuse projects in recent years converted former industrial spaces to apartments and art studios.

One of the first neighborhoods along the Study Area on the southside of Richmond is just north of Philip Morris Industries along Ruffin Road. This is a workforce neighborhood straddling the existing rail corridor between I-95 and US-1. The Ruffin Road neighborhood is primarily residential, with an elementary school, community center and city park east of the corridor, and a small church to the west. A similar neighborhood exists west of the rail corridor south of Bells Road.

3.11.4.1.2 CHESTERFIELD COUNTY

Most of Chesterfield County contains a suburban development pattern of subdivisions, commercial corridors and shopping centers, and industrial areas.

> Most of Chesterfield County contains a suburban development pattern of subdivisions, commercial corridors and shopping centers, and industrial areas.

The community core area of Chester extends from Hundred Road to around Daniels Street. Chester developed around a stop on the Richmond & Petersburg Railroad, with Railroad Street paralleling the rail corridor. Grid-pattern blocks are laid out with their long sides paralleling the tracks so the old core area is nine blocks long but only four deep (two streets on either side of the rail corridor). Most development within this grid pattern is residential, the bulk of which fronts internal streets rather than the rail corridor. Commercial and institutional development first developed along Hundred Road at the northern end of the core. As the surrounding area suburbanized, most new commercial development has occurred around the intersection of US-1 and VA 10 and the I-95 interchange area.

Ettrick also straddles the existing rail corridor, but its development pattern and demographics appear to be shaped more by Virginia State University, an historically black college of 5,300 students, founded in 1882. As the Study Area passes Dupuy Road, Ettrick Park abuts the rail corridor to the west while a fairly dense residential neighborhood abuts it to the east. This neighborhood, unlike Chester's old core, was not built along the railroad but adjacent to the university. The influence of the university is also evident in that, according to the 2010 Census, 78% of the population is African-American and 44% is in the 15-24 age bracket. The long term presence of the railroad is evidenced by the Amtrak station's location at the southern end of Ettrick Park, which itself straddles the active rail corridor. Ettrick's growth appears to be mostly to the west and northwest.

3.11.4.1.3 CITY OF COLONIAL HEIGHTS

Colonial Heights and Petersburg essentially form a single urbanized area, with Colonial Heights accounting for much of the suburban residential and commercial development. The central development focus of Colonial Heights is US-1, known locally as the "Boulevard." Except where it crosses both Ellerslie Avenue and US-1, the Study Area is almost completely hidden from most of the community as it generally runs behind the developed area fronting the Boulevard. The linear development pattern of Colonial Heights is auto-oriented and thus shielded by the presence of a rail corridor. City plans indicate future growth may continue to the north and towards the east.

3.11.4.1.4 CITY OF PETERSBURG

> Colonial Heights and Petersburg form a single urbanized area, with Colonial Heights accounting for much of the suburban residential and commercial development. Petersburg accounts for much of the urban residential and commercial development in the region.

In contrast to Colonial Heights, Petersburg accounts for much of the urban residential and commercial development in the region. After the Study Area passes Washington Street, it passes through a semi-industrial area, with older workforce residential neighborhoods to the east and west. A similar urban neighborhood abuts the tracks south of Stuart Avenue west of the rail corridor. Suburban-style infill neighborhoods are adjacent to the Study Area around Youngs Road to the west and Juniper Road to the east. A few older workforce houses are located along Lincoln Street west of the Study Area, while a large, urban workforce neighborhood extends north and south along the rail corridor to the east. The remainder of the Study Area is adjacent to either industrial development or undeveloped lands. Urbanized Petersburg essentially ends as the Study Area crosses I-85.

3.11.4.1.5 DINWIDDIE COUNTY

Most of Dinwiddie County contains a rural residential and agricultural development pattern, within large tracts of woodlands, with some scattered residential and commercial development along major roads such as US-1.

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The community core of Dinwiddie (also called Dinwiddie Courthouse) is clustered around the intersection of Boydton Plank Road (US-1) and Courthouse Road. This cluster serves as the county's center for government and commerce. Residential development patterns adjacent to the core are mostly linear, following roads radiating out from the core. A small commercial development cluster exists along the inactive rail corridor south of Haddon Street; however, all other development is linear and oriented towards roadways, particularly Boydton Plank Road.

McKenney is an old railroad village where part of the core area developed along Railroad Street and Factory Street adjacent to the inactive rail corridor. The village core has a loose street grid, six blocks long and three deep, southeast of the rail corridor and northeast of Doyle Boulevard

(VA 40). More recent development is in a linear pattern, mostly oriented northwest-southeast along Doyle Boulevard, Sunnyside Road and Depot Road, with minor clusters at the Boydton Plank Road intersection and I-85 interchange.

3.11.4.1.6 BRUNSWICK COUNTY

Most of Brunswick County contains a rural residential and agricultural development pattern, within large tracts of woodlands, with some scattered residential and commercial development along US-1.

Most of Brunswick and Mecklenburg counties in VA contain a rural residential and agricultural development pattern, within large tracts of woodlands, with some scattered residential and commercial development along US 1. Lake-oriented subdivisions and development occur at the southern end of the Mecklenburg County near Lake Gaston.

Alberta is an old railroad village, with an intersection of the now inactive CSX S-Line and NS rail corridors within its town core. Most of the town is older buildings, some well-maintained and some in need of repair, and many commercial buildings are vacant or underutilized. In 2003, the town commissioned the Alberta Downtown Plan as part of an effort to secure Federal Community Development Block Grant funds to assist with redevelopment and revitalization projects. Alberta's plans for economic development include converting the inactive NS rail corridor to become part of the Tobacco Heritage Trail and creating an industrial park straddling the CSX S-Line rail corridor adjacent to the south side of Boydton Plank Road.

3.11.4.1.7 MECKLENBURG COUNTY

Most of Mecklenburg County contains a rural residential and agricultural development pattern, within large tracts of woodlands, with some residential and commercial development along US-1. Lake-oriented subdivisions and development occur at the southern end of the county near Lake Gaston.

The Town of La Crosse straddles the inactive CSX S-Line rail corridor from US-58 south to Hillcrest Street. La Crosse was a former rail stop and the now closed La Crosse Hotel was built just east of the CSX S-Line rail corridor in the early 20th century. Most of the town's commercial and industrial buildings face the CSX S-Line rail corridor across Main Street to the west. The fire station, the town's main building, faces the CSX S-Line rail corridor from across Carolina Street. The town is actively working on economic development projects for the core area, including renovating and reopening the hotel for use as a railway station to serve this Project, and creating a Tobacco Heritage Trail greenway along the inactive east-west NS rail corridor. Residential areas are mostly older, some well maintained and some in need of repair. The residential parts of town are arranged on a loose street grid around all sides of the core. Some development continues south of town along St. Tammany Road west of the CSX S-Line rail corridor.

Bracey is a tiny highway crossroads area with a few scattered houses; however, the predominant development pattern is commercial and trucking operations oriented toward VA 903 and its interchange with I-85. Several structures in this area are dilapidated or vacant. The old Bracey railroad station building has been moved and is located within the Study Area on the north end of Bracey.

3.11.4.2 *NORTH CAROLINA*

3.11.4.2.1 WARREN COUNTY

Most of Warren County contains a rural residential and agricultural development pattern, within large tracts of woodlands, with some residential, commercial and industrial development along US-1. Lake-oriented subdivisions and development occur at the northern end of the county near Lake Gaston.

Most of Warren County contains a rural residential and agricultural development pattern, within large tracts of woodlands, with some residential, commercial and industrial development along US-1. Lake-oriented subdivisions and development occur at the northern end of the county near Lake Gaston.

Norlina is an old railroad town developed around the intersection of the active CSX S-Line from the south and the inactive CSX SA-Line to the east, as well as the intersection of US-1 with US-158/401. Within the town core area, some heavy commercial buildings are oriented toward the railroad corridors along Liberty and Hyco Streets. Many of the core's buildings are oriented towards streets perpendicular to the rail corridors and most non-residential buildings are located between Main Street south of the rail corridors and US-1 to the north. Residential areas are along a loose street grid to the north and south of the core area. Some lower density suburban development has occurred east of the core between the two rail corridors.

3.11.4.2.2 VANCE COUNTY

Middleburg is a small, predominantly minority community straddling both US-1 and the active CSX S-Line rail corridor. A small residential area of about eight square blocks lies north of US-1 along both sides of Lee Avenue. E.O. Young Elementary school is immediately to the southwest. Most of the area south of US-1 and the CSX S-Line rail corridor is large scale commercial development, including a large Georgia-Pacific operation. Middleburg is immediately east of the US-1 interchange with I-85, with Chex Truck World and related restaurants located to the northwest.

Henderson is a much larger, predominantly minority, city south of I-85 and west of the US-1 Bypass, through which the active CSX S-Line passes. Henderson is a heavy industry center, much of which is located along the Study Area to the northeast and south of the urban core. Within the urban core, the active CSX S-Line rail corridor essentially separates residential neighborhoods and commercial activities to the east from Garnett Street, Henderson's "main street," to the west. Henderson's older neighborhoods are mostly smaller houses along a rectilinear street grid commonly aligned with the CSX S-Line rail corridor. Housing towards the northeast is a mix of middle class and workforce housing. Adjacent to the core, the housing is a mix of workforce and lower income housing. Residential areas in South Henderson are mostly lower income and often vacant. Outside of the Study Area, newer residential development is mostly to the west and follows a more suburban pattern. South Henderson is almost entirely heavy commercial and industrial development as far south as Bear Pond Road and Peter Gill Road. Many industries located here to have access the CSX S-Line rail corridor and to US-1.

Kittrell is a small village originally built straddling the active CSX S-Line rail corridor with much of the core area oriented towards the CSX S-Line rail corridor as well as towards Main and Church Streets, which run perpendicular to the tracks. Much of this "interior" area is now residential and institutional, including Zeb Vance Elementary. The community's limited commercial development is oriented to the US-1 corridor.

3.11.4.2.3 FRANKLIN COUNTY

In Franklin County, Franklinton and Youngsville are small towns that were built straddling the rail corridor and US 1.

Franklinton is an old railroad town built straddling both the active CSX S-Line rail corridor and the old alignment for US-1 (now US-1-A), which remains the town's main street. The street grid reflects the orientations of US-1 and NC 56. The Study Area is mostly residential and institutional, including both Franklinton Elementary and Franklinton High schools, but the commercial core is centered on Mason Street just west of the CSX S-Line rail corridor. Although there is some commercial development around the US-1 interchange with NC 56, the dominant growth pattern appears to be to the east.

Youngsville is another small community built straddling the active CSX S-Line rail corridor and the old alignment for US-1. The street grid reflects the orientation of US-1, NC 96, and the CSX S-Line rail corridor, with older houses surrounding the town core. Most structures are oriented towards streets running perpendicular to the active CSX S-Line rail corridor. Northwest of the core is a newer industrial park developed along the west side of the CSX S-Line rail corridor. Youngsville does not exhibit a clear growth pattern; however, Wake County's growth is expanding towards the community.

3.11.4.2.4 WAKE COUNTY

The SEHSR corridor in Wake County crosses suburban, industrial, and commercial development. Urban development is found in the own core of Wake Forest and inside the Beltline in Raleigh. Most residential development inside the Beltline has occurred since 2000 and consists primarily of mill conversions and high-end condos.

Wake Forest is the northernmost community in Wake County and its subdivisions are spreading into Franklin County. The town's core and urban neighborhoods developed on both sides of the active CSX S-Line rail corridor. Initially, it was a small town heavily focused on mills and the local college. (Wake Forest University has since moved to Winston-Salem – Southeastern College and Seminary has taken its place.) Today, Wake Forest is a bedroom community for people commuting to Raleigh and Research Triangle Park. Most new housing is for middle to upper income households, as is the restored historic housing. However, pockets of lower income and workforce housing remain. The DuBois Center, for example, is a community center serving lower income residents through special school programs, tutoring, job training and a food bank. Wake Forest has active plans to revitalize its downtown core area. Regardless, most new commercial development is drawn to the US-1 corridor, because it is the primary commuter route.

Between Wake Forest and the area within Raleigh known as "inside the [I-440] Beltline," lie a combination of newer, middle to upper income subdivisions and master planned communities, such as Heritage Wake Forest, and older workforce housing, apartments and manufactured housing communities, such as Litchford Mobile Homes. This outer area of suburban housing is separated from more urban neighborhoods and districts by a swath of industrial and commercial development along the Study Area.

Once the rail corridor crosses Capital Boulevard (inside the Beltline), the Study Area enters urban Raleigh, with the historic Mordecai and neo-traditional Pilot Mill Village neighborhoods adjacent to the ROW, and Peace College near by. The state government office complex lies along much of the eastern edge of the Study Area. The active CSX S-Line rail corridor travels through several districts (Glenwood South, Powerhouse Square and the Warehouse District, collectively known as West Side) transitioning from industrial and commercial to mixed use entertainment, office and residential. Most residential development in this area has occurred since 2000 and consists primarily of mill conversions and high-end condos. Most downtown neighborhoods were oriented towards workforce housing, government employees and college faculty, but now gentrification and high cost infill development are causing a demographic shift within downtown.

3.11.5 COMMUNITY FACILITIES AND SERVICES

This section of the chapter documents and describes the public facilities and services located within the Study Area. Regional facilities located outside of the Study Area as well as services provided throughout an entire jurisdiction are also documented. Updates to the information provided in the Richmond to Raleigh Project Tier II DEIS are noted within the sections below.

3.11.5.1 *PUBLIC EDUCATIONAL FACILITIES*

Following publication of the Richmond to Raleigh Project Tier II DEIS, three schools previously located within the Study Area moved to locations outside the Study Area: Franklinton High School in Franklinton, NC; Forest Pines Drive Elementary in Wake Forest, NC; and Raleigh Charter High School in Raleigh, NC. The description below is the same as that provided in the Richmond to Raleigh Project Tier II DEIS, except where otherwise noted below.

Following publication of the Richmond to Raleigh Project Tier II DEIS, 3 schools previously located within the Study Area moved to locations outside the Study Area. The description below is the same as that provided in the Richmond to Raleigh Project Tier II DEIS, except where otherwise noted below.

3.11.5.1.1 VIRGINIA

3.11.5.1.1.1 *CITY OF RICHMOND*

Ruffin Road Elementary is located at 2001 Ruffin Road, east of the existing CSX S-Line rail corridor and at-grade railroad crossing. The school is located in an isolated, lower income neighborhood just north of the Philip Morris industrial complex. Ruffin Road provides the only access to this school via the at-grade railroad crossing, which is also connected with a city park and community center.

3.11.5.1.1.2 *CHESTERFIELD COUNTY*

Bensley Elementary is located at 6600 Strathmore Road in Chesterfield County, west of the CSX S-Line and east of the CSX A-Line existing rail corridors. The Richmond to Raleigh Project Tier II DEIS mistakenly included Bensley Elementary in the list of schools located within the Study Area. Because the school is outside the Study Area, it has not been evaluated for Project impacts in Chapter 4 of this Tier II FEIS.

Perrymont Middle is located at 8610 Perrymont Road, east of the existing CSX S-Line rail corridor. The school is located southeast of the Defense Supply Center Richmond (DSCR). Kingsland Road is the closest access road crossing the existing CSX S-Line and CSX A-Line rail corridors at-grade.

Chester Middle is located at 3900 W. Hundred Road in Chester, east of the existing CSX A-Line rail corridor. The school is located in close proximity to old town Chester. Hundred Road is the closest access road crossing the existing CSX A-Line rail corridor, which is grade separated with a five-lane roadway bridge over the CSX A-Line.

Ettrick Elementary is located at 20910 Chesterfield Avenue in Ettrick, east of the existing CSX A-Line rail corridor. The school is located about two blocks west of Virginia State University. Chesterfield Avenue is the closest access road crossing the existing CSX A-Line rail corridor, which is grade separated with a four-lane roadway bridge over the CSX A-Line.

3.11.5.1.1.3 *CITY OF COLONIAL HEIGHTS*

North Elementary is located at 3201 Dale Avenue, west of the existing CSX A-Line rail corridor. The school is located east of Boulevard. East Ellerslie Avenue is the closest access road crossing the existing rail corridor, which is grade separated with a five-lane roadway bridge over the CSX A-Line.

Lakeview Elementary is located at 401 Taswell Avenue, west of the existing CSX A-Line rail corridor. The school is located south of Lakeview Avenue and west of the Boulevard. The Boulevard is the closest access road crossing the existing rail corridor, which is grade separated with the CSX A-Line passing over the four-lane roadway.

3.11.5.1.1.4 *CITY OF PETERSBURG*

J.E.B. Stuart Elementary is located at 100 Pleasants Lane, west of the existing CSX A-Line rail corridor. The school is located about seven blocks east of Central State Hospital. Dupuy Road is the closest access road crossing the existing CSX A-Line rail corridor, which is grade separated with the CSX A-Line passing over the two-lane roadway.

Westview Elementary is located at 1100 Patterson Street, east of the existing CSX A-Line rail corridor. The school is centrally located within a residential neighborhood. Lincoln Street is the closest access road crossing the existing CSX A-Line rail corridor at-grade.

3.11.5.1.1.5 *DINWIDDIE COUNTY*

Southside Elementary is located at 10305 Boydton Plank Road, west of the former CSX S-Line rail corridor. The school is located between Burgess and Dinwiddie village. Dabney Mill Road and Quaker Road are the closest access roads crossing the Study Area.

Sunnyside Elementary is located at 10203 Sunnyside Road in McKenney, northwest of the former CSX S-Line rail corridor. The school is located northwest of McKenney’s town core. Doyle Road is the closest access road crossing the Study Area.

3.11.5.1.1.6 *BRUNSWICK COUNTY*

No schools in Brunswick County are located within the Study Area.

3.11.5.1.1.7 *MECKLENBURG COUNTY*

No schools in Mecklenburg County are located within the Study Area.

3.11.5.1.2 NORTH CAROLINA

3.11.5.1.2.1 *WARREN COUNTY*

Northside Elementary is located at 164 Elementary Avenue (on US-1) north of the existing CSX S-Line rail corridor. The school is located within the Norlina town core. Division Street and US-158 are the closest access roads crossing the existing CSX S-Line rail corridor, with Division Street crossing at-grade and US-158 grade separated with the CSX S-Line passing over the two-lane roadway.

3.11.5.1.2.2 VANCE COUNTY

E.O. Young Jr. Elementary is located at 6655 Broad Street (US-1) in Middleburg, west of the existing CSX S-Line rail corridor. The school is located just southwest of the town core. Allison Cooper Road is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

L.B. Yancey Elementary is located at 311 Hawkins Drive in Henderson, east of the existing CSX S-Line rail corridor. The school is located in south Henderson. St. Matthews Street is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

Zeb Vance Elementary is located at 4800 Raleigh Road in Kittrell, west of the existing CSX S-Line rail corridor. Peter Gill Road is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

Henderson Middle is located at 219 Charles Street in Henderson, east of the existing CSX S-Line rail corridor. The school is located in central Henderson. Charles Street and East Andrews Avenue are the closest access roads crossing the existing CSX S-Line rail corridor, with Charles Street grade separated with the CSX S-Line passing over the four-lane roadway and East Andrews Avenue crossing at-grade.

Northern Vance High is located at 293 Warrenton Road in Henderson, north of the existing CSX S-Line rail corridor. The school is located in northeast Henderson. Warrenton Road is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

The Kittrell Job Corp Center is located at 1096 US-1 South, west of the existing CSX S-Line rail corridor. The training center is located along Kittrell's highway corridor. East Main Street is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

3.11.5.1.2.3 FRANKLIN COUNTY

Franklinton Elementary is located at 431 South Hillsborough Street in Franklinton, west of the existing CSX S-Line rail corridor. The school is located near the town core. Hawkins Street is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

Since publication of the Richmond to Raleigh Project Tier II DEIS, Franklinton High moved from 3 North Main Street in Franklinton to a location outside the Study Area, and Franklinton Middle School moved into the building at 3 North Main Street. East Mason Street is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

3.11.5.1.2.4 WAKE COUNTY

Since publication of the Richmond to Raleigh Project Tier II DEIS, Forest Pines Drive Elementary moved from its temporary location at 530 E. Perry Avenue in Wake Forest to a location outside the Study Area on Forest Pines Drive, southwest of the town core.

Wake Forest Elementary is located at 136 W. Sycamore Avenue in Wake Forest, west of the existing CSX S-Line rail corridor. The school is located south of the town core. Elm Avenue is the closest access road crossing the existing CSX S-Line rail corridor at-grade.

Raleigh Charter High School moved from 1111 Haynes Street in Raleigh, to a location outside the Study Area at 1307 Glenwood Avenue, Raleigh, NC.

> No changes have been made to the description of Emergency Services that was provided in the Richmond to Raleigh Project Tier II DEIS.

Peace College is located at 15 Peace Street in Raleigh, east of the existing CSX S-Line rail corridor. The college is located immediately north of downtown Raleigh. Wake Forest Road and Peace Street (both of which are currently grade separated) are the closest access roads crossing.

3.11.5.2 *EMERGENCY SERVICES*

No changes have been made to the description of Emergency Services that was provided in the Richmond to Raleigh Project Tier II DEIS.

3.11.5.2.1 EMERGENCY MANAGEMENT AND HAZARDOUS MATERIALS

3.11.5.2.1.1 *VIRGINIA*

Emergency management for the Virginia segment of the Study Area is administered by the Virginia Department of Emergency Management, Divisions 1 and 3.

The Virginia hazardous materials emergency response program provides enhanced, state-of-the-art technical response capabilities and extensive, multi-level, broad-based environmental planning and training programs. Team G, based in Henrico County, is responsible for the Virginia segment of the Study Area.

3.11.5.2.1.2 *NORTH CAROLINA*

Emergency management for the North Carolina segment of the Study Area is administered by the North Carolina Department of Crime Control and Public Safety, Division of Emergency Management, Central Branch Areas 6 and 7.

The North Carolina Hazardous Materials Regional Response Team (RRT) program is a system of six teams strategically located within the state to provide hazardous materials response services to the citizens of North Carolina. An RRT is available to respond with technical support, manpower, specialized equipment and/or supplies whenever an incident exceeds local capabilities. Team 4, based in Durham, is responsible for the North Carolina segment of the Study Area.

3.11.5.2.2 POLICING

Chesterfield, Dinwiddie, Brunswick, Mecklenburg, Warren, Vance, Franklin and Wake Counties all provide some degree of policing through their Sheriff's Department. Richmond, Colonial Heights, Petersburg, Henderson, Franklinton, Youngsville, Wake Forest and Raleigh all have their own municipal police departments.

Chesterfield, Dinwiddie, Brunswick, Mecklenburg, Warren, Vance, Franklin and Wake Counties all provide some degree of policing through their Sheriff's Department. Richmond, Colonial Heights, Petersburg, Henderson, Franklinton, Youngsville, Wake Forest and Raleigh all have their own municipal police departments.

3.11.5.2.3 FIRE AND EMERGENCY MEDICAL SERVICES

Fire and Emergency Medical Services (EMS) are provided at county and municipal level throughout the Study Area.

3.11.5.2.3.1 VIRGINIA

The City of Richmond's Department of Fire and Emergency Services provides fire, rescue and EMS within municipal boundaries through 20 fire stations. The City has several specialty unites, including river rescue, heavy rescue, repelling, and hazardous materials. There are no emergency facilities located within the Study Area in Richmond, but the Medical College of Virginia Campus of Virginia Commonwealth University, the Richmond Fire Station 1/R1, Richmond Fire Station 13, and Richmond Fire Station 21 are located nearby.

Chesterfield County's Fire and EMS Department, a combination career/volunteer system, provides fire, rescue and EMS throughout the county through 20 fire and 9 rescue stations. The Bensley-Bermuda Volunteer Rescue Squad's Station 2 and Station 3, and the Chesterfield Fire and EMS Station 17 are located within the Study Area; while the Bensley-Bermuda Volunteer Rescue Squad Station 12, and the Chesterfield Fire and EMS Station 1 and Station 3 are located nearby.

Colonial Heights' Fire and EMS Department, a combination career/volunteer system, provides fire, rescue and EMS within municipal boundaries through 2 stations. Neither of these stations are in the Study Area, but both are nearby.

Petersburg's Department of Fire, Rescue and Emergency Services provides fire, rescue and EMS within municipal boundaries. None of Petersburg's emergency facilities are located within the Study Area, however Petersburg Company 3 and Company 5 are located nearby.

Dinwiddie County's Division of Fire and EMS, a combination career/volunteer system provides fire, rescue and EMS throughout the county through 6 fire stations and 3 rescue squads. There are no emergency facilities located within the Study Area; however the Dinwiddie Rescue Squad, the Dinwiddie Volunteer Fire Department Company 1, and the McKenney Volunteer Fire Department Company 3 are located near or adjacent to the Study Area.

Brunswick County's Fire and EMS is a combination career/volunteer system that provides fire, rescue and EMS services throughout the county. The system includes five fire companies, two EMS agencies, and two fire and EMS companies. There are no emergency facilities located within the Study Area; however the Alberta Volunteer Fire Department Company 1 and the Brunswick Volunteer Rescue Squad are located nearby.

Mecklenburg County's volunteer fire department provides fire and EMS services throughout the county through 5 fire stations and 4 rescue squads. Additional municipal volunteer fire stations are located in the towns of South Hill, Chase City, La Crosse, Boydton and Clarksville. The La Crosse Volunteer Fire Department is adjacent to the Study Area.

3.11.5.2.3.2 NORTH CAROLINA

Warren County's volunteer fire department provides fire services throughout the county through 17 fire stations. Warren County EMS provides EMS throughout most of the county while the Warren County Rescue Squad covers the northeast quadrant. The Wise Hawtree Volunteer Fire Department, Ridgeway Volunteer Fire Department and Soul City Volunteer Fire Department are located within the Study Area, while the Norlina Station #2 is located nearby, but outside the Study Area.

Vance County's Fire and Ambulance Department provides fire and EMS services throughout the county. In addition, the City of Henderson's Fire and Rescue Department provides fire and EMS services within municipal boundaries through 2 stations. The City of Henderson Fire Station #2 and Bearpond Volunteer Fire Department are inside the Study Area; while the Vance

County Ambulance and Fire Service, City of Henderson Fire Station #1, and Kittrell Volunteer Fire Department are adjacent to, or nearby the Study Area.

Franklin County's Fire Department, a combination career/volunteer system, provides fire and EMS services throughout the county and within municipalities through 8 stations. The Youngsville EMS is located within the Study Area, while the Franklinton EMS and Youngsville Fire Department Station #1 are just outside the Study Area.

Wake County's Fire/Rescue Division provides fire and rescue services within unincorporated areas of Wake County through approximately 45 stations (because Wake County is a rapidly growing area new stations are periodically added). Wake County EMS operates approximately 9 stations within the county and 4 within municipalities. The Town of Wake Forest provides fire and EMS services within municipal boundaries through 2 stations. The City of Raleigh provides fire, rescue and EMS services within municipal boundaries through 27 stations. The Wake Forest Fire Station #2, Raleigh Fire Department #22, Durant EMS and Glenwood South EMS are located within the Study Area. Located near the Study Area are the Wake Forest Fire Station #1, Wake Forest EMS, Wake Forest South EMS, Raleigh Fire Department # 15, Mini City EMS, Duke Health Raleigh Hospital, Highwoods EMS, Whittaker Mill EMS, Raleigh Fire Department #1 and Downtown EMS.

3.11.5.3 *HEALTH SERVICES*

No changes have been made to the description of Health Services that was provided in the Richmond to Raleigh Project Tier II DEIS.

No changes have been made to the description of Health Services that was provided in the Richmond to Raleigh Project Tier II DEIS.

3.11.5.3.1 VIRGINIA

3.11.5.3.1.1 *CITY OF RICHMOND*

Major medical facilities include the Children's Hospital of Richmond, Virginia Commonwealth University Health System, Chippenham Hospital, McGuire Veterans Medical Center, Cumberland Hospital, St. Marys Hospital, Johnston-Willis Hospital, and Richmond Community Hospital, all of which are located outside of the Study Area.

3.11.5.3.1.2 *CHESTERFIELD COUNTY*

Johnston-Willis Hospital and St. Francis Medical Center are located outside the Study Area.

3.11.5.3.1.3 *CITY OF COLONIAL HEIGHTS*

There are no major medical facilities within this city.

3.11.5.3.1.4 *CITY OF PETERSBURG*

Major medical facilities include the Southside Regional Medical Center and the John Randolph Medical Center, both of which are outside of the Study Area.

3.11.5.3.1.5 *DINWIDDIE COUNTY*

There are no major medical facilities within this county.

3.11.5.3.1.6 *BRUNSWICK COUNTY*

There are no major medical facilities within this county.

3.11.5.3.1.7 *MECKLENBURG COUNTY*

The Community Memorial Health Center is located outside of the Study Area.

3.11.5.3.2 **NORTH CAROLINA**

3.11.5.3.2.1 *WARREN COUNTY*

There are no major medical facilities within this county.

3.11.5.3.2.2 *VANCE COUNTY*

Maria Parham Medical Center is located outside of the Study Area.

3.11.5.3.2.3 *FRANKLIN COUNTY*

Franklin Regional Medical Center is located outside of the Study Area.

3.11.5.3.2.4 *WAKE COUNTY*

Major medical facilities include WakeMed, WakeMed North, Western Wake Medical Center, Duke Raleigh Community Hospital, and Rex Healthcare. State medical institutions include Dorothea Dix Hospital and the Central Prison Hospital. All of these facilities are located outside of the Study Area.

3.11.5.1 *PLACES OF WORSHIP AND CEMETERIES*

The list of places of worship and cemeteries in the Study Area has been revised since the Richmond to Raleigh Project Tier II DEIS to include new listings based upon comments or additional information (Table 3-28). Churches that have moved or are no longer in existence are also noted here, but are not discussed in Chapter 4.

The list of places of worship and cemeteries in the Study Area has been revised since the Richmond to Raleigh Project Tier II DEIS to include new listings based upon comments or additional information. Churches that have moved or are no longer in existence are also noted here, but are not discussed in Chapter 4.

Table 3-28
Places of Worship by Section

Section	Map Sheet	Location	Place of Worship	Change From Project Tier II DEIS
AA	3	Richmond, VA	All Saints Apostolic Church, 2001 Royall Ave.	
	4	Richmond, VA	Shekinah Temple Church of Our Lord Jesus Christ, 2102 Ruffin Rd.	Moved or no longer in existence
	4	Richmond, VA	Church of God in Christ, 2208 Summer Hill Ave.	
	8	Near Bellwood in Chesterfield County, VA	Kingsland Baptist Church, 8801 Perrymont Rd.	
	10	Chester, VA	Historic First Baptist Church, 4412 Centralia Rd.	
	10	Chester, VA	Centralia Presbyterian Church, 4625 Centralia Rd.	
BB	12	Chester, VA	Chester Church of Christ, 12100 Winfree St.	
	12	Chester, VA	St. John's Episcopal Church, 12201 Richmond St.	
CC	17	Near Colonial Heights in Chesterfield County, VA	Calvary Baptist Church, 17001 Jefferson Davis Highway	
	18	Colonial Heights, VA	Church of Nazarene, 601 Ellerslie Ave.	
	18	Chesterfield County, VA	Kingdom Hall, 3635 Halifax Rd.	Moved or no longer in existence
	18	Colonial Heights, VA	St. Michael's Episcopal Church, Old Town Rd.	
	20	Near Ettrick in Chesterfield County, VA	Macedonia Tabernacle, 3615 E. River Rd.	
	20	Near Ettrick in Chesterfield County, VA	God Mission of Faith Church, 3718 East River Rd.	
	24	Petersburg, VA	Shining Light Pentecostal Holiness Church, 1417 Farmer St.	

Table 3-28
Places of Worship by Section

Section	Map Sheet	Location	Place of Worship	Change From Project Tier II DEIS
	24	City of Petersburg, VA	Third Presbyterian Church, 1660 Dupuy Rd.	Tier II DEIS incorrectly listed the location as Chesterfield County
	25	City of Petersburg, VA	Greater Faith AME Zion Church, 1301 Youngs Rd.	
	25	City of Petersburg, VA	New First Baptist Church, 1346 Grant Ave.	
	25	City of Petersburg, VA	Zion Apostolic Church, 1601 Youngs Rd.	
DD	--	N/A	N/A	
A	38	Dinwiddie County, VA	Olive Branch Baptist Church, 11119 Boydton Plank Rd.	
B	41	Near the County courthouse in Dinwiddie County, VA	Smyrna Baptist Church, 18725 Carson Rd.	
C	45	Dinwiddie County, VA	Mount Calvary Baptist Church, 16609 Glebe Rd.	
D	54	Between McKenney and Alberta in Brunswick County, VA	Lovely Zion Baptist Church, Lovely Zion Rd.	
	60	North of Alberta in Brunswick County, VA	Mercy Seat RZUA Church, Waqua Creek Rd.	
	62	North of Alberta in Brunswick County, VA	Warfield Baptist Church and Cemetery, 7318 Flat Rock Rd.	
E	66	Alberta, VA	United Methodist Church, 304 Church St.	
	66	Alberta, VA	Trinity-St. Mark’s Episcopal Church, 194 Connelly St.	
F to H	--	N/A	N/A	
I	83	South of La Crosse in Mecklenburg County, VA	First Baptist Church, Marengo Rd.	
	83	South of La Crosse in Mecklenburg County, VA	La Crosse Cemetery, Marengo Rd.	New listing

Table 3-28
Places of Worship by Section

Section	Map Sheet	Location	Place of Worship	Change From Project Tier II DEIS
	83	South of La Crosse in Mecklenburg County, VA	Morning Star Apostolic Church, 142 Morris Town Circle	
	83	South of La Crosse in Mecklenburg County, VA	Mecklenburg United Methodist Church, 6503 Marengo Rd.	
J	85	South of La Crosse in Mecklenburg County, VA	Pleasant Hill Reformed Zion Union Apostolic Church, 4143 Marengo Rd.	
	86	South of La Crosse in Mecklenburg County, VA	Sardis United Methodist Church, 3152 Marengo Rd.	
K	--	N/A	N/A	
L	93	Community of Wise in Warren County, NC	Jerusalem United Methodist Church, 850 Paschall Station Road	
	94	Community of Wise in Warren County, NC	Bethlehem Baptist Church, 1258 Cole Farm Road	
	95	Community of Wise in Warren County, NC	Locust Grove Baptist Church, Paschall Station Road	
	95	Community of Wise in Warren County, NC	Providence Church , 1908 US Highway 1 N.	
	95	Community of Wise in Warren County, NC	Wise Baptist Church, 1840 US-1 North	New listing
M	99	Norlina, NC	First Baptist Church, 300 Washington St.	
	100	Warren County, NC	New Creation Church, 108 Hyco St.	Moved or no longer in existence
	100	Norlina, NC	Norlina United Methodist Church, 401 US-1 N.	
	100	Warren County, NC	Unity Prayer House of Faith, 291 US-1 S.	Moved or no longer in existence
	101	East of Ridgeway Community in Warren County, NC	Chapel of the Good Shepherd, NC Rt.1107	
	102	Ridgeway Community in Warren County, NC	Ridgeway Baptist Church, 156 Wycoff Rd.	
N	106	Manson Community in Warren County, NC	Manson Baptist Church, Kimball Rd.	
O	108	Middleburg, NC	Middleburg Baptist Church, 80 N. Plummer Ave.	

Table 3-28
Places of Worship by Section

Section	Map Sheet	Location	Place of Worship	Change From Project Tier II DEIS
	110	Between Middleburg and Henderson in Vance County, NC	Young's Memorial Holy Church, 1379 Brookston Rd.	
	111	Between Middleburg and Henderson in Vance County, NC	Brookston Baptist Church and Cemetery, 242 Baptist Church Rd.	Cemetery added to listing
P	112	North of Henderson in Vance County, NC	North Henderson Church of God, 305 John Deere Rd.	
	114	Henderson, NC	North Henderson Baptist Church, 1211 North Garnett Street	
	114	Henderson, NC	St. John's Episcopal Church, 100 Main Street	
	114	Henderson, NC	Cotton Memorial Presbyterian Church, 511 Chestnut Street	
	114	Henderson, NC	Calvary Temple Holy Church, 215 Kitchen Ave.	
	114	Henderson, NC	Mt Zion Christian Church of Henderson 995 Burr St.	
	114	Henderson, NC	City Road United Methodist Church, N. Garnett St.	New listing
	114	Henderson, NC	Davis Chapel 742 N. Chestnut St.	
	114	Henderson, NC	First Congregational Christian Church, 427 Rowland St.	
	114	Henderson, NC	Rock of the Reach Ministry, 611 N. Garnett St.	Moved or no longer in existence
	115	Henderson, NC	A Touch of Faith Community Church, 601 S. Williams St.	Moved outside corridor
	115	Henderson, NC	First Presbyterian Church, 222 Young St.	
	115	Henderson, NC	First United Methodist Church, 114 Church Street	
	115	Henderson, NC	First Baptist Church, 205 W. Winder St.	
	115	Henderson, NC	Shiloh Baptist Church, 635 S. College St.	

Table 3-28 Places of Worship by Section				
Section	**Map Sheet**	**Location**	**Place of Worship**	**Change From Project Tier II DEIS**
	116	Henderson, NC	Fisher of Men Church of Our Lord Jesus Christ, 163 Elsie St.	
	116	Henderson, NC	United Prayer of Faith Church, Miriam St.	
	116	Henderson, NC	Cooks Chapel Zion Church, 210 Center St.	
	116	South of Henderson in Vance County, NC	Victory Baptist Church, 475 J P Taylor Rd.	
	116	South of Henderson in Henderson, NC	Welcome Chapel Baptist Church, 237 Welcome Ave.	
	117	South of Henderson in Vance County , NC	Raleigh Rd Baptist Church, 3892 Raleigh Rd.	
Q	120	Vance County, NC	Union Chapel United Methodist Church, 6479 Raleigh Rd.	
	120	Vance County, NC	New Hope Baptist Church, Raleigh Rd.	
	121	Kittrell, NC	Taylor's Chapel AME Zion Church, 106 William St.	
	121	Kittrell, NC	Confederate Cemetery, West Chavis Rd.	New listing
	121	Kittrell, NC	Kittrell Baptist Church, 100 W. Williams St.	New listing
	121	Kittrell, NC	St. James Episcopal Church, William St.	
	121	South of Kittrell in Vance County, NC	Grace Missionary Baptist Church, 1625 US-1 South	New listing
	122	South of Kittrell in Vance County, NC	Long Creek United Holy Church, 313 Oak Ridge Rd.	Moved or no longer in existence
	122	South of Kittrell in Vance County, NC	Oak Ridge Baptist Church and Cemetery, Oak Ridge Church Road	New listing
	122	South of Kittrell in Vance County, NC	Kittrell Church of God, 2540 US-1 South	
R	--	N/A	N/A	
S	127	Franklinton, NC	Franklinton United Methodist Church, 109 N. Main St.	

Table 3-28
Places of Worship by Section

Section	Map Sheet	Location	Place of Worship	Change From Project Tier II DEIS
	127	Franklinton, NC	First United Church of Christ, 20 W. Green St.	
	127	Franklinton, NC	Franklinton Baptist Church, 102 W. Mason St.	
	127	Franklinton, NC	Mt. Pleasant Presbyterian Church, S. Main St.	
	127	Franklinton, NC	Holy Trinity Church, 118 S. Hawkins St.	New listing
	128	Franklinton, NC	First Baptist Church, S. Main St.	
	132	North of Youngsville, in Franklin County NC	Union Grove Baptist Church, 552 N. College St.	
T	132	Youngsville, NC	Youngsville Baptist Church, 315 E. Main St.	Tier II DEIS incorrectly listed under Section S
	132	Youngsville, NC	Grace Fellowship Church, 120 W. Franklin St.	Moved or no longer in existence
	133	Wake Forest, NC	Holy Redeemer Catholic Church, 1841 N. White St.	Tier II DEIS incorrectly listed under Section U
U	133	Wake Forest, NC	Wake Forest Cemetery, N. White Street	
	135	Wake Forest, NC	Glen Royal Baptist Church, 731 Elizabeth Ave.	
	135	Wake Forest, NC	Wake Forest Church of God, 155 E. Cedar Ave.	
	135	Wake Forest, NC	Olive Branch Baptist Church, 326 E. Juniper Ave.	
	136	Wake Forest, NC	Spring Street Christian Church, E. Spring St.	
	136	Wake Forest, NC	Hope Baptist Church, new temporary location at 403 Brooks St.	New address
	136	Wake Forest, NC	Tri-Area Ministry, 149 E. Holding Ave.	

Table 3-28
Places of Worship by Section

Section	Map Sheet	Location	Place of Worship	Change From Project Tier II DEIS
	136	Wake Forest, NC	Wake Forest Baptist Church, 107 E. South St.	
	136	Wake Forest, NC	Church of God of Prophecy, 122 N. White St.	Moved or no longer in existence
	136	Wake Forest, NC	Wake Forest United Methodist Church, 905 S. Main St.	
	136	Wake Forest, NC	South Main Baptist Chapel Church, S. Main St	
	137	Wake Forest, NC	Friendship Chapel Baptist Church, 237 Friendship Chapel Rd.	
	139	Between Wake Forest and Raleigh in Wake County, NC	Living Word Family Church, Capital Boulevard	
V	145	Raleigh, NC	Millbrook United Methodist Church, 1712 E. Millbrook Rd.	Tier II DEIS incorrectly listed under Section U
	149	Raleigh, NC	Deliverance Holy Church of God, 626 Capital Boulevard	Moved or no longer in existence
	149	Raleigh, NC	EMI New Covenant Global Ministries, 911 N. West St.	New listing
	149	Raleigh, NC	Powerhouse Church of Jesus Christ, 1130 N. Blount St.	
	150	Raleigh, NC	St Paul AME Church, 402 W. Edenton St.	
	150	Raleigh, NC	Victory Tabernacle Church, W. South St.	

3.12 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

The Richmond to Raleigh Project is subject to the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 306108), and implementing regulations (see 36 CFR Part 800), which require Federal agencies to consider the effects of Federally funded, licensed, or permitted actions on properties listed on or eligible for the National Register of Historic Places (NRHP). Section 106 also gives the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on such actions. The following section identifies archaeological and historical resources located within the Study Area and describes the methods used to identify them.

The NRHP is a list of the nation's cultural resources that are considered worthy of preservation. Listed and eligible resources must meet at least one of the four NRHP key criteria:

- Criterion A - associated with events that have made a significant contribution to the broad patterns of our history; or
- Criterion B - associated with the lives of persons significant in our past; or
- Criterion C - embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D - have yielded or may be likely to yield, information important in prehistory or history.

Section 106 coordination for the Project was conducted with the Virginia Department of Historic Resources (VDHR) and North Carolina State Historic Preservation Office (NC-HPO). In addition, the National Park Service was consulted regarding Civil War battlefields.

3.12.1 ARCHAEOLOGICAL RESOURCES

Per 36 CFR 800.4(b)(2), a phased approach was developed to determine the eligibility of archaeological sites within the Area of Potential Effects (APE) for the Project. The APE is the geographic area within which the character or use of resources may be changed as a result of the Project. For potential archaeological resources in the Study Area, the APE was defined as a 100-foot corridor that extends 50 feet on either side of the centerline of proposed construction activities when they are within current rail ROW. The APE was extended to a 200-foot corridor where construction is proposed on new location.

For the Richmond to Raleigh Project Tier II DEIS, preliminary investigations were completed to identify potentially eligible archaeological resources along all Project alternatives. For the Richmond to Raleigh Project Tier II FEIS, more intensive (Phase II) surveys were completed at the potential eligible sites located within the APE for the preferred alternative, as well as in areas that were not within the APE footprint at the time of Tier II DEIS submission, but became part of the Project APE after modifications to the associated engineering designs.

Between 2009 and 2011, the Project Team's consultant, Dovetail Cultural Resource Group (Dovetail), conducted Phase II testing at 17 sites in the Virginia portion and five sites in the North Carolina portion of the APE that were determined to be potentially eligible for the NRHP, and were located along areas where all Project alternatives overlapped. All sites were investigated through close-interval shovel testing, test unit excavation, and archival research, where applicable.

After establishment of the preferred alternative, Dovetail examined the non-common alignment areas of the APE and identified 12 additional archaeological sites within the limits of construction in Virginia that were determined to be potentially eligible for the NRHP and three additional sites in North Carolina. As such, these 15 sites were the subject of archaeological Phase II work in 2012 and 2013.

Based on the Phase II investigations, there are 18 archaeological sites eligible for or listed on the NRHP in the VA portion of the preferred alternative APE and none in the NC portion.

Based on the Phase II investigations, there are 18 archaeological sites eligible for or listed on the NRHP in the Virginia portion of the preferred alternative APE and none in the North Carolina portion. Table 3-29 summarizes these sites by location.

Table 3-29
Summary of Eligible Archaeological Sites Located within Preferred Alternative by State and County

Jurisdiction	NRHP Listed Sites	NRHP Eligible Sites	Total Sites
Virginia			
City of Richmond	0	1	1
Chesterfield County	3	6	9
City of Colonial Heights	0	0	0
City of Petersburg	1	0	1
Dinwiddie County	0	2	2
Brunswick County	0	3	3
Mecklenburg County	1	1	2
Total in VA	5	13	18
North Carolina			
Warren County	0	0	0
Vance County	0	0	0
Franklin County	0	0	0
Wake County	0	0	0
Total in NC	0	0	0
Total in Study Area	**5**	**13**	**18**

Source: Berger, 2005; Legacy Research, 2005; 2007; Legacy Research, 2005, 2007; Dovetail (see Appendix K for list of Dovetail reports).

The following discussion identifies the archaeological resources within the APE that are listed in or eligible for the NRHP. Specific location information is not provided due to the nature of the resources.

3.12.1.1 *WILLIAMS BRIDGE COMPANY (SITE 44CF0724)*

The Williams Bridge Company (44CF0724) in Richmond, VA, was constructed in 1918 as a manufacturing facility for ship parts during World War I. Subsequent uses included a Depression-era City of Richmond facility storage, recommissioned during World War II for additional shipbuilding services, and later twentieth century private iron working. Today, the facility is used to manufacture bridge components. Due to this multi-faceted and notable history, the property was determined to be eligible for the NRHP under Criteria A, C, and D in 2009. Archaeological investigations determined that a segment of the site was used as an occupation and personal well-being area during both the World War I and World War II periods, only to be abandoned when the facility became a private enterprise. The property is also the only known remaining Emergency Fleet Corporation domestic complex in Virginia. The above- and below-ground remains have the potential to reveal information on Richmond and the Commonwealth of Virginia during the World War I to World War II period (1917–1945); therefore, the property is also eligible for the NRHP under Criterion D.

3.12.1.2 FALLING CREEK IRONWORK (SITE 020-0063)

The Falling Creek Ironwork archaeological site was originally recorded as the location of the Virginia Company Ironworks in Chesterfield County, VA, established in 1619. Subsequent investigation suggests that it could also be Cary's Ironworks, destroyed in 1781 during the American Revolution. It is believed that the site has intact subsurface remains including features and an abundance of in situ artifacts. The site was listed on the NRHP in 1995 under Criterion D for its ability to contain information on area history. It is also a locally designated historic site.

3.12.1.3 SHEFFIELDS (SITE 020-0007)

Sheffields, or Bellwood, is significant as a representative of an early-nineteenth century antebellum plantation that evolved into a modern, twentieth-century farm and dairying operation in Chesterfield County. The main house is an excellent example of vernacular interpretaion of the Early Classical Revival style in the piedmont area constructed in an I-form. During the Civil War, the house served as General P.G.T. Beauregard's headquarters in 1864 and was a meeting site for General Braxton Bragg, General Beauregard, and Jefferson Davis to discuss the defense of Richmond. In 1887, the property was purchased by James Bellwood, who along with his sons transformed the plantation into a nationally reowned farm and dairying operation. In 1941, the Federal government purchased the property for use as a military supply depot, now known as the Defense Supply Center Richmond (DSCR). The period of significance is from the approximate date of construction circa 1804 to 1924. Sheffields is listed on the NRHP under Criterion A for agriculture, Criterion B for its association with James Bellwood, Criterion C for architecture, and potentilally eligible under Criterion D pending archaeological testing.

3.12.1.4 USDOD SUPPLY CENTER DISTRICT (SITE 020-5336)

The USDOD Supply Center District in Chesterfield County is a group of residential, industrial, and military buildings dating from the construction of Sheffield/Bellwood Manor (020-0007), circa 1804, to the development of the Korean Conflict era buildings in 1952. The district is eligible for the NRHP under Critera A, B, C, and D.

3.12.1.5 CENTRALIA EARTHWORKS (SITE 44CF0680)

The Centralia Earthworks, located in Chesterfield County, were developed in the 1862 by Confederate troops as part of the Outer Line of defenses for Drewry's Bluff, a line of protection around the City of Richmond. This series of trenches and artillery batteries was situated near Centralia, a major railroad/road crossroads in Chesterfield County. Although some segments of the earthworks has been destroyed, the extant areas remain in excellent condition and the remaining elements of the artillary battery, trenches, and gun emplacements are representative of earthworks developed in this area during the Civil War. For its association with the Civil War and its important role during battle, specifically the Battle of Wooldridge's Hill, and as an example of military engineering, the site is eligible for the NRHP under Criteria A and C, and potentially eligible under Criterion D pending archeaological testing.

3.12.1.6 CHESTER HOTEL SITE (SITE 44CF0304)

Site 44CF0304 in Chesterfied County is a mid-nineteenth through early-twentieth century site representing many occupations ranging from the Chester Hotel to its transformation to a domestic residence and doctor's office in the 1930s. Due to the presence of intact structural features, the quantity of artifacts and the site's data potential to reveal information on the early years of Chester, this site is eligible for the NRHP under Criteria A and D.

3.12.1.7 *SWANEE SITE (SITE 44CF0748)*

Site 44CF0748 in Chesterfield County was identified as a late-nineteenth century domestic archaeology site during the Phase I archaeology survey completed for the Project in 2009. Dovetail attempted to complete a Phase II survey in February 2011. However, testing was not completed at this site as archaeologists were asked to leave by the property owners during the shovel test portion of the work. Because Phase II testing was not finished at this site, the Site 44CF0748 is still formally considered “potentially eligible” for the NRHP under Criterion D. For the purposes of determining Project effects and potential mitigation as part of the Richmond to Raleigh Project Tier II FEIS, the site is assumed eligible, and it is included in all Project mitigation documents as such, pending futher review once access is granted.

3.12.1.8 *SITE 44CF0707*

Site 44CF0707 in Chesterfield County is a prehistoric site dating to the Middle Woodland Period with a small scatter of late-nineteenth century debris. Due to the presence of stratified deposits, quantity of prehistoric pottery, and integrity of the soils, this site is eligible for listing on the NRHP under Criterion D.

3.12.1.9 *ARROWFIELD PLANTATION (SITE 44CF0708)*

Site 44CF0708 in Chesterfield County contains the archaeological remains of Arrowfield, an early-nineteenth through mid-twentieth century farmstead with a prehistoric component dating to the Middle Woodland and Late Archaic Periods. Based on the presence of intact building remains, high artifact densities, and the potential for this site to yield a plethora of data on Antebellum Chesterfield County, this site is eligible for the NRHP under Criteria A and D.

3.12.1.10 *SITE 44CF0710*

Site 44CF0710 in Chesterfield County is a multicomponent site primarily dating to the Terminal Archaic prehistoric period with an ephemeral mid-late nineteenth century occupation. Based on the presence of diagnostic materials, intact stratigraphy, and the potential for this site to yield additional information on the prehistoric occupation of Chesterfield, this site is eligible for the NRHP under Criterion D.

3.12.1.11 *BATTERSEA (SITE 123-0059)*

Battersea, located in Petersburg, is significant as one of the earliest surviving examples of a five-part, Robert Morris-style Palladian house form in the United States and is the earlist extant, fully developed example of this house type in Virginia. The house was built in 1768 for Colonel John Banister, who was a Virginia Revolutionary War Delegate, a framer of the Article of Confederation, and the first mayor of Petersburg. During the Revoluationary War. Banister contributed to the war effort politically, militarily, financially, and materially. The stables and fields at Battersea were used by the Continental Army throughout the war, and during the invasion of Petersburg, the British occupied the property three different times. Also archaeological studies have yielded Woodland Period lithic fragments, as well as eighteenth-, nineteenth-, and twentieth-century architectural and ceramic artifacts. For these reasons, Battersea is listed on the NRHP under Criterion A for its association with military activity, Criterion B for its association with Colonel John Banister, Criterion C for its architectural merit, and Criterion D in the area of archaeology.

3.12.1.12 DIMMOCK LINE/EARTHWORKS (SITE 44DW0373)

The Dimmock Line/Earthworks in Dinwiddie County is a nineteenth century site featuring multiple components dating to the Civil War era. The trench line, known as the Dimmock Line, is a series of Confederate defenses around Petersburg. Construction began in 1862 and was erected in a shape similar to a horseshoe around the city. These defense works are an excellent example of a trench line used throughout the Civil War. This site is eligible for the NRHP under Criteria A, B and C and is potentially eligible under Criteria D pending further archeaological testing.

3.12.1.13 FORT DAVIS EARTHWORKS (SITE 44DW0314)

Fort Davis Earthworks in Dinwiddie County comprises a 4,000-foot long portion of Civil War earthworks that led south from Fort Davis to protect the county during the Siege of Petersburg. Fort Davis and the earthworks served as the southern anchor for Union troop occupation from 1864 to 1865. Based on their association with notable Civil War activity in the area and the excellent physical integrity of the earthwork system as a whole, the resource was determined to be eligible for the NRHP under Criteria A and C. The resource is also potentially eligible under Criterion D due to its ability to yield additional information on the Civil War occupation of Dinwiddie, but additional testing is required.

3.12.1.14 ORGAIN HOUSE (SITE 44BR0280)

The 1940s Orgain House in Brunswick County was determined eligible for listing on the NRHP under Criterion C as an excellent representative example of Tudor Revival-style architecture. The property also contains above-ground remnants of the original mid-nineteenth century plantation complex, including the preserved stone foundation of the original circa-1840 Orgain home, a ground depression marking the site of a former ice house, and a variety of historic artifacts and landscape features. Although no formal archaeology was conducted on the parcel, historic artifacts litter the entire ground surface, and oral histories with living relatives attest to the retention of all subsurface manifestations of historic properties, wherever possible. As such, the property was determined eligible for NRHP listing under Criterion D for the potential of these remains to reveal important information regarding the physical and cultural development of both the Orgain property and the surrounding area.

3.12.1.15 OAK SHADES (SITE 44BR0179/012-5048)

David Meredith built Oak Shades in 1812 on a plantation that once totaled 1,000 acres and stretched far across Old Indian Road and present-day US-1. The Meredith family, including David's son, William, and grandson, David, farmed the land and operated a store until after the Civil War. In 1820, Oak Shades was licensed as an ordinary. Oak Shades is a two-story, L-shaped dwelling featuring features a center-hall plan, a hipped roof clad in standing seam metal, clapboard siding, and a brick foundation and exterior-end chimneys. Oak Shades represents a rural interpretation of the Federal style that was popular in the early nineteenth century, and the house is eligible for listing in the National Register under Criterion C for its architectural merit. The surrounding domestic archaeological site is eligible under Criterion D.

3.12.1.16 DAVIS SITE (SITE 44BR0225)

The Davis Site (44BR0225) in Brunswick County is a mid-nineteenth through early-twentieth century domestic site, likely occupied around 1914 by Charlie Davis, an African American resident. Given the artifact concentration, preservation of cultural features, and the lack of intensive archaeological studies of mid-nineteenth-century and early-twentieth century domestic sites in Brunswick County, this site has the potential to reveal information on rural domestic sites and/or settlement patterns in the Piedmont during the Reconstruction and Growth Period (1865–1917) and the World War I and World War II Period (1917–1945) (NRHP Criterion D). This site is also eligible under Criterion A for its potential to reveal significant data on nineteenth century domestic life in Brunswick County. As such, the site is eligible for listing in the NRHP under Criteria A and D.

3.12.1.17 *LA CROSSE HOTEL (SITE 44MC0888)*

The La Crosse Hotel (Site 44MC0888) in Mecklenburg County is a historic hotel dating to the first-half of the twentieth century. The resource was previously listed on the NRHP under Criteria A and C. Archaeological surveys determined the site is also eligible for listing in the NRHP under Criterion D.

3.12.1.18 *WRIGHT FARMSTEAD (SITE 44MC0707)*

The Wright Farmstead (Site 44MC0707) is located south of Belfield Road on the edge of an agricultural field. Mecklenburg County records indicate that the Wright Farmstead was originally a 125-acre tract that remained in the Wright family from as early as 1864 until 1941.The principle building is a two-story, three-bay, single family dwelling that dates to the mid-nineteenth century. It has been uninhabited for many years, and is in a dilapidated state. In addition, three hand hewn log buildings and a shed of milled lumber are located on the property. Artifacts were noted on the ground surface surrounding all of the extant buildings, including ceramics, glass, and architectural materials. Based on the results of the investigations, it was determined that the site is potentially eligible for the NRHP under Criterion A for its association with mid-nineteenth century farming in Mecklenburg County and Criterion D for its ability to reveal information on area history.

3.12.2 HISTORICAL RESOURCES

As described in the Richmond to Raleigh Project Tier II DEIS, the APE for potential historical resources in the Study Area extends 250 feet on either side of the corridor center line in those areas where the proposed HSR corridor would remain within existing rail ROW. However, in town or urban settings, the APE was reduced during the field survey because dense modern development would often limit the effect of the proposed railroad on any historic resources. Where the rail designs are on new alignment, the APE was enlarged where necessary. Finally, where the railroad closely parallels modern four-lane highways, the APE extends to, but not beyond, the highway.

Similar to archaeology, historical resource surveys were also performed in the Study Area in two phases. In the first phase, historians for the Project team identified all properties within the APE listed on or eligible for the NRHP. In the second phase, investigators for the Project team performed in-depth evaluations of those properties to determine whether or not they are eligible for listing on the NRHP. During the initial investigation, historians from Mattson, Alexander, and Associates (Petersburg, VA, to Raleigh, NC) and Louis Berger, Inc. (Richmond, VA, to Petersburg, VA), conducted a Phase I preliminary architectural survey for all properties within the APE that appeared to be 50 or more years old. The investigators performed the survey and compiled their results pursuant to the National Historic Preservation Act of 1966, as amended, and the ACHP's *Protection of Historic Properties* (36 CFR 800), in order to meet the requirements of that document. The surveys were also done pursuant to Section 4(f) of the Department of Transportation Act of 1966, which provides additional protection for listed or eligible historic resources. These lands can only be used for a Federally-funded transportation project if there is no other feasible and prudent alternative, and the project incorporates all possible planning to minimize harm (see Chapter 5).

The historians researched files at the North Carolina Division of Archives and History and the VDHR to identify all known, historic architectural resources fitting any of the following categories:

- Listed on the NRHP
- Listed on the North Carolina Study List
- Determined eligible for the NRHP through environmental assessment
- Designated as a local landmark
- Listed on the Virginia Landmarks Registry (VLR)
- Inventoried previously

The historians performed a drive-through (windshield) survey of the APE to photograph and map all resources that appeared to be 50 or more years old. They also evaluated each property and recommended further investigation of those properties appearing to be eligible for the NRHP.

139 historical resources that are listed or eligible for the NRHP are along the Project corridor.

Phase II investigations were performed by Mattson, Alexander, and Associates (Virginia-North Carolina state line to Raleigh, NC), Louis Berger, Inc. (Petersburg, VA, to Virginia-North Carolina state line), and Dovetail (Richmond to Petersburg, additional roadwork areas and historic district evaluations throughout Virginia, and additional roadwork areas throughout North Carolina). Mattson, Alexander, and Associates (Petersburg, VA, to Raleigh, VA) and Dovetail (Richmond, VA, to Petersburg, VA) also conducted research on the Seaboard Air Line (CSX S-Line) and Atlantic Coastline (CSX A-Line) railroad corridors to determine if the existing railroad lines were eligible for listing in the NRHP.

Detailed evaluations included a site file review and background check, field surveys, evaluation, and documentation. Tax records were consulted to determine construction dates and the current owners of each resource. Research was conducted in county and local libraries and historical societies to gather resource-specific information. GIS was used to map the boundaries of each individual resource within the architectural APE. Sufficient narrative physical information was collected to describe each property, characterize its integrity, and assess its potential for NRHP eligibility. Table 3-30 summarizes by state and county the historic resources in the APE that are listed on or eligible for the NRHP.

Table 3-30
Summary of Historical Resources Located within Study Area by State and County

Jurisdiction	NRHP Listed Sites	NRHP Eligible Sites	Total Sites
Virginia			
City of Richmond	4	5	9
Chesterfield County	1	16	17
City of Colonial Heights	1	0	1
City of Petersburg	2	5	7
Dinwiddie County	1	12	13
Brunswick County	0	6	6
Mecklenburg County	1	8	9

Table 3-30 Summary of Historical Resources Located within Study Area by State and County			
Jurisdiction	**NRHP Listed Sites**	**NRHP Eligible Sites**	**Total Sites**
Multi-county resources*	0	2	2
Total in VA	10	54	64
North Carolina			
Warren County	3	5	8
Vance County	7	16	23
Franklin County	4	5	9
Wake County	22	12	34
Multi-county resources*	0	1	1
Total in NC	36	39	75
Total in Study Area	**46**	**93**	**139**

Source: Berger, 2005; Mattson, Alexander, and Associates, 2005, 2007, 2009; Dovetail (see Appendix K for list of Dovetail reports).
* Includes battlefields, historic railroad corridors, and other large resources.

Table 3-31 through Table 3-33 provide information on the individual resources from north to south as they appear in the Study Area. The tables include a general description of all resources in the Study Area. For resources that were identified subsequent to the publication of the Richmond to Raleigh Project Tier II DEIS or where information presented in the Richmond to Raleigh Project Tier II DEIS has changed, additional information is included in the sections below. For more detailed information on the remaining resources, refer to Section 3.12 of the Richmond to Raleigh Project Tier II DEIS.

Table 3-31
Historical Resources in the Study Area - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	VLR Status	NRHP Status/Criteria	Description
Seaboard Air Line Railroad Corridor	AA, BB, CC/ 1-19, 23-24	Chesterfield, Colonial Heights, Petersburg, Richmond		Eligible/A	Historic railroad corridor that represents the origins and growth of the railroad industry in the Richmond to Petersburg corridor; reflects the post-Civil War trend of merging smaller operations to provide better service while being more economical
C. & O. and Seaboard Railroad Depot	AA/1	Richmond	Listed	Listed/A, C	Built 1901, the monumental structure symbolizes the importance of the rail terminal as an entrance gateway to Richmond; example of the influence of the French Ecole des Beaux Arts on American building
Shockoe Valley and Tobacco Row Historic District	AA/1	Richmond	Listed	Listed/A, C	Circa 1740, encompasses the area of Richmond's earliest residential, commercial, and manufacturing activity; architectural styles ranging from Federal through twentieth-century industrial vernacular
Shockoe Slip Historic District	AA/1	Richmond	Listed	Listed/A, C	Circa late-nineteenth and early-twentieth century, erected as wholesale food or tobacco warehouses, with some serving light industry; buildings generally are modified Italianate in style
James River and Kanawha Canal Historic District	AA/1	Richmond	Listed	Listed/A, C	Circa 1785, canal improved navigation on the James River from Richmond to Botetourt County a distance of approximately 200 miles; District comprises of the canal and canal towpath
Atlantic Coast Line Railroad Corridor	AA, BB, CC/ 10-24	Chesterfield, Colonial Heights, Petersburg, Richmond		Eligible/A	Historic railroad corridor that represents the origins and growth of the railroad industry in the Richmond to Petersburg corridor; reflects the post-Civil War trend of merging smaller operations to provide better service while being more economical

Table 3-31
Historical Resources in the Study Area - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	VLR Status	NRHP Status/Criteria	Description
Manchester Industrial Warehouse Historic District	AA/1-2	Richmond	Listed	Listed/A, C	Post 1880, industrial area related to the post-war community of Manchester, VA
Williams Bridge Company	AA/2	Richmond		Eligible/A, C, D	Built in 1919 to assist with World War I war efforts; also used by the US government during World War II; eligible boundary contains main factory and apartment structures used to house workers during both world wars
Lucky Strike/RJ Reynolds Tobacco	AA/2	Richmond		Eligible/A,C	Circa 1955 industrial complex made up of brick buildings and metal storage facilities
Transmontaigne Product Services, Inc.	AA/2	Richmond		Eligible/A	Used to refine, store, ship, and process oil extracts for almost 80 years; founded in 1928 as Gulf Refinery Company; associated with the history of oil production and transport in Richmond
Davee Gardens Historic District	AA/4	Richmond		Eligible/A, C	Planned, symmetrical suburb of Richmond, established in 1947
DuPont Spruance	AA/5-6	Chesterfield, Richmond		Eligible/A	1,500 acre processing plant; first building constructed in 1929; factory played a significant role in the development of textiles and plastics in the US
Sheffields; Auburn Chase; Bellwood; Building 42 - DSCR Officer's Club; New Oxford*	AA/8	Chesterfield	Listed	Listed/A, B, C, D	Circa 1797, representative of the changes in the Richmond area economy, from plantation to tenant farm to military depot; The main dwelling is a Federal style structure with Greek Revival modifications

Table 3-31
Historical Resources in the Study Area - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	VLR Status	NRHP Status/Criteria	Description
USDOD Supply Center Historic District; Bellwood-Richmond Quartermaster Depot Historic District	AA/7-8	Chesterfield		Eligible/A, B, C, D	Resource encompasses Sheffields -Bellwood described above; circa 1940, compound established as the central depot for Richmond area activities associated with World War II
Richmond & Petersburg Electric Railway	AA, BB, CC/ 4-12, 18, 22-23	Chesterfield, Colonial Heights, Petersburg, Richmond		Eligible/A	Circa 1902, creation of this line was the direct impetus for large-scale modifications to settlement patterns in central Virginia
House at 3619 Thurston Rd	AA/9	Chesterfield		Eligible/C	Circa 1900, 1.5-story Colonial Revival dwelling with a gambrel roof and flared eaves
Centralia Post Office	BB/10	Chesterfield		Eligible/A	Served as one of the pivotal social and economic centers of the Centralia community
Ragland House/4626 Centralia Rd*	BB/10	Chesterfield		Eligible/C	Circa 1890, 2.5-story frame single-family dwelling with brick foundation and raised basement
Circle Oaks/4510 Centralia Road*	BB/10	Chesterfield		Eligible/C	Circa 1840, two-story single family dwelling with slave quarters and a kitchen
Centralia Earthworks	BB/10	Chesterfield		Eligible/A, C; Potentially Eligible/D	Earthworks built in 1862 as part of the Confederate outer defensive for Drewry's Bluff; associated with the battle at Wooldridge's Hill and the Bermuda Hundred Campaign; example of Civil War military engineering
Chester Historic District	BB/11-13	Chesterfield		Eligible/A, C	About 10 blocks within Village of Chester; demonstrates a successful planned community in the mid-nineteenth century; high number of extant architectural resources within its period of significance (1830 to 1958)

Table 3-31
Historical Resources in the Study Area - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	VLR Status	NRHP Status/Criteria	Description
Chester #94 Masonic Lodge	BB/12	Chesterfield		Eligible/A	Circa 1905, simple two-story, one-bay, frame meeting hall; important at the local level as a historic Masonic lodge that received its charter in 1878
Pretlow House	BB/12	Chesterfield		Eligible/B	Circa 1850 home to two notable Chester residents, Joseph Snead and Thomas Pretlow
Eichelberger House	BB/12-13	Chesterfield		Eligible/C	Circa 1890, 1.5-story vernacular Queen Anne-Eastlake style single dwelling with Central Passage plan; eligible boundary includes a stone gate near of the intersection of the former Richmond & Petersburg Railroad
Ellerslie	CC/17-18	Colonial Heights	Listed	Listed/A, C	Circa 1857, associated with the development of Colonial Heights; an excellent example of Italianate architecture
Appomattox River Railroad Bridge	CC/24	Petersburg		Eligible/A, C	Built 1915, open steel, deck-plate-girder bridge with 11 steel latticework bents; of the three railroad bridges that crossed the Appomattox River into Petersburg during the first half of the twentieth century, it is the only one that survives
Battersea	CC/24	Petersburg	Listed	Listed/A, B, C, D	Built 1768 for Colonel John Banister, the first mayor of Petersburg and a signer of the Articles of Confederation; a substantial stuccoed brick house that still retains its historic rural character
North Battersea/Pride’s Field Historic District	CC/23-24	Petersburg	Listed	Listed/C	Circa mid-to-late nineteenth and early twentieth century, Italianate, Gothic Revival and Colonial Revival styles residences

Table 3-31 Historical Resources in the Study Area - Virginia					
Resource Name	**Section(s)/ Mapsheet(s)**	**County**	**VLR Status**	**NRHP Status/Criteria**	**Description**
Defense Road	CC/25-27	Petersburg		Eligible/A, C	Colonial Revival-era public parkway designed by the National Park Service in the 1920s and built by the Civilian Conservation Corps as a means of aiding tourists visiting the numerous Petersburg area Civil War earthworks and forts; maintains its original white/grey pavement and the surrounding park-like setting
Dimmock Line/Earthworks	CC/26-27	Petersburg		Eligible/A, B, C, D	Series of Confederate defenses around Petersburg; construction began in 1862 and was primarily built with slave labor under the guidance of Captain Charles Dimmock; great example of a trench line used throughout the Civil War
Bridge over Defense Road	CC/26-27	Petersburg		Eligible/A, C	Single-span, three-lane, segmental arch bridge constructed in 1936 as part of the larger Defense Road parkway project
Fort Davis Earthworks	DD/34	Dinwiddie		Eligible/A, C; Potentially Eligible/D	Civil War era earthworks constructed by Union troops in 1864 during the Siege of Petersburg; good physical integrity
Evergreen	A/37	Dinwiddie		Eligible/C	Circa 1790, example of a Federal-era dwelling
Courtworth	C/44	Dinwiddie		Eligible/C	Circa 1878, example of a late nineteenth-century vernacular dwelling incorporating Victorian motifs
Bowen House	C/45	Dinwiddie		Eligible/C	Circa 1878, example of late Victorian domestic vernacular architecture
W. Boisseau's Store, Warehouse, Dwelling	C/45	Dinwiddie		Eligible/A, C	Circa 1900, examples of rural commercial/domestic complexes of the early twentieth century in southern Virginia

Table 3-31
Historical Resources in the Study Area - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	VLR Status	NRHP Status/Criteria	Description
Bank of McKenney (referred to as Bank Building in Tier II DEIS)	C/50	Dinwiddie		Eligible/A	Circa 1906 commercial building; one of the few surviving early banks associated with the trend of small communities opening banks and one of earliest banks in all of Dinwiddie County
Chesapeake and Potomac Telephone Company (C & P) Building	C/50	Dinwiddie		Eligible/A, C	Circa mid-1920s industrial building; represents a time when the telephone forever changed communication; excellent example of elaborate local telephone company building with notable percentage of original elements intact
Mayton House	C/51	Dinwiddie		Eligible/C	Circa 1905, example of early twentieth-century vernacular Colonial Revival domestic architecture
Zehmer Farm/ Honeymoon Hill Farm	C/51	Dinwiddie	Listed	Listed/C	Circa late nineteenth century; good example of a vernacular dwelling
Wynnhurst	D/54-55	Brunswick		Eligible/C	Built 1925, example of an early twentieth-century Dutch Colonial dwelling
Blick's Store	D/54-55	Brunswick		Potentially Eligible/C	Circa 1909, example of an early twentieth century crossroads store
House/458 Second Avenue	E/66	Brunswick		Eligible/C	Circa 1924 Craftsman style house, rare example of an unmodified kit dwelling
Orgain House	G/73	Brunswick		Eligible/A, C, D	Circa 1840 Tudor Revival dwelling; associated with regional landscape changes and the cultural memory of a single family struggling to maintain their familial land in a rapidly-changing economic environment; contains above-ground remnants of original mid-nineteenth century plantation complex
Tourist Guest House	G/74	Brunswick		Eligible/C	Circa 1926, Craftsman-style tourist house

Table 3-31
Historical Resources in the Study Area - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	VLR Status	NRHP Status/Criteria	Description
Oak Shades	G/74	Brunswick		Eligible/C	Built 1812, rural interpretation of the Federal style
Evans House	H/78-79	Meckenburg		Eligible/C	Built 1930, ornate example of an American Foursquare dwelling
Smelley House	I/82	Mecklenburg		Eligible/C	Built 1880, Victorian-era house represents a rural interpretation of the highly ornate Queen Anne style
La Crosse Commercial Historic District	I/83	Mecklenburg		Eligible/A, C	Collection of early twentieth century commercial buildings; significant as a boom community created by the construction of the railroad that brought economic expansion to the region
La Crosse Hotel	I/83	Mecklenburg	Listed	Listed/A, C, D	Early twentieth century small town railroad hotel with excellent integrity; occupies a prominent position across the tracks from the former location of the Seaboard Air Line depot and the main commercial strip in La Crosse
Wright Farmstead	J/84-85	Mecklenburg		Potentially Eligible/A, C, D	Associated with the history of agriculture in this area, particularly the late-nineteenth/early-twentieth century change in the meat-smoking industry; farmstead includes a main house, four outbuildings, and an archaeological site
Sardis Methodist Church	J/86	Mecklenburg		Eligible/C	Built 1911, example of a vernacular early-twentieth century ecclesiastic structure
Bracey Historic District	K/89	Mecklenburg		Eligible/A, C	Circa late nineteenth century; example of a small community created by the construction of the railroad that brought economic expansion to the region; architectural example of a railroad community

Table 3-31
Historical Resources in the Study Area - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	VLR Status	NRHP Status/Criteria	Description
Bracey Depot	K/89	Mecklenburg		Eligible/A, C, Consideration B (as a moved property)	Rare surviving example of an early-twentieth century depot with much of its original architectural elements; associated with large county-wide, state-wide, and nation-wide trend of development of railroad across the American landscape in the second half of the nineteenth century and early-twentieth century
Bracey & Company Store	K/89	Mecklenburg		Eligible/A, C	Circa 1917 commercial building; excellent example of an important early-twentieth century type of commerce that was common in rural areas though the US; rare intact example of vernacular commercial form of architecture
Granite Hall/Fitts House	L/92-93	Mecklenburg		Eligible/C	Circa early twentieth century; example of Classical Revival architecture

Source: Berger, 2005; Dovetail (see Appendix K for list of Dovetail reports).
* Also a locally designated historic site.

Table 3-32
Battlefields in the Study Area – Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Proctor’s Creek	AA, BB/7-10	Chesterfield	Eligible/A	Battlefield consists of monuments, interpretive markers, a cemetery, historic road bed, buildings and trenches
Port Walthall Junction	BB/14-16	Chesterfield	Eligible/A	Area associated with the Battle at Port Walthall Junction; consists of a historic road bed, trenches, and an old railroad bed

Table 3-32
Battlefields in the Study Area – Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Swift Creek/Arrowfield Church	CC/16-18	Chesterfield, Colonial Heights	Eligible/A	Area associated with the Battle at Swift Creek
Petersburg III/The Breakthrough	CC, DD/25-28	Dinwiddie, Petersburg	Eligible/A	Area associated with the Battle of Petersburg
Weldon Railroad/Globe Tavern	CC, DD/26-30	Dinwiddie, Petersburg	Eligible/A	Area associated with the Civil War battles fought near the Weldon Railroad
Peebles Farm	CC, DD/27, 31-33	Dinwiddie, Petersburg	Eligible/A	Location of the Battle of Peebles Farm
Boydton Plank Road	DD, A/32-37	Dinwiddie	Eligible/A	Location of the Battle of Boydton Plank Road
Hatcher’s Run	DD, A/31-36	Dinwiddie	Eligible/A	Area associated with the Battle near Hatcher's Run
Lewis Farm	A/36-38	Dinwiddie	Eligible/A	Location of an episode in the initial phase of Grant’s final drive to outflank Lee’s Petersburg force
Dinwiddie Courthouse	B/40-41	Dinwiddie	Eligible/A	Location of the Battle at Dinwiddie Courthouse

Source: Berger, 2005; Dovetail (see Appendix K for list of Dovetail reports).

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Warren County Training School	L/94-95	Warren	Listed/A, C	Built 1922, first and only high school for African Americans in the county; large and architecturally sophisticated example of the rural schools built for black communities
Wise School	L/95	Warren	Eligible/A, C	Built 1904, reflects the era of school consolidation in NC; imposing and rare surviving example of the rural public schools
House (East side of US-1, Wise, NC)	M/96	Warren	Eligible/C	Circa 1890, especially stylish expression of a common regional design
Holtzmann Farm	M/101	Warren	Eligible/A	Circa 1880, illustrates the agricultural practices and self-sufficiency of a middling Ridgeway farmer
Chapel of the Good Shepherd	M/101-102	Warren	Listed/A, C	Built 1871, Gothic Revival chapel; landmark in Ridgeway community
Dr. Thomas B. Williams House and Office	M/102	Warren	Eligible/C	Circa 1890 residence, size and architectural embellishments reflected the wealth and status of the Williams family
Marshall House/Tavern (House No 245)	M/102	Warren	Eligible/C	Early timber-framed structure, which has been expanded over time to become one of the largest dwellings in the vicinity of Ridgeway; unique example of Colonial, vernacular, and Folk Victorian architecture in Warren County; associated with the planning and development of the town of Ridgeway and the Ridgeway Company
William J. Hawkins House	N/103	Warren	Listed/A, B, C	Circa 1850, Greek Revival and Italianate residence; illustration of the prosperous plantation society; home of Dr. William J. Hawkins
Middleburg Community House (Middleburg Steakhouse)	O/108	Vance	Eligible/A, C	Circa 1930; financed by the Civil Works Administration; rustic style for Depression era residence

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
House (Allison Cooper Rd, Middleburg vicinity)	O/108	Vance	Eligible/C	Circa 1880, Greek Revival residence
Holloway Farm	O/109-110	Vance	Eligible/A, C	Late nineteenth century farm; illustrates the rise of tobacco cultivation; traditional domestic and agricultural buildings
William Haywood Harris Farm	O/109-110	Vance	Eligible/A, C	Built 1860 for tobacco cultivation; Greek Revival residence
Forrest Ellington Farm	O/110	Vance	Eligible/A	Circa 1920-1950 farmstead
R. B. Carter House	P/114	Vance	Eligible/C	Built 1892, adaptation of up-to-date picturesque architecture to traditional forms
Henderson Historic District and Proposed Boundary Expansion	P/114-115	Vance	Listed/A, C	Circa 1890-1930, tobacco market and regional industrial center; represents the national design and style trends of the period
Vance County Courthouse	P/115	Vance	Listed/A, C	1884 and 1908 Neoclassical Revival courthouse
Zollicoffer's Law Office	P/115	Vance	Listed/B, C	1887 small brick Victorian commercial building; landmark of downtown Henderson; one of the best preserved reminders of the town's post-Civil War prosperity; associated with the A. C. Zollicoffer, who was prominent in local and regional legal, political, and business circles
Henderson Fire Station and Municipal Building	P/115	Vance	Listed/A, C	1908 brick firehouse with tower; associated with early twentieth century improvement of municipal service and safety, and improved firefighting efforts
Houses (2 bungalows on E Young Ave)	P/115	Vance	Eligible/A, C	Circa 1900, gabled bungalows
Mistletoe Villa	P/115	Vance	Listed/C	Built in 1885, Queen Anne residence

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
South Henderson Industrial Historic District	P/115-116	Vance	Eligible/A, C	Early twentieth century small-scale commercial buildings, workers dwellings, and three industrial complexes; illustrates rail-oriented industrial development
Vance Flour Mill (Sanford Milling Co.)	P/115-116	Vance	Eligible/A, C	Circa 1920 factory; contributing element to South Henderson Industrial Historic District; represents innovation in industrial construction
Houses (5 worker houses on 1400 block of Nicholas St)	P/116	Vance	Eligible/A, C	Circa 1910-1920 worker dwellings; contributing elements to South Henderson Industrial Historic District
Houses (3 side gable houses on 1500 block of Nicholas St)	P/116	Vance	Eligible/A, C	Circa 1910-1920 worker dwellings; contributing elements to South Henderson Industrial Historic District
Esso Gasoline Station	P/117	Vance	Eligible/A, C	Circa 1930, pre-World War II gasoline station; Spanish Colonial Revival
Confederate Cemetery	Q/121	Vance	Eligible/A	Circa 1864-1865, one of the few Confederate cemeteries in North Carolina
Saint James Episcopal Church	Q/121	Vance	Listed/C	Circa 1850, Carpenter Gothic style church
Hedgepeth and Finch Store	Q/121	Vance	Eligible/A, C	Late nineteenth century general merchandise store; marshalling point for agricultural products

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Kittrell Residential Historic District	Q/121	Vance	Eligible/A, C	Circa 1865-1960, district of historic houses embodying diversity in style, scale, and lot size that illustrate the Town of Kittrell's small population and relatively slow pace at which this area was developed; reflects the efforts of several local merchants and companies to use their proximity to the Raleigh and Gaston Railroad and other area roadways to an economic benefit; associated with important events at the local level, such as the establishment of the Raleigh and Gaston Railroad and the broad impacts it made on Kittrell's economic and socio-cultural development by extension
Josiah Crudup House	Q/123	Vance	Listed/C	1830s Federal two-story tripartite frame house; circa 1900 expansion
Person-McGhee Farm	Q, R/124-125	Franklin, Vance	Listed/A, C	Circa 1830, well-preserved farmstead; Queen Anne dwelling surrounded by an array of outbuildings
Raleigh and Gaston Railroad Bridge Piers (Tar River)	Q, R/124	Vance	Eligible/A, C	Circa 1840 railroad piers; oldest railroad structures in the state; illustrate the design, material, and method of construction employed in building before the Civil War
Franklinton Historic District (Includes Sterling Mill Historic District)	S/127-128	Franklin	Eligible/A, C	Epitomizes the development of a Piedmont railroad town circa 1890-1920; remains one of the most intact, small railroad towns in the Piedmont
Aldridge H. Vann House	S/127	Franklin	Listed/C	Built 1918, Classical Revival two-story brick house
Franklinton Depot	S/127	Franklin	Listed/A, C	Built 1886, Raleigh & Gaston Railroad frame depot; associated with one of North Carolina's s first and most important railroads and with the development of the Town of Franklinton
Church	S/127-128	Franklin	Eligible/A, C	Circa 1891, Gothic Revival church
Sterling Cotton Mill	S/127-128	Franklin	Listed/A, C	Circa 1895, two-story, simplified Italianate mill; largest textile operation in Franklin County

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Cedar Creek Railroad Bridge Piers	S/129	Franklin	Eligible/A, C	Circa 1840 railroad piers; illustrate the design, material, and method of construction employed in building before the Civil War
Youngsville Historic District	T/132	Franklin	Eligible/A, C	Circa 1890, tobacco market; common commercial and residential building types of the period; stone veneered and several fine, Queen Anne residences
J. B. Perry House	T/132	Franklin	Eligible/C	Circa 1900, Queen Anne residence
Glen Royall Mill Village Historic District*	U/135	Wake	Listed/A, C	Circa 1900, village that provided housing for workers at the Royall Cotton Mill; district includes a company commissary, additional stores, churches, and schools
Wake Forest Historic District*	U/135-136	Wake	Listed/A, C	Original campus of Wake Forest College circa 1820-1890; oldest denominational college in NC; Colonial Revival buildings, Greek Revival, Italianate, Queen Anne, and Classical Revival residences
Downtown Wake Forest Historic District	U/136	Wake	Listed/A	Epitomizes the small, rail-oriented business districts circa 1820-1890; Colonial Revival, Art Moderne, and Art Deco elements
Purefoy-Chappell House and Outbuildings	U/137	Wake	Listed/C	Built 1838 and 1895 two-story frame house and outbuildings
Oakforest*	U/138	Wake	Listed/C	Circa 1807, Federal style hall and parlor home; various additions during the nineteenth century converted it into a Greek Revival house
Powell House	U/139-140	Wake	Listed/A, C	Circa 1790, centerpiece of a large plantation; one of the most imposing and earliest dwellings remaining in Wake County
Neuse Railroad Station	U/142	Wake	Eligible/A, C	Circa 1900 station; typical of the period railway stations
Crabtree Creek Railroad Bridge Pier	V/148	Wake	Eligible/A, C	Circa 1840 railroad pier; illustrates the design, material, and method of construction employed in building before the Civil War

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Gulf Petroleum Products Warehouse	V/148	Wake	Eligible/A, C	Circa 1926 warehouse with utilitarian, small-scale, industrial architecture; associated with commerce and industry in Wake County during the period between the World Wars; reflects a larger historic trend for oil and gas companies to establish distribution centers for gasoline and other petroleum products adjacent to major railroads following the exponential growth in automobiles across the country after the end of World War I
Raleigh Bonded Warehouse	V/148-149	Wake	Listed/A, C	Built 1923, cotton warehouse; one million cubic feet of storage space strategically located between the cotton growers of the Coastal Plain and the textile mills in the Piedmont
Mordecai Place Historic District	V/148-149	Wake	Listed/A, C	Circa 1916, subdivision of the plantations that once encircled Raleigh; variety of Revival-style dwellings, Bungalows, and Minimal Traditional domestic designs
Pilot Mill*	V/149	Wake	Listed/A, C	Built 1892; illustrates the emergence of the Piedmont textile industry; example of the simple, brick buildings with long, rectangular plans and limited ornamentation
Roanoke Park Historic District	V/149	Wake	Listed/A, C	Circa 1913-1926, residential neighborhood; Colonial Revival, American Foursquare, Dutch Colonial, Tudor Revival, Minimal Traditional, Period Cottage, and Ranch residences
Noland Plumbing Company Building	V/149	Wake	Eligible/A, C	Built 1960; represents wholesale distribution companies during the postwar years when suppliers built facilities near customers in the new subdivisions; illustrates the postwar modernist movement
John A. Edwards and Company Building	V/149	Wake	Eligible/C	Built 1960; example of postwar commercial modernism

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Glenwood-Brooklyn Historic District	V/149	Wake	Listed/A, C	Circa 1905; first of a series of suburban neighborhoods; Queen Anne, Craftsman, Tudor Revival, and Colonial Revival style residences
Seaboard Railway Station	V/149	Wake	Eligible/A, C	Built 1942, Colonial Revival railroad station; represents the important role of rail transportation
Seaboard Railway Warehouses	V/149	Wake	Eligible/A, C	Circa 1940 warehouses; represent the important role of rail transportation; representative of planned warehousing
Raleigh Cotton Mills*	V/149	Wake	Eligible/A, C	Circa 1890; illustrates the rise of the textile industry; typifies the small-scale textile mills of the period
Pine State Creamery*	V/150	Wake	Listed/A, C	Built 1928, dairy farmers' cooperative; Art Moderne building
Seaboard Coast Line Railroad Company Office Building*	V/150	Wake	Listed/C	Built 1861, brick commercial building with restrained Italianate design
Melrose Knitting Mill	V/150	Wake	Eligible/A, C	Built 1902; illustrates the rise of rail-oriented manufacturing; typifies the small-scale textile mills of the period
Raleigh Electric Company Power House*	V/150	Wake	Listed/A	Built 1910, primarily to power the city's electric streetcar system
Carolina Power and Light Company Car Barn and Automobile Garage*	V/150	Wake	Listed/A, C	Built 1925 Art Deco style garage; housed and repaired the company's streetcars and service vehicles
St. Paul A.M.E. Church*	V/150	Wake	Listed/A, B, C	Built 1909, Gothic Revival brick church, constructed by the first independent African-American congregation of Raleigh, ministers were influential leaders of African-American community during Reconstruction

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Depot Historic District	V/150	Wake	Listed/A, C	Circa 1880-1952; illustrates the transformation of a downtown neighborhood into a specialized industrial zone and transportation center; area comprises Raleigh's only important collection of rail-related, industrial, and warehouse buildings
Depot Historic District Expansion Area	V/150	Wake	Eligible/A, C	Twelve additional warehouses and commercial buildings and their associated tax parcels that abuts the northwest side of the existing historic district; they form a cohesive collection of resources that contribute to the industrial and commercial significance of the historic district during its period of significance
Montford Hall*	V/150-151	Wake	Listed/C	1858 Italianate-style plantation home located at the northern entrance to the Boylan Heights Historic District; one of the few mansions in Raleigh that survived during the American Civil War era
Boylan Heights Historic District*	V/150-151	Wake	Listed/A, B, C	Circa 1907, Colonial Revival, Neo-Classical Revival, and picturesque dwellings; exemplifies early twentieth century suburban development; associations with developers and civic leaders, Frank Ellington and J. Stanhope Wynne

Table 3-33
Historical Resources in the Study Area – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Joel Lane House*	V/150-151	Wake	Listed/A, B, C	Built in late 1760s; manor plantation house overlooking the future site of Raleigh; associated with Joel Lane who was a member of the colonial General Assembly, lobbied to create Wake County, and was directly involved in the decision to locate the permanent capital of the state in Wake County; during the Revolutionary War, house was the site of important government meetings, both formal and informal; National Society of Colonial Dames of America in the State of North Carolina continues to operate this Raleigh Historic Landmark as a house museum
Boylan Apartments*	V/150-151	Wake	Listed/A, C	Built 1935, three-story brick Colonial Revival apartments
Raleigh Hosiery Company Building	V/151	Wake	Eligible/A	Circa 1900; illustrates the small-scale industrial and warehousing properties built along the rail lines
North Carolina School Book Depository	V/151	Wake	Eligible/A	Circa 1940; exemplifies the auxiliary buildings erected to serve the expanding statewide public school system
Governor Morehead School Historic District	V/151	Wake	Eligible/A, C	The North Carolina Institution of the Deaf and Dumb and Blind (now the Governor Morehead School) opened in 1845 and moved to its current location in 1923; significant state-wide for its role in the training of blind, white students in North Carolina; well-preserved collection of Colonial Revival scholastic architecture
Raleigh and Gaston Railroad Corridor	M-V/29	Franklin, Warren, Vance, Wake	Eligible/A	Circa 1836-1840; one of the state's first two railroads and grew to become one of the major rail lines in the southeastern United States

Source: Mattson, Alexander, and Associates, 2005, 2007, 2009; Dovetail (see Appendix K for list of Dovetail reports).
* Also a locally designated historic site.

3.12.2.1 HISTORICAL RESOURCES – VIRGINIA

The following discussion identifies the historic architecture resources within the Virginia APE for the Project that are listed in or eligible for the NRHP and were identified subsequent to the publication of the Richmond to Raleigh Project Tier II DEIS or where information presented in the Richmond to Raleigh Project Tier II DEIS has changed. They are ordered from north to south through the Study Area. For more detailed information on the remaining resources, refer to Section 3.12 of the Richmond to Raleigh Project Tier II DEIS.

3.12.2.1.1 SEABOARD AIR LINE RAILROAD CORRIDOR (127-6271)

The Seaboard Air Line Railroad Corridor is a historic railroad corridor in Virginia that extends from Richmond, VA south to the North Carolina state line. The Seaboard Air Line opened in 1900 and continued to expand and develop throughout the first-half of the twentieth century. In the 1960s, the Seaboard Airline and Atlantic Coast Line railroads joined as a conglomeration to form the "Seaboard Coast Line Railroad," which was a predecessor of CSX Transportation.

Over the years, the orientation of the rail line was notably modified, but it kept its general north-south trend. Overall, this railroad represents the origins and growth of the railroad industry in the Richmond, VA to North Carolina corridor. It also reflects the post-Civil War trend of merging smaller operations to provide better service while being more economical. For these reasons, the Seaboard Line Railroad Corridor is eligible for the NRHP under Criterion A for its association with transportation history and community planning. The Seaboard Air Line Railroad Corridor is generally congruent with the current CSX S-Line from Richmond through Petersburg to Raleigh, paralleling I-85.

3.12.2.1.2 ATLANTIC COAST LINE RAILROAD CORRIDOR (127-6251)

The Atlantic Coast Line Railroad Corridor was fully completed in 1898 with the merger of the Richmond & Petersburg and Petersburg Railroads into the Atlantic Coast Line Railroad. The rail line connected Richmond and Petersburg, and throughout the early twentieth century it absorbed many smaller railroads eventually creating a line that traveled from Richmond to Tampa, Florida. In the 1960s, the Seaboard Airline and Atlantic Coast Line railroads joined as a conglomeration to form the "Seaboard Coast Line Railroad," which was a predecessor of CSX Transportation.

Over the years, the orientation of the rail lines has been notably modified but has generally kept the north-south trend. This resource is a historic railroad corridor that represents the origins and growth of the railroad industry in the Richmond to Petersburg corridor. It reflects the post-Civil War trend of merging smaller operations to provide better service while being more economical. For these reasons, the Atlantic Coast Line Railroad Corridor is eligible for the NRHP under Criterion A for its association with transportation history and community planning. The Atlantic Coast Line Railroad Corridor is generally congruent with the current CSX A-Line from Richmond through Petersburg to eastern North Carolina, paralleling I-95.

3.12.2.1.3 MANCHESTER INDUSTRIAL WAREHOUSE HISTORIC DISTRICT (127-0457)

The Manchester Industrial Warehouse Historic District in Richmond, VA, was listed in the NRHP in 2000 under Criterion A for its association with industrial history in South Richmond and under Criterion C for its architectural merit. The boundary of the district was expanded in 2004, and again in 2011. The district comprises an area of industrial development associated with the growth and development of the community of Manchester, an area south of the James River that was once a separate town but later incorporated within the boundaries of the City of

Richmond. The district includes a variety of industrial buildings, alleyways, parking lots, and other landscape attributes needed to accommodate the busy warehouse traffic. Most buildings, dating from 1880 until the 1940s, are two or three stories in height and fabricated of brick or timber frame covered with pressed metal sheeting. The 2011 boundary Increase includes all remaining contributing buildings in the Manchester industrial area between the James River and Commerce Road and from Semmes Avenue on the east to Maury Street on the west that are associated with the most recent period of industrial growth in this area between about 1930 and 1959.

3.12.2.1.4 RICHMOND & PETERSBURG ELECTRIC RAILWAY (020-5351)

The Richmond & Petersburg Electric Railway is a circa 1902 interurban rail line that extends from Richmond, through Chesterfield County and Colonial Heights, to Petersburg. The railway is defined by the railway prism and several associated structures including the 1925 Electric Building in Petersburg (southern terminal) and the 1909-1910 Northern Terminal in Richmond. Between these two terminals, most of the track and structures have been destroyed, but fragments of track are still visible in Petersburg and Richmond. The extant features are significant as relics of an early electric-powered interurban railway. Overall, the creation of this line was the direct impetus for large-scale modifications to settlement patterns in central Virginia, and as such this railway is eligible for the NRHP under Criterion A for its association with transportation history.

3.12.2.1.5 CENTRALIA EARTHWORKS (020-0022)

The Centralia Earthworks were constructed in 1962 as part of the Confederate outer defense line for Drewry's Bruff, a line of protective fortifications around Richmond. They are associated with the May 1864 action at Wooldridge's Hill during the Bermuda Hundred Campaign. The earthworks are eligible for the NRHP under Criterion A because of their association with the battle at Wooldridge's Hill and the Bermuda Hundred Campaign, and under Criterion C as an example of Civil War military engineering. They are also potentially eligible under Criterion D pending additional archaeological testing.

3.12.2.1.6 APPOMATTOX RIVER RAILROAD BRIDGE (020-5579)

The Appomattox River Railroad Bridge is eligible for the NRHP under Criterion A for its association with transportation history and under Criterion C for engineering. The structure is an open steel, deck-plate-girder bridge built in 1915 that extends 1,212 feet across the Appomattox River. It is supported by 11 steel latticework bents visible along the waterway, and at least one multistoried, poured-concrete pier on the south side of the river, all of which elevate the bridge to a height of roughly 79 feet. Of the three railroad bridges that crossed the Appomattox River into Petersburg during the first half of the twentieth century, it is the only one that survives. Still in use on the CSX A-Line, this resource continues to illustrate its significant role in the region's railroad history and economic, as well as physical, development.

3.12.2.1.7 FORT DAVIS EARTHWORKS (026-5012)

The Fort Davis Earthworks are also recorded as archaeological site 44DW0314 (see above). The earthworks comprise a 4,000-foot long earthen structure built by Union troops during the Seige of Petersburg in 1864. The earthworks are eligible for the NRHP under Criteria A and C and are potentially eligibile under Criterion D pending further archaeological testing.

3.12.2.1.8 BANK OF MCKENNEY (257-5004)

The Bank of McKenney (referred to as Bank Building in the Richmond to Raleigh Project Tier II DEIS) in McKenney, VA, is eligible for the NRHP under Criterion A as one of the few surviving early banks associated with the trend of small communities opening banks. It is also one of earliest banks in all of Dinwiddie County. The building was presented in the Richmond to Raleigh Project Tier II DEIS as being "potentially eligible" for the NRHP because permission to survey the building interior had not been granted during the original Section 106 investigations. At that time, it was thought the building was potentially eligible under Criterion C for its architectural merit; however, the subsequent evaluation determined that much of the interior has been compromised by recent modifications and the building is not eligible for the NRHP under this criterion.

3.12.2.1.9 CHESAPEAKE AND POTOMAC TELEPHONE COMPANY (C & P) BUILDING BUILDING (257-5010)

The C & P Building in McKenney, VA, is eligible for the NRHP under Criterion A because the building represents a time when communication technology was rapidly changing. Although the telephone had been around for over thirty years, the process was still being refined and was considered a relatively advanced form of technology for most of the public. It is also eligible for the NRHP under Criterion C as an excellent example of an elaborate local telephone company building with a notable percentage of its original elements intact.

3.12.2.1.10 ZEHMER FARM/HONEYMOON HILL FARM (257-5008)

Zehmer Farm (also known as Honeymoon Hill Farm House) in McKenney, VA, is listed on the NRHP under Criterion C for its collection of agricultural architecture. The house is a good example of an early twentieth century vernacular dwelling possessing integrity of materials, workmanship, setting, feeling, design and location. As an intact collection of agricultural architecture, the outbuildings are significant for their association with the evolution of agricultural practices in Dinwiddie County. The main house and its domestic outbuildings constitute a collection typical for an early twentieth century tobacco and dairy farming complex in Dinwiddie County and with its 309 acres the farm represents an unusually intact example of this property type. Taken together, the house and agricultural buildings, modest structures concerned more with function than design, represent an unusually complete farmstead that documents the county's agricultural architectural history in the era before agricultural specialization.

3.12.2.1.11 HOUSE/458 SECOND AVENUE (012-5013)

The House at 458 Second Avenue in Alberta, VA, is eligible for the NRHP under Criterion C as rare example of an unmodified Craftsman style kit dwelling. The circa 1924 house has had very few alterations or modifications during its 90-year history. The exterior of the building is in excellent condition and has been maintained extremely well. The interior also retains nearly all of its original fabric. It has all of the original door hardware, floors, crown and corner molding, baseboards, light fixtures, and door and window frames. The lot also contains most of its original outbuildings.

3.12.2.1.12 ORGAIN HOUSE (012-5076)

The Orgain House in Brunswick County, VA, is eligible for the NRHP under Criterion A due to its embodiment on regional landscape changes in the nineteenth and twentieth century and, moreover, its association with the pervading cultural memory of a single family struggling to maintain their familial land in a rapidly-changing economic environment. The 1940s house is also eligible for the NRHP under Criterion C as an excellent representative example of Tudor Revival-style architecture, one of only a few such examples currently recorded in Brunswick County. Last, the resource is also eligble for the NRHP under Criterion D for the potential of above-ground remnants of the original mid-nineteenth century plantation complex to reveal important information regarding the physical and cultural development of both the Orgain property and the surrounding area.

3.12.2.1.13 LA CROSSE HOTEL (250-5001-0003)

The La Crosse Hotel is listed on the NRHP under Criterion A for commerce and Criterion C for architecture. It is also eligible under Criterion D for its subsurface data potential. It is locally significant as an outstanding example of an early twentieth century small town railroad hotel with excellent integrity. The two-story brick hotel occupies a prominent position across the tracks from the former location of the Seaboard Air Line depot and the main commercial strip in La Crosse, and for nearly half a century it drew travelers and locals alike to its communal dining table. Under the guidance and management of three respected business women, the hotel flourished at the center of town. Today it serves as a representative example of many of the defining characteristics of the American hotel industry. The period of significance is from the date of construction, 1917, through 1958, for the central role that it played in the community.

3.12.2.1.14 BRACEY DEPOT (058-5001-0001)

The Bracey Depot in Bracey, VA, is eligible for the NRHP under Criterion A for its association with the large county-wide, state-wide, and nation-wide trend of development of railroad across the American landscape in the second half of the nineteenth century and early-twentieth century. It is also eligible for the NRHP under Criterion C and Consideration B (as a moved property) because, unlike many depots that have been heavily remodeled or demolished, the Bracey Depot retains much of its historic fabric, both on the interior and the exterior, and is a rare example of this type of architecture.

3.12.2.1.15 BRACEY & COMPANY STORE (058-5001-0002)

The Bracey & Company Store in Bracey VA, is eligible for the NRHP under Criterion A as excellent example of an important early-twentieth century type of commerce that was common in rural areas though the United States, but quickly stopped being applicable as times and technologies changed. The circa 1917 commercial building is also eligible for the NRHP under Criterion C as a rare intact example of vernacular commercial form of architecture.

3.12.2.2 *BATTLEFIELDS – VIRGINIA*

Table 3-32 identifies the 10 Civil War battlefields within the Virginia APE for the Project that are listed on or eligible for the NRHP. They are ordered from north to south through the Study Area. For more detailed information on the battlefields in the Study Area, refer to Section 3.12 of the Richmond to Raleigh Project Tier II DEIS. It should be noted that the battlefield boundaries described in the Richmond to Raleigh Project Tier II DEIS are those adopted by the VDHR and have not changed since production of the Richmond to Raleigh Project Tier II DEIS.

In July 2009, subsequent to resource eligibility coordination on the Project, the American Battlefield Protection Program (ABPP) proposed new National Register-eligible boundaries for the 10 battlefields in the Study Area (see Figures 3-12 and 3-12 continued). Although there are differences between the individual VDHR and ABPP battlefield boundaries, when considered in total, the two sets of boundaries almost completely overlap within the APE. There are seven exceptions where the ABPP battlefield boundaries within the APE are not included in the VDHR boundaries:

- Just south of Highway 288 in Chester, VA – the ABPP boundary for the Proctor's Creek battlefield extends just south and east of the VDHR boundary
- Vicinity of Walthall Industrial Parkway just north of Colonial Heights, VA – the ABPP boundaries for the Proctor's Creek, Port Walthall Junction, and Swift Creek battlefields include an area south of Woods Creek Road and north of Pine Forest Drive that is not included in the VDHR battlefield boundaries
- Vaughn Road near the Burgess Connector – the ABPP boundary for the Petersburg III battlefield includes an area near Vaughn Road that is not included in the VDHR battlefield boundaries
- Carson Road near the Dinwiddie Courthouse community – the ABPP boundary for the Hatcher's Run battlefield includes an area near Carson Road that is not included in the VDHR battlefield boundaries
- Courthouse Road near the Dinwiddie Courthouse community – the ABPP boundary for the Hatcher's Run battlefield includes an area near Courthouse Road that is not included in the VDHR battlefield boundaries
- Gatewood Road south of the Dinwiddie Courthouse community – the ABPP boundary for the Hatcher's Run battlefield includes an area near Gatewood Road that is not included in the VDHR battlefield boundaries
- Keelers Mill Road south of the Dinwiddie Courthouse community – the ABPP boundary for the Hatcher's Run battlefield includes an area near Keelers Mill Road that is not included in the VDHR battlefield boundaries

Figure 3-12

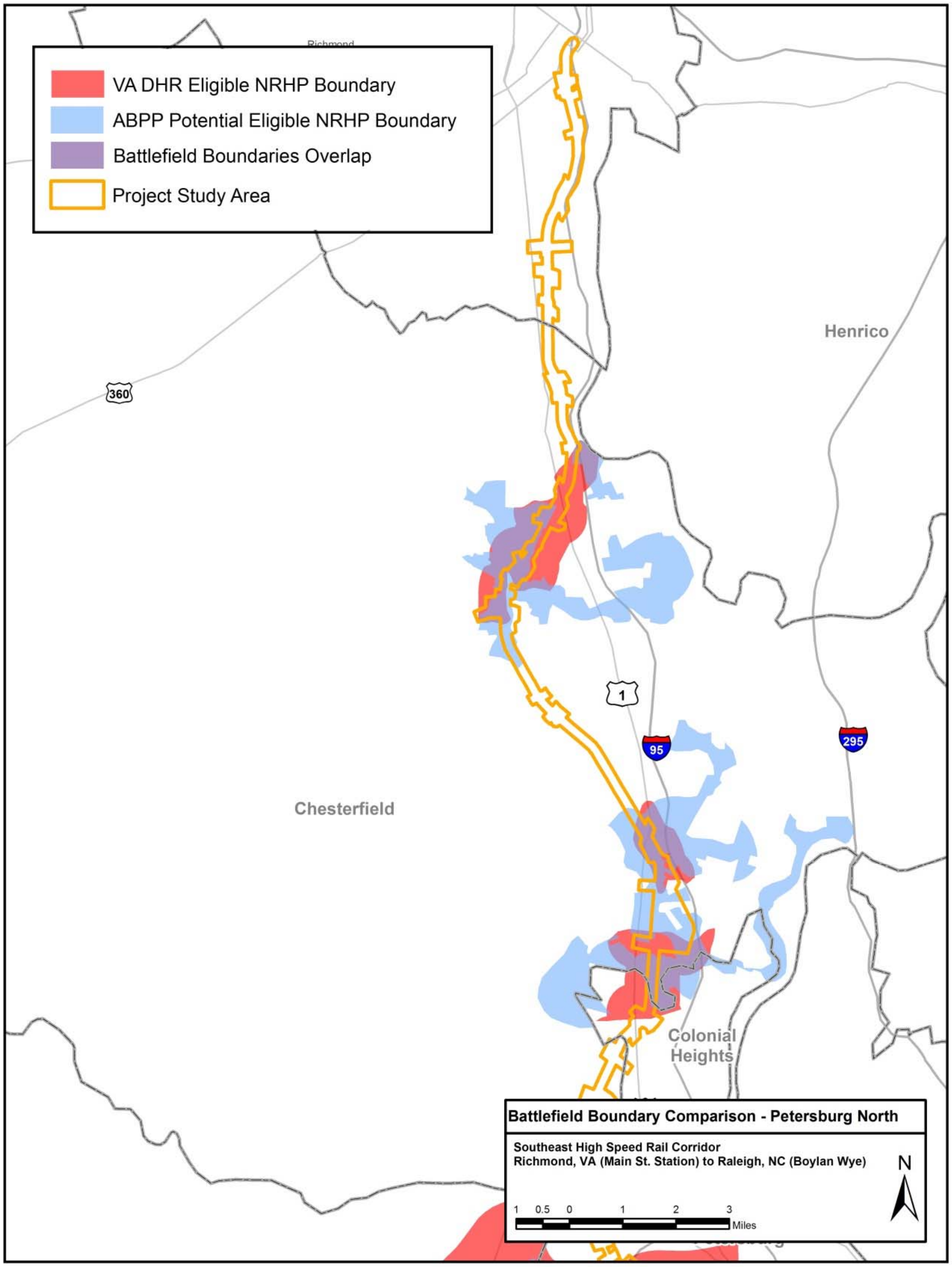

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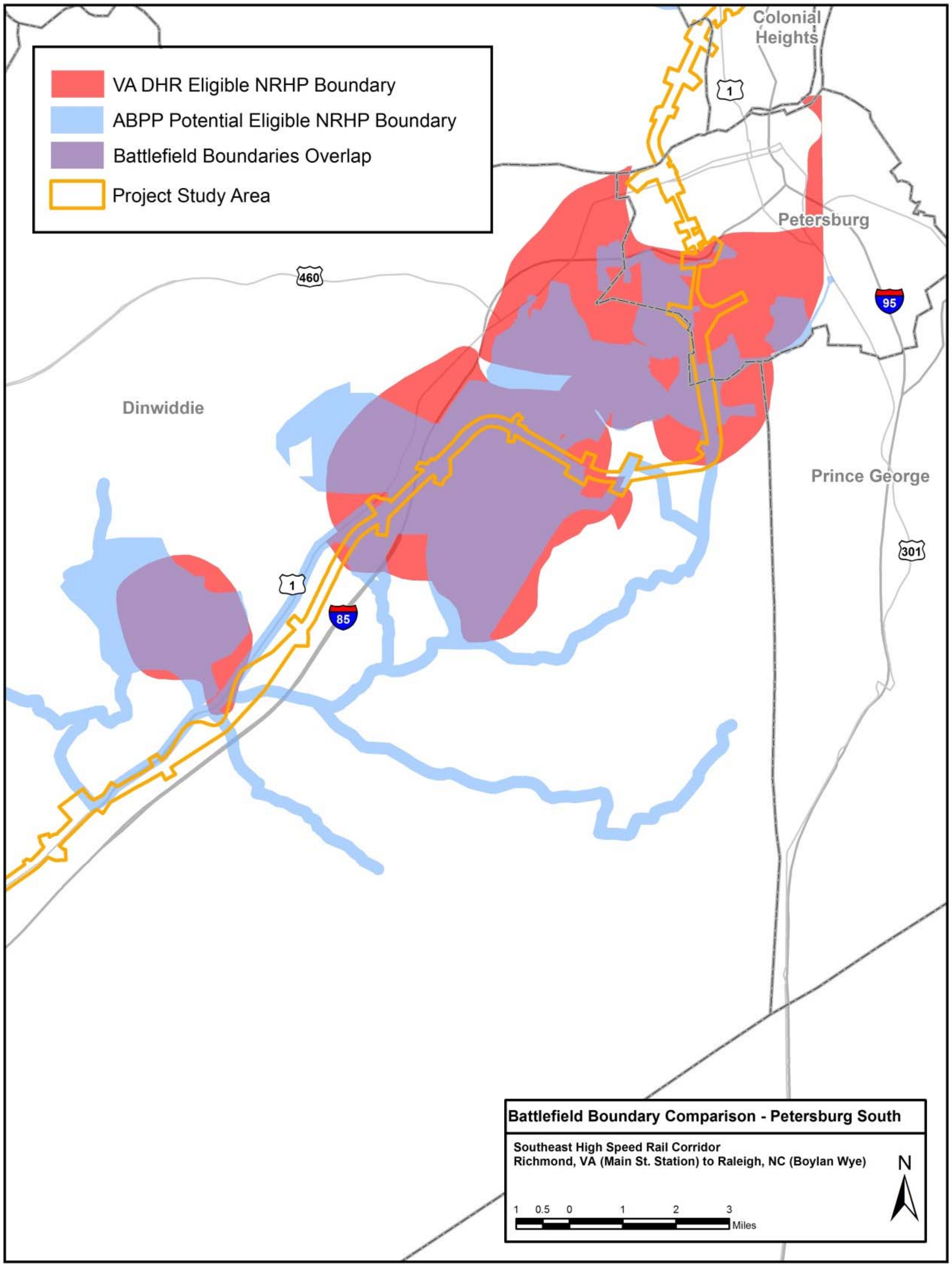
Figure 3-12 continued



3.12.2.3 HISTORICAL RESOURCES – NORTH CAROLINA

The following discussion identifies the historic architecture resources within the North Carolina APE for the Project that are listed in or eligible for the NRHP and were identified subsequent to the publication of the Richmond to Raleigh Project Tier II DEIS or where information presented in the Richmond to Raleigh Project Tier II DEIS has changed. They are ordered from north to south through the Richmond to Raleigh Project study corridor. For more detailed information on the remaining resources, refer to Section 3.12 of the Richmond to Raleigh Project Tier II DEIS.

3.12.2.3.1 MARSHALL HOUSE/TAVERN (HOUSE NO 245)

The Marshall House/Tavern is eligible for the NHRP under Criterion A for its associations with the planning and development of the town of Ridgeway and the Ridgeway Company. Although the house is primarily known for its long-standing association with the Marshall family and is considered to be one of Warren County's early taverns, it also has historical associations with the Ridgeway Company and their efforts to develop the town of Ridgeway. The Marshall House is one of just a few buildings that remain in the area from this era and on what was briefly Company land. The parcel on which the house sits was created by the Company before the town of Ridgeway was incorporated and continues to be defined by some of the 1868 boundaries. This resource is also eligible for the NRHP under Criterion C as a unique example of Colonial, vernacular, and Folk Victorian architecture in Warren County.

3.12.2.3.2 VANCE COUNTY COURTHOUSE

The Vance County Courthouse is listed in and remains eligibile for the NRHP under Criterion A. The courthouse was listed in the NRHP in 1979 as part of a thematic nomination of Courthouses in North Carolina. The courthouse in each county has been associated for however long it has stood with the broad patterns of county life, as the center of the local county political process, the administration of justice, and a social and cultural focal point. On a statewide basis, the courthouses have been the subsidiary outlets of political processes and the law.

3.12.2.3.3 ZOLLICOFFER'S LAW OFFICE

Zollicoffer's Law Office is listed in and remains eligibile for the NRHP under Criterion A for its association with the post-Civil War development of Henderson as a county seat and trade center; under Criterion B for its association with A. C. Zollicoffer, who was prominent in local and regional legal, political, and business circles, and under Criterion C for embodying distinctive characteristics of Victorian commercial architecture, practically unaltered on the exterior. The building is a rare survival in the town and region.

3.12.2.3.4 HENDERSON FIRE STATION AND MUNICIPAL BUILDING

The Henderson Fire Station and Municipal Building is listed in and remains eligibile for the NRHP under Criterion A for its association with early twentieth century improvement of municipal service and safety, and improved firefighting efforts. It is also eligible for the NRHP under Criterion C for embodying distinctive characteristics, particularly the fire station tower, of functional, dramatic early twentieth century eclectic architecture. The municipal building was added to the rear in the 1920s and is constructed in an irregular L shape around the fire station.

3.12.2.3.5 KITTRELL RESIDENTIAL HISTORIC DISTRICT

The Kittrell Residential Historic District is eligible for the NRHP under Criterion A for its association with important events at the local level, such as the establishment of the Raleigh and

Gaston Railroad and the broad impacts it made on Kittrell's economic and socio-cultural development by extension. Furthermore, as one of three incorporated towns in Vance County, the community of Kittrell has developed and evolved in response to local conditions, predominantly reflecting the continued success that tobacco and cotton farming had on the area, and also various other types of commerce created by entrepreneurial citizens and the town's location at the center of several overland transportation routes. The Kittrell Residential Historic District is also eligible for the NRHP under Criterion C for architecture. This district plays a vital role in the character and rural setting of the town. The historic houses in Kittrell embody diversity in style, scale, and lot size that illustrate the town's small population and relatively slow pace at which this area was developed, but also reflects the efforts of several local merchants and companies to use their proximity to the Raleigh and Gaston Railroad and other area roadways to an economic benefit.

3.12.2.3.6 JOSIAH CRUDUP HOUSE

The Josiah Crudup House is listed in the NRHP under Criterion C for architecture. With construction beginning in the 1830s, this handsome house was designed as a Federal tripartite dwelling for planter, Baptist minister, and politician Josiah Crudup. The wings were given second stories circa 1900. The two story dwelling has a hip roof, a projecting, central pavilion capped by a pitched pediment, a pedimented entrance porch, and double leaf doors.

3.12.2.3.7 ALDRIDGE H. VANN HOUSE

The Aldridge H. Vann House is listed in the NRHP under Criterion C as an excellent example of an early-twentieth century architect-designed residence combining elements from nationally popular styles. The dwelling is the only known poured concrete residence in Franklin County and is significant locally for both its design and construction. It retains exceptional integrity of design and materials. The dwelling's period of significance is 1918, the year construction was completed.

3.12.2.3.8 FRANKLINTON DEPOT

The Franklinton Depot is listed in the NRHP under Criterion A for its associations with one of the state's first and most important railroads and with the development of the town of Franklinton, and under Criterion C as a well-preserved example of late nineteenth century picturesque railroad architecture along the route of the Raleigh and Gaston Railroad. The building is one of the last surviving railroad structures built along the route of the Raleigh and Gaston Railroad before the line merged with the Seaboard system at the turn of the century. Constructed in 1886, the small frame building combines simple Italianate, Gothic Revival, and Queen Anne period details and is the only remaining example of a type that was built at other stops along the line at the same time. The depot served passenger operations until the early 1970s. When abandoned by the Seaboard Coast Line in 1973, the depot was acquired by the Franklinton Woman's Club and moved a short distance to become the group's clubhouse.

3.12.2.3.9 PUREFOY-CHAPPELL HOUSE AND OUTBUILDINGS

The Purefoy-Chappell House and Outbuildings is listed in the NRHP under Criterion C for architecture. The antebellum house and outbuildings, including the circa 1862 doctor's office, are rare survivors of once common forms. The period of significance for these locally significant buildings is circa 1838 for when the original portion of the house, the smokehouse, and kitchen/dining building were constructed; circa 1862 for the building of the doctor's office; and circa 1895 for the construction of the two-story wing.

3.12.2.3.10 OAKFOREST

Oakforest in Wake Forest, NC, is listed in and remains eligible for the NRHP under Criterion C for architecture. It is one of the oldest and most prominent homes in the Wake Forest area, built circa 1807 as a Federal style hall and parlor home. Various additions during the nineteenth century converted it into a Greek Revival house. The location of the front door was changed from the south side to the west side, exterior chimneys were replaced with interior chimneys, the delicate Federal baluster stairwell was moved to the rear of the hallway, the veranda was covered, and a portico and four Doric columns were added. A rear 2-story ell was built circa 1865. The kitchen wing was built by slave labor during the Civil War.

3.12.2.3.11 GULF PETROLEUM PRODUCTS WAREHOUSE

The Gulf Petroleum Products Warehouse in Raleigh, NC, is eligible for the NRHP under Criterion A for its association with commerce and industry in Wake County during the period between the World Wars, and under Criterion C for its utilitarian, small-scale, industrial architecture. The Gulf Company Petroleum Products complex stands out among the warehouse complexes of Raleigh as a unique example of this building type and the vernacular industrial architecture it embodies from the years between the World Wars. Furthermore, as a warehouse and distribution facility, the Gulf Company complex reflects a larger historic trend for oil and gas companies to establish distribution centers for gasoline and other petroleum products adjacent to major railroads following the exponential growth in automobiles across the country after the end of World War I.

3.12.2.3.12 SEABOARD COAST LINE RAILROAD COMPANY OFFICE BUILDING

The Seaboard Coast Line Railroad Company Office Building is listed in the NRHP under Criterion C for architecture. One of the city's earliest surviving office buildings, the three-story brick Seaboard Building served as railroad offices for more than a hundred years. The building, which has a restrained Italianate design, originally stood on N. Halifax Street. The state purchased the land for the its Government Mall in 1977 and moved the building to N. Salisbury Street. The building has also been designated as a local landmark. The Seaboard Coast Line Railroad was a successor conglomeration of the Seaboard Air Line and Atlantic Coast Line Railroads, and a predecessor of CSX Transportation.

3.12.2.3.13 ST. PAUL A.M.E. CHURCH

St. Paul A.M.E. (African Methodist Episcopal) Church is listed in the NRHP under Criterion A for both politics/ government and ethnic heritage (black), under Criterion B for its associations with Reverend R.W.H. Leak, and under Criterion C for architecture. This imposing, brick, Gothic Revival building was constructed between 1884 and 1909 by African-American masons, and the church displays both elements of the national style and interpretations made by the masons who worked on the building. The building was constructed by the first independent African-American congregation, and thus is important to the religious history of Raleigh. The church also has political significance because the ministers of St. Paul were influential leaders of the African-American community during Reconstruction. In particular, Reverend R.W.H. Leak, minister during the 1880s, was a prominent leader of the black Republicans and served as editor of the Outlook, the second oldest black newspaper in Raleigh. The church has also been designated as a local landmark.

3.12.2.3.14 DEPOT HISTORIC DISTRICT EXPANSION AREA

In early 2013, NC-HPO concurred that an expansion area for the Depot Historic District in Raleigh, NC, was eligible for the NRHP, which included ten additional warehouses and commercial buildings and their associated tax parcels that abuts the northwest side of the existing NRHP-listed Depot Historic District. Later in 2013, NC-HPO concurred that two additional properties, the former US Post Office Morgan Street Station and former Capital Coca-Cola Bottling Company Garage, were also contributing elements to the district and the boundaries should be expanded to include them. The additional industrial and commercial properties contribute to the significance of the Depot Historic District under Criterion A for industry, transportation, and commerce. The Depot Historic District was nominated for its significance in the areas of industry and commerce as the city's wholesale distribution center from the 1880s to the early 1950s. The newly surveyed resources are all wholesale warehouses and commercial buildings that are similar in design, scale, materials, and function to those found within the existing district, and the new properties date to the same period of significance. Furthermore, the Depot Historic District contains the only significant collection of rail-related buildings, factories, and warehouses in Raleigh that date to the period when the railroads predominated in freight transportation, and the additional properties share these characteristics and strengthens the significance of this collection.

The additional properties are also eligible for the NRHP under Criterion C for design/construction. The Depot Historic District was listed in the NRHP under Criterion C because this area, west of the center city, has a locally significant collection of industrial, commercial, and railroad related architecture dating from the 1880s to 1952. The additional warehouses and commercial buildings on the east side of the rail corridor add to the architectural significance and cohesion of the district.

On March 12, 2014, FRA, in partnership with NCDOT, completed an Environmental Assessment for Phase I of the proposed Raleigh Union Station to be constructed at the Boylan Wye to support the expansion of intercity passenger rail service in Raleigh; for which FRA subsequently issued a Finding of no Significant Impact (FONSI) on June 24, 2014. In support of the FONSI, FRA, NCDOT and the NC-HPO executed a Memorandum of Agreement (MOA) for Phase I of the proposed Raleigh Union Station on May 22, 2014.

The MOA determined that Phase I of the Raleigh Union Station project will have an Adverse Effect upon the Depot Historic District and the Proposed Boundary Amendment to the Depot Historic District. Specific areas of effect include the Capital Feed and Grocery and Southern Railway Passenger Station, which may be subject to demolition for Phase I of the Raleigh Union Station project. Although Phase I of the Raleigh Union Station project will provide the primary station building and access facility, it is considered independent from the Richmond to Raleigh Tier-II EIS. A future phase of the Raleigh Union Station will include the expansion of facilities to construct a platform and passenger access to the CSX S-Line on the SEHSR corridor. This future phase will require a separate environmental determination from the Phase I activity as well as this Richmond to Raleigh Tier II FEIS.

3.12.2.3.15 MONTFORT HALL

Montfort Hall was listed in the NRHP in 1978 under Criterion C for architecture. It is an Italianate-style plantation home located at the northern entrance to the Boylan Heights Historic District and is one of the few mansions in Raleigh that survived during the American Civil War era. The house was built for William Montfort Boylan in 1858. The centerpiece of the house's interior is a rotunda supported by four Corinthian columns and lit by a stained glass window located on the roof. Montfort Hall has also been designated as a local landmark.

3.12.2.3.16 JOEL LANE HOUSE

The Joel Lane House in Raleigh, NC, is listed in and remains eligible for the NRHP under Criterion A for politics/government, Criterion B for its association with Joel Lane, and Criterion C for architecture.

In the late 1760s, Joel Lane began building a home in colonial Johnston County. Lane and his house subsequently played a key role in North Carolina's transition from colony to state and in the establishment of Raleigh as the state capital. The manor plantation house stood on a small hill overlooking the future site of Raleigh. In 1770, as a member of the colonial General Assembly, Lane successfully lobbied to create Wake County, which was then a sparsely settled wilderness. In 1771, Wake's first county court is believed to have convened at his house. Lane was appointed a member of the court, a position he held until his death. During the Revolutionary War, Lane's house was the site of important government meetings, both formal and informal. In 1776, Lane hosted the colony Council of Safety; the following year, he obtained a license for a small ordinary (i.e., inn). From May to June 1781, Lane's property was the setting for a session of the state General Assembly. Lane served in the state Senate in 11 of the 14 sessions from 1782 to 1794. He was also a delegate to the 1789 convention in Halifax that ratified the United States Constitution.

Lane was directly involved in the decision to locate the permanent capital of the state in Wake County. In 1792, the legislature authorized the purchase of 1,000 acres of his land upon which to establish the city of Raleigh as the new center of state government. The community's western boundary was drawn just east of Lane's house, and a street of the city was named in his honor. After Lane's death in 1795, the house served several owners before being purchased by planter William Boylan in 1818. The house, along with Montfort Hall, remained in the Boylan family until 1909. During this time, the city of Raleigh absorbed the house into its expanding boundaries. Lane's former plantation lands became the site of new streets, homes and businesses. In 1912, the house was moved a short distance. In 1927, it was purchased by the National Society of Colonial Dames of America in the State of North Carolina to ensure its preservation. The organization continues to operate this Raleigh Historic Landmark as a house museum.

3.12.2.3.17 BOYLAN APARTMENTS

The Boylan Apartments are listed in the NRHP under Criterion C as a well-executed and intact local example of a 1930s garden apartment complex. Built in 1935, one-half-mile due west of the state Capitol, the Boylan Apartments are Raleigh's earliest garden-style apartment complex. The complex is comprised of three three-story brick Colonial Revival-style buildings arranged around an open courtyard. The buildings and site retain integrity of design, setting, and materials.

The Boylan Apartments also meet NRHP Criterion A for their important association with community planning and development and social history. The project to construct the complex, led by local businessman Rufus Boylan, was one nation's first to participate in a Public Works Administration program that loaned Federal money to private developers. The program's goal was to provide jobs for the unemployed at the close of the Depression while creating quality "modern" housing for lower income residents. The project's controversial three-year road to completion was reported in local and national newspapers. The period of significance is 1935, the year construction was completed. The complex has also been designated as a local landmark.

3.12.2.3.18 GOVERNOR MOREHEAD SCHOOL HISTORIC DISTRICT

The North Carolina Institution of the Deaf and Dumb and Blind (now the Governor Morehead School) opened in 1845. The school moved to its current location in 1923. The Governor Morehead School Historic District is eligible for the NRHP under Criterion A for education and has state-wide significance for its role in the training of blind, white students in North Carolina. The Governor Morehead School Historic District was established at this location in the 1920s as the state's premier educational facility for visually impaired, white girls and boys. The assemblage of substantial, Colonial Revival scholastic buildings erected mainly in the 1920s, as well as its tree-lined pathways, open space, and recreational fields, illustrate the school's major role in the education and care of the state's blind, white students.

The district is also eligible for the NRHP under Criterion C for design/construction. The school's well-preserved collection of Colonial Revival scholastic architecture possesses the integrity of design, materials, and workmanship needed for eligibility under Criterion C. Erected during the school's original construction phase in the 1920s, the administration building, dormitories, library, home economics building, and gymnasium are all notable, well-preserved expressions of the Colonial Revival style as adapted for educational facilities.

3.12.2.4 *RESOURCES NO LONGER ELIGIBLE FOR THE NRHP*

It should be noted that one resource described in the Richmond to Raleigh Project Tier II DEIS was subsequently determined by NC-HPO to no longer be eligible for the NRHP in April 2013. The Commercial Block at 524-530 Hillsborough Street in Raleigh (referred to as "National Art Interiors" in the Richmond to Raleigh Project Tier II DEIS), lacks sufficient integrity to be eligible for the NRHP due to alterations to the first-floor storefronts and the interior of the property. Therefore, it is no longer included in the discussion of historic resources in the Richmond to Raleigh Project Tier II FEIS.

3.12.3 LOCAL LANDMARKS

3.12.3.1 *VIRGINIA*

As indicated in Table 3-31, 11 of the historical resources in the Study Area in Virginia are listed on the VLR, a statewide program established in 1966 and managed by the VDHR. It is the state's official list of properties important to Virginia's history. While these resources are evaluated under the same criteria used for the NRHP, listing on the VLR should not be confused with listing on the NRHP, which is a Federal program. All 11 of the historical resources within the Study Area listed on the VLR are also listed on the NRHP.

Also indicated in Table 3-31 are several historical resources within the Study Area that are also designated as local historic landmarks. Local historic landmarks are designated by county or city governments, and in some cases, such as in the City of Petersburg and the City of Richmond, are participants in the Certified Local Government (CLG) Program, which partners the local government with state and Federal preservation programs. Several county governments in Virginia have crafted ordinances to create and designate local historic districts and landmarks. For example, Chesterfield County Board of Supervisors amended the County Code in 1987 to include Article XXIII, the Historic Districts and Landmarks Ordinance, which enables to the Board to designate historic landmarks, landmark sites, and historic districts. This has led to the designation of 46 local historic resources within the county, including four within the Study Area (Falling Creek Ironwork [020-0063], Sheffields/Auburn Chase/Bellwood [020-0007], Ragland House [020-0432], and Circle Oaks [020-0140]). The other counties and cities in the Study Area did not provide formal lists of their local historic landmarks.

3.12.3.2 NORTH CAROLINA

As indicated in Table 3-33, several of the historical resources in the Study Area in North Carolina are locally-designated landmarks. State law (North Carolina General Statutes 160A-400.1-400.14) enables counties and municipalities to create historic preservation commissions and to designate local historic districts and landmarks. These regulations require a Certificate of Appropriateness from the local historic commission in order to make alterations to a landmark property or local district. Local designation should not be confused with listing in the NRHP, which is a Federal program. Although some properties may carry both types of designation, the two designations are separate programs with different requirements and benefits. Within the Study Area, there is one local landmark that was determined not eligible for the NRHP as part of the Project evaluations. All other local landmarks within the Study Area are either listed on or eligible for the NRHP.

The circa 1803 Heartsfield House on Ligon Mill Road in Wake Forest, NC, was designated a Wake Forest Local Landmark in 2011 (subsequent to publication of the Richmond to Raleigh Project Tier II DEIS). At the request of the property owners and Capital Area Preservation (CAP, a nonprofit), the NC-HPO and NCDOT reviewed the original Section 106 eligibility survey for the Heartsfield House, which stated the property was not eligible for the NRHP due to its extensive alternations. Based on their review of the survey, NC-HPO and NCDOT do not recommend altering its NRHP eligibility determination. Both the property owners and CAP have stated they will provide additional information in support of the property's eligibility. Additional materials have not been received at press; once received, NC-HPO and NCDOT will review it and reevaluate the eligibility.

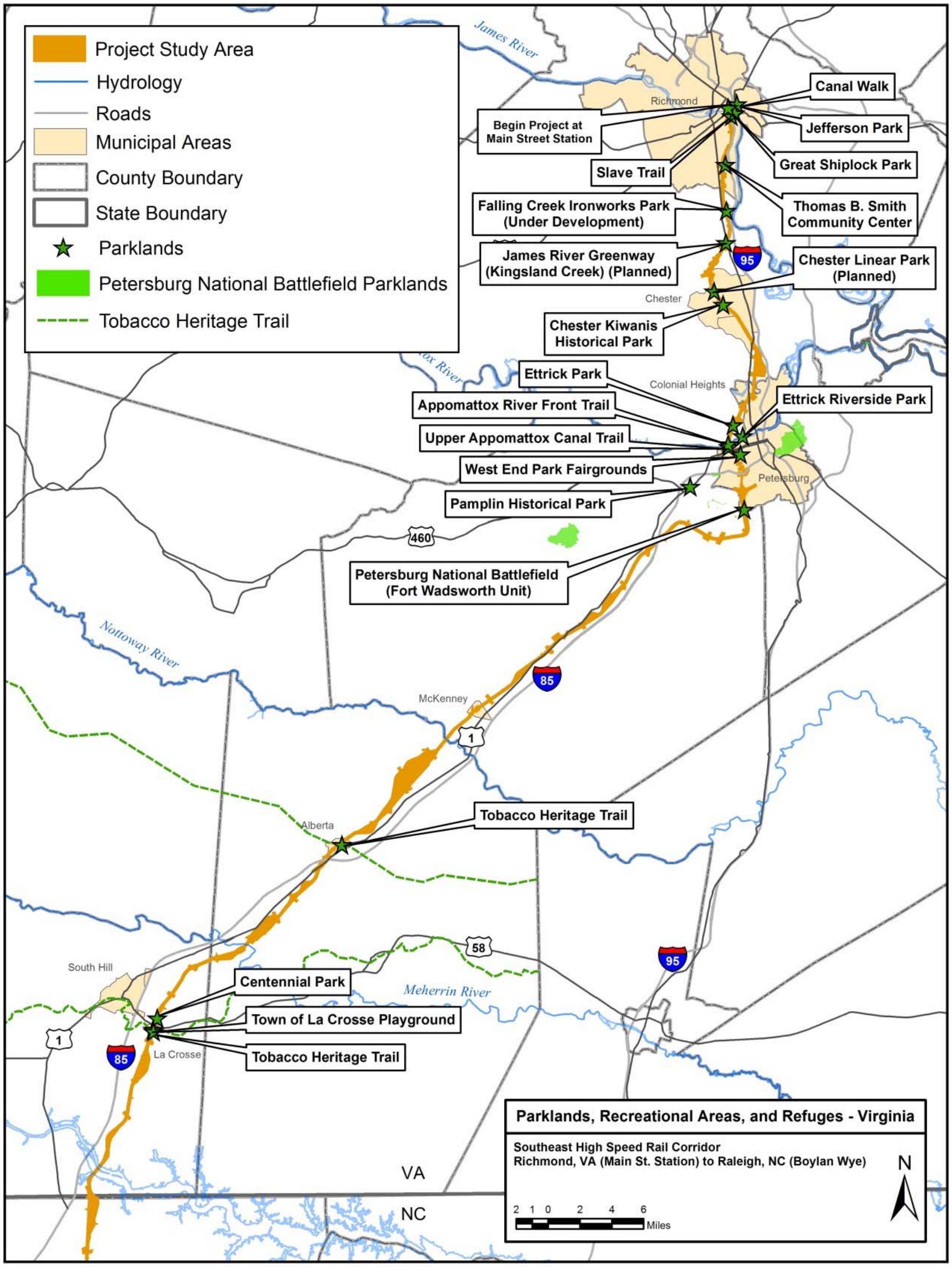
3.13 PARKLANDS, RECREATIONAL AREAS, AND REFUGES

This section documents Federal, state and local parklands, public recreational areas and wildlife refuges located within the vicinity of the Study Area. Figures 3-13 and 3-13 continued show the locations of these areas. A Community Profile Report, including a detailed discussion of parklands, recreational areas, and refuges within the Study Area, was prepared in January 2004 (NCDOT and Virginia DRPT, 2004d); the data from this report have been updated to reflect changes to the Study Area and newly available materials. The following subsections document each resource by jurisdiction (Federal, state, or local) and location.

3.13.1 FEDERAL PARKLANDS

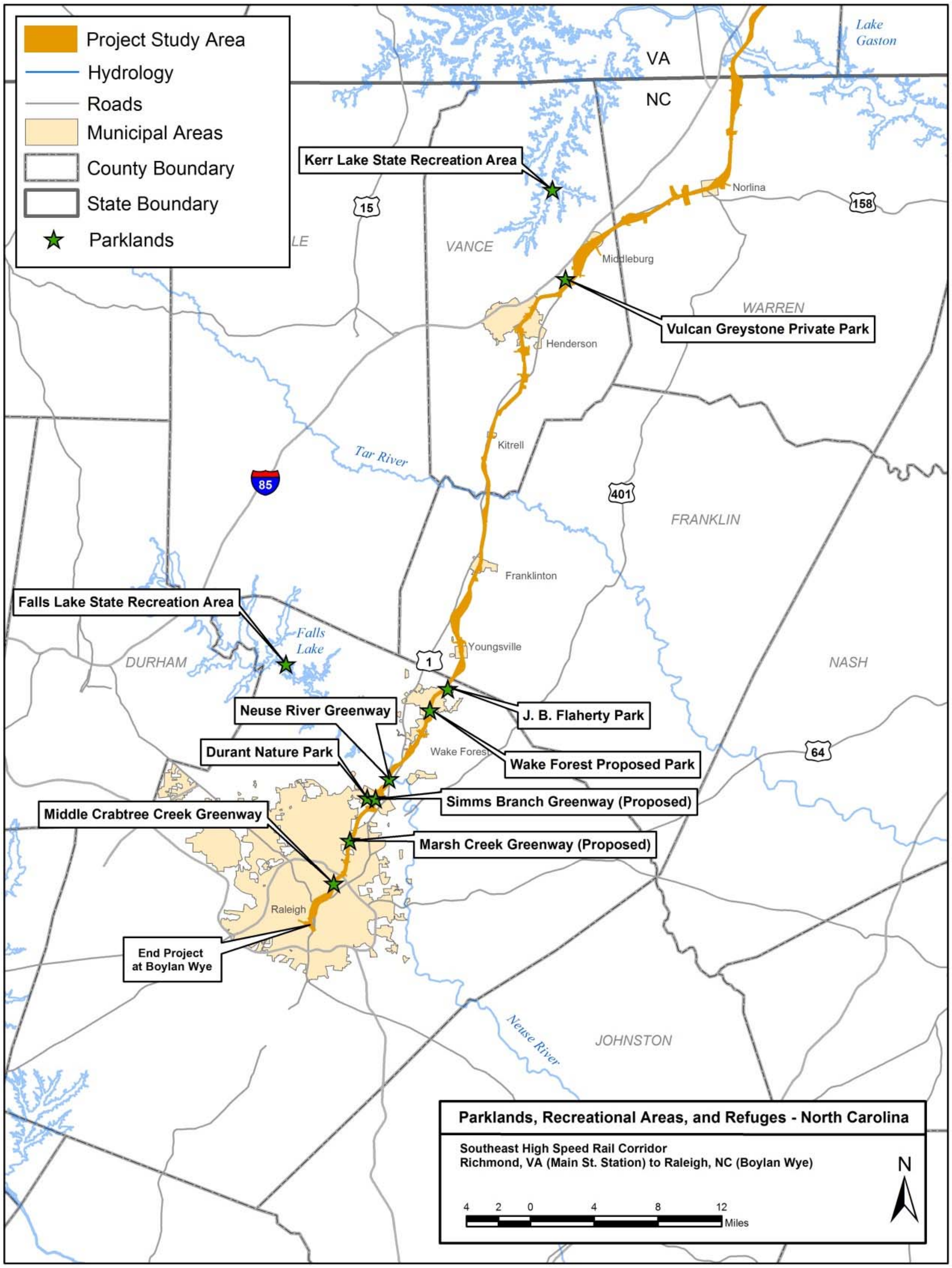
Petersburg National Battlefield is the only National Park located within the Study Area. The existing active rail corridor passes through both the Confederate defense and Union siege lines south of the city along a route parallel with the old Petersburg and Weldon Railroad of the Civil War era. Fort Wadsworth and the site of the Battle of the Weldon Railroad are part of the Petersburg National Battlefield Fort Wadsworth Unit, which is managed by the National Park Service and located directly adjacent to the rail corridor near Collier rail yard.

Figure 3-13



continued

Figure 3-13 continued



The Petersburg Breakthrough Battlefield at Pamplin Historical Park, located several miles west of the Study Area, is also a National Historic Landmark.

No National Forests or Wildlife Refuges are located within the Study Area.

3.13.2 STATE PARKLANDS AND RECREATION AREAS

No Virginia or North Carolina state parks, natural area preserves, forests or recreation areas are located within the Study Area. The nearest state parks to the Study Area are discussed below.

3.13.2.1 *VIRGINIA*

Staunton River State Park is one of the six original state parks in Virginia that opened in June 1936. It is located on approximately 1,600 acres of shoreline along the John H. Kerr Reservoir, the Dan River and the Staunton River (Virginia Department of Conservation and Recreation, 2004b).

3.13.2.2 *NORTH CAROLINA*

Kerr Lake State Recreation Area is located along the John H, Kerr Reservoir. The recreation area's headquarters are located north of Henderson, NC, at Satterwhite Point (North Carolina Division of Parks and Recreation, 2004a).

Falls Lake State Recreation Area covers an area of over 12,400 acres. The manmade reservoir is located in Durham and Wake counties. Falls Dam is located in the upper Neuse River basin, approximately 200 miles upstream from New Bern, NC, 47 miles above Smithfield, NC, and about 10 miles north of Raleigh, NC. The main body of the lake is in Wake and Durham counties, but some of the embayments extend into Granville County (North Carolina, Division of Parks and Recreation, 2004b).

3.13.3 COUNTY/CITY PARKLANDS

There are several county and city parks and greenways within or in the immediate vicinity of the Study Area.

3.13.3.1 *VIRGINIA*

The City of Richmond’s Canal Walk is located between 5th and 17th Streets along the James River and the Kanawha and Haxall Canals on the north side of the James River. The James River Park System within the City of Richmond includes the Slave Trail along the south bank of the James River. The City also operates the Thomas B. Smith Community Center near the existing Ruffin Road at-grade crossing. Both resources are located within the Study Area. The City’s Jefferson Park on Jefferson Avenue and Great Shiplock Park along the north bank of the James River are both located just east of the Study Area.

Chesterfield County is planning several parks and greenways in the SEHSR Study Area. The County plans to acquire property just north of Falling Creek and east of Jefferson Davis Highway to use for a public park, expanding on the Falling Creek Ironworks Park directly south of the creek. This nearby park at the site of the Falling Creek Ironworks is the first ironworks in English North America. Chesterfield County is also planning a greenway on the north side of Kingsland Creek in the vicinity of the Defense Supply Center Richmond (DSCR) in Bellwood, and an expansion of Chester Linear Park, a strip of land situated in the Chester Village area. The county is also planning the Chester Kiwanis Historical Park along Curtis and Richmond Streets within the Study Area.

The County's Ettrick Park on Laurel Road is located within the Study Area and the County's Ettrick Riverfront Park is located along the Appomattox River just east of the Study Area. In Ettrick, the County also operates the Ettrick Park and Mayes-Colbert Ettrick Community Building. In addition, the County is planning the Appomattox Riverfront Trail, which will extend for 1.8 miles along the Appomattox riverfront between Virginia State University (VSU) and the Village of Ettrick.

The Upper Appomattox Canal Trail associated with Appomattox Riverside Park is located on the south bank of the Appomattox River in Petersburg within the Study Area. West End Park Fairgrounds in Petersburg is adjacent to the Study Area.

Dinwiddie County is home to the privately-owned Pamplin Historical Park, which is located at the site of the Petersburg Breakthrough Battle and includes the Museum of the Civil War Soldier. The park is located approximately three miles west of the Study Area along a rail alternative that was considered, but not carried forward (see Section 2.2.2).

The Tobacco Heritage Trail, a Rails-to-Trails Conservancy (www.railstotrails.org) corridor along an abandoned Norfolk-Southern rail corridor, intersects the Study Area in Alberta and La Crosse, VA. The Tobacco Heritage Trail will connect existing trail segments and create new trail within five Virginia counties: Brunswick, Mecklenburg, Halifax, Charlotte, and Lunenburg, with a potential spur trail connection to Dinwiddie County.

La Crosse is home to Centennial Park on South Main Street. The park includes a railroad caboose and is located within the Study Area. The town also operates a playground on a vacant parcel at the intersection of College Street and Central Avenue, just south of the historic La Crosse Hotel.

3.13.3.2 NORTH CAROLINA

Vulcan Materials Company at Greystone Quarry in Henderson, NC, operates a privately-owned park facility adjacent to its mining operations and the existing rail line within the Study Area.

The Richmond to Raleigh Project Tier II DEIS discussed a proposed park in the Town of Wake Forest, NC, on approximately one acre of land at the intersection of South White Street and East Holding Avenue (All People's Park). The park has not been developed and does not appear in a planning document adopted by the town.

J.B. Flaherty Park is located in the Town of Wake Forest, NC, and is approximately a quarter mile south of the Study Area. This 100-acre park currently houses three lighted fields for baseball and softball, a restroom /storage and picnic shelter facility, two ponds, four lighted tennis courts, and a community center. The center has a regulation high school gymnasium, arts and crafts room, game room, and a meeting room with a small kitchen (Town of Wake Forest, Department of Parks and Recreation, 2004).

The portion of the Neuse River Greenway in Raleigh, NC, that crosses the Study Area was constructed in 2011. This segment, the Upper Neuse Greenway, is part of the City of Raleigh Capital Area Greenway System and provides connections from the Falls Canoe Launch and Falls Lake Recreation Area at Falls of Neuse Road to the private soccer complex on Perry Creek Road. The City is also planning two greenways in the Study Area. The proposed Simms Branch Greenway corridor crosses the CSX S-Line rail corridor between Gresham's Lake Road and Durant Road, and the proposed Marsh Creek Greenway corridor crosses the CSX S-Line rail corridor just north of Millbrook Road. The City of Raleigh's Middle Crabtree Creek greenway also intersects the Study Area.

3.13.4 WILDLIFE REFUGES

There are no wildlife refuges in the immediate vicinity of the Study Area in either Virginia or North Carolina.

3.13.5 SECTION 4(F)/SECTION 6(F) RESOURCES

Several Federal laws protect parklands and other natural and recreational areas described above, as well as public recreation areas associated with schools described in Section 3.11.5.1. This section does not discuss the application of Section 4(f) to historic properties. Please refer to Section 3.12 and Chapter 5 for more information about historic and cultural resources and the assessment of potential impacts to these resources.

3.13.5.1 *SECTION 4(F) REQUIREMENTS*

Section 4(f) of the Department of Transportation Act of 1996 (49 U.S.C. § 303) requires that a special effort be made to preserve the natural beauty of the countryside, including public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) prohibits the Secretary of Transportation from approving projects that require the direct or indirect use of publicly owned parks, recreation areas, wildlife and waterfowl refuges, or any significant historic sites protected under Section 4(f) unless a determination is made that there is no feasible and prudent alternative to such use, and that the projects include all possible planning to minimize harm to the properties.

3.13.5.2 *SECTION 6(F) REQUIREMENTS*

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (Public Law 88-578) requires that recreation land acquired or developed with assistance under this section remain in use exclusively for public outdoor recreation. State and local governments can obtain Federal grants through the LWCF to improve parks and recreational areas. Section 6 (f) prohibits the conversion of these lands to non-recreational use without the approval of the USDOI National Parks Service and, as appropriate, other departments. Under Section 6(f), USDOI is directed to assure that replacement lands are of equal value and location. Regardless of the mitigation proposed, the Section 6(f) evaluation should document the National Park Service’s position relative to the Section 6(f) conversion.

3.13.5.3 *SECTION 4(F) AND 6(F) RESOURCES*

Section 4(f) resources were identified through a search of databases for Federal, state, county, and locally owned park sites and recreational facilities, and publicly owned lands. This information was supplemented with information obtained from municipal and county planning documents, as well as meetings with local officials.

The following is a list of Section 4(f) resources located within the Study Area:

- Canal Walk, Richmond, VA
- Slave Trail (James River Park System), Richmond, VA
- Thomas B. Smith Community Center, Richmond, VA
- Falling Creek Park Expansion (Planned), Chesterfield County, VA
- Falling Creek Ironworks Park (Under Development), Chesterfield County, VA
- James River Greenway (Kingsland Creek) (Planned), Chesterfield County, VA
- Chester Linear Park, Chester, VA
- Chester Kiwanis Historical Park (Planned), Chester, VA
- Ettrick Park and Mayes-Colbert Ettrick Community Building, Ettrick, VA

- Appomattox Riverfront Trail (Planned), Ettrick, VA
- Upper Appomattox Canal Trail (Appomattox Riverside Park), Petersburg, VA
- Petersburg National Battlefield (Fort Wadsworth Unit), Petersburg, VA
- Tobacco Heritage Trail, Alberta, VA, and La Crosse, VA
- Centennial Park, La Crosse, VA
- Town of La Crosse Playground, La Crosse, VA
- Franklinton Elementary School, Franklinton, NC
- Neuse River Greenway, Raleigh, NC
- Simms Branch Greenway (Proposed), Raleigh, NC
- Marsh Creek Greenway (Proposed), Raleigh, NC
- Middle Crabtree Creek Greenway, Raleigh, NC

There are several other recreational resources described in the above sections that are located outside the Study Area and, therefore, are not included in the Section 4(f) evaluation in Chapter 5.

Section 6(f) properties were identified through a search of the LWCF website, which listed two potential Section 6(f) resources in the vicinity of the Project: Appomattox River City Park (grant ID 89; approved 1973) and James River Park (grant IDs 31, 54, and 59; approved 1968, 1970, and 1972). A scoping letter was sent to the Virginia Department of Conservation and Recreation to determine if these Section 6(f) resources are potentially impacted by the Project alternatives. Subsequent coordination determined that the Project alternatives will not require ROW from or otherwise impact these Section 6(f) resources.

In addition, the Project team coordinated with the National Park Service's American Battlefield Protection Program and Northeast Region land office to determine if any properties acquired using LWCF funds are located within the Study Area. This coordination determined that there were no such properties.

At the time of publication of the Richmond to Raleigh Project Tier II DEIS, the Roanoke River Rails-to-Trails, Inc. (RRRT) was in the process of applying for LWCF funds for the Tobacco Heritage Trail in Alberta, VA. The RRRT has communicated to the Project team that LWCF funds will not be used for any of the ROW potentially required for the Project.

3.14 TRANSPORTATION

3.14.1 ROADS

- The discussion below is mostly unchanged from the Richmond to Raleigh Project Tier II DEIS, with corrections noted within the descriptions by location.
- There are numerous transportation facilities within the Study Area, including many that cross the rail ROW within the Study Area. Low-volume, two-lane roads are the most common type; although facilities range from Interstate highways to the US Bicycle Highway 1; from small town main streets to city-center, transit-oriented developments; and from rural roads to private access roads.
- This section highlights major road facilities that cross the rail ROW within the Study Area, with average daily traffic counts (2002) greater than 1,000 vehicles per day.

3.14.1.1 *CITY OF RICHMOND, VA*

Within the City of Richmond, VA, the Study Area is centered along the active CSX S-Line, which crosses under, then loosely parallels I-95. The largest volume of north/south traffic through Richmond is carried on I-95. Jefferson Davis Highway/US-1 also parallels the Study

Area, crossing the James River west of the Study Area, and serves local north/south traffic. Within the downtown area, most of the roads that cross the CSX S-Line are grade separated by bridges or underpasses.

Major public road facilities that cross the active CSX S-Line are listed from north to south:

- East Main Street, existing railroad bridge over roadway
- I-95, existing highway bridge over railroad
- I-195 Powhite Expressway, existing highway bridge over railroad
- Maury Street, crosses at-grade
- I-95 exit ramp at Maury Street, existing highway bridge over railroad
- East Commerce, crosses at-grade
- Ruffin Road, crosses at-grade
- West Bells Road, crosses at-grade

3.14.1.2 *CHESTERFIELD COUNTY, VA*

Within Chesterfield County, major north/south traffic near the Study Area is served by I-95 and Jefferson Davis Highway. The major east/west traffic is carried on Chippenham Parkway, Highway 288, and West Hundred Road. In Chesterfield County, the Study Area is centered along the active CSX S-Line until reaching Centralia, where it begins to follow the active CSX A-Line.

Major public road facilities that cross the active CSX S-Line and CSX A-Line are listed from north to south:

- Chippenham Parkway, existing highway bridge over railroad
- Station Road, crosses at-grade
- Jefferson Davis Highway, existing roadway bridge over railroad
- Kingsland Road, crosses at-grade
- Brinkley Road, crosses at-grade
- VA-288, existing highway bridge over railroad
- Old Lane, crosses at-grade
- Centralia Road, crosses at-grade
- West Hundred Road, existing roadway bridge over railroad
- Curtis Street, crosses at-grade
- Jefferson Davis Highway, existing roadway bridge over railroad
- Ruffin Mill Road, existing roadway bridge over railroad
- Woods Edge Road, crosses at-grade
- Pine Forest Drive, crosses at-grade
- Branders Bridge Road, crosses at-grade
- Dupuy Road, crosses at-grade (correction; was not included in Richmond to Raleigh Project Tier II DEIS)
- River Road, existing bridge

3.14.1.3 *CITY OF COLONIAL HEIGHTS, VA*

Major north/south traffic in Colonial Heights, VA, is served by I-95 and Boulevard/Jefferson Davis Highway. The major east/west traffic is carried on East Ellerslie Avenue and Temple Avenue. Major public road facilities that cross the active CSX A-Line are listed from north to south:

- East Ellerslie Avenue, existing roadway bridge over railroad

- Boulevard, existing railroad bridge over roadway

3.14.1.4 *CITY OF PETERSBURG, VA*

I-95 and I-85 carry the largest volume of north/south traffic through the City of Petersburg, VA; I-85 additionally serves some east/west traffic after splitting from I-95 in south Petersburg. Local north/south traffic is served by 2nd Street and Fleet Street, which cross the Appomattox River to the west of I-95, as well as Crater Road, well to the east of the Study Area. The largest east/west traffic volume is carried by Boydton Plank Road and Washington Street. Within Petersburg the Study Area follows the active CSX A-Line.

Major public road facilities that cross the active CSX A-Line are listed from north to south:

- Washington Street, existing railroad bridge passing over roadway
- Farmer Street, existing railroad bridge over roadway
- Halifax Street, existing roadway bridge over railroad
- I-85, existing highway bridge over railroad
- Defense Road, existing railroad bridge over roadway
- Halifax Road, existing roadway bridge over railroad

3.14.1.5 *DINWIDDIE COUNTY, VA*

The largest volume of north/south traffic in Dinwiddie County is carried by I-85 and US-1/Boydton Plank Road; both roads closely parallel as well as cross the CSX S-Line and the Study Area. VA 703/Carson Road carries the greatest east/west traffic volume across the Study Area in the northern part of the county, while VA 40/Doyle Boulevard, which passes through the Town of McKenney, serves as the major east/west corridor in southern Dinwiddie County. The Study Area follows the inactive Burgess Connector and the inactive CSX S-Line. No major public roads cross the Burgess Connector.

Major public road facilities that cross the inactive CSX S-Line are listed from north to south:

- I-85, existing highway bridge over railroad
- VA 703/Carson Road (community of Dinwiddie), existing roadway bridge over railroad
- Courthouse Road (community of Dinwiddie), existing roadway bridge over railroad
- US-1/Boydton Plank Road (south of community of Dinwiddie), existing highway bridge over railroad
- VA 40/Doyle Boulevard (McKenney), crosses at-grade

3.14.1.6 *BRUNSWICK COUNTY, VA*

Within Brunswick County, the largest volume of north/south traffic is carried by I-85 and US-1/Boydton Plank Road; both roads closely parallel as well as cross the CSX S-Line and the Study Area. In the Town of Alberta, Main Street runs north/south, and carries the largest volume of traffic through the town.

Major public road facilities that cross the inactive CSX S-Line are listed from north to south:

- Main Street (Alberta), crosses at-grade
- I-85 (south of Alberta), existing highway bridge over railroad
- Boydton Plank Road/US-1 (south of Alberta), existing highway bridge over railroad
- Christianna Highway/Route 46 (south of Alberta), existing roadway bridge over railroad

3.14.1.7 *MECKLENBURG COUNTY, VA*

In Mecklenburg County, I-85 and US-1 continue to loosely parallel the Study Area, but remain on the west side; these two highways carry the heaviest volume of north/south traffic through the county, with US-1 serving more local traffic. US-58 bears the largest east/west traffic load, crossing the Study Area in the Town of La Crosse. Main Street in La Crosse carries the bulk of the local north/south traffic.

Major public road facilities that cross the inactive CSX S-Line are listed from north to south:

- US-58 (La Crosse), existing highway bridge over railroad
- Main Street (La Crosse), crosses at-grade
- Morris Town Circle (La Crosse), crosses at-grade
- Route 903 (Bracey community), existing roadway bridge over railroad

Note that the Richmond to Raleigh Project Tier II DEIS incorrectly included St. Tammany Street in the listing of roads that cross the railroad in La Crosse, VA (with an AADT over 1,000). The road has been removed from the listing here in the Richmond to Raleigh Project Tier II FEIS. St. Tammany ties to Main Street very near the Main Street at-grade railroad crossing, with Main Street the road that actually crosses the railroad.

3.14.1.8 *WARREN COUNTY, NC*

Within Warren County, I-85 carries the largest volume of north/south through traffic, while US-1 serves more local north/south traffic. The CSX S-Line closely parallels US-1, which curves to the east away from I-85. US-158 provides east/west access through the county, and crosses under the CSX S-Line by way of an underpass in the center of Norlina, NC, where the CSX S-Line becomes an active freight railroad.

Major public road facilities that cross the active CSX S-Line are listed from north to south:

- Wise Five Forks Road, crosses at-grade (inactive railroad segment)
- Warren Plains Road(Norlina), crosses at-grade (inactive railroad segment)
- US-158 (Norlina), existing railroad bridge over roadway
- Ridgeway Road SR 1107 (south of Norlina), crosses at-grade
- Axtell Ridgway Road (south of Norlina), crosses at-grade (correction; was not included in Richmond to Raleigh Project Tier II DEIS)

3.14.1.9 *VANCE COUNTY, NC*

Within Vance County, I-85 continues to carry the bulk of north/south through traffic while US-1 provides local north/south access. I-85, US-1, and the Study Area briefly come together near Middleburg, NC; however, at this location I-85 diverges from the Study Area and remains well to the west throughout the remainder of the corridor. US-1 Bypass crosses the active CSX S-Line on a bridge north of Henderson, NC. US-158 provides east/west access through the Henderson, area, but does not cross the railroad, while Andrews Avenue/NC39 provides a connection from US1 to the east. There are many public roads that cross the active CSX S-Line at-grade as it moves through the central areas of Middleburg, Henderson and Kittrell, NC.

Major public road facilities that cross the active CSX S-Line are listed from north to south:

- US-1 Bypass (north of Henderson), existing highway bridge over railroad
- Warrenton Road (north of Henderson), crosses at-grade (correction to description)
- Main Street (Henderson), crosses at-grade

- Unnamed crossover (Henderson), crosses at-grade
- Rock Spring Road (Henderson), crosses at-grade
- Andrews Avenue/NC39 (Henderson), crosses at-grade
- Charles Street (Henderson), existing railroad bridge over roadway (correction to description)
- Montgomery Street (Henderson), crosses at-grade
- E. Winder Street (Henderson), crosses at-grade
- Orange Street (Henderson), crosses at-grade
- Chavasse Avenue (Henderson), crosses at-grade
- Miriam Avenue/ St. Matthews Street/ Nicholas Street (Henderson), crosses at-grade (revised name)
- Welcome Avenue/Belmont Drive (south of Henderson), crosses at-grade
- JP Taylor Road (south of Henderson), crosses at-grade
- Bearpond Road (south of Henderson), crosses at-grade
- US-1 Bypass (south of Henderson), existing highway bridge over railroad
- Peter Gill Road (north of Kittrell), crosses at-grade
- Chavis Road (north of Kittrell), crosses at-grade
- Main Street (Kittrell), crosses at-grade

3.14.1.10 *FRANKLIN COUNTY, NC*

Within Franklin County, US-1 carries the highest volume of north/south traffic near the Study Area, while NC 56, which crosses the Study Area in Franklinton, provides primary east/west access. In the towns of Franklinton and Youngsville, many low traffic volume public roads cross the CSX S-Line at-grade.

Major public road facilities that cross the active CSX S-Line are listed from north to south:

- Eric Medlin Road (north of Franklinton), crosses at-grade
- Mason Street (Franklinton), crosses at-grade
- Green Street/NC 56 (Franklinton), existing railroad bridge over roadway
- College Street (Franklinton), crosses at-grade
- Bert Winston Road (north of Youngsville), crosses at-grade (correction; was not included in Richmond to Raleigh Project Tier II DEIS)
- Main Street/NC 96 (Youngsville), crosses at-grade

3.14.1.11 *WAKE COUNTY, NC*

In Wake County, the preferred alternative primarily follows the active CSX S-Line along the busy US-1 corridor, although in Downtown Raleigh, it parallels the NS line on the east side for a short distance. US-1, US-401 to the east, and NC 50 to the west carry the bulk of north/south through traffic near the corridor. Many roads provide a network of east/west access across the county, including the NC 98 Bypass in Wake Forest, the I-540 beltline in north Raleigh, and the I-440 beltline around Downtown Raleigh.

The listing below of major public road facilities that cross railroad ROW has been revised from the Richmond to Raleigh Project Tier II DEIS to reflect the alignment of Preferred Alternative (NC5) in Downtown Raleigh.

Major public road facilities that cross the active CSX S-Line or NS rail alignment are listed from north to south:

- Roosevelt Avenue (Wake Forest), existing CSX railroad bridge over roadway

- Elm Avenue (Wake Forest), crosses CSX railroad at-grade
- Holding Avenue (Wake Forest), crosses CSX railroad at-grade
- NC 98 Bypass (Wake Forest), existing roadway bridge over CSX railroad
- Rogers Road (Wake Forest), crosses CSX railroad at-grade
- Ligon Mill Road (Wake Forest), crosses CSX railroad at-grade
- Capital Boulevard/US1 (north of Raleigh), existing highway bridge over CSX railroad
- Durant Road (Raleigh), crosses CSX railroad at-grade
- Gresham Lake Road (Raleigh), crosses CSX railroad at-grade
- I-540 Outer Beltline (Raleigh), existing highway bridge over CSX railroad
- Old Wake Forest Road (Raleigh), existing roadway bridge over CSX railroad
- Spring Forest Road (Raleigh), existing CSX railroad bridge over roadway
- Atlantic Avenue (Raleigh), existing roadway bridge over CSX railroad
- Millbrook Road (Raleigh), crosses CSX railroad at-grade
- New Hope Church Road (Raleigh), crosses CSX railroad at-grade
- Wolfpack Lane (Raleigh), crosses CSX railroad at-grade
- I-440 Beltline (Raleigh), existing highway bridge over CSX railroad
- Six Forks Road (Raleigh), existing CSX railroad bridge over roadway
- Hodges Street (Raleigh), existing CSX railroad bridge over roadway
- Whitaker Mill Road (Raleigh), crosses CSX railroad at-grade
- Capital Boulevard/US-1 (Raleigh), existing CSX railroad bridge over roadway
- Peace Street (Raleigh), existing NS railroad bridge over roadway
- W. Johnson Street (Raleigh), existing NS railroad bridge over roadway
- Tucker Street (Raleigh), existing NS railroad bridge over roadway
- North Street (Raleigh), existing NS railroad bridge over roadway
- Jones Street (Raleigh), crosses CSX railroad at-grade
- Hillsborough Street (Raleigh), existing roadway bridge over CSX railroad
- Morgan Street (Raleigh), existing roadway bridge over CSX railroad
- Hargett Street (Raleigh), crosses CSX railroad at-grade
- Boylan Avenue (Raleigh), existing roadway bridge over NCRR railroad

3.14.2 TRAFFIC CONDITIONS

Locations where the Study Area crosses existing or planned roadways were reviewed to identify locations requiring a traffic analysis screening to determine the effects of the rail crossing closures and consolidations. Determination of select locations for the traffic analysis screening was based on annual average daily traffic (AADT), roadway classification, thoroughfare plan projections, Strategic Highway Corridor inclusion, connectivity and presence of Transportation Improvement Program (TIP) projects. In addition, specific locations requested by the design team or stakeholders were also analyzed. Traffic analyses were not performed in places where the design caused little or no change in the existing travel pattern, rerouted only a minimal amount of traffic, or relocated an existing connection in a way that was not assumed to affect the system.

Appendix P includes figures displaying existing traffic configurations (e.g., stop signs, stop lights, turn lanes) and the predicted traffic in 2030 without the proposed Project (“No Build”). More detailed information on the traffic analysis methodology is located in the traffic report prepared for the Project (SEHSR Traffic Review, Hatch Mott MacDonald, 2013).

3.14.2.1 *RICHMOND, VA*

As stated above, the traffic analysis followed a general screening procedure that eliminated traffic analysis in places where the design caused little or no change in the existing travel pattern, rerouted only a minimal amount of traffic, or relocated an existing connection in a way that was not assumed to affect the system. Based on this screening, there are to be no sections within the City of Richmond that warranted detail study.

3.14.2.2 *CHESTERFIELD COUNTY, VA*

3.14.2.2.1 KINGSLAND ROAD/NORCLIFF ROAD AND PERRYMONT ROAD – BELLWOOD AREA

Chester Road/Bellwood Road and US-1: This intersection is a signalized intersection with several yield movements. US-1 is a north-south US highway while Chester Road is a major north-south arterial. Appendix P Figures 1 and 2 provide the existing laneage and 2030 No Build volumes of the Chester Road/Bellwood Road and US-1 intersection, respectively. The area surrounding the intersection is industrial/undeveloped.

Perrymont Road and Chester Road/Driveway: This intersection is a stop controlled intersection with a stop condition on the Chester Road/Driveway approaches. Perrymont Road is a minor, relatively short facility that parallels US-1. Chester Road is an arterial and VA route, VA 145, which connects US-301 and VA 10 and interchanges with VA 288. Appendix P Figures 1 and 2 provide the existing laneage and 2030 No Build volumes of the Perrymont Road and Chester Road/Driveway intersection. The area around the intersection is a mixture of business and residential land use.

Kingsland Road and Chester Road: This intersection is a three-leg stop controlled intersection with a stop condition on the Kingsland Road approach. Kingsland Road is a local collector type facility serving mostly residential land use and runs mainly east-west. Chester Road is an arterial and VA route, VA 145, which connects US-301 and VA 10 and interchanges with VA 288. Appendix P Figures 1 and 2 provide the existing laneage and 2030 No Build volumes of the Kingsland Road and Chester Road intersection. The western side of the intersection is bounded by the CSX S-Line rail corridor, while the rest of the area around the intersection is mostly undeveloped with some residential land use.

Norcliff Road and Perrymont Road/Church Parking Lot: This intersection is an unsignalized intersection with Norcliff Road and the Church Parking Lot experiencing the stop condition. Norcliff Road is a local collector type facility while Perrymont Road is a minor, relatively short north-south facility that parallels US-1. Appendix P Figures 1 and 2 provide the existing laneage and 2030 No Build volumes of the Norcliff Road and Perrymont Road/Church Parking Lot intersection. The intersection is bounded on the west side by a church facility and its associated parking, in the southeast quadrant by a church, and in the northeast quadrant by a parking lot.

Norcliff Road and US-1: This intersection is a four-leg, unsignalized intersection collector type facility while US-1 is a four-lane undivided major US highway in the area that runs north-south. Appendix P Figures 1 and 2 provide the existing laneage and 2030 No Build volumes of the Norcliff Road and US-1 intersection. The intersection has development in all four quadrants.

Kingsland Road and Dorsey Road: This intersection is a three-leg unsignalized intersection with Kingsland Road the stop condition. Kingsland Road and Dorsey Road are local collector type facilities serving mostly residential land use. Kingsland Road runs mainly east-west while Dorsey Road runs primarily north-south. Appendix P Figures 1 and 2 provide the existing laneage and 2030 No Build volumes of the Kingsdale Road and Dorsey Road intersection. There is a residence on the east side of the intersection while the northwest and southwest quadrants are undeveloped.

3.14.2.2.2 CHESTER ROAD AND BRINKLEY ROAD – BELLWOOD AREA

Chester Road and Brinkley Road: The intersection of Brinkley Road and Chester Road is located approximately one quarter mile north of the intersection of Kingsdale Road and Chester Road. This intersection is a stop controlled "T" intersection, with a stop condition on Brinkley Road. Brinkley Road is a local connector while Chester Road is an arterial and VA route, VA 145, which connects US-301 and VA 10 and interchanges with VA 288. Appendix P Figures 5 and 6 provide the existing laneage and 2030 No Build volumes for the Chester Road and Brinkley Road intersection, respectively. The intersection is bounded on the west side by CSX S-Line railroad tracks, while the east side is relatively undeveloped.

Hopkins Road and Thurston Road: The intersection of Hopkins Road and Thurston Road is located northwest of the intersection of Park Road and Chester Road, and is a stop controlled "T" intersection, with the stop condition on Thurston Road. Thurston Road is a local collector type facility, while Hopkins Road is more of a major collector that runs north-south from US-301 to Centralia Road. Appendix P Figures 5 and 6 provide the existing laneage and 2030 No Build volumes for the Hopkins Road and Thurston Road intersection, respectively.

Kingsdale Road and Chester Road: The intersection of Kingsdale Road and Chester Road is located approximately one quarter mile north of the intersection of Park Road and Chester Road, and is a signalized "T" intersection. Kingsdale Road is a local collector that connects Chester Road to US-301, while Chester Road is an arterial and VA route, VA 145, which connects US-301 and VA 10 and interchanges with VA 288. Appendix P Figures 5 and 6 provide the existing laneage and 2030 No Build volumes for the Kingsdale Road and Chester Road intersection, respectively. The area immediately adjacent to the intersection is undeveloped; however, it should be noted that the western side is bounded by the CSX S-Line railroad tracks and there is low density residential development in the southeast area.

Park Road and Chester Road/Driveway: The intersection of Park Road and Chester Road is a stop controlled intersection, with a stop condition on the driveway and Park Road approaches. The northbound approach of Chester Road is two through lanes (which narrows to one through lane approximately 300 feet downstream of the intersection). The southbound approach has two through lanes as well; however, neither the northbound nor southbound approach functions as a true two lane approach. Since the northbound through lane drops shortly after the intersection, traffic skews to the lane that does not drop. Also, since the second southbound through lane is so short (approximately 300 feet), the amount of vehicles able to reach the second through lane is limited. A fire station is located 300 feet north of the intersection. There is an emergency access signal at the intersection of the fire station driveway and Chester Road to facilitate egress from the fire station onto Chester Road. Park Road is a short residential road, while Chester Road is an arterial and VA route, VA 145, which connects US-301 and VA 10 and interchanges with VA 288. Appendix P Figures 5 and 6 provide the existing laneage and 2030 No Build volumes for the Park Road/Driveway and Chester Road intersection, respectively. The area on the western side of the intersection is undeveloped while the eastern side has low density land use along with the aforementioned fire station.

3.14.2.3 *CHESTER, VA*

3.14.2.3.1 OLD LANE, CENTRALIA ROAD AND CHESTER ROAD

Old Lane and Hopkins Road: Old Lane is a short local collector type facility, while Hopkins Road is more of a major collector that runs north-south from US-301 to Centralia Road. The existing intersection of Old Lane and Hopkins Road is a stop controlled “T” intersection with Old Lane and the northern leg of Hopkins Road experiencing the stop condition. Appendix P Figures 9 and 10 provide the existing laneage and 2030 No Build peak hour volumes, respectively. The land use around the intersection is a mixture of low density residential and undeveloped.

Old Lane and Chester Road: Old Lane is a local collector type facility, while Chester Road is a four-lane divided arterial/VA route (VA 145) that connects US-301 and VA 10 and interchanges with VA 288. The existing intersection of Old Lane and Chester Road is an unsignalized “T” intersection with Old Lane experiencing the stop condition. Currently, there is a daycare on Old Lane between the intersection of Old Lane with Chester Road and the Old Lane at-grade rail crossing of the CSX A-Line. Appendix P Figures 9 and 10 provide the existing laneage and 2030 No Build peak hour volumes, respectively. The area immediately adjacent to the intersection is not developed; however, there is development behind that buffer in each quadrant.

Centralia Road and Chester Road: The existing intersection of Centralia Road and Chester Road is a signalized four-leg intersection with development in all but the southeast quadrant. There is an existing at-grade rail crossing of the CSX A-Line approximately 280 feet west of the intersection on Centralia Road. Centralia Road is an east-west, two-lane arterial/VA route (VA 145) and Chester Road is a north-south, four-lane divided arterial/VA route (VA 145 and VA 144) in this area that connects US-301 and VA 10 and interchanges with VA 288. Appendix P Figures 9 and 10 provide the existing laneage and 2030 No Build peak hour volumes, respectively.

Centralia Road and Hopkins Road: The existing intersection of Centralia Road and Hopkins Road is an unsignalized four-leg intersection with Hopkins Road experiencing the stop condition. Centralia Road is an east-west, two-lane arterial/VA route (VA 145) and Hopkins Road is more of a major two-lane collector that runs north-south from US-301 to Centralia Road. Appendix P Figures 9 and 10 provide the existing laneage and 2030 No Build peak hour volumes, respectively.

3.14.2.4 *LA CROSSE, VA*

3.14.2.4.1 PINE STREET AND MAIN STREET

US-58 and Main Street/Country Club Road: The intersection of US-58 and Main Street is a signalized intersection. US-58 is a US highway, while Main Street is north-south facility that traverses through the center of La Crosse. Country Club Road is a local north-south access facility that extends to US-1. The existing laneage and 2030 No Build traffic volumes for the intersection of US-58 and Main Street are shown in Appendix P Figures 13 and 14, respectively. Aside from a convenience mart/gas station, the area around the intersection is largely undeveloped; however, the southeast and northeast sides are bounded by Main Street as it curves to parallel US-58 in the intersection area.

Pine Street and Main Street: The intersection of Main Street and Pine Street is a stop controlled intersection with a stop condition on Pine Street. Pine Street is a local collector, while Main Street is more of a major type collector. The existing laneage and 2030 No Build traffic volumes for the intersection of Pine Street and Main Street are shown in Appendix P Figures 13 and 14, respectively. The area around the intersection is low density residential.

Carter Street and Pine Street: The intersection of Carter Street and Pine Street is a stop controlled intersection with a stop condition on Carter Street. Carter Street is a north-south local collector, while Pine Street is an east-west local connector. The existing laneage and 2030 No Build traffic volumes for the intersection of Carter Street and Pine Street are shown in Appendix P Figures 13 and 14, respectively. The area around the intersection is a mix of business, recreational and undeveloped land use. It should be noted that US-58 is only approximately 200 feet north of the Carter Street and Pine Street intersection and somewhat bounds the northern side of the intersection.

US-58 and Pine Street: The intersection of US-58 and Pine Street is a stop controlled “T” intersection with Pine Street experiencing the stopped condition. US-58 is a US highway running east-west in the area, while Pine Street is east-west local connector. The existing laneage and the 2030 No Build traffic volumes for the intersection of Pine Street and US-58 are provided by Appendix P Figures 13 and 14, respectively. The land use surrounding the intersection is low density residential or undeveloped.

Hillcrest Road: Hillcrest Road is a local roadway that runs east-west and between Saint Tammany Road and Carter Street.

Central Avenue: Central Avenue is a local roadway that runs north-south in the La Crosse area. Central Avenue begins at Main Street near the intersection of Saint Tammany Road, Seaboard Avenue, and College Street, and extends northward approximately 770 feet just beyond Carolina Street.

Meredith Street: Meredith Street is a short local roadway that runs north-south and has a break between Jones Street and Seaboard Avenue.

Jones Street: Jones Street is a local east-west street that is only approximately 400 feet long. Jones Street connects Saint Tammany Road to Meredith Street.

St. Tammany Road: Saint Tammany Road is a very short north-south facility that becomes Morris Town Circle to the south and terminates at Main Street to the north.

3.14.2.5 *NORLINA, NC*

3.14.2.5.1 WARREN PLAINS ROAD AND YANCEY ROAD

US-1/US-401 and Norlina Pines Drive: The existing intersection of US-1/US-401 and Norlina Pines Drive is an unsignalized “T” intersection with Norlina Pines Drive experiencing the stop condition. Norlina Pines Drive is a “no outlet” road that serves approximately 50 apartment units. US-1/US-401 is a major US route in the area. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes, respectively of the US-1/US-401 and Norlina Pines Drive intersection. Aside from the apartment units, the area around the intersection is largely undeveloped; however, it should be noted the western side of the “T” intersection is bounded by the CSX S-Line railroad property.

Warren Plains-Norlina Road and Yancey Road: The existing intersection of Warren Plains-Norlina Road and Yancey Road is a stop controlled “T” intersection, with Yancey Road experiencing the stop condition. Both Warren Plains-Norlina Road and Yancey Road are local collector type facilities. Current land use in the area is agricultural and residential in nature. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes, respectively for the Warren Plains-Norlina Road and Yancey Road intersection.

Weldon Road and Warren Plains-Norlina Road: The existing intersection of Warren Plains-Norlina Road and Weldon Road is a stop controlled “T” intersection, with Weldon Road experiencing the stop condition. Both Weldon Road and Warren Plains-Norlina Road are local collector type facilities. Currently, the land surrounding the intersection is agricultural and residential in nature. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes, respectively of the Warren Plains Road and Weldon Road intersection.

3.14.2.5.2 WARREN PLAINS ROAD AND HYCO STREET

Warren Plains Road and Hyco Street: The existing intersection of Warren Plains Road and Hyco Street is an unsignalized "T" intersection with Hyco Street experiencing the stop condition. Both Warren Plains Road and Hyco Street are local collector type facilities. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes for the Warren Plains Road and Hyco Street intersection. Hyco Street is bordered on the north side by the Downtown Norlina Business District and on the south side by the CSX S-Line rail corridor. There is a small museum in the southwest corner of the intersection and unpaved parking in the southeast corner.

US-1/US-401 and Hyco Street/North Street: The existing intersection of US-1/US-401 and Hyco Street/North Street is a four-leg stop controlled intersection with Hyco Street and North Street experiencing stop conditions. Both Hyco Street and North Street are local collector type facilities, while US-1/US-401 is a US highway. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes for the US-1/US-401 and Hyco Street/North Street intersection. The land use around intersection varies from residential to business to undeveloped.

Warren Plains Road and Division Street: The existing intersection of Warren Plains Road and Division Street is an unsignalized "T" intersection with Division Street experiencing the stop condition. Both Warren Plains Road and Division Street are local collector type facilities, with Warren Plains running east-west and Division Street running north-south. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes for the Warren Plains Road and Division Street intersection. The intersection is bordered on the south side by the CSX S-Line rail corridor and the area just north of the intersection is undeveloped.

Liberty Street and US-401/US-158: The existing intersection of Liberty Street and US-401/US-158 is a stop controlled "T" intersection with a stop condition on Liberty Street. Liberty Street is a local collector type facility, while US-401/US-158 is a north-south US highway. It should be noted that the existing CSX S-Line railroad structure creates sight distance concerns at this intersection. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes for the Liberty Street and US-401/US-158 intersection. Liberty Street is bounded by the CSX S-Line railroad property to the north, low density residential land use to the southeast, and undeveloped property to the southwest.

Liberty Street and Division Street: The existing intersection of Liberty Street and Division Street is a stop controlled "T" intersection with a stop condition on Liberty Street. Liberty Street is an east-west local collector, while Division Street is a north-south local connector. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes for the Liberty Street and Division Street intersection. This intersection is bounded by the CSX S-Line railroad property to the north, a business to the southeast, and a vacant facility to the southwest.

Main Street and US-401/US-158: The existing intersection of Main Street and US-401/US-158 is a stop controlled intersection with a stop condition on Main Street. Main Street is a local collector type facility, while US-401/US-158 is a north-south US highway. There are houses located in close proximity to each corner of the intersection. Appendix P Figures 17 and 18 provide the existing laneage and 2030 No Build peak hour volumes for the Main Street and US-401/US-158 intersection.

3.14.2.5.3 US-1 AND AXTELL-RIDGEWAY ROAD AND RIDGEWAY-DREWRY ROAD

US-1/US-158 and Axtell Ridgeway Road/Driveway: Currently, the intersection of US-1/US-158 and Axtell Ridgeway Road is a four-leg unsignalized intersection. A private drive that forms the northern leg of the intersection and Axtell Ridgeway Road operates under stop control. There is an at-grade rail crossing of the CSX S-Line on Axtell Ridgeway Road approximately 50 feet south of the intersection. US-1/US-158 is a US highway that generally runs northwest-southeast, while Axtell Ridgeway Road is a local type facility that runs from Manson-Axtell Road to US-1/US-158. Appendix P Figures 21 and 22 provide the existing laneage and 2030 No Build peak hour volumes for the US-1/US-158 and Axtell Ridgeway Road intersection, respectively. The CSX S-Line rail corridor runs parallel to US-1 at this location, and thus Axtell Ridgeway Road crosses the CSX S-Line rail corridor in close proximity to the intersection of Axtell Ridgeway Road and US-1/US-158. The area surrounding the intersection is rural-agricultural in nature, with low density sporadic development. The south side of the intersection is bounded by the CSX S-Line rail corridor.

US-1/US-158 and Ridgeway-Drewry Road: The intersection of Ridgeway-Drewry Road and US-1 is a “T” intersection with stop control on Ridgeway-Drewry Road. US-1/US-158 is a US highway that runs generally northwest-southeast, while Ridgeway-Drewry Road is a local-type facility that interchanges with I-85 northwest of this intersection. Appendix P Figures 21 and 22 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 and Ridgeway-Drewry Road intersection, respectively. The area surrounding the intersection is low density rural-agricultural and residential in nature.

US-1/US-158 and Ridgeway-Warrenton Road/Grant Lane: The intersection of US-1/US-158 and Ridgeway-Warrenton Road/Grant Lane is a four-leg stop controlled intersection with Grant Lane and Ridgeway-Warrenton Road experiencing the stop condition. US-1/US-158 is a US highway that runs generally northwest-southeast, while Ridgeway-Warrenton Road is a local type facility that connects US-1/US-158 to US-401/US-158 Business near Warrenton. Appendix P Figures 21 and 22 provide the existing laneage and 2030 No Build peak hour volumes for the US-1/US-158 and Ridgeway-Warrenton Road/Grant Road intersection, respectively. The area surrounding the intersection is a mixture of low density residential and undeveloped land.

US-1/US-158 and Saint Tammany Road: The intersection of St. Tammany Road and US-1/US-158 is a "T" intersection with Saint Tammany Road experiencing the stop condition. US-1/US-158 is a US highway that runs generally northwest-southeast, while Saint Tammany Road is a minor north-south facility that connects US-1/US-158 and Oine Road (which interchanges with I-85). Appendix P Figures 21 and 22 provide the existing laneage and 2030 No Build peak hour volumes for the US-1/US-158 and St. Tammany Road intersection, respectively. The area surrounding the intersection is rural-agricultural or undeveloped in nature.

3.14.2.5.4 COLLINS ROAD AND SOUL CITY BOULEVARD - SOUL CITY AREA

Soul City Boulevard and US-1/US-158: The intersection of US-1/US-158 and Soul City Boulevard is an unsignalized “T” intersection, with Soul City Boulevard operating under stop control. There is also a small raised median on the northbound approach to the intersection. The area around the intersection is undeveloped. Soul City Boulevard is a local minor facility, while US-1/US-158 is a US highway. Appendix P Figures 25 and 26 provide the existing laneage and 2030 No Build peak hour volumes for the Soul City Boulevard and US-1/US-158 intersection, respectively.

Collins Road and Manson-Axtell Road: The intersection of Collins Road and Manson-Axtell Road is an unsignalized "T" intersection with Manson-Axtell Road experiencing the stop condition. The intersection is bounded to the north by the CSX S-Line railroad. The land use adjacent to the intersection is very rural in nature. Both Collins Road and Manson-Axtell Road are local-type facilities.

Collins Road and Soul City Boulevard: The intersection of Collins Road and Soul City Boulevard is a four-leg unsignalized intersection with Collins Road experiencing the stop condition. There is development on the south side of the intersection, but little on the north side.

3.14.2.6 *MIDDLEBURG, NC*

3.14.2.6.1 SOUTH CAROL STREET AND US-1/US-158

The current intersection of South Carol Street and US-1 is an un-signalized "T" intersection with a left and right-turn lane for the northbound approach. The westbound approach has a shared through and left-turn movement. The eastbound approach has a shared through and right-turn movement. The area around the intersection is rural, agricultural land and a house is located directly across from the "T" intersection.

3.14.2.7 *HENDERSON, NC*

3.14.2.7.1 MAIN STREET/BECKFORD DRIVE AND OLD NORLINA ROAD

Beckford Drive, Chestnut Street, and US-1 Business/US-158 (Garnett Street): The intersection of Beckford Drive, Chestnut Street, and Garnett Street operates under signal control. The northbound movement from Garnett Street is a slip lane and does not go through the signal. Main Street does not directly feed into the intersection; however, it does tie into the northbound slip lane for Garnett Street. Old Norlina Road provides access to the Beckford Drive, Chestnut Street, and Garnett Street intersection for Main Street traffic and vice-versa.

Garnett Street is an urban arterial that essentially parallels US-1 in Henderson. Chestnut Street is a local type facility that parallels Garnett Street from this intersection to Corbitt Road. Beckford Road is a four-lane undivided east-west facility, while Main Street is a minor local connector. It should be noted that the Henderson Thoroughfare Plan recommends extending Main Street eastward to connect with a new north-south facility that would connect to John Deere Road near Warrenton Road. While traffic volumes on Main Street are currently relatively low, this extension project could increase the volume on Main Street on and around the crossing well above current levels which was accounted for in this analysis process.

The area around the intersection of Main Street and the North Garnett Street northbound slip lane is a mix of low density residential land use, businesses, and churches. Appendix P Figures 29a and 30a provide the existing laneage and 2030 No Build peak hour volumes for the Beckford Drive/Main Street, Chestnut Street, and Garnett Street intersections, respectively.

Main Street and Old Norlina Road: The Main Street and Old Norlina Road intersection is a two-way stop controlled intersection with Main Street experiencing the stop conditions. Main Street has an existing at-grade crossing of the CSX S-Line rail corridor approximately 200 feet east of this intersection, which is proposed to be grade separated under the Project. Main Street also has an offset at this intersection, with the west leg approximately 25 feet north of the east leg at the intersection. Both Main Street and Old Norlina Road are local-type facilities and run for relatively short distances. Appendix P Figures 29a and 30a provide the existing laneage and 2030 No Build peak hour volumes for the Main Street and Old Norlina Road intersection, respectively.

3.14.2.7.2 US-1 BUSINESS (GARNETT STREET) AND NC 39 (ANDREWS AVENUE)

Rock Spring Street and Chestnut Street: The intersection of Rock Spring Street and Chestnut Street is a four-leg unsignalized intersection with Rock Spring Street experiencing the stop conditions. Rock Spring Street is a relatively short minor facility that mainly serves residential land use. While also a relatively short facility, Chestnut Street is an arterial type facility and parallels Garnett Street. Appendix P Figures 29a and 30a provide the existing laneage and 2030 No Build peak hour volumes for the Rock Spring Street and Chestnut Street intersection, respectively. The area surrounding the Rock Spring Street and Chestnut Street intersection is currently either low density residential or undeveloped.

Rock Spring Street and Garnett Street: The intersection of Rock Spring Street and Garnett Street is a four-leg offset unsignalized intersection with eastbound Rock Spring Street experiencing a stop condition and westbound Rock Spring Street experiencing a yield condition. There is an existing at-grade rail crossing of the CSX S-Line on Rock Spring Street approximately 50 feet east of the intersection. The two legs of Rock Spring Street (southeast-northwest) are offset approximately 100 feet. Rock Spring Street is a relatively short minor facility that serves mainly residential land use. Garnett Street serves as US-1 Business/US-158 and is an arterial type facility. Appendix P Figures 29a and 30a provide the existing laneage and 2030 No Build peak hour volumes for the Rock Spring Street and Garnett Street intersection, respectively. There is development that abuts the intersection on the west side while the east side is bounded by the existing CSX S-Line railroad tracks and associated right-of-way.

Rock Spring Street and Williams Street: The intersection of Rock Spring Street and Williams Street is a four-leg unsignalized intersection with Williams Street experiencing the stop condition. There is an existing at-grade rail crossing of the CSX S-Line approximately 50 feet northwest of this intersection on Rock Spring Street. Williams Street is local-type facility that parallels Garnett Street in this area. Rock Spring Street is a relatively short minor facility that serves mainly residential land use. Appendix P Figures 29a and 30a provide the existing laneage and 2030 No Build peak hour volumes for the Rock Spring Street and Williams Street intersection, respectively. Each quadrant on east side of the intersection currently has development, while the west side is bounded by the CSX S-Line railroad tracks and its associated right-of-way with no development.

Chestnut Street and Andrews Avenue (NC 39): The intersection of Chestnut Street and Andrews Avenue is a four-leg signalized intersection. Chestnut Street is a relatively short arterial type facility and parallels Garnett Street. Andrews Avenue is a major arterial and serves as NC 39 in this area, providing access from Henderson to US-1 and I-85. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Chestnut Street and Andrews Avenue intersection, respectively. Development exists on all four corners of the intersection and abuts the intersection in three of the four quadrants, with the exception of southwest quadrant.

Garnett Street and Andrews Avenue (NC 39): Garnett Street and Andrews Avenue is a four-leg signalized intersection. Garnett Street serves as US-1 Business/US-158 and is an arterial type facility. Andrews Avenue is a major arterial and serves as NC 39. Andrews Avenue provides access between Henderson and US-1 and I-85. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Garnett Street and Andrews Avenue intersection, respectively. Development exists on all four corners of the intersection and there is an at-grade rail crossing of the CSX S-Line on Garnett Street approximately 150 feet southeast of the intersection.

Williams Street and Andrews Avenue (NC 39): Williams Street and Andrews Avenue is a four-leg unsignalized intersection. Williams Street is local-type facility that parallels Garnett Street in this area. Andrews Avenue is a major arterial and serves as NC 39. Andrews Avenue provides access between Henderson and US-1 and I-85. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Williams Street and Andrews Avenue intersection, respectively. Aside from a residence in the southeast quadrant the area adjacent to the intersection is relatively undeveloped; however, the existing at-grade CSX S-Line rail crossing and associated right of way on Andrews Avenue approximately 80 feet from the intersection bounds the western side of the intersection.

Montgomery Street and Chestnut Street: The intersection of Montgomery Street and Chestnut Street is a four-leg signalized intersection. Chestnut Street is a short arterial type facility that parallels Garnett Street. Montgomery Street is a relatively short local type facility that parallels Andrews Avenue in this area. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Montgomery Street and Chestnut Street intersection, respectively. Development extends up to the intersection in every quadrant aside from the southeast quadrant, which has a buffer between an existing parking lot and the intersection.

Montgomery Street and Garnett Street: The intersection of Montgomery Street and Garnett Street is a four-leg signalized intersection with pedestrian crossings on Garnett Street and the southern leg of Montgomery Street. Montgomery Street is a short local-type facility that parallels Andrews Avenue in this area. Garnett Street serves as US-1 Business/US-158 and is an arterial facility. Marked parking spaces are located on both sides of Garnett Street. There is an at-grade CSX S-Line rail crossing on Montgomery Street approximately 180 feet southwest of the intersection. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Montgomery Street and Garnett Street intersection, respectively. Development abuts the intersection on all four corners, as well as along each leg of the intersection.

Montgomery Street and Williams Street: The intersection of Montgomery Street and Williams Street is four-leg unsignalized intersection with Williams Street experiencing the stop condition. Montgomery Street is a relatively short local type facility that parallels Andrews Avenue in this area. Williams Street is a local type facility that parallels Garnett Street in this area. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Montgomery Street and Williams Street intersection, respectively. The western side of the intersection is bounded by the CSX S-Line railroad; however, parking is provided in the southwest quadrant between the intersection and the CSX S-Line railroad tracks. Development exists in the southeast quadrant, while the northern quadrants are undeveloped.

Charles Street and Garnett Street: The intersection of Charles Street and Garnett Street is a split intersection. The northeastern intersection is unsignalized with Charles Street under yield control and the southwestern intersection is signalized with pedestrian crosswalks on Charles Street and parking on Church Street. Charles Street ends/begins at Garnett Street. Church Street, which is an access facility to parking and businesses, is located across from Charles Street at the western intersection forming a four-leg signalized intersection. Approximately 160 feet east of the intersection, Charles Street has an existing grade separated crossing of the CSX S-Line rail corridor, crossing under the CSX S-Line rail corridor. Garnett Street serves as US-1 Business/US-158 and is an arterial type facility. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Charles Street and Garnett Street intersection, respectively. All sides of this intersection are developed with the southeast side bounded by the grade separation.

Williams Street and Charles Street: The intersection of Williams Street and Charles Street is a four-leg signalized intersection with pedestrian crosswalks on each leg. Charles Street is a local-type facility that runs from Garnett Street to Cherry Street and has a grade separated crossing of the CSX S-Line rail corridor, crossing under the rail line. Williams Street is a local type facility that parallels Garnett Street in this area. Appendix P Figures 29b and 30b provide the existing laneage and 2030 No Build peak hour volumes for the Williams Street and Charles Street intersection, respectively. Development exists in the northeast and southeast quadrants while the northwest and southwest quadrants are bounded by the CSX S-Line railroad grade separation which is approximately 50 feet from the intersection.

3.14.2.7.3 CHAVASSE AVENUE/DABNEY DRIVE/ALEXANDER AVENUE

Chavasse Avenue and Williams Street: The intersection of Chavasse Avenue and Williams Street is currently a four-leg signalized intersection. There is an at-grade rail crossing of the CSX S-Line on Chavasse Avenue approximately 70 feet west of the intersection. Chavasse Avenue is a short, local east-west facility that provides access to US-1 Business. Williams Street is a local facility that runs approximately north-south, paralleling the existing CSX S-Line rail corridor. Appendix P Figures 35 and 36 provide the existing laneage and 2030 No Build peak hour volumes for the Chavasse Avenue and Williams Street intersection, respectively. The eastern side of the intersection is bounded by the CSX S-Line railroad tracks, while the western side has some residential development that does not encroach upon the intersection.

Chavasse Avenue/Oxford Road and Dorsey Avenue and US-1 Business: The intersection of Chavasse Avenue/Oxford Road and Dorsey Avenue and US-1 Business is a five-leg signalized intersection. The northwest leg (Dorsey Avenue) is stop controlled and allows for right-turn egress only, but allows for all movements to enter. Chavasse Avenue is a short local east-west facility that provides access to US-1 Business while Oxford Street is an arterial in the area and serves as US-158 west of this intersection. Dorsey Avenue is a short local east-west facility running from Young Street to Dabney Drive. US-1 Business is a major arterial connecting Henderson to points north and south. Appendix P Figures 35 and 36 provide the existing laneage and 2030 No Build peak hour volumes for the Chavasse Avenue/Oxford Street and Dorsey Avenue and US-1 Business intersection, respectively. This intersection is developed in every quadrant.

Dabney Drive and Oxford Road: The intersection of Dabney Drive and Oxford Road is a four-leg signalized intersection. Dabney Drive runs northwest-southeast and provides access to I-85. Oxford Road is an arterial in the area and serves as US-158 west of the intersection. There is development in each quadrant consisting of residential and commercial land uses. This development is close to the intersection. Appendix P Figures 35 and 36 provide the existing laneage and 2030 No Build peak hour volumes for the Dabney Drive and Oxford Road intersection, respectively.

Dabney Drive and Garnett Street/Deer Court: The intersection of Dabney Drive and Garnett Street/Deer Court is an offset signalized intersection with Deer Court serving as a one-way loop and Garnett Street intersecting Dabney Drive between the two Deer Court intersections. The split intersections are operated by one signal controller. Dabney Drive runs northwest-southeast and provides access to I-85, while Deer Court is a local access facility. Garnett Street serves as US-158 and is an arterial facility in this location. There is development in each quadrant consisting of residential and commercial land uses. Appendix P Figures 35 and 36 provide the existing laneage and 2030 No Build peak hour volumes for the Dabney Drive and Garnett Street/Deer Court intersection, respectively.

Dabney Drive/Shopping Center and US-1 Business: The intersection of Dabney Drive and US-1 Business is a signalized four-leg intersection. The east leg of this intersection serves as access to a shopping center. Dabney Drive runs northwest-southeast and provides access to I-85. US-1

Business is a major arterial connecting Henderson to points north and south. Appendix P Figures 35 and 36 provide the existing laneage and 2030 No Build peak hour volumes for the Dabney Drive and US-1 Business intersection, respectively. There is development along the eastern side of the intersection, while both the northwest and southwest quadrants are currently undeveloped.

Alexander Avenue and Nicholas Street: The intersection of Alexander Avenue and Nicholas Street is a four-leg, two-way stopped controlled intersection with Alexander Avenue experiencing the stop condition. The western leg of the intersection is currently unpaved and provides access to industrial facilities. Alexander Avenue is a local east-west access facility, while Nicolas Street is a north-south local type access facility that parallels the existing CSX S-Line rail corridor in this area. Appendix P Figures 35 and 36 provide the existing laneage and 2030 No Build peak hour volumes for the Alexander Avenue and Nicholas Street intersection, respectively. This intersection is currently bounded by development on all sides.

3.14.2.7.4 BELMONT DRIVE AND WELCOME AVENUE

US-1 Business (Raleigh Road) and Welcome Avenue/Belmont Drive: The intersection of US-1 Business and Belmont Drive/Welcome Avenue is a signalized intersection. This is an offset intersection in the east-west direction. Approximately 100 feet north of Belmont Drive, Welcome Drive intersects US-1 Business from the east. Both Belmont Drive and Welcome Avenue are short, local-type facilities. US-1 Business is an arterial route that was converted to the Business designation with the completion of US-1 on new alignment east of this facility. Appendix P Figures 39 and 40 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 Business and Belmont Drive/Welcome Avenue intersection, respectively. This area has development on the west side and the southeast sides of the intersection while the intersection is bounded by Matthews Street on the northeast side. There is an existing at-grade rail crossing of the CSX S-Line on Welcome Avenue approximately 275 feet east of the intersection.

Welcome Avenue and Nicholas Street: The intersection of Welcome Avenue and Nicholas Street is a four-leg unsignalized intersection with Nicholas Street experiencing the stop condition. The at-grade crossing on Welcome Avenue is approximately 30 feet west of the Intersection. Welcome Avenue is a short, local-type facility, while Nicholas Street is currently a minor dirt facility in the intersection area. Appendix P Figures 39 and 40 provide the existing laneage and 2030 No Build peak hour volumes for the Welcome Avenue and Nicholas Street intersection, respectively. While there is development on the east side of the intersection, aside from fences, it is offset from the intersection.

US-1 Business (Raleigh Road) and JP Taylor Road: The intersection of US-1 Business and JP Taylor Road is an unsignalized three-leg intersection with JP Taylor experiencing the stop condition. This is an existing at-grade rail crossing of the CSX S-Line on JP Taylor Road approximately 60 feet east of the intersection. JP Taylor Road is a short, east-west, local-type facility connecting US-1 Business to Facet Road, which has access to Old Epson Road adjacent to its interchange with US-1. US-1 Business is an arterial route that was converted to the Business designation with the completion of US-1 on new alignment east of this location. Appendix P Figures 39 and 40 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 Business and JP Taylor Road intersection, respectively. There is development on all sides of the intersection.

3.14.2.7.5 US-1 BUSINESS (RALEIGH ROAD) AND BEAR POND ROAD AND PETER GILL ROAD

US-1 Business (Raleigh Road) and Bear Pond/Lynnbank Road: US-1 Business (Raleigh Road) and Bear Pond Road/Lynnbank Road is a four-leg signalized intersection. Bear Pond

Road/Lynnbank Road is a relatively short, east-west facility that provides access to US-1 and US-1 Business. US-1 Business is an arterial that provides long distance north-south travel. Appendix P Figures 43 and 44 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 Business and Bear Pond Road/Lynnbank Road intersection, respectively. Buildings are located in the southeast, northeast and northwest quadrants of the intersection. The southwest quadrant is currently undeveloped and wooded.

US-1 Business (Raleigh Road) and US-1 NB Ramp/Eastern Minerals Road: US-1 Business (Raleigh Road) and US-1 northbound off ramp/Eastern Minerals Road is a four-leg unsignalized intersection. The US-1 Business northbound off ramp is one-way eastbound and is offset with Eastern Minerals Road by approximately 50 feet. Eastern Minerals Road provides access to an industrial area and to Commerce Drive which intersects Bear Pond Road. US-1 Business is an arterial that provides long distance north-south travel. Appendix P Figures 43 and 44 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 Business and US-1 northbound off ramp/Eastern Minerals Road intersection, respectively. While each quadrant of the intersection is undeveloped, the eastern quadrants are bounded by the existing CSX S-Line railroad tracks, approximately 200 feet away.

US-1 Business (Raleigh Road) and Peter Gill Road/Driveway: US-1 Business and Peter Gill Road is a four-leg stop controlled intersection. The western leg serves as a driveway to a gas station/convenience mart. Both Peter Gill Road and the driveway experience the stop conditions. Peter Gill Road is a local east-west facility that connects US-1 Business and Bear Pond Road. Appendix P Figures 43 and 44 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 Business and Peter Gill Road/Driveway intersection, respectively. Each quadrant of the intersection is currently developed aside from the southwest quadrant. The existing CSX S-Line rail corridor located approximately 150 feet west of the intersection, bounds the intersection on the east side.

3.14.2.7.6 US-1 BUSINESS (RALEIGH RD) AND CHAVIS ROAD

Chavis Road and US-1 Business: Chavis Road currently intersects US-1 Business at an angled "T" intersection located north of the US-1 Business connection to US-1. The Chavis Road and US-1 intersection is an unsignalized intersection with Chavis Road experiencing the stop condition. The existing at-grade rail crossing of the CSX S-Line is on Chavis Road approximately 180 feet southeast of its US-1 Business intersection. Chavis Road is a local access facility that runs north-south east of US-1. US-1 Business is a north-south arterial that becomes US-1 approximately 2,300 feet south of this intersection. Appendix P Figures 47 and 48 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 Business and Chavis Road intersection, respectively. The area around the intersection is a mix of low density residential land use and open land.

US-1 Business and Edwards Road: US-1 Business and Edwards Road is a stop controlled "T" type intersection with the stop condition on Edwards Road. Currently, Edwards Road is a relatively short local facility in the Kittrell area that generally runs north-south. US-1 Business is a north-south arterial that becomes US-1 approximately 4,000 feet south of this intersection. Appendix P Figures 47 and 48 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 Business and Edwards Road intersection, respectively. The area around the intersection is a mix of low density residential land use and open land.

3.14.2.8 KITTRELL, NC

3.14.2.8.1 US-1 (CAPITAL BOULEVARD) AND KITTRELL COLLEGE ROAD/NEW CONNECTOR

US-1 and Kittrell College Road/College Street: The intersection of Kittrell College Road/College Street and US-1 is an unsignalized four-leg intersection with the stop control on Kittrell College Road/College Street. Kittrell College Road is a local east-west facility west of US-1, while College Street is east of US-1 and is only approximately 400 feet long ending at Railroad Street. US-1 is a north-south arterial that runs through Kittrell, paralleling the existing CSX S-Line rail alignment. Appendix P Figures 51 and 52 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 and Kittrell College Road/College Street intersection, respectively. The area around the intersection is developed with low density land use.

US-1 and Kittrell Vance Avenue: Currently, the intersection of Kittrell Vance Avenue and US-1 is a three-leg stop controlled intersection with a stop condition on Kittrell Vance Avenue. Kittrell Vance Avenue is a short east-west residential street. US-1 is a north-south arterial that runs through Kittrell, paralleling the existing CSX S-Line rail alignment. Appendix P Figures 51 and 52 provide the existing laneage and 2030 No Build peak hour volumes for the US-1 and Kittrell Vance Road intersection, respectively. The area around the intersection is developed with low density residential land use.

Main Street and Railroad Street: Currently, the intersection of Main Street and Railroad Street is a three-leg stop controlled intersection with Railroad Street experiencing the stop condition. There is a driveway to a residence on the northern side of the intersection. Railroad Street is a short north-south access facility, while Main Street is a minor east-west facility. Appendix P Figures 51 and 52 provide the existing laneage and 2030 No Build peak hour volumes for the Main Street and Railroad Street intersection, respectively. The area around the intersection is developed with low density land use.

3.14.2.9 FRANKLINTON, NC

3.14.2.9.1 MAIN STREET AND NC 56 (GREEN STREET)

Subsequent to the traffic counts that were taken in this area for the Richmond to Raleigh Project Tier II DEIS, Franklinton High School, which was in very close proximity to the intersection of Mason Street and Main Street, has relocated to Cedar Creek Road near its intersection with Lane Road. At the time traffic studies were completed, there was a plan for Franklinton Middle School to occupy the old high school (the plan has subsequently been implemented). Based on this information, new counts were performed and data were obtained on the future middle school. Based on information found on the new school, the amount of new school trips that would be added to the area was estimated. These new trips were added to the 2030 No Build traffic volumes, which were estimated by comparing counts taken and historic traffic volumes in the area to determine a growth rate. The counts from 2006 to 2012 showed little to no growth in this area. Therefore, along with the fact that considerable traffic was being added to the area to account for the proposed middle school, a 1% growth rate was used to estimate background growth.

Mason Street and Main Street: The intersection of Mason Street and Main Street is a four leg signalized intersection. On-street parking is provided on each leg of the intersection. Mason Street is a local type east-west facility that parallels NC 56 and provides access to US-1. Main Street is a north-south facility that runs through Franklinton and connects to US-1 at its northern and southern termini. There is an existing at-grade rail crossing of the CSX S-Line on Mason

Street approximately 300 feet east of this intersection. Appendix P Figures 55 and 56 provide the existing laneage and 2030 No Build peak hour volumes for the Mason Street and Main Street intersection, respectively. This intersection is in an urban area with development in each quadrant. Development or its associated parking abuts the intersection in each quadrant.

NC 56 (Green Street) and Main Street: The intersection of NC 56 and Main Street is a four leg signalized intersection. On-street parking is provided on the north leg of the intersection. In the Study Area, NC 56 is an east-west highway that travels through Franklinton. NC 56 has a grade separated rail crossing of the CSX S-Line at the proposed Project alignment. Main Street is a north-south facility that runs through Franklinton and connects to US-1 at its northern and southern termini. Appendix P Figures 55 and 56 provide the existing laneage and 2030 No Build peak hour volumes for the NC 56 and Main Street intersection, respectively. This intersection is in an urban area with development in each quadrant. Development abuts the intersection in each quadrant aside from the southeast quadrant.

College Street and Main Street: The intersection of College Street and Main Street is currently a four-leg unsignalized intersection with College Street experiencing the stop condition. There is an at-grade rail crossing of the CSX S-Line on College Street approximately 300 feet east of its intersection with Main Street. College Street is a minor east-west facility that runs from Chavis Street on the east to Cheatham Street on the west. Main Street is a north-south facility that runs through Franklinton and connects to US-1 at its northern and southern termini. Appendix P Figures 55 and 56 provide the existing laneage and 2030 No Build peak hour volumes for the College Street and Main Street intersection, respectively. The area around the intersection is either undeveloped or low density residential.

College Street and Hawkins Street: The intersection of College Street and Hawkins Street is currently a three-leg unsignalized intersection with Hawkins Street experiencing the stop condition. There is an at-grade rail crossing of the CSX S-Line approximately 350 west of the intersection on College Street. The rail crossing is between this intersection and the intersection of College Street and Main Street. College Street is a minor east-west facility that runs form Chavis Street on the east to Cheatham Street on the west. Hawkins Street is a local-type facility that connects College Street and Main Street. Appendix P Figures 55 and 56 provide the existing laneage and 2030 No Build peak hour volumes for the College Street and Hawkins Street intersection, respectively. The area around the intersection is either vacant or low density residential.

3.14.2.9.2 CEDAR CREEK ROAD AND MAIN STREET

Person Street and Main Street: The intersection of Person Street and Main Street is currently a three leg unsignalized intersection with Person Street experiencing the stopped condition. Person Street is a one-way street in the eastbound direction and serves school traffic. Main Street is a north-south facility that runs through Franklinton and connects to US-1 at its northern and southern termini. Appendix P Figures 55 and 56 provide the existing laneage and 2030 No Build peak hour volumes for the Person Street and Main Street intersection, respectively. The area surrounding the intersection is low density residential.

Hillsborough Street/Hawkins Street and Main Street: The intersection of Hillsborough Street/Hawkins Street and Main Street is currently a four leg unsignalized intersection with Hillsborough Road and Hawkins Street experiencing the stopped conditions. Hillsborough Street services school traffic and can be gated to prevent through traffic. Hawkins Street is a local-type facility that connects Main Street and College Street. Main Street is a north-south facility that runs through Franklinton and connects to US-1 at its northern and southern termini. Appendix P Figures 55 and 56 provide the existing laneage and 2030 No Build peak hour volumes for the

Hillsborough Street/Hawkins Street and Main Street intersection, respectively. The western quadrants are developed by the school while the remaining area around the intersection is low density residential.

Cedar Creek Road and Main Street: The intersection of Cedar Creek Road and Main Street is currently a three leg unsignalized intersection with Cedar Creek Road experiencing the stopped conditions. Cedar Creek Road provides access to Franklinton High School. There is an existing at-grade rail crossing of the CSX S-Line approximately 450 feet east of the intersection on Cedar Creek Road. Main Street is a north-south facility that runs through Franklinton and connects to US-1 at its northern and southern termini. Appendix P Figures 55 and 56 provide the existing laneage and 2030 No Build peak hour volumes for the Cedar Creek Road and Main Street intersection, respectively. The development surrounding the intersection is a mix of low density land use including athletic fields, residential, and a church all in the vicinity of the intersection.

3.14.2.10 *RALEIGH, NC*

3.14.2.10.1 **ATLANTIC AVENUE AND WOLFPACK LANE/HIGHWOODS AVENUE**

Wolfpack Lane and Tarheel Drive: The intersection of Wolfpack Lane and Tarheel Drive is currently a three-leg unsignalized intersection with an offset driveway on the south side. Tarheel Drive experiences the stop condition. For the purposes of the analysis and based on the peak hour traffic counts, this intersection was analyzed as a “T” intersection. Wolfpack Lane is a local-type facility that provides access from an industrial area to Atlantic Avenue. Tarheel Drive serves the same industrial area and connects Wolfpack Lane and Tarheel Drive. Appendix P Figures 59 and 60 provide the existing laneage and 2030 No Build peak hour volumes for the Wolfpack Lane and Tarheel Drive intersection, respectively. The area around the intersection is developed with industrial type land use.

Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue: The intersection of Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue is a four-leg signalized intersection. There is an at-grade rail crossing of the CSX S-Line on Wolfpack Lane approximately 200 feet northwest of the intersection. Wolfpack Lane is a facility that provides access from an industrial area to Atlantic Avenue. Highwoods Boulevard is a short multilane facility that provides access to a business park and connects Atlantic Avenue and Capital Boulevard. Atlantic Avenue is a north-south arterial in the Study Area. Appendix P Figures 59 and 60 provide the existing laneage and 2030 No Build peak hour volumes for the Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue intersection, respectively. The intersection is bounded by the CSX S-Line rail corridor on the west side and the Highwoods Office Park on the east side.

Highwoods Boulevard and Beechleaf Court: The Highwoods Boulevard and Beechleaf Court intersection is a four-leg unsignalized intersection with Beechleaf Court experiencing the stop condition. This intersection is closely spaced (approximately 400 feet) to the Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue intersection. Highwoods Boulevard is a short multilane facility that serves a business park and connects Atlantic Avenue and Capital Boulevard. Beechleaf Court is an access facility to office buildings and their associated parking. Appendix P Figures 59 and 60 provide the existing laneage and 2030 No Build peak hour volumes for the Highwoods Boulevard and Beechleaf Court intersection, respectively. The immediate area adjacent to the intersection is wooded, but parking and office buildings are offset behind the tree line.

Highwoods Boulevard and Smoketree Court: The Highwoods Boulevard and Smoketree Court intersection is a four-leg unsignalized intersection with Beechleaf Court experiencing the stop condition. Highwoods Boulevard is a short arterial that serves a business park and connects Atlantic Avenue and Capital Boulevard. Smoketree Court is an access facility to office buildings and their associated parking. Appendix P Figures 59 and 60 provide the existing laneage and 2030 No Build peak hour volumes for the Highwoods Boulevard and Smoketree Court intersection, respectively. The immediate area adjacent to the intersection is wooded but parking and office buildings are offset behind the tree line.

3.14.2.10.2 DOWNTOWN RALEIGH

It should be noted that there is active freight service on both the Norfolk Southern and CSX railroads through Downtown Raleigh.

Glenwood Avenue and North Street: The intersection of Glenwood Avenue and North Street is an urban four-leg intersection located in the northern section of Downtown Raleigh and is signalized. There is an existing grade separated rail crossing of North Street on the Norfolk Southern NS-Line east of this intersection between Glenwood Avenue and West Street. Glenwood Avenue is a north-south downtown grid facility that transitions to an arterial and becomes US 70 north of Downtown Raleigh. North Street is a downtown grid street that runs east-west on the northern side of Downtown Raleigh. North Street has two segments; one runs from Saint Mary’s Street to Harrington Street and the other runs from Wilmington Street to Person Street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Glenwood Avenue and North Street intersection, respectively.

North Street and West Street: The intersection of West Street and North Street is an urban four-leg intersection located in the northern section of Downtown Raleigh. It is a stop controlled intersection with North Street experiencing the stopped condition. An existing grade separated crossing of North Street and the Norfolk Southern NS-Line is located just west of this intersection. West Street runs north-south from the Boylan Wye to Wade Avenue, servicing downtown facilities as well as industrial uses north of downtown. North Street is a downtown grid street that runs east-west on the northern side of Downtown Raleigh. North Street has two segments; one runs from Saint Mary’s Street to Harrington Street and the other begins Wilmington Street and ends at Person Street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the North Street and West Street intersection, respectively.

North Street and Harrington Street: The intersection of Harrington Street and North Street is a three-leg intersection located in the northern section of downtown Raleigh. It is a stop controlled intersection with North Street experiencing the stopped condition. Harrington Street crosses the CSX S-Line at-grade between North Street and Lane Street. North Street is a downtown grid street that runs east-west on the northern side of downtown Raleigh. North Street has two segments; one runs from Saint Mary’s Street to Harrington Street and the other runs from Wilmington Street to Person Street. Harrington Street is a north-south downtown grid street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the North Street and Harrington Street intersection, respectively.

Lane Street and Harrington Street: The intersection of Lane Street and Harrington Street is a four-leg intersection located in the northern section of downtown Raleigh. The western leg serves a parking area and is not part of Lane Street. The Lane Street and Harrington Street intersection is stop controlled with Lane Street experiencing the stopped condition. Lane Street is an east-west downtown grid street that is one-way westbound at this intersection. Lane Street is currently split in the area of the existing CSX S-Line and NS rail lines west of Harrington Street. Harrington Street is a north-south downtown grid street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Lane Street and Harrington Street intersection, respectively.

Jones Street and Glenwood Avenue: The intersection of Jones Street and Glenwood Avenue is an urban four-leg intersection located in eastern Downtown Raleigh. It is signalized with pedestrian signal heads and crosswalks on each approach. There is an at-grade rail crossing approximately 200 feet to the east of the intersection on Jones Street. Jones Street is an east-west downtown grid facility, while Glenwood Avenue is a north-south downtown grid facility that transitions to an arterial and becomes US 70 north of Downtown Raleigh. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Jones Street and Glenwood Avenue intersection, respectively.

Jones Street and West Street: The intersection of Jones Street and West Street is an urban four-leg intersection located in Downtown Raleigh. It is unsignalized with West Street experiencing the stop condition. Sidewalks and crosswalks are located along each leg of the intersection. There is an at-grade rail crossing of the combined CSX S-Line and Norfolk Southern NS-Line approximately 300 feet east of the intersection on Jones Street. West Street runs north-south from the Boylan Wye to Wade Avenue, servicing downtown facilities as well as industrial land uses north of downtown. Jones Street is an east-west downtown grid facility that varies from one-way to two-way operations in the Study Area. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Jones Street and West Street intersection, respectively.

Jones Street and Harrington Street: The intersection of Jones Street and Harrington Street is an urban four-leg intersection located in Downtown Raleigh. It is unsignalized with Harrington Street experiencing the stop condition and sidewalks and crosswalks located along each leg of the intersection. The eastern leg is one-way in the eastbound direction, while all other legs are in two-way operation. Jones Street is an east-west downtown grid facility than varies from one-way to two-way operations in the Study Area. Harrington Street is a north-south downtown grid street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Jones Street and Harrington Street intersection, respectively.

Glenwood Avenue and Hillsborough Street: The intersection of Glenwood Avenue and North Street is an urban four-leg intersection located in the western section of Downtown Raleigh. It is signalized, including pedestrian phases. Crosswalks and sidewalks are located on each leg of the intersection. There is an existing grade separated crossing of Hillsborough Street located approximately 150 feet east of this intersection. Glenwood Avenue is a north-south downtown grid facility that transitions to an arterial and becomes US 70 north of Downtown Raleigh. Hillsborough Street is an east-west downtown grid facility that transitions to an arterial and services North Carolina State University west of downtown. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Glenwood Avenue and Hillsborough Street intersection, respectively.

West Street and Edenton Street: The intersection of West Street and Edenton Street is an urban four-leg intersection located in Downtown Raleigh and is signalized, including pedestrian phases. Crosswalks are located on three approaches and sidewalks are on each leg of the intersection. Edenton Street is one-way in the westbound direction. There is an existing grade separated crossing of Hillsborough Street where Edenton Street becomes Hillsborough Street located approximately 150 feet west of this intersection. West Street runs north-south from the Boylan Wye to Wade Avenue servicing downtown facilities as well as industrial land uses north of downtown. Edenton Street is an eastbound downtown grid facility that terminates at Hillsborough Street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the West Street and Edenton Street intersection, respectively.

Hillsborough Street and Edenton Street: The intersection of Hillsborough Street and Edenton Street is an urban, unsignalized, two-leg intersection located in Downtown Raleigh. Edenton Street is one-way in the westbound direction. Hillsborough Street in the westbound direction experiences the stop condition, while the eastbound direction is free-flow. Sidewalk is located on one side of each leg of the intersection. The intersection is located on the eastern edge of the bridge for the existing grade separated roadway crossing over the combined CSX S-Line and Norfolk Southern NS-Line. Hillsborough Street is an east-west downtown grid facility that transitions to an arterial and services North Carolina State University west of downtown while Edenton Street is an eastbound downtown grid facility that terminates at this intersection with Hillsborough Street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Hillsborough Street and Edenton Street intersection, respectively.

Boylan Street and Morgan Street: The intersection of Boylan Street and Morgan Street is an urban four-leg intersection located in the southern section of Downtown Raleigh and is signalized, including pedestrian phases. Crosswalks and sidewalks are located on each leg of the intersection. Morgan Street is an east-west downtown grid facility that begins at Hillsborough Street to the west and becomes New Bern Avenue east of the Study Area. Boylan Street is a north-south downtown grid facility and is one of the few in Downtown Raleigh that traverses the the combined CSX S-Line, Norfolk Southern NS-Line, and NCRR H-LIne railroad tracks south of the Boylan Wye. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Boylan Street and Morgan Street intersection, respectively.

Morgan Street and Glenwood Avenue: The intersection of Morgan Street and Glenwood Avenue is an urban three-leg intersection located in the southern section of Downtown Raleigh north of the Boylan Wye and is signalized, including pedestrian phases. Crosswalks and the associated pedestrian phases are located on two of the three legs of the intersection while sidewalks are located on every leg of the intersection. The eastern leg of the intersection crosses the combined CSX S-Line and Norfolk Southern NS-Line rail corridor on an existing grade separated crossing adjacent to the intersection. Morgan Street is an east-west downtown grid facility that begins at Hillsborough Street to the west and becomes New Bern Avenue east of the Study Area. Glenwood Avenue is a north-south downtown grid facility that transitions into an arterial and becomes US 70 north of Downtown Raleigh. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Boylan Street and Glenwood Avenue intersection, respectively.

Boylan Street and Hargett Street: The intersection of Boylan Street and Hargett Street is an urban four-leg intersection located in the southern section of Downtown Raleigh north of the Boylan Wye and is signalized. Crosswalks and sidewalks are located on each leg of the intersection; however, no pedestrian phasing is currently provided. There is an existing at-grade rail crossing of the combined CSX S-Line and Norfolk Southern NS-Line approximately 300 feet east of the intersection on Hargett Street. Boylan Street is a north-south downtown grid facility and is one of the few in Downtown Raleigh that traverses the railroad tracks at the Boylan Wye. Hargett Street is an east-west downtown grid facility that serves City of Raleigh offices. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Boylan Street and Hargett Street intersection, respectively.

West Street and Hargett Street: The intersection of West Street and Hargett Street is an urban four-leg intersection located in the southern section of Downtown Raleigh and is unsignalized. West Street experiences the stop condition and crosswalks are located on both legs of West Street. Sidewalks are located on each leg of the intersection. There is an existing at-grade rail crossing of the combined CSX S-Line and Norfolk Southern NS-Line approximately 300 feet west of the intersection on Hargett Street. West Street runs north-south from the Boylan Wye to

Wade Avenue, servicing downtown facilities as well as industrial land uses north of downtown. Hargett Street is an east-west downtown grid facility that serves City of Raleigh offices. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Boylan Street and Hargett Street intersection, respectively.

Harrington Street and Hargett Street: The intersection of Harrington Street and Hargett Street is an urban four-leg intersection located in the southern section of Downtown Raleigh. It is unsignalized. Hargett Street experiences the stop condition and crosswalks are located on both legs of Hargett Street. Sidewalks are located on each leg of the intersection and parking is allowed on each intersection leg. Hargett Street is an east-west downtown grid facility that serves City of Raleigh offices, while Harrington Street is a north-south downtown grid street. Appendix P Figures 63 and 64 provide the existing laneage and 2030 No Build peak hour volumes for the Harrington Street and Hargett Street intersection, respectively.

3.14.3 RAIL

The discussion below is largely unchanged from the Richmond to Raleigh Project Tier II DEIS, with the exception of minor corrections, and an update to reflect the new and planned passenger rail connections to the area of Hampton Roads, VA (refer to Section 1.1.2 for additional discussion regarding new Amtrak NEC Regional service to Norfolk, VA, and information on the Richmond to Hampton Roads SEHSR Corridor Tier I EIS).

The two main Class I railroads operating in Virginia and North Carolina are Norfolk Southern and CSX. There are several Class III shortline railroads operating in the two states, and these play an important role in the rail network. A large portion of the rail network in both states is single track, which creates bottlenecks in high traffic areas. Amtrak passenger rail operates within a portion of the Study Area on the private freight railroad system. The following section describes the active railroads within the Study Area, including rail lines that cross the corridor. Figure 3-14 displays the railroads in Virginia that intersect the Study Area, while Figure 3-15 shows the railroads that intersect the Study Area in North Carolina.

Figure 3-14

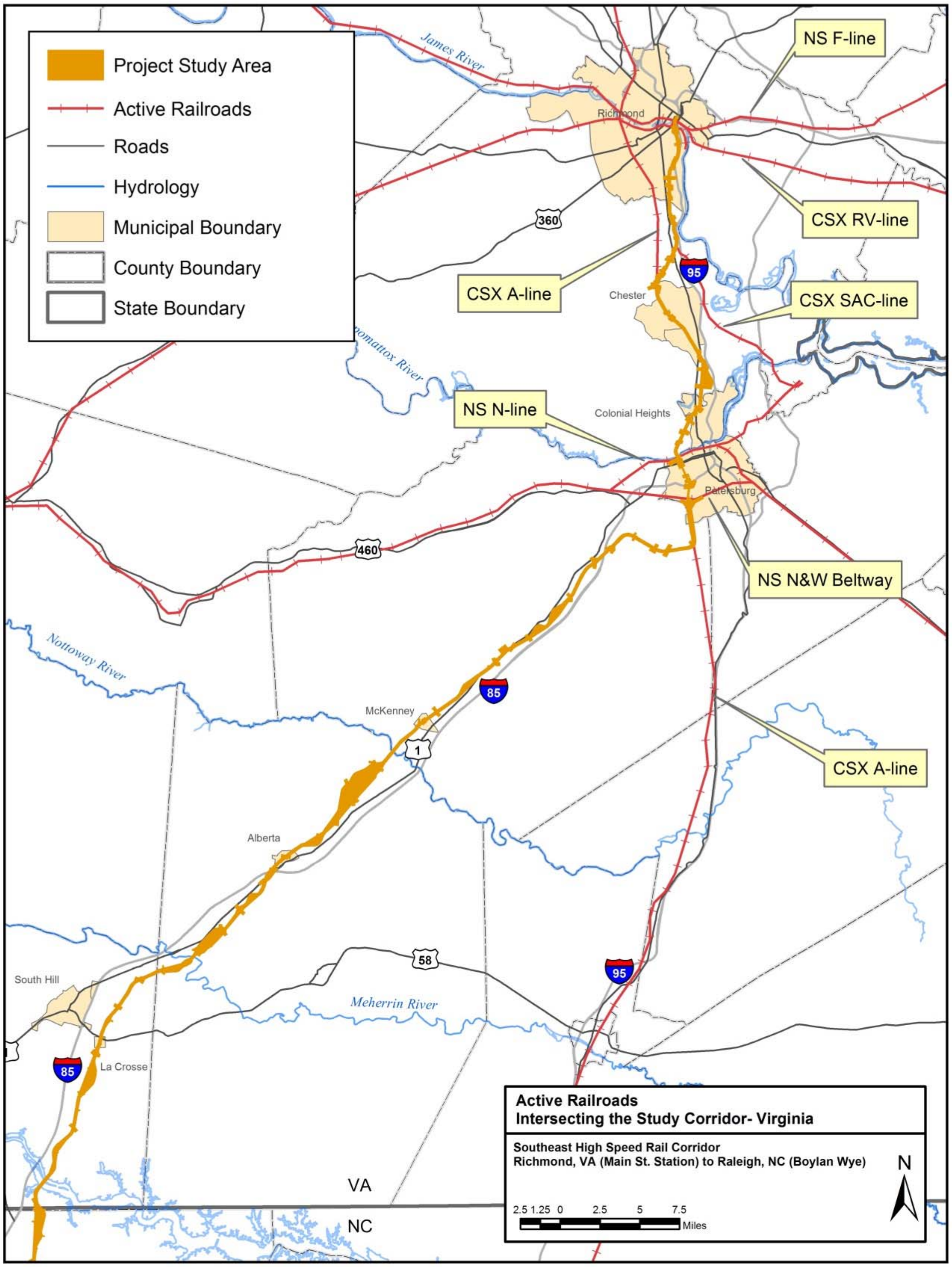
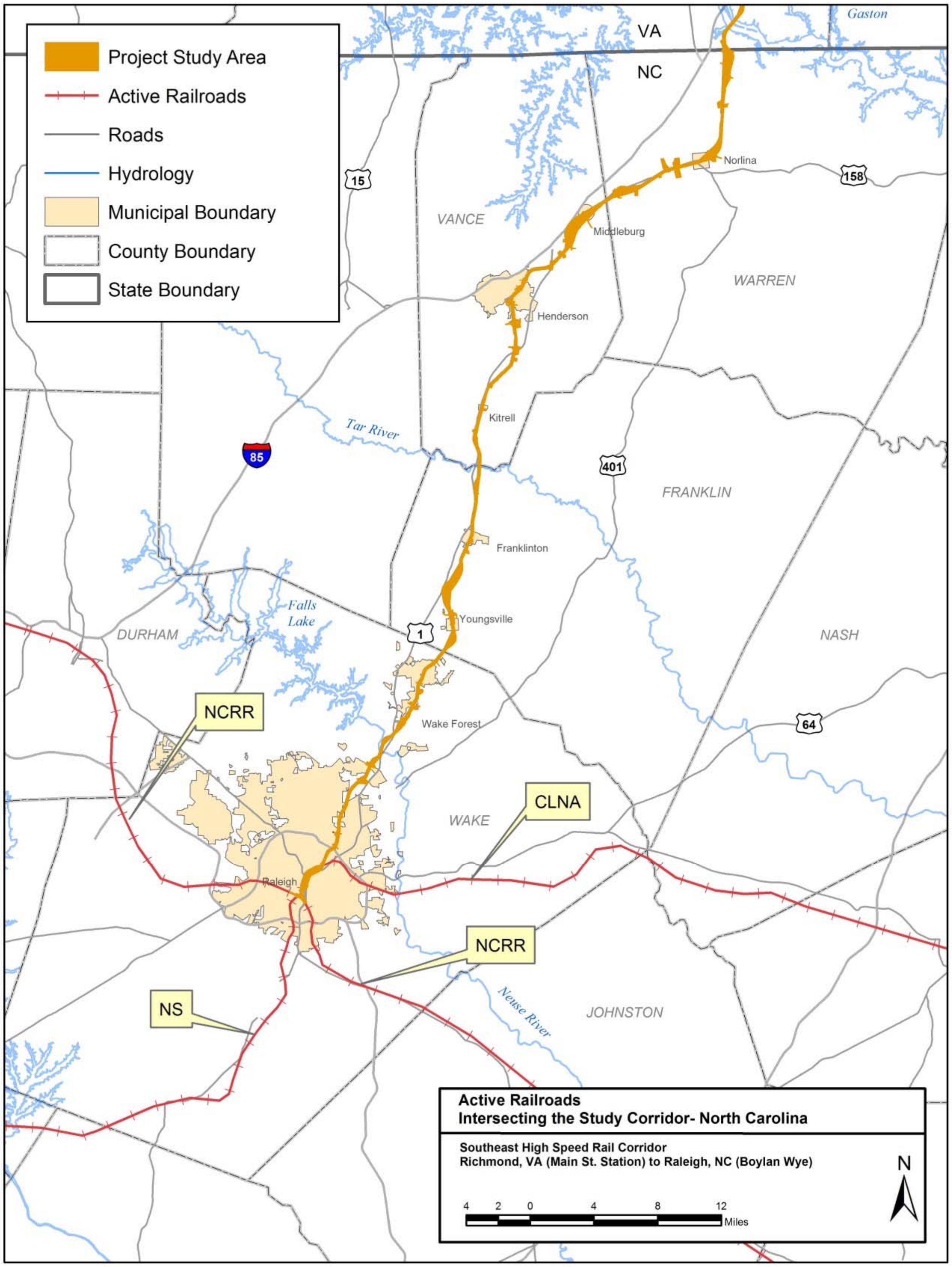

Project Study Area
Active Railroads
Roads
Hydrology
Municipal Boundary
County Boundary
State Boundary
NS F-line
CSX RV-line
CSX A-line
CSX SAC-line
NS N-line
NS N&W Beltway
CSX A-line
James River
Richmond
Chester
Colonial Heights
Petersburg
McKenney
Alberta
South Hill
La Crosse
Nottoway River
Meherrin River
360
95
460
85
1
58
VA
NC
Active Railroads
Intersecting the Study Corridor- Virginia
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
2.5 1.25 0 2.5 5 7.5
Miles
N

Figure 3-15


Project Study Area
Active Railroads
Roads
Hydrology
Municipal Boundary
County Boundary
State Boundary
VA
NC
Gaston
Norlina
158
15
VANCE
Middleburg
WARREN
Henderson
Kitrell
Tar River
85
401
FRANKLIN
Franklinton
Falls Lake
Youngsville
1
DURHAM
NASH
NCRR
Wake Forest
64
CLNA
WAKE
Raleigh
NCRR
NS
Neuse River
JOHNSTON
Active Railroads
Intersecting the Study Corridor- North Carolina
Southeast High Speed Rail Corridor
Richmond, VA (Main St. Station) to Raleigh, NC (Boylan Wye)
N
4 2 0 4 8 12
Miles

3.14.3.1 VIRGINIA

The Study Area begins in Richmond, VA, at Main Street Station, following the CSX S-Line south. The CSX S-Line is a secondary mainline and carries approximately 12 freight trains daily. Just south of the station, the CSX S-Line is elevated on a bridge, and crosses two railroads at the well-known “triple crossing” (one of the few places in North America where three Class I railroad lines cross each other at different levels). The CSX S-Line bridge crosses over the NS F-Line, and under the CSX Rivanna Subdivision (RV-Line). The NS F-Line is a freight line serving West Point, VA, to the east. The CSX RV-Line is part of an important freight corridor serving the port at Newport News, VA. Amtrak passenger service to Newport News, VA also uses the CSX RV-Line, making a connection from Main Street Station, to the east of the triple crossing. The CSX RV-Line is the preferred route for expanded conventional passenger rail service from Richmond Main Street Station to Newport News, VA as part of the extension of the SEHSR Corridor to Hampton Roads.

From the triple crossing, the CSX S-Line continues south elevated on structure, crossing the James River on a single track bridge. After crossing the river, the NS F-Line intersects the CSX S-Line via an interchange track and a rail diamond. The F-Line terminates beyond the diamond at the City of Richmond’s wastewater treatment facility. The interchange track provides an important link for NS’s intermodal freight service to the City of Richmond’s Port (CSX currently has direct access between the CSX S-Line and the Port). In Chesterfield County at the south end of the Bellwood rail yard, there is a rail wye connection for the CSX SAC-Line; this line provides freight service to industries in Hopewell, VA. The Richmond to Hampton Roads SEHSR Corridor Tier I EIS selected the CSX S-Line as the preferred route for the extension of the SEHSR Corridor to Hampton Roads from Richmond Main Street Station to Norfolk through Centralia.

At Centralia, VA, the Study Area and the CSX S-Line join the CSX A-Line; this track carries approximately 30 freight trains daily, and the 10 daily Amtrak passenger trains (including one Amtrak Auto Train) that serve the Staples Mill Station on the northwest side of Richmond. Continuing south into Petersburg, VA, the CSX A-Line crosses the Appomattox River and the NS N-Line on a single track bridge. The N-Line parallels the south bank of the Appomattox, and provides important freight service to industries in Hopewell, VA. On the south side of Petersburg, VA (just north of Collier Yard), the CSX A-Line crosses the NS N&W Beltway on a bridge. The N&W provides direct access to the port at Norfolk, VA, and is part of the Heartland Corridor (NS’s primary intermodal train system). This line is undergoing improvements to handle more double-stack intermodal trains, and recent upgrades have also allowed the introduction of Amtrak NEC Regional passenger service to Norfolk. The CSX A-Line and NS N&W Line is the preferred route for the extension of the SEHSR Corridor to Hampton Roads from Richmond Main Street Station to Norfolk south of Centralia.

At the south end of Collier Yard, the CSX A-Line continues south, while the Study Area curves westward along the inactive Burgess Connector rail line. The tracks have been removed along the Burgess Connector, and small portions of the ROW have been sold for driveway access.

At Burgess, the Study Area curves south, joining again with the alignment of the CSX S-Line. Although the tracks along this section of the CSX S-Line were removed in 1987, CSX retains exclusive ownership with exceptions, of the CSX S-Line (i.e., fee simple) and leases a portion of the corridor for operation of an underground fiber optic cable. The exceptions are located along the Burgess Connector south of Collier Yard, where portions of the ROW have been sold to individual property owners for driveway access, and in southside Virginia, where sections of the ROW have been sold to adjacent landowners, such as a 1.3 mile long section at the Nottoway River in Dinwiddie County owned by Reedy Creek Farm Associates.

3.14.3.2 *NORTH CAROLINA*

There are no changes to the description provided in the Richmond to Raleigh Project Tier II DEIS of the rail network within the Study Area in North Carolina.

In North Carolina, the Study Area continues to follow the inactive CSX S-Line to Norlina, NC. Between Norlina, NC, and Raleigh, NC, the CSX S-Line is an active freight railroad that carries approximately four local trains daily. There are no active railroads that intersect the Study Area until it reaches Capital Boulevard in downtown Raleigh, NC. At this point, the Study Area widens to include both the CSX S-Line and the Norfolk Southern NS-Line. At this same location, the Carolina Coastal Railway (CNLA) short line railroad intersects both the NS and CSX lines through at-grade switch connections.

In the downtown area of Raleigh, NC, the Norfolk Southern NS-Line carries eight trains daily, and there are approximately eight trains operating daily on the CSX S-Line between Capital Yard and the Boylan Wye, which is the southern terminus of the Project. The North Carolina Railroad (NCRR) intersects the corridor at the Boylan Wye. The NCRR leases trackage rights to both NS and CSX, and it is a more heavily used freight and passenger corridor, carrying approximately 16 trains daily. The SEHSR Corridor Tier I EIS identified the NCRR corridor for service between Raleigh, NC and Charlotte, NC. The NS Fuquay Line also intersects the corridor at the Boylan Wye, with a diamond connection at the Boylan Avenue bridge.

3.14.4 STATIONS

The Richmond to Raleigh Project Tier II DEIS contained a discussion regarding station locations in Chapters 3 and 4. However, this document does not evaluate environmental impacts related to specific station locations, but rather provides a general discussion of potential station locations in relationship to the larger transportation network. As stated in the Richmond to Raleigh Project Tier II DEIS, specific station locations within municipalities will be determined in the future by the local governments with the passenger service operator, and appropriate levels of environmental documentation will be undertaken at that time. For the Richmond to Raleigh Project Tier II FEIS, the Project Team determined the discussion regarding stations was more appropriately placed within Chapter 1 and was, therefore, moved to the Project Description in Section 1.4.

3.14.5 TRANSIT

In the Richmond to Raleigh Project Tier II DEIS, connectivity to local public transportation was discussed under “Stations” (Sections 3.17 and 4.1). To address public comments, a new separate section has been added to the Richmond to Raleigh Project Tier II FEIS.

As described in Chapter 1, the intent of the Project is to be connected to other forms of transit to enhance regional connectivity. The following public transit service agencies either currently provide, or are anticipated to be expanded to provide public transit (bus or van) services for SEHSR passengers at rail stations in the following locations:

- Richmond, VA - GRTC
- Petersburg Area, VA - Petersburg Area Transit (PAT) and GRTC
- La Crosse, VA - Lake Area Bus (LAB)
- Henderson, NC - Kerr Area Rural Transportation System (KARTS)

- Raleigh, NC - CAT and TT

Discussion regarding the impact of the preferred alternative on existing and planned transit systems (bus, light rail, commuter rail, etc.) is provided in Chapter 4.

3.14.6 AVIATION

This section is new to the Richmond to Raleigh Project Tier II FEIS and was added to address a request by the Virginia Department of Aviation's Airport Services Division to identify all applicable airport runways within 20,000 linear feet of the Preferred Alternative. Chapter 4 contains discussion regarding the likelihood of the Project in penetrating an existing or proposed Part 77 surface or approach path as defined in Federal Aviation Administration (FAA) Advisory Circular 150/5300.

Table 3-34 below, lists airports located within 20,000 feet of the Richmond to Raleigh Project Tier II FEIS Preferred Alternative.

Table 3-34
Airports Located Near Study Area

Name	Airport ID	Location	Runway Length (ft.)	Distance Between Runway and Study Corridor (ft.)
Mecklenburg-Brunswick Regional Airport	AVC	South Hill, VA	5,000	10,300
Chesterfield County	FCI	Richmond, VA	5,500	18,900
Dinwiddie County	PTB	Petersburg, VA	5,000	10,000

3.15 UTILITIES AND RELATED SERVICES

The text for this section has been summarized from the Richmond to Raleigh Project Tier II DEIS, except for the discussion on water supply, which has been amended to address public and agency questions and comments.

Utilities are, by definition, a commodity or service provided for public use. As discussed in Section 3.18 of the Richmond to Raleigh Project Tier II DEIS, the Study Area contains municipal, regional, interstate and private utility infrastructure systems, including: sanitary sewer collection and treatment; storm water collection and discharge; electric power generation and distribution; communications facilities and cabling; natural gas storage and distribution; petroleum storage and transportation; solid waste collection and management facilities; and, interstate pipelines. For more detail on those systems in the Study Area, please see Section 3.18 of the Richmond to Raleigh Project Tier II DEIS. For a discussion of the potential impact to these utilities from the proposed Preferred Alternative for the Project, see Section 4.15.

3.15.1 WATER SUPPLY

Water treatment and supply facilities are owned, operated and maintained by municipalities, counties or private entities in the Study Area. Some of the rural counties and communities have joined together to form regional water authorities that serve the municipal water system function. The infrastructure for water systems varies throughout the Study Area. Each system may include different combinations of major structures such as groundwater wells, water supply reservoirs and intakes, water treatment plants, pumping stations, and water towers/tanks. Most water systems also include minor structures, e.g., fire hydrants, meters, valves and back-flow preventers. A network of underground pipes integrates these major and minor structures.

The data sources were different for each state. Table 3-35 lists groundwater wells that are within a 1,000 foot radius of the SEHSR Study Area in Virginia. Table 3-36 lists the public water supply groundwater wells that are located within the SEHSR Study Area in North Carolina.

Table 3-35
Virginia Groundwater Wells Within 1,000 Feet of Study Areaa

Well Owner	Milepost Marker (Approximate)
Southside Elementary School	S-32.5/S-33
Food Lion	S-36.25
Dinwiddie Elementary School	S-37
Hoagie Bob's	S-38.5
Home Place Restaurant	S-38.5
Town of McKinney-North Well	S-47
Town of McKinney-South Well	S-47
Town of McKinney-Well 01	S-48.5
Hillcrest Mobile Home Park*	S-77/S-78

Source: Virginia Department of Health, 2010
* The wells at Hillcrest Mobile Home Park are no longer required to follow Virginia Waterworks Regulations (Virginia Department of Health correspondence, 20120); however, the Project team confirmed two active wells at the location.

Table 3-36
North Carolina Public Water Supply Groundwater Wells Within Study Area

ID	Owner	Site Location
0235452	Church of God of Prophecy	Left side of church
0392222	Aqua North Carolina Inc.	Ligon Mill Rd at RR crossing
0291470	Brookston Baptist Church	Far right of parking lot
0291538	Kittrell Church of God	Front yard adjacent to house
4035007	Living Springs Church of God	Front left corner of parking lot

Source: NCDENR, 2009

In Virginia, the Study Area falls within Zone 2 (greater than 5 miles into the watershed) of five surface water intakes, as shown in Table 3-37. The Study Area does not fall within Zone 1 (up to 5 miles into the watershed) of any public surface water intakes.

In North Carolina, there is one surface water intake located within the Study Area. The Burlington Industries Inc. – Wake Forest site at 9701 Capital Boulevard, on the Neuse River, in Section U is not currently in use.

Table 3-37
Virginia Surface Water Intakes with Zone 2 (greater than 5 miles into the watershed)

River Basin	Surface Water Intake Owner	Water Source
James Virginia	American Water Company Hopewell	Appomattox
Chowan	Greensville County WSA-Jarratt	Nottoway
Chowan	Town of Lawrenceville	Meherrin
Chowan	Town of Lawrenceville	Great Creek
Chowan	City of Emporia	Meherrin
Chowan	City of Norfolk	Nottoway
Roanoke	City of Norfolk- Left VB Intake	Lake Gaston
Roanoke	City of Norfolk- Right VB Intake	Lake Gaston

Source: Virginia Department of Health, 2010.

3.16 SAFETY AND SECURITY

The text for this section is repeated in its entirety from the Richmond to Raleigh Project Tier II DEIS, with no changes. In Virginia, safety measures appropriate to the existing average daily traffic at each crossing are in place along the active rail line between Main Street Station in Richmond, and Collier Yard in south Petersburg. These measures range from crossbucks only at very low volume and private crossings; to quad gates with signals; to fully grade separated crossings such as bridges or underpasses. In addition, all the trains operating along the CSX S-Line and CSX A-Line are equipped with on-board horns, which are used to warn vehicular and pedestrian traffic of the approach of trains at every at-grade crossing.

In the areas of Virginia within and south of Petersburg, where the corridor follows inactive or abandoned rail ROW, the safety measures remaining in place are those that have not been removed since the rail line became inactive.

In North Carolina, between the state line and Norlina, where the rail is inactive, the safety measures remaining in place are those that have not been removed since the rail line became inactive.

From Norlina, NC, where the CSX S-Line becomes an active freight railroad to the Boylan Wye in Raleigh (including the active NS-Line in Downtown Raleigh) common safety measures are in place at all active grade crossings. Common safety measures include the appropriate crossing protection for the existing volume of traffic using that crossing on the average day. The safety measures range from crossbucks only at very low volume and private crossings; to four quadrant gates with median barriers and signals at high traffic volume, public locations; to fully grade separated crossings such as bridges or underpasses. The safety measures in place are considered adequate for the current freight service, which operates between 10 and 25 miles per hour (mph). In addition, all the trains operating along the active CSX S-Line and the Norfolk Southern NS-Line in Raleigh are equipped with on-board horns, which are used to warn vehicular and pedestrian traffic of the approach of trains at every at-grade crossing.

In the current security climate, rail line security continues to be a prominent concern. Access points are of particular concern. The entire corridor is accessible from many miles of arterial and secondary roadways where no security measures are practicable. Standard rail security practices are in place at all rail yards throughout the corridor.

This Project assumes that all freight and passenger trains will share all tracks along all segments of the Project corridor (refer to Figure 1-4 for proposed rail improvements and associated MAS throughout the Project corridor). However, FRA regulations will require the preparation of a system safety plan, with partnership from the operating freight railroads, for the delivery of the new passenger HSR service or shared freight service prior to authorization to operate the new service at any speed.

4 ENVIRONMENTAL CONSEQUENCES

A condensed format was used for this Final Environmental Impact Statement (EIS), as clarified in the Executive Summary of this report.

The discussion on environmental consequences in this chapter summarizes the potential effects on the human, physical, and natural environments that may result from the construction and operation of the Preferred Alternative for the Richmond to Raleigh Project. All references to "Study Area" and "Project" below pertain to the Richmond to Raleigh Project, unless otherwise noted.

As discussed in Chapter 2, the Preferred Alternative was selected as the "best-fit" from the three alternative alignments presented in the Tier II DEIS within each of the 26 sections of the Project. The impacts presented in this chapter are therefore based on the proposed preliminary engineering designs for the Preferred Alternative, composed of the recommended rail alignment within each section and its associated roadway modifications.

As presented in Chapter 2, and further discussed in this chapter, several changes have been made to the railroad and roadway designs for the Preferred Alternative (from the alternative designs presented in the Tier II DEIS), to avoid or minimize impacts to human, physical or natural resources. To further mitigate impacts of the Preferred Alternative on affected resources, other mitigation measures are also identified, and are discussed within the resource sections, as applicable.

4.1 WATER RESOURCES

Potential Project impacts to streams, wetlands, and other jurisdictional waters are discussed in the following sections, followed by discussion of potential permits required. Clean Water Act - Waters of the US, Clean Water Act Permits, Construction Moratoria, Chesapeake Bay Preservation Act regulations, North Carolina River Basin Buffer Rules, and Rivers and Harbors Act Section 10 - Navigable Waters are addressed. Stormwater, floodplain, and Wild and Scenic Rivers Act impacts are also discussed. Avoidance and minimization of impacts to these resources, and mitigation for unavoidable impacts to wetlands and streams are addressed in Sections 4.1.5 and 4.1.6.

4.1.1 SURFACE WATERS

Impacts to the surface waters described in Section 3.1.1 are likely to result from activities associated with Project construction, such as clearing and grubbing on stream banks, riparian canopy removal, in-stream construction, extending or replacing existing pipes and culverts, bridge construction, fertilizer and pesticide application during re-vegetation, and railroad installation.

Erosion associated with construction activities can be 200 times greater than that from cropland and 2,000 times greater than that naturally occurring in woodlands. The majority of the Study Area is located in woodland areas. Erosion problems associated with construction activities include water pollution, flooding, stream channel damage, decreased groundwater storage, slope failures, damage to adjacent and/or downstream properties, and the time and costs associated with addressing these issues.

The following impacts to surface water resources could potentially result from Project construction activities:

- Changes in light incidence and water clarity due to forest clearing, necessary for the maintenance of the railroad corridor
- Changes in and destabilization of water temperature due to increased light incidence from vegetation removal

- Increased sedimentation as a result of vegetation removal primarily from access roads and skid trails
- Increased sedimentation from erosion in the Study Area associated with grading new alignments and repairing old slopes on the existing railroad corridor
- Alteration of water levels and flows due to interruptions and/or additions to surface and groundwater flow from construction
- Alteration of stream discharge due to silt loading and changes in surface and groundwater drainage patterns
- Channel alteration from stream crossings because culverts are often under or oversized causing destabilization of the stream channel morphology up and downstream
- Increased siltation downstream of the stream crossings as culverts are repaired or installed
- Increased nutrient loading during construction via runoff from exposed areas
- Increased potential for release of toxic compounds such as fuel and oil from construction equipment and other vehicles

VDRPT and NCDOT will minimize construction related impacts by implementing erosion and sediment control (ESC) measures on construction sites to prevent soil movement/loss in the first place, enhance Project aesthetics, reduce complaints, and most importantly, eliminate appreciable damage to off-site receiving channels, property and natural resources.

In order to minimize potential impacts to water resources in the Study Area, VDRPT and NCDOT will strictly enforce the most recent edition of VDCR's Erosion Sediment Control Handbook and NCDOT's Best Management Practices for the Protection of Surface Waters during the construction phase of the Project.

VDRPT and NCDOT will limit in-stream activities and re-vegetate streambanks immediately following the completion of grading in order to further reduce impacts. In addition, whenever possible, VDRPT and NCDOT will use bridges or bottomless culverts to maintain adequate fish passage and stream channel morphological integrity.

4.1.1.1 *STREAMS*

Jurisdictional streams in the Study Area have been designated as warm water streams for the purposes of stream mitigation. Potential Project impacts to 40,679 linear feet of jurisdictional intermittent and perennial channels, including 3,651 linear feet of Section 303(d) listed streams are anticipated. Stream impacts were calculated by determining the length of field-delineated jurisdictional channel within 25 feet of the Project slope-stake line. As noted in Section 3.1.1, more detailed identification of the nature of affected streams (e.g. perennial/intermittent classification) will take place during Section 401 Water Quality Certification (33 U.S.C. § 1341) and Section 404 permitting required by of the Clean Water Act (CWA) (33 U.S.C. § 1344). The Project is not anticipated to cause or contribute to significant degradation of 303(d) listed streams or other jurisdictional aquatic resources.

4.1.1.1.1 **VIRGINIA**

Potential Project impacts (in linear feet) to streams in the James, Chowan, and Roanoke River Basins in Virginia are summarized by section in Table 4-1. The portion of these impact totals that are Section 303(d)-listed streams are also tabulated.

Potential Project impacts to streams in the James River basin were the same for each of the three Virginia alternatives, so selection of Alternative VA1 as the Preferred Alternative for these sections offers no advantage for impact minimization.

In the Chowan River Basin, the Project alternative with the least potential impact to streams was selected for all sections except for Sections B and D. Alternative VA1/VA3 was selected for

Section B in part to minimize noise impacts, business relocations, and to maintain operating speed to meet purpose and need. In Section D, a new alternative (VA4) was developed to avoid effects to an historic property, avoid impacts to a Michaux's sumac population, and reduce wetland impacts compared with alternative VA2. Refer to Chapter 2 for additional discussion regarding selection of the Preferred Alternative in these sections.

In the Roanoke River Basin in Virginia, the Project alternative with the least potential impact to streams was selected as the Preferred Alternative for all sections.

Streams to be potentially impacted in Virginia include Goode Creek (S010, S010A); No Name Creek (unnamed tributary to the James River; S025A, S025B, S025C, & S029); Kingsland Creek (S035); Proctors Creek (S040); Oldtown Creek (S071); and Buckskin Creek (S178) on the 303(d) list due to *Escherichia coli*. Kingsland Creek and Timsbury Creek (S059A) are also listed due to pH. Proctors Creek and Oldtown Creek are listed due to Benthic Macroinvertebrate Bioassessments. Rowanty Creek and tributaries (S103, S103A, & S104) and Hatcher Run (S107) are listed due to Dissolved Oxygen and Hatcher Run is also listed due to Mercury in Fish Tissue.

Table 4-1
Potential Impacts to Stream Channels in Virginia (linear feet)

Section	River Basin	Streams	303(d) Listed Streams
AA	James	3,919	2,391
BB		2,078	28
CC		2,405	31
	James Subtotal:	**8,402**	**2,450**
DD	Chowan	585	85
A		3,094	284
B		760	0
C		2,803	203
D		1,998	0
E		860	0
F		1,004	0
G		510	0
H		2,808	0
	Chowan Subtotal:	**14,422**	**606**
I	Roanoke, VA	22	0
J		420	0
K		1,419	0
L		497	0
	Roanoke, VA Subtotal:	**2,358**	**0**
	VA Total:	**25,182**	**3,056**

4.1.1.1.2 NORTH CAROLINA

Potential Project impacts to streams in the Roanoke, Tar-Pamlico, and Neuse River Basins in North Carolina are summarized by section in Table 4-2.

Potential Project impacts to streams in North Carolina have been minimized through selection of the Project alternative affecting the least linear footage for all sections except for Sections L, O, T, and U. In Sections L and O in the Roanoke River Basin, the Preferred Alternatives are Section 4(f) avoidance alternatives, which necessitate additional stream impacts. In Sections T and U in the Tar-Pamlico River Basin, selection of Preferred Alternative was based on many factors including operating speed, operability and construction limitations. Refer to Chapter 2 for additional discussion regarding selection of the Preferred Alternative in these sections.

Streams potentially impacted in North Carolina include Perry Creek (S487) and Marsh Creek (S495) on the Section 303(d) list due to Ecological/Biological Integrity - Benthos. Fishing Creek (S370) is 303(d) listed due to Dissolved Oxygen.

Table 4-2
Potential Impacts to Stream Channels in North Carolina (linear feet)

Section	River Basin	Streams	303(d)
L	Roanoke, NC	2,005	0
M		442	0
N		42	0
O		53	0
P		777	0
Roanoke NC Subtotal:		**3,319**	**0**
N	Tar-Pamlico	344	0
O		3,049	565
P		755	0
Q		1,127	0
R		438	0
S		1,620	0
Tar-Pamlico Subtotal:		**7,333**	**565**
T	Neuse	415	0
U		3,394	0
V		1,036	95
Neuse Subtotal:		**4,845**	**95**
NC Total:		**15,497**	**660**

The James, Appomattox, Nottoway, Meherrin, and Roanoke Rivers in Virginia; and the Tar and Neuse Rivers in North Carolina are Navigable Waters under Section 10 of the Rivers and Harbors Act. As discussed in Chapter 4.14.3.1, the three proposed rail alternatives are on common alignment at the crossings of these rivers and major creeks (Cedar Creek and Crabtree Creek in North Carolina).

4.1.1.2 *RIPARIAN AREAS AND OTHER JURISDICTIONAL WATERS*

Within Tidewater Virginia, the Chesapeake Bay Preservation Act (Va. Code Ann. § 10.1-2100) (CBPA) regulates Chesapeake Bay Preservation Areas that include land areas adjacent to water bodies. Within the Study Area, the cities of Richmond, VA, Colonial Heights, VA, and Petersburg, VA, as well as Chesterfield County, VA, are subject to the CBPA. Chapter 20

Section 9VAC 10-20-150 of the CBPA, “Nonconformities, exemptions, and exceptions,” excludes public utilities, railroads, public roads, and facilities from the requirements of the CBPA. The Project is subject to this exemption, provided that the Project and related construction activities follow local, state, and Federal water quality regulations. The Project is committed to complying with all applicable water quality regulations and permit requirements, as well as to minimizing all impacts to water quality as designs are finalized. This includes complying with the Virginia Erosion and Sediment Control Law (§62.1-44.15:51 *et seq.*) and the Virginia Stormwater Management Act.(§62.1-44.15:24 *et seq*).

Streamside riparian zones within the Study Area in North Carolina are protected under provisions of the Tar-Pamlico and the Neuse River Basin Riparian Buffer Rules (15A NCAC 02B .0259 and 15A NCAC 02B .0233, respectively) administered by NCDWR. The rules protect two riparian zones: Zone 1 extends 30 feet from stream bank and Zone 2 extends from 30 to 50 feet from the stream bank. Table 4-3 summarizes the potential impacts (in square feet) to each riparian buffer zone for each section of the Project in the Tar-Pamlico and Neuse River Basins.

Table 4-3
Potential Impacts to Tar-Pamlico and Neuse Riparian Buffers (square feet)

Section	Zone 1	Zone 2	Total
N	21,964	16,097	38,061
O	145,656	115,503	261,159
P	48,940	33,741	82,681
Q	77,743	61,031	138,774
R	23,935	13,337	37,272
S	104,397	73,537	177,934
Tar-Pamlico:	**422,635**	**313,246**	**735,881**
T	25,937	17,638	43,575
U	219,901	148,808	368,709
V	71,017	55,067	126,084
Neuse:	**316,855**	**221,513**	**538,368**
Total:	**739,490**	**534,759**	**1,274,249**

The Tar-Pamlico and Neuse River Basin Riparian Buffer Rules provide that:

- Railroad crossings that impact equal to or less than 40 linear feet of riparian buffer are exempt.
- Railroad crossings that impact greater than 40 linear feet but equal to or less than 150 linear feet or one-third of an acre (14,520 square feet) of riparian buffer are allowable provided that there are no practicable alternatives.
- Railroad crossings that impact greater than 150 linear feet or one-third of an acre of riparian buffer will require mitigation.

Based on the buffer impacts listed in Table 4-3, as well as the linear footages of the corresponding stream impacts (from Table 4-2), mitigation will be required for impacts to riparian buffers at each stream crossing in North Carolina. Mitigation for impacted riparian buffers, where required, will be coordinated directly with NCDWR.

As described in Chapter 2, recommendations for the preferred alternative in Sections O, T, and U were based on avoidance of resources other than streams, and subsequently do not result in the least impacts to riparian buffers.

Other Jurisdictional Surface Waters - The Project will potentially affect other jurisdictional waters (such as lakes, ponds, and reservoirs). Potential Project impacts (in acres) to other waters in the Chowan and Roanoke River Basins in Virginia are summarized by section in Table 4-4. The alternatives selected for each of the Virginia sections with potential impacts to lakes, ponds, and reservoirs were not necessarily the ones involving lowest impact to other waters. Other water resources (streams, wetlands, riparian buffers) were assigned more value in determining the least environmentally damaging practicable alternative, consistent with the relative environmental value of man-made lakes, ponds, and reservoirs versus natural streams, rivers, riparian areas, and wetlands.

Table 4-4
Potential Impacts to Other Jurisdictional Surface Waters in Virginia

Section	River Basin	Impact (acres)
AA	James	0.7
BB		0.4
CC		0.03
	James Subtotal:	**1.13**
DD	Chowan	**1.7**
A		**0.4**
D		**0.2**
E		**0.01**
H		**0.06**
	Chowan Subtotal:	**2.37**
K	Roanoke, VA	0.1
L		0.3
	Roanoke, VA Subtotal:	**0.4**
	VA Total:	**3.9**

Potential Project impacts (in acres) to other waters in the Roanoke, Tar-Pamlico, and Neuse Rivers Basins in North Carolina are summarized by section in Table 4.5. Selection of the alternative having the least impacts to other waters was recommended for all North Carolina sections with the exception of Sections L and U. As described in Section 4.1.1.1, other factors more heavily influenced the recommendation of the Preferred Alternative for these sections. Refer to Chapter 2 for additional discussion regarding selection of the Preferred Alternative in these sections.

Table 4-5
Potential Impacts to Other Jurisdictional Surface Waters in NC

Section	River Basin	Impact (acres)
L	Roanoke, NC	1.25
O		0.16
P		0.03
	Roanoke, NC Subtotal:	**1.44**
P		0.001
R		0.002
S		0.01
	Tar-Pamlico Subtotal:	**0.013**
U		0.24
	Neuse Subtotal:	**0.24**
	NC Total:	**1.693**

Water Supply Reservoirs - No direct impacts to water supply reservoirs are contemplated by the Project in VA or NC.

4.1.1.3 *STORMWATER/DRAINAGE*

Increased stormwater runoff from Project development can impact stream channel networks and land surfaces through two means: longer-term impacts caused by runoff from increased impervious surface and short-term impacts caused by land disturbance during construction. These separate impacts are discussed in this section, followed by a discussion regarding strategies for mitigation.

The Project will increase the amount of impervious surface in the watersheds, which can cause increased stormwater runoff. Stormwater runoff from roadways carries substantial quantities of silt, heavy metals, petroleum products, nitrogen, and phosphorus. These materials can potentially degrade water quality and aquatic habitat integrity. The effects on water quality depend on the size of the waterways crossed and the number of such crossings. In general, additional road runoff as a result of the Project will be minimal because the increases in impervious surface are small. Streams with low flow are more severely affected since they have less volume to dilute the runoff.

Stormwater runoff from railroads is less pronounced than that from roadways because much of the railroad corridor is permeable to rainfall (i.e., ballast and side slopes). However, some runoff will collect in ditches adjacent to the railroad corridor. This runoff may carry similar pollutants to and have similar impacts to surface waters as runoff from roadways with shoulders.

Short-term impacts on water quality within the Study Area may result from soil erosion and sedimentation due to land-disturbing activities during construction. Land-disturbing activities include construction of the tracks, bridges, communication facilities, and other related structures and facilities of the railroad, including road crossings and alterations, as well as clearing of ROW, staging areas, access roads, and borrow/spoil areas. Construction-related impacts are likely to be similar for road and rail. Uncontrolled erosion and sedimentation can potentially destroy aquatic algae, eliminate benthic macroinvertebrate habitat, eradicate fish spawning habitat, and remove food resources for many stream species.

The Project will be designed and constructed to meet all current Federal, state, and local requirements for water quality and stormwater management. These requirements include permits, plans, and temporary best management practices (BMPs) to manage stormwater runoff during construction, as well as design criteria for permanent rail and road runoff control and treatment measures. Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control practices and use of BMPs. The regulations and their requirements are discussed below for both Virginia and North Carolina.

Long-term impacts on water quality are also possible due to particulates, heavy metals, organic matter, pesticides, herbicides, nutrients, and bacteria that are often found in highway and railway runoff.

The Project Team will incorporate the following mitigation measures to eliminate or reduce short-term and long-term water quality impacts wherever practicable:

- Development of roadway and railway alignments that avoid streams and ponds to the extent possible
- Use of design measures to protect water quality, including avoiding stormwater discharge into public water supplies, minimizing stream crossings, and minimizing segments of roadway or railway that closely parallels streams
- Use of grass shoulders, grass lined ditches, and vegetative buffers to intercept highway/railway runoff
- Implementation of construction practices that protect stream bottom habitat from siltation by sedimentation control, retention of riparian vegetation buffers, and restoration of stream bottom habitat taken by construction
- Countersink culverts to allow unimpeded passage by fish and other aquatic organisms
- Avoid installation of bridge bents in creeks
- Avoid placing sediment and erosion control measures in wetlands or streams
- Restricting the use of scuppers (bridge deck drains) in bridges that span water bodies.

4.1.1.4 *PUBLIC WATER SUPPLIES*

Impacts to water supplies are not anticipated. Best Management Practices will be employed along the Project corridor, including erosion and sediment controls and Spill Prevention Controls and Countermeasures.

4.1.1.5 *GROUNDWATER WELLS*

The Preferred Alternative avoids direct impacts to all identified public groundwater wells with the exception of one on Ligon Mill Road in Wake Forest, NC, in Section U. It is anticipated that the impact to this well can be mitigated with a connection to a public water supply or the well will be relocated, if necessary. This issue will be addressed during the final design stage of the Project, at which time the Project Team will coordinate with the owner of the well.

The Preferred Alternative will impact a private well serving Hillcrest Mobile Home Park, located north of La Crosse, VA in Section I. The Mecklenburg County, VA, Health Department has indicated that there is sufficient land available within the Hillcrest property to accommodate relocation of the drinking water well. During final design, a suitable new water source will be identified to ensure a continuous, safe, and sanitary water source for the residents.

4.1.2 **WETLANDS**

Wetlands are categorized as "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344). These waters are regulated by the US Army Corps of Engineers (USACE). Any action that proposes to dredge or place fill material into wetlands is subject to these provisions.

Potential Project impacts (in acres) to jurisdictional wetlands in the James, Chowan, and Roanoke River Basins in Virginia are summarized by section in Table 4-6. The alternative with least impact to wetlands has been selected for each Virginia section with the exception of Sections DD, B, and D in the Chowan River basin; and Section J in the Roanoke River basin.

Table 4-6
Potential Impacts to Jurisdictional Wetlands in Virginia

Section	River Basin	Impact (acres)
AA	James	2.3
BB		5.2
CC		1.2
James Subtotal:		**8.7**
CC	Chowan	1.4
DD*		2.4
A		2.8
B		0.6
C		2.2
D		2.0
E		1.2
F		0.6
G		0.3
H		0.4
I		0.001
Chowan Subtotal:		**13.9**
I	Roanoke, VA	0.0
J		0.2
K		0.9
L		0.0002
Roanoke, VA Subtotal:		**1.1**
VA Total:		**23.7**

In Section DD, the Preferred Alternative was selected to minimize the effect to the Weldon Railroad/Globe Tavern Battlefield, which is eligible for the National Register of Historic Places (NRHP). In Section B the Preferred Alternative was selected to minimize noise impacts, business relocations and to maintain operating speed directed by the purpose and need. In Section D, the Preferred Alternative (VA4) was developed to avoid effects to an historic property, avoid impacts to a Michaux's sumac population, and reduce wetland impacts compared with Alternative VA2. In Section J, the Preferred Alternative was selected in part to avoid stream impacts. Refer to Chapter 2 for more information regarding selection of the Preferred Alternative in these sections.

Potential Project impacts to wetlands (in acres) in the Roanoke, Tar-Pamlico, and Neuse River Basins in North Carolina are summarized by section in Table 4-7. The alternative with least impact to wetlands has been selected for each North Carolina section with the exception of Sections L, N, S, T, and U. In these sections, avoidance of significant resources other than wetlands led to Preferred

Alternatives that do not have the least impact to wetlands. In Sections N and S, additional wetland impacts are recommended in order to minimize impacts to significant stream and other natural resources. Refer to Chapter 2 for additional information regarding selection of the Preferred Alternative in these sections.

Table 4-7
Potential Impacts to Jurisdictional Wetlands in North Carolina

Section	River Basin	Impact (acres)
L	Roanoke, NC	0.72
P		0.49
	Roanoke Subtotal:	**1.21**
N	Tar-Pamlico	1.25
O		0.3
P		0.42
Q		0.03
S		0.48
	Tar-Pamlico Subtotal:	**2.48**
T	Neuse	0.07
U		0.38
V		0.05
	Neuse Subtotal:	**0.5**
	NC Total:	**4.19**

4.1.3 FLOODPLAINS AND FLOODWAYS

This section discusses the potential for floodplain impacts within the Study Area. Floodplain areas were defined in Section 3.1.1 and shown in Figures 3-2 and 3-3. Data from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) were analyzed and the FEMA zone designations were determined for the 100-year FEMA floodplains crossed by the Study Area. The alignment of the Preferred Alternative was reviewed to determine the area it will encroach on a FEMA floodplain within each section of the Project. Specific designs (i.e., including elevations) were considered. Also, the analysis considered whether the floodplain crossing was at grade or over a structure that would minimally contact the floodplain (e.g., a wide span bridge).

Table 4-8 lists the area of FEMA floodplain that will be encroached upon by section.

Reviewing the impacts at each crossing allows for determination of specific acreages of potential impact. The slope stakes (i.e., construction limits) in the current design files do not extend under the existing or proposed bridges, so no floodplain impacts are counted in these areas. Some of the structures may have piers on the floodplain. Placement of the structure piers will not be decided until final design so it is not possible to assess the floodplain impact of piers at this stage. NCDOT and VDRPT will re-examine these floodplain crossings once the final designs have been completed.

Mitigation includes designing the proposed floodplain crossing to minimize or eliminate an increase in the base flood elevation. Mitigation measures include right angle crossings and typical section reductions.

FEMA Executive Order 11988, (May, 1977) (Floodplain Management) requires Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities" for the following actions:

- Acquiring, managing, and disposing of Federal lands and facilities;
- Providing Federally-undertaken, financed, or assisted construction and improvements;
- Conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.

Summary of Requirements

The guidelines for Executive Order 11988 address an eight-step process that agencies should carry out as part of their decision-making on projects that have potential impacts to or within the floodplain. The eight steps, which are summarized below, reflect the decision-making process required in Section 2(a) of the Order.

- Determine if a proposed action is in the base floodplain (that area which has a one percent or greater chance of flooding in any given year).
- Conduct early public review, including public notice.
- Identify and evaluate practicable alternatives to locating in the base floodplain, including alternative sites outside of the floodplain.
- Identify impacts of the proposed action.
- If impacts cannot be avoided, develop measures to minimize the impacts and restore and preserve the floodplain, as appropriate.
- Reevaluate alternatives.
- Present the findings and a public explanation.
- Implement the action.

Among a number of things, the Interagency Task Force on Floodplain Management clarified the Executive Order with respect to development in floodplains, emphasizing the requirement for agencies to select alternative sites for projects outside the floodplains, if practicable, and to develop measures to mitigate unavoidable impacts.

The Project Team will coordinate with FEMA and local authorities during final design to ensure compliance with applicable floodplain management/development ordinances. Also, the NCDOT Hydraulics Unit and Virginia DRPT will coordinate with FEMA to determine if a Conditional Letter of Map Revision (CLOMR) and a subsequent final Letter of Map Revision (LOMR) are required for the Project. Floodplain development permits will be obtained from the local jurisdictions and include a no-rise/impact certification for each regulated floodplain/floodway and/or non-encroachment area crossing or a submittal for a CLOMR per 44 CFR Section 65.12.

Table 4-8
FEMA Mapped 100-Year Floodplain Impacts

Section	Preferred Alternative Floodplain Impact (acres)
AA	25.72
BB	11.4
CC	6.16
DD	4.63
A	4.67

Table 4-8 FEMA Mapped 100-Year Floodplain Impacts	
Section	**Preferred Alternative Floodplain Impact (acres)**
B	0.85
C	6.38
D	1.31
E	0.85
F	3.2
G	0.32
H	0.06
I	0
J	0
K	0.19
L (VA)	0.04
L (NC)	0
M	0
N	0
O	0
P	0
Q	0
R	0.04
S	0.42
T	0
U	0
V	1.38
Total	**67.62**

4.1.4 WILD AND SCENIC RIVERS

As stated in Section 3.1.4, there are four rivers in the Study Area designated as Virginia Scenic Rivers: the James River, Nottoway River, Appomattox River, and Meherrin River. The Nottaway River and Meherrin Rivers are listed in the Nationwide Rivers Inventory (NRI) (see Table 3-5). In North Carolina, the Tar River is listed on the NRI through the Study Area. For all of the proposed crossings, the Project alternatives cross the listed rivers on common alignments, and the river will be spanned by a bridge.

In Virginia, the Project will cross the James River on a new bridge adjacent to the existing single-track bridge. At the Appomattox River, a new parallel bridge is proposed for high speed passenger trains, located to the east of the existing single-track bridge. The Project will utilize the existing bridge piers and substructure of the bridges at the Nottaway and Meherrin Rivers (pending results of a detailed bridge investigation that would occur prior to final design). The superstructure (girders, decking and track) will be replaced at the Nottoway River, while the existing girders and decking will be retained at the Meherrin River. There is no conflict with the Wild and Scenic Rivers Act of 1968; however, coordination with the Virginia Scenic Rivers Board will be required to comply with the Virginia Scenic Rivers Act of 1970 for the new structures on the James and Appomattox Rivers.

In North Carolina, the Tar River will be crossed on the existing single-track bridge. The substructure will be utilized, as well as the superstructure (girders and decking).

4.1.5 PERMITS

A discussion of permitting requirements for impacts to wetlands and surface waters is provided below, and is followed by a discussion of permitting requirements for waters over which the US Coast Guard has jurisdiction. As discussed in Section 4.1.1, the Project is exempt from the CBPA, provided that the Project complies with all applicable local, state, and Federal water quality regulations and permit requirements. Permit applications will be filed after the ROD is signed, prior to construction.

4.1.5.1 *SECTION 404/401 PERMITS*

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344). Any action that proposes to dredge or place fill material into surface waters or wetlands is subject to these provisions. Some excavation/dredging in waters of the U.S. may not be considered a jurisdictional activity, depending on how the activity is conducted.

The USACE issues either general or individual permits. An individual permit (IP) is generally reserved for projects with potential for substantial environmental impacts. An IP requires a full public interest review, including public notices and coordination with involved agencies, interested parties, and the general public. A general permit, either through the Nationwide Permit and the Regional General Permit programs, is reserved for only the most minor impacts to streams, wetlands, and other waters. An IP is required for impacts greater than 1/2-acre of wetlands and/or 300 linear feet streams. Impacts to jurisdictional wetlands and perennial streambed or important intermittent streambed that result from activities authorized under an IP require compensatory mitigation.

Due to the placement of fill associated with crossing over and filling in of jurisdictional waters (i.e., wetlands and surface waters), it will be necessary for the Project Team to obtain permits for the Project from the USACE, Virginia Department of Environmental Quality (VDEQ), and NCDWR. Section 401 of the CWA requires each state to certify that state water quality standards will not be violated for activities that either involve issuance of a Federal permit or license, or require discharges to waters of the United States. The USACE cannot issue a Section 404 permit until a Section 401 certification is issued. Therefore, the Project Team must apply to VDEQ and NCDWR for Section 401 Water Quality Certification as part of the permit process. Based on the assessments summarized in Sections 4.1.1 and 4.1.2, it is likely that a Section 404 IP requiring mitigation will be required for the Project. Temporary activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction or rehabilitation should also be included in the permit application. The USACE will determine what permit(s) will be required to authorize Project construction.

In Virginia, the Project Team will complete a Joint Permit Application to apply for a Section 404 permit, Section 401 certification (Virginia Water Protection Permit), and a subaqueous permit from the Virginia Marine Resources Commission (VMRC). The Virginia Water Protection Permit (VWPP) is a state permit which governs wetlands, surface water, and surface water withdrawals/impoundments. It also serves as § 401 certification of the Federal Clean Water Act § 404 permits for dredge and fill activities in waters of the U.S. The subaqueous permit is needed to encroach upon or over bottomlands under VMRC jurisdiction, which include submerged lands (beds of lakes, rivers, and streams) including non-tidal, perennial tributaries draining five square miles or greater. To issue the permit, the VMRC must determine that the Project is necessary, that there are no reasonable alternatives requiring less environmental disruption, and that adverse effects do not unreasonably interfere with other private and public rights to the use of waterways and bottomlands.

The Virginia Coastal Zone Management Program was established in 1986 to protect and manage Virginia's coastal areas. This program is part of national coastal preservation effort authorized under the Coastal Zone Management Act of 1972 (16 USC 1451-1464, Chapter 33). Virginia's Coastal Zone Management area consists mostly of Tidewater Virginia as defined by the Code of Virginia §28.2-100. In particular, several localities within the Study Area are within Virginia's coastal zone, including; City of Richmond, VA, Chesterfield County, VA, City of Colonial Heights, VA, and City of Petersburg, VA. As a result, final design plans for the Project will be subject to a Federal Consistency Review, which outlines any affects to the land, water, or natural resources within Virginia's coastal zone. Regulations pertaining to the Chesapeake Bay Preservation Act are discussed in Section 4.1.1.2.

4.1.5.2 *STORMWATER PERMITS*

Since the Project would disturb more than 10,000 square feet, it must obtain a Virginia Stormwater Management Program (VSMP) general National Pollutant Discharge Elimination System (NPDES) permit (CWA Section 402) through the VDCR. A site-specific Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented. The SWPPP outlines the steps and techniques the operator will take to comply with the terms and conditions of the permit, including water quality and quantity requirements that are consistent with the VSMP permit regulations, to reduce pollutants in the stormwater runoff from the construction site. The SWPPP also includes a description of post development stormwater management measures to be installed, including design calculations. Prior to construction, an erosion and sediment control (ESC) plan and a stormwater management (SWM) plan to ensure compliance with state law and regulations will be prepared and implemented.

In North Carolina, the Project Team may also need to obtain an NPDES permit from the NC Division of Energy, Mineral, and Land Resources (NCDEMLR). Although NCDOT has a statewide NPDES permit for roads, the railroad portion of the Project is potentially subject to NPDES permitting within urban areas. NCDEMLR will determine if such a permit is required. The requirements for this permit include public education, illicit discharge identification, and post-construction stormwater management.

In North Carolina, a sediment and erosion control permit also must be obtained from the NCDEMLR. The Project Team will implement the appropriate sediment and erosion control measures as detailed in the most recent version of the North Carolina Erosion and Sediment Control Planning and Design Manual. During final design of the Preferred Alternative, the Project Team will investigate and implement appropriate stormwater treatment measures as detailed in the most recent version of NCDEMLR Stormwater Best Management Practices Manual, which may include grassed swale treatment, preformed scour holes, other energy dissipater devices, stormwater detention basins, pipe-end treatments, and level spreaders to the extent practicable. In addition, the Project Team will develop a stormwater management plan and obtain a State Stormwater Permit prior to construction.

NCDOT and VDRPT will require the contractor(s) constructing the Project to follow contract specifications pertaining to erosion control measures (as outlined in 23 CFR Part 650, Subpart B and Article 107-13) entitled Control of Erosion, Siltation, and Pollution. These measures include the following:

- Use of dikes, berms, silt basins, and other containment measures to control runoff during construction. Regular maintenance and inspection of these structures is recommended to insure effectiveness.

- Elimination of construction staging areas in floodplains or adjacent to streams and tributaries to help reduce the potential for petroleum contamination or discharges of other hazardous materials into receiving waters.
- Rapid re-seeding of disturbed sites to help alleviate sediment loading and reduce runoff. Increased runoff from new highway surfaces can be partially mitigated by providing for grassed road shoulders and limited use of ditching.
- Careful management and use of herbicides, pesticides, de-icing compounds, or other chemical constituents to minimize potential negative impacts on water quality. Roadside maintenance crews should be well versed in the use of these chemicals.
- Avoidance of direct discharges into streams whenever feasible. Runoff effluent should be allowed to filter through roadside vegetation in order to remove contaminants and to minimize runoff velocities.

In general, sediment and erosion control measures will not be placed in wetlands or streams, outfalls will be designed to prevent adverse impacts to the receiving stream or wetland, and impacts to riparian buffers and stream bottom habitat will be minimized to the extent practicable. All relevant directives with regards to invasive species will be complied with during construction.

4.1.5.3 *US COAST GUARD PERMITS*

The USCG has jurisdiction over navigable waters (see Section 3.1.5 for discussion regarding navigable waters as defined by 33 CFR 2.05-25). A USCG permit will be required for the Project crossing of the James River near I-95 in Richmond, VA, which is subject to tidal influence. Permits are not required for the crossings of the Appomattox River, Nottoway River, Meherrin River, Neuse River, or Tar River because these waterways are not subject to tidal influence nor are they used for interstate commerce (see Section 3.1.5). In addition, a permit is not required for the crossing of Lake Gaston because the Project will use the existing bridge piers; work will involve upgrading the deck of the bridge to the Project design standards.

At the James River crossing (where all alternatives are on common alignment), the Preferred Alternative will construct a new rail bridge immediately adjacent to the existing rail bridge located between the South 14th Street and I-95 roadway bridges in Richmond, VA. The new bridge will provide an additional track that is necessary to accommodate the high speed trains associated with the Project. The bridge will provide approximately the same vertical and horizontal clearance for boats that the existing bridge provides (within one to two feet, depending on the deck material). The existing bridge is at an elevation of 26.3 feet above the average water surface.

The bridge permit will be prepared as the bridge design is developed. Coordination with the USCG has been initiated and will continue throughout the development of the Project.

4.1.6 AVOIDANCE, MINIMIZATION, AND MITIGATION EVALUATION

Mitigation is defined in NEPA regulations (40 CFR Section 1508.20 and 40 CFR Part 230) as efforts that a) avoid, b) minimize, c) rectify, d) reduce or eliminate, or e) compensate for adverse impacts to the environment. Mitigation of wetland impacts is recommended in accordance with CWA Section 404(b)(1) Guidelines (40 CFR Part 230), mitigation policy mandates articulated in the USACE/USEPA Memorandum of Agreement (MOA); Page and Wilcher 1990), Executive Order 11990 (42 FR 26961 [1977]), US Fish and Wildlife Service (USFWS) mitigation policy directives (46 FR 7644-7663 [1981]), and the USACE/USEPA New Mitigation Rule (Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (33 CFR Parts 325 and 332 and 40 CFR Part 230, effective on June 6, 2008).

Section 404(b)(1) Guidelines, the USACE/USEPA MOA, and Executive Order 11990 stress avoidance and minimization as primary considerations for protection of Waters of the US. These efforts, and other measures that may be implemented later in the design process in consultation with the USACE, are described below.

4.1.6.1 *AVOIDANCE AND MINIMIZATION*

The Project designs attempt to maximize use of the existing rail ROW in order to avoid new impacts to aquatic resources. However, due to the need to straighten curves (to meet design speed dictated by purpose and need) or to avoid impacts to other resources (such as historic properties), there are occasions when it is necessary for Project impacts to extend outside the existing ROW. During the development of the preliminary engineering designs for each Project alternative, efforts were made to avoid and minimize impacts to wetlands and streams wherever practicable. Where stream crossings were unavoidable, they were located, within design constraints, as perpendicular as practicable, in order to minimize the length of stream impacted. Bridges are generally preferred over culverts for road crossings, to minimize impacts to streams.

4.1.6.2 *OTHER AVOIDANCE AND MINIMIZATION MEASURES*

Jurisdictional impacts have been minimized by reducing, where applicable, fill slopes at stream and wetland crossings. Conservative use of culverts and sensitive placement of drainage structures has been applied to minimize degradation of water quality and reduce adverse impacts on aquatic habitat viability in streams and tributaries. Sediment and erosion control measures will not be placed in wetlands or streams and outfalls will be designed to prevent adverse impacts to the receiving stream or wetland. Elimination of construction staging areas in floodplains or adjacent to streams, wetlands, and tributaries will help reduce the potential for petroleum contamination or discharges of other hazardous materials into receiving waters. Impacts to riparian buffers and stream bottom habitat will be minimized to the extent practicable. All relevant directives with regards to invasive species will be complied with during construction. More detailed information concerning potential impacts to “other waters” and mitigation may be developed during the final design and permitting phases of the Project.

4.1.6.3 *COMPENSATORY MITIGATION*

The purpose of compensatory mitigation is to replace the lost functions and values from the impact of a project to Waters of the US. Mitigation activities include restoration, creation, enhancement, or preservation of wetlands and streams. The amount of mitigation required is determined on a case-by-case basis. Typical mitigation ratios (amount of mitigation required compared to amount impacted) for wetland mitigation are 2:1 for restoration (meaning 2 acres must be restored for every 1 acre impacted), 3:1 for creation, from 3:1 to 9:1 for enhancement, and from 10:1 to 20:1 for preservation, depending on the type and quality of the wetland being preserved and the extent of uplands included in the preserved area. Typical ratios for stream mitigation are 2:1 (2 feet of mitigation for every 1 foot impacted) for restoration, 4:1 for enhancement, and 10:1 for preservation. In Virginia, the Unified Stream Methodology (USM), developed jointly by the Norfolk District and the Virginia Department of Environmental Quality, provides a guide for determining appropriate stream compensation requirements. Appropriate specific mitigation ratios for the Norfolk and Wilmington District USACE will be applied during the Section 404 permitting process.

DRPT and NCDOT are responsible for developing compensatory mitigation separately for the their respective portions of the Project according to 33 CFR Parts 325 and 332. This rule creates a flexible preference for the use of mitigation bank credits to satisfy requirements for mitigation, since banks can help reduce many of the risks and uncertainties associated with compensatory mitigation. The watershed approach to mitigation also provides for application of in-lieu fee programs and permittee-responsible mitigation.

In Virginia, mitigation will be provided through the use of mitigation banks and/or the Virginia Aquatic Resources Trust Fund (VARTF). The VARTF pursues stream and wetland mitigation projects throughout Virginia as an in-lieu fee program. It is administered in partnership with the USACE Norfolk District and The Nature Conservancy in Virginia. The use of the VARTF as a mitigation option is at the discretion of the appropriate regulatory agencies. There are currently 12 USACE-pending and 22 USACE-approved mitigation banks listed for the seven Norfolk District hydrologic units (HU) intersected by the Project (Regional Internet Banking Information System or "RIBITS"). However, there are no credits listed as "available" for the Roanoke River Basin or the Meherrin (03010204) HU of the Chowan River basin. Bank credit availability may not currently be adequate for potential Project wetland impacts in the Nottoway (03010201) HU or stream impacts in the Blackwater (03010202) HU of the Chowan River basin.

In North Carolina, mitigation will be provided through coordination with the North Carolina Ecosystem Enhancement Program (NCEEP) within the same HU as the potential impacts to jurisdictional waters occur. The USACE, NCDOT, and NC Department of Environment and Natural Resources entered into a MOA in July 2003 that established procedures for providing compensatory mitigation through NCEEP to offset impacts to streams and wetlands from NCDOT projects. The three parties agreed that mitigation for transportation projects should occur before impacts and using a watershed approach. Appropriate compensatory mitigation requirements for wetland and stream impacts from the Preferred Alternative will be determined in consultation with the appropriate Federal and state environmental resource and regulatory agencies.

4.2 TOPOGRAPHY, GEOLOGY, AND SOILS

4.2.1 TOPOGRAPHY

The Study Area lies in the Northern Outer Piedmont and Rolling Coastal Plain ecoregions of Virginia and the Northern Outer Piedmont Ecoregion of North Carolina. Topography of the Study Area ranges from 9 feet above sea level in Richmond, VA, to approximately 445 feet above sea level in Youngsville, NC. The various sections chosen as the Preferred Alternative are not anticipated to have an effect on area topography.

4.2.2 GEOLOGY

There is little difference in the geology along the Project alternatives through the Study Area. All alternatives pass through coastal plain sediments in Richmond, VA, and Piedmont igneous and metamorphic complexes from Petersburg, VA, through Raleigh, NC, with some isolated areas of sedimentary rock. The various sections chosen as the Preferred Alternative are not anticipated to have an effect on area geology.

Within a specific section of the Project, soil and subsurface geology may influence the levels of ground-borne vibration, especially the stiffness and internal damping of the soil and the depth to bedrock (Federal Transit Administration, 2006). See Section 4.7 for more information on specific vibration impacts.

4.2.3 SOILS

There is little difference in soil types between the Project alternatives. The soils in the Study Area will affect the constructability of the various Project sections, however they are not anticipated to be a major concern for the various sections chosen as the Preferred Alternative. Soil drainage characteristics, shrink-swell potential, and erodibility vary depending on soil types. Generally, well drained soils with low shrink swell potential and low erodibility are best suited for rail transport.

4.3 PRIME AND OTHER IMPORTANT FARMLANDS

As stated in Section 3.3 and shown in Table 3.7, substantial Prime and Important Farmlands, as well as farmlands of statewide and local importance, are located in the Study Area. As required by the Farmland Protection Policy Act (FPPA) of 1981 (7 U.S.C. 4202(a)) and North Carolina Executive Order Number 96, coordination with the Natural Resources Conservation Service (NRCS) for the Project was initiated by submittal of Form AD-1006, requesting the Farmland Conversion Impact Rating for each county in the Study Area. This coordination effort served as the basis for determining the farmland impacts of the Project alternatives. The NRCS responded by completing their portions of this form and providing a relative value of farmland that may be affected (converted) by the proposed Project. Land that was owned by CSX railroad prior to 1981 is exempt from consideration as prime or important farmland, as defined by the regulation.

The NRCS assigns ratings to potential farmland impacts in order to determine the level of significance of these impacts. The ratings are comprised of two parts. The Land Evaluation Criterion Value represents the relative value of the farmland to be converted and is determined by the NRCS on a scale from 0 to 100 points. The Corridor Assessment, which is rated on a sale of 0 to 160 points, evaluates farmland soil based on its use in relation to the other land uses and resources in the immediate area. The two ratings are combined for a possible total rating of up to 260 points. Sites receiving a total score of less than 160 should be given a minimal level of protection, and sites receiving a total score of 160 or more are given increasingly higher levels of consideration for protection (7 CFR Section 658.4).

Completed AD-1006 Farmland Conversion Rating Forms for the Study Area were provided in the Tier II DEIS Appendix E. Farmland ratings are not required for areas designated as urban. Based on 2000 Census data, two urban areas are in the SESHR Study Area: Richmond, VA (which includes Richmond, VA, Colonial Heights, VA, and Petersburg, VA) and Raleigh, NC (which includes Raleigh, NC, Wake Forest, NC, and Youngsville, NC). There is also one urban cluster (Henderson, NC).

The Tier II DEIS noted that the NRCS did not provide Land Evaluation Criterion Values for Sections AA through C in Virginia. However, values for the remainder of the Project were provided and were used in the evaluation for the Tier II DEIS. The Tier II DEIS indicated that no special protections for farmland were needed in these sections (D through V).

Subsequent to the Tier II DEIS, in September 2013, NRCS provided Land Evaluation Criterion Values for Sections AA through C for the Preferred Alternative (Appendix D). Based on the 2013 completed forms for Sections AA through C, the Preferred Alternative does not result in an average site assessment score greater than 160 points. Therefore, special protections for farmland are not required for this part of the Project Study Area.

Table 4-9 summarizes the acreage of prime farmland, and farmland of statewide or local importance impacted by the preferred alternative for each section. Sections O and D have the most impacted acreage (all types, combined) with 124.4 and 99.9 acres, respectively. Sections AA through CC have the smallest area of farmland impacts with acreages ranging from 0 to 16.4 acres.

Project Sections D in Virginia through V in North Carolina were reviewed to determine if the minor design changes developed since the publication of the Tier II DEIS were sufficient to require re-submittal of AD-1006 forms to NRCS. There was a net gain of 28.3 acres of Prime and Important farmland in Virginia as compared with the Tier II DEIS. The change in North Carolina was a net decrease of 38 acres as compared with the Tier II DEIS. Because of the increases in farmland totals in Sections D and G in Virginia, Virginia NRCS requested an update of AD-1006 forms for those sections. Based on the completed forms, no special protections for farmland were needed. North Carolina NRCS was contacted about the design changes and updated AD-1006 forms were submitted for all sections. None of the sites exceeded the 160 point threshold, therefore no special protections for farmland are required.

Table 4-9
Prime and Other Important Farmland Acres
Impacts for the Preferred Alternative by Section
(where values had changed since DEIS)

Section	Selected Alternative	Prime / Statewide Acreage
(Virginia)		
AA	VA1	0 / 0
BB	VA1	13.3 / 0
CC	VA1	16.4 / 0
DD	VA3	31.6 / 4.1
A	VA2	49.3 / 2.5
B	VA1	44.4 / 20.4
C	VA1	79.3 / 7
D	VA4	84.8 / 15.1
E	VA1	51.7 / 8.1
F	VA1	22.5 / 2.5
G	VA3	30.2 / 2.9
H	VA1	47.3 / 34.7
I	VA1	36.9 / 20.7
J	VA2	45.2 / 26.9
K	VA1	12.1 / 25.5
L (VA)	VA1	14.8 / 17.4
(North Carolina)		
L (NC)	NC1	68.9 / 8.9
M	NC1	86.0 / 1.4
N	NC1	64.0 / 0.7
O	NC3	82.1 / 42.3
P	NC1	83.2 / 3.8
Q	NC1	82.6 / 14.1
R	NC1	25.1 / 0
S	NC1	63.3 / 29.3
T	NC1	32.3 / 9.6
U	NC1	40.5 / 55.0*
V	NC5	28.9 / 26.6*

* Includes farmland of local importance

4.4 MINERAL RESOURCES

As stated in Section 3.4, the main non-fuel resources in Virginia and North Carolina are crushed stone, sand and gravel, and lime. The alternatives pass over areas that contain bedrock, as well as sand and gravel resources; however, only eight mine sites are located in the Study Area. In late 2013 Dinwiddie County, VA, contacted the Project Team to obtain information about Project designs near Burgess, VA (Section A) in relation to a request for a Conditional Use Permit for a proposed stone quarry that the County was reviewing but had not yet approved.

The eight existing mine sites located in the Study Area are:

- Carter Sand and Gravel Company, Richmond, VA (listed as past producer)

- McGowan Quarry, Richmond, VA (listed as past producer)
- Rawlings Quarry, Brunswick County, VA (listed as past producer)
- Vulcan-Greystone Quarry, Vance County, NC
- Carolina Sun Rock, L.L.C., Vance County, NC
- Franklin Quarry, Franklin County, NC
- Raleigh Quarry, Wake County, NC
- Rowland Mine, Wake County, NC (listed as past producer) (USGS, 2008)

Of these sites, five are in areas where rail alternatives remain within existing railroad ROW, and where there would be no direct impacts from proposed rail or roadway designs:

- Carter Sand and Gravel Company, Richmond, VA
- McGowan Quarry, Richmond, VA
- Franklin Quarry, Franklin County, NC
- Raleigh Quarry, Wake County, NC
- Rowland Mine, Wake County, NC

For the Preferred Alternative, no impacts are anticipated to Rawlings Quarry, as there is no active mine pit. At the Vulcan-Greystone Quarry, the Preferred Alternative would require the acquisition of mine ROW due to necessary road realignments. However, the realigned road would be relocated further away from the current pit, so impacts to mine operations are not anticipated.

Based on preliminary designs, there will be minor ROW impacts to Carolina Sun Rock, L.L.C. However, impacts would be limited to areas adjacent to existing railroad ROW and it is anticipated that mining operations would remain unaffected.

4.5 HAZARDOUS MATERIAL

As stated in Section 3.5 and listed in Appendix Q, a number of hazardous waste sites are within the Study Area, particularly in the urban areas of Virginia and North Carolina. These sites were plotted based on data in publicly available databases that have varying degrees of data quality. Sites found within the Study Area were classified as underground storage tanks (USTs), dry cleaners, hazardous waste disposal sites, and similar hazardous areas. The vast majority of these sites are USTs.

Hazardous waste sites fall under various state and Federal regulations. State regulations include:

- Virginia Waste Management Act (Code of Virginia Section 10.1-1400 et seq.)
- Virginia Hazardous Waste Management Regulations (VHWMR) (9 VAG 20-60)
- Virginia Solid Waste Management Regulations (VSWMR) (9 VAG 20-80)
- Virginia Regulations for the Transportation of Hazardous Materials (9 VAG 20-110)
- North Carolina Hazardous Waste Management Regulation (15A NCAC 13A.0101)
- North Carolina Solid Waste Management Law (15A NCAC 13A290 to 310.22)
- North Carolina Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (40 CFR 266 as adopted in 15A NCAC 13A.0111)
- North Carolina Standards Applicable to Transporters of Hazardous Waste (40 CFR 263 as adopted in 15A NAC 13A.0108).

Federal regulations include:

- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Section 6901 et seq.)
- Title 40 of the Code of Federal Regulations
- U.S. Department of Transportation Rules for Transportation of Hazardous materials (49 CFR Part 107).

During the impact assessment, if a construction alternative crossed any part of a parcel listed in the hazardous waste summary, it was counted as a potentially impacted site. This allowed for a conservative, defensible assessment of potential impacts. Potential impacts to hazardous waste sites are included in Table 4-10. As stated in Section 3.5, one additional site (Covidien, previously called Malinckrodt) was added to the site list based on comments received for the Tier II DEIS. This site is located in Section U of the Project, just north of the intersection of Durant Road and Capital Boulevard.

The Project will not impact Superfund sites in Virginia or North Carolina. Two Resource Conservation and Recovery Act (RCRA) Corrective Action Facility sites, one in Virginia and the other in North Carolina, are located within the Study Area. The Virginia site, the First Energy Corporation (FEC) Bioremediation Facility, is in Section AA and is impacted by the Preferred Alternatives. The North Carolina Site, the Covidien/Mallinckrodt SCC Raleigh Site, is located in Section U and is impacted by the Preferred Alternative. One polychlorinated biphenyl (PCB) site, owned by the Town of Wake Forest, NC, is located in Section U and is impacted by the Preferred Alternative.

If any potential hazardous waste sites cannot be avoided during final design, further assessments of the properties will be conducted. Based on current knowledge, it is not expected that any of these sites would preclude the construction of the Preferred Alternative.

Table 4-10
Hazardous Waste Sites by Section, Preferred Alternative

Section	VA
AA	59
BB	10
CC	20
DD	1
A	1
B	3
C	3
D	1
E	0
F	0
G	0
H	0
I	2
J	1
K	0
L (VA)	0
Section	**NC**
L (NC)	1
M	0
N	1
O	1
P	31
Q	4
R	0
S	7
T	4
U	20
V	79

4.6 AIR QUALITY

Please refer to Section 3.6.1 for regulatory information on air quality. This section analyzes criteria pollutant air emissions associated with the proposed railroad engine operations and affected (i.e., diverted) motor vehicles. While mobile source air toxics (MSATs) are not a criteria pollutant nor subject to conformity requirements, they are considered in this section in accordance with US Environmental Protection Agency (USEPA) guidance. Potential air quality impacts of the proposed Project include:

- Changes in rail-related emissions due to an increase in train operations each day and a change in equipment
- Changes in the overall regional emissions

- Changes in local (microscale) emissions, including changes at various crossings that could handle additional traffic due to nearby highway-railroad crossing closures, and changes in vehicular delay due to increased traffic resulting from increased ridership.

Federal Railroad Administration (FRA), Federal Highway Administration (FHWA), NCDOT, Virginia Department of Transportation (VDOT), and USEPA guidance manuals were used to analyze the potential air quality impacts. Data sources for the project-level analysis in Virginia included VDOT and Project traffic data. Data sources for the project-level analysis in North Carolina included NCDOT, NCDENR (Division of Air Quality) Capital Area Metropolitan Planning Area (CAMPO), Triangle Air Quality Partnership (air quality conformity documents), and Project traffic data.

4.6.1 LOCOMOTIVE OPERATIONS - CO, NOX, HC, AND PM

Locomotive operations are subject to Federal air quality conformity regulations (40 CFR 51.853). In 2008, USEPA proposed a comprehensive program to dramatically reduce emissions from locomotives, including line-haul, switch, and passenger engines (see 73 FR 25097 (May 6, 2008) and 40 CFR, Part 92). The program establishes emission standards with applicability dependent on the date a locomotive is first manufactured. The first set of standards (Tier 0) applies to most locomotives originally manufactured before 2001. The most stringent set of standards (Tier 4) applies to locomotives originally manufactured in 2015 and later.

Locomotives contribute to air pollution by generating notable emissions of fine particulate matter ($PM_{2.5}$) and nitrogen oxides (NO_X). USEPA estimates that by using the new standards to control the exhaust emission standards and idle reduction requirements of diesel locomotives of all types (line-haul, switch, and passenger), that PM reductions of 90 percent and NO_X reductions of 80 percent would be possible by the year 2030, as compared to the engine emissions that would be encountered under the previous guidance.

To advance this goal, Motive Power (located in Boise, ID) designed and developed the MP40 locomotive, which is anticipated to be used for SEHSR Corridor service and, therefore, was used for the Project air quality analysis. With improved fuel efficiency, a diesel oxidation catalyst, and a diesel particulate filter, this locomotive provides the advanced emissions reduction technology currently required to be Tier 2 compliant and the company estimates that their engines will be Tier 3 compliant by either 2014 or 2015.

Tier 2 emission rates for this locomotive are assumed to be the following (in grams/brake horsepower-hour) as referenced in the Federal Register listed above.

- CO - 1.5*
- PM - 0.2
- NO_X - 5.5
- HC - 0.3

*USEPA did not propose new standards for CO. Emissions of CO are relatively low in diesel engines compared to non-diesel pollution sources. Locomotives are already subject to relatively stringent CO standards in Tier 2 compared to the former heavy-duty highway diesel engine CO standard of 15.5. Additionally, even though USEPA did not set more stringent standards for CO (for Tier 4), note that after-treatment devices using precious metal catalysts projected to be employed to meet Tier 4 PM, NOX and HC standards will provide meaningful reductions in CO emissions as well.

Based on the above calculations, the emission rates are expressed as grams emitted per gallon of fuel consumed by multiplying the Tier 2 emission rates by a conversion factor. USEPA has estimated the appropriate conversion factor to be 20.8 bhp-hr/gal (USEPA Technical Highlights: Emission Factors for Locomotives USEPA420-F-97-051, December, 1997). These converted emission factors (in grams/gallon) are shown here:

- CO - 31.20
- PM - 4.16
- NO_X - 114.40
- HC - 6.24

The next step in developing air quality impacts is to estimate the amount of fuel that the diesel engines will consume. At a conservative Notch 6 throttle setting, the fuel consumption rate is approximately 146.5 gallons/hr. This is based on Motive Power fuel consumption measured at their Federal Test Procedures (FTP) emissions test facility in Boise, ID. Therefore, for an approximate 2-hour trip for the Project, the total fuel consumed during a one-way trip is 293 gallons and 586 gallons for a round trip. The Project estimates four round trips a day between Richmond, VA, and Raleigh, NC.

Table 4-11 presents calculated emissions for CO, NO_X, PM, and HC for SEHSR locomotive emissions in the Project corridor based on the collected data.

Table 4-11
Predicted Locomotive Emissions

County/Area	Annual Emissions (tons/year)			
	CO	NO_X	PM	HC
Richmond-Chesterfield * (Virginia)	3.55	13.02	0.47	0.71
Colonial Heights-Petersburg-Dinwiddie (Virginia)	5.98	21.94	0.80	1.20
Brunswick (Virginia)	4.11	15.09	0.55	0.82
Mecklenburg (Virginia)	3.37	12.34	0.45	0.67
Warren (North Carolina)	2.62	9.60	0.35	0.52
Vance (North Carolina)	3.93	14.40	0.52	0.79
Franklin-Wake ** (North Carolina)	5.80	21.25	0.77	1.16
De minimis (allowable) levels in the various counties/areas according to 40 CFR 51.853, as applicable	100.00	100.00	100.00	100.00

* Within the Richmond Regional Planning District
** Within the North Carolina Capital Area Metropolitan Planning Organization

Note that the above emissions are conservative because of the Notch 6 setting and that actual pollutant emission rates are lower than the Tier 2 standards (according to Motive Power, Inc.). However, these rates have not been certified; therefore, the conservative rates were used in the analysis.

Nonetheless, the predicted annual emissions are well below the *de minimis* levels established in 40 CFR 51.853 for the respective areas and no further action or mitigation is necessary. Additionally, note that the above emissions are for the proposed SEHSR operations only. Between Richmond, VA, and Petersburg, VA, there is currently a mixture of freight trains and Amtrak passenger trains. There are currently no trains operating in the Project corridor between Petersburg, VA, and Norlina, NC. Between Norlina, NC, and Raleigh, NC, there is some limited existing freight service. It is estimated that with the Project, there will be eight additional intermodal trains between Petersburg, VA, and Raleigh, NC, with improvements made to the rail infrastructure, along with two to four additional freight trains. (Two freight trains per day are assumed between Petersburg, VA, and Youngsville, NC, and four freight trains per day are assumed between Youngsville, NC and Raleigh, NC. Between Richmond, VA, and Petersburg, VA, growth in freight and Amtrak is projected, but is not anticipated as a result of the Project.)

From an air quality perspective, the additional intermodal and freight trains will likely result in a regional efficiency improvement as a result of freight providers switching from long haul trucking to intermodal and freight rail. Quantification of the reductions and re-routing of truck hauling was determined to be outside the scope of the Project. The intermodal and freight trains are not considered to be induced by the Project, but rather represent an improved and more efficient transfer from other fuel-consumption sources. Regardless, even if they were hypothetically 100% induced by the Project, the intermodal and freight emissions could be triple the HSR locomotive operation emissions (conservatively) and still not exceed the *de minimis* levels.

4.6.2 LOCOMOTIVE OPERATIONS - MSATS

Currently there is no Federally approved model to perform a quantitative MSAT hot spot analysis. A hot spot analysis is known as a "microscale" analysis because it focuses on a relatively small geographic area. In the absence of a microscale model, regional MSAT impacts from locomotives are discussed qualitatively.

Effective April 27, 2007, USEPA adopted controls on locomotive MSATs. At that time, USEPA proposed more stringent standards for large diesel engines used in locomotives.

In May 2008, USEPA published the final rule adopting a comprehensive program to dramatically reduce pollution from locomotives, applying to all types of locomotives. This final rule strengthened the locomotive and marine diesel programs proposed in April 2007. When fully implemented, the programs will reduce harmful diesel engine emissions to a small fraction of their previous levels.

On a nationwide annual basis, these overall reductions from all MSAT sources are projected to reduce annual MSAT emissions by 83% from 1999 to 2050. Specific to locomotives, the reduction from existing standards in PM Tiers 0 through 4 locomotives will be approximately 60, 50, 50, 50, and 90 percent, respectively. The reduction in NO_X for range year Tiers 0 through 4 will be approximately 20, 20, 20, 20, and 80 percent, respectively. All Tier idle emissions are predicted to be reduced by 50 percent for both PM and NO_X.

4.6.3 HIGHWAY VEHICLE OPERATIONS - CO

CO emissions are associated with large volumes of slow-moving traffic, such as highly congested intersections. Areas experiencing high levels of CO are referred to as CO "hot spots." The purpose of a CO hot spot analysis is to determine if CO emissions generated by a proposed project would cause or contribute to an exceedance of the air quality standard for CO as promulgated by USEPA.

The state and Federal ambient air quality standards for CO are 35 ppm (1-hour) and 9 ppm (8-hour). An analysis was made to determine the CO impacts at the worst-case intersections along the Study Area in North Carolina and Virginia.

The consolidation of rail crossings throughout the Study Area will necessitate that some automobiles travel an additional distance to reach a grade-separated crossing. The additional distance vehicles will need to travel to the nearest bridge or underpass is typically less than one mile. The anticipated CO emissions associated with the additional distance are likely to be offset by the removal of the vehicle idling that currently occurs while trains pass at-grade crossings. As an example, a vehicle idling for one minute as a train crosses an at-grade crossing will produce approximately 70 grams of CO. Were the same car to travel two miles out of its way to use a grade-separated crossing (one mile in each direction), it will generate approximately 16 grams of CO. Although many factors can effect vehicle emissions, the benefit of removing vehicle idling should more than offset the additional vehicle miles traveled.

4.6.3.1 VIRGINIA

According to VDOT's Consultant Guide for Air Quality Project-Level Analysis, the level of CO analysis is determined by a memorandum of understanding (MOU) between VDOT and FHWA that outlines when a quantitative or qualitative CO hot spot analysis is required.

The intersections in Virginia are exempt from a quantitative analysis based on the following criteria from Section II-Level of Analysis, subsection B, "Projects meeting one of the following criteria require only a qualitative analysis":

"Any project affecting capacity for roadways with intersections and/or freeway interchanges for which the build scenario design year intersection/freeway interchange LOS is E or better (or reasonable proxy thereof) and the corresponding ADT does not exceed the following levels for the roadway being improved as part of the project or any intersecting roadway within the Study Area:

> (i) 59,000, for intersections and freeway interchanges for which the minimum skew angle (defined here as the smallest angle modeled between intersecting roadways in a reasonable representation of the intersection or interchange selected for air quality analysis following applicable state and Federal guidance) is 60 degrees or more"

Since the ADTs at all potentially affected Virginia intersections are predicted to be less than 59,000, have a skew angle of 60 degrees or more and an LOS E or better condition for the build scenario design year, the qualitative analysis applies. As a result, the following language from the VDOT Consultant's Guide applies:

"The project does not include or directly affect any roadway whose design year average daily traffic volume, skew angle or level of service would exceed the threshold criteria specified in the Agreement between the Federal Highway Administration and the Virginia Department of Transportation for streamlining the project-level air quality analysis process for carbon monoxide. Modeling using "worst-case" parameters has been conducted for these thresholds and it has been determined that projects, such as this one, for which the thresholds would not be exceeded would not significantly impact air quality and would not cause or contribute to a new violation, increase the frequency or severity of an existing violation, or delay timely attainment of the National Ambient Air Quality Standards for carbon monoxide."

4.6.3.2 NORTH CAROLINA

An analysis was performed for the worst-case intersection based on traffic modeling (see Section 4.14.2), and Level of Service (LOS). The worst-case intersection in North Carolina is predicted to be Oxford Road and Dabney Drive in Henderson, NC.

For the North Carolina analysis, the concentrations were evaluated at locations (receptors) just outside the mixing zone. The mixing zone is considered to be the area of uniform emissions and turbulence. These receptors were placed where the general public has access and at 25 and/or 50 foot intervals along the intersection roadway approach and departure links.

The CO hot spot analysis compared the 2011 Existing (Base), 2015 Interim Build and No-Build, and 2030 Design Year Build and No-Build scenarios.

On December 20, 2010, USEPA (as coordinated with FHWA and FTA) issued guidance for using the Motor Vehicle Emission Simulator (MOVES) in project-level CO analysis. For CO hot spot analyses (outside California) that are started during the 2 year MOVES grace period ending December 20, 2012, either the MOBILE 6.2 emission modeling software or MOVES2010 can be used. The air quality analysis for the Project was started prior to December, 20, 2012. Therefore, MOBILE 6.2 emissions factors are applicable and were used in the analysis. The CAL3QHC dispersion model was used to estimate CO concentrations in accordance with Section 5.2.3 of

Appendix W to 40 CFR Part 51. (CAL3Q interface software with NC input parameters.) The land use near the intersection is composed of residential, some small retail stores and a school. Model input parameters included MOBILE 6.2 emissions factors, CO background levels (from NCDENR), persistence factors (from NCDENR), peak-hour volumes, free-flow speeds and traffic signal operations data (Hatch Mott MacDonald, 2014).

The results of the analyses indicated that the 1-hour and 8-hour concentrations for both intersections in any scenario were well below the NAAQS. Based on these results, no mitigation is required and additional analysis is not recommended. The results are presented in Table 4-12.

Table 4-12
Predicted CO Concentration (in pp,m) Screening Analysis (Including background)

Worst-Case Intersection	Analysis Scenario									
	2010-Base Year		2020-No Build		2020-Build		2030-No Build		2030-Build	
	1-hr	8-hr	1-hr	8-hr	1-hr	8-hr	1-hr	8-hr	1-hr	8-hr
NC: Oxford/Dabney (Henderson)	4.2	3.3	4.0	3.2	4.4	3.5	4.0	3.2	4.2	3.3
VA: Centralia/Chester (Chester)	Exempt from quantitative analysis per VDOT guidance (because the ADT is below the analysis threshold)									

NAAQS: 35 ppm (1-hour) and 9 ppm (8-hour)

4.6.4 HIGHWAY VEHICLE OPERATIONS - $PM_{2.5}$

The Project is located in areas that are currently designated as being in attainment of the $PM_{2.5}$ standards. These standards were also not exceeded at any of the Study Area monitoring stations during 2012. For projects within $PM_{2.5}$ attainment areas, quantitative and/or qualitative analyses are not required. Therefore, no mitigation is proposed and further analysis is not recommended.

4.6.5 HIGHWAY VEHICLE OPERATIONS - MSAT

Currently, there is no Federally approved model to perform a quantitative MSAT hot spot analysis. On September 30, 2009, FHWA issued an update to its guidance concerning MSATs, which included a three-tiered approach to determine the level of analysis. Subsequent interim guidance was published on December 6, 2012. The update reflects recent changes in methodology for conducting emissions analysis and updates of research in the MSAT arena. All analysis beginning on or after December 20, 2012, should use the MOVES model. Any analysis initiated prior to that date may continue to operate under the previous guidance and utilize MOBILE 6.2.

The FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

1. No analysis for projects with no potential for meaningful MSAT effects;
2. Qualitative analysis for projects with low potential MSAT effects; or
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The Project falls under the Qualitative analysis category for projects with low potential MSAT effects.

The types of projects included in this category are those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects.

Most highway projects that need an MSAT assessment fall into this category. Any projects not meeting the criteria in category (1) or category (3) below should be included in this category. Examples of these types of projects are minor widening projects; new interchanges, replacing a signalized intersection on a surface street; or projects where design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT).

For these projects, a qualitative assessment of emissions projections should be conducted. This qualitative assessment would compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives, including no-build, based on VMT, vehicle mix, and speed. It would also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by USEPA. Because the emission effects of these projects typically are low, we expect there would be no appreciable difference in overall MSAT emissions among the various alternatives.

Please note that sensitive receptors within the Study Area were not identified for the Tier II FEIS as this task is no longer recommended by FHWA for qualitative analyses. Performing the highly intensive task of identifying sensitive sites from Richmond, VA, to Raleigh, NC, and looking at anticipated traffic volume change for each of these sites would not produce meaningful information, especially given the low volumes of the roads along the Study Area and the fact that MSATs are anticipated to decrease throughout the United States based on improvements in vehicle operation standards.

In addition to the qualitative assessment, a NEPA document for this category of projects must include a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT impacts, in compliance with the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.22(b)). This discussion should explain how current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that could result from a transportation project in a way that would be useful to decision-makers. Also in compliance with 40 CFR 1502.22(b), it should contain information regarding the health impacts of MSAT.

The qualitative analysis for highway vehicle MSATs for the Project is included in Appendix M.

4.6.6 CONSTRUCTION IMPACTS

Construction activities will result in temporary increases in air pollution. The greatest increases are likely to occur in the areas where new bridges are proposed for construction. At this time, it is not known over what time frame the bridges will be constructed. However, it is not expected that increased pollutants from trucks and site equipment will cause violations of the NAAQS.

Generally, air quality along detour routes may be affected by an increase in vehicle idling or miles traveled during crossing closures. These will be temporary and where possible, the proposed road improvements will be constructed prior to the diversion of traffic.

VDOT and NCDOT require that BMPs are in place to control particulate emissions (e.g., fugitive dust) during construction activities. Operators of fugitive dust sources are expected to take reasonable precautions to prevent airborne dust such as requiring the appropriate emission-control devices on all construction equipment powered by gasoline or diesel fuel to reduce exhaust emissions.

In conclusion, the predicted project-level and regional level values are below either the *de minimis* levels established in 40 CFR 51.853, the NAAQS, and or do not require a formal detailed analysis for the respective area conditions. As a result, no mitigation is required and no further action is necessary.

4.6.7 SUMMARY

In the Study Area, USEPA has designated the Richmond-Petersburg, VA, and Raleigh-Durham-Chapel Hill, NC, regions as being maintenance areas of the 8-hour ozone standard. For CO, the Study Area is in attainment within Virginia and designated as being in maintenance for Wake and Franklin counties, NC. Additionally, the Study Area is in attainment for NO_X and particulate matter (PM10, PM2.5).

A CO hot spot analysis was performed for the Project. There were no predicted CO impacts as the 1-hour and 8-hour concentrations were well below the NAAQS. Based on these results, no mitigation is required and additional analysis is not recommended.

For particulate matter, the Study Area is in attainment of the NAAQS. As a result, no analysis or mitigation is required.

Because the estimated VMT for the Preferred Alternative is less than the No-Build condition, it is expected there will be a positive impact in overall MSAT emissions. Also, emissions will likely be lower than present levels in the design year as a result of USEPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Therefore, the Project was found to result in low potential MSAT effects and no further action is required.

For ozone, the Project is currently funded only at the planning level and does not yet have a dedicated funding source for construction. As a result, it falls under the exempt status for transportation conformity. Once funding is secured for ROW purchase and construction, NCDOT and VDRPT will perform conformity analyses in accordance with 40 CFR Part 93.

For general conformity, the predicted locomotive operations are well below the *de minimis* levels established in 40 CFR 51.853 and no further action or mitigation is necessary.

4.7 NOISE AND VIBRATION

The following section describes the potential noise and vibration impacts from the Project, and includes highway noise analysis that was conducted for the Preferred Alternative.

4.7.1 OPERATION IMPACT ASSESSMENT

Noise and vibration impacts from operation and construction activities related to the Project are presented in this section. Noise and vibration mitigation will be addressed during final design using FRA's High-Speed Ground Transportation Noise and Impact Assessment (FRA, 2012b) procedures.

4.7.1.1 *RAIL OPERATION NOISE*

Noise emissions were regulated under the Noise Control Act of 1972. Locomotive operations are subject to Federal noise emission standards (see 40 CFR, Part 201). Train noise impacts were evaluated based on projected noise level increases relative to existing conditions at noise-sensitive receptors. Depending upon the land use, this increase was measured in terms of either one-hour equivalent sound level (Leq(h)) or the day-night sound level L_{dn}.

The Project noise exposure was calculated based on the operating characteristics listed in Table 4-13. These characteristics were developed during preparation of the Tier II DEIS, at which time the initial noise analysis was completed. The most current ridership and revenue analysis (see Section 1.5), which was completed after the Tier II DEIS was published, anticipates potential increases in the number of passenger trains using the Project corridor over what was assumed in the Tier II

DEIS noise analysis. Notably, the updated ridership and revenue analysis estimated that one existing round trip Amtrak long distance train will divert to the Project corridor between Petersburg, VA, and Raleigh, NC, and one additional round trip train will travel the Project corridor between Richmond, VA and Petersburg, VA, to/from Norfolk, VA, to serve the Richmond, VA, to Hampton Roads, VA, SEHSR Corridor. In addition, three existing round trip Amtrak trains would continue to use the Project corridor between Richmond, VA, and Petersburg, VA. These changes are not anticipated to substantially affect the results of the original rail operation noise analysis because the noise impact resulting from a small number of additional passenger trains is negligible compared to the overall impact of relatively heavier and longer freight and intermodal trains. If any impacts occur as a result of these changes, they will be addressed by the Project Team during the final design phase of the Project.

The Tier II DEIS noise analysis also did not account for the existing freight traffic in the Project corridor between Richmond, VA, and Petersburg, VA, in which more than 20 trains currently operate. It is assumed that this large number of freight trains would render the impacts of any passenger trains negligible. In addition, existing and future freight operations in this section of the Project corridor are not dependent on the Project, and can be changed at the discretion of the operating railroad. Therefore, the model applied no freight trains in order to identify impacts resulting directly from the Project.

It is important to note that the alternatives evaluated in the Project corridor between Richmond, VA, and Petersburg, VA, (Sections AA through DD) were on common alignment, with the exception of slight differences in a small area just below the city limits of Petersburg, VA, at the south end of the Collier rail yard. Therefore, potential noise impacts did not have any bearing on the selection of the Preferred Alternative in these sections of the Project.

In addition to the operating assumptions listed above, it was also assumed that the track would consist of continuously welded rail and would generally be in very good condition. Based on these assumptions, distance-to-impact contours were developed for the different land use categories and existing noise levels. These distances were then used to tabulate the rail noise impacts that would occur as a result of the Project. A summary of projected noise impacts for the Project is provided in Table 4-14. The results in Table 4-14 represent a fairly conservative estimate in terms of the number of projected impacts. This is mainly due to the fact that maximum authorized speed was assumed throughout the corridor

Table 4-13
Noise Modeling Projected Train Operating Characteristics

Operating Characteristic	HSR Passenger Trains	Intermodal Trains	Freight Trains
Richmond, VA, to Petersburg, VA (1)			
Total Number of Daily Trains	14	--	--
Number of Trains - Day	14	--	--
Number of Trains – Night (2)	0	--	--
Number of Peak Hour Trains	2	--	--
Maximum Operating Speed (mph)	79-90 (3)	--	--
Petersburg to Raleigh			
Total Number of Daily Trains	8	8	2-4 (4)
Number of Trains - Day	8	5	2-4
Number of Trains – Night (2)	0	3	0
Number of Peak Hour Trains	1	2	0
Maximum Operating Speed (mph)	110	60	50

Notes:
(1) Since there is existing freight train traffic between Richmond, VA, and Petersburg, VA, project noise exposure is only calculated for projected high speed rail trains through this section.
(2) Night trains are those that operate between 10:00 p.m. and 7:00 a.m.
(3) 79 mph – Richmond to Chester; 90 mph – Chester, VA, to Petersburg, VA.
(4) Two freight trains per day (one round trip) are assumed between Petersburg, VA and Youngsville, NC, and four freight trains per day (two round trips) are assumed between Youngsville, NC and Raleigh, NC.

Table 4-14
Land Use Categories and Metrics for High Speed Rail Noise Impact Criteria

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

Table 4-14 Summary Total of Rail Noise Impacts						
Section/Preferred Alternative	**Noise Impacts along Preferred Alternative**					
	Land Use Category 1*		**Land Use Category 2***		**Land Use Category 3***	
	Moderate Impact	**Severe Impact**	**Moderate Impact**	**Severe Impact**	**Moderate Impact**	**Severe Impact**
AA / VA1	0	0	0	0	0	0
BB / VA1	0	0	0	0	0	0
CC / VA1	0	0	11	0	0	0
DD / VA3	0	0	0	0	0	0
A / VA2	0	0	4	1	0	0
B / VA1	0	0	13	0	0	0
C / VA1	0	0	9	0	0	0
D / VA4	0	0	4	2	0	0
E / VA1	0	0	22	6	1	0
F / VA1	0	0	6	0	0	0
G / VA3	0	0	2	0	0	0
H / VA1	0	0	18	2	0	0
I / VA1	0	0	49	5	1	0
J / VA2	0	0	21	1	0	0
K / VA1	0	0	9	0	0	0
L / VA1/NC1	0	0	20	1	0	0
M / NC1	0	0	41	6	0	0
N / NC1	0	0	4	0	0	0
O / NC3	0	0	10	5	0	0
P / NC1	0	0	77	11	1	0
Q / NC1	0	0	12	5	1	0
R / NC1	0	0	1	0	0	0
S / NC1	0	0	22	1	0	0
T / NC1	0	0	25	0	0	0
U / NC1	0	0	159	17	0	0
V / NC5	0	0	79	2	0	0
Total	**0**	**0**	**618**	**64**	**4**	**0**

4.7.1.2 *DIVERTED ROADWAY TRAFFIC NOISE IMPACTS*

The highway noise impact focused on the secondary/indirect impacts resulting from two build actions of the Project:

- The creation of grade-separated crossings (bridges and underpasses) and;
- The diversion of traffic to the grade-separated crossings from closed at-grade crossings.

The selection of a Preferred Alternative was primarily the choice of a preferred railroad alignment. Highway noise did not affect the decision process because of 84 proposed grade separations, about 80% were common to all alternatives. Furthermore, given the estimated traffic volumes, the diverted volumes and the rural land use at most crossings, it is highly unlikely that these changes will result in noise impacts and/or feasible and reasonable abatement measures according to North Carolina or Virginia policies. Less than 10% of the grade separations will have greater than 10,000 annual average traffic volumes (AADT) in the design year.

The grade separations are considered to be a Type I improvement under FHWA regulations because of the proposed substantial vertical change in the road alignment. An interagency screening process was developed to analyze the likely sound level environment changes in both qualitative and quantitative methods for the new crossings, appropriately addressing both the NCDOT and VDOT noise policies. FHWA has established noise abatement criteria (NAC), which are noise levels for various activities or land uses which represent the upper limit of acceptable traffic noise level conditions. These regulations do not require meeting the abatement criteria in every instance; rather, they require highway agencies make every feasible and reasonable effort to provide noise mitigation when the criteria are approached or exceeded.

The methodology for completing this assessment was developed in coordination with FHWA, NCDOT and US Environmental Protection Agency (USEPA). In summary, it applies a screening process so that all crossings are appropriately addressed per state transportation policies and 23 CFR 772. The screening process was conducted in the following manner for each crossing:

- Step 1 – Identify existence of receptors in the area of each proposed grade separation
- Step 2 – Identify receptors within 60 dBA cordon line (66 dBA is the NAC for categories B and C, which include residences, daycare centers, parks, and historic sites). The 60 dBA cordon was initially applied as a conservative measure. Ultimately, receptors with predicted levels of 66 or greater were identified. (Note: there were no "substantial increase" criteria impacts) Industrial and retail land uses were not analyzed because they do not have impact criteria.)
- Step 3 – Mitigation analysis, applying NCDOT reasonable and feasible criteria, as applicable.
- Step 4 – Reporting.

Road closure areas and crossings where there were no traffic volume changes nor physical realignment were not analyzed. For planning purposes, the 60 and 66 dBA contours for various AADT are presented in Table 4-15.

The results are shown in Table 4-16. In addition to the location and type of each crossing, the table also represents a fairly conservative estimate in terms of the number of projected highway traffic noise receptors within the 60 dBA contour. The number and type of these receptors was estimated based on Project mapping aerials and Google Earth data. Possible impacts (those within the 66 dBA contour) and mitigation rationale are also included in the table. There were no predicted impacts based on the criteria for a "substantial increase."

Table 4-15
Comparison of Sound Level Contours for Various Traffic Volumes
(for Planning/Screening Purposes)

Average Annual Daily Traffic (AADT)	Approximate Distance to Contour From the Edge of the Nearest Traveled Way (in feet):	
	60 dBA	66 dBA
1,000	<10	<10
2,500	<10	<10
5,000	55	<10
7,500	120	<10
10,000	140	30
15,000	185	65
20,000	225	85
25,000	250	105
30,000	260	115

Note: the sound level contour results are based on an operational speed of 45 mph. Distances for slower speeds will be slightly less and distances for faster speeds will be slightly greater. They are also based on a peak hour factor of 12% (the highest factor used for the analyzed crossings, many are 10% or less) and a truck factor of 5% (most of the analyzed crossings were less).

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
AA-2	Goodes Street	Petersburg, VA	Grade separated road over rail	-	-	0	No	Industrial land uses (no applicable criteria)
AA-3	VA 7521-East Commerce road	Petersburg, VA	Grade separated road over rail	-	-	0	No	Industrial land uses (no applicable criteria)
AA-4	Ruffin Road	Petersburg, VA	Underpass, grade separated rail over road	4,300	300’	3 residences 1 church	No	Receptors too far from bridge Low traffic volumes Road going under the RR bridge
AA-4.5	VA 161-West Bells Road	Petersburg, VA	Grade separated road over rail	15,400	200’	11 residences	No	Receptors too far from bridge
AA-6	VA 1479-Station Road	Chesterfield, VA	Grade separated road over rail	-	-	0	No	Industrial land uses (no applicable criteria)
AA-9	New Crossing-from Dorsey to Perrymount	Chesterfield, VA	New access road over rail	2,200	450’/200’	0	No	Receptors too far from bridge Low traffic volumes
BB-10	VA 145-Centralia Road	Chesterfield, VA	Grade separated road over rail	24,200	1000’/220’	17 residences	No	Receptors too far from bridge No traffic volume change
BB-12	Curtis Street	Chesterfield, VA	Realign, underpass, grade separated rail over road	5,770	700’	5 residences	No	Receptors too far from bridge Low traffic volumes Road going under the RR bridge
BB-16	VA 620-Woods Edge Road	Chesterfield, VA	Grade separated road over rail	-	-	0	No	Primarily Industrial land use (no applicable criteria) No receptors in vicinity

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
CC-16,17	VA 1144-Pine Forest Drive	Chesterfield, VA	Grade separated road over rail	3,000	330’	6 residences	No	Receptors too far from bridge Low traffic volume No traffic volume change
CC-18,19	VA 625 Branders Bridge Road	Chesterfield, VA	Grade separated road over rail	8,850	230’/120’	8 residences	No	Receptors too far from bridge Low traffic volume No traffic volume change
CC-19	VA 1106-Dupuy Road	Chesterfield, VA	Grade separated road over rail	700	300’	0	No	Receptors too far from bridge Low traffic volume
DD-31	VA 675-Vaughn Road	Dinwiddie, VA	Grade separated road over rail	1,100	200’	0	No	Receptors too far from bridge Low traffic volume
DD-32	VA 613-Squirrel Level Road.	Dinwiddie, VA	Grade separated road over rail	600	200’	0	No	Receptors too far from bridge Low traffic volume
A-34	VA 670-Duncan Road	Dinwiddie, VA	Grade separated road over rail	850	220’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change.
A-35	VA 613-Dabney Mill Road	Dinwiddie, VA	Grade separated road over rail	1,600	200’	0	No	Receptors too far from bridge. Low traffic volume No traffic volume change
A-37	VA 660-Quaker Road	Dinwiddie, VA	Grade separated road over rail	970	450’/110’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
B-39	VA 605-Honeycutt Road	Dinwiddie, VA	Grade separated road over rail	980	220’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
B-41	VA 703-Carson Road	Dinwiddie, VA	Grade separated road over rail	6,100	630’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
B-42,43	Gatewood Drive	Dinwiddie, VA	Underpass, grade separated rail over road	800	500’	0	No	Low traffic volume No traffic volume change Road is moved farther away from the receptors Road going under the RR bridge
C-45	VA 646-Glebe Road	Dinwiddie, VA	Grade separated road over rail	2,000	250’	0	No	Receptors too far from bridge Low traffic volume
C-47,48	Karla Drive	Dinwiddie, VA	Grade separated road over rail	50	300’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
C-49,50	VA 652-Asbury Road	Dinwiddie, VA	Grade separated road over rail	-	-	0	No	No receptors in vicinity.
C-50	VA 40-Doyle Boulevard	Dinwiddie, VA	Grade separated road over rail	4,400	130’	2 residences	No	Low traffic volume
D-55	VA 629 Rawlings Road	Brunswick, VA	Close road at new rail, realign, grade separated road over rail	700	240’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
D-60	VA 636-Kress Rd	Brunswick, VA	Grade separated over rail	-	-	0	No	No receptors in vicinity
D-62	VA 643-Flat Rock Road	Brunswick, VA	Grade separated over rail	1,100	350'	0	No	Receptors too far from bridge Low traffic volume
E-64	VA 726-Chestnut Road	Brunswick, VA	Grade separated over rail	460	680'	0	No	Receptors too far from bridge Low traffic volume
E-65	VA 628-Littlemont Road Church Street	Brunswick, VA	Grade separated over rail	570	500'	0	No	Receptors too far from bridge Low traffic volume
E-66	VA 136-Second Avenue	Brunswick, VA	Grade separated over rail	750	240'	0	No	Receptors too far from bridge Low traffic volume
E-66	VA 1401-Main Street	Brunswick, VA	Grade separated over rail	1,400	400'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
F-67	Rosebud Lane	Brunswick, VA	Grade separated over rail	-	-	0	No	No receptors in vicinity
F-68	US-1 SB Boydton Plank Road	Brunswick, VA	Grade separated over rail	-	-	0	No	No receptors in vicinity
F-70	VA 763-Millville Road	Brunswick, VA	Grade separated over rail	-	-	0	No	No receptors in vicinity
G-73	Old Indian Road	Brunswick, VA	Realign, grade separated road over rail	200	350'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
G-74	Old Indian Road.	Brunswick, VA	Grade separated over rail	-	-	0	No	No receptors in the area.
H-77	Tannertown Road	Brunswick, VA	Realign, underpass, grade separated rail over road	900	400'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change Road going under the RR bridge
H-78,79	VA 638-Wilson Road	Mecklenburg, VA	Realign grade separated road over rail	650	550'/130'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
I-82	Northington Road Connector	Mecklenburg, VA	New underpass, rail over road	380	600'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change Road going under the RR bridge
I-83	Jones Street	Mecklenburg, VA	Realign, underpass, grade separated rail over road	3,400	140'/100'	0	No	Low traffic volume No traffic volume change Road going under the RR bridge
J-84	VA 630-Belfield Road	Mecklenburg, VA	Realign, grade separated road over rail	-	-	0	No	No receptors in the area.
J-86	VA 618-Marengo Road.	Mecklenburg, VA	Realign, grade separated road over rail	1,750	500'/200'	0	No	Receptors too far from bridge Low traffic volume

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
J-87	VA 627-Gaulding Road	Mecklenburg, VA	Realign, grade separated road over rail	-	-	0	No	No receptors in the area.
K-89	VA 903	Mecklenburg, VA	Realign, grade separated road over rail	-	-	0	No	No receptors in the area.
L-92	VA 712-Paschall Road	Mecklenburg, VA	Realign, grade separated road over rail	500	500’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
L-93	NC 1302-Felts Road	Mecklenburg, VA	Grade separated road over rail	100	350’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
L-95	NC 1300-Wise Five Forks Road	Warren, NC	Realign, grade separated road over rail	1,900	200’	0	No	Receptors too far from bridge Low traffic volume
M-98,99	NC 1320-Warren Plains Road	Warren, NC	Realign, grade separated road over rail	-	-	0	No	No receptors in the area.
M-101,102	NC 1107-Ridgeway Warrenton Road	Warren, NC	New grade separated road over rail	3,000	400’/300’	0	No	Receptors too far from bridge Low traffic volume
N-104	NC 1151-Soul City Boulevard	Warren, NC	Realign, grade separated road over rail	1,200	500’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
N-105,106	NC 1101-Kimball Road	Warren, NC	Realign, grade separated road over rail	700	700’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
O-108	NC 1501-Carol Street	Warren, NC	Grade separated road over rail	-	-	0	No	No receptors in the area.
O-110	NC 1507-Brookston Road	Vance, NC	Realign, grade separated road over rail	1,100	450’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
O-111	NC 1508-Greystone Road	Vance, NC	Realign, grade separated road over rail	670	520’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
P-112	Warrenton Road	Vance, NC	Realign, underpass, replace existing rail over road	14,000	300’	2 residences	No	Receptors too far from bridge No traffic volume change Road going under the RR bridge
P-114	Main Street	Vance, NC	Realign, underpass grade separated rail over road	7,900	170’	30 residences	No	Low traffic volume No traffic volume change Road going under the RR bridge
P-114	NC 39-Andrews Avenue	Vance, NC	Realign, grade separated road over rail	19,840	180’	19 residences, 1 church	No	Receptors too far from bridge Road moved slightly farther away as a result of the realignment.

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
P-115	Alexander Avenue	Vance, NC	Realign, grade separated road over rail	12,535	700'	10 residences	No	Receptors too far from bridge.
P-116	NC 1139-JP Taylor Road	Vance, NC	Realign, grade separated road over rail and US1 BUSINESS	5,800	1660'/170'	9 residences	No	Receptors too far from bridge Low traffic volume No traffic volume change
P-117	NC 1115-Bear Pond Road.	Vance, NC	Realign, grade separated road over rail and US1BUS	5,900	100'	6 residences	No	Low traffic volume No traffic volume change
Q-119,120	Edwards Road	Vance, NC	Extend road underpass, grade separated rail over road	3,000	300'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change Road going under the RR bridge
Q-120	NC 1552-Chavis Road	Vance, NC	Close crossing, realign grade separated over rail	3,200	400'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
Q-121	McClannahan	Vance, NC	Realign, grade separated road over rail	3,100	420'/100'	2 residences	No	Receptors too far from bridge Low traffic volume
Q-122,123	Oak Ridge Church Road	Vance, NC	Realign, grade separated rail over road	650	250'	0	No	Receptors too far from bridge Low traffic volume No traffic volume change Road going under the RR bridge

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
R-125	New Eric Medlin Road	Franklin, NC	Grade separated road over rail	1,100	200’	0	No	Receptors too far from bridge Low traffic volume No traffic volume change
S-127	New Winston-Main Street Connector	Franklin, NC	New underpass, grade separated rail over road	1,800	150’	0	No	Low traffic volume No traffic volume change Road going under the RR bridge
S-127,128	Green Street	Franklin, NC	Widen road, underpass, rail over road	1,900	100’	0	No	Low traffic volume No traffic volume change Road going under the RR bridge
S-128	NC 1125-Cedar Creek Road	Franklin, NC	Realign, grade separated road over rail	6,400	300’100’	2 residences	No	Receptors too far from bridge Low traffic volume
S-132	NC96	Franklin, NC	New alignment, grade separated road over rail	21,700	550’	0	No	Receptors too far from bridge
T-132	East Main Street/Holden Road	Franklin, NC	Grade separated road over rail	14,800	300’/60’	6 residences Youngsville Historic District	Yes	Receptors currently have sound levels above the criteria Mitigation not feasible, need to maintain direct driveway access
U-136	Holding Avenue	Wake, NC	Realign, underpass, grade separated rail over road	6,400	200’/100’	7 residences	No	Receptors too far from bridge Low traffic volume Road going under the RR bridge
U-137,138	NC 2052-Rogers Road	Wake, NC	Grade separated road over rail	19,900	650’	0	No	Receptors too far from bridge

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
U-138,139	NC 2044-Ligon Mill Road	Wake, NC	Realign grade separated road over rail	9,500	300'/70	7 residences	No	Receptors too far from bridge Low traffic volume Predicted dBA is 64, an increase of ~3 dBA.
U-142	NC 2006-Durant Road	Wake, NC	Realign, grade separated road over rail	19,800	300'	16 residences	No	Receptors too far from bridge No traffic volume change Proposed road is moved farther away, approximately twice the distance farther.
V-142,142	NC 2013-Gresham Lake Road	Wake, NC	Realign, grade separated road over rail	-	-	0	No	No receptors in vicinity Industrial/commercial retail land use (no applicable criteria)
V-145	Millbrook Road	Wake, NC	Underpass, grade separated rail over road	-	-	0	No	No receptors in vicinity. Industrial/commercial retail land use. (no applicable criteria)
V-46,147	New Hope Church Road	Wake, NC	Realign, grade separated road over rail	-	-	0	No	No receptors in vicinity Industrial/commercial retail land use (no applicable criteria)
V-147	Wolfpack Lane	Wake, NC	Close crossing, realign grade separated road over rail	-	-	0	No	No receptors in vicinity Industrial/commercial retail land use (no applicable criteria)

Table 4-16
Detailed Summary of Diverted Roadway Traffic Noise Impacts

Section-Map #	Road	City or County	Crossing Type	Build AADT*	Approximate Distance from Crossing/Local Access Road (where applicable)**	Number-type of receptors (within 60 dBA)	Possible Project Impact (66 dBA)	Rationale
V-148	Whitaker Mill Road	Wake, NC	Realign, grade separated road over rail	12,900	550’	0	No	Primarily Industrial /commercial retail land use (no applicable criteria) Receptors too far from bridge

* No AADT is listed when there are no applicable criteria that require analysis (e.g., all industrial or commercial land uses)
** If there is no local access road in the vicinity (i.e., there is only the rail crossing), the only distance provided is to the rail crossing.

4.7.1.3 OPERATION VIBRATION

FRA guidelines (FRA, 2012b) provide a calculation method for predicting vibration levels for a generalized assessment, but recommend field measurements for detailed analyses. Within the Project corridor, freight, intermodal, Amtrak, and high speed passenger trains will operate. This means that there are different vibration sources that need to be analyzed for vibration impact.

Currently, there are freight trains operating in the northern and southern portions of the Study Area. Field measurements of train passbys were taken at ten locations along the Study Area. At least one train passby was measured at each site. Measured results for the high speed passenger train were not taken because there are no high speed trains currently operating through the Study Area. The measured freight train values were compared to the generalized ground surface vibration curves presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment (FTA Manual).[1] The vibration levels listed in the FTA Manual are higher than the measured data. The vibration levels in the FTA Manual are also higher than those presented for high speed trains in the 2012 FRA guidelines (see Table 4-17). After reviewing the data, it was determined that the FTA generalized ground surface vibration curve for a typical freight train should be used for operation impact assessment between Petersburg, VA, and Raleigh, NC, since the improvements that will be provided as part of the Project will not only add high speed passenger trains, it will also allow for freight traffic where it currently does not exist. Between Richmond, VA, and Petersburg, VA, the FRA generalized curve should be used since freight traffic currently operates through this area.

Table 4-17
Comparison of Ground Vibration Impact Curves

Ground Vibration Estimation Techniques	Distance to Human Annoyance Vibration Impacts (in feet)	
	Residential	Commercial
Measured Freight Train Passby	60	40
FTA Generalized Curve for Freight Trains (1)	80	64
FRA Generalized Curve for High Speed Passenger Trains (2)	47	30

Notes:
(1) The selected distances used to determine impacts between Petersburg and Raleigh.
(2) The selected distances used to determine impacts between Richmond and Petersburg.

Based on the FTA generalized curve (FTA. 1995), annoyance vibration impacts (i.e., where vibration levels will be 80 VdB or higher) would occur at residences located 47 feet or closer to the proposed track between Richmond, VA, and Petersburg, VA, and 80 feet or closer to the proposed track between Petersburg, VA, and Raleigh, NC. For commercial and institutional uses, annoyance vibration impacts (i.e., where vibration levels will be 83 VdB or higher) would occur at structures located 30 feet or closer to the proposed track between Richmond, VA, and Petersburg, VA, and 64 feet or closer to the proposed track between Petersburg, VA, and Raleigh, NC. The annoyance impact criteria for residences and commercial/institutional property established by the FRA apply to vibrations inside building structures. Table 4-18 provides a summary of the number and type of vibration sensitive structures that will be potentially impacted by the Project.

[1] http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf

The building damage criteria of 0.50 inch per second would not be exceeded at any building along the corridor due to train passbys. Therefore, the Project is not expected to cause damage, due to vibration, to any buildings in the Study Area.

Throughout the Study Area, the vibration levels would be 5 to 10 VdB higher when there are crossovers, turnouts, jointed track, switches, or other special trackwork present. These conditions can cause annoying sustained and/or forced vibration levels called "transients" that are characterized by a repetitive sounding, "thump-thump…thump-thump" that one would experience during a train passby. Vibration mitigation may be required for the areas were these conditions exist.

Table 4-18
Summary of Vibration Impacted Areas

Section / Preferred Alternative	Number of Sensitive Structures Impacted by Land Use Type for the Preferred Alternative		
	Single Family	Multi Family	Commercial
AA / VA1	0	0	1
BB / VA1	1	0	1
CC / VA1	7	7	1
DD / VA3	0	0	0
A / VA2	0	0	0
B / VA1	1	0	1
C / VA1	5	0	5
D / VA4	2	0	0
E / VA1	9	0	0
F / VA1	0	0	0
G / VA3	0	0	0
H / VA1	4	0	1
I / VA1	15	0	9
J / VA2	5	0	0
K / VA1	1	0	0
L / VA1/NC1	6	0	1
M / NC1	25	0	5
N / NC1	5	0	1
O / NC3	3	0	0
P / NC1	30	0	44
Q / NC1	16	0	4
R / NC1	2	0	1
S / NC1	17	0	5
T / NC1	2	0	3
U / NC1	24	0	21
V / NC5	0	0	4
Total	180	7	108

4.7.1.4 CONCLUSION

The effects of the proposed action were evaluated based on the number and type of impacts. The following impacts were identified for the Project Preferred Alternative:

Rail Noise

Noise impacts are projected for the Preferred Alternative. The FRA Manual rail noise criteria are divided into moderate impact and severe impact categories.

Based on FRA criteria, the Preferred Alternative is predicted to have zero moderate impacts and zero severe impacts for Category 1 receptors (studios, concert halls, etc.); 618 moderate impacts and 64 severe impacts for Category 2 receptors (residences, hospitals, hotels, etc.), and; four moderate impacts and 0 severe impacts for Category 3 receptors (schools, libraries, churches, etc.).

Rail Vibration

Vibration impacts are projected for the Preferred Alternative. Unlike the rail noise criteria with its differentiation of moderate impact and severe impact, there is only an impact condition for the FRA vibration criteria; therefore, all vibration impacts for the Project are considered to be of the same level. Vibration effects will be noticeable, but are not anticipated to result in property damage.

Based on FRA Manual vibration criteria, the Preferred Alternative potentially impacts 180 single family homes, 7 multi-family homes and 108 commercial sites. Vibration annoyance from the existing freight trains occurs within 80 feet or less for residential sites and 64 feet for commercial sites. Vibration annoyance from the proposed high speed passenger train would occur within 47 feet for residential sites and 30 feet for commercial sites.

Highway Noise

The noise associated with diverted roadway traffic at proposed grade-separated intersections is expected to cause an exceedance of the FHWA criteria for an estimated 6 residences in the proposed Youngsville, NC, Historic District. However, these residential sites are currently assessed with sound levels above the FHWA criteria. Additionally, since a noise barrier would have to be placed between the homes and the road, mitigation would not be practical.

No impacts due to “substantial increase” criteria were predicted as a result of the diverted traffic.

Mitigation was not required at other locations because there were no predicted impacts. The “no-impact” determinations were made as a result of noise receptors that were either too far away or were in the vicinity of roads with low traffic volumes and/or had no traffic volume changes as a result of the Project.

4.7.2 CONSTRUCTION IMPACT ASSESSMENT

4.7.2.1 CONSTRUCTION NOISE

The predominant construction activities associated with the Project are expected to be earth removal, hauling, grading, and paving. Temporary and localized construction noise impacts may occur as a result of these activities (see Table 4-19). During daytime hours, the effects of these impacts may be temporary speech interference for passers-by and those individuals living, working, or attending school near the Project. During evening and nighttime hours, if applicable, steady-state construction noise emissions such as from paving operations may be audible, and may cause impacts to activities such as sleep. Sporadic evening and nighttime construction equipment noise emissions such as from backup alarms, lift gate closures (slamming of dump truck gates), etc., may be perceived as distinctly louder than the steady-state acoustic environment, and may cause greater impacts to the general peace and usage of noise-sensitive areas – particularly residences and hotels in the Study Area.

Extremely loud construction noise activities such as usage of pile-drivers and impact-hammers (jack hammer, hoe-ram) will provide sporadic and temporary construction noise impacts in the near vicinity of those activities. It is suggested that construction activities that will produce extremely loud noises be scheduled during times of the day when such noises will create as minimal disturbance as possible.

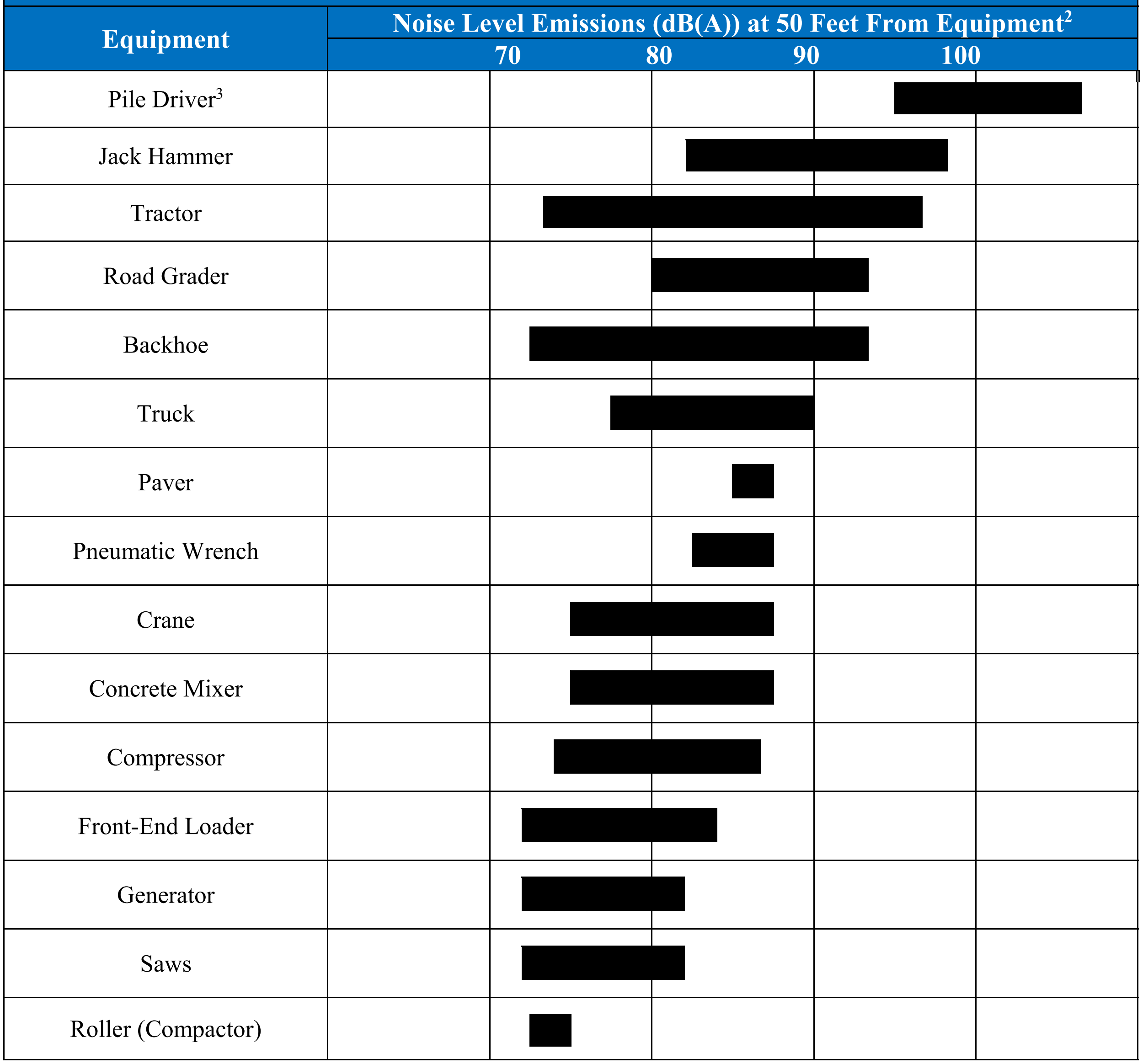
Generally, low-cost and easily implemented construction noise control measures should be incorporated into Project plans and specifications. These measures include, but are not limited to, work-hour limits, exhaust muffler requirements, haul-road locations, elimination of tail gate banging, ambient-sensitive backup alarms, construction noise complaint mechanisms, and consistent and transparent community communication.

While discrete construction noise level prediction is difficult for a particular receiver or group of receivers, it can be assessed in a general capacity with respect to distance from known or likely Project activities. Although construction noise impact mitigation should not place an undue burden upon the financial cost of the Project or the Project construction schedule, it is suggested that:

- Earth removal, grading, hauling, and paving activities in the vicinity of residences should be limited to weekday daytime hours.
- If meeting the Project schedule requires that earth removal, grading, hauling and/or paving must occur during evening, nighttime and/or weekend hours in the vicinity of residences, the contractor shall notify the appropriate state agency (Virginia DRPT and/or VDOT, or NCDOT) as soon as possible. In such instance(s), all reasonable attempts shall be made to notify and to make appropriate arrangements for the mitigation of the predicted construction noise impacts upon the affected property owners and/or residents.
- If construction noise activities must occur during context-sensitive hours in the vicinity of noise-sensitive areas, discrete construction noise abatement measures including, but not limited to portable noise barriers and/or other equipment-quieting devices shall be considered.
- Some construction activities may create extreme noise impacts for nearby noise-sensitive land uses. It is the recommendation of this analysis that considerations be made for any nearby residences for all evening and/or nighttime periods (7:00 p.m. – 7:00 a.m.), and for all weekend hours throughout which extremely loud construction activities might occur.

For additional information on construction noise, please refer to the FHWA Construction Noise Handbook (FHWA-HEP-06-015) and the Roadway Construction Noise Model (RCNM), available online at http://www.fhwa.dot.gov/environment/noise/cnstr_ns.htm.

Table 4-19
Construction Equipment typical Noise Level Emissions[1]



1. Adapted from Noise Construction Equipment and Operations, Building Equipment, and Home Appliances. USEPA. Washington D.C. 1971.
2. Cited noise level ranges are typical for the equipment cited. Noise energy dissipates as a function of distance between the source and the receptor. For example, if the noise level from a pile driver at a distance of 50 feet = 100 decibels (dB(A)), then at 400 feet, it might be 82 decibels (dB(A)) or less.
3. Due to project safety and potential construction noise concerns, pile driving activities are typically limited to daytime hours.

4.7.2.2 *CONSTRUCTION VIBRATION*

Vibration levels produced by construction equipment were obtained from FRA's *High Speed Ground Transportation Noise and Vibration Impact Assessment* (USDOT, 2012) (see Table 6-2) and from field measurements. Based on the typical vibration levels listed, calculations were performed to determine the distances at which vibration impacts would occur according to the criteria discussed in Section 3.2. Table 4-20 shows the results of those calculations. The distances shown in Table 4-21 are the maximum distances at which short-term construction vibration impacts may occur. Mitigation measures will need to be considered if construction equipment will operate near wood-framed buildings within the distances shown in Table 4-21.

Two types of construction vibration impact were analyzed: (1) human annoyance and (2) building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Fragile buildings such as historical structures are generally more susceptible to damage from ground vibration. Normal buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet based on typical construction equipment vibration levels. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The potential for vibration annoyance and building damage was analyzed for major vibration producing construction equipment that will be used on the Project.

Table 4-20
Vibration Source Levels for Construction Equipment

Equipment (projected use)	PPV 1 at 25 feet (in/sec)	Approximate Velocity Level 2 at 25 ft (VdB)
Large bulldozer	0.089	87
Loaded trucks	0.076	86
Vibratory compactor/roller	0.210	94

Source: USDOT, 2012
Notes:
1. Peak particle ground velocity measured at 25 feet unless noted otherwise
2. RMS ground velocity in decibel (VdB) referenced to 1 micro-inch/second

Table 4-21
Construction Equipment Vibration Impact Distances

	Distance to Vibration Annoyance Impact [1] feet	Distance to Vibration Building Damage [2] feet
Large bulldozer	43	15
Loaded trucks	40	13
Small bulldozer	<10	<10
Auger/drill rigs	45	<10
Vibratory hammer	130	25
Vibratory compactor/roller	73	26

Notes:
1. This is the distance at which the RMS velocity level is 80 VdB or less at the inside of the building structure. When propagating from the ground surface to the building structure foundation, there is a vibratory coupling loss of approximately 5 dB; however, this loss is offset by the building amplification in light-frame construction. Thus, no additional adjustments are applied.
2. This is the distance at which the peak particle velocity is 0.20 inch/sec or less.

4.7.3 MITIGATION

This section discusses the possible mitigation measures that can be implemented to either reduce or mitigate the impacts generated by the construction and operation of the Project.

4.7.3.1 *MITIGATION DURING CONSTRUCTION*

Noise and vibration impacts caused by construction activities are temporary. However, standard construction mitigation measures may be required to minimize these impacts. Construction activities conducted during daytime hours will have a lesser impact than nighttime construction. However, there may be locations where nighttime construction would be unobtrusive, such as commercial areas where the land use is unoccupied during nighttime hours, or industrial areas that are generally not sensitive to noise and vibration. Nighttime construction may be necessary to avoid unacceptable disruptions to current rail operations or street traffic during daytime hours. Once details of the construction activities become available, Virginia DRPT, NCDOT, and the contractor will work with local authorities to develop an acceptable approach to minimize interference with the business and residential communities, traffic disruptions, and the total duration of the construction.

There are a number of measures that can be taken to minimize intrusion without placing unreasonable constraints on the construction process or substantially increasing costs. These include noise and vibration monitoring to ensure that contractors take all reasonable steps to minimize impacts when near sensitive areas and that noise testing and inspection of equipment to ensure that all equipment on the site is in good condition and effectively muffled.

DRPT and NCDOT will determine appropriate noise mitigation control measures during the final design phase of the Project. The following are possible control measures that can be implemented in order to minimize noise and vibration disturbances at sensitive areas during construction:

- Use newer equipment with improved noise muffling and ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine vibration isolators intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding, etc.).
- Perform all construction in a manner to minimize noise and vibration. Utilize construction methods or equipment that will provide the lowest level of noise and ground vibration impact, e.g., avoid impact pile driving near residences and consider alternative methods that are also suitable for the soil condition. The contractor should be required to select construction processes and techniques that create the lowest noise levels.
- Perform independent noise and vibration monitoring to demonstrate compliance with the noise limits, especially in particularly sensitive areas. Require contractors to modify and/or reschedule their construction activities if monitoring determines that maximum limits are exceeded at residential land uses.
- Conduct truck loading, unloading and hauling operations so that noise and vibration are kept to a minimum by carefully selecting routes to avoid going through residential neighborhoods to the greatest extent possible.
- Construction lay-down or staging areas should be selected in industrially zoned districts. If industrially zoned areas are not available, commercially zoned areas may be used, or locations that are at least 100 feet from any noise sensitive land use such as residences, hotels and motels. Ingress and egress to and from the staging areas should be on collector streets or greater (higher street designations are preferred).
- Turn off idling equipment.
- Minimize construction activities during evening, nighttime, weekend, and holiday periods. Permits may be required in some cities before construction can be performed in noise sensitive areas between 7:00 p.m. and 7:00 a.m.
- The construction contractor should be required by contract specification to comply with all local noise and vibration ordinances and obtain all necessary permits and variances.

It is expected that ground-borne vibration from construction activities would cause only intermittent localized intrusion along the rail corridor. Processes such as earth moving with bulldozers, the use of vibratory compaction rollers, and the operation of vibratory pile drivers can create annoying vibration. There are cases where it may be necessary to use this type of equipment in close proximity to residential buildings. DRPT and NCDOT will determine if mitigation measures are needed during the final design phase of the Project. Following are some procedures that can be used to minimize the potential for annoyance or damage from construction vibration:

- When possible, limit the use of construction equipment that creates high vibration levels, such as vibratory rollers and hammers, operating within 130 feet of building structures.
- Require vibration monitoring during vibration-intensive activities.
- Restrict the hours of vibration-intensive equipment or activities such as vibratory rollers so that impacts to residents are minimal (e.g., weekdays during daytime hours only when as many residents as possible are away from home).

A combination of the mitigation techniques for equipment noise and vibration control as well as administrative measures, when properly implemented, can be selected to provide the most effective means to minimize the effects of construction activity impacts. Application of the mitigation measures will reduce the construction impacts; however, temporary increases in noise and vibration would likely occur at some locations. DRPT and NCDOT will determine if mitigation measures are needed during the final design phase of the Project.

4.7.3.2 *MITIGATION DURING OPERATION*

The Richmond to Raleigh Project would provide a completely new, fully road/rail grade separated Class 6 railroad (speeds up to 110 mph) to allow high speed passenger and intermodal freight movement, as well as providing opportunities for conventional passenger service (i.e., same speeds and equipment, but more stopping locations), commuter passenger service, and standard freight service. Because of the potential for increased freight usage, the potential effects of this increase are discussed in this section.

Train Noise Mitigation. The noise results and recommendations for the Tier II FEIS are preliminary, as final mitigation requirements will be development based on final designs. DRPT and NCDOT will conduct a detailed noise analysis during the development of final designs. This analysis will reassess the potential impact of new intermodal and freight train service between Petersburg, VA, and Raleigh, NC; refer to Section 1.4 for Project assumptions regarding the number of passenger and freight trains that will operate in the corridor. As part of the analysis summarized in this document (with the results presented in Table 4-14 Summary Total of Rail Noise Impacts), it has been assumed that new freight and intermodal train traffic will occur south of Petersburg, VA, as a result of the Project. This projected freight and intermodal train traffic dominates the Project noise impact exposure. If only the new HSR trains were included in the Project noise impact exposure (as was modeled north of Petersburg, VA), the number of projected noise impacts would be reduced substantially. Therefore, the detailed noise assessment undertaken during development of final design for the Project will use any updated information on estimated freight operations.

Additionally, the train noise impact results previously shown in Table 4-14 represent a fairly conservative estimate in terms of the number of projected impacts because maximum operating speed was assumed throughout the corridor. During the design phase of the Project, when more detailed analysis will be conducted, operating speeds through applicable impacted areas will be evaluated further prior to DRPT and NCDOT making a final determination on mitigation.

During the final design study, the following mitigation measures should be considered and applied as appropriate per Federal and state regulations:

- **Wheel Treatments** – A major source from steel-on-steel high speed train systems is the wheel-rail interaction. Various wheel designs and other mitigation measures to reduce the wheel noise include: resilient or damped wheels, spin-slide control systems, and maintenance.
- **Rail Treatments** – Rail surfaces that are degraded over time due to wear generate noise levels that are significantly higher than those produced by a well-maintained system. Roughness of rail surfaces can be eliminated by grinding rails.
- **Vehicle Treatments** – Mechanical systems associated with rail cars themselves can be a source of noise. For example, fans necessary to ventilate the interior of cars can be a major noise source, especially when the cars are stopped, such as in a station and/or farther from the engines. Fan quieting, if required, can be accomplished by installation of one of several new designs of quiet, efficient fans. The vehicle body design itself can also provide shielding and absorption of noise generated by the vehicle components.
- **Building Insulation** – In cases where rights-of-way are restricted, the only practical noise mitigation measure may be to provide sound insulation for the building. The most effective treatments are to caulk and seal gaps in the building and to install windows that are specially designed to meet acoustical transmission-loss requirements.
- **Noise Barriers** – Noise reduction can be achieved by using noise barrier walls in areas along the corridor where significant train noise impacts have been identified. If the noise barrier walls are implemented prior to Project construction, the walls could then also serve as an effective means of mitigating construction noise impacts as well. The cost-effectiveness and optimum height of the walls would need to be determined by specific acoustical analysis for each area of impact identified. An important consideration in determining areas where noise mitigation might be appropriate is whether the railroad and any adjacent residential developments may have coexisted for many years. Some land uses may be less sensitive to train noise because of its established, long history in the communities, and because of the services the rail operation provides to the communities. The USEPA (1974) has indicated that these considerations would likely reduce community reactions to noise. Before implementation of a mitigation measure such as noise barrier walls, the FRA guidelines recommend that the agreement of the community should be obtained. Some communities would rather not have a wall because of adverse visual effects. For preliminary estimate purposes, an average noise barrier height of 8 feet is an assumed cost-effective height for high-speed rail noise impact. (16 feet if there are higher noise sources (such as propulsion units) or for protecting higher floors of residences, if desired.) The barrier length needs to extend long enough to shield the entire train length for an angle of at least 60 degrees in either direction from the impacted receptor. Unit costs are assumed to be $20 per square foot. Maximum costs (or square footage) per benefited unit are determined by the project sponsor or the sponsor can apply the respective State DOT criteria. Barrier effectiveness is achieved with an attenuation of 5 dBA for an 8-foot-high barrier and 8 dBA for a 16-foot-high barrier.

Both Virginia and North Carolina have traffic noise abatement policies that address impacts related to highway noise. While impacts associated with Project will be a result of rail activity, review of these abatement policies is useful in understanding how noise abatement is evaluated to determine if it will be cost-effective. Table 4-22 provides a summary of the noise abatement policies of the respective states.

Table 4-22
Summary of Highway Noise Abatement Policies*

Noise Abatement Criteria	Virginia	North Carolina
Feasibility	(1) At least a 5 dB(A) highway traffic noise reduction at impacted receptors. VDOT requires that fifty percent (50%) or more of the impacted receptors experience 5 dB(A) or more of insertion loss (the reduction of traffic noise levels that directly results from installation of a noise reduction measure) to be feasible; and; (2) The determination that it is possible to design and construct the noise abatement measure. The factors related to the design and construction include: safety, barrier height, topography, drainage, utilities, and maintenance of the abatement measure, maintenance access to adjacent properties, and general access to adjacent properties	(a) Any receptor that receives a minimum noise level reduction of five dB(A) due to noise abatement measures shall be considered a benefited receptor. Noise reduction of five dB(A) must be achieved for at least one impacted receptor. (b) Engineering feasibility of the noise abatement measure(s) shall consider adverse impacts created by or upon property access, drainage, topography, utilities, safety, and maintenance requirements.
Reasonableness	(1) Cost-Benefit Factors • Surface Area (Total square foot) of the proposed noise barrier. (ft^2) • Total number of benefited receptors. • Surface Area per benefited receptor unit (ft^2/BR) less than or equal to the maximum square feet per benefited receptor (MaxSF/BR) value of 1600 • Must provide a decibel reduction of at least 7 decibels (dB(A)) for at least one impacted receptor in the design year (2) Community Desires Related to the Barrier • Do at least 50 percent of the benefited receptor unit owner(s) and renters desire the noise barrier?	The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure. (a) Viewpoints of the property owners and residents of all benefited receptors shall be solicited. (b) The maximum allowable base quantity of noise walls and/or earthen berms per benefited receptor shall not exceed 2,500 ft2 and 7,000 yd3, respectively. (c) A noise reduction design goal of at least 7 dB(A) must be evaluated for all front row receptors. At least one benefited front row receptor must achieve the noise reduction design goal of 7 dB(A).

*As taken from the respective VDOT and NCDOT highway traffic noise policy guidance manuals.

Train Vibration Mitigation. The Tier II FEIS vibration results and recommendations are preliminary. DRPT and NCDOT will develop a more detailed vibration analysis during the final design phase of the Project, to determine:

- The soil characteristics and the efficiency at which the vibration propagates through the ground at various locations along the alignment,
- The most appropriate method of vibration mitigation, and
- The extent where mitigation would be required at specific locations.

In order to ensure that vibration is reduced to an acceptable level, FRA has established the following mitigation measures to be considered and applied according to the results of the final design study:

- **Maintenance** – Wheel and rail surfaces that are degraded over time due to wear generate vibration levels that are significantly higher than those produced by a well-maintained system. However, these conditions are not uncommon on rail systems. Up to 20 VdB of vibration reduction can be gained when comparing new or well-maintained rail systems to older systems showing wear. The following measures would help to minimize vibration impacts if done regularly:

1. Rail grinding on a regular basis, especially on rails that tend to develop corrugations.
2. Wheel truing to re-contour the wheel and remove wheel flats. This can result in a dramatic vibration reduction. However, significant improvements can be gained from simply smoothing the running surface. Install wheel-flat detector systems to identify vehicles that are most in need of wheel truing.
3. Implement vehicle reconditioning programs, particularly with components such as suspension systems, brakes, wheels, and slip-slide detectors.

- **Relocation of Special Trackwork** – Crossovers, turnouts, and other special trackwork that cause an irregular rail surface should be considered for relocation to less vibration sensitive areas when feasible. The use of special "spring-loaded rail frogs" should be considered at turnouts and crossovers that cannot be relocated away from residential and commercial structures. The special frogs incorporate mechanisms that close the gaps between running rails. Frogs with spring-loaded mechanisms and frogs with movable points can significantly reduce vibration levels near crossovers.
- **Ballast Mats** – Ballast mats are rubber or another type of elastomer pads that are placed under the ballast. The mat must be placed on a concrete pad to be effective. They will not be effective if placed on the soil or the sub-ballast. Ballast mats can provide up to 10 to 15 VdB of reduction at frequencies above 35 to 40 hertz, but are generally ineffective at frequencies below 35 hertz.
- **Resiliently Supported Ties** – This is a system that consists of concrete ties supported by rubber pads. The rails are fastened directly to concrete ties using standard rail clips. This measure can provide a 10 VdB reduction at frequencies in the 15 to 40 hertz range.
- **High Resilience Fasteners** – These are used in conjunction with a concrete slab base. The fastener must be very compliant (resilient) in the vertical direction. If standard resilient fasteners are used (vertical stiffness of 200,000-lbs/inch; stiffness refers to the compressibility of the resilient material), little or no improvement in the vibration level would be achieved. Special soft fasteners with a vertical stiffness in the 30,000-lbs/inch range would reduce vibration levels as much as 5 to 10 VdB at frequencies above 30 to 40 Hz.
- **Floating Slab Trackbed** – This type of trackbed consists of a concrete base with 5-foot long floating concrete slabs supported above the base using resilient isolation elements such as rubber or similar elastomeric pads. The effectiveness of this method depends on the resonant frequency of the resilient pads and the mass of the concrete slab. These have been shown to be very effective at frequencies in the 5 to 20 hertz range. However, this method is very expensive and would normally be considered only in areas where irregular surfaces exist.

4.8 ENERGY

Overall, there is a positive impact on energy use from the Project. This improvement is due to a reduction in energy per passenger mile traveled within the corridor between Washington, DC, and Charlotte, NC. Generally speaking, rail is more energy efficient than both automobile and air travel; in fact, rail travel is one of the most energy efficient forms of transportation due to the low rolling resistance of steel wheels on steel rail.

The Tier II DEIS showed that the mileage differences between alternatives within each section of the Project between Richmond, VA, and Raleigh, NC, was relatively small. The discussion in Section 4.8

of the Tier II DEIS noted that because the difference in length between alternatives was so small, the difference in impact related to energy would be negligible. Table 4-22 of the Tier II DEIS showed that the shortest possible combination of alternatives for the 26 sections of the Project, would total 157.95 miles, and the longest possible combination of alternatives would total 159.90 miles. The total length of the Preferred Alternative (as described in Chapter 2) is 158.92 miles.

The Tier I EIS for the SEHSR Corridor between Washington, DC, and Charlotte, NC, estimated a net energy fuel reduction value for the implementation of the SEHSR Corridor compared to a no build alternative. This energy savings was based on projected ridership, and continues to be supported by results of the recently updated ridership and revenue model described in Chapter 1.

It should be noted that non-recoverable energy will be consumed during construction of the Project on a short term basis. This consumption will be related to construction activities as well as potential construction-related delays for freight and passenger trains in the areas with existing service. Best Management Practices (BMP) will be followed during construction which may include measures to minimize energy use such as:

- Use of energy-efficient equipment
- Restrictions on unnecessary idling of construction equipment
- Proper maintenance of equipment and machinery to meet original standards
- Consolidation of material delivery when possible, and use of local materials where possible.

4.9 VISUAL ENVIRONMENT

The following discussion of impacts to the visual environment provides a summary of the information presented in the Tier II DEIS and new analyses for areas where the Preferred Alternative was re-designed and not addressed in the Tier II DEIS analysis.

The regional landscape establishes the general visual environment of a Study Area (USDOT, 1981). Regional landscape is defined by the area's landform (topography) and land cover, including vegetation, water, and manmade development. Overall, the visual environment of the Project Study Area ranges from undeveloped natural areas to large expanses of agricultural areas and small towns to large-scale industrial development and vibrant urban districts. Section 3.9 identifies the existing visual elements of the Study Area, which have not changed substantively since publication of the Tier II DEIS.

4.9.1 OVERVIEW OF VISUAL IMPACTS OF THE PROJECT

FRA's Procedures for Considering Environmental Impacts states that an EIS should identify any significant changes likely to occur in the natural landscape and in the developed environment (64 FR 28545, May 26, 1999). The visual elements of the proposed Project include single or multiple sets of tracks, the supporting rock ballast, vegetated ROW, trains, and associated grade-separated bridge and road crossings. The actual configuration of the tracks often would be unnoticeable by the train passenger or bystander. A rail corridor is most visible when trains pass and or when one train is waiting on a siding for another train to pass. Passing siding improvements allow trains to pass more quickly through the view of the onlooker. The Project has been designed to include either double tracks or passing sidings (about five miles long, located approximately every ten miles between ends). A number of bridges will have to be constructed, reconstructed, or modified. Most bridges will be built adjacent to the existing bridge structure or the existing structure will be modified to accommodate the proposed Project.

The incremental addition of HSR service where passenger rail service and/or freight rail service is currently active will not substantially alter the visual setting, character, or experience for those adjacent to the rail line because they are already exposed to trains passing through. Thus, the overall degree of change in the visual environment where rail service currently exists will be low. Maximizing the use of existing rail ROW further minimizes visual impacts.

In locations where rail service is not currently active (from the Burgess Connector in Dinwiddie County, VA, southward to Norlina in Warren County, NC), the physical components of the rail line itself (e.g., railroad tracks) will introduce a change to the existing visual environment. In some instances, the tracks have been removed and small portions of ROW sold for driveway access. Communities without active rail lines include the Dinwiddie, VA, Courthouse area, McKenney, VA, Alberta, VA, and La Crosse, VA, and Norlina, NC. Although each of these towns developed along the railroad and had active rail service until the 1980s, the return of rail operations in a community could serve as a visual intrusion, albeit a short and periodic one. Some individuals and communities adjacent to the new rail service may never get used to the sight of trains adjacent to their property and may perceive this as a negative impact on their quality of life. However, others may view the visual changes as a sign of progress and economic opportunity. Outside of the urbanized areas, dense stands of forest and agricultural operations dominate the landscape. The existing wooded areas would provide a visual barrier for those living in rural areas.

Throughout the Study Area along the rail alignment, landscaping will be consistent with what currently exists. Along road work, landscaping will be addressed during final design using VDOT or NCDOT standards/procedures. Details for landscaping in historic districts may be specified under the Section 106 Memorandum of Agreement (MOA), which is being developed with input from property owners and other consulting parties. Refer to Section 4.12 for additional discussion regarding mitigation for visual impacts relative to Section 106 historic resources.

Impacts to visual resources will also result from construction activities. Construction of physical improvements may cause some temporary degradation of visual quality. Construction BMPs often include use of silt fencing or construction barriers, which would have a temporary visual presence.

Section 4.9 of the Tier II DEIS provided an analysis of the area-specific and resource-specific visual impacts within each section of the Project for each of the alternatives presented in the Tier II DEIS. The methodology for that analysis focused on potential visual changes to cities, towns, communities, and scenic or visually sensitive resources along the Project corridor. Potential changes to the visual environment were described and ranked as either low, moderate, or high depending on the degree of visual change. Visual Impact Ratings are defined below.

- Low Visual Impacts: If rail or roadway features of the alignment are consistent with the existing line, form, texture, and color of other elements in the landscape and do not stand out.
- Moderate Visual Impacts: If rail or roadway features of the alignment are obvious but do not dominate the landscape or detract from existing visual features.
- High Visual Impacts: If the rail or roadway features of the alignment are obvious, thereby dominating the landscape and detracting from the existing landscape characteristics or scenic qualities.

The visual impacts of the Preferred Alternative are summarized by section in Table 4-23. As discussed in Section 4.9 of the Tier II DEIS, there was no difference between alternatives in terms of visual impacts, except in Project Section R (Franklin County, NC), and Project section V (Wake County, NC). Subsequent to the Tier II DEIS, a revision was made to the Preferred Alternative in Section R that results in a reduction of the visual impacts described in the Tier II DEIS, and an entirely new rail alignment was developed and selected as the Preferred Alternative in Section V; in addition, a new rail alignment was developed and selected as the Preferred Alternative in Section D (Brunswick County, VA). An analysis of the visual impacts for the Preferred Alternative in these three sections is provided below.

4.9.2 SECTIONS WITH NEW ANALYSES

4.9.2.1 SECTION D, BRUNSWICK COUNTY, VIRGINIA

Section D is located in northern Brunswick County, VA, where the visual setting is dominated by forested, agricultural, and rural residential uses. As described in Chapter 2, the Preferred Alternative (VA4) was developed subsequent to the Tier II DEIS, and follows an alignment on new location, predominantly east of the existing rail ROW, where the tracks have been removed. The Preferred Alternative will require construction of three new grade-separated crossings and the closure of one public at-grade crossing. Under the Preferred Alternative, new HSR service and road/rail features will be obvious elements on the landscape. However, the overall visual impacts will be low because dense forest cover dominants the landscape, and views of the new rail will be screened from view throughout the most of the section.

4.9.2.2 SECTION S, FRANKLIN COUNTY, NC

Section S is located in the northern portion of Franklin County, NC, where CSX operates freight service along the existing CSX S-Line railroad. South of the Tar River, the Preferred Alternative (NC1) shifts from existing rail ROW to new location east the existing railroad in order to flatten a curve, and then rejoins the existing rail ROW near Misty Way. The Preferred Alternative calls for one public road to be closed at the new rail alignment, and one bridge over the new rail alignment to be constructed.

The surrounding visual setting is dominated by agricultural and forest uses with homes sparsely dotting the landscape. The exception to this is the residential community located to the east of the rail line along Cornerstone Drive, which is buffered from the existing rail line (approximately 900 feet to the west) by vegetation and terrain.

The residential development along Cornerstone Drive was constructed after alternatives had been developed for the Tier II DEIS. The Alternative NC1 alignment shown in the Tier II DEIS crossed through the vegetated buffer behind the new neighborhood and through several residential properties, which would have resulted in a high visual impact to the community. Alternative NC1 was selected as the Preferred Alternative in this section. However, as described in Chapter 2 of this document, subsequent to the Tier II DEIS, the rail alignment for NC1 was revised to avoid impacting the new residential development. The revised alignment still flattens the curve of the existing rail, but a westward shift away from the residential properties retains the existing terrain and vegetated buffer behind the neighborhood, resulting in a low visual impact for the neighborhood.

Because the Preferred Alternative follows the active railroad ROW throughout the remainder of this section, it will not present an obvious visual intrusion; therefore, the visual impact will be low.

4.9.2.3 SECTION V, WAKE COUNTY, NC

Section V contains the southern terminus of the Project, and is located within Wake County, a rapidly suburbanizing county where the visual landscape is becoming dominated by residential, commercial, and industrial development. Large tracts of forested and agricultural lands are interspersed throughout the county, but are not the dominant landscape features.

As described in Chapter 2, the Preferred Alternative (NC5) was developed for Section V subsequent to the Tier II DEIS, and predominantly follows existing freight rail ROW. Nine new bridges or underpasses and one pedestrian bridge will be constructed, fourteen existing grade separated crossings will be maintained or replaced, and two public crossings will be closed. Much of the northern portions of this section are heavily wooded; however, the dominant landscape features vary from suburban residential and commercial to industrial to forested to dense urban mixed-use development. From Gresham Lake Road to Whittaker Mill Road, the Preferred Alternative remains primarily within the existing rail ROW. Thus, the visual impact will remain low because freight rail is currently active on the tracks and the rail ROW and the adjacent land is heavily wooded.

The roadway improvements proposed for Gresham Lake Road will have a low visual impact given that the adjacent landscape is either heavily wooded or high density commercial/industrial. Similarly, the roadway improvements associated with new bridges over the rail at East Millbrook Road, New Hope Church Road, Wolfpack Lane and Whitaker Mill Road will be obvious, but not inconsistent with the existing urban commercial setting.

The Middle Crabtree Creek Greenway is a visually sensitive resource located just south of the I-440 Beltline. The Project will introduce new HSR service essentially within existing freight ROW. Under the Preferred Alternative, a new bridge will be constructed adjacent to the existing single-track bridge that spans the Middle Crabtree Creek Greenway, Crabtree Creek, and Hodges Street. The new adjacent, parallel bridge will not substantially alter the existing landscape and setting for individuals using the Middle Crabtree Creek Greenway. Therefore, the Preferred Alternative will result in a low degree of visual change.

South of Whitaker Mill Road to the CSX Capital Yard, the Preferred Alternative maximizes use of the existing, active CSX S-Line while incorporating a new HSR bridge parallel to the existing CSX bridge to cross over both the CNLA short line railroad and Capital Boulevard, before entering the west side of CSX Capital Yard. Because the alignment remains within or immediately adjacent to existing rail ROW, and because the existing rail line is active, the introduction of HSR will not create a visually intrusive feature nor will it be inconsistent with the historic Mordecai neighborhood, the historic Pilot Mill buildings, or the new urbanist Pilot Mill Village. Therefore, the Preferred Alternative will result in a low degree of visual change in this area.

Just south of the Wade Avenue/Capital Boulevard interchange, the Preferred Alternative branches west out of Capital Yard to cross back over Capital Boulevard and West Street on a new HSR bridge in a new location. The surrounding area is that of a commercial urban setting, which is not inconsistent with rail. However, because the bridge represents an entirely new structure, it will bring a moderate visual change to this location.

The Preferred Alternative then follows the active Norfolk Southern NS-Line southward within new, adjacent ROW, utilizing new parallel bridges to cross over Peace Street, West Johnson Street, Tucker Street, and West North Street. Because the alignment remains adjacent to the existing ROW, and because the existing rail line is active, the introduction of HSR service along this alignment will not be an obvious visual intrusion nor will it be visually inconsistent with the surrounding development patterns.

At Jones Street, the existing at-grade crossing will be closed and a pedestrian bridge will be constructed. While not inconsistent with the existing urban setting that is transitioning toward entertainment and office uses, the new structure will be obvious, and will have a moderate to high level of visual impact. Because of the close proximity to historic properties (the Carolina Power and Light Company Car Barn and Automobile Garage, and the Raleigh Electric Company Power House) the appearance of the bridge will be a condition of the MOA being developed as part of coordination under Section 106 of the NHPA. Refer to Section 4.12 for additional discussion.

At the approach to the Boylan Wye and the terminus of the Project, the immediate view to the east is of older brick buildings within the Warehouse District (another industrial area transitioning towards entertainment and office uses) with the Raleigh, NC, skyline in the background. The view to the south is of the current Amtrak station with the Boylan Heights Historic District on the hill behind. The view to the west is of an older neighborhood, the Boylan Avenue bridge and both NS and NCRR rail corridors. Because this is an active freight rail area and the alignment is primarily within existing rail ROW, the visual impact will be low.

Table 4-23
Visual Impacts (Low, Moderate, High)

Section	VA Communities	Impacts
AA	Richmond, Chesterfield County, VA	Low to Moderate
BB	Chesterfield County, Centralia, Chester, VA	Low to Moderate
CC	Colonial Heights, Ettrick, Petersburg, VA	Low
DD	Dinwiddie County, VA	Low to Moderate
A	Dinwiddie County, VA	Low to Moderate
B	Dinwiddie County, Dinwiddie Courthouse, VA	Low to Moderate
C	Dinwiddie County, McKenney, VA	Moderate
D	Brunswick County, VA	Low
E	Brunswick County, Alberta, VA	Low to Moderate
F	Brunswick County, VA	Low
G	Brunswick County, VA	Low
H	Brunswick County, Mecklenburg County, VA	Low to Moderate
I	Mecklenburg County, La Crosse, VA	Low to Moderate to High
J	Mecklenburg County, VA	Low to Moderate
K	Mecklenburg County, VA	Low to Moderate
L (VA)	Mecklenburg County, VA, Lake Gaston area	Low to Moderate
Section	**NC Communities**	**Impacts**
L (NC)	Warren County, NC	Moderate to High
M	Warren County, Norlina, NC	Low to Moderate to High
N	Warren County, NC	Low to Moderate
O	Vance County, Middleburg, NC	Low to Moderate
P	Vance County, Henderson, NC	Low to Moderate
Q	Vance County, Kittrell, NC	Low to Moderate to High
R	Franklin County, NC	Low
S	Franklin County, Franklinton, NC	Low
T	Franklin County, Youngsville, NC	Low to Moderate
U	Wake County, Wake Forest, Raleigh, NC	Low to Moderate to High
V	Wake County, Raleigh, NC	Low to Moderate to High

4.10 BIOLOGICAL RESOURCES

Proposed Project impacts to the natural terrestrial communities occurring within the preferred alternative are described in the following sections (aquatic community impacts are summarized in Sections 4.1 and 4.2). Impact minimization, threatened and endangered species, and bald eagles are also addressed.

4.10.1 NATURAL COMMUNITIES

Project construction will have various impacts to the terrestrial and aquatic communities described in Section 3.10.1. Construction activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies potential impacts to the natural communities within the Study Area in terms of the area impacted and the plants and animals affected.

Temporary and permanent impacts are considered here along with recommendations to minimize or eliminate impacts.

4.10.1.1 *TERRESTRIAL COMMUNITY IMPACTS*

Clearing and paving for Project construction, and loss of terrestrial community area will potentially cause permanent impacts to terrestrial communities in the Study Area. Destruction of natural communities within the Study Area will potentially result in the loss of foraging and breeding habitats for the various animal species that utilize the area. Animal species will potentially be displaced into surrounding communities. Adult birds, mammals, and some reptiles are mobile enough to avoid mortality during construction. Young animals and less mobile species may suffer direct loss during construction.

Potential Project impacts (in acres) to the various different land cover types classified by the Southeast Gap Analysis for Virginia and North Carolina are summarized by Project section for each alternative in Appendix N. Appropriate land cover types were combined into “Mixed Forest,” “Pine Forest,” and “Maintained/Disturbed” to summarize the impacts in Table 4-24. Project impacts were calculated by determination of the acreage of applicable forested community types from the Southeast GAP data (BaSIC, 2008) within 25 feet of the slope-stake line. Impacts to “Maintained/disturbed” communities, though not “natural”, are included for reference.

Table 4-24 Potential Project Impacts to Natural Communities (acres)					
Section	**Mixed Forest**	**Pine Forest**	**Forest Subtotal**	**Maintained/ Disturbed**	**Total**
AA	34.09	8.48	**42.57**	181.26	**223.83**
BB	53.90	0.26	**54.16**	96.18	**150.34**
CC	40.24	4.81	**45.05**	127.85	**172.90**
DD	51.67	10.74	**62.41**	49.17	**111.58**
A	42.41	21.79	**64.20**	42.46	**106.66**
B	48.18	33.27	**81.45**	22.43	**103.88**
C	87.78	67.27	**155.05**	63.67	**218.72**
D	45.82	55.89	**101.71**	39.17	**140.88**
E	33.85	18.16	**52.01**	40.31	**92.32**
F	35.94	31.08	**67.02**	33.90	**100.92**
G	25.89	17.67	**43.56**	18.45	**62.01**
H	82.37	28.27	**110.64**	47.88	**158.52**
I	22.02	13.51	**35.53**	67.60	**103.13**
J	38.13	24.93	**63.06**	40.06	**103.12**
K	40.38	38.83	**79.21**	10.03	**89.24**
L (VA)	11.27	12.80	**24.07**	16.83	**40.90**
VA Subtotal	**693.94**	**387.76**	**1,081.7**	**897.25**	**1,978.95**
L (NC)	40.67	23.72	**64.39**	51.50	**115.89**
M	25.79	14.71	**40.50**	128.95	**169.45**
N	22.14	21.29	**43.43**	47.16	**90.59**
O	27.15	19.07	**46.22**	93.00	**139.22**
P	9.98	2.88	**12.86**	171.40	**184.26**
Q	38.04	11.18	**49.22**	100.03	**149.25**
R	8.18	21.27	**29.45**	14.91	**44.36**
S	54.68	37.51	**92.19**	57.99	**150.18**
T	6.91	18.74	**25.65**	37.35	**63.00**
U	40.69	31.25	**71.94**	92.89	**164.83**
V	10.63	6.42	**17.05**	162.62	**179.67**
NC Subtotal	**284.86**	**208.04**	**492.90**	**957.80**	**1,450.70**
Total:	**978.80**	**595.80**	**1,574.60**	**1,855.05**	**3,429.65**

The Project has minimized impacts to natural terrestrial communities by selecting to the maximum extent practicable, alternatives having the lowest impacts to jurisdictional wetlands, streams, and other waters, which generally coincide with the remnant forested habitats for each section. Plant and animal communities are also threatened by habitat fragmentation which can increase the risk of predation or the displacement of native species by invasive, exotic species.

Loss of habitat, mortality due to collisions, barrier effect, and reduction in habitat quality are the main impacts of habitat fragmentation by railroads. On a local scale, trains may affect wildlife habitats through the introduction of exotic plant species (e.g. seeds), emission of toxic contaminants like heavy metals, or management (e.g. herbicides) (Wild Earth Guardians, 2014). Potential habitat fragmentation may occur in Section D, where the Preferred Alternative is on new location, bisecting existing forested tracts. Of concern in Section D is the potential constraining of the Michaux's sumac (Table 4-25) population and its ability to expand to the potential habitat on the other side of the rail line. However, the proposed location is over 80 feet from the sumac population and does not present an immediate barrier to expansion due to the extensive suitable habitat to the north and the south. To further minimize potential impacts here, herbicide application will be restricted in this vicinity.

Species requiring large, unbroken tracts of forest, offering deep interior forest conditions to carry out some portion of their life cycle may be impacted in Project sections on new location and to a lesser degree on existing inactive rail line. Review of 2010 aerial photography from Collier Yard, south of Petersburg, VA to the beginning of Section N, south of Norlina, NC (the only Project locations involving currently inactive rail line and/or new location within non-urban settings), revealed the following potential for habitat fragmentation and/or impacts to wildlife and riparian corridors. Potential impacts to forest interior-dependent species are also considered.

There are 27 areas in the Study Area where potentially natural habitat (mixed forest natural community exceeding 200 acres) is traversed by approximately 22.5 miles of existing inactive or proposed new rail corridor. Of these locations, 15 include existing inactive rail corridor where there is a berm with no ballast, ties, or rails; berm with ballast only; or berm with ballast and ties. New railroad is proposed at 16 of the 27 locations (4 of the locations include a combination of existing and new rail corridor). Where inactive rail corridor exists, the adjacent potential habitat is already fragmented by this variably maintained interruption and riparian corridors have been affected by culverts and, to a lesser extent, bridges. Habitat edge zones and wildlife travel, however, may be newly disturbed by reintroduction of train travel at these 15 locations. Re-activating the railway would increase collision mortality and toxic contaminants at these locations along approximately 11.2 miles of existing currently inactive railroad corridor through contiguous mixed forested areas.

The Preferred Alternative is located up to 5,000 feet from the existing rail corridor (but average maximum distance is about 1,500 feet) at 16 new locations through contiguous mixed forested habitat. Depending on the distance from existing natural community edges, there is variable potential for habitat fragmentation at each of these sites. Minimal impacts are anticipated due to the combination of stream-bridging, proximity to existing habitat barriers, and the size, orientation, and quality of the mixed forested communities. Approximately 2.15 miles of the 11.26-mile Preferred Alternative on new location within mixed forested community would be over 500 feet from the nearest existing potential habitat edge. Within these areas (at 8 locations) the 3 locations in North Carolina present the most significant potential for habitat fragmentation and/or impacts to wildlife and riparian corridors or forest interior-dependent species. In Sections L and M, location of the over 8,000 feet of Preferred Alternative up to 2000 feet west of the existing rail corridor would result in direct impacts to over 18 acres of mixed forest community within contiguous tracts over 50 acres in size, including over 1,000 linear feet of direct stream impacts. Avoidance and minimization of these areas is summarized in Section 2.2 but potential adverse effects to Section 4(f) resources necessitated the additional habitat (and stream) impacts.

As discussed above, the avoidance and minimization of environmental impacts, including forested areas, has been maximized throughout Project planning and design after consideration of variably competing priorities such that impacts of the Preferred Alternative to potential riparian and/or forest-interior habitat through fragmentation, are unavoidable.

4.10.1.2 *AQUATIC COMMUNITY IMPACTS*

Aquatic habitat in the Study Area will be both directly and indirectly affected by the construction of the Project. Direct impacts will include the destruction of habitat by the placement and re-placement of culverts at stream crossings and clearing and filling of adjacent floodplain and wetlands (see Tables 4-1 through 4-7). Many of the historic railroad culverts were bottomless arched rockwork placed on bedrock with rock walls at the entrance and exit. These were morphologically stable. As a result of their bottomless design, the natural streambed was able to fully function and did not impede fish migration or impair benthic habitat. In subsequent years, the exterior rock walls on some culverts have been supplemented with concrete culvert extensions. These extensions have increased plunge pool depths at outfalls and downstream stream bank erosion. This erosion was observed to embed stream substrate typically for hundreds of linear feet downstream of the culverts. Many culverts are creating fish migration blockages either at their outfall or as a result of the shallow water that passes through them with swift currents and high velocities.

Impacts to aquatic communities for new construction would include fluctuations in water temperatures as a result of the loss of riparian vegetation. Shelter and food resources, both in the aquatic and terrestrial portions of these organisms' life cycles, would be affected by losses in the terrestrial communities. The loss of aquatic plants and animals will affect terrestrial fauna, which rely on them as a food source.

Temporary and permanent impacts to aquatic organisms may result from increased sedimentation. While aquatic invertebrates may be severely impacted, some may drift downstream during construction and recolonize the disturbed area once it has been stabilized. Sediments have the potential to affect fish and other aquatic life in several ways, including the clogging and abrading of gills and other respiratory surfaces, affecting the habitat by scouring and filling of pools and riffles, altering water chemistry, and smothering different life stages. Increased sedimentation may cause decreased light penetration through an increase in turbidity. Dissolved oxygen rates may be lower as well.

4.10.1.3 *NATURAL COMMUNITY IMPACT MINIMIZATION*

VDRPT and NCDOT will minimize terrestrial and aquatic impacts by including the following measures:

- Minimizing clearing and grubbing activity
- Limiting or eliminating discharges into streams
- Reducing fill slopes at stream/wetland crossings
- Placing drainage structures with care
- Using spanning structures or bottomless culverts over streams
- Reestablishing vegetation on exposed areas, with judicious pesticide and herbicide management
- Scheduling "in-stream" activity during dry or low flow periods
- Using responsible litter control practices

4.10.2 RARE AND PROTECTED SPECIES

Coordination with the USFWS is continuing through the design phase of the Project regarding Threatened and Endangered Species (16 U.S.C. §1531 *et seq.*), the Bald Eagle and Golden Eagle Protection Act, (16 U.S.C. 668-668c), and the Migratory Bird Treaty Act (16 U.S.C. §§ 703–712). The Chowanoke crayfish (*Orconectes virginiensis*) has been historically documented in the Study Area. Although the species is currently not listed as threatened or endangered by USFWS, Virginia

DRPT and NCDOT will review the status of the species during final design to determine if field surveys are necessary.

The USFWS recently listed the Northern Long-eared Bat (*Myotis septentrionalis*) as “Threatened” and issued an interim species-specific rule under Section 4(d) of the Endangered Species Act of 1973, effective May 4, 2015. Furthermore, this species is included in USFWS’s current list of protected species for the project study area. Virginia DRPT and NCDOT will continue working closely with the USFWS to determine how this listing may impact the SEHSR project. Approximately 1,575 acres of trees (see Table 4-26) and numerous structures may be impacted by project construction over the anticipated three-year phased schedule. Prior to project permitting, Virginia DRPT and NCDOT will coordinate with USFWS to determine if this project will incur potential effects to the Northern long-eared bat and how to address these potential effects, if necessary.

4.10.2.1 *THREATENED AND ENDANGERED SPECIES*

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 *et seq.*) requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The ESA also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife.

Biological conclusions regarding potential Project impacts for the ten Federally protected species within the Study Area described in Section 3.10.2 are summarized in Table 4-25. More detailed information can be found in the natural resource technical reports for the Project (NCDOT and Virginia DRPT, 2004a, 2008).

Table 4-25 Biological Conclusions for Federally Protected Species in the Study Area				
Scientific Name	**Common Name**	**Status**	**County/State**	**Biological Conclusion**
Haliaeetus leucocephalus	bald eagle	BGEPA	Richmond, Chesterfield, Mecklenburg/ VA Warren, Vance, Wake/ NC	No Effect for VA1, VA2, and VA3 in Virginia – see discussion below regarding population west of Petersburg, VA No Effect for NC1, NC2, or NC3 in North Carolina
Picoides borealis	red-cockaded woodpecker	E	Wake/NC	No Effect for all alternatives - No habitat in the project study area
Percina rex	Roanoke logperch	E	Dinwiddie, Brunswick, Mecklenburg/ VA	Informal Section 7 consultation is ongoing with USFWS; surveys will be conducted followed by additional coordination with USFWS
Alasmidonta heterodon	dwarf wedgemussel	E	Chesterfield, Dinwiddie/VA Warren, Vance, Franklin, Wake/NC	Informal Section 7 consultation is ongoing with USFWS; surveys will be conducted followed by additional coordination with USFWS
Pleurobema collina	James River spinymussel	E	Chesterfield/ VA	Informal Section 7 consultation is ongoing with USFWS; surveys will be conducted followed by additional coordination with USFWS
Elliptio steinstansana	Tar River spinymussel	E	Warren, Franklin/NC	May Affect – Not Likely to Adversely Affect for all alternatives
Rhus michauxii	Michaux's sumac	E	Chesterfield, Dinwiddie, Brunswick, Mecklenburg/ VA Franklin, Wake/NC	No Effect for VA2; May Affect – Is Likely to Adversely Affect for VA1/VA3 in Section D only (No Effect for VA1/VA3 in all other sections – see discussion below) No Effect for NC1, NC2, or NC3 in North Carolina
Ptilimnium nodosum	harperella	E	Mecklenburg/ VA	No Effect for all alternatives - No habitat in the project study area
Aeschyno-mene virginica	sensitive joint-vetch	T	Chesterfield/ VA	No Effect for all alternatives - No habitat in the project study area

The Roanoke logperch (*Percina rex*) is presumed to occur within the Study Area as it crosses over Nottoway River and Stony Creek. The species has been observed in streams above and below the Study Area and suitable habitat is present where the Study Area crosses these streams. At the request of USFWS, surveys along the Nottoway River and suitable tributaries where the Roanoke logperch may be found, will be scheduled as required when the Project is funded for construction. Construction of the Project should not impact Roanoke logperch populations in the Nottoway River or Stony Creek if in-stream activities and sedimentation are appropriately minimized.

Additional surveys for listed freshwater mussels will be scheduled prior to Project construction for Sappony Creek, Nottoway River, Tar River, Neuse River, and Cedar Creek in order to determine potential Project impacts to the dwarf wedgemussel (*Alasmidonta heterodon*), Tar River spinymussel (*Elliptio steinstansana*), and James River spinymussel (*Pleurobema collina*). The results of these surveys will be coordinated with USFWS in continuing informal Section 7 consultation. Stringent erosion controls will be enforced during construction to minimize impacts to the dwarf wedgemussel population downstream of the Project crossing at Cedar Creek.

The area of the Michaux's sumac (*Rhus michauxii*) population described in Section 3.10.2 has been avoided in Section D Alternative VA4, with the limits of construction being approximately 80 feet from the closest extent of the population.

Based on informal Section 7 consultation, the USFWS stated in a letter dated November 8, 2004, that "…this project is not likely to adversely affect Michaux's sumac provided the following conditions apply:

- The railway footprint would be located a minimum of 20 feet from the closest extent of the population,
- No construction activity would occur within 20 feet of the closest extent of the population,
- During and following construction, no herbicide treatment would occur within 500 feet of the population…"

Based on this coordination, FRA has determined that Alternative VA4 within Section D of the Project would have no effect on the Michaux's sumac. As encouraged by USFWS, the Army National Guard Maneuver Training Center, Fort Pickett, was contacted regarding potential management of the sumac population and coordination is on-going.

The sumac population is located along an inactive portion of the CSX S-Line; therefore, the population area is not currently sprayed by CSX for maintenance. Following Project construction, typical practice along active lines with high density traffic would be to spray once in the spring, and perform heavy cutting and spraying of the ROW 25 feet from the centerline as needed. The spraying is done using Hi-Rail trucks with booms that can be raised and lowered. The equipment operators use railroad mile post numbers to identify locations along the line where they are prohibited from spraying. During and after construction, the Project Team will identify the sumac population area as an area where spraying is prohibited.

Although no suitable habitat was identified for harperella (*Ptilimnium nodosum*) and sensitive joint-vetch (*Aeschynomene virginica*) during field surveys, these surveys have expired or will expire prior to anticipated Project permitting and construction. Informal Section 7 consultation is ongoing with USFWS and additional surveys will be conducted (as required) when the Project is funded for construction, followed by further coordination with USFWS prior to the permitting phase of the Project. Additional survey for potential Michaux's sumac habitat will be similarly coordinated with USFWS.

4.10.2.2 *BALD EAGLE AND GOLDEN EAGLE PROTECTION ACT*

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large, dominant trees are utilized for nesting sites, typically within one mile of open water. While conducting field surveys for Federally listed species, a pair of bald eagles was observed on September 14, 2005, along the Appomattox River, just west of the City of Petersburg, VA. The area was revisited on February 2, 2006 (after leaf fall), to survey nest locations. Two potential nests were found in mature loblolly pine trees along the north bank of the Appomattox River outside the Study Area. The nest locations were reported to USFWS and the Virginia Department of Game and Inland Fisheries. Because the Project will be located more than 1,000 feet from the nests, it is anticipated that Project will have no effect on the bald eagle.

4.10.2.3 *MIGRATORY BIRD TREATY ACT*

The Migratory Bird Treaty Act (16 U.S.C. §§ 703–712) makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations.

The Project can have effects on migratory bird populations, including habitat loss, habitat degradation, and habitat fragmentation. The Preferred Alternative passes through areas of developed land, farm fields, and forested areas. However, in all Project sections, impacts are focused on the existing rail corridor and do not include large areas of undisturbed land.

4.11 COMMUNITY RESOURCES

This Section has been updated from the Tier II DEIS to address public and agency comments, unless otherwise noted.

In this section, direct impacts to the human environment and economy from the proposed Project are discussed. These issues are directly related to one another; as communities and neighborhoods are affected by development (be it transportation or urban uses), so too is the land on which we live and our local economies. This assessment analyzes and reviews critical areas such as socio-economics, communities, facilities, services, environmental justice, vulnerable populations and land use planning on a local and regional level.

4.11.1 SOCIO-ECONOMICS

This section assesses the economic benefits and consequences (negative impacts) that are likely to accrue within the Study Area from the Preferred Alternative.

4.11.1.1 *ECONOMIC CONSEQUENCES*

4.11.1.1.1 PROPERTY VALUE IMPACTS

A significant loss in adjacent property values is not anticipated from the Project, given that:

- Along active rail lines, residents are used to the sights and sounds of trains.
- Where the lines are currently inactive, the reactivation of rail service may be viewed negatively; however, the low number of trains and the speed at which they will be traveling will limit the exposure to rail activities.
- Along active lines in communities with planned stations, residents are not only used to trains, it is predicted that the demand for office, retail, hotel and higher density housing will increase sharply near the proposed stations. And, as demand for redevelopment and infill opportunities increase, property values may actually increase over the long term.
- Where crossings are planned to be closed or access to parcels modified, residents and businesses should not witness a loss in property values given that access to all uses will be retained and the overall change in travel patterns for the community will not be substantially altered because most of the consolidated crossings have been designed to be no more than one mile apart.
- Although train horn noise has been shown to affect property values, under the Preferred Alternative all crossings will be grade-separated which will eliminate horn noise in the Study Area (refer to Section 4.7 for additional discussion related to noise).

4.11.1.1.2 LOSS OF USE

As noted in other sections of this chapter, the Preferred Alternative will impact approximately 2,288 acres of potentially developable land (farm, forest, open, undeveloped), as shown on Table 4-26. This land will be indefinitely lost from existing and future agricultural uses as well as future development. In addition, it is anticipated that this land will be removed from the tax rolls, and as such will have a fiscal impact on both states.

Table 4-26
Potentially Developable Land Lost to Preferred Alternative

	Forest (ac)	Farmland & Other (ac)	TOTAL (ac)
VA	1,082	313	1,395
NC	493	400	893
TOTAL	**1,575**	**713**	**2,288**

Source: Baker GIS Analysis, 4-15-14

4.11.1.2 *ECONOMIC BENEFITS*

As discussed below and in Chapter 1, the addition of the HSR proposed by the Project will provide substantial transportation, environmental, and community benefits to the residents of Virginia and North Carolina. Although the economic consequences discussed above are not quantified, the economic benefits of the Project, as quantified in this section, would appear to far exceed any negative economic impacts.

Sections 1.1 and 1.8 summarize several detailed economic and fiscal analyses that have been prepared for the SEHSR Corridor, including two cost-benefit studies: one prepared in 1997 by FRA for the entire national HSR system (the SEHSR Corridor is only one segment); and, a second detailed feasibility study prepared by NCDOT in 1998 specifically for the Washington, DC, to Charlotte, NC, SEHSR Corridor. Table 4-27 presents the results of these studies, with inflation-adjusted values to the year 2014 based on the Consumer Price Index (Bureau of Labor Statistics). Although the two studies used different assumptions and methods, and a direct comparison is not feasible, this table shows that independent evaluations found implementation of HSR in the SEHSR Corridor to be economically justified.

Table 4-27
Results of SEHSR Cost-Benefit Studies – Updated to 2014 Dollars

	1997 FRA Study*	1998 SAIC Study**
Total Benefits (in millions)	$9,597	$1,789
Total Costs (in millions)	$3,779	$1,191
NET Benefits (Total Benefits – Total Cost)	$5,818	$598
Benefit Ratio^ (Total Benefits / Total Cost)	**2.54**	**1.46**

Sources: FRA 1997 Study; SAIC (Science Application International Corporation and Corporate Strategies, Inc.) "Cost Benefit Analysis of the Piedmont High Speed Corridor" (Dec 1998), as reported in NCDOT SEHSR Feasibility Study (1999).
Figures from the initial reports have been updated to 2014 Dollars based on the Consumer Price Index, Inflation Calculator, Bureau of Labor Statistics, *http://www.bls.gov/data/inflation_calculator.htm* Accessed 4/16/14
* Assumes 27 RTS (round trips) between Charlotte/NYC.
** This reports "Scenario 6", which assumed 4 RTS between Charlotte/Raleigh and 4 RTS Charlotte/NYC.
^ This ratio estimates the amount of benefits for every $1.00 spent to build and operate the SEHSR corridor. Thus, for the 1997 study, the project was estimated to provide $2.54 worth of benefits for every $1.00 spent to build and operate the project.

4.11.1.2.1 CONSTRUCTION AND OPERATION EFFECTS

Construction of the SEHSR Corridor would create 23,952 temporary full-time jobs for individuals to upgrade the railroad road bed, install signal and safety devices, build frontage/service roads, improve grade separated crossings, and build bridges to replace grade crossings (KPMG, 1995). Additional jobs, possibly within the Study Area, would be created within the manufacturing sector to produce the equipment and materials needed to make these improvements. The additional jobs would increase income, and benefit the regional economy.

During construction, the economic impact would depend on the location of the firms supplying labor and materials. It is estimated that a high percentage of the new employment during the construction phase would come from within the SEHSR Corridor. Communities along the SEHSR Corridor will also benefit as construction crews spend money in local hotels, restaurants, and shops.

The impact from operation expenditures would likely be more concentrated; the majority of new jobs would likely be created in communities served by the proposed service. Ticket agents and other railroad personnel are likely to be located in these communities and the secondary impacts of their employment would be spread throughout the areas in which stations are located. Once HSR service is in place there would be additional needs such as maintaining the equipment and the track.

However, it is feasible that once the system is up and running, railroad personnel could live anywhere along the corridor and use the system to get to their work location. In addition the installation of high speed compatible track will enable even communities without stops to benefit from potential freight enhancements, an added incentive to draw new industry locations. Communities without stops will have new potential freight access, providing enhanced incentives for new industrial locations. Together, these impacts would expand the economic benefits of the Project beyond those communities with stations.

As shown in Tables 4-28 and 4-29, it is estimated that in North Carolina alone, construction of the SEHSR Corridor will generate almost $800 million in economic (business sales, employee earnings and jobs) and fiscal benefits (tax and fee revenues). Over 20 years, the operation and maintenance of the system will create over 800 permanent full-time jobs and generate over $661 million in economic and fiscal benefits in North Carolina alone. Although the studies did not include the Virginia portion of the SEHSR Corridor, it can be assumed that Virginia will see similar economic and fiscal benefits from constructing and maintaining the proposed system.

Table 4-28
Estimate of Annual Economic and Fiscal Impacts (NC Only)

		1996 Dollars	2014 Dollars^
Economic Impacts	Earning Income	$10,507,629,189	15,824,596,700
Fiscal Impacts	State Income Taxes	$332,041,082	$500,057,256
	Corporate Income Taxes	$62,873,699	$94,684,932
	State Sales Tax	$204,898,768	$308,579,634
	Property Taxes / Recordation Fees	$44,874,257	$67,581,089
	Franchise Taxes	$2,124,158	$3,199,004
	Employment Security Taxes	$72,230,023	$108,779,151
	Sum of Fiscal Impacts	*$719,041,987*	*$1,082,881,066*
Total Economic and Fiscal Impacts		**$11,226,671,176**	**$16,907,477,766**

Source: From Tier I EIS, KPMG Economic Impact Analysis, 1995, using Net Present Value of 1996 dollar values. Covers NC only. Does NOT include station construction (see Table 4-29). Construction of SHSR and the Stations are assumed for a 1 year duration; Other impacts are over the 20 years after construction.
^ Updated to 2014 Dollars based on the Consumer Price Index, Inflation Calculator, Bureau of Labor Statistics, http://www.bls.gov/data/inflation_calculator.htm Accessed 4/14/14

Table 4-29
Economic and Fiscal Impacts of SEHSR by Project Activity
(NC Only; Updated to 2014 Dollars)

Activity	Economic Impact (Earnings Income)	Fiscal Impacts (Fees & Taxes)	TOTAL
SEHSR Construction (1 year duration)	$739,660,600	$52,902,034	**$792,562,634**
Operations & Maintenance (over 20 years)	$619,401,095	$41,791,367	**$661,192,462**
Station Construction^ (1 year duration)	$37,736,526	$38,772,233	**$76,508,759**
Construction Surrounding Stations (1 year duration)	$224,123,748	$16,713,764	**$240,837,512**
Recurring Employment (20 yrs)	$14,241,424,820	$971,477,399	**$15,212,902,219**
TOTAL	**$15,862,346,789**	**$1,121,656,797**	**$16,984,003,586**

Sources: ^ From NCDOT Feasibility Study Summary & Implementation Plan (April 1999); Other data originally presented by KPMG Economic Impact Analysis, 1995 (from Tier I EIS).
Note: Totals do not exactly total to figures in Table 4-28 due to application of inflation factors.

4.11.1.2.2 STATION DEVELOPMENT EFFECTS

Transportation investments like HSR will provide specific locations with improvements to attract growth. This growth is most likely around planned stations, but as discussed in Section 3.11, the Project's freight improvements along the Study Area have already been noted by affected local governments (with and without planned stations) as a benefit to their existing and planned industrial zones as well as a means to attract economic development.

As noted in the NCDOT Feasibility Study (NCDOT,1999), construction of the stations themselves in NC is projected to create 1,222 temporary construction jobs, and re/development surrounding the proposed stations will create 7,438 additional temporary construction jobs. Re/development surrounding the NC stations will also create 18,980 permanent jobs in the hotel, office, retail and residential management industries. The economic and fiscal benefits from constructing the stations in NC have been estimated to exceed $76 million and the resulting secondary development around the NC stations is projected to result in over $240 million in economic and fiscal benefits (one time benefits). However, the recurring employment in these station growth areas is expected to exceed $15 billion in economic and fiscal benefits over 20 years (see Table 4-29). Similar results are anticipated for the planned Virginia stations.

The following comments from affected local governments in the Study Area (in response to this Project's Tier II DEIS) support the long-standing assertion that the economic impacts of the Project will be significantly positive (See Tier II DEIS, Appendix A):

City of Richmond, VA

"Connecting multi-state urbanized areas with improved passenger rail service and eventual high speed passenger rail infrastructure will provide competitive travel alternatives, enhance the environment, attract jobs, promote tourism and bolster economic vitality. Passenger rail service provides safe and highly reliable transportation service between the downtown areas of multiple cities for all segments of the population. This type of transportation service is extremely desirable and in many cases rail travel is quicker, more convenient, reliable, comfortable and less expensive than air or automobile travel. A city connected by quality passenger rail service coupled with convenient public transportation services becomes a more attractive destination and the areas near downtown stations become prime locations for investment. Such stations invite transit oriented development and present the opportunity to improve the livability and sustainability of the communities that they serve. In this way passenger rail service fosters economic development for the city, state and nation.

The location of the Southeast high speed corridor directly connected to Amtrak's existing successful NEC provides a tremendous opportunity and further enhances the rail infrastructure investment. Federal and state agencies along with HSR supporters should continue their efforts to make the implementation of the Southeast high speed rail corridor project a priority and a reality."

Town of Henderson, NC

"The location of a passenger rail station in downtown Henderson, NC, would be a significant boost to the redevelopment of the local economic base that has been devastated by the loss of the traditional economic stalwarts of textiles and tobacco in the early part of the decade as well as the lingering negative effects of the current Recession."

City of Raleigh, NC

"The high speed train brings an additional dimension connecting the city to the Northeast Corridor and offers potential opportunity for creating a powerful economic zone with Virginia. The Raleigh 2030 Comprehensive Plan establishes this aspiration by providing density and better connectivity to the city fabric in the hope to invigorate urban and economic development. The city's goals of urban development and excellence need to be fully integrated with the rail project to yield an overall positive result and sustainable economic development."

Also, the EA for the proposed Raleigh Union Station in Raleigh, NC, made the following conclusions of the economic impact of the proposed station (Proposed Raleigh Union Station, Phase I and Associated Track Improvements, TIP NO. P-5500; Draft Environmental Assessment & Section 4(f) Evaluation, NCDOT Rail Division, Dec 2013.):

- The Raleigh Union Station will provide economic development benefits to Raleigh, NC, and the surrounding region in the form of jobs, increases in tourism, and development opportunities.
- Centrally located in downtown Raleigh, NC, the site is surrounded by property offering tremendous development potential.
- The project will benefit the local economy by creating jobs and the housing, goods and services that these workers will need.
- The return on investment is profound and is estimated to impact the area for years to come.

4.11.1.2.3 CHANGES IN ECONOMIC ACTIVITY

In addition to impacts from direct expenditures on system construction and operation, and construction of the stations and surrounding induced development around the stations, the proposed HSR system will increase the flow of travelers between cities along the route and thus enhance economic activity in those communities with station stops.

The Ridership/Revenue projection model recently updated for the Project by AECOM estimated current demand and projected future travel between cities along the travel corridor, as well as along the entire Atlantic Coast for all modes of travel; refer to Section 1.5 for additional discussion regarding the updated ridership and revenue forecasts. Over 10,000 auto, air, and rail travelers were surveyed to find their stated and revealed preferences. The study estimated over two million annual riders will be utilizing North Carolina service trains by 2030. Most of these trips were for personal and other discretionary travel. The next largest category was recreation trips, closely followed by business trips. Based on current trends and experience along the high speed corridor between New York and Washington, DC, business travel is anticipated to be the fastest growing sector of rail travel.

4.11.1.3 *NET ECONOMIC IMPACTS*

As discussed above and in Chapter 1, the previous economic and fiscal studies on the SEHSR Corridor repeatedly concluded that the tangible and intangible benefits of the planned improvements for the SEHSR Corridor (to rail users as well as the public at large) exceed its costs. And, specific to the most recent ridership and revenue study completed for the Preferred Alternative for the Project (see Section 1.5), projected revenues of the SEHSR system are projected to exceed annual operating costs by the design year (2030).

Overall, it is estimated that in North Carolina alone, over the first 20 years of operation, SEHSR Corridor service would bring over $1 billion in new state and local tax revenues, $15.8 billion in employee wages (Table 4-28), over 32,600 new one-year construction jobs, more than 800 permanent new railroad operation positions, and nearly 19,000 permanent fulltime jobs from businesses which choose to locate or expand in North Carolina because of the SEHSR service (KPMG, 1995). And this 20-year period is a conservative cut-off assumption, since a HSR system’s components (apart from the track) have a life of 30 to 40 years.

A similar evaluation was not prepared for Virginia as part of the original study; however, it can be reasonably assumed that similar, if not greater, positive benefits would accrue in Virginia, given that it will initially have one more station than NC.

In summary, the substantial long term positive economic, environmental, and fiscal benefits of HSR in the SEHSR Corridor will include:

- Creation of jobs in the railroad, roadway, commercial and residential construction industries, as well as railroad operation and maintenance;
- Increased manufacturing jobs in the rail passenger transportation industry, including car, equipment and part manufacturers;
- Enhanced economic development and revitalization of urban areas around stations, creating jobs in the office, commercial, hotel and housing management industries;
- Increased tourism;
- Improved transportation safety, including enhanced safety at rail crossings;
- Improved speed and reduced cost of service for freight-rail commerce;
- Reduced dependence on highways and airports, leading to:
    - Reduced use of carbon fuel, leading to:
        - Reduced greenhouse gas emissions, and

        - Reduced dependence on foreign oil;
    - Reduced need to build new (or widen existing) highways;
    - Deferred need to invest in airport expansions;
    - Reduced transportation delays, including reduced truck congestion on interstates;
- Increased productivity of business travel through consistently reliable and comfortable travel combined with the potential for reduced business-travel expenses;
- Increased generation of personal and business income and sales;
- Additional generation of tax revenues for both Virginia and North Carolina; and
- Billions of dollars in sustainable economic development.

4.11.2 NEIGHBORHOOD AND COMMUNITY IMPACTS

The neighborhoods and communities along the Project corridor are of many types, ranging from mobile home parks to upscale neighborhoods. Surrounding land uses range from agricultural to commercial to densely developed industrial areas. Commercial, industrial, upscale residential and mixed uses are found along the southern reaches of the Project. Medium sized communities are found in towns such as Dinwiddie, VA, La Crosse, VA, and Henderson, NC. They are typified by older grid patterned street systems close to the heart of the original town center or central business district (CBD). The larger, urbanized communities such as Richmond, VA, Petersburg, VA, Colonial Heights, VA, Wake Forest, NC, and Raleigh, NC, have residential areas typified by a mixture of distinct urban and suburban areas.

Table 4-30 provides an overview of the rail and road impacts and benefits; it puts the discussion of community impacts in context and aids in understanding the intensity of the proposed improvements relative to each community and the Project in its entirety.

4.11.2.1 *COMMUNITY CONCERNS*

Overall, community officials and citizens who provided input during the public outreach effort for the Project agreed that it would enhance and improve most areas along the corridor and surrounding areas. The Project is seen as providing an opportunity for business, retail, tourism, and residential growth possibilities. While there was overall support for the Project, the following concerns still remained.

4.11.2.1.1 HIGH SPEED RAIL (HSR) BYPASSING A COMMUNITY

Communities not identified as receiving a stop as a part of the Project were concerned they would miss out on the economic and community benefits associated with HSR. While only five locations are proposed to receive HSR stops (Richmond, VA, Petersburg, VA, and La Crosse, VA; Henderson, NC, and Raleigh, NC), this does not preclude the addition of other stations in the future. Table 4-30 provides a list of communities with an existing rail station, those for which a rail station is proposed, and those without a rail station (refer to section 1.4.3 for additional discussion about proposed station locations). While not all communities will have a rail station in their own backyards, the addition of two more stations will reduce the distance many must travel to access a station. While multiple communities will not have a station within their community limits, new freight rail service will be available to communities in Dinwiddie County, VA, Brunswick County, VA, Mecklenburg County, VA, and Warren counties, NC (Table 4-30). For those communities with industries that already have access to industrial freight, those services will be improved. Overall, new and improved freight rail service will provide economic benefits that would not otherwise be possible without the Project.

The new or improved rail lines constructed for the Project would be available for future, conventional passenger rail service once the Project is developed. This would allow residents not served by high speed service to utilize conventional speed service to access the high speed stops. This option will be given further consideration as the system develops based on user demand along the route.

Table 4-30
Rail and Road Impacts and Benefits of Preferred Alternative by Community

Section	Community	Minority	Low-Income	Elderly Populations* Higher than Average Presence	Existing** Freight | *Passenger* Trains per Day	Existing Public Pedestrian Structures (to be Retained)	*Impacts* Projected* * * Freight | *Passenger* Trains per Day	Existing At-Grade Public RR Corridor / Crossings	Existing Public Roads Closed (Crossed by New	*Benefits* SEHSR Station	Existing Public Grade Separations Maintained /	Additional Public Grade Separations	Additional Public Pedestrian Structures	Freight Rail Service Available for Industries
A A	City of Richmond, VA	✓	✓	---	29 | *10*	0	29 | *24*	3	0	Existing Station	20	8	0	Enhanced
B B	Chesterfield Co. between Richmond, VA and Colonial Heights, VA (includes Chester)	□	□	---	29 | *10*	0	29 | *24*	1	0	---	3	3	1	Enhanced
C C	City of Colonial Heights, VA	□	□	✓	29 | *10*	0	29 | *24*	0	0	---	2	1	0	Enhanced
C C	Chesterfield County between Colonial Heights, VA, and Petersburg, VA (includes Ettrick, VA)	✓	✓	✓	29 | *10*	0	29 | *24*	0	0	Existing Station[1]	1	2	0	Enhanced
	City of Petersburg, VA	✓	✓	✓	29 | *10*	0	29 | *24*	2	0	Existing Station[1]	7	0	1	Enhanced
D D	Dinwiddie Co. from Petersburg, VA, to Gatewood Road, VA (includes community of Dinwiddie, VA)	□	□	✓	---	0	10 | *8*	0	0	---	1	3	0	New
A, B, C	Dinwiddie Co. from south of Gatewood Road to Brunswick County line, VA (includes McKenney)	□	□	✓	---	0	10 | *8*	4	0	---	5	10	0	New
D, E	Brunswick Co. from Dinwiddie Co. to I-85, VA (includes of Alberta)	✓	✓	✓	---	1	10 | *8*	3	0	---	0	7	0	New

Table 4-30
Rail and Road Impacts and Benefits of Preferred Alternative by Community

Section	Community	Minority	Low-Income	Elderly Populations* Higher than Average Presence	Existing** Freight | *Passenger* Trains per Day	Existing Public Pedestrian Structures (to be Retained)	*Impacts*: Projected* * * Freight | *Passenger* Trains per Day	*Impacts*: Existing At-Grade Public RR Corridor / Crossings	*Impacts*: Existing Public Roads Closed (Crossed by New	*Benefits*: SEHSR Station	*Benefits*: Existing Public Grade Separations Maintained /	*Benefits*: Additional Public Grade Separations	*Benefits*: Additional Public Pedestrian Structures	*Benefits*: Freight Rail Service Available for Industries
F, G	Brunswick Co. from south of I-85 to Mecklenburg Co. line, VA	✓	✓	✓	---	0	10 | *8*	0	0	---	6	4	0	New
H, I, J	Mecklenburg Co. from Brunswick Co. to Bellfield Rd, VA (includes La Crosse)		✓	✓	---	0	10 | *8*	6	1	Recommended Station	2	7	1	New
K	Mecklenburg Co. from south of Bellfield Rd, VA to NC state line	□	□	✓	---	0	10 | *8*	0	0	---	1	1	0	New
L	Warren Co. from VA state line to Norlina, NC	✓	✓	✓	---	0	10 | *8*	2	0	---	0	2	0	New
M	Town of Norlina, NC (Warren County)	✓	✓	✓	2 | *0*	0	12 | *8*	1	4	---	1	2	0	Enhanced
N	Warren Co. from Norlina to Vance Co. line, NC (includes Ridgeway)	✓	✓	✓	2 | *0*	0	12 | *8*	2	1	---	0	2	0	Enhanced
O	Vance Co. from Warren Co. line to Henderson, NC (includes Middleburg)	✓		✓	2 | *0*	0	12 | *8*	0	1	---	0	3	0	Enhanced
P	City of Henderson, NC (Vance County)	✓		✓	2 | *0*	0	12 | *8*	11	0	Recommended Station	2	3	1	Enhanced
	Vance Co. between Henderson and Kittrell, NC	✓	✓	✓	2 | *0*	0	12 | *8*	1	0	---	1	3	0	Enhanced
Q	Town of Kittrell, NC (Vance County)		✓	✓	2 | *0*	0	12 | *8*	1	0	---	0	1	0	Enhanced
	Vance Co. south of Kittrell to Franklin Co. line, NC	✓	✓	✓	2 | *0*	0	12 | *8*	3	0	---	1	3	0	Enhanced

Table 4-30
Rail and Road Impacts and Benefits of Preferred Alternative by Community

Section	Community	Minority	Low-Income	Elderly Populations* Higher than Average Presence	Existing** Freight | *Passenger* Trains per Day	Existing Public Pedestrian Structures (to be Retained)	*Impacts*			*Benefits*				
							Projected* * * Freight | *Passenger* Trains per Day	Existing At-Grade Public RR Corridor / Crossings	Existing Public Roads Closed (Crossed by New Rail)	SEHSR Station	Existing Public Grade Separations Maintained /	Additional Public Grade Separations	Additional Public Pedestrian Structures	Freight Rail Service Available for Industries
R	Franklin Co. from Vance Co. line to Franklinton, NC	□	□	---	2 | *0*	0	12 | *8*	1	1	---	0	1	0	Enhanced
S	Town of Franklinton, NC (Franklin County)	✓	✓	---	2 | *0*	0	12 | *8*	4	0	---	1	1	2	Enhanced
S	Franklin Co. between Franklinton and Youngsville, NC	□	□	---	2 | *0*	0	12 | *8*	1	1	---	0	3	1	Enhanced
T	Town of Youngsville, NC (Franklin County)	□	□	---	4 | *0*	0	16 | *8*	2	0	---	0	1	2	Enhanced
T	Franklin Co. from Youngsville, NC to Wake County line	□	□	---	4 | *0*	0	16 | *8*	0	0	---	0	0	0	Enhanced
U	Wake Co. from Franklin Co. line to Wake Forest, NC	□	□	---	4 | *0*	0	16 | *8*	0	0	---	0	0	0	Enhanced
U	Town of Wake Forest, NC (Wake County)	□	□	---	4 | *0*	0	16 | *8*	3	0	---	2	2	2	Enhanced
U	Wake Co. between Wake Forest and Raleigh, NC	□	□	---	4 | *0*	0	16 | *8*	1	0	---	1	2	0	Enhanced
V	City of Raleigh, NC (Wake County) (includes unincorporated islands south of northern city limit)	□	□	---	6 (CSX) 18 (NS) | *8*	0	20 (CSX) 18 (Norfolk Southern) | *16*	2	0	Existing Station	14	9	1	Enhanced
Project Totals		---	---		---	1	---	54	9	3 Existing and 2 Recommended	71	84	12	7 New 21 Enhanced

Table 4-30
Rail and Road Impacts and Benefits of Preferred Alternative by Community

Section	Community	Minority	Low-Income	Elderly Populations* Higher than Average Presence	Existing** Freight | *Passenger* Trains per Day	Existing Public Pedestrian Structures (to be Retained)	*Impacts* Projected* * * Freight | *Passenger* Trains per Day	*Impacts* Existing At-Grade Public RR Corridor / Crossings	*Impacts* Existing Public Roads Closed (Crossed by New	*Benefits* SEHSR Station	*Benefits* Existing Public Grade Separations Maintained /	*Benefits* Additional Public Grade Separations	*Benefits* Additional Public Pedestrian Structures	*Benefits* Freight Rail Service Available for Industries
	Project Totals - EJ Only	---	---		---	1	---	39	7	2 Existing and 2 Recommended	42	48	5	4 New 11 Enhanced
	% Impacts to EJ Pop.	---	---		---	1	---	72.2%	77.8%	80.0%	59.2%	57.1%	41.7%	57.1% New 52.4% Enhanced

= EJ Populations (see Section 4.11.5)

= Disproportionately High Impacts Relative to % Miles within Section having EJ community

61.6% = Threshold value used to determine if impacts are disproportionate within Section having EJ community

*Elderly Populations are those age 65 and older whose total percentages in their demographic study area are greater than the percentage of elderly reflected in their respective city, county, and/or state. See Section 3.11.1.3, Age, Table 3-23 for elderly population data.

Notes –

* * Existing freight trains are estimates only due to the nature of freight service which does not run on specific, published schedules. The number of existing total train trips is up to the noted figures per day. It is estimated that up to 29 freight trains per day currently use the CSX corridor between Richmond, VA and Petersburg, VA; up to 2 freight trains per day use the CSX corridor between Norlina, NC, and Youngsville, NC; and up to 4 freight trains per day use the CSX corridor between Youngsville, NC, and Raleigh, NC. There are also up to 2 additional freight trains a day estimated to use the CSX corridor between the CSX rail yard in downtown Raleigh and points south and west (for a total of up to 6 freight trains per day in the SEHSR project study area in Raleigh). In addition, it is estimated that up to 8 freight trains per day use the Norfolk Southern corridor in downtown Raleigh, NC, between the Norfolk Southern rail yard and the Boylan railroad wye, and an additional estimated 10 freight trains per day leave the Boylan Wye for points south and west (for a total of up to 18 freight trains per day in the SEHSR project study area in Raleigh). Note that the 8 existing passenger trains in Raleigh are Amtrak trains headed west or south out of the existing Raleigh, NC, station (Carolinian / Piedmont and Silver Service / Palmetto).

* * * Projected freight (including intermodal) and passenger trains are based on assumptions in DEIS, which assumes projected HSR passenger trains are in addition to existing Amtrak trains. Eight intermodal trains were estimated to use the corridor south of Petersburg, VA. In addition, two non-intermodal freight trains per day (one round trip) are assumed to use the corridor between Petersburg, VA, and Youngsville, NC, and four non-intermodal freight trains per day (two round trips) are assumed to use between Youngsville, NC and Raleigh, NC, for a total of 10 additional freight trains in the corridor between Petersburg, VA, and Youngsville, NC, and 12 additional freight trains in the corridor between Youngsville, NC, and Raleigh, NC. In Raleigh, it is assumed all additional freight trains would remain in the CSX corridor and not cross over Capital Boulevard with the SEHSR passenger trains.

Between Petersburg, VA, and Raleigh, NC, it is assumed the SEHSR project would operate 8 passenger trains per day (4 round trips). Between Richmond, VA, and Petersburg, VA, it is assumed an additional 6 trains per day (3 round trips) would operate on the SEHSR corridor originating in Hampton Roads as part

Table 4-30
Rail and Road Impacts and Benefits of Preferred Alternative by Community

Section	Community	Minority	Low-Income	Elderly Populations* Higher than Average Presence	Existing** Freight | *Passenger* Trains per Day	Existing Public Pedestrian Structures (to be Retained)	*Impacts*			*Benefits*				
							Projected* * * Freight | *Passenger* Trains per Day	Existing At-Grade Public RR Corridor / Crossings	Existing Public Roads Closed (Crossed by New Rail)	SEHSR Station	Existing Public Grade Separations Maintained /	Additional Public Grade Separations	Additional Public Pedestrian Structures	Freight Rail Service Available for Industries

of the planned Richmond, VA, to Hampton Roads, VA, Passenger Rail Project (for a total of 14 additional trains per day).

^ "Existing At-Grade Public RR Corridors / Crossings Closed" are those locations, under the Preferred Alternative, where existing roads intersect with existing railroad corridors (including those with, as well as without, existing active rail) at at-grade crossings, and those intersections/crossings are proposed to be closed and all traffic would be rerouted. "Existing Public Roads Closed (Crossed by New Rail)" are those locations, under the Preferred Alternative, where existing roads are proposed to be crossed by new constructed rail lines. In those instances, the roads on both sides of the new rail location would be closed and all traffic would be rerouted.
[1] The Tri-Cities Area Metropolitan Planning Organization and FRA are addressing the issue of whether the existing station in Ettrick or another location in the Petersburg area should serve as the SEHSR station.
[2] There are 2 additional public grade separations proposed just outside of Franklinton, NC, Town Limits. Those additional grade separations are counted within the Franklin County figures because they were not within the official Corporate Limits of Franklinton, NC.

4.11.2.1.2 NEIGHBORHOOD DISRUPTIONS

Because the Project maximizes the use of existing rail corridors, neighborhood disruptions and relocations have been minimized to the greatest extent practicable. Along active rail lines, overall impacts to neighborhoods and communities from the operation of SEHSR trains is expected to be minor because residents are used to the sights and sounds of trains through their communities, the introduction of high speed passenger rail would not substantially alter their current quality of life.

In addition, the Project accommodates pedestrian traffic in that all new bridges and underpasses are designed to have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses. At other locations,NCDOT and VDOT will evaluate pedestrian accommodations on the bridges/underpasses during final design based on the current NCDOT and VDOT pedestrian policies. Both NCDOT and VDOT have established Complete Streets policies which provide for consideration of all modes of transportation including pedestrians and cyclists, when building new projects or making improvements to existing infrastructure.

From the Burgess Connector in Dinwiddie County, VA, southward to Norlina, NC, in Warren County, NC, the rail corridor is inactive and, in some instances, the tracks have been removed and small portions of ROW sold for driveway access. Communities without active rail lines include the Dinwiddie, VA, Courthouse area, McKenney, VA, Alberta, VA, and La Crosse, VA, and Norlina, NC. In these communities and other areas adjacent to the inactive rail line, residents may view the reactivation of rail service as a negative impact on their quality of life. The sights and sounds of the rail would require a degree of adjustment for the families and businesses adjacent to it. However, given the number of trips planned (eight high speed trains and up to eight additional intermodal trains and two to four additional freight trains), and the speed at which the trains will be traveling, exposure to rail activity would be of a limited duration and frequency for those communities without a rail stop. In La Crosse, VA, and Henderson, NC, the duration of exposure to HSR trains will be greater given that two stops daily are planned for each town.

Residents and businesses within the communities not currently living with an active rail line could also experience a sense of their community being split by the newly active rail line. What has in recent years been a situation of unencumbered access to and from either side of the tracks would now only be possible at designated bridges and underpasses. Given that the vast majority of consolidated crossings were designed to be no more than one mile apart, the change in community travel patterns would not be substantially altered.

There will also be some changes to the visual environment within communities. The required minimum clearance for a road over a rail line is 24 feet three inches from the bottom of the bridge. The required minimum clearance for a rail line over a road is 17 feet. Because of these vertical clearance requirements and topographical constraints, the average new bridge will be between 25 feet and 38 feet high at its tallest point. This is about the height of a three to four-story building. Even in the rural communities with existing rail activity, the new bridge structure will be an obvious, new landmark. Some may see the new structures as a sign of progress whereas others may find it to be inconsistent with their community's setting and sense of place.

Relocations are discussed in detail in Section 4.11.6.

4.11.2.1.3 SAFETY AND FENCING

Because of the speeds at which the SEHSR trains will be traveling, fencing on both sides of the rail line may be necessary in some areas, particularly in urban areas. NCDOT and VDOT will determine the location and type of fencing during final design. While such fencing would serve as a physical barrier between communities on either side of the tracks, it would provide a necessary measure of safety to keep vehicles, pedestrians, and animals off of the tracks. Refer to Section 4.16 for additional discussion about fencing.

4.11.2.1.4 RAIL NOISE AND VIBRATION

An analysis was completed to identify and evaluate the potential noise and vibration impacts associated with the operation of trains in the Study Area. (See Section 4.7 for more information.) The conclusions of that analysis are as follows:

- Rail Noise – Based on FRA Manual noise criteria, the Preferred Alternative is predicted to have zero moderate impacts and zero severe impacts for Category 1 receptors (studios, concert halls, etc.); 618 moderate impacts and 64 severe impacts for Category 2 receptors (residences, hospitals, hotels, etc.), and; four moderate impacts and 0 severe impacts for Category 3 receptors (schools, libraries, churches, etc.).
- Highway Noise – For vehicular noise associated with the diversion of traffic, no impacts due to "substantial increase" criteria were predicted. The noise associated with diverted roadway traffic at proposed grade-separated intersections is expected to cause an exceedance of the FHWA criteria for an estimated 6 residences in the proposed Youngsville, NC, Historic District. However, these residential sites are currently assessed with sound levels above the FHWA criteria. Additionally, since a noise barrier would have to be placed between the homes and the road, mitigation would not be feasible because of the need to maintain driveway access
- Rail Vibration – Based on FRA Manual vibration criteria, the Preferred Alternative potentially impacts 180 single family homes, 7 multi-family homes and 108 commercial sites. Vibration annoyance from the existing freight trains occurs within 80 feet or less for residential sites and 64 feet for commercial sites. Vibration annoyance from the proposed

high speed passenger train would occur within 47 feet for residential sites and 30 feet for commercial sites.

It should be noted that for safety reasons, trains are required to sound their horns when approaching at-grade crossings. Train horn noise will decrease or be eliminated in locations with active rail traffic under the Project as a result of grade-separating all rail crossings within the corridor. Communities without active rail would not experience any new grade-crossing related horn noise for the same reason. As stated previously, mitigation for noise and vibration impacts will be determined during final design.

4.11.2.1.5 TRAFFIC CHANGES & PUBLIC ROAD AND PRIVATE DRIVE CLOSURES

This section on traffic changes, public road and private drive closures is repeated in its entirety from the Tier II DEIS.

Travelers in areas with active rail lines are accustomed to waiting at at-grade crossings for stopped or passing trains. While construction activities and the consolidated or realigned closings may be an initial inconvenience for these travelers, the short-term inconvenience will be offset by having a grade-separated rail crossing that allows for continuous, unimpeded access to and from both sides of the rail line. Owners of parcels with current, legal access to existing roads will have access to their parcels maintained (or will be compensated if it is not possible to maintain the access); driveway access to these parcels will be determined during final design when detailed survey level data is available.

Whether the existing rail line is active or inactive, rail crossing consolidations and associated improvements to adjacent roadways could have an impact on community cohesion within neighborhoods and communities. Potential impacts were identified and described if an alternative created a new physical barrier that isolated one part of an established community from another and potentially resulted in a physical disruption to community cohesion. However, the railroad line predates existing development and the railroad already acts as a boundary for many neighborhoods and businesses along the corridor. With the rail line already in existence, such adverse impacts are expected to be minor. The impacts of the Preferred Alternative within each community are addressed in the discussion that follows.

4.11.2.2 *IMPACTS FROM CHANGES TO THE TRANSPORTATION NETWORK*

The proposed improvements to existing at-grade crossings included in the Project are in response to documented needs for increased safety. Safety improvements are currently underway on active rail lines in North Carolina and Virginia to consolidate and close crossings where possible, and grade-separate those that remain (i.e., replace with bridges or underpasses) to separate vehicular and pedestrian traffic from rail traffic. The effect of these grade crossing closures is enhanced community safety.

One of the benefits of the Project is the opportunity to consolidate unsafe and redundant at-grade rail crossings along the corridor into safer, grade-separated crossings that do not adversely affect the surrounding communities. Increased train speeds and frequencies along the Project corridor will require an increased degree of protection at crossings. The safest such measure is the closure and consolidation of at-grade crossings in proximity to each other, rerouting traffic to new or existing bridges or underpasses. In addition, crossing closures can save money by eliminating installation and maintenance costs associated with warning devices, crossing surfaces, and foliage removal to improve sight distance. Consolidating crossings also improves a community's quality of life by eliminating noise from train horns sounded at crossings. An additional benefit is that grade separations are an “always open” crossing of the rail line for the community.

The construction of new railroad bridges and underpasses and the associated roadwork would impact highway traffic through temporary lane closures and changes to traffic patterns. The degree of impact will vary based on the level of service of the roadway, the proximity of alternate routes, and the extent of construction required at a given crossing.

Communities and neighborhoods along the Project corridor have a deep interest in the impacts of the proposed at-grade crossing changes, access consolidations, and road closures. Throughout the design process, meetings were held with local government representatives along the corridor to obtain input on local conditions that would affect design considerations. This information was used to refine proposed designs to better suit the needs of the local communities; comments on Tier II DEIS were used to further refine many of the railroad crossing designs for the Preferred Alternative. The decision to consolidate a crossing in a community considered accessibility and connectivity to the larger transportation network. Local and regional land use and transportation plans were taken into account and natural resource constraints, such as wetlands and cultural resources, were also considered. Descriptions for each crossing and associated roadwork, are included in Appendix F. Maps displaying the proposed roadwork are included in Appendix R.

To examine potential impacts to the transportation network from the Preferred Alternative, the proposed improvements were divided into the following categories and tabulated by section (Table 4-31).

- Existing Bridge / Underpass Maintained - In some instances, an existing bridge is proposed to be expanded or replaced in the same location.
- New Bridge / Underpass Provided
- Public Crossing Relocated - "Relocated" means the current public road crossing location will be closed and the traffic re-routed to an adjacent, grade-separated, public road crossing via improved roadways, as appropriate.
- Private Crossing Closed, Alternative Access Provided
- Existing Pedestrian-Only Bridge / Underpass Maintained
- New Pedestrian-Only Bridge / Underpass Provided

Undocumented rail crossings such as informal footpaths across the rail line are considered trespassing and, for safety reasons, will be eliminated.

Table 4-31
Crossing Consolidations for Preferred Alternative by Section

Location			Action						
Section	From	To	Existing Bridge / Underpass	New Bridge / Underpass	Public Crossing Relocated	Private Crossing Closed (Alternate Access Provided)	Existing Public Pedestrian Bridge / Underpass	New Pedestrian Bridge / Underpass	Public Road Closed at New Rail
AA	Main Street Station	Centralia	20	8	3	3	0	0	0
BB	Centralia	North of Dunlop	3	3	1	1	0	1	0

Table 4-31
Crossing Consolidations for Preferred Alternative by Section

Location			Action						
Section	From	To	Existing Bridge / Underpass	New Bridge / Underpass	Public Crossing Relocated	Private Crossing Closed (Alternate Access Provided)	Existing Public Pedestrian Bridge / Underpass	New Pedestrian Bridge / Underpass	Public Road Closed at New Rail
CC	North of Dunlop	Collier Yard	10	3	2	4	0	1	0
DD	Collier Yard	North of Burgess	1	3	0	1	0	0	0
A	North of Burgess	North of Dinwiddie	2	3	0	1	0	0	0
B	North of Dinwiddie	South of Dinwiddie	1	3	0	3	0	0	0
C	South of Dinwiddie	South of Nottaway River	2	4	4	7	0	0	0
D	South of Nottaway River	North of Alberta	0	3	1	1	0	0	0
E	North of Alberta	South of Alberta	0	4	2	2	1	0	0
F	South of Alberta	South of Tower Rd.	5	2	0	4	0	0	0
G	South of Tower Rd.	Meherrin River	1	2	0	0	0	0	0
H	Meherrin River	North of Wray Rd.	0	2	1	2	0	0	0
I	North of Wray Rd.	South of La Crosse	2	2	5	9	0	1	1
J	South of La Crosse	North of Bracey	0	3	0	5	0	0	0
K	North of Bracey	Roanoke River	1	1	0	0	0	0	0
L	Roanoke River	North of Norlina	0	2	2	3	0	0	0
M	North of Norlina	Southwest of Norlina	1	2	1	6	0	0	4
N	Southwest of Norlina	North of Middleburg	0	2	2	2	0	0	1

Table 4-31
Crossing Consolidations for Preferred Alternative by Section

Location			Action						
Section	From	To	Existing Bridge / Underpass	New Bridge / Underpass	Public Crossing Relocated	Private Crossing Closed (Alternate Access Provided)	Existing Public Pedestrian Bridge / Underpass	New Pedestrian Bridge / Underpass	Public Road Closed at New Rail
O	North of Middleburg	North of Henderson	0	3	0	1	0	0	1
P	North of Henderson	North of Kittrell	3	6	12	3	0	1	0
Q	North of Kittrell	Tar River	1	4	4	3	0	0	0
R	Tar River	North of Franklinton	0	1	1	0	0	0	1
S	North of Franklinton	North of Youngsville	1	4	5	0	0	3	1
T	North of Youngsville	North of Wake Forest	0	1	2	0	0	2	0
U	North of Wake Forest	North Raleigh	3	4	4	2	0	2	0
V	North Raleigh	Boylan Wye	14	9	2	0	0	1	0

In general, public road and private drive closings and consolidations could result in slightly longer travel distances and time, but not to the extent that the impact would be considered adverse. As noted in Chapter 2, all existing at-grade crossings located between proposed and existing bridges or underpasses will be closed and vehicular traffic rerouted to the nearest bridge or underpass. Bridges or underpasses will be located at a maximum distance of approximately one mile apart. In addition, the Annual Average Daily Traffic (AADT) of roads proposed for closure is typically very low, indicating that the numbers of drivers inconvenienced by the consolidations and reroutes would not be substantial. Drivers and pedestrians would experience the benefits of safety improvements via the elimination of at-grade road and pedestrian crossings and improvements to existing access roads for better sight distance and roadway geometrics. In addition, by replacing at-grade crossings with bridges and underpasses, driver and pedestrian access will not be impeded by a passing or stopped train.

The following discussion identifies how the individual communities will be changed and challenged by the Preferred Alternative. Impacts to communities and their resources are described below. Impacts from proposed changes to the transportation network from a traffic perspective are provided in Section 4.14.2. Impacts from potential relocations are discussed in Section 4.11.6.

The communities discussed below were chosen because they are formally recognized as communities, towns, or cities, and have the potential to be impacted by the alignments under consideration for the Project.

4.11.2.2.1 CITY OF RICHMOND, VA

The areas along the corridor in the City of Richmond, VA, are located on the "Southside" between Richmond, VA, and Petersburg, VA. Most of the area is developed with industrial and commercial establishments. The Preferred Alternative maximizes the use of existing rail ROW through Richmond, VA. Because the rail line is active, the proposed rail improvements within the City of Richmond, VA, are not expected to divide communities or create community barriers. Impacts would primarily be associated with road closures and consolidations and new, grade-separated crossings.

The proposed ROW for the new Maury Street bridge over the existing rail line may require the removal or relocation of several large petroleum storage tanks and small businesses. The existing I-95 ramps will be shifted slightly to the south of their current location, and a new roundabout will be constructed at the intersection of Maury Street/I-95 ramps/E. 4th Street.

Relocation of East Commerce Road and a new bridge over the rail line may require the relocation of several businesses in this heavily industrialized part of the city. In these industrial areas, a safe and unimpeded crossing of the rail line should be a welcome improvement to businesses.

Further to the south, the Study Area is a combination of residential, commercial, and industrial uses. At Ruffin Road, the rail line would bridge the road. The ROW needed for this underpass may require the relocation of several residences and commercial facilities. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced. At Bells Road, a new bridge over the rail line will be constructed. Roadway improvements and ROW may require the acquisition of a portion of the Philip Morris parking lot to the east of the rail line, as well as the relocation of several residences to the west of the rail line. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

4.11.2.2.2 CHESTERFIELD COUNTY, VA

The Preferred Alternative maximizes the use of existing rail ROW through Chesterfield County. Because the rail line is active, the proposed rail improvements within Chesterfield County are not expected to divide communities or create community barriers. Impacts would primarily be associated with road closures and consolidations and new, grade-separated crossings. Station Road is an existing at-grade crossing and serves as the only point of access to Chesterfield County's water treatment plant. Station Road will be realigned with a new, grade-separated crossing provided to maintain access to the plant. A new road connecting Thurston Road with Chester Road will improve access within the Bellwood community. Near the southern boundary of Chesterfield County, the designs shown in the Tier II DEIS called for a closure of the existing Woods Edge Road at-grade rail crossing. However, in response to comments on the Tier II DEIS, the designs have been revised to include a bridge over the railroad, which will maintain community connectivity in this location.

4.11.2.2.3 CHESTER, VA

The Preferred Alternative maximizes use of the existing rail ROW through Chester, VA. Because the rail line is active, the proposed rail improvements within the community of Chester are not expected to divide communities or create community barriers. Impacts would primarily be associated with road closures and consolidations and new, grade-separated crossings.

Centralia Road will be relocated with a bridge that crosses both the rail line and Chester Road with a connection to Chester Road. For those traveling on Centralia Road, access to Centralia Road across the tracks would be slightly circuitous in that drivers would be rerouted to Chester Road to reconnect to Centralia Road. In response to comments received from the County, the designs for West Street closure have been revised to include a pedestrian bridge over the railroad, maintaining pedestrian access between the communities on either side of the rail.

4.11.2.2.4 CITY OF COLONIAL HEIGHTS, VA

The Preferred Alternative maximizes the use of existing rail ROW through the City of Colonial Heights, VA. There are no road closures or realigned roadways within Colonial Heights, VA. An additional rail bridge over Cedar Lane will not have a negative effect on travel or adjacent communities. The rail alignment is proposed to cross over Boulevard US-1 on expanded new adjacent rail bridge.

4.11.2.2.5 ETTRICK, VA

The community of Ettrick, VA, straddles the existing railroad corridor. Although located within Chesterfield County, it is a small bedroom community for the City of Petersburg, VA. Recent development within this community has been driven by Virginia State University, which is located within Ettrick, VA.

The Preferred Alternative maximizes the use of existing rail ROW through Ettrick, VA. Because the rail line is active and the Amtrak passenger rail station at Ettrick, VA is currently in operation, the proposed rail improvements within the community of Ettrick, VA, are not expected to divide communities or create community barriers. Impacts would primarily be associated with road closures and consolidations and new, grade-separated crossings.

ROW required for the realignment and new bridge crossing for Branders Bridge Road, along with the associated roadway improvements, may require the relocation of approximately two homes in the residential development along Maurer Lane. The realignment and new bridge crossing for Dupuy Road will potentially displace between 15 and 20 homes on the north side of the road between Roosevelt Avenue and Laurel Road. While these homes may be displaced, the Ettrick, VA, community as a whole will experience improved access through the area. During final design, further measures to avoid and minimize displacements will be implemented; this will likely lower the numbers ultimately displaced.

4.11.2.2.6 CITY OF PETERSBURG, VA

The Preferred Alternative maximizes use of the existing rail ROW through the City of Petersburg, VA. Because the rail line is active, the proposed rail and roadway improvements within Petersburg, VA, are not expected to divide communities or create community barriers. Impacts would primarily be associated with road closures and consolidations and new, grade-separated crossings. While the Washington Street underpass will be realigned and the existing rail bridge widened, these improvements will not have a negative effect on travel or adjacent communities. At Lincoln Street, the at-grade crossing will be closed but a pedestrian crossing will be provided, maintaining pedestrian access between the communities on either side of the rail.

4.11.2.2.7 DINWIDDIE COURTHOUSE COMMUNITY, VA

The Dinwiddie, VA, Courthouse community is clustered around the intersection of Boydton Plank Road (US-1) and Courthouse Road, approximately 600 feet to 2,000 feet to the west of the inactive CSX S-Line rail line. It is a small community whose main business and residential core is along Boydton Plank Road. The Preferred Alternative diverges from the existing rail alignment onto new alignment; the new alignment provides improved train performance by straightening two curves. The Preferred Alternative will require a new bridge over the railroad for Carson Road. There are no communities within the new alignment area. Therefore, the portion of new rail alignment would not be considered adverse or disruptive.

4.11.2.2.8 MCKENNEY, VA

Although the rail line is currently inactive, the Town of McKenney, VA, is historically an old railroad village and most of the development in town has occurred along the rail line and Factory Street. The Preferred Alternative maximizes the use of the existing rail line and ROW through McKenney, VA. Town officials were concerned about preserving the historic nature and features of their town with any proposed grade-separated rail crossing. The design for a bridged crossing of the railroad at Doyle Boulevard was developed through coordination efforts with the Town. The designs call for lowering the existing rail alignment approximately 15 feet, and raising the elevation of Doyle Boulevard approximately 15 feet, so that Doyle Boulevard can cross over the railroad on a bridge in the existing location. This design feature will help to maintain the historic setting of Doyle Boulevard and the surrounding area. Aside from the short-term disruption from construction activities, the proposed road and rail improvements will have minor adverse effects on community cohesion.

4.11.2.2.9 ALBERTA, VA

The Town of Alberta, VA, is historically a former railroad village with the intersection of the inactive CSX and NS rail lines at its core. The town has minimal development in terms of industrial, commercial, and retail establishments. Development and neighborhoods are relatively evenly dispersed within the town limits. The Town of Alberta, VA, is actively pursuing downtown revitalization and is hopeful that the Project will provide positive economic benefits to the town.

Through town, the Preferred Alternative maximizes the use of the existing rail ROW. Because of this, improvements to the rail corridor itself will have minimal effect on adjacent neighborhoods and businesses. However, roadway improvements associated with the Project will be substantial, including road closings, road realignments, and grade-separated rail crossings.

The current at-grade rail crossing of Church Street will be closed and Church Street will be realigned approximately 1,700 feet to the northeast, crossing over the railroad on a bridge. This realignment will provide a better connection with Littlemont Road and the new residential development currently under construction around Brunswood Avenue. The new Littlemont Road bridge over the rail line will be approximately 31 feet high. Several of the homes on the southeast side of Littlemont Road may be displaced because of the need for ROW for the new bridge approach. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

The current at-grade rail crossing of Second Avenue will be closed and the road realigned through an undeveloped parcel approximately 500 feet to the northeast. While this undeveloped parcel has been subdivided, the realignment of Second Avenue through it will not disrupt any existing neighborhoods. The realigned road will include an approximately 30-foot high bridge over the railroad.

The current at-grade rail crossing of Main Street will be closed and Main Street will be realigned approximately 200 feet to the north, crossing over the railroad on a bridge. This roadway improvement will not separate communities or have an adverse effect on community cohesion.

The Tobacco Heritage Trail follows the inactive NS rail line through town. The Town of Alberta, VA, includes the Tobacco Heritage Trail as a vital component of its downtown revitalization effort as it would stimulate tourism in the region. To ensure the safety of those using the Tobacco Heritage Trail, the Preferred Alternative proposes to replace the existing railroad superstructure to provide an improved pedestrian underpass where the Tobacco Heritage Trail intersects with the Preferred Alternative railroad alignment. Given that the Tobacco Heritage Trail follows an inactive rail line through a town built around the railroad, the re-introduction of passenger rail in the area would be in keeping with the historic context of the Town of Alberta, VA, and will not likely have a negative impact on the trail user's experience.

4.11.2.2.10 LA CROSSE, VA

The Town of La Crosse, VA, is becoming a suburb of South Hill, VA, a larger town approximately 2.5 miles to the northwest. La Crosse, VA, was originally built around the now inactive railroad corridor.

Through town, the Preferred Alternative follows the inactive rail corridor and maximizes the use of the existing rail ROW. Improvements to the rail corridor itself would have minimal disruptive effects on adjacent neighborhoods and businesses. However, there are several roadway improvements associated with the rail improvements, including road closings, road realignments, and grade-separated rail crossings.

The current at-grade rail crossing of Main Street will be closed and relocated to a new, grade-separated crossing (rail-over-road) approximately 1,000 feet to the south. This crossing will connect to a traffic circle that will include the intersections of Meredith Street and St. Tammany Road. The traffic circle element was designed in response to community requests that traffic be maintained on downtown roads, especially Main Street. Closing the existing Main Street rail crossing and relocating the feeder roads to it will alter the character of the downtown area. However, the change was designed with input from town residents with the idea that passenger rail service and a future rail stop will encourage business, residential, and tourism development opportunities.

As with Alberta, VA, the Tobacco Heritage Trail follows the inactive NS rail line through town. To ensure the safety of those using the Tobacco Heritage Trail, a railroad bridge will be constructed where the Tobacco Heritage Trail intersects with the Preferred Alternative railroad alignment, providing a pedestrian-only underpass. Given that the Tobacco Heritage Trail follows an inactive rail line through a town built around the railroad, the re-introduction of passenger rail in the area will be in keeping with the historic context of the Town of La Crosse, VA, and will not likely have a negative impact on the trail user's experience.

4.11.2.2.11 NORLINA, NC

Like Alberta, VA, and La Crosse, VA, the Town of Norlina, NC, is an old railroad town and its development has been evenly divided along either side of the now-inactive CSX S-Line and the inactive CSX SA-Line which join together in the middle of the town. The Preferred Alternative diverges from the CSX S-Line to the east, then joins the old CSX SA-Line ROW near Town and Country Road, thereby improving train performance by straightening curves.

Close to Main Street and US-158, the Preferred Alternative re-joins the CSX S-Line ROW crossing over US-158 on a bridge; improvements to the existing US-158 underpass (rail over road) are proposed by the Preferred Alternative. There is active freight service on the CSX S-Line just south of Norlina, NC, and the rails remain in place through town, however rail operations through the town have been inactive for over 20 years. Therefore, in general, reactivation of rail operations in Norlina, NC, would be disruptive to the community. The proposed relocation of Warren Plains Road just north of the Town limits, will create new travel patterns for access across the rail line; however, the proposed realignment includes construction of a bridge over the railroad to provide safe access.

4.11.2.2.12 MIDDLEBURG, NC

Middleburg, NC, is an old town that developed along US-1 and what is now the current, active CSX line. Most of the town's development is located west of US-1 and the railroad corridor.

The Preferred Alternative is on new location to the southeast. Under the Preferred Alternative, Carroll Street will bridge over the rail line on new alignment further to the east. Because of the existing terrain, this new road-over-rail crossing will be raised approximately 30 feet. Overall, the proposed road consolidations and crossings would not have an adverse effect on travel patterns and quality of life within this predominately agricultural community.

4.11.2.2.13 CITY OF HENDERSON, NC

Henderson, NC, is equally developed on either side of the existing CSX S-Line. The Preferred Alternative maximizes the use of existing rail ROW through the city. Because the rail line is active, the proposed rail improvements within Henderson, NC, are not expected to divide communities or create community barriers. Impacts will primarily be associated with road closures and consolidations and new bridges or underpasses.

In response to comments on the Tier II DEIS, several revisions have been made to the roadwork designs in Henderson, NC (refer to Chapter 2 for a description of the changes). Of the 15 existing, public at-grade road/rail crossings within the vicinity of Henderson, NC, 10 will be closed and consolidated into 7 new or existing grade-separated crossings. The new crossings include Main Street, Andrews Avenue, Alexander Avenue, JP Taylor Road, and Bear Pond Road. The existing crossings include Charles Street and the US-1 Bypass. A new pedestrian crossing will be located at Peachtree Street.

The ROW required for the construction of an underpass at Main Street with connections to a new roundabout on the west side of the railroad, and construction of the other grade separated crossings will require the relocation of approximately eleven residences. However, the designs provide improved access across the rail line and the roundabout will improve the transportation network for the community on the west side of the railroad. The designs for an Andrews Avenue bridge over the railroad will also require the relocation of several residences and approximately two businesses; however, the designs provide improved access across the rail line. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

The Alexander Avenue bridge over the rail line and its extension to Dabney Drive will potentially require the relocation of between one and five businesses. However, this will improve access for both sides of the rail line in this area. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

Because the roadway network is well developed within Henderson, NC, the road closures and travel reroutes would not have an adverse effect on travel patterns or the quality of life within Henderson, NC. The City of Henderson, NC, has been supportive of the Project in hopes that a future rail stop will encourage business, residential, and development opportunities.

4.11.2.2.14 KITTRELL, NC

The Preferred Alternative maximizes the use of existing rail ROW through Kittrell, NC. The majority of Kittrell, NC, development is to the east of the existing rail line. Because the rail line is active, the proposed rail improvements within Kittrell, NC, are not expected to divide communities or create community barriers. As such, impacts will primarily be associated with road closures and consolidations and new, grade-separated crossings.

Under the Preferred Alternative, the existing at-grade crossing of E. Main Street will be closed. In response to comments on the Tier II DEIS, the designs for a grade separated crossing in Kittrell, NC, have shifted from a location near Church Street to McClannahan Street. The new designs reduce the number of potential residential relocations from approximately seven to one, and would potentially require one business relocation. During final design, further measures to avoid and minimize displacements will occur.

4.11.2.2.15 FRANKLINTON, NC

The Town of Franklinton, NC, is an old railroad town that historically developed along the current, active rail line and old US-1. Commercial development is primarily west of the rail line. The Preferred Alternative maximizes the use of existing rail ROW; because the rail line is active, the proposed rail improvements within Franklinton, NC, are not expected to divide communities or create community barriers. Impacts will primarily be associated with road closures and consolidations and new, grade-separated crossings.

Existing at-grade crossings at Pearce, Joyner, Mason, College, and Hawkins Streets will be closed. Automobile travelers needing to cross the rail line will use the existing (but improved) Green Street underpass or the realigned and new Cedar Creek Road bridge over rail that connects to Main Street. The design for a pedestrian bridge at Mason Street has been revised in response to comments on the Tier II DEIS; the Preferred Alternative now provides a pedestrian-only underpass with ramps at Mason Street. Pedestrian underpasses are also provided between E. College and W. College Streets, and south of Hawkins Street. An additional design revision affecting the Franklinton, NC, road network was made in response to comments; the proposed improvements to Tanyard Street have been eliminated from the designs. An alternative design was developed for a north-south connection east of the railroad between East Green Street and East College Street, near the eastern boundary of the Sterling Mill historic resource.

Because the roadway network is well developed within Franklinton, NC, the road closures and travel reroutes would not have an adverse effect on travel patterns or the quality of life within Franklinton, NC.

4.11.2.2.16 YOUNGSVILLE, NC

This small community is located adjacent to the active rail corridor and old US-1. It is a bedroom community of the Raleigh, NC, and Wake Forest, NC, areas. Through town, much of the development faces the railroad line. The Preferred Alternative maximizes the use of existing rail ROW through the town. Because the rail line is active, the proposed rail improvements within Youngsville, NC, are not expected to divide communities or create community barriers. Impacts will primarily be associated with road closures and consolidations and new, grade-separated crossings.

A major feature of the proposed improvements will be the lowering of the rail corridor by approximately 30 feet between Main Street and Winston Street in order to maintain the architectural and historic integrity of the town. The lowering of the rail line through this area will require the closing of both East Railroad Street and West Railroad Street on both sides of the rail line. The end result will be a new Main Street bridge over the rail line; however, the crossing will maintain its current grade. The Winston Street and Pine Street at-grade crossings will be closed, while a new pedestrian bridge will be built over the railroad connecting E. Franklin Street to W. Franklin Street. In response to comments on the Tier II DEIS, an additional pedestrian crossing in town has been added to the designs; a bridge with ramps will be built at Pine Street. Additional revisions include elimination of the proposed extension of Nassau Street. Instead, Cross Street will be extended northward to intersect the Future NC 96 Bypass alignment that will cross over the railroad on a bridge, and will be used for the detour route during construction of the Main Street bridge over the railroad. The inconvenience of the road closures and consolidations in Youngsville, NC, will be offset by the improved connectivity and safety of roads and the maintenance of the historic integrity of the town.

4.11.2.2.17 WAKE FOREST, NC

The Town of Wake Forest, NC, is the second largest urban area in the North Carolina Study Area and is considered a bedroom community for the City of Raleigh, NC,. Development has occurred on both sides of the active CSX railroad corridor over the years. The Preferred Alternative maximizes the use of existing railroad ROW. Because the rail line is active, the proposed rail improvements within Wake Forest, NC, are not expected to divide communities or create community barriers. Impacts will primarily be associated with road closures and consolidations and new, grade-separated crossings.

Wake Forest, NC, officials expressed concern about maintaining pedestrian access across the rail line. Undocumented pedestrian crossings will be eliminated near Brick/N. White Streets and near Cedar Avenue/ Brewer Avenue/N. White Street, and a new grade-separated, pedestrian-only bridge over the railroad will be constructed near the latter of the two. While the Elm Avenue crossing will be closed, new crossing access will be available nearby at a realigned Holding Avenue. The realignment will connect E. Holding to W. Holding Avenue which may require the displacement of several homes along W. Holding Avenue and S. Main Street. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

Comments on the Tier II DEIS from the public and the Town of Wake Forest, NC, indicated a strong desire to maintain access across the railroad at Elm Avenue, if not vehicular, at least pedestrian. Refer to Chapter 2 for a description of coordination that has occurred subsequent to the Tier II DEIS that led to inclusion of new designs for a pedestrian-only bridge at Elm Avenue. The new design maintains pedestrian connectivity across the railroad for the community located along Elm Avenue.

The existing crossing at Friendship Chapel Road will be closed and a new road will be constructed to the east that connects to the NC 98 Bypass. This new access point to NC 98 will provide an improvement to the traffic network and would not disturb residential communities.

The Preferred Alternative provides improved access to Heritage Middle and Elementary Schools to the east of the crossing and Wake Forest – Rolesville Middle School to the west of the new crossing. The alignment will impact private baseball fields west of the railroad, and will likely require the displacement of a private school (Thales Academy) on the east side of the railroad. During final design, further measures to avoid and minimize displacements will occur.

4.11.2.2.18 CITY OF RALEIGH, NC

As North Carolina’s state capitol, Raleigh, NC, is the largest urban area in North Carolina within the Project corridor. A variety of residential, commercial, and industrial development has occurred on both sides of the active railroad corridor over the years. The Preferred Alternative maximizes the use of existing rail ROW, while crossing over Capital Boulevard on a new passenger train-only rail bridge, adjacent to the existing CSX S-Line bridge, just north of the downtown area. Because the rail line is active, the proposed rail improvements within Raleigh, NC, are not expected to divide communities or create community barriers. Impacts will primarily be associated with road closures and consolidations and new, grade-separated crossings.

Outside the Route I-440 Beltline, Durant Road will become grade-separated with a bridge over the rail line. The designs for Durant Road improvements have been revised subsequent to the Tier II DEIS (refer to Chapter 2). The improvements minimize ROW impacts to homes and businesses on the south side of Durant Road, however the relocation of one or two homes at the entrance to the Windsor Forest neighborhood will be required. In addition, the Preferred Alternative will require relocation of the City of Raleigh, NC, Fire Station 22. The new Durant Road bridge will provide unimpeded access across the rail line; a feature that will be beneficial to

Durant Road Middle School, Durant Road Elementary School, and Durant Road Park, all located west of the railroad.

The Preferred Alternative will require a new Gresham Lake Road bridge over the rail line. The new bridge and associated roadway improvements will provide unimpeded ingress and egress to the adjacent industrial areas on either side of the rail.

The Preferred Alternative will maintain the existing bridges at I-540, Old Wake Forest Road, Spring Forest Road, and Atlantic Avenue. Therefore, there will be no disruption to existing access at these crossings. A new rail bridge over Millbrook Road will be required by the Preferred Alternative. Aside from the temporary inconveniences associated with construction activities, the new rail bridge will improve ingress and egress through this commercial/industrial area.

The Preferred Alternative will require a new bridge over the rail line at New Hope Church Road. Design revisions subsequent to the Tier II DEIS include a small southward shift for New Hope Church Road, to allow more lanes of traffic to remain open during construction and to provide room for bike lane. Roadway improvements associated with the grade-separated crossing will include St. Albans Drive, Tarheel Drive, Craftsman Drive, and New Hope Church Road. These improvements will provide unimpeded access between the commercial area to the west of the rail line and the many residential communities to the east of the line.

The Preferred Alternative has been revised to include a realignment and bridge over the railroad at Wolfpack Lane, which will retain connectivity across the railroad (refer to Chapter 2 for more information).

Given the well-developed roadway network in the downtown area, inconveniences associated with reroutes will be minimal. Inside the Beltline, the Preferred Alternative will maintain the existing I-440 bridge, replace the existing bridges over Six Forks Road, and construct a second bridge adjacent to the existing bridge over Hodges Street. This will result in minimal community disruption.

The Preferred Alternative will require a new Whitaker Mill Road bridge over the rail line. This will likely result in the displacement of several industrial buildings for the realignment of Whitaker Mill Road. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

In the downtown area, the Preferred Alternative will maintain grade separated crossings at Capital Boulevard, Hodges Street, Hillsborough Street, Morgan Street, and Boylan Avenue; a new separate parallel rail bridge will be built east of existing NS rail bridges, to span Peace Street, W. Johnson Street, Tucker Street, and North Street, therefore disruptions and reroutes will be avoided. New grade separated crossings will be provided at Old Williamson Road, and a new bridge spanning both Capital Boulevard and West Street, south of the CSX Capital Yard. Both Jones Street and Hargett Street will be closed under the Preferred Alternative. However, to accommodate strong public interest in maintaining pedestrian access across the railroad at Jones Street, the Preferred Alternative includes a pedestrian-only bridge at this location, near the heart of the burgeoning Glenwood South downtown development.

4.11.3 COMMUNITY FACILITIES AND SERVICES

The effect of rail crossing consolidations and road closures on community facilities and services such as schools, places of worship, and emergency services are evaluated in this section. Noise and vibration impacts to community facilities and services are discussed in Section 4.7. An evaluation of impacts to parks and recreation areas is provided in Section 4.13.

4.11.3.1 *PUBLIC EDUCATIONAL FACILITIES*

There are 27 public educational facilities located within the designated communities of the Study Area, with 11 in Virginia and 16 in North Carolina. In the Tier II DEIS, schools potentially impacted by the proposed alternatives were evaluated in light of changes in accessibility and safety improvements due to elimination of at-grade crossings. Section 3.11 of this Tier II FEIS noted that the Tier II DEIS mistakenly included Bensley Elementary School in Richmond, VA, in the list of schools located in the Study Area. This school is not included for evaluation in this chapter. In addition, the three schools previously located within the Study Area have subsequently moved to locations outside the Study Area; although one former site is being re-used for a different school. Table 4-32 provides a summary of the impacts associated with the Preferred Alternative by section. As mentioned above, noise and vibration impacts at these sensitive receptors are addressed in Section 4.7.

Overall, there will be a net benefit to all schools from roadway safety improvements provided by grade-separated rail crossings (bridges and underpasses), the elimination of at-grade rail crossings, and the addition of pedestrian-only crossings. Inconveniences associated with construction activities will be temporary. The negative impacts of potentially longer driving distances to cross the rail line would be minimal and offset by the benefits gained in safety and unimpeded “always open” access.

Table 4-32
Impacts to Schools

Section	Map Sheet	Location	School	Impacts from Preferred Alternative
AA	4	Richmond, VA	Ruffin Road Elementary	Replacement of existing Ruffin Road at-grade crossing with new underpass will provide safer travel and unimpeded access
	8	Chesterfield County, VA	Perrymont Middle	Realignment and new grade-separated bridge for Kingsland road will improve safety and provide better access to the school at Perrymont Road
BB	12	Chesterfield County, VA	Chester Middle	No impact
CC	17	Colonial Heights, VA	North Elementary	No impact
	18	Colonial Heights, VA	Lakeview Elementary	No impact
	20	Ettrick, VA	Ettrick Elementary	No impact
	24	Petersburg, VA	JEB Stewart Elementary	No impact
	25	Petersburg, VA	Westview Elementary	No impact
DD	37	Dinwiddie County, VA	Southside Elementary	Quaker Road realignment with new grade separated bridge over rail and new intersection with Boydton Plank Road provides improved, safer access from the east
	39	Dinwiddie County, VA	Dinwiddie Middle	Honeycutt Road realignment with new grade separated bridge over rail provides improved, safer access from the southeast

Table 4-32
Impacts to Schools

Section	Map Sheet	Location	School	Impacts from Preferred Alternative
A & B	--	Dinwiddie County, VA	There are no schools in these sections	N/A
C	51	McKenney, VA	Sunnyside Elementary	Doyle Boulevard would have new grade separated bridge over rail, improving access to Sunnyside Road and Sunnyside School
D - L	--	Brunswick & Mecklenburg County, VA	There are no schools in these sections	N/A
M	99	Norlina, NC	Northside Elementary	Realignment of Warren Plains Rd with bridge over new rail alignment and direct connection to US 1 improves safety and access from the southeast
N & O	--	Warren & Vance County, NC	There are no schools in these sections	N/A
P	108	Middleburg, NC	E.O Young Elementary	Closure of existing Carroll Street crossing and realignment, with new bridge over existing rail improves access to school from the south
	110	Middleburg, NC	Carver Elementary	Realignment of Carver School Road improves access to school
	112	Henderson, NC	Northern Vance High	Improvements to Warrenton Road (realignment and new rail bridge) improve access to school
	115	Henderson, NC	Henderson Middle	No impact to nearby existing Charles Street underpass, which provides access to school
	116	Henderson, NC	L.B. Yancey Elementary	No impact
Q	118	Henderson, NC	Zeb Vance Elementary	Direct access from east of the railroad via Peter Gill Road will be eliminated and traffic rerouted less than 0.5 miles to new Wildlife Lane extension and underpass of the rail. New route will be longer, but unimpeded and safer with removal of at-grade rail crossing
	121	Kittrell, NC	Kittrell Job Corps Center	Extension of Church Street and bridging of rail line will provide improved, unimpeded access from the east
R	--	Franklin County, NC	There are no schools in this section	N/A
S	127	Franklinton, NC	Franklinton Middle School	Direct access from east of the railroad at Mason Street, located one block away, will be restricted to pedestrian and bicycle access via new underpass with stairs and ramps. Existing underpass at nearby Green Street located two blocks away, would be replaced for better clearance
	128	Franklinton, NC	Franklinton Elementary	Pedestrian access to school from east of rail line will be safer and unimpeded with two new pedestrian-only underpasses near College Street (approximately 0.25 miles north) and Hawkins Street (approximately 0.15 miles south)

Table 4-32
Impacts to Schools

Section	Map Sheet	Location	School	Impacts from Preferred Alternative
T	132	Youngsville, NC	Youngsville Elementary	Access to school from east of rail line will be safer and unimpeded with new Main Street bridge over rail. Main Street connects to US 1 where school is located
U	136	Wake Forest, NC	Wake Forest Elementary	The closure of the nearby existing Elm Avenue at-grade crossing will re-route vehicular traffic to the existing Roosevelt Avenue underpass approximately 0.3 miles north, and to the new underpass at Holding Avenue, approximately 0.3 miles south; The new pedestrian bridge at Elm Avenue will provide direct, safe, pedestrian access to the school
	137	Wake Forest, NC	Heritage Elementary	New Rogers Road bridge over rail line provides improved, safer, and unimpeded access to school from west of rail line
	137	Wake Forest, NC	Heritage Middle	New Rogers Road bridge over rail line provides improved, safer, and unimpeded access to school from west of rail line
	138	Wake Forest, NC	Wake Forest – Rolesville Middle	New Rogers Road bridge over rail line provides improved, safer, and unimpeded access to school from west of rail line
V	144	Raleigh, NC	Millbrook High	No impact
	149	Raleigh, NC	Peace College	No impact

4.11.3.2 *PLACES OF WORSHIP AND CEMETERIES*

In terms of the human environment, places of worship are very important to the lifestyle and overall health of the population of a community. In the Tier II DEIS, potential impacts of the Project alternatives related to changes in accessibility and safety from elimination of at-grade crossings were evaluated for places of worship and cemeteries within the corridor. Property impacts related to ROW required for new rail and road work were also addressed. Noise and vibration impacts were addressed separately in Section 4.7 of the Tier II DEIS.

The Tier II DEIS identified 100 places of worship and/or cemeteries located within the Project corridor. As noted in Section 3.11.5, the list of resources has been revised to reflect inclusion of new listings based on information and comments received after publication of the Tier II DEIS. In addition, 10 churches either moved or are no longer in existence, and have been removed from the list. Table 4-33 provides a summary of impacts from the Preferred Alternative to the 98 places of worship and cemeteries within the Study Area.

Overall, there will be a net benefit to all places of worship from roadway safety improvements provided by grade-separated rail crossings, the elimination of at-grade rail crossings, and the addition of pedestrian-only crossings. Inconveniences associated with construction activities will be temporary. The negative impacts of potentially longer driving distances to cross the rail line will be minimal (less than 1 mile) for most places of worship, and offset by the benefits gained in safety and unimpeded access. However, as shown in Table 4-33, there are 17 churches where the Preferred Alternative may require ROW and/or where driveway access may be changed as part of the final design process. Of these, the Preferred Alternative will result in the relocation of two churches: God Mission of Faith Church in Ettrick, VA; and EMI New Covenant Global Ministries in Raleigh, NC.

In February 2013, letters were sent to Chesterfield County, VA property owners within the Study Area, to announce the February 26, 2013 Project Update Meeting in Chesterfield. God Mission of Faith Church was included in the mailing. Following the mailing, Virginia DRPT staff attempted to contact the church to discuss the potential impacts from relocating the church. Two phone calls were made, and two voicemails were left that mentioned the letter and the upcoming meeting. The message included an invitation to discuss the impacts of relocating, either by telephone, or at the Project Update Meeting. The telephone calls were not returned, and church representatives did not attend the Project Update Meeting. Future coordination will be undertaken as needed, as part of Virginia's right of way procedures for relocation assistance. It appears from current parcel data, that the Church owns a larger vacant tract of land next to the church building that may be suitable for relocation.

EMI New Covenant Global Ministries rents space in a commercial building at 909 N. West Street in Raleigh, NC. In summer 2013, NCDOT staff attempted to contact the church in order to discuss the fact that the Project designs impact the property where the church is currently located, and the fact that implementation of the Project will result in a need for the church to relocate. No phone number is listed on the church's website, but emails were sent to links provided on the website. In addition, a certified letter was sent to the owner of the property, but was not claimed. Although there was no response to this outreach, future coordination will be undertaken as needed, as part of NCDOT's right of way procedures for relocation assistance. An internet search in spring 2013 found that similar suitable rental properties are available throughout downtown Raleigh, NC; therefore, it appears the church should be able to relocate within the community.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
AA	3	Richmond, VA	All Saints Apostolic Church, 2001 Royall Ave.	Access to the church across the railroad from the east will be unimpeded via the new bridge and realignment of Commerce Road.
	4	Richmond, VA	Church of God in Christ, 2208 Summer Hill Ave.	ROW may be required for the extension of Lynnhaven Avenue along west side of the church. Access to the church will be improved through the new bridge over the railroad at Ruffin Road, one block south.
	8	Near Bellwood in Chesterfield County, VA	Kingsland Baptist Church, 8801 Perrymont Rd.	Access to the church will be improved due to an extension of Kingsland Road, which will cross the railroad on a bridge.
	10	Chester, VA	Historic First Baptist Church, 4412 Centralia Rd.	ROW is required for new access roads west of the church property through adjacent undeveloped property, and along the southern parcel boundary. Access across the railroad will be improved through realignment of Centralia Road, which includes a bridge over the railroad and Chester Road.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	10	Chester, VA	Centralia Presbyterian Church, 4625 Centralia Rd.	ROW is required along the northern property for the realignment of Centralia Road. Access across the railroad will be improved through realignment of Centralia Road, which includes a bridge over the railroad and Chester Road.
BB	12	Chester, VA	Chester Church of Christ, 12100 Winfree St.	Access from the north will not be altered, while there will be improved access from the south due to the new underpass at Curtis Street.
	12	Chester, VA	St. John's Episcopal Church, 12201 Richmond St.	Access from the north will not be altered, while there will be improved access from the south due to the new underpass at Curtis Street.
CC	17	Near Colonial Heights in Chesterfield County, VA	Calvary Baptist Church, 17001 Jefferson Davis Highway	Access across the railroad from the east will be improved due to a new bridge over the railroad on Pine Forest Drive.
	18	Colonial Heights, VA	Church of Nazarene, 601 Ellerslie Ave.	No impact
	18	Colonial Heights, VA	St. Michael's Episcopal Church, Old Town Rd.	No impact
	20	Near Ettrick in Chesterfield County, VA	Macedonia Tabernacle, 3615 E. River Rd.	No impact
	20	Near Ettrick in Chesterfield County, VA	God Mission of Faith Church, 3718 East River Rd.	The DEIS stated there would be no substantive change in access, but failed to account for ROW impacts. Rail ROW requirements will displace the church. Assistance with relocation is provided as needed as part of Virginia right of way acquisition procedures.
	24	Petersburg, VA	Shining Light Pentecostal Holiness Church, 1417 Farmer St.	There will be no substantive change in access.
	24	City of Petersburg, VA	Third Presbyterian Church, 1660 Dupuy Rd.	There will be no substantive change in access.
	25	City of Petersburg, VA	Greater Faith AME Zion Church, 1301 Youngs Rd.	Vehicular access will be altered due to the closure of the Lincoln Street at-grade crossing. Vehicular traffic from east of the rail line will be rerouted a maximum of 1.5 miles to access the church. Pedestrian access will be improved with a pedestrian-only, grade-separated crossing at Lincoln Street.
	25	City of Petersburg, VA	New First Baptist Church, 1346 Grant Ave.	There will be no substantive change in access.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	25	City of Petersburg, VA	Zion Apostolic Church, 1601 Youngs Rd.	There will be no substantive change in access.
DD	--	N/A	N/A- no places of worship in Section	N/A
A	38	Dinwiddie County, VA	Olive Branch Baptist Church, 11119 Boydton Plank Rd.	There will be no impact to the parcel on which the church is located or to the outlying parcel behind the church, which lies close to the rail ROW.
B	41	Near the County courthouse in Dinwiddie County, VA	Smyrna Baptist Church, 18725 Carson Rd.	There will be improved access from the east across the railroad via a new bridge over the railroad on Carson Road.
C	45	Dinwiddie County, VA	Mount Calvary Baptist Church, 16609 Glebe Rd.	ROW is required along the front of the church property to accommodate the realignment of Glebe Road. Access across the railroad will be improved due to new bridge over railroad on Glebe Road.
D	54	Between McKenney and Alberta in Brunswick County, VA	Lovely Zion Baptist Church, Lovely Zion Rd.	Access will be altered slightly due to a realignment of Rawlings Road; however, access to the church will continue to be provided via the old Rawlings Road alignment on the west side of the railroad. A bridge over the railroad on the new Rawlings Road alignment will provide improved access from the east across the railroad.
	60	North of Alberta in Brunswick County, VA	Mercy Seat RZUA Church, Waqua Creek Rd.	The rail alignment will be located near the back of the church property, but there will be no direct impact and no substantive change in access.
	62	North of Alberta in Brunswick County, VA	Warfield Baptist Church and Cemetery, 7318 Flat Rock Rd.	ROW will be required for road work associated with new Flat Rock Road bridge.
E	66	Alberta, VA	United Methodist Church, 304 Church St.	Church Street will be realigned beginning just north of the church to cross the railroad on a bridge. Road work will end near the church, but no ROW will be required and there will be no substantive change in access.
	66	Alberta, VA	Trinity-St. Mark's Episcopal Church, 194 Connelly St.	There will be no substantive change in access.
F to H	--	N/A	N/A- no places of worship in Sections	N/A
I	83	South of La Crosse in Mecklenburg County, VA	First Baptist Church, Marengo Rd.	Access will be altered due to the closure of the Morris Town Circle crossing south of the church. Travelers west of the railroad tracks will utilize a new underpass at a re-configured Main Street, less than 0.5 miles north.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	83	South of La Crosse in Mecklenburg County, VA	La Crosse Cemetery, Marengo Rd. (New listing)	Access will be altered due to the closure of the Morris Town Circle crossing next to the cemetery. Travelers west of the railroad tracks will utilize a new underpass at a re-configured Main Street, approximately 0.6 miles to the north.
	83	South of La Crosse in Mecklenburg County, VA	Morning Star Apostolic Church, 142 Morris Town Circle	Access will be altered due to the closure of the Morris Town Circle crossing. Travelers from the east of the railroad tracks will have to travel northward to Hillcrest Road (maximum reroute of 1.25 miles) to access the church.
	83	South of La Crosse in Mecklenburg County, VA	Mecklenburg United Methodist Church, 6503 Marengo Rd.	Access will be altered due to the closure of the Morris Town Circle crossing north of the church will be closed. Travelers west of the railroad tracks will utilize a new underpass at a re-configured Main Street, less than 0.75 miles north.
J	85	South of La Crosse in Mecklenburg County, VA	Pleasant Hill Reformed Zion Union Apostolic Church, 4143 Marengo Rd.	The DEIS stated no impact, but failed to note a change in access. Access will be altered in that the private crossing in front of the church will be closed, with a new access road provided on the west side of the railroad. Travelers will have to travel approximately 0.35 miles south to new bridge over the railroad for Marengo Road (maximum reroute of approximately .75 miles).
	86	South of La Crosse in Mecklenburg County, VA	Sardis United Methodist Church, 3152 Marengo Rd.	The existing at-grade access across the railroad will be closed, with alternate access provided on the east side of the railroad. Travelers will have to travel approximately 0.5 miles north to new bridge over the railroad for Marengo Road (maximum reroute of approximately 1.25 miles).
K	--	N/A	N/A- no places of worship in Section	N/A
L	93	Community of Wise in Warren County, NC	Jerusalem United Methodist Church, 850 Paschall Station Road	No impact
	94	Community of Wise in Warren County, NC	Bethlehem Baptist Church, 1258 Cole Farm Road	No impact
	95	Community of Wise in Warren County, NC	Locust Grove Baptist Church, Paschall Station Road	There will be no substantive change in access.
	95	Community of Wise in Warren County, NC	Providence Church, 1908 US Hwy 1 North	A new public access road will intersect US 1 just south of the church property and existing driveway, but no ROW will be required and access will be improved through a new bridge over the railroad on the nearby Wise-Five Forks Road.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	95	Community of Wise in Warren County, NC	Wise Baptist Church, 1840 US Hwy 1 North	A small amount of ROW may be required for realignment of Wise Five Forks/Carrie Dunn Road, but access will be improved through new bridge over railroad.
M	99	Norlina, NC	First Baptist Church, 300 Washington St.	Existing access from the west side of the railroad via Jerman Lane will remain unaltered. However, access from the east will be rerouted to the realigned Warren Plains Road and new bridge.
	100	Norlina, NC	Norlina United Methodist Church, 401 US 1 N.	Access from the east of the rail line will be slightly modified.
	101	East of Ridgeway Community in Warren County, NC	Chapel of the Good Shepherd, NC Rt.1107/ Ridgway Warrenton Road	The impacts described here represent a change from the DEIS due to new designs for roadwork developed subsequent to the DEIS. Access to the church from across the rail line will be changed from the existing Ridgway Warrenton Road at-grade crossing near the church to a new bridge over the railroad approximately 2,000 feet south via a realigned Ridgeway Drewry Road connecting to a realigned Ed Petar Road/Ridgeway Warrenton Road.
	102	Ridgeway Community in Warren County, NC	Ridgeway Baptist Church, 156 Wycoff Rd.	The impacts described here represent a change from the DEIS due to new designs for roadwork developed subsequent to the DEIS. Access from across the rail line will be less direct, utilizing a new bridge over the railroad for realigned Ridgway Drewry Road, located approximately halfway between two existing at-grade crossings at Ridgeway Warrenton Road and Axtell Ridgeway Road, which are approximately one mile apart.
N	106	Manson Community in Warren County, NC	Manson Baptist Church, Kimball Rd.	The railroad is proposed to be on new alignment south of the church. The Kimball Road design has been revised since the DEIS. The new alignment bridges the railroad southwest of the NC1 alignment shown in DEIS (away from the church), and unlike the DEIS alignment, does not require ROW from church.
O	108	Middleburg, NC	Middleburg Baptist Church, 80 N. Plummer Ave.	The following is a correction to the DEIS: there would be no change in access to the church. The preferred alternative is on new alignment to the east of existing railroad ROW. Access across the railroad from the east will be provided via Carol Street, which crosses the railroad on a bridge.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	110	Between Middleburg and Henderson in Vance County, NC	Young's Memorial Holy Church, 1379 Brookston Rd.	The following is a correction to the DEIS: a small amount of ROW may be required from the front of church property for the realignment of Brookston Road and the new bridge over the railroad. The railroad is proposed to be on new alignment east of the existing rail ROW. Access from north and south will be unimpeded.
	111	Between Middleburg and Henderson in Vance County, NC	Brookston Baptist Church and Cemetery, 242 Baptist Church Rd.	Access from the west of the rail line will be improved and unimpeded with the realignment of Brookstone Road and a new bridge over the rail line. The DEIS failed to note that the church property abuts the existing rail ROW and rail improvements may require ROW from rear of the church property. However, this will not change access to the church front driveway. Driveway access to the rear of the church will be addressed during the ROW acquisition phase of the project.
P	112	North of Henderson in Vance County, NC	North Henderson Church of God, 305 John Deere Rd.	There will be no substantive change in access.
	114	Henderson, NC	Calvary Temple Holy Church, 215 Kitchen Ave.	There will be no substantive change in access.
	114	Henderson, NC	North Henderson Baptist Church, 1211 North Garnett Street	ROW may be required from the front of the church property for the realignment of North Garnett Street. There is no substantive change in access.
	114	Henderson, NC	St. John's Episcopal Church, 100 Main Street	A small amount of ROW may be required from the rear of the church property for realignment of N. Garnett Street. In addition, ROW may be required from the church parking across Main Street for the realignment of Main Street. Access across the railroad will be improved with new Main Street underpass.
	114	Henderson, NC	Cotton Memorial Presbyterian Church, 511 Chestnut Street	A small amount of ROW may be required for the vertical realignment of Chestnut Street. There is no substantive change in access.
	114	Henderson, NC	Mt Zion Christian Church of Henderson 995 Burr St.	The project would have no direct impact to the church. Access in the surrounding area will change from four at-grade rail crossings to two grade separated rail crossings. However, access from the west will be improved with a new round-about intersection at N. Garnett Street, N. Beckford Drive, N. Chestnut Street and Main Street, including a road underpass on Main Street at the railroad.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	114	Henderson, NC	* City Road United Methodist Church, N. Garnett St. (New listing)	There is no direct impact. The surrounding area will change from four at-grade rail crossings to two grade separated rail crossings. However, access from the east will be improved with new round-about intersection at N. Garnett Street, N. Beckford Drive, N. Chestnut Street and Main Street, including a road underpass on Main Street at the railroad.
	114	Henderson, NC	Davis Chapel 742 N. Chestnut St.	There is no direct impact. The surrounding area will change from four at-grade rail crossings to two grade separated rail crossings. However, access from the east will be improved with new round-about intersection at N. Garnett Street, N. Beckford Drive, N. Chestnut Street and Main Street, including a road underpass on Main Street at the railroad.
	114	Henderson, NC	First Congregational Christian Church, 427 Rowland St.	There is no direct impact. Realignment of Andrews Avenue and new road over rail bridge improves safety and provides unimpeded access from the west.
	115	Henderson, NC	First Presbyterian Church, 222 Young St.	There will be no substantive change in access.
	115	Henderson, NC	First United Methodist Church, 114 Church Street	There will be no substantive change in access because the existing Charles Street underpass, which is located directly across the street from the church, will be maintained.
	115	Henderson, NC	First Baptist Church, 205 W. Winder St.	Several nearby existing at-grade crossings will be closed, but vehicular access across the railroad will be maintained through the nearby existing underpass at Charles Street and the new bridge on E. Andrews Avenue. Additional access will be provided to the south through a new pedestrian only underpass at Burwell Avenue/Peachtree Street.
	115	Henderson, NC	Shiloh Baptist Church, 635 S. College St.	There will be no substantive change in access.
	116	Henderson, NC	Fisher of Men Church of Our Lord Jesus Christ, 163 Elsie St.	There is no direct impact. Vehicular access will be altered in that the nearby at-grade rail crossing of Nichols Street, which intersects with St. Matthews Street, will be closed. Traffic rerouting will be minimal because new bridges over the railroad are proposed less than a mile to the north and south.
	116	Henderson, NC	United Prayer of Faith Church, Miriam St.	There is no direct impact. Vehicular access will be altered in that the nearby at-grade rail crossing of Nichols Street which intersects with St. Matthews Street will be closed. Traffic rerouting will be minimal because new bridges over the railroad are proposed less than a mile to the north and south.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	116	Henderson, NC	Cooks Chapel Zion Church, 210 Center St.	There is no direct impact. Vehicular access will be altered in that the nearby at-grade rail crossing of Nichols Street which intersects with St. Matthews Street will be closed. Traffic rerouting will be minimal because new bridges over the railroad are proposed less than a mile to the north and south.
	116	South of Henderson in Vance County, NC	Victory Baptist Church, 475 J P Taylor Rd.	A small amount of ROW may be required along the church parcel frontage for road work associated with J P Taylor Road. Vehicular access will be improved through a new bridge over the railroad for J P Taylor Road, with an extension west of the railroad to Belmont Drive. The extension of Nicholas Street to J P Taylor Road will also improve connectivity.
	116	South of Henderson in Henderson, NC	Welcome Chapel Baptist Church, 237 Welcome Ave.	The closure of the Welcome Avenue at-grade crossing will create reroute traffic from the west. The reroute will divert traffic to realigned JP Taylor Road and its new road-over-rail bridge to a new intersection with Belmont Drive.
	117	South of Henderson in Vance County , NC	Raleigh Road Baptist Church, 3892 Raleigh Rd.	There is no direct impact. The church property also fronts Bear Pond Road, which will be realigned away from the church, and will cross the railroad on a bridge.
Q	120	Vance County, NC	Union Chapel United Methodist Church, 6479 Raleigh Rd.	Access to the church will be altered, but traffic re-routing will be minimal in that the crossing at Chavis Road will be closed and the road realigned to connect with a new underpass at Edwards Road; the new underpass will be located within the adjacent parcel northeast of the church. No ROW will be required from the church for road work. However the church abuts the existing railroad, and a sliver of ROW will be required along the back of the church property for rail improvements. The private dirt crossing located at the back of the church parking lot will be closed.
	120	Vance County, NC	New Hope Baptist Church, Raleigh Rd.	Access to the church will be altered, but traffic re-routing will be minimal in that the crossing at Chavis Road will be closed and the road realigned to connect with a new underpass at Edwards Road less than a half a mile to the north.
	121	Kittrell, NC	Taylor’s Chapel AME Zion Church, 106 William St.	The impact to the church is slightly different than what was shown in the DEIS. The bridge over the railroad at nearby Church Street shown in the DEIS has been replaced with a bridge over the railroad less than a quarter mile to the south at McClannahan Street at the request of the town. The difference to the church should be minimal.

Table 4-33 Impacts to Places of Worship and Cemeteries				
Section	**Map Sheet**	**Location**	**Name**	**Impacts from Preferred Alternative**
	121	Kittrell, NC	* Confederate Cemetery, West Chavis Rd. (New listing)	No impact
	121	Kittrell, NC	* Kittrell Baptist Church, 100 W. Williams St. (New listing)	The bridge over the railroad at Church Street shown in the DEIS has been replaced with a bridge over the railroad at nearby McClannahan Street at the request of the town. The difference to the church should be minimal.
	121	Kittrell, NC	St. James Episcopal Church, William St.	The bridge over the railroad at nearby Church Street shown in the DEIS has been replaced with a bridge over the railroad less than a quarter mile to the south at McClannahan Street at the request of the Town. The difference to the church should be minimal.
	121	South of Kittrell in Vance County, NC	* Grace Missionary Baptist Church, 1625 US Hwy 1 South (New listing)	A small amount of ROW may be required for the improvements to US Hwy 1 South as part of the project. There will be no substantive change in access.
	122	South of Kittrell in Vance County, NC	* Oak Ridge Baptist Church and Cemetery, Oak Ridge Church Rd. (New listing)	There is no direct impact. Access will change with the closure of the nearby Beechtree Trail Road at-grade crossing and with a new bridge over the railroad provided approximately one mile to the south at Egypt Mountain Road.
	122	South of Kittrell in Vance County, NC	Kittrell Church of God, 2540 US Hwy 1 South	Access will be altered due to the closing of the crossing at Beechtree Trail Road. Travelers will utilize a new bridge over the railroad at Egypt Mountain Road approximately 1 mile south.
R	--	N/A	No places of worship in this section	N/A
S	127	Franklinton, NC	Franklinton United Methodist Church, 109 N. Main St.	From the east, the closure of the Mason and Joyner Street at-grade rail crossings will redirect vehicular traffic to an expanded Green Street underpass. A new pedestrian underpass will provide safe pedestrian crossing at Mason Street.
	127	Franklinton, NC	First United Church of Christ, 20 W. Green St.	The existing Green Street underpass located two blocks to the east will be expanded, providing improved vehicular access. The pedestrian underpasses at Mason Street, one block north of Green Street, and College Street, one block south, will provide safe pedestrian access across the railroad.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	127	Franklinton, NC	Franklinton Baptist Church, 102 W. Mason St.	From the east, the closure of the Mason and Joyner Street at-grade rail crossings will redirect vehicular traffic to an expanded Green Street underpass. A new pedestrian underpass will provide a safe pedestrian crossing at Mason Street.
	127	Franklinton, NC	Mt. Pleasant Presbyterian Church, S. Main St.	From the west, the closure of College Street at-grade rail crossing will redirect vehicular traffic to an expanded Green Street underpass, one block north. A new pedestrian underpass will provide safe pedestrian crossing at College Street.
	127	Franklinton, NC	Holy Trinity Church, 118 S. Hawkins St. (New listing)	New listing for FEIS- from the west, closure of College Street at-grade crossing will redirect vehicular traffic to an expanded Green Street underpass, one block north. A new pedestrian underpass will provide safe pedestrian crossing at College Street.
	128	Franklinton, NC	First Baptist Church, S. Main St.	The existing Green Street underpass located one block to the east will be expanded, providing improved vehicular access. The pedestrian underpasses at Mason Street, one block north of Green Street, and College Street, one block south, will provide safe pedestrian access across the railroad.
	132	North of Youngsville, in Franklin County NC	Union Grove Baptist Church, 552 N. College St.	ROW may be required from the eastern property boundary for improvements to the railroad. From the east, access will improve via the new NC 96 realignment and bridge over the railroad, as well as new Main Street bridge over the railroad.
T	132	Youngsville, NC	** Youngsville Baptist Church, 315 E. Main St.	From the west, access will improve due to the new bridge over the railroad at Main Street, as well as the new NC 96 realignment to the north with a new bridge over the railroad.
	13	Wake Forest, NC	** Holy Redeemer Catholic Church, 1841 N. White St.	No impact
U	133	Wake Forest, NC	Wake Forest Cemetery, N. White Street	There will be no substantive change in access.
	135	Wake Forest, NC	Glen Royal Baptist Church, 731 Elizabeth Ave.	There is improved pedestrian access via a new pedestrian-only bridge over railroad near Cedar Avenue and White Street.
	135	Wake Forest, NC	Wake Forest Church of God, 155 E. Cedar Ave.	There is improved pedestrian access via a new pedestrian-only bridge over railroad near Cedar Avenue and White Street.
	135	Wake Forest, NC	Olive Branch Baptist Church, 326 E. Juniper Ave.	There is improved pedestrian access via a new pedestrian-only bridge over railroad near Cedar Avenue and White Street less than one quarter mile to the north.

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
	136	Wake Forest, NC	Spring Street Christian Church, E. Spring St.	There will be no substantive change in access.
	136	Wake Forest, NC	Hope Baptist Church, new temporary location at 403 Brooks St.	The closure of the Elm Avenue at-grade rail crossing will redirect traffic to existing underpass at Roosevelt Avenue to the north, and new underpass at realigned Holding Avenue to the south. New pedestrian underpass will also provide a safe pedestrian crossing at Elm Avenue.
	136	Wake Forest, NC	Tri-Area Ministry, 149 E. Holding Ave.	A portion of the church's front property may be acquired for ROW associated with the realignment of E. Holding Avenue. Driveway access and parking will be determined during the ROW acquisition phase of the project. From the west, access across the railroad will be altered due the southward realignment of Holding Avenue, which will cross under the railroad via an underpass.
	136	Wake Forest, NC	Wake Forest Baptist Church, 107 E. South St.	There will be no substantive change in access.
	136	Wake Forest, NC	Wake Forest United Methodist Church, 905 S. Main St.	Access will be improved via a realignment and new underpass (road under railroad) for Holding Avenue. (Note that the DEIS incorrectly stated that Holding Avenue will cross the railroad on a bridge.)
	136	Wake Forest, NC	South Main Baptist Chapel Church, S. Main St	Vehicular access from east of the rail line will be altered with the closure of the at-grade rail crossing of Elm Avenue to the north, but the realignment and new underpass (road under rail) at Holding Avenue will provide improved access. (Note that the DEIS incorrectly stated that Holding Avenue will cross the railroad on a bridge.) Pedestrian access across the railroad at Elm Avenue will be maintained via a new pedestrian bridge with stairs and ramps.
	137	Wake Forest, NC	Friendship Chapel Baptist Church, 237 Friendship Chapel Rd.	From the east, access will be improved via a new access road connecting Friendship Chapel Road to Franklin Street at the NC 98 Bypass. A small amount of ROW may be required from the corner of the church property for the road improvements. From the southwest, access will be altered in that the existing at-grade rail crossing of Friendship Chapel Road will be closed with traffic redirected to the NC 98 bypass, resulting in approximately one additional mile of travel distance to the church as a result the closed crossing.
	139	Between Wake Forest and Raleigh in Wake County, NC	Living Word Family Church, Capital Boulevard	No impact

Table 4-33
Impacts to Places of Worship and Cemeteries

Section	Map Sheet	Location	Name	Impacts from Preferred Alternative
V	145	Raleigh, NC	** Millbrook United Methodist Church, 1712 E. Millbrook Rd.	Access will be improved via new Millbrook Road bridge over the railroad.
	149	Raleigh, NC	* EMI New Covenant Global Ministries, 911 N. West St.	Rail ROW requirements will displace church. Assistance with relocation is provided as needed as part of NCDOT right of way acquisition procedures.
	149	Raleigh, NC	Powerhouse Church of Jesus Christ, 1130 N. Blount St.	No impact
	150	Raleigh, NC	St Paul AME Church, 402 W. Edenton St.	Vehicular access from the east will be altered somewhat with the closure of the existing at-grade crossing at Jones Street (one block north). However, traffic re-routing will be minimal because the existing bridge over the railroad at Hillsborough Street (one block south) will retained. Pedestrian access across the railroad will be maintained via a new pedestrian bridge at Jones Street.
	150	Raleigh, NC	Victory Tabernacle Church, W. South St.	No impact

* Listing was mistakenly not included in DEIS
** Project section listed in DEIS was incorrect; correct section shown here

4.11.3.3 *POLICE, FIRE, AND EMS*

Closing existing at-grade railroad crossings and consolidating access across the Project corridor will have some effect on police, fire, and EMS response in the communities along the Project. Section 4.11.3.3 of the Tier II DEIS provided a discussion about seven facilities that were studied to determine the impact that changes in access would have on EMS service coverage. The seven facilities are close to the corridor and would experience changes in access across the railroad. They are representative of the worst-case changes that may occur; changes at other locations should be less substantial. In locations near existing rail operations where freight trains may block existing at-grade rail crossings, all alternatives, including the Preferred Alternative, provide better conditions for emergency service response than existing conditions. Throughout the corridor, police, fire, and emergency response times may be temporarily affected during construction. Coordination with public response agencies serving the Study Area will continue during construction to avoid and minimize disruptions to emergency response.

To determine the effect that changes in access would have on EMS services, a service area analysis was completed in ArcGIS using the Network Analyst extension. A road network was developed corresponding to the expected changes that would be made for each alternative and a No Build scenario (i.e., if the Project were not constructed). These road networks were used to develop an approximate service area that could be reached within about five minutes. The difference between the service areas for the alternatives were compared to the service area of a No Build scenario to provide insight into what effects the access changes associated with each alternative would have on response times.

For five of the seven facilities studied in the Tier II DEIS, the service area analysis showed little difference between the overall EMS service area for a No Build scenario compared to the Project alternatives, including the Preferred Alternative. Results of the analysis for these facilities was detailed in Section 4.11.3.3 of the Tier II DEIS, and is summarized below.

For two facilities, the Tier II DEIS analysis revealed a substantial difference between the overall service area for a No Build scenario compared to the Project alternatives: the Bensley-Bermuda Volunteer Rescue Squad South Station in Chesterfield, VA; and the Ridgeway Volunteer Fire Department in Warren County, NC. Subsequent to publication of the Tier II DEIS, road work design revisions for the Preferred Alternative were made near these two facilities, which has resulted in a change to the service area analysis that was presented in the Tier II DEIS. These changes are discussed below; new discussion is also provided below for Henderson, NC, and Raleigh, NC.

4.11.3.3.1 BENSLEY-BERMUDA VOLUNTEER RESCUE SQUAD SOUTH STATION

This facility provides emergency medical response for the southern section of the Bensley-Bermuda Volunteer Rescue Squad coverage area in Chesterfield County, VA. It is located very near and to the east of the existing Woods Edge Road at-grade crossing of the Project corridor. The designs presented in the Tier II DEIS showed that the Woods Edge Road crossing would be closed under all Project alternatives, which are on common alignment in this section. Results of the service area analysis shown in Section 4.11.3.3.1 of the Tier II DEIS revealed a substantial difference between the overall EMS service area for the Bensley-Bermuda Volunteer Rescue Squad South Station under the Project alternatives compared to a No Build scenario. There were some sizeable shifts in the five-minute response area with most being attributable to the closure of the Woods Edge Road crossing.

In response to comments on the Tier II DEIS, the Preferred Alternative (VA1) was revised to include a grade-separated crossing at Woods Edge Road. The new bridge over the railroad will provide improved access for emergency responders compared to existing conditions.

4.11.3.3.2 ALBERTA, VA, VOLUNTEER FIRE DEPARTMENT

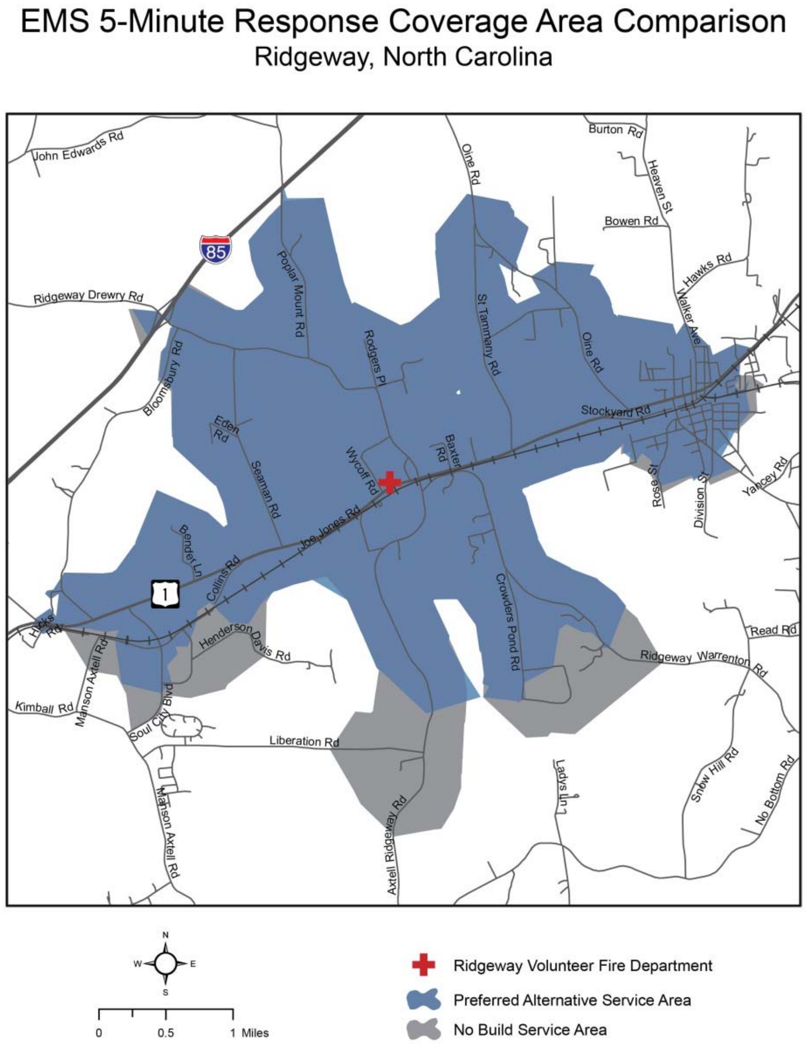
The Town of Alberta, VA, in Brunswick County, VA, straddles the inactive CSX S-Line. The Project will affect several crossings that are proposed for consolidation. The Alberta, VA, Volunteer Fire Department facility is very near and to the east of the existing rail ROW. Results of the service area analysis shown in Section 4.11.3.3.12 of the Tier II DEIS revealed very little change in the five-minute response window between a No Build scenario and the Project alternatives, including the Preferred Alternative (VA1). For all Project alternatives, the total area covered is essentially identical to a No Build coverage area and there is no indication that areas to the west of the corridor would be subjected to reduced coverage. Thus, there is almost no difference between the overall EMS service area for the Alberta, VA, Volunteer Fire Department under the Preferred Alternative compared to a No Build scenario.

4.11.3.3.3 RIDGEWAY VOLUNTEER FIRE DEPARTMENT

This facility provides fire response for the Ridgeway area, southeast of Norlina, NC, in Warren County, NC. It is located along US-1, just north of the Project corridor. The designs presented in the Tier II DEIS showed that nearby crossings at Joe Jones Road and Axtell Ridgeway Road would be consolidated, and the nearby Ridgeway Warrenton Road crossing would be realigned under all Project alternatives. As discussed in Section 4.11.3.3.3 of the Tier II DEIS, there is a notable difference between the overall EMS service area for the Ridgeway Volunteer Fire Department under the Project alternatives presented in the Tier II DEIS compared to a No Build scenario.

Subsequent to the Tier II DEIS, revisions were made to road work designs in the Ridgeway area for the Preferred Alternative (NC1). The revisions were made in response to comments on the Tier II DEIS and input from local officials, and are outlined in Section 2.2. A service area analysis was conducted for the revised designs and the results are shown below in Figure 4-1. The results indicate some difference between the overall EMS service area for the Ridgeway Volunteer Fire Department under the Preferred Alternative compared to a No Build scenario. However, the difference is less substantial than the difference for the designs in the Tier II DEIS. It should be noted that the new road work was developed in coordination with Warren County, NC, Kerr-Tar Council of Governments (the Rural Planning Organization) and the NCDOT Transportation Planning Branch to serve the needs of the local community and Warren County, NC, as a whole.

Figure 4-1 EMS 5- Minute Response Coverage Area Comparison Ridgeway, NC



4.11.3.3.4 VANCE COUNTY, NC, AMBULANCE AND FIRE SERVICE

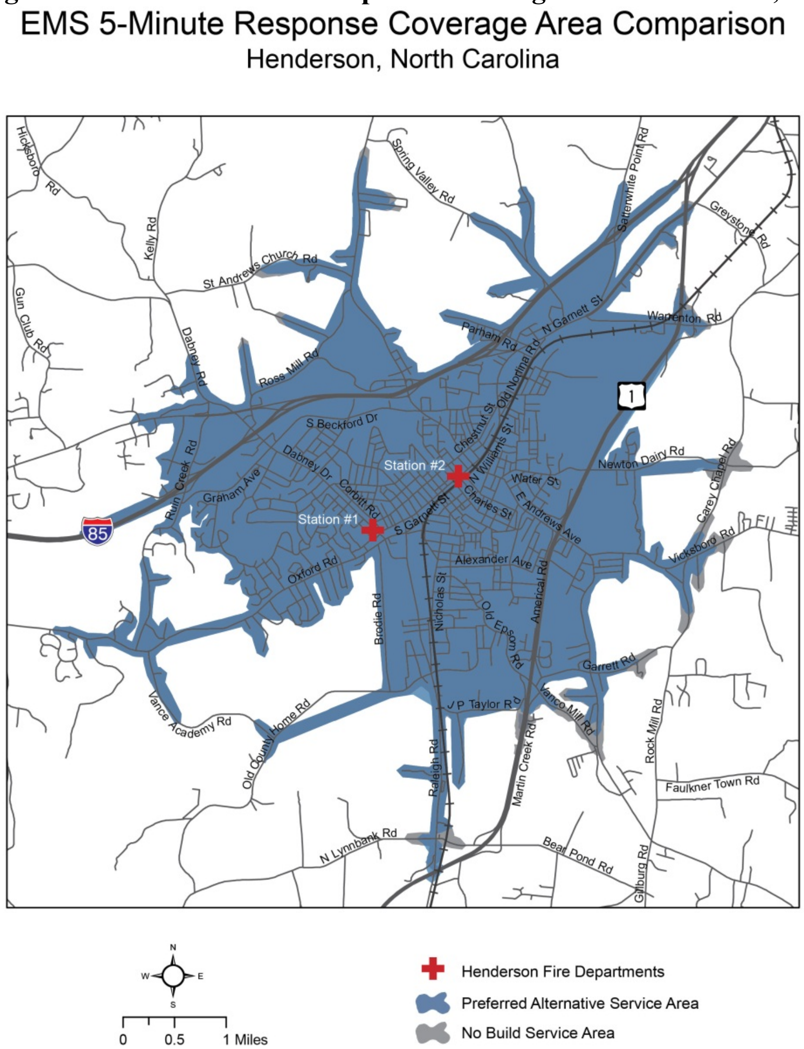
Located in Henderson, NC, this facility provides fire response for Vance County, NC. It is located near US-158, just north of the Project corridor. All Project alternatives, including the Preferred Alternative (NC1) are on common alignment in this location. The Project will affect several crossings that are proposed for consolidation, and several roads that will be realigned. Results of the service area analysis shown in Section 4.11.3.3.4 of the Tier II DEIS reveal that the overall service area of all alternatives including the Preferred Alternative is largely the same compared to a No Build scenario. Although revisions to road work have been made in Henderson, NC, for the Preferred Alternative (as described in Section 2.2), the revisions do not affect which crossings are to be consolidated and will not substantially alter the response time service area of the Preferred Alternative.

4.11.3.3.5 CITY OF HENDERSON, NC, FIRE STATION 1 AND CITY OF HENDERSON, NC, FIRE STATION 2

Subsequent to the publication of the Tier II DEIS, a service area analysis was conducted for the combined service area of City of Henderson, NC, Fire Station 1 and City of Henderson, NC, Fire Station 2. The analysis was conducted in response to concerns expressed by the City of

Henderson, NC, regarding impacts to response time for City fire stations from the proposed closure of the Chavasse Avenue at-grade rail crossing. The analysis took into account design revisions that include a connection between Alexander Avenue (south of Chavasse Avenue), which will cross over the railroad on a bridge, and Nicholas Street which runs parallel to the railroad on the east side (refer to Section 2.2 for more information on the design changes). A comparison of potential coverage areas is shown in Figure 4-2. The analysis shows that the existing Charles Street underpass north of Chavasse Avenue and the new Alexander Avenue bridge adequately compensate for the nearby crossing consolidations with regard to response time. There is very little change in the five-minute response area of the Preferred Alternative (NC1) compared to a No Build scenario.

Figure 4-2 EMS 5- Minute Response Coverage Area Henderson, NC



4.11.3.3.6 FRANKLINTON, NC, FIRE DEPARTMENT

The Town of Franklinton, NC, in Franklin County, NC, straddles the active CSX S-Line about 30 miles northeast of Raleigh, NC. The Franklinton, NC, Fire Department facility is very near and to the west of the existing rail ROW. All Project alternatives, including the Preferred Alternative (NC1) are on common alignment in this location. The Project will affect several crossings that are proposed for consolidation. Results of the service area analysis shown in Section 4.11.3.3.5 of the Tier II DEIS reveal that there is very little difference between the EMS service area for the Franklinton, NC, Fire Department under a No Build scenario or the Preferred Alternative (NC1).

Although revisions to road work have been made in Franklinton, NC, for the Preferred Alternative (as described in Section 2.2), the revisions do not affect which crossings are to be consolidated and will not substantially alter the response time service area of the Preferred Alternative.

4.11.3.3.7 YOUNGSVILLE, NC, EMS RESCUE STATION

The Town of Youngsville in Franklin County, NC, straddles the active CSX S-Line northeast of Raleigh, NC. The Project will affect several crossings that are proposed for consolidation. The Youngsville, NC, EMS Rescue Station is very near and to the west of the existing rail ROW. The designs for the three alternatives, including the Preferred Alternative (NC1), are on common alignment near the EMS station. Under the Preferred Alternative, the rail ROW and new Main Street ROW will affect the existing entrances for the station; however, new access will be provided for and determined through negotiations during final design.

Results of the service area analysis shown in Section 4.11.3.3.6 of the Tier II DEIS reveal that the five-minute response area is slightly larger under the Preferred Alternative compared to a No Build scenario. Thus, there is no negative impact to the EMS service response area for the Youngsville, NC, EMS Rescue Station in Franklin County, NC, under the Preferred Alternative and there are improvements in response coverage area.

Although revisions to road work have been made in Youngsville, NC, for the Preferred Alternative (refer to Section 2.2) the revisions do not affect which crossings are to be consolidated and will not substantially alter the response time service area of the Preferred Alternative NC1.

4.11.3.3.8 WAKE FOREST, NC, FIRE DEPARTMENT STATION #1

The Town of Wake Forest, NC, in Wake County, NC, straddles the active CSX S-Line just northeast of Raleigh, NC,. The Wake Forest, NC, Fire Department facility is very near and to the east of the existing rail ROW. The designs for the three alternatives, including the Preferred Alternative (NC1), are on common alignment near the fire station. The Project will affect several crossings that are proposed for consolidation.

Results of the service area analysis shown in Section 4.11.3.3.7 of the Tier II DEIS reveal that there is very little change in the five-minute response area between a No Build scenario and the Preferred Alternative; the total area covered is 99.6 percent of the coverage area of a No Build scenario. Thus, there is essentially no difference between the EMS service coverage areas for the Wake Forest, NC, Fire Department under the Preferred Alternative compared to a No Build scenario.

Although revisions to road work have been made in Wake Forest, NC, for the Preferred Alternative (refer to Section 2.2) the revisions do not affect which crossings are to be consolidated and will not substantially alter the response time service area of the Preferred Alternative.

4.11.3.3.9 RALEIGH, NC, FIRE STATION NO. 22

In north Raleigh, NC, Raleigh Fire Station No. 22 is located near the active CSX railroad, on Durant Road. All alternatives are on common alignment in the Durant Road area, including the Preferred Alternative (NC1). The designs shown in the Tier II DEIS had ROW impacts along the front of Fire Station No. 22 property, but they included a new access road to provide driveway access for the station, which will allow the station to continue operating. Subsequent to the publication of the Tier II DEIS, a revised bridge and road alignment was designed for this location for the Preferred Alternative, in response to comments from the City of Raleigh, NC,. The northward shift of the new alignment will take the road through the City of Raleigh, NC, Fire Station No. 22, requiring the fire station to be relocated. The new designs were developed in coordination with the City of Raleigh, NC, and will result in the City having a relocated station that can better serve this rapidly growing area (refer to Section 2.2).

4.11.4 LAND USE PLANNING

This section has been revised from the Tier II DEIS to address comments and updated to include the most recent adopted plans and studies from each agency (as relevant to the Project, which were presented in Section 3.11), as well as an expanded discussion of relevant planning activities by state, regional and local agencies. In this section, specific focus has been placed on evaluating these current plans for consistency with the Project as a whole, as well as on whether specific projects proposed by these entities are consistent with Project's designs for the Preferred Alternative.

4.11.4.1 *LAND USE PLANS*

Land use plans are important to the overall development of a community. This is achieved through comprehensive/master plans, neighborhood/special area plans and other land use and transportation studies that examine existing development trends, desired community growth and the infrastructure demands of planned development. Section 3.11.3 identifies those communities affected by the Project and discusses how their respective land use, transportation, and comprehensive plans address the SEHSR Corridor. The following section summarizes the most recent plans and studies in the Study Area and notes their consistency with the Project.

At the time the Tier II DEIS was published, several communities in the Study Area had not acknowledged the Project, and although some had acknowledged the Project, many organizations had not yet developed plans to address its effects. This appears to be the result of the age of those plans, which preceded the Tier II DEIS. All of the most recent plans and studies adopted by the communities and planning agencies in the Study Area now acknowledge and address the Project, as noted below.

4.11.4.2 *CHANGES IN LAND USE*

The potential for direct impacts on land use and development resulting from the Project is generally a function of:

- Existing land uses and current zoning;
- Availability of undeveloped land for new development;
- Regional and local markets;
- Proposed station locations;
- Local effect of crossing closures and redirected traffic patterns;
- Potential for existing uses to be redeveloped; and
- Local land use plans, economic development programs and land use controls such as zoning and land development ordinances.

To the greatest extent practicable, the Preferred Alternative utilizes existing rail lines and existing railroad right of way (ROW) that extend through established cities and towns. To some degree, this helps minimize impacts to current and future land uses, although some individual existing land uses may be directly impacted (as discussed in Section 4.11.6).

As noted in the Tier I EIS for the SEHSR Corridor between Washington, DC and Charlotte, NC, and as demonstrated in the local planning efforts undertaken since the Tier II DEIS was published (summarized below), the long range planning effects of the implementation of the Project will increase transportation opportunities, as communities increase transit services at planned stations, and some communities consider adding conventional passenger and commuter service in addition to SEHSR service. This has already prompted communities within the Study Area to use land use planning to spur new development and increase redevelopment efforts nearest planned rail stations.

The presence of these opportunities will create a favorable environment for new economic activity and investment possibilities. In a few communities without proposed stations, the increase in train activities and improvement of freight service from the Project has already prompted the adoption of plans to decrease the amount of residential uses and increase the amount of industrial uses nearest the rail lines. Other communities have adopted specific area plans to better address the land use opportunities and transportation changes in areas where crossings will be closed.

In communities with stations that will serve SEHSR trains, some major direct land use impacts may occur, as those properties nearest the stations gain value and are either developed (if vacant) or redeveloped to more dense uses to facilitate transit oriented uses. Such planning efforts are underway for Raleigh, NC, and recommended for other smaller communities with planned stations, as described further below. Especially in the larger center cities of Richmond, VA, and Raleigh, NC, redevelopment pressures around the stations could displace existing residents and small businesses in favor of higher density (and more costly) residential uses and higher cost lease space for businesses. However, positive land use changes also should be expected, as business development and investment is triggered to serve passenger needs. These changes should be evaluated in the future environmental documentation developed for the stations.

4.11.4.3 *COMPATIBILITY WITH FUTURE LAND USE PLANS*

This section examines the future land use plans throughout the Study Area. As noted below, the proposed Project and the Preferred Alternative are consistent and compatible with future land use plans (Tables 4-34 and 4-35).

Table 4-34
Virginia – SEHSR Compatibility with Future Land Use Plans

City or County	Future Land Use Plan	Reference SEHSR?	Compatible with Preferred Alternative?	Notes
City of Richmond	2020 Richmond Master Plan (2000)	Yes*	Yes	*Plan does not specifically mention SEHSR, but does support “establishing high speed rail through downtown Richmond as part of Amtrak’s northeast corridor service.”
	Richmond Connects (Strategic Multimodal Transportation Plan, 2013)	Yes	Yes	The Plan’s Transit and Rail Recommendations include MSS as the city’s “Multimodal Hub’, with the SEHSR’s Preferred Alternative connecting to MSS along the “High Speed Rail Corridor”.
	Downtown Master Plan, 2009	Yes	Yes	Main Street Station is recommended as a multi-modal transportation hub for Downtown Richmond.

Table 4-34 Virginia – SEHSR Compatibility with Future Land Use Plans				
City or County	**Future Land Use Plan**	**Reference SEHSR?**	**Compatible with Preferred Alternative?**	**Notes**
	Richmond Riverfront Plan, 2012	No	Yes	The CSX S-line and bridge over the James River is shown in the plan. The preferred alternative is within the existing rail ROW in this location.
	GRTC Broad Street Bus Rapid Transit Study	No+	Yes	+This is a study, not a locally adopted plan. The SEHSR project is referenced in relation to MSS in the station evaluation memo on the project website http://study.ridegrtc.com/
Chesterfield County	Chesterfield County Comprehensive Plan (2012)	Yes	Yes	SEHSR station is identified as Ettrick Station.
	Ettrick Village Plan (2004)	Yes	Yes	SEHSR crossing of Appomattox River should not be impacted by proposed riverfront park.
City of Colonial Heights	Comprehensive Community Development Plan (1996)	No^	Yes^	^Plan currently being updated; no drafts available for review. No policies in old plan would preclude SEHSR and several policies support concepts behind SEHSR.
City of Petersburg	Comprehensive Plan (2011)	Yes	Yes	Includes policies for the city to become “transit ready” and adopt transit oriented development zoning overlay district at proposed SEHSR station to make high speed rail feasible.
Dinwiddie County	Comprehensive Land Use Plan (2007)	Yes	Yes	Includes several policies and implementation items specifically to accommodate SEHSR.
Brunswick County	Vision 2015 Brunswick County Comprehensive Land Use Plan Update (2006)	Yes	Yes	Contains policies that support development of rail facilities, including SEHSR, to promote balanced transportation systems that support growth.
Mecklenburg County	Economic Development Plan (2011)	Yes	Yes	Recommends coordination with Federal and state agencies for adequate funding to build SEHSR. Recommends a SEHSR station in La Crosse.
	2035 Comprehensive Plan (2012)	Yes	Yes	Recommends careful land use planning along SEHSR. Recommends dedicated SEHSR station in La Crosse.

Table 4-35 North Carolina – SEHSR Compatibility with Future Land Use Plans				
City or County	**Future Land Use Plan**	**Reference SEHSR?**	**Compatible with Preferred Alternative?**	**Notes**
Warren County	2022 Comprehensive Development Plan (2002)	Yes	Yes	Recommends several actions to plan for SEHSR.
Vance County	Vance County Land Use Plan (2010)	Yes	Yes	Recommends several actions to plan for SEHSR. Acknowledges SEHSR stop in Henderson.
City of Henderson	2030 Comprehensive Plan (2010)	Yes	Yes	Recommends several actions to plan for SEHSR, including station in Henderson. @ Notes challenge related to SEHSR – maintaining access across RR tracks.
Franklin County	Comprehensive Land Use Plan (2000)	No	Yes	No specific SEHSR reference (due to plan age) but contains no policies that would preclude SEHSR.
Town of Franklinton	Franklinton Comprehensive Plan (2006)	No	Yes	No specific SEHSR reference (due to plan age) but contains no policies that would preclude SEHSR.
	US 1 Corridor Phase II Study (2012)	Yes	Yes	Includes Preferred SEHSR alignment and proposed crossing closures and road realignments into detailed land use plan at major development node around rail corridor.
Town of Youngsville	2000-2010 Land Use Plan (2000)	Yes	Yes	Recommends several actions to plan for SEHSR.
Town of Wake Forest	Community Plan (2009)	Yes	Yes	Recommends several actions to plan for SEHSR.
	NC 98 Bypass Corridor Master Plan (2003)	No	Yes	No specific SEHSR reference (due to plan age). Recommends several pedestrian and vehicular grade-separated crossings over/under RR that are consistent with SEHSR Preferred.
City of Raleigh	2030 Comprehensive Plan (2009)	Yes	Yes	Future growth framework map and policies follow sustainable city model whereby 60% of future growth would be redirected to infill centers based on location of SEHSR and TT stations and other transit nodes. Contains policy to grade-separate all rail crossings.

4.11.4.4 *COMPATIBILITY WITH TRANSPORTATION PLANS*

This section examines the transportation plans throughout the Study Area to ensure that the proposed Project, and specifically the Preferred Alternative, is consistent and compatible with current plans (Tables 4-36 and 4-37).

Table 4-36 Virginia – SEHSR Compatibility with Transportation Plans					
Planning Organization	**Transportation Plan**	**Does Plan Acknowledge SEHSR?**	**Is Preferred Alternative Compatible w/ Plan's Policies?**	**Is Preferred Alternative Consistent w/ Plan's Listed Project(s)?**	**Notes**
State of Virginia	2035 Surface Transportation Plan (2013)	Yes	Yes	Yes	No projects required detailed coordination with SEHSR.
	Statewide Rail Plan (2013)	Yes	Yes	Yes	Plan acknowledges all SEHSR projects in Virginia.
Richmond Regional PDC/RAMPO	Plan 2035: RRPDC Regional Long Range Transportation Plan (2012)	Yes	Yes	Yes	Coordination with SEHSR was required for one listed project (Project 74 – Commerce Rd)
	FY 12-15 Transportation Improvement Program	Yes	Yes	Yes	RAMPO is working to fund projects that benefit SEHSR
	Regional Transportation Priority Projects (2011)	Yes	Yes	Yes	Funding is included for Main Street Station Improvements
	Richmond Rail Transit Feasibility Study (2003) and Executive Summary (2008)	Yes	Yes	Yes	Commuter rail and bus options in region were evaluated for consistency with SEHSR
	2035 Rural Long Range Transportation Plan (2011)	Yes	Yes	Yes	No projects required detailed coordination with SEHSR.
Crater PDC / Tri-Counties MPO	Tri-Cities Area Year 2035 Transportation Plan (2012)	Yes	Yes	Yes	No projects required detailed coordination with SEHSR.
	Tri-Cities Multi-Modal Station Study	Yes	Yes	Yes	See Section 1.4.3.2 for study results.
	Crater PDC 2035 Long Range Transportation Plan (2011)	Yes	Yes	Yes	Covers rural transportation network in Crater planning area. No projects required detailed SEHSR coordination.
Southside PDC	2035 Regional Long Range Transportation Plan (2011)	Yes	Yes	Yes	Preferred locations for SEHSR stations: Alberta and La Crosse. No projects required SEHSR coordination.

Table 4-37
North Carolina - Compatibility with Transportation Plans

Planning Organization	Transportation Plan	Does Plan Acknowledge SEHSR?	Is Preferred Alternative Compatible w/ Plan's Policies?	Is Preferred Alternative Consistent w/ Plan's Recommended Project(s)?	Notes
State of North Carolina	State Transportation Improvement Program: 2013-2023 (STIP)	Yes	Yes	Yes	No projects required detailed coordination with SEHSR.
	Strategic Highway Corridors	Yes	Yes	Yes	SEHSR will not impact mobility on critical corridors in the project area (US 1, I-440 or I-540).
Kerr-Tar Regional COG (Region K) / Kerr-Tar RPO	Warren County Comprehensive Transportation Plan (CTP) 2008	Yes	Yes	Yes	Recommends SEHSR station in Norlina. No projects required detailed coordination with SEHSR.
	Vance County CTP (2012)	Yes	Yes	Yes	Plan shows recommended SEHSR station in Henderson. No projects required detailed coordination with SEHSR.
	Franklin County CTP (2011)	Yes	Yes	Yes	Includes future commuter rail stops in Franklinton and Youngsville. No projects required detailed coordination with SEHSR.
	Kerr-Tar Project Priority Listing (2014-2020)	Yes	Yes	Yes	No projects required detailed coordination with SEHSR.
Triangle J COG / CAMPO	2035 Long Range Transportation Plan (Joint Plan with Durham-Chapel Hill-Carrboro MPO) (amended 2011)	Yes	Yes	Yes	Plan specifically supports the SEHSR and other passenger rail initiatives with a clear goal of prioritizing transit facilities and services, including bus and rail, to create a more modally balanced and interconnected system. A few projects required detailed coordination with SEHSR.

Table 4-37
North Carolina - Compatibility with Transportation Plans

Planning Organization	Transportation Plan	Does Plan Acknowledge SEHSR?	Is Preferred Alternative Compatible w/ Plan's Policies?	Is Preferred Alternative Consistent w/ Plan's Recommended Project(s)?	Notes
	US 1 Corridor Study - Phase I (2006) and Phase II (2012)	Yes	Yes	Yes	Included long range transportation improvements to support development near SEHSR to take advantage of enhanced freight access.
	2012-2018 CAMPO Transportation Improvement Program (TIP) (2011)	Yes	Yes	Yes	No projects required detailed coordination with SEHSR.
	Capital Area Bus Transit Development Plan (2011)	Yes	Yes	Yes	No projects required detailed coordination with SEHSR.
Town of Wake Forest, NC	Wake Forest Transportation Plan (2010)	Yes	Yes	Yes	In reference to no planned SEHSR stop, the plan calls for bus service to Raleigh to include a stop at the Raleigh SEHSR station.
Triangle Transit (TT)	Regional Light Regional Rail Project	Yes	Yes	Yes	This project and Wake Forest, NC, commuter rail line will potentially share same ROW as SEHSR. SEHSR has closely coordinated with the two projects where alignments overlap.
TT/CAMPO/Durham-Chapel Hill-Carrboro MPO	Station Area Development Guidelines	Yes	Yes	Yes	Land use and transportation guidelines for rail stations, including SEHSR and regional rail.

Table 4-37
North Carolina - Compatibility with Transportation Plans

Planning Organization	Transportation Plan	Does Plan Acknowledge SEHSR?	Is Preferred Alternative Compatible w/ Plan's Policies?	Is Preferred Alternative Consistent w/ Plan's Recommended Project(s)?	Notes
City of Raleigh, NC	Raleigh Union Station Project	Yes	Yes	Yes	Funded project to replace existing Amtrak Station in downtown Raleigh, NC, with this multi-modal passenger train station that will accommodate SEHSR, TT regional rail, bus, taxis, bicycles and other forms of transportation. Project will also improve downtown freight storage tracks.
	Bicycle Transportation Plan (2009)	No*	Yes	Yes	* No specific SEHSR reference (due to plan age). Post-DEIS coordination with the City resulted in Preferred Alternative that includes a bike/pedestrian crossing at Jones St, a grade separated Wolfpack Lane and no closure of Fairview Street. With these changes, the Preferred Alternative is consistent with this plan.

4.11.5 VULNERABLE POPULATIONS / ENVIRONMENTAL JUSTICE

4.11.5.1 *ELDERLY & DISABLED POPULATIONS*

As presented in Section 3.11.1.3, the age dependency ratio is defined as the ratio of the dependent-age population (young or old) to the working-age population. Between 2000 and 2010, the ratios in NC and VA were less than the US averages (Table 1-7). Consistent with the nationwide trend, both NC and VA have been gaining a greater percentage of old-age dependents as the baby boomers continue to age and retire. The ratio of dependent youth has decreased slightly between 2000 and 2010, but is expected to increase above current levels in the coming decades. By the year 2050, the youth and old-age dependency ratios nationally are projected to stabilize at 48:100 and 37:100, respectively, but not before reaching a total dependency ratio of 85:100, a 37% increase in overall dependency from 2000 (Figure 1-5). Following this national trend, North Carolina and Virginia are projected to experience significant increases in the under 20 and over-65 populations between now and 2050. This means that fewer and fewer working age people will be taking care of even more dependents in the coming decades, and a greater percentage of the population may be dependent on others for their transportation needs. The increase in the over-65 population is important because of the reduced mobility within this age group and the resulting increase in demand this will place on public transportation alternatives to meet their transportation needs.

Current studies indicate changes in transportation systems and local roadway connectivity may have a greater impact on older populations who rely more heavily on pedestrian infrastructure and/or transit (Balfour and Kaplan, 2002). There are numerous communities in the area where the percentage of elderly (age 65 and older) in their demographic Study Area are greater than the percentage of elderly reflected in their respective city, county, and/or state (Table 4-30 Rail and Road Impacts and Benefits of Preferred Alternative by Community, above). In Virginia, communities with higher than average elderly populations within the Study Area are in the cities of Colonial Heights, VA, and Petersburg, VA, and the counties of Dinwiddie, VA, Brunswick, VA, and Mecklenburg, VA. In North Carolina, higher than average elderly populations in the Study Area are found in Warren and Vance counties, NC. In addition to the elderly, persons with some form of disability or impairment constitute another sensitive category with important transportation needs.

Additional transportation opportunities afforded by the Project will be equally available to the elderly and disabled and will provide additional transportation options. To accommodate the needs of these special populations, future designs should take into consideration the alteration of existing facilities, locomotives, stations, and rail cars in order to make them accessible for the elderly and persons with disabilities, such as modifying doorways, adding or modifying lifts, constructing access ramps and railings, modifying restrooms, and constructing accessible platforms.

The Project will not create barriers specific to elderly or disabled populations. As described in Section 4.11.2, all new bridges and underpasses are designed to have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses. At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and VDOT pedestrian policies. Both NCDOT and VDOT have established “Complete Streets” policies that provide for consideration of all modes of transportation, including pedestrians and cyclists, when building new projects or making improvements to existing infrastructure. Therefore, the Project is not anticipated to introduce any barriers to the elderly or disabled or have adverse impacts to either of these special populations.

4.11.5.2 ENVIRONMENTAL JUSTICE

An updated Environmental Justice (EJ) analysis was prepared for this Tier II FEIS as a result of the availability of 2010 Census data and USDOT EJ Guidance (USDOT, 2012). The EJ analysis in the 2010 Tier II DEIS was based on 1990 and 2000 US Census because the 2010 Census had yet to be completed. Since the release of the 2010 Tier II DEIS, the 2010 Census data is available and is the basis of the updated EJ analysis for this Tier II FEIS. In addition to the change in time period, there are also differences in the data collection. From 1970 to 2000, the decennial Census "Long Form" was used, providing a 1-in-6 population sample of demographic and socioeconomic characteristics such as income and poverty. This form is no longer collected as part of the Decennial Census. It has been replaced by the American Community Survey (ACS). The ACS is a nationwide, continuous survey designed to provide demographic, housing, social, and economic data every year; however, it is subject to larger margins of error and is only provided for larger geographies such as counties and large cities and, therefore, is not available at the Census Block Group (CBG) level. For the ACS, the margin of error is the difference between an estimate and its lower or upper confidence bound. All ACS published margins of error are based on a 90 percent confidence level calculated using a standard error formula. This margin of error is included in the EJ tables presented in this section.

Since the release of the 2010 Tier II DEIS, the US Department of Transportation (USDOT) issued an update to its guidance on carrying out Executive Order 12898 on Environmental Justice in Minority and Low-Income Populations (USDOT, 2012). This order requires Federal agencies to achieve environmental justice by identifying and addressing disproportionately high and adverse human health or environmental effects, including the interrelated social and economic effects of their programs, policies, and activities on minority populations and low-income populations in the United States. Effective August 15, 2012, FTA issued its first EJ guidance, "Environmental Justice Policy Guidance for FTA Recipients." In 2011, FHWA issued "Guidance on Environmental Justice in NEPA" and in 2012 issued "FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The new guidance expands minority definitions to match those of the Census. Hispanic populations (an ethnicity), were added to the category of minority populations (a race of people). In addition, clarifications were provided regarding identifying disproportionately high and adverse effects. FRA has elected to apply these guidance documents for this Tier II FEIS.

A summary of the USDOT guidance on the application of Executive Order 12898 to transportation projects includes the following points:

- Low-Income: A person whose median household income is at or below the Department of Health and Human Services (DHHS) poverty guidelines. The 2012 DHHS poverty guideline for an individual is $11,170 and a family/ household of four persons is $23,050.
- Low-Income Population: Any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed USDOT program, policy, or activity.
- Minority: A person who is
    - Black: a person having origins in any of the black racial groups of Africa;
    - Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
    - Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;
    - American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who

maintains cultural identification through tribal affiliation or community recognition; or
    - Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
- Minority Population: Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed USDOT program, policy, or activity.
- Adverse Effects: The totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of human-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of USDOT programs, policies, or activities.
- Disproportionately High and Adverse Effects on Minority and Low-Income Populations are adverse effects that:
    - Are predominately borne by a minority population and/or a low-income population; or
    - Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population.

This EJ analysis was carried out in accordance with the guidance and requirements set forth in the USDOT Order 5610.2(a) and Executive Order 12898. The locations of minority and/or low-income populations are identified and referred to as EJ communities. A minority and/or low-income population is defined as an EJ community if it meets one or both of the following criteria:

- The Census block group contains 50 percent or more minority persons and/or the Census block group contains 25 percent or more low-income persons.
- The percentage of minority and/or low-income persons in any Census block group is more than 10 percent greater than the county average.

The presence of these two types of EJ populations was determined based on 2010 Census data and the most recent data available from the ACS. The EJ Study Area included all Census blocks, block groups, and tracts within or adjacent to the Project corridor. Extensive public outreach efforts were undertaken equally along the entire Study Area and throughout the life of the Project. These efforts are documented in Chapter 7.

In addition to the changes in Census and ACS data and the new Federal EJ guidance, this Tier II FEIS EJ analysis differs from the 2010 Tier II DEIS analysis for several reasons:

- For this Tier II FEIS, minority communities now include white and non-white Hispanic populations, whereas the 2010 Tier II DEIS addressed Hispanic populations as a separate, disadvantaged population in the EJ analysis.
- For this Tier II FEIS, low-income communities are determined based on the updated 2012 Health and Human Services (HSS) poverty threshold, whereas the Tier II DEIS used the HSS 2010 poverty threshold.

- This Tier II FEIS uses a Project-level EJ threshold value (58%, as explained below in 4.11.5.2.1) to determine if impacts are disproportionately high, whereas the Tier II DEIS did not use a threshold value (see Section 4.11.5.2.1 for an explanation of the derivation of this threshold value.)
- The EJ analysis in the 2010 Tier II DEIS was more generic in its approach than this Tier II FEIS EJ analysis. In other words, the Tier II DEIS did not make comparisons of disproportionately high and adverse impacts by multiple EIS topics, whereas this Tier II FEIS addresses EJ impacts by specific topics such as traffic changes & road closures, displacements, neighborhood disruptions, air, noise, and vibration.

Beneficial and adverse impacts to EJ communities are addressed by topic in the text that follows. Overall, this analysis shows that EJ communities would experience disproportionately high and adverse impacts in the areas of residential relocations, rail operation noise impacts to Category 2 receptors (residences and buildings where people normally sleep), rail noise vibration impacts to sensitive receptors, and the need for housing of last resort. Use of the housing of last resort provision is required where an owner, occupant, or tenant cannot otherwise be appropriately housed within the monetary limits. This is a common situation in high-cost housing areas or with very low income tenants who do not live in subsidized housing at the time of displacement. A discussion of avoidance, minimization, and potential mitigation measures for noise impacts is also included, where appropriate.

4.11.5.2.1 EJ COMMUNITIES IN THE PROJECT STUDY AREA

Table 4-38 presents the percentage of minority and low-income populations by state, locality, and community. Community-level data reflect the Census block groups within or adjacent to the Study Area. On Table 4-38, EJ communities are identified with bold text. Table 4-39 lists the EJ communities and indicates if the communities are minority and/or low-income. Of the 26 sections of the Study Area (AA through V), more than half qualify as having EJ communities. Overall, the percentage of minority and/or low-income populations in the Census block groups within or adjacent to the Study Area is equal to or greater than it is for the entire locality within which the block groups are located. In other words, there are more EJ communities adjacent to the existing railroad tracks than there are away from the tracks. The exception to this is Wake County, NC, where the percentage of minority populations is much less adjacent to the railroad than it is for the county as a whole.

The percentage of the Project located within EJ communities (as defined above) was evaluated to determine if the Project is disproportionately located within them. Table 4-40 identifies each Project section as either having or not having EJ communities, as well as the number of miles of rail and road improvements proposed within each section of the Preferred Alternative. Based on the data provided in Table 4-40, there are 234.43 combined miles of road and rail mainline track to be improved within the Study Area, of which 57 percent of these improvements would be located within EJ communities. While the Project is disproportionately located within EJ communities based on this criteria, it is important to note that the Study Area, which uses existing railroad rights of way to the extent practical, was selected in the Tier I EIS because it would minimize impacts to the human and natural environment. Additionally, the presence of the Project improvements does not necessarily result in impacts, particularly in locations where the designs are located entirely within the existing railroad corridor. The Tier II EIS efforts to further minimize impacts involved extensive community outreach to all communities along the Project, including EJ communities (see Chapter 7 for details on community involvement). Minimization and mitigation to EJ communities are summarized in Section 4.11.5.2.11, Community Involvement Process and Resulting Mitigation.

Representing 57 percent of the Study Area, EJ communities have the potential to receive a disproportionately high level of adverse impacts in comparison to non-EJ communities. On the other hand, EJ communities also have the potential to be the recipients of a disproportionately high level of Project benefits compared to non-EJ communities. To determine if EJ impacts are disproportionately high, a threshold of 58 percent or greater percent was used to evaluate impacts. Table 4-30 (Rail and Road Impacts and Benefits of Preferred Alternative by Community) presents summaries of the road and rail impacts and benefits to EJ communities. Table 4-41 presents a summary of the community-level impacts to EJ communities.

Table 4-38
Environmental Justice: Minority and Low-Income Data*

State and Locality				Study Area and Community				
Locality	% Minority	Persons Whose Income is Below Poverty Level (2010)		Section	Study Area / Community	% Minority	Persons Whose Income is Below Poverty Level (2010)	
		%	Standard Error (SE)				%	Standard Error (SE)
Virginia	31.4%	10.3%	0.12	Census Block Groups Within or Adjacent to Project Corridor				
City of Richmond, VA	**59.2%**	**25.3%**	0.67	AA	**City of Richmond, VA**	**70.1%**	**25.3%**	0.7
Chesterfield County, VA	31.7%	5.9%	0.36	AA - CC	Chesterfield County, VA	39.3%	5.9%	0.4
				CC	**Ettrick, VA**	**75.8%**	7.5%	3.3
City of Colonial Heights, VA	17.7%	7.5%	1.2	CC	City of Colonial Heights, VA	23.3%	7.5%	1.2
City of Petersburg, VA	**83.9%**	20.2%	1.7	CC - DD	**City of Petersburg, VA**	**85.1%**	20.2%	1.7
Dinwiddie County, VA	36.1%	11.8%	1.3	DD - C	Dinwiddie County, VA	36.6%	11.8%	1.3
				C	McKenney, VA	36.5%	14.5%	5.4
Brunswick County, VA	**59.6%**	21.0%	3.1	D - G	**Brunswick County, VA**	**63.8%**	21.0%	3.1
				E	**Alberta, VA**	**62.7%**	**35.5%**	13.1
Mecklenburg County, VA	40.0%	18.8%	1.6	H - L	Mecklenburg County, VA	29.5%	18.8%	1.6
				I	**La Crosse, VA**	43.9%	**27.0%**	8.7
North Carolina	31.5%	15.5%	0.1	Census Block Groups Within or Adjacent to Project Corridor				
Warren County, NC	**60.6%**	**27.0%**	2.6	L - N	**Warren County, NC**	**64.9%**	**27.0%**	2.6
				M	**Norlina, NC**	**55.9%**	**34.0%**	7.9
Vance County, NC	**61.8%**	**27.5%**	1.7	O - Q	**Vance County, NC**	**57.2%**	**27.5%**	1.7
				O	**Middleburg, NC**	**61.7%**	8.4%	6.4
				P	**Henderson, NC**	**71.6%**	12.7%	0.9

Table 4-38
Environmental Justice: Minority and Low-Income Data*

State and Locality				Study Area and Community				
Locality	% Minority	Persons Whose Income is Below Poverty Level (2010) %	Persons Whose Income is Below Poverty Level (2010) Standard Error (SE)	Section	Study Area / Community	% Minority	Persons Whose Income is Below Poverty Level (2010) %	Persons Whose Income is Below Poverty Level (2010) Standard Error (SE)
				Q	**Kittrell, NC**	42.1%	**78.6%**	7.9
Franklin County, NC	30.8%	15.0%	1.2	R	Franklin County, NC	35.4%	15.0%	1.2
				S	**Franklinton, NC**	**44.3%**	**28.0%**	6.4
				S - T	Youngsville, NC	22.8%	5.2%	2.6
Wake County, NC	36.7%	9.7%	0.2	T - V	Wake County, NC	15.0%	9.7%	0.2
				U	Wake Forest, NC	23.9%	7.5%	1.3
				U - V	City of Raleigh, NC	45.7%	14.6%	0.5

Source: State and county data from 2010 Census, QTP4 for Minority and DP03 (All Persons) for Poverty. Community data at the Census block group and tract level from 2010 American Community Survey S1701 by Place.

Note: Bolded text indicates an EJ community.

Table 4-39
Environmental Justice Communities within Study Area Block Groups

State	Section	Study Area / Community	Minority	Key Minority Demographic	Low-Income
Virginia	AA	City of Richmond, VA	✓	Black	✓
	CC	Ettrick, VA	✓	Black	-
	CC, DD	City of Petersburg, VA	✓	Black	-
	D, E, F, G	Brunswick County, VA	✓	Black	-
	E	Alberta, VA	✓	Black	✓
	I	La Crosse, VA	-	-	✓
North Carolina	L, M, N	Warren County, NC	✓	Black	✓
	M	Norlina, NC	✓	Black	✓
	O, P, Q	Vance County, NC	✓	Black	✓
	O	Middleburg, NC	✓	Black	-
	P	Henderson, NC	✓	Black	-
	Q	Kittrell, NC	-	-	✓
	S	Franklinton, NC	✓	Black	✓

Source: State and county data from 2010 Census, QTP4 for Minority and DP03 (All Persons) for Poverty. Community data at the Census block group and tract level from 2010 American Community Survey S1701 by Place.

Table 4-40
Project Area of Preferred Alternative within Environmental Justice Communities

Section	Area	Minority	Low-Income	Rail Mainline Track	Roadwork	Combined Rail/Road
				Miles	Miles	Miles
AA	**City of Richmond, VA**	✓	✓	**11.31**	**4.88**	**16.19**
BB	Chesterfield County VA	□	□	6.91	3.18	10.09
CC	**Ettrick, Petersburg VA**	✓	□	**8.91**	**3.25**	**12.16**
DD	**Petersburg VA**	✓	□	**5.66**	**1.80**	**7.46**
A	Dinwiddie County VA	□	□	4.95	1.97	**6.92**
B	Dinwiddie County VA	□	□	5.71	1.44	7.15
C	Dinwiddie County VA	□	□	10.74	3.99	14.73
D	**Brunswick County VA**	✓	□	**6.17**	**1.96**	**8.13**
E	**Brunswick County, Alberta VA**	✓	✓	**4.21**	**1.66**	**5.87**
F	**Brunswick County VA**	✓	✓	**4.28**	**1.55**	**5.83**
G	**Brunswick County VA**	✓	✓	**3.55**	**0.58**	**4.13**
H	Mecklenburg County VA	□	□	5.53	4.60	10.13
I	**La Crosse VA**	□	✓	3.78	**3.77**	7.55
J	Mecklenburg County VA	□	□	4.10	2.67	6.77
K	Mecklenburg County VA	□	□	4.96	0.13	5.09
L	**Warren County, NC**	✓	✓	**5.69**	**4.84**	**10.53**
M	**Warren County, Norlina, NC**	✓	✓	**6.14**	**5.37**	**11.51**
N	**Warren County, NC**	✓	✓	**3.71**	**2.61**	**6.32**
O	**Vance County, Middleburg, NC**	✓	✓	**4.70**	**3.94**	**8.64**
P	**Vance County, Henderson, NC**	✓	□	**7.99**	**8.50**	**16.49**
Q	**Vance County, Kittrell, NC**	□	✓	**7.70**	**3.32**	**11.02**
R	Franklin County, NC	□	□	3.21	**0.23**	3.44
S	**Franklinton, NC**	✓	✓	**6.88**	**2.80**	**9.68**
T	Franklin County, NC	□	□	2.83	0.55	3.38
U	Wake County, NC	□	□	8.88	3.67	12.55
V	Wake County, NC	□	□	9.88	2.79	12.67
	Project Totals	-	-	158.38	76.05	234.43
	Project Totals - EJ Communities Only	-	-	86.90	47.06	133.96
	% Impacts to EJ Communities Only	-	-	55%	62%	57%

Note: Bolded text indicates an EJ community.
58% = Threshold value used to determine if impacts are disproportionate within Section having EJ communities

Table 4-41
Community Impacts of Preferred Alternative within Environmental Justice Communities

Section	Area	Residential Relocations	Housing of Last Resort	Business Relocations	Public Schools Impacted	Hazmat Sites
		#	Yes or No	#	#	#
AA	**City of Richmond, VA**	**40**	**No**	**7**	**0**	**59**
BB	Chesterfield County, VA	7	No	1	0	10
CC	**Ettrick, Petersburg, VA**	**48**	**No**	**1**	**0**	**20**
DD	**Petersburg, VA**	**2**	**No**	**0**	**0**	**1**
A	Dinwiddie County, VA	0	No	0	0	1
B	Dinwiddie County, VA	3	No	1	0	3
C	Dinwiddie County, VA	4	No	8	0	3
D	**Brunswick County, VA**	**3**	**No**	**2**	**0**	**1**
E	**Brunswick County, Alberta, VA**	**2**	**No**	**7**	**0**	**0**
F	**Brunswick County, VA**	**0**	**No**	**0**	**0**	**0**
G	**Brunswick County, VA**	**2**	**No**	**0**	**0**	**0**
H	Brunswick County, VA	1	No	0	0	0
I	**La Crosse, VA**	**14**	**No**	**0**	**0**	**2**
J	Mecklenburg County, VA	5	No	0	0	1
K	Mecklenburg County, VA	0	No	5	0	0
L	**Warren County, NC**	**8**	**Yes**	**1**	**0**	**1**
M	**Warren County, Norlina, NC**	**18**	**Yes**	**4**	**0**	**0**
N	**Warren County, NC**	**2**	**Yes**	**0**	**0**	**1**
O	**Vance County, Middleburg, NC**	**3**	**No**	**0**	**0**	**1**
P	**Vance County, Henderson, NC**	**33**	**No**	**8**	**0**	**31**
Q	**Vance County, Kittrell, NC**	**10**	**Yes**	**0**	**0**	**4**
R	Franklin County, NC	1	No	0	0	0
S	**Franklinton, NC**	**4**	**No**	**0**	**0**	**7**
T	Franklin County, NC	5	No	0	0	4
U	Wake County, NC	8	No	12	0	20
V	Wake County, NC	0	No	59	0	79
	Project Totals	223	None	116	0	249
	Project Totals - EJ Communities Only	189	Yes	30	0	128
	% Impacts to EJ Communities Only	85%	Yes	26%	0%	51%

Note: Bolded text indicates an EJ community.

[yellow box] = Disproportionately High Impacts Relative to % Miles within Section having EJ communities

58% = Threshold value used to determine if impacts are disproportionate within Section having EJ communities

4.11.5.2.2 TRAFFIC CHANGES & PUBLIC ROAD AND PRIVATE DRIVE CLOSURES

Communities along the corridor have consistently provided supportive comments regarding the development of HSR. This community support is in light of the road closures and reroutes to accommodate rail crossing safety improvements. Road consolidations and grade separated (i.e., bridge and underpass) crossings are generally at a maximum distance of one mile apart, avoiding lengthy or circuitous rerouting. In addition, the elimination of at-grade crossings will reduce train horn noise in communities through which the trains pass, including EJ communities. The temporary inconvenience of and disruption caused by construction activities will be shared by all, not just minority and/or low-income populations.

As shown in Table 4-30 above, EJ communities will be subject to a disproportionately high number of at-grade road and rail crossing closures. However, these closures are not considered significant given the maximum reroute distance of one mile. In addition, closures and reroutes were discussed with community representatives to develop the most beneficial and least impactful design (see Chapter 7 for details on community involvement).

As stated in Section 4.11.2.1.5, Traffic Changes & Public Road and Private Drive Closures, travelers in areas with active rail lines are accustomed to waiting at at-grade crossings for stopped or passing trains. While construction activities and the consolidated or realigned closings may be an initial inconvenience for these travelers, the short-term inconvenience will be offset by having a grade-separated rail crossing that allows for continuous, unimpeded access to and from both sides of the rail line. Owners of parcels with current, legal access to existing roads will have access to their parcels maintained (or will be compensated if it is not possible to maintain the access); driveway access to these parcels will be determined during final design when detailed survey level data is available.

While EJ communities will experience a disproportionately higher level of temporary community disruption from Project improvement activities, these EJ communities will also be the recipients of the permanent benefits associated with the improvements. The adverse effects associated with road and rail improvements are not anticipated to be appreciably more severe or greater in magnitude than those suffered by non-EJ communities.

4.11.5.2.3 RESIDENTIAL DISPLACEMENTS

Table 4-37 above, presents a summary of residential impacts relative to EJ communities. The greatest number of residential displacements in EJ communities will occur in Richmond, VA, Ettrick, VA, and Henderson, NC. These displacements will result from converting existing, at-grade crossings to grade-separated crossings, rerouting existing roads, and providing new access roads. Residences located along the existing rail corridor in a developed, urban area are difficult to avoid due to rail engineering standards and constraints that limit flexibility in the proposed designs. Last resort housing, as discussed in Section 4.11.6, will likely be necessary in Sections L (NC-portion), M, N, and Q in Warren and Vance Counties, NC, including Norlina, NC, and Kittrell, NC. The number of residential relocations within EJ communities is disproportionately high and adverse relative to non-EJ communities, as is the need for housing of last resort.

Where displacements are unavoidable, fair and equitable compensatory mitigation will be implemented in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646). As is the case with any relocation, the Uniform Relocation Act ensures that persons displaced as a result of a Federal action or by an undertaking involving Federal funds are treated fairly, consistently, and equitably. This helps to ensure persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Persons who will be displaced will personally work with a Relocation Agent from either North Carolina or Virginia, as appropriate. Section 4.11.6 provides additional details on the relocation process.

While residential displacements are disproportionately high and adverse, the surrounding EJ communities would be served by and will directly benefit from the safety improvements afforded by the proposed improvements. A description of the residential displacements within EJ communities is provided in the text that follows.

Richmond, VA: As currently designed, three single-family residences, half of one multi-family residence, and one business would be displaced due to the construction of grade separations of the rail line at Ruffin Road and Bells Road. Given that these two roads serve as the primary points of access for residential, commercial, and industrial development in the area, and that the areas are fully built out, avoidance of these relocations is not practicable. In addition, given the high traffic volumes along these two roads, simply closing these at-grade crossings would not be a prudent option. Along Ruffin Road, one of the residential units at the Lafayette Gardens apartment community and several adjacent homes may be displaced as a result of ROW acquisition for the railroad bridge construction at this intersection. The footprint of the overpass was minimized to avoid the building that formerly housed the Shekinah Temple Church of Our Lord Jesus Christ on the eastern side of the railroad tracks. Project designs also include a Bells Road bridge over the existing rail line, andROW acquisition on the southern side of Bells Road, to the west of the rail line, may result in the displacement of up to three single-family residences. The Preferred Alternative maximizes the use of existing rail ROW in this area, minimizing displacements of any kind. Because these homes are located adjacent to the existing rail corridor, and because of design requirements, avoidance of all properties was not possible.

Ettrick, VA: Several single-family residences would be displaced for the bridging of Branders Bridge Road and Dupuy Road over the existing rail line. Both new road alignments would be located on the northern side of the roads to minimize property impacts and residential displacements. Given the high traffic volumes along these two roads, simply closing these at-grade crossings would not be a prudent option. Residential properties remaining on the south side of the original Dupuy Road (south of the proposed, relocated Dupuy Road) will face the new fill necessary to elevate relocated Dupuy Road over the railroad tracks. Landscaping of this fill will be evaluated during final design as mitigation for these remaining residents. God Mission of Faith Church on East River Road would be displaced by the Preferred Alternative railroad ROW requirements. Assistance with relocation will be provided as needed as part of Virginia right of way acquisition procedures. Public meetings were held in 2010 and 2013 to discuss these issues with local residents and develop acceptable solutions (see Section 4.11.1.10 and Chapter 7). Based on these meetings, residents and local officials attending the meetings appeared to understand the issues and the proposed design solutions.

Petersburg, VA: To accommodate construction of the new track east of the existing railroad, a new rail bridge would be constructed adjacent to the existing Dupuy Road/Farmer Street underpass, which would be retained. The Preferred Alternative does not impact the nearby Shining Light Pentecostal Church located on Dupuy Road. A new pedestrian-only bridge will be provided over Lincoln Street to maintain neighborhood access. Both of these improvements require the displacement of several single-family residences. Public meetings were held in 2010 and 2013 to discuss access issues with local residents and develop acceptable solutions (see Section 4.11.1.10 and Chapter 7). Road closures and consolidations would have a minimally disruptive effect in this area.

Brunswick County, VA: Rail along the CSX S-Line has not been active in Brunswick County, VA, since the 1980s. To accommodate rail and eliminate at-grade crossings, a small number of residential relocations will be necessary. Rawlings Road will be relocated to provide a grade-separated crossing. This new crossing was shifted to the west to avoid the displacement of several resources, including a residential displacement, Blick's Store and Wynnhurst (eligible for the National Register of Historic Places), and Lovely Zion Baptist Church. A new overpass will be constructed at Flat Rock Road, avoiding residential displacements and avoiding displacement of the Warfield Baptist Church. Rail will be on new alignment to the north of Alberta, VA, requiring an overpass of the new tracks at Chestnut Road. The design minimizes residential displacements along Chestnut Road.

Alberta, VA: Alberta, VA, is an old railroad village and the community's structure and identity historically relate directly to the existence of the former rail line. There has not been active rail in the town since the 1980s and the new, active rail will bisect the community, causing changes in travel patterns throughout the town. This effect will likely occur despite the three, relatively close new road overpasses for Main Street, 2nd Avenue, and Church Street. In addition, a new overpass for pedestrians, bicyclists, and horses will be provided where the Tobacco Heritage Trail crosses the railroad tracks, one block north of 2nd Avenue. Littlemont Road will be rerouted with the realigned Church Street and will include a new rail overpass for Church Street. While the alignment of the new Church Street goes through several residential parcels south of the railroad tracks, these parcels and the adjacent subdivision are vacant. The Preferred Alternative avoids the United Methodist Church and minimizes residential displacements, but several commercial displacements will be necessary. Meetings with residents and local officials have been ongoing to develop acceptable design plans (see Section 4.11.1.10 and Chapter 7).

La Crosse, VA: As with Brunswick County, VA, and the Town of Alberta, VA, there has not been active rail in La Crosse, VA, since the 1980s. Accommodating new, active rail and eliminating at-grade crossings will require multiple residential displacements. North of town, the relocation of Country Club Road and the shift of the existing rail corridor to the northwest will result in several displacements of residents at the Hillcrest Mobile Home Park. Based on discussions with the park administrator in May and August 2013, it is anticipated that the displaced properties can relocate to currently vacant lots within the park.

In addition to the residential displacements, water to residents of this mobile home park is provided via private wells. The relocated rail would require capping at least one well that serves remaining residents at the mobile home park. Communication with the Virginia Department of Health indicated that the Hillcrest Mobile Home Park was an inactive waterworks system as of June 2010. They stated that "[a] modification to their distribution system changed their status at that time and they are no longer required to follow Virginia Waterworks Regulations. It is unclear whether the Park has drilled additional wells, or if they are now connected to town water." Further coordination by the Project Team with the park administrator determined that the Park had, in fact, drilled an additional well. Due to the potential impacts to one of the Park's drinking water wells, the Project Team requested that the Mecklenburg County, VA, Health Department conduct a site visit of the Hillcrest Mobile Home Park property to assess the adequacy of the overall site to accommodate the relocation of the drinking water well. The Health Department determined there is sufficient land available within the Hillcrest 50-acre parcel to accommodate the relocation of the drinking water well. During final design, a suitable new water source will be identified to ensure a continuous, safe, and sanitary water source for these residents.

Immediately south of Hillcrest Mobile Home Park, there will be a new, grade-separated, rail over road access point connecting Country Club Road and Northington Road. An additional residential displacement is likely at this location.

The existing pedestrian rail crossing for the Tobacco Heritage Trail will be relocated to a new bicycle/pedestrian-only underpass connecting the trail to Main Street, just north of its current intersection with High Street. No displacements are associated with this feature. The rerouting of traffic, along with construction of a traffic circle for the intersection of Meredith Street and St. Tammany Road, may be confusing and disruptive at first. Changing traffic patterns may add traffic volumes to local streets due to reroutes. South of downtown La Crosse, VA, the existing Morris Town Circle at-grade crossing of the rail corridor will be closed. This closure may require an additional mile of travel for those wanting to get to the La Crosse Cemetery, Mecklenburg United Methodist Church, and Morning Star Apostolic Church, depending on which side of the railroad tracks they live.

The La Crosse, VA, Town Council requested consideration of an additional pedestrian crossing of the railroad tracks near the historic La Crosse Hotel. Following detailed discussions with the Mayor and local residents about the constraints to such a crossing, including the presence of historic resources (i.e., the La Crosse, VA, Commercial Historic District and the La Crosse Hotel), the community was satisfied that it was not prudent.

Residents remaining at the Hillcrest Mobile Home Park, as well as those within La Crosse, VA, will be subjected to the new sights, sounds, and vibrations of the new rail and the rerouted roads. Mitigation of noise and vibration impacts are addressed in detail in Section 4.11.1.8 and Section 4.7.

The community has been very involved in the development of and in support of the Project. Based on input received from residents and local officials via multiple meetings, the possibility of having a HSR station in their community is seen as a positive development and offers the community the possibility of multimodal transportation alternatives. The return of rail is seen as an opportunity for future tourism growth, particularly when coupled with the existing Tobacco Heritage Trail.

Warren County, NC, and Norlina, NC: From the Mecklenburg County, VA, line southward to the northern half of Norlina, NC, there is no active rail service. From the southern half of Norlina, NC, southward, freight rail is active along the CSX S-Line. North of Norlina, NC, Wise Five Forks/Carrie Dunn Road will be realigned to provide a new grade-separated crossing; this improvement may require a small amount of ROW from the front of the Wise Baptist Church property. There will be multiple displacements in Norlina, NC, as a result of roadway realignments, closures, and grade-separated crossings. Several mobile homes at Town and Country Mobile Home Park, between Kearney and Washington Streets, will be displaced due to the westward shift of Warren Plains Road adjacent to the rail line. The displacement of these mobile homes eliminates the need for circuitous routing of the entire mobile home park. New access will also be provided to the mobile home park from the north, through a new connection of Town and Country Road to Washington Street. It appears there is land available at the mobile home park to accommodate the relocation of these displaced mobile homes. Residential displacements are likely at the Main Street and US-158/401 intersection improvements associated with the replacement of the existing grade-separated crossing of US-158/401 and connection to US-1.

Just south of Norlina, NC, Ridgeway Drewry Road will be relocated to provide a new, grade-separated crossing of the railroad tracks. This change to the design presented in the Tier II DEIS was undertaken in response to comments on the Tier II DEIS and developed in coordination with Warren County, NC, and Kerr-Tar Cog (the Rural Planning Organization) to serve the needs of the local community and the County as a whole. The proposed grade separation will connect to a new frontage road connecting Ridgeway Warrenton Road with Axtell Ridgway Road. ROW acquisition for the new frontage road will displace one or two homes. However, final design will include efforts to minimize residential relocations in this area where possible.

Soul City Boulevard, located south of Ridgeway Drewry Road is also proposed to be grade separated.The designs have not changed from what was presented in the Tier II DEIS, and no residential relocations are anticipated. The designs shown in the Tier II DEIS for a bridge over the railroad at Kimball Road, the southernmost crossing in Warren County, NC, have been revised. The new designs minimize impacts and also allow traffic to be maintained during construction; no relocations are anticipated as part of the new designs.

Vance County, NC, and Middleburg, NC: Freight rail is active in Vance County, NC. Northeast of Middleburg, NC, residential relocations at a mobile home park may occur as a result of new railroad ROW. To the south of Middleburg, NC, the new rail alignment, the new, grade-separated crossing for Brookston Road, and a new access road will require at least one residential displacement. ROW will be required along the front of the Young Memorial Church property, and from the rear of the Brookston Baptist Church and Cemetery. Final design will include efforts to minimize impacts, and will include coordination on possible mitigation for potential impacts to the cemetery. To the north of Henderson, NC, the relocation of Greystone Road, the new overpass of the railroad tracks, and the new intersection with Vulcan Lane are not anticipated to require residential displacements. However, the realignment of Vulcan Lane may displace one or two homes.

Henderson, NC: Henderson, NC, is one of the cities that the states of Virginia and North Carolina have recommended to have a HSR stop, the development of which will be evaluated in future environmental documentation. The economic and travel access benefits of a new station will be equally available to all residents and businesses within Henderson, NC. Disruption in travel patterns, the addition of HSR service through town, and the operation of a new rail station in town will likely affect all residents. Several meetings were held with Henderson, NC, officials and residents to develop a design that addresses existing traffic congestion problems and accommodates rerouted traffic from Project-related at-grade road closures. The end result of these discussions is that the Preferred Alternative is supported by both local officials and residents. The Henderson, NC, City Council passed Resolution 12-42 and Resolution 11-84 in support of a HSR Passenger Station in downtown Henderson, NC. The resolutions also state acceptance of both the adverse and beneficial impacts associated with construction of the necessary rail and road improvements of the Preferred Alternative (Appendix A).

There will be multiple displacements in Henderson, NC, as a result of roadway realignments, closures, and grade-separated crossings. Existing development, planned future development, and multiple historic resources were constraints to providing more grade-separated crossings than are proposed; thereby limiting the number of likely displacements.

At the north end of Henderson, there are several residences along Railroad Street that may potentially be impacted by the project in terms of property access. Railroad Street is a gravel road that runs parallel to the railroad, to the east (map 114, Appendix R). As it is shown on CSX mapping, the road is located within the existing railroad ROW. However, NCDOT identifies Railroad Street as SR 1251 within the state road system. In this location, the Project proposes to improve the single-track rail in its existing location (i.e., all within the existing rail ROW, with no construction impacts to the road or the residences that are accessed by the road). As no additional ROW is required by the Project, these residences were not identified as relocations. However, there is the possibility that the road bed is owned by CSX. If that is the case, at any time, the railroad could enforce its ROW and preclude access to the residences. If the Project results in future railroad ROW enforcement that would preclude access to the residences, there would be additional displacements associated with the Project. During final design and ROW acquisition, as survey data become available, NCDOT will coordinate with the neighborhood property owners and occupants, to ensure they are informed of any issues that may arise related to ROW and access.

Several residential displacements are likely at the proposed roundabout for N. Garnett Street, Main Street, N. Chestnut Street, and N. Beckford Drive. N. Main Street will be shifted slightly southward and a new, grade-separated crossing will be provided, connecting it to the new roundabout. ROW will be required from the front of the North Henderson Baptist Church property, and from the rear of St. John's Episcopal Church parking lot. In addition, improvements to Chestnut Street further south, may require a small amount of ROW from the front of the Cotton Memorial Presbyterian Church Property. A new pedestrian-only underpass will be constructed that connects N. Burwell Avenue/S. Garnett Street to Peachtree Street. No displacements are anticipated with this improvement.

The new, grade-separated crossing of Alexander Street will provide a new intersection with Raleigh Road and a new connection to Dabney Drive. While this improvement will result in several industrial property impacts, the industrial buildings impacted are currently vacant and in poor repair. Additionally, the proposed designs were developed at the request of the owner of a historic resource protected by Section 106 of the NHPA. Half of this roadway improvement is located within the South Henderson, NC, Industrial Historic District and includes Vance Flour Mill (Sanford Milling Company), which is still in operation. The current design configuration for this grade-separated crossing allows for Nicholas Street to remain open. Any other design configuration that avoided this historic district would have required the closure of Nicholas Street. Based on input from the owner of Vance Flour Mill, the closure of Nicholas Street will result in limited truck access to this mill and ultimately put the mill out of business. Upon hearing this, community representatives agreed that impacts associated with the proposed design were preferable to the closing of the mill. In addition, traffic flow on Nicholas Street will be improved and a new connection to J.P. Taylor Road will be provided. Several residential relocations may result from the improvements to Nicholas Street. In addition, a large, vacant industrial complex will be displaced as a result of the relocated connection between Nicholas Street and J.P. Taylor Road. This relocation accommodates a new, grade-separated crossing of J.P. Taylor Road to a new connection to Belmont Drive, which may require a small amount of ROW from the front of the Victory Baptist Church property. Local officials and residents requested that the vacant industrial complex be taken because it will provide access to this site planned for future commercial redevelopment.

Kittrell, NC: North of Kittrell, NC, Raleigh Road and the railroad tracks will be shifted slightly to the west to improve the curve radius of both. In so doing, several residential displacements will occur in a mobile home park adjacent to Vansandt Lane. The displacements are unavoidable, but it appears there may be suitable replacement land available within the mobile home park.

Several meetings were held with local officials and residents of Kittrell, NC, to determine acceptable road closures and grade-separated closures of the Preferred Alternative. Residential displacements have been minimized as a result of this coordination.

Franklinton, NC: Several meetings were held with local officials and residents of Franklinton, NC, to determine acceptable road closures and grade-separated closures of the Preferred Alternative. Residential displacements have been minimized as a result of this coordination. The replacement of the existing underpass at Green Street/NC 56, the new grade-separated crossing for Cedar Creek Road, and the new grade-separated crossing for a new road just north of the existing Pearce Street at-grade crossing, as well as the pedestrian-only, grade-separated crossings for College Street and E. Hawkins Street, will not require residential displacements.

4.11.5.2.4 NEIGHBORHOOD DISRUPTIONS

Whether the existing rail corridor is active or inactive, rail crossing consolidations and associated improvements to adjacent roadways could have an impact on community cohesion within neighborhoods and communities. The railroad corridor predates existing development and the railroad already acts as a boundary for many neighborhoods and businesses along the corridor, including EJ communities. Where rail service is active in this existing rail corridor, such adverse impacts are expected to be minor.

As stated in Section 4.11.2.1.2, Neighborhood Disruptions, neighborhood disruptions and relocations have been minimized to the greatest extent practicable because the Project maximizes the use of existing rail corridors. Along active rail lines, overall impacts to EJ neighborhoods and communities from the operation of SEHSR trains are expected to be minor because residents are used to the sights and sounds of trains through their communities.The introduction of high speed passenger rail would not substantially alter their current quality of life.

From the Burgess Connector in Dinwiddie County, VA, southward to Norlina in Warren County, NC, the rail corridor is inactive and, in some instances, the tracks have been removed and small portions of ROW sold for driveway access. EJ communities without active rail lines include the Virginia areas of Brunswick County, VA, Alberta, VA, and La Crosse, VA, and the North Carolina areas of Warren County, NC, and the northern half of Norlina, NC. In these communities and other areas adjacent to the inactive rail line, residents may view the reactivation of rail service as a negative impact on their quality of life. The sights and sounds of the rail would require a degree of adjustment for the families and businesses adjacent to it. However, given the number of trips planned (eight high speed trains and up to eight additional intermodal trains and two to four additional freight trains), and the speed at which the passenger trains will be traveling, exposure to rail activity will be of a limited duration and frequency for those EJ communities without a rail stop. In La Crosse, VA, and Henderson, NC, the duration of exposure to the HSR will be greater given that two stops daily are planned for each town.

Residents and businesses within EJ communities not currently living with an active rail line could also experience a sense of their community being split by the newly active rail line. What has in recent years been a situation of unencumbered access to and from either side of the tracks will now only be possible at designated bridges and underpasses. Given that the vast majority of consolidated crossings were designed to be no more than one mile apart, the change in community travel patterns will not be substantially altered. While EJ communities without existing rail will experience community disruption to some degree, the experience will not be disproportionately high and adverse relative to the experiences of non-EJ communities.

Communities and neighborhoods along the Study Area are concerned about the impacts of the proposed at-grade crossing changes, access consolidations, and road closures. Throughout the design process, the Project Team held meetings with local government representatives along the corridor to obtain input on local conditions that would affect design considerations. This information was used to refine proposed designs to better suit the needs of the local communities, including provision of pedestrian crossings in areas of high pedestrian activity. The decision to consolidate a crossing in a community considered accessibility and connectivity to the larger transportation network. Local and regional land use and transportation plans were taken into account and natural resource constraints, such as wetlands and cultural resources, were also considered.

Because of extensive outreach efforts with localities and communities within the Study Area, there is a high degree of public awareness of the proposed Project. As with any project where there are multiple opinions and stakeholders, support for one particular improvement over another is not always unanimous; however, localities and communities have continued to support the overall concept of HSR in their respective areas.

4.11.5.2.5 PUBLIC SERVICES AND FACILITIES

Overall, access to public services and facilities will not be substantially reduced. Because road consolidations and at-grade crossings are generally at a maximum distance of one mile apart, lengthy or circuitous rerouting is avoided. The temporary inconvenience of and disruption caused by construction activities will be shared by EJ communities and non-EJ communities. EJ communities share equally in the safety benefits afforded by the road closings, consolidations, and grade-separated crossings.

Stations: Two of the three existing rail stations are located within EJ communities: Richmond, VA, and Ettrick/Petersburg, VA. The new railroad stations proposed for La Crosse, VA, and Henderson, NC, would be located within EJ communities. The two new stations and improvements to the existing stations would bring with them local opportunities for economic development, employment, and more convenient access to rail services to these EJ communities.

Therefore, EJ communities currently and in the future will receive a disproportionately high level of benefits from rail stations located within their boundaries relative to non-EJ communities.

Schools and Places of Worship: As stated in Section 4.11, Community Resources, there will be an overall net benefit to schools from roadway safety improvements provided by grade-separated rail crossings (bridges and underpasses), the elimination of at-grade rail crossings, and the addition of pedestrian-only crossings. Inconveniences associated with construction activities will be temporary. The negative impacts of potentially longer driving distances to cross the rail line will be minimal and offset by the benefits gained in safety and unimpeded access. There will be no disproportionately high and adverse impacts to schools within EJ communities.

Section 4.11.3.2, Places of Worship and Cemeteries, states there are 98 places of worship and cemeteries within the Study Area. As with schools, there will be a net benefit to all places of worship from roadway safety improvements provided by grade-separated rail crossings, the elimination of at-grade rail crossings, and the addition of pedestrian-only crossings. The negative impacts of potentially longer driving distances to cross the rail line will be minimal (less than one mile) for most places of worship, and offset by the benefits gained in safety and unimpeded access. This will be the case for both EJ and non-EJ communities. Of the impacts to places of worship, there are 17 churches where the Preferred Alternative will or may require ROW, and where driveway access may be changed as part of the final design process. Of these, the Preferred Alternative will result in the relocation of two churches: God Mission of Faith Church in Ettrick, VA (an EJ community); and EMI New Covenant Global Ministries in Raleigh, NC. Based on these impacts, there would be no disproportionately high and adverse impacts to places of worship or cemeteries within EJ communities.

Police, Fire, and Emergency Response: Impacts to these facilities and services are addressed in detail in Section 4.11.3.3. Seven facilities were identified as being close to the corridor and will experience changes in access across the railroad. Of those seven, five are within or serve EJ communities. While impacts to these EJ facilities appear disproportionately high, mitigation measures have been incorporated for each facility, where warranted, to minimize adverse impacts such that they will not be severe. Impacts and details of minimization and mitigation measures are addressed in Section 4.11.3.3, but are summarized here.

- Alberta, VA, Volunteer Fire Department:
  There is almost no difference between the overall EMS service area for the Alberta, VA, Volunteer Fire Department under the Preferred Alternative compared to a No Build scenario.
- Ridgeway Volunteer Fire Department (Warren County, NC):
  In response to comments on the Tier II DEIS, revisions were made to road work designs in the Ridgeway area for the Preferred Alternative. The new road work was developed in coordination with Warren County, NC, Kerr-Tar Council of Governments (the Rural Planning Organization) and the NCDOT Transportation Planning Branch to serve the needs of the local community and Warren County, NC, as a whole.
- Vance County, NC, Ambulance and Fire Service (Henderson, NC):
  This facility provides fire response for Vance County, NC. The overall service area of the Preferred Alternative is largely the same compared to a No Build scenario. Although revisions to road work have been made in Henderson, NC, for the Preferred Alternative (as described in Section 2.2), the revisions do not affect which crossings are to be consolidated and will not substantially alter the response time service area of the Preferred Alternative.
- City of Henderson, NC, Fire Station 1 and City of Henderson, NC, Fire Station 2:
  The existing Charles Street underpass north of Chavasse Avenue, and the new Alexander Avenue bridge adequately compensate for the nearby crossing consolidations with regard to response time. There is very little change in the five-minute response area of the Preferred Alternative compared to a No Build scenario.

- Franklinton, NC, Fire Department:
  There is very little difference between the EMS service area for the Franklinton, NC, Fire Department under a No Build scenario or the Preferred Alternative. Although revisions to road work have been made in Franklinton, NC, for the Preferred Alternative, the revisions do not affect which crossings are to be consolidated and will not substantially alter the response time service area of the Preferred Alternative.

Once construction is complete, Project improvements are anticipated to have a net positive effect on access and response times for emergency vehicles serving all communities, including EJ communities. By eliminating at-grade crossings and by providing grade separations, the existing rail barriers will be eliminated for improved emergency vehicle access and response times. In areas with existing rail service, response time for emergency vehicles is expected to improve from decreased train delay times and improved roadway access as a result of improved roadway system linkage. Police, fire, and emergency response times may be temporarily affected during construction. Coordination with public response agencies serving the Study Area will continue during construction to avoid and minimize disruptions to emergency response.

4.11.5.2.6 ECONOMIC IMPACTS FROM CONSTRUCTION AND OPERATION

As stated in Section 4.11.1.1, Economic Impacts from Construction and Operation, construction would create new jobs for individuals to upgrade the railroad road bed, install signal and safety devices, build frontage/service roads, improve grade separated crossings, and build bridges to replace grade crossings. Additional jobs, possibly within the Study Area, could be created within the manufacturing sector to produce the equipment and materials needed to make these improvements. The additional jobs would increase income, thus affecting the economy of the region. These benefits are likely to be spread along the corridor, benefiting both EJ and non-EJ communities.

During construction, the economic impact would depend on the location of the firms supplying the labor and materials needed for the Project. It is estimated that a high percentage of the new employment during the construction phase would come from within the Study Area. Communities along the route, including EJ communities, will benefit as construction crews spend money in local hotels, restaurants, and shops.

The impact from operation expenditures would likely be more concentrated; the majority of new jobs would likely be created in communities served by the proposed service. Ticket agents and other railroad personnel would be located in these communities and the secondary impacts of their employment would be spread throughout the areas in which the stations are located, four out of five of which are EJ communities.

Freight-rail commerce would benefit by improving speed of service, enhancing safety of rail crossings, expanding rail connectivity, and relieving truck congestion on interstates. These improvements may provide opportunities for existing users to expand or new users to locate in communities with new or improved freight services, possibly equating to more jobs within these communities.

The specific economic impacts to the communities receiving HSR stops (Richmond, VA, Petersburg, VA, La Crosse, VA, Henderson, NC, and Raleigh, NC) are outside the scope of this document, but are anticipated to be positive. Therefore, the economic impacts from Project construction and operation will not be disproportionately high nor will they be adverse to EJ communities within the Study Area.

4.11.5.2.7 HAZARDOUS MATERIALS

As presented in Table 4-41, hazardous materials are present within the Study Area of the EJ communities. It is not expected that any of these sites would preclude the construction of the Project. The presence of these materials and the potential to impact them is not considered disproportionately high and adverse. If any potential hazardous waste sites cannot be avoided as the Preferred Alternative is designed and avoidance and minimization steps are undertaken, further assessments of the properties will be conducted.

4.11.5.2.8 AIR QUALITY

The results of the air quality analysis presented in Section 4.6 show that projected impacts from locomotive and automobile emissions will be below regulated thresholds for all monitored pollutants throughout the Study Area. Air quality improvements are anticipated as a result of the Project. In addition, while the consolidation of rail crossings throughout the Project corridor will necessitate that some automobiles travel an additional distance to reach a grade-separated crossing, the anticipated CO emissions associated with the additional distance are likely to be offset by the removal of the vehicle idling that currently occurs while trains pass at-grade crossings. Therefore, EJ communities will share in the benefits of air quality improvements and are not anticipated to experience disproportionately high and adverse air quality effects from the Project. No further action or mitigation is necessary relative to air quality impacts.

4.11.5.2.9 NOISE AND VIBRATION

As presented in Section 4.7, five categories of noise and vibration impacts were evaluated: Rail Operation Noise, Diverted Roadway Traffic Noise, Rail Operation Vibration, Construction Noise, and Construction Vibration. The EJ analyses of rail operation noise and rail operation vibration impacts are presented in Table 4-42 and Table 4-43, respectively.

Based on the disproportionate threshold of 58 percent, increased noise from new or additional rail operations would have a disproportionately high and adverse impact on Category 2 receptors (residences and buildings where people normally sleep) within EJ communities (Table 4-42). Forty-two of the 65 severe noise impacts would occur in EJ communities due in large part to the presence of properties adjacent to the existing railroad corridor. The towns of Alberta, VA, and La Crosse, VA, and Norlina, NC, Henderson, NC, Middleburg, NC, and Kittrell, NC, would receive the greatest number of predicted severe noise impacts. In addition, all four of the Category 3 receptors (institutional land uses with primary daytime uses) impacted are located within EJ communities (Alberta, VA, La Crosse, VA, Middleburg, NC, and Kittrell, NC). During the final design phase of the Project, NCDOT and VDOT will prepare a detailed noise assessment that identifies specific mitigation measures including the following: wheel treatments, rail treatments, vehicle treatments, building insulation, and noise barriers. NCDOT and VDOT will ensure that appropriate mitigation measures are in place where required.

With one exception, there would be no noise impacts as a result of diverted roadway traffic throughout the rail corridor. The exception to this is in the Town of Youngsville, NC, which is not an EJ community. Construction noise and vibration will be temporary and would equally affect EJ and non-EJ communities. Neither diverted roadway traffic noise, construction noise, nor construction vibration would have a disproportionately high and adverse effect on EJ communities within the Study Area. No further EJ analysis of these three areas is warranted.

With regard to rail operation vibration impacts, the vibration levels would be 5 to 10 vibration decibels (VdB) higher when there are crossovers, turnouts, jointed track, switches, or other special track work present. These conditions can cause annoying transients in the vibratory level characterized by a repetitive sounding, “thump-thump…thump-thump” that one would experience during a train passby. Of the sensitive receptors identified along the corridor, single family, multi-family, and commercial receptors would experience disproportionately high and adverse effects within EJ communities (Table 4-43). NCDOT and VDOT will determine if vibration mitigation is required during the final design phase of the Project when more detailed data are available. The building damage criteria of 0.50 inch-per-second for rail operation vibrations would not be exceeded at any building along the corridor due to train passbys. Therefore, the Project is not expected to cause damage due to vibration to any buildings in the Study Area, regardless of EJ applicability.

Table 4-42
EJ Summary of Rail Operation Noise Impacts of Preferred Alternative

Section	EJ Community within Section	Preferred Alternative					
		Category 1*		Category 2*		Category 3*	
		Impact	Severe Impact	Impact	Severe Impact	Impact	Severe Impact
AA	**Richmond, VA**	**0**	**0**	**0**	**0**	**0**	**0**
BB	---	0	0	0	0	0	0
CC	**Ettrick, VA**	**0**	**0**	**11**	**0**	**0**	**0**
DD	**Petersburg, VA**	**0**	**0**	**0**	**0**	**0**	**0**
A	---	0	0	4	1	0	0
B	---	0	0	13	0	0	0
C	---	0	0	9	0	0	0
D	**Brunswick County, VA**	**0**	**0**	**4**	**2**	**0**	**0**
E	**Brunswick County, Alberta, VA**	**0**	**0**	**22**	**6**	**1**	**0**
F	**Brunswick County, VA**	**0**	**0**	**6**	**0**	**0**	**0**
G	**Brunswick County, VA**	**0**	**0**	**2**	**0**	**0**	**0**
H	---	0	0	18	2	0	0
I	**La Crosse, VA**	**0**	**0**	**49**	**5**	**1**	**0**
J	---	0	0	21	1	0	0
K	---	0	0	9	0	0	0
L	**Warren County, NC**	**0**	**0**	**20**	**1**	**0**	**0**
M	**Warren County, Norlina, NC**	**0**	**0**	**41**	**6**	**0**	**0**
N	**Warren County, NC**	**0**	**0**	**4**	**0**	**0**	**0**
O	**Vance County, Henderson, NC**	**0**	**0**	**10**	**5**	**0**	**0**
P	**Vance County, Middleburg, NC**	**0**	**0**	**77**	**11**	**1**	**0**
Q	**Vance County, Kittrell, NC**	**0**	**0**	**12**	**5**	**1**	**0**
R	---	0	0	1	0	0	0
S	**Franklinton, NC**	**0**	**0**	**22**	**1**	**0**	**0**
T	---	0	0	25	0	0	0
U	---	0	0	159	17	0	0
V	---	0	0	79	2	0	0
	Project Totals	0	0	618	65	4	0
	EJ Communities Only	0	0	280	42	4	0
	% EJ Communities Only	0%	0%	45%	65%	100%	0%

Note: Bolded text indicates an EJ community.
[yellow box] = Disproportionately high impacts relative to % miles within Section having EJ community
58% = Threshold value used to determine if impacts are disproportionate in Section having EJ community

*Where:
Category 1: Buildings where vibration would interfere with interior operations.
Category 2: Residences and buildings where people normally sleep.

Category 3: Institutional land uses with primarily daytime use.

**Where:

Impact = In this range, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These other factors can include the predicted increase over existing noise levels, the types and number of noise-sensitive land uses affected, existing outdoor-indoor sound insulation, and the cost-effectiveness of mitigating noise to more acceptable levels.

Severe = Severe noise impacts are considered "significant" as this term is used in the National Environmental Policy Act (NEPA) and implementing regulations. Noise mitigation will normally be specified for severe impact areas unless there is no practical method of mitigating the noise.

Table 4-43
EJ Summary of Vibration Impacted Areas

Section	EJ Community within Section	Preferred Alternative		
		Single Family	Multi Family	Commercial
AA	**Richmond, VA**	**0**	**0**	**1**
BB	---	1	0	1
CC	**Ettrick, VA**	**7**	**7**	**1**
DD	**Petersburg, VA**	**0**	**0**	**0**
A	---	0	0	0
B	---	1	0	1
C	---	5	0	5
D	**Brunswick County, VA**	**2**	**0**	**0**
E	**Brunswick County, Alberta, VA**	**9**	**0**	**0**
F	**Brunswick County, VA**	**0**	**0**	**0**
G	**Brunswick County, VA**	**0**	**0**	**0**
H	---	4	0	1
I	**La Crosse, VA**	**15**	**0**	**9**
J	---	5	0	0
K	---	1	0	0
L	**Warren County, NC**	**6**	**0**	**1**
M	**Warren County, Norlina, NC**	**25**	**0**	**5**
N	**Warren County, NC**	**5**	**0**	**1**
O	**Vance County, Henderson, NC**	**3**	**0**	**0**
P	**Vance County, Middleburg, NC**	**30**	**0**	**44**
Q	**Vance County, Kittrell, NC**	**16**	**0**	**4**
R	---	2	0	1
S	**Franklinton, NC**	**17**	**0**	**5**
T	---	2	0	3
U	---	24	0	21
V	---	0	0	4
	Project Totals	180	7	108
	EJ Communities Only	135	7	71
	% EJ Communities Only	75%	100%	66%

Note: Bolded text indicates an EJ community.

= Disproportionately high impacts relative to % miles within Section having EJ community

58% = Threshold value used to determine if impacts are disproportionate within Section having EJ community

4.11.5.2.10 VISUAL ENVIRONMENT

The results of the visual analysis are provided in Section 4.9. Active passenger and/or freight rail service currently exists in the following EJ communities: Richmond, VA, Ettrick, VA, and Petersburg, VA, and the southern half of Warren County, NC, (including the southern half of Norlina, NC), Vance County, NC (including Middleburg, NC, Henderson, NC, and Kittrell, NC), and Franklinton, NC. In these EJ communities the visual and auditory introduction of HSR would not be inconsistent with the existing condition.

Rail service is currently inactive in the following environmental justice communities of concern: Brunswick County, VA, Alberta, VA, and La Crosse, VA and the northern half of Warren County, NC, and Norlina, NC. Disruption in travel patterns, the reactivation of rail service through town, and the operation of new rail stations in La Crosse, VA, and Henderson, NC, would likely affect all residents. Therefore, the reactivation of freight and passenger rail service is not anticipated to have a disproportionately high and adverse visual impact to EJ communities alone.

4.11.5.2.11 COMMUNITY INVOLVEMENT PROCESS AND RESULTING MITIGATION

The Project involved an extensive community involvement process that resulted in design modifications, shifts in roadway and rail alignments, new vehicular and pedestrian crossings, and bike lane accommodations. Details of the process, comments received, and responses provided are included in Chapter 7 and Chapter 8. The following is a summary of the public outreach effort to all communities. Communities identified as EJ populations or communities of concern are in *italics*.

Public Meetings and Workshops

At the initiation of the Tier II DEIS for the Project, a series of public meetings was held in 2003 to review rail alignments and to solicit concerns and feedback on the proposed Project. In Virginia, these meetings were held in *Petersburg, Alberta*, Dinwiddie, and *La Crosse*. In North Carolina, they were held in *Norlina, Henderson/Kittrell, Franklinton*, Wake Forest, and Raleigh.

In 2006, informational workshops were held in Petersburg, VA, and in Richmond, VA, to present the extension of the Project limits from Petersburg, VA, (S. Collier Yard) to Richmond, VA, (Main Street Station). This extension was done at the direction of the Federal Rail Administration and motivated by FRA's policy to connect city-center to city-center for the Project.

A series of public hearings was held in 2010 to present the 2010 Tier II DEIS and associated designs for public comment. In Virginia, these meetings were held in Chesterfield, *Richmond*, *Petersburg*, McKenney, and *Alberta*. In North Carolina, they were held in *Norlina, Henderson, Franklinton*, and Raleigh.

A series of public Project Update Meetings was also held in 2012 and 2013. These update meetings were held in communities in which design changes occurred in response to comments on the Tier II DEIS. These design changes included revisions to proposed bridges and underpasses, rail crossing closures and other road work throughout the corridor. In North Carolina, Project Update Meetings were held in Raleigh, north Raleigh (for downtown Wake Forest and north Raleigh), and Henderson. In Virginia, meetings were held in Chesterfield County and Alberta.

Local Official Coordination

Beginning in 2002, one-on-one meetings were held with local, county, and city planning staff throughout the entire Study Area to review proposed Project designs. Advisory Council meetings were held in 2004 and 2006 to update broader groups on the Project and answer questions. Advisory Council representatives typically included county commissioners, councils of government, and metropolitan planning organization staff. The combined outcome of these local meetings was considerable redesign in Virginia in Chesterfield County, McKenny, and *La Crosse* and in North Carolina in *Henderson, Kittrell, Franklinton*, Wake Forest, and Raleigh.

Resulting Mitigation for EJ Community Impacts

Extensive community outreach efforts resulted in the following mitigation for community impacts, including EJ communities:

- The decision that all new, grade-separated crossings will include room for sidewalks on at least one side of the bridge to accommodate pedestrians.
- The decision to provide, non-vehicular, grade-separated crossings at heavily used pedestrian/cyclist/scooter locations, including:
    - Lincoln Street in Petersburg, VA
    - Burwell Avenue/Peachtree Street in Henderson, NC
    - Mason Street in Franklinton, NC
    - College Street in Franklinton, NC
    - Hawkins Street (Franklinton Elementary School) in Franklinton, NC
- The two proposed high speed passenger rail stations will be located within the EJ communities of La Crosse, VA and Henderson, NC. (While this was recommended by the ridership revenue studies completed for the Project, the reason it was initially considered in the modeling was at the request of the local communities.)
- The Preferred Alternative essentially remains on existing alignment through the EJ communities, thereby minimizing relocation impacts and impacts to EJ community services and facilities as compared to impacts that would result if the Preferred Alternative were designed primarily on new location.
- All persons, business, and non-profit organizations displaced as a result of the Project would be compensated in a fair and equitable manner in accordance with the Uniform Relocation Assistance and Property Acquisition Policies Act of 1970, as amended, and the North Carolina Relocation Assistance Act (GS-133-5 through 133-18).

With the exception of Alberta, VA, and La Crosse, VA, and the northern portion of Norlina, NC, rail service is currently in operation through these EJ communities, thus the visual and auditory introduction of HSR would not be inconsistent with the existing condition.

4.11.6 RELOCATIONS AND ASSOCIATED RIGHT OF WAY COSTS

During the final design phase of the Project, which takes place after completion of the Tier II FEIS and ROD, the Project Team will begin to coordinate with affected families, businesses, and non-profit facilities. The states have established programs for assisting those affected with relocation to replacement facilities. Specific VDOT policies will be applied in Virginia and NCDOT policies will be applied in North Carolina, as outlined below.

Wherever possible, NCDOT and VDOT try to find an agreeable price for both the state and the property owner. When such a price cannot be reached, the legal system is used to ensure a fair market price for the property owner. Property owners are encouraged to obtain their own property appraisal for use in negotiating fair market value on their property with ROW agents. In all cases the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) will be applied as directed by Federal law. It is not the policy of VDOT or NCDOT to provide compensation for homes and businesses if no acquisition of property takes place.

4.11.6.1 *VDOT RELOCATION POLICIES*

A comprehensive program of services and benefits has been established to ensure, to the maximum extent possible, the timely and successful relocation of displacees and reestablishment of businesses per the Virginia Administrative Code, 24VAC30-41. Property acquisition policies can be found under Right-of-Way at: http://www.virginiadot.org/business/resources/property_owners2006.pdf. The VDOT Right of Way and Utilities Division's relocation section is staffed with skilled personnel that oversee the Relocation Advisory Services Program. The services provided are intended to assist displacees in relocating to decent, safe and sanitary housing that meets their needs.

VDOT will ensure effective acquisition and relocation services, and will provide moving reimbursement, replacement housing payments and other cost reimbursements so that individuals displaced will not suffer disproportionate injuries as a result of state and/or Federally assisted projects. All housing will be fair housing and available to all persons, regardless of race, color, sex, religion, or national origin. The acquisition and relocation program will be conducted in accordance with the Uniform Act.

Early in the acquisition and relocation phase, experienced agents perform field inspections of each proposed segment and connection and secure tax boundary and sales records from local courthouses to determine the various costs of land, buildings, improvements, damages, and relocation costs. Realtors are also questioned regarding the availability of decent, safe, and sanitary replacement housing throughout the corridor alternatives. Each person will have sufficient time to negotiate for and obtain replacement housing or business space.

A displaced individual or family is entitled to receive a payment for moving personal property. The displacee has the option of a payment based upon the actual reasonable moving expenses (commercial move or self-move), a fixed payment that is based on VDOT's room count schedule, or, in unusual circumstances, any combination of the above. An example of such a circumstance would be to have a commercial mover that would move the household items, but would not move certain personal property stored in a shed. The displacee can remove the items from the shed as a self-move.

Individuals and families displaced from a dwelling are eligible for purchase or rental supplement payments. The purpose of the purchase or rental supplement is to enable the displaced household to relocate to decent, safe and sanitary replacement housing that is within financial means. The elements included in the replacement housing payment are: additional costs to purchase replacement housing (purchase supplement); compensation to the owner for the increased interest cost and other debt service costs which are incurred in connection with a mortgage(s) on the replacement dwelling; and reimbursement to the owner for expenses related to the purchase of replacement housing. A residential tenant who was in occupancy at the displacement dwelling for 90 days or more before the initiation of negotiations, is eligible to receive a rent supplement for relocation to comparable housing. An owner-displacee who was in occupancy from 90 to 179 days before the initiation of negotiations is also eligible for the same benefits.

No displaced persons will be required to move until a comparable replacement dwelling is made available within their financial means. Comparable replacement housing may not be available on the private market or does not meet specific requirements or special needs of a particular displaced family. Also, housing may be available on the market, but the cost exceeds the benefit limits for tenants and owners of $5,250 and $22,500, respectively. If housing is not available to a displacee and the transportation project would thereby be prevented from proceeding in a timely manner, VDOT is authorized to take a broad range of measures to make housing available. These measures, which are outside normal relocation benefit limits, are called collectively, Last Resort Housing.

4.11.6.2 NCDOT RELOCATION POLICIES

It is the policy of NCDOT to ensure that comparable replacement housing is available for relocates prior to construction of state and/or Federally assisted projects. Furthermore, the NCDOT has three programs to minimize the inconvenience of relocation: relocation assistance, relocation moving payments, and relocation replacement housing payments or rent supplements. Property acquisition policies can be found under Right-of-Way at: http://www.ncdot.gov/projects/roadbuilt/.

With the Relocation Assistance Program, experienced NCDOT staff will be available to assist displacees with information such as: availability and prices of homes, apartments, or commercial property for sale or rent, and financing or other housing programs. The Relocation Moving Payment Program, in general, provides for payment of actual moving expenses encountered in relocation. Where displacement would force an owner or tenant to purchase or rent property at higher cost or to lose a favorable financing arrangement (in case of ownership), the Relocation Replacement Housing Payments or Rent Supplement Program would compensate up to $22,500 to owners who are eligible and qualify, and up to $5,250 to tenants who are eligible and qualify.

The relocation program for the proposed action will be conducted in accordance with the Uniform Act and the North Carolina Relocation Assistance Act (GS-133-5 through 133-18). This program is designed to provide assistance to displaced persons in relocating to a replacement site in which to live or do business. At least one relocation officer is assigned to each transportation project for this purpose.

The relocation officer will determine the needs of displaced families, individuals, businesses, non-profit organizations, and farm operations without regard to race, color, religion, sex, or national origin. NCDOT will schedule its work to allow ample time, prior to displacement, for negotiation and possession of replacement housing that meets decent, safe, and sanitary standards. The relocatees are given a 90-day written notice after the NCDOT purchases the property.

Relocation of displaced persons will be offered in areas not generally less desirable in regard to public utilities and commercial facilities. Rent and sale prices of replacement housing will be within the financial budget of the families and individuals displaced and will be reasonably accessible to their places of employment. The relocation officer also will assist owners of displaced businesses, non-profit organizations, and farm operations in searching for and moving to replacement property.

All tenant and owner residential occupants who may be displaced will receive an explanation regarding all available options, including: 1) purchases of replacement housing; 2) rental of replacement housing, either private or public; and 3) moving existing owner-occupied housing to another site (if practicable). The relocation officer also will supply information concerning other state or Federal programs offering assistance to displaced persons and will provide other advisory services as needed in order to minimize hardships to displaced persons in adjusting to a new location.

Last Resort Housing is a program used when comparable replacement housing is not available, or is unavailable within the displacee's financial means, and the replacement payment exceeds the Federal and state legal limitation. The purpose of the program is to allow broad latitudes in methods of implementation by the state so that decent, safe, and sanitary replacement housing can be provided. Since opportunities for replacement housing appear adequate within the Study Area, it is not likely that the Last Resort Housing Program will be necessary for the proposed Project. However, this program will still be considered, as mandated by State law.

4.11.6.3 *RELOCATION IMPACTS*

Historically, railroads played a major transportation role in the development of the east coast. Many large and small municipalities developed along and around the rail lines. This is true for the cities and towns throughout the Study Area.

To minimize impacts, alternatives were developed that took advantage of existing rail corridors. Throughout most of the urban and developed areas, the three alternatives share a common alignment. The proposed rail improvements and associated roadwork understandably require relocations to residences and business, due to their close proximity to the rail line.

Table 4-44 presents a summary of the potential residential and business relocation impacts for the Preferred Alternative by section. The highest number of residential relocations would occur in Section AA in Richmond, VA and Section CC, in Petersburg, VA, and Section P in Henderson, NC. The designs presented in this Tier II FEIS provide sufficient information to identify potential displacements. During final design, further measures to avoid and minimize displacements will occur; this will likely lower the numbers ultimately displaced.

Table 4-44 Residential/Business Relocations by Section			
Section	**Preferred Alternative**	**Residential Relocation**	**Business Relocations**
AA	VA1	40	7
BB	VA1	7	1
CC	VA1	48	1
DD	VA3	2	0
A	VA2	0	0
B	VA1	3	1
C	VA1	4	8
D	VA4	3	2
E	VA1	2	7
F	VA1	0	0
G	VA3	2	0
H	VA1	1	0
I	VA1	14	0
J	VA2	5	0
K	VA1	0	5
L	VA1/NC1	8 (1 VA, 7 NC)	1 (NC)
M	NC1	18	4
N	NC1	2	0
O	NC3	3	0
P	NC1	33	8
Q	NC1	10	0
R	NC1	1	0
S	NC1	4	0
T	NC1	5	0
U	NC1	8	12
V	NC5	0	59
VA Total		132	32
NC Total		91	24

Source: VDOT, 2006, 2009; NCDOT, 2008, 2011, SEHSR project team 2013.

4.11.6.4 *RIGHT OF WAY COSTS*

Total ROW costs include land and damages, residential and business relocation costs, and acquisition costs. Table 4-45 presents a summary of the estimated ROW costs associated with Preferred Alternative by section. The costs for the Preferred Alternative are the same as those presented in the Tier II DEIS, except in Sections D and V. As described in Chapter 2, the Preferred Alternatives in these two sections were developed subsequent to the Tier II DEIS. For Sections D and V, the ROW costs are derived from the 2012 Project Recommendation Report (NCDOT, Virginia DRPT, 2012). The ROW costs for all sections will be updated during final design.

Table 4-45
Right of Way Costs by Section

Section	Preferred Alternative	Cost
AA	VA1	$28,113,343
BB	VA1	$11,035,693
CC	VA1	$26,141,675
DD	VA3	$2,452,856
A	VA2	$505,900
B	VA1	$1,538,500
C	VA1	$4,335,300
D	VA4	$1,850,000
E	VA1	$1,533,800
F	VA1	$268,100
G	VA3	$531,200
H	VA1	$1,142,000
I	VA1	$1,929,100
J	VA2	$1,415,900
K	VA1	$1,573,000
L (VA)	VA1	$388,700
L (NC)	NC1	$5,032,500
M	NC1	$5,767,500
N	NC1	$2,080,188
O	NC3	$3,841,750
P	NC1	$6,976,313
Q	NC1	$7,943,532
R	NC1	$3,178,438
S	NC1	$6,801,188
T	NC1	$2,956,250
U	NC1	$26,245,625
V	NC5	$79,215,000
VA Total		$84,755,067
NC Total		$150,038,284

Source: DRPT, 2006, 2009; NCDOT, 2008; Recommendation Report, SEHSR Richmond, VA to Raleigh, NC Tier II EIS, April 2012.

4.12 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

Section 106 of the National Historic Preservation Act of 1966 (Section 106), as amended (16 U.S.C. 306108), and implementing regulations (36 CFR Part 800) require Federal agencies to consider the effects of their actions on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment if the action would result in an adverse effect on the property listed on or eligible for the National Register of Historic Places (NRHP). Eligibility criteria for the NRHP are summarized in Section 3.12.

The potential effect of the Project on archaeological and historic architectural resources was evaluated in accordance with Section 106. According to the criteria for Effect and Adverse Effect developed by the ACHP (36 CFR Section 800.5), potential effect is determined based upon the following:

- No Effect - There would be no effect, neither adverse nor beneficial, on potential cultural resources.

- No Adverse Effect - There would be an effect, but it is determined that the effect would not compromise those characteristics that qualify the property for listing on the NRHP. Archeological sites may be "adversely affected" when they are threatened with unavoidable physical destruction or damage.
- Adverse Effect - There would be an effect that would compromise the physical and/or historic integrity of the resource.

Where the Project has been determined to have an adverse effect on historic resources, Section 106 requires that efforts be undertaken to avoid, minimize, or mitigate the adverse effects. As part of this process, consultation has taken place and is ongoing with the Virginia Department of Historic Resources (VDHR), North Carolina State Historic Preservation Office (NC-HPO), and other "consulting parties," such as the National Park Service, local historical societies, and property owners. FRA, the Virginia State Historic Preservation Officer, the North Carolina State Historic Preservation Officer, DRPT, NCDOT, and the Advisory Council on Historic Preservation have developed a draft Programmatic Agreement (Process PA) to ensure compliance with Section 106 of the Historic Preservation Act for the Proposed SEHSR project. This provides a consistent process for considering the effects of each portion of the SEHSR on historic properties and resolving adverse effects where appropriate. The draft agreement is included in Appendix K to allow for public comment.

As per the Process PA, "When the State Rail Transportation Agency proposes a finding of adverse effects to historic properties, it shall notify FRA. FRA shall initiate consultation with the appropriate SHPO and other consulting parties, interested Federal and state recognized Indian tribes, ACHP, FRA and the State Rail Transportation Agency shall develop a Memorandum of Agreement (MOA) to identify measures to avoid, minimize, and mitigate the adverse effects prior to beginning any work on that portion of the SEHSR Project. The State Rail Transportation Agency shall submit a draft of each MOA to the appropriate SHPO for review and comment. NCDOT and DRPT shall ensure that all comments received within thirty (30) days of SHPO's receipt of the draft MOA are addressed in the final MOA. One (1) copy of each final MOA shall be provided to the appropriate SHPO and other consulting parties and one (1) copy shall be provided to any consulting party or other group who may have a vested interest in a particular property."

Required MOAs for the Richmond to Raleigh Project will be included in the project Record of Decision (ROD).

4.12.1 ARCHAEOLOGICAL RESOURCES

The effects of the Project on archaeological resources were determined after the selection of the Preferred Alternative per 36 CFR 800.4(b)(2). This regulation permits a phased process to conduct identification and evaluation efforts on projects where alternatives under consideration consist of corridors or large land areas. Both VDHR and NC-HPO agreed with this approach for the Project.

Determinations of effect for archaeological resources in Virginia are listed in Table 4-46. Note that only the impact of the Preferred Alternative was evaluated as eligibility was only assessed within the APE for the Preferred Alternative. The resources are listed in the order they appear in the Study Area from north to south. There are no eligible or listed archaeological resources in North Carolina; therefore, it was not necessary to evaluate impacts in North Carolina.

If "No Effect" is listed for a Project alternative in Table 4-46, the Preferred Alternative does not have any property impacts on the resource; therefore, no further discussion is provided. For resources where the Project has been determined to have no adverse effect or adverse effects, details are provided below regarding the impact of the Preferred Alternative on the resource. In addition, resources that also have above-ground historic architecture components are discussed in Section 4.12.2 below.

Table 4-46
Effect Determinations for Eligible Archaeological Sites for Preferred Alternative – Virginia

Resource Name	Section	VDHR Site ID	Preferred Alternative Effect
Williams Bridge Company	AA	44CF0724	Adverse Effect
Falling Creek Ironwork	AA	020-0063	No Effect
Sheffields	AA	020-0007	No Adverse Effect
USDOD Supply Center District	AA	020-5336	No Adverse Effect
Centralia Earthworks	BB	44CF0680	No Adverse Effect
Chester Hotel Site	BB	44CF0304	Adverse Effect
Swanee Site	BB	44CF0748	Adverse Effect
Site 44CF0707	BB, CC	44CF0707	Adverse Effect
Arrowfield Plantation	CC	44CF0708	Adverse Effect
Site 44CF0710	CC	44CF0710	Adverse Effect
Battersea	CC	123-0059	No Adverse Effect
Dimmock Line/Earthworks	CC	44DW0373	Adverse Effect
Fort Davis Earthworks	DD	44DW0314	No Adverse Effect
Orgain House	G	44BR0280	No Adverse Effect
Oak Shades House Site	G	44BR0179	No Adverse Effect
Davis Site	H	44BR0225	Adverse Effect
La Crosse Hotel	I	44MC0888	No Adverse Effect
Wright Farmstead	J	44MC0707	No Effect

4.12.1.1 *WILLIAMS BRIDGE COMPANY*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.2 *SHEFFIELDS*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.3 *USDOD SUPPLY CENTER*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.4 *CENTRALIA EARTHWORKS*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.5 *CHESTER HOTEL SITE*

The Chester Hotel site is located on the west side of the extant railroad tracks and north of Curtis Street. It is eligible for the NRHP under Criterion A for its association with the development of the Village of Chester and Criterion D for its archaeological potential. Although the rail alignment will not be notably modified in this area, a portion of Curtis Street will be realigned to remove the current at-grade crossing in this area. The new road alignment will physically impact the southern one-quarter of this site, resulting in disturbances to the subsurface matrix and data-bearing archaeological deposits. As a result, the Preferred Alternative will have an adverse effect on this resource.

4.12.1.6 SWANEE SITE

The Swanee site was identified during a Phase I archaeological survey of the road system adjacent to the rail corridor and found to be potentially eligible under Criterion D. The property owner did not allow access for a Phase II-level site evaluation. As such, this site is assumed to be eligible for the NRHP for coordination purposes. Modifications to the road system to the south of the site will result in physical impacts to intact soils with the potential to bear data on area history. As such, the Preferred Alternative will have an adverse effect on this resource.

4.12.1.7 SITE 44CF0707

Site 44CF0707 is a prehistoric campsite with subsurface integrity. It is eligible for the NRHP under Criterion D for its ability to contain notable information on the area's Woodland Period cultures. The designs for the Preferred Alternative include modifications to the rail corridor through the site. In addition, changes to the extant road pattern in this area will also result in subsurface impacts to the archaeological deposits. Since both the road and rail changes associated with the Preferred Alternative will impact intact data-bearing soils within the site, it will have an adverse effect on this resource.

4.12.1.8 ARROWFIELD PLANTATION

The Arrowfield Plantation site contains both intact subsurface deposits and above-ground features related to the historic occupation of this area. It is eligible for the NRHP under Criteria A and D. The designs for the Preferred Alternative include modifications to both the rail corridor and the road system, resulting in impacts to the physical fabric of this site and the extant surface features. Since both the road and rail changes associated with the Preferred Alternative will impact intact archaeological deposits and above-ground remains, it will have an adverse effect on this historic property.

4.12.1.9 SITE 44CF0710

Site 44CF0710 is a prehistoric campsite with subsurface integrity. It is eligible for the NRHP under Criterion D for its ability to contain notable information on the area's Archaic Period inhabitants. The Preferred Alternative includes modifications to the rail corridor through the site. In addition, changes to the extant road pattern in this area will also result in subsurface impacts to the intact archaeological deposits. As such, the Preferred Alternative will impact intact portions of the site with the ability to shed light on area prehistoric culture and will have an adverse effect on this historic property.

4.12.1.10 BATTERSEA

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.11 DIMMOCK LINE/EARTHWORKS

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.12 FORT DAVIS EARTHWORKS

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.13 *ORGAIN HOUSE*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.14 *OAK SHADES HOUSE SITE*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.15 *DAVIS SITE*

The Davis Site is located south of the Meherrin River. It was found to be eligible for the NRHP under Criteria A and D for its association with post-bellum tenant farming and intact archaeological deposits. The road realignments in this area will result in the disturbances of soils throughout the site, thus altering intact subsurface deposits. As a result, the Preferred Alternative will have an adverse effect on this historic property.

4.12.1.16 *LA CROSSE HOTEL SITE*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.1.17 *WRIGHT FARMSTEAD*

This resource is also eligible for the NRHP as a historic architectural property and is discussed in Section 4.12.2 below.

4.12.2 HISTORICAL RESOURCES

FRA and DRPT made determinations of effect for historic resources in Virginia, which are listed in Table 4-47 and Table 4-48. The resources are listed in the order they appear in the Study Area from north to south. The VDHR concurred with these determinations in letters dated November 23, 2009 and July 29, 2014. In addition, coordination with the National Park Service (NPS) regarding impacts to historic battlefields is ongoing and will be completed prior to publication of the ROD.

FRA and NCDOT made determinations of effect for resources in North Carolina, which are listed in Table 4-49. The North Carolina State NC-HPO concurred with these determinations of effect in a form signed August 14, 2013. Copies of the correspondence related to Section 106 coordination are provided in Appendix K.

If "No Effect" is listed for a Project alternative in Tables 4-47 through 4-39, the alternative does not have any property impacts on the resource; therefore, no further discussion is provided. For resources where FRA, DRPT, and NCDOT determined that the Project would have no adverse effect or adverse effects, details are provided below regarding the impact of each alternative on the resource.

The Preferred Alternative is identified in **bold** in Tables 4-37 through 4-39.

Table 4-47
Effect Determinations for Historic Architecture Resources – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Section	VA1 Section 106 Effect	VA2 Section 106 Effect	VA3 Section 106 Effect	VA4 Section 106 Effect
Seaboard Air Line Railroad Corridor (resource spans sections)	AA	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
	BB	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
	CC	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
C. & O. & Seaboard Railroad Depot	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Shockoe Valley & Tobacco Row Historic District	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Shockoe Slip Historic District	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
James River and Kanawha Canal Historic District	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Atlantic Coast Line Railroad Corridor (resource spans sections)	AA	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
	BB	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
	CC	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Manchester Warehouse Historic District	AA	**No Effect**	No Effect	No Effect	N/A
Williams Bridge Company	AA	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Lucky Strike/RJ Reynolds Tobacco	AA	**No Effect**	No Effect	No Effect	N/A
Transmontaigne Product Services, Inc.	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Davee Gardens Historic District	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
DuPont Spruance	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Sheffields; Auburn Chase; Bellwood; Building 42 - DSCR Officer's Club; New Oxford	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
USDOD Supply Center Historic District; Bellwood-Richmond Quartermaster Depot Historic District	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Richmond & Petersburg Electric Railway (resource spans sections)	AA	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
	BB	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
	CC	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
House at 3619 Thurston Rd	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Centralia Post Office	BB	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Ragland House/4626 Centralia Road	BB	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Circle Oaks/4510 Centralia Road	BB	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Centralia Earthworks	BB	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Chester Historic District	BB	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A

Table 4-47
Effect Determinations for Historic Architecture Resources – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect	VA2 Section 106 Effect	VA3 Section 106 Effect	VA4 Section 106 Effect
Chester #94 Masonic Lodge	BB	**No Effect**	No Effect	No Effect	N/A
Pretlow House	BB	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Eichelberger House	BB	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Ellerslie	CC	**No Effect**	No Effect	No Effect	N/A
Appomattox River Railroad Bridge	CC	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Battersea	CC	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
North Battersea/Pride's Field Historic District	CC	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Defense Road	CC	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Dimmock Line/Earthworks	CC	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Bridge over Defense Road	CC	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Fort Davis Earthworks	DD	No Adverse Effect	No Adverse Effect	**No Adverse Effect**	N/A
Evergreen	A	No Effect	No Effect	No Effect	N/A
Courtworth	C	**No Effect**	No Effect	No Effect	N/A
Bowen House	C	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
W. Boisseau's Store, Warehouse, Dwelling	C	**No Effect**	No Effect	No Effect	N/A
Bank of McKenney (referred to as Bank Building in DEIS)	C	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Chesapeake and Potomac Telephone Company (C & P) Building	C	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Mayton House	C	**No Effect**	No Effect	No Effect	N/A
Zehmer Farm/Honeymoon Hill Farm	C	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Wynnhurst	D	Adverse Effect	No Effect	Adverse Effect	**N/A (Outside APE)**
Blick's Store	D	No Effect	No Adverse Effect	No Effect	**No Adverse Effect**
House/458 Second Avenue	E	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Orgain House	G	No Effect	No Effect	**No Adverse Effect**	Adverse Effect
Tourist Guest House	G	No Effect	No Effect	**Adverse Effect**	No Effect
Oak Shades	G	Adverse Effect	Adverse Effect	**No Effect**	No Effect
Evans House	H	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Smelley House	I	**No Effect**	No Effect	No Effect	N/A

Table 4-47
Effect Determinations for Historic Architecture Resources – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect	VA2 Section 106 Effect	VA3 Section 106 Effect	VA4 Section 106 Effect
La Crosse Commercial Historic District	I	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
La Crosse Hotel	I	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Wright Farmstead	J	Adverse Effect	**No Effect**	Adverse Effect	N/A
Sardis Methodist Church	J	No Adverse Effect	**No Adverse Effect**	No Adverse Effect	N/A
Bracey Historic District	K	**No Adverse Effect**	Adverse Effect	No Adverse Effect	N/A
Bracey Depot	K	**No Adverse Effect**	Adverse Effect	No Adverse Effect	N/A
Bracey & Company Store	K	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Granite Hall/Fitts House	L	**No Effect**	Adverse Effect	No Effect	N/A

Table 4-48
Effect Determinations for Battlefields – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect	VA2 Section 106 Effect	VA3 Section 106 Effect	VA4 Section 106 Effect
Proctor's Creek (resource spans sections)	AA	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
	BB	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Port Walthall Junction	BB	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Swift Creek/Arrowfield Church	CC	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Petersburg III/The Breakthrough (resource spans sections)	CC	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
	DD	No Adverse Effect	No Adverse Effect	**No Adverse Effect**	N/A
Weldon Railroad/Globe Tavern (resource spans sections)	CC	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
	DD	No Adverse Effect	No Adverse Effect	**No Adverse Effect**	N/A
Peebles Farm (resource spans sections)	CC	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
	DD	No Adverse Effect	No Adverse Effect	**No Adverse Effect**	N/A
Boydton Plank Road (resource spans sections)	DD	No Adverse Effect	No Adverse Effect	**No Adverse Effect**	N/A

Table 4-48
Effect Determinations for Battlefields – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect	VA2 Section 106 Effect	VA3 Section 106 Effect	VA4 Section 106 Effect
	A	No Adverse Effect	**No Adverse Effect**	No Adverse Effect	N/A
Hatcher's Run (resource spans sections)	DD	No Adverse Effect	No Adverse Effect	**No Adverse Effect**	N/A
	A	No Adverse Effect	**No Adverse Effect**	No Adverse Effect	N/A
Lewis Farm	A	No Adverse Effect	**No Adverse Effect**	No Adverse Effect	N/A
Dinwiddie Courthouse	B	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A

Table 4-49
Effect Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect	NC2 Section 106 Effect	NC3 Section 106 Effect	NC5 Section 106 Effect
Warren County Training School	L	**No Effect**	No Effect	No Effect	N/A
Wise School	L	**No Effect**	No Effect	No Effect	N/A
House (East side of US 1, Wise, NC)	M	**No Effect**	No Effect	No Effect	N/A
Holtzmann Farm	M	**No Effect**	No Effect	No Effect	N/A
Chapel of the Good Shepherd	M	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Dr. Thomas B. Williams House and Office	M	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Marshall House/Tavern (House No 245)	M	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
William J. Hawkins House	N	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Middleburg Community House (Middleburg Steakhouse)	O	No Effect	No Effect	**No Effect**	N/A
House (Allison Cooper Rd, Middleburg vicinity)	O	No Effect	No Effect	**No Effect**	N/A
Holloway Farm	O	Adverse Effect	Adverse Effect	**No Effect**	N/A
William Haywood Harris Farm	O	No Effect	No Effect	**No Effect**	N/A
Forrest Ellington Farm	O	No Adverse Effect	No Adverse Effect	**No Adverse Effect**	N/A
R. B. Carter House	P	**No Effect**	No Effect	No Effect	N/A
Henderson Historic District and Proposed Boundary Expansion	P	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Vance County Courthouse	P	**No Effect**	No Effect	No Effect	N/A
Zollicoffer's Law Office	P	**No Effect**	No Effect	No Effect	N/A
Henderson Fire Station and Municipal Building	P	**No Effect**	No Effect	No Effect	N/A

Table 4-49
Effect Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect	NC2 Section 106 Effect	NC3 Section 106 Effect	NC5 Section 106 Effect
Houses (2 bungalows on E Young Ave)	P	**No Effect**	No Effect	No Effect	N/A
Mistletoe Villa	P	**No Effect**	No Effect	No Effect	N/A
South Henderson Industrial Historic District	P	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Vance Flour Mill (Sanford Milling Co.)	P	**No Effect**	No Effect	No Effect	N/A
Houses (5 worker houses on 1400 block of Nicholas St)	P	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Houses (3 side gable houses on 1500 block of Nicholas St)	P	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Esso Gasoline Station	P	**No Effect**	No Effect	No Effect	N/A
Confederate Cemetery	Q	**No Effect**	No Effect	No Effect	N/A
Saint James Episcopal Church	Q	**No Effect**	No Effect	No Effect	N/A
Hedgepetch and Finch Store	Q	**No Effect**	No Effect	No Effect	N/A
Kittrell Residential Historic District	Q	**No Effect**	No Effect	No Effect	N/A
Josiah Crudup House	Q	**No Effect**	No Effect	No Effect	N/A
Person-McGhee Farm (resource spans sections)	Q	**No Effect**	No Effect	No Effect	N/A
	R	**No Effect**	No Effect	No Effect	N/A
Raleigh and Gaston Railroad Bridge Piers (Tar River) (resource spans sections)	Q	**No Effect**	No Effect	No Effect	N/A
	R	**No Effect**	No Effect	No Effect	N/A
Franklinton Historic District (Includes Sterling Mill Historic District)	S	**Adverse Effect**	Adverse Effect	Adverse Effect	N/A
Aldridge H. Vann House	S	**No Effect**	No Effect	No Effect	N/A
Franklinton Depot	S	**No Effect**	No Effect	No Effect	N/A
Church (within proposed Franklinton Historic District)	S	**No Effect**	No Effect	No Effect	N/A
Sterling Cotton Mill	S	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Cedar Creek Railroad Bridge Piers	S	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Youngsville Historic District	T	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
J. B. Perry House	T	**No Effect**	No Effect	No Effect	N/A
Glen Royall Mill Village Historic District	U	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Wake Forest Historic District	U	**No Adverse Effect**	No Adverse Effect	No Adverse Effect	N/A
Downtown Wake Forest Historic District	U	**No Effect**	No Effect	No Effect	N/A
Purefoy-Chappell House and Outbuildings	U	**No Effect**	No Effect	No Effect	N/A

Table 4-49
Effect Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect	NC2 Section 106 Effect	NC3 Section 106 Effect	NC5 Section 106 Effect
Oakforest	U	**No Effect**	No Effect	No Effect	N/A
Powell House	U	**No Effect**	No Effect	No Effect	N/A
Neuse Railroad Station	U	**No Effect**	No Effect	No Effect	N/A
Crabtree Creek Railroad Bridge Pier	V	No Adverse Effect	No Adverse Effect	No Adverse Effect	**No Adverse Effect**
Gulf Petroleum Products Warehouse	V	Adverse Effect	Adverse Effect	Adverse Effect	**Adverse Effect**
Raleigh Bonded Warehouse	V	No Effect	No Effect	No Effect	**No Effect**
Mordecai Place Historic District	V	No Effect	No Effect	No Effect	**No Effect**
Pilot Mill	V	No Effect	No Effect	No Effect	**No Effect**
Roanoke Park Historic District	V	No Effect	No Effect	Adverse Effect	**No Effect**
Noland Plumbing Company Building	V	No Effect	No Effect	No Adverse Effect	**No Effect**
John A. Edwards and Company Building	V	No Effect	No Effect	No Effect	**No Effect**
Glenwood-Brooklyn Historic District	V	No Effect	No Effect	No Adverse Effect	**No Effect**
Seaboard Railway Station	V	No Adverse Effect	No Adverse Effect	No Effect	**No Effect**
Seaboard Railway Warehouses	V	No Adverse Effect	No Adverse Effect	No Effect	**No Effect**
Raleigh Cotton Mills	V	No Adverse Effect	No Adverse Effect	No Effect	**No Effect**
Pine State Creamery	V	No Effect	No Effect	No Effect	**No Effect**
Seaboard Coast Line Railroad Company Office Building	V	No Effect	No Effect	No Effect	**No Effect**
Melrose Knitting Mill	V	No Effect	No Effect	No Effect	**No Effect**
Raleigh Electric Company Power House	V	Adverse Effect	Adverse Effect	No Adverse Effect	**No Adverse Effect**
Carolina Power and Light Company Car Barn and Automobile Garage	V	Adverse Effect	Adverse Effect	No Effect	**No Effect**
St. Paul A.M.E. Church	V	No Effect	No Effect	No Effect	**No Effect**
Depot Historic District	V	No Adverse Effect	No Adverse Effect	No Adverse Effect	**No Adverse Effect**
Depot Historic District Proposed Expansion Area	V	No Adverse Effect	No Adverse Effect	No Adverse Effect	**No Adverse Effect**
Montfort Hall	V	No Effect	No Effect	No Effect	**No Effect**
Boylan Heights Historic District	V	No Effect	No Effect	No Effect	**No Effect**
Joel Lane House	V	No Effect	No Effect	No Effect	**No Effect**
Boylan Apartments	V	No Effect	No Effect	No Effect	**No Effect**
Raleigh Hosiery Company Building	V	No Effect	No Effect	No Effect	**No Effect**

Table 4-49
Effect Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect	NC2 Section 106 Effect	NC3 Section 106 Effect	NC5 Section 106 Effect
North Carolina School Book Depository	V	No Effect	No Effect	No Effect	**No Effect**
Governor Morehead School Historic District	V	No Effect	No Effect	No Effect	**No Effect**
Raleigh and Gaston Railroad Corridor*	M-V	**Adverse Effect**	**Adverse Effect**	**Adverse Effect**	**Adverse Effect**

* Impacts to the Raleigh and Gaston Railroad Corridor are common among all project alternatives.

4.12.2.1 *HISTORICAL RESOURCES – VIRGINIA*

The following discussion provides details on the effect of the Project alternatives on historical resources in Virginia where FRA and DRPT concluded that the Project would have no adverse effect or adverse effects for at least one Project alternative. For all other resources, the Project has been determined to have no effect for all alternatives.

4.12.2.1.1 SEABOARD AIR LINE RAILROAD CORRIDOR

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The rail improvements will be located within the existing rail corridor in the vicinity of the Seaboard Air Line Railroad Corridor. Historically, the corridor contained two to three sets of parallel tracks. Over the years, the number of tracks has been reduced; therefore, the corridor now only contains one or two sets of tracks within the wider ROW. The addition of an additional set of tracks will return most of the corridor to its original historic appearance and configuration. In addition, the existing tracks have been replaced with in-kind materials numerous times over the past 150 years, including new rails, cross ties, spikes, and ballast. As such, the resource is only eligible for the NRHP under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history) and not under Criterion C (embodying the distinctive characteristics of a type, period, or method of construction) due to compromised physical integrity.

Although most of the rail corridor will remain unchanged, the removal and replacement of the rail bridge over US-1 South near Alberta, VA, a contributing element to the historic resource, will alter the resource and diminish the resource’s integrity of design, setting, materials, workmanship, feeling, and association. The location will not change, but a notable visual element will be removed from the resource. This element is representative of the modifications that occurred along the track in the second quarter of the twentieth century associated with transportation improvements and the establishment of a multi-state vehicular corridor. Because of the proposed demolition of a contributing element, the Preferred Alternative will have an adverse effect on theSeaboard Air Line Railroad Corridor .

(It should be noted that the Tier II DEIS identified the Project alternatives as having no adverse effect on the Seaboard Air Line Railroad Corridor. Subsequent to the publication of the Tier II DEIS, the US-1 South rail bridge was identified as a contributing element to the resource. This resulted in the change in effect.)

4.12.2.1.2 C. & O. & SEABOARD RAILROAD DEPOT

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The Project begins at the C. & O. & Seaboard Railroad Depot (Main Street Station) and runs south. The Preferred Alternative will not require any modifications to the existing building or the surrounding tracks. Moreover, historically, numerous rail lines ran perpendicular to Main Street Station, thus this Project will return rail traffic to this notable historic building. Because the rail is elevated, no road changes are required in this area. Because the Project will not alter the property's location, design, setting, materials, workmanship, feeling, or association, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.3 SHOCKOE VALLEY & TOBACCO ROW HISTORIC DISTRICT

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. Currently, as trains exit to the south of Main Street Station and through this district, they run along a single-track, which is elevated on T-shaped supports built to accommodate two tracks, of which the second track has been removed. The Preferred Alternative will retain the existing track and reinstall the second track on top of the T-shaped support. All work will be between one and three stories above the historic district atop existing supports. Because the rail is elevated, no road changes are required in this area. As such, the addition of the second track will not alter the physical composition or viewshed of the district in any way. Therefore, the Preferred Alternative will have no adverse effect on this district.

4.12.2.1.4 SHOCKOE SLIP HISTORIC DISTRICT

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. As discussed with the Shockoe Valley & Tobacco Row Historic District above, the existing single-track that runs north-south through the Shockoe Slip Historic District is located on top of a T-shaped pier. The Preferred Alternative will add a second track to the same pier, thus limiting any potential impacts on surrounding historic properties. Because the rail is elevated, no road changes are required in this area. The Preferred Alternative will have no adverse effect on this district.

4.12.2.1.5 JAMES RIVER AND KANAWHA CANAL HISTORIC DISTRICT

This district is located south of Shockoe Slip Historic District and north of the James River. The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. As discussed with the nearby districts above, the existing single-track through the district is located on top of a T-shaped pier. The Preferred Alternative will add a second track to the same pier, thus limiting any potential impacts on surrounding historic properties. Because the rail is elevated, no road changes are required in this area. Modifications will not impact the integrity of any aspects of this district, and the addition of the second track on the existing pier will not alter the district's significance or character. The Preferred Alternative will have no adverse effect on this district.

4.12.2.1.6 ATLANTIC COAST LINE RAILROAD CORRIDOR

The Atlantic Coast Line Railroad Corridor spans Sections AA, BB, and CC. The Preferred Alternative for all three sections is VA1, the common alignment of VA1, VA2, and VA3. The rail improvements will be located within the existing rail corridor. Historically, the corridor contained two to three sets of parallel tracks. Over the years, the number of tracks has been reduced; therefore, the corridor now only contains one or two sets of tracks within the wider ROW. The addition of an additional set of tracks will return most of the corridor to its original historic appearance and configuration. In addition, the existing tracks have been replaced with in-kind materials numerous times over the past 150 years, including new rails, cross ties, spikes, and ballast. As such, the resource is only eligible for the NRHP under Criterion A and not under Criterion C due to compromised physical integrity.

Although most of the rail corridor will remain unchanged, the removal of a utility bridge for the crossing of the Richmond & Petersburg Electric Railway and abandoned abutments associated with the historic alignment of Highway 10, both of which are contributing elements to the historic resource, will alter the resource and diminish the resource's integrity of design, setting, materials, workmanship, feeling, and association. The location will not change, but notable visual elements will be removed from the resource. These elements are located along the Atlantic Coast Line Railroad Corridor and were constructed during its period of significance in response to the railroad tracks below. Because of the proposed demolition of contributing elements, the Preferred Alternative will have an adverse effect on this resource

It should be noted that the Tier II DEIS identified the Project alternatives as having no adverse effect on the Atlantic Coast Line Railroad Corridor. Subsequent to the publication of the Tier II DEIS, the utility bridge and Highway 10 bridge abutments were identified as contributing elements to the resource. This resulted in the change in effect.

4.12.2.1.7 MANCHESTER WAREHOUSE INDUSTRIAL HISTORIC DISTRICT

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will change relocated Maury Street within the Manchester Industrial Historic District to a new road and grade separation over the railway, located just north of the existing I-95 ramps and within the Citgo Petroleum above-ground storage tanks property. In addition to the new roadway, a roundabout will be constructed at the intersection of the relocated Maury Street/I-95 ramps/E. 4th Street, as proposed in the City of Richmond's Long Range Transportation Plan for this area. This new design for Maury Street will avoid property impacts to the expanded Manchester Industrial Historic District.

Although the Project will change the road configuration east of the historic district boundaries, it will not modify the historic road pattern or any above-ground contributing elements within the district itself. No buildings will be altered during this work. The construction of the new roundabout will be at-grade and thus not alter the viewshed of the district's contributing resources. The modifications in this area will not diminish the characteristics that make this property eligible for the NRHP. As such, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.8 WILLIAMS BRIDGE COMPANY

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will reroute the entry and roadways near the Williams Bridge Company complex to include changes to the road system. These changes may result in alterations to building remains and the subsurface deposits within the boundaries of the eligible archaeological component. Due to the Project's potential to diminish the property's integrity of location, design, setting, feeling, and association, and the impacts to the data-bearing layers within the associated archaeological site, the Preferred Alternative will have an adverse effect on this resource.

4.12.2.1.9 TRANSMONTAIGNE PRODUCT SERVICES, INC.

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. As mentioned above, the proposed rail work in this vicinity of Richmond, VA, is limited to adding a second track to the existing corridor. However, Goodes Street will be widened south of this resource. Widening on the eastern portion of Goodes Street near the railroad tracks requires creating an underpass to bring the roadway under the rail near the southeastern corner of the Transmontaigne property. A retaining wall will be constructed on the north side of Goodes Street to eliminate any modifications to this historic property. The viewshed will not be modified, and no Transmontaigne-owned property will be used. As such, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.10 DAVEE GARDENS HISTORIC DISTRICT

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The proposed rail modifications near Davee Gardens are minimal and will include rebuilding a second track within the existing rail corridor. Road work in this area will involve widening a 2,300-foot long stretch of Ruffin Road, which is located along the northern perimeter of the district. The road widening in this area is minimal and will result in expanding the existing paved shoulder by approximately five feet. Thus, the front yard of one of the 165 homes in the district will be shortened by between one and five feet. This modification will not alter any of the characteristics that render this district eligible for the NRHP. As such, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.11 DUPONT SPRUANCE

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will reintroduce a second track to this area; there are no road modifications in the vicinity of the DuPont Spruce parcel. The rail corridor runs north-south along the western boundary of this resource. The complex was created in this particular location due to the close proximity of the active rail line and the company historically used the second rail track to help transport goods. Although the Project has the potential to slightly alter the setting of the resource, it will not diminish the characteristics that make this property eligible for the NRHP. As such, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.12 SHEFFIELDS; AUBURN CHASE; BELLWOOD; BUILDING 42 - DSCR OFFICER'S CLUB; NEW OXFORD

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The Sheffields home and surrounding archaeological site are located over 1,500 feet west of the rail alignment. The viewshed from the main house to the rail tracks is obscured by distance, topography and vegetation, thus rendering the rail area virtually invisible from the historic house. The Preferred Alternative involves reconstructing a second rail within the existing ROW, thus the current viewshed will not be modified during the Project. The rail and road work will also not physically impact the intact archaeological remains associate with this property. As such, the Preferred Alternative will have no adverse effect on this property. (It should be noted that the Tier II DEIS identified the Project alternatives as having no effect on the resource. The change was made as a result of additional coordination with VDHR.)

4.12.2.1.13 USDOD SUPPLY CENTER HISTORIC DISTRICT; BELLWOOD-RICHMOND QUARTERMASTER DEPOT HISTORIC DISTRICT

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The massive USDOD historic district is located west of the existing rail line. Only the southeastern 500 feet is adjacent to the current railway corridor boundaries, as the eastern boundary veers away from the rail track along the northeastern 3,000 feet. This southeastern area was once the location of a railroad spur providing rail access to the US Department of Defense complex off of the main rail tracks. Thus, the presence of the rail in this area is associated with the location and association of this resource. At the time the supply center was in operation, rail traffic along this line was higher and trains traveled on dual lines. The Preferred Alternative will add a second rail line in the ROW, thus restoring the rail configuration in this area to resemble the system in existence during the resource’s Period of Significance. Because the changes will restore the dual tracks in this area, the Preferred Alternative will have no adverse effect on this property. (It should be noted that the Tier II DEIS identified the Project alternatives as having no effect on the resource. The change was made as a result of additional coordination with VDHR.)

4.12.2.1.14 RICHMOND & PETERSBURG ELECTRIC RAILWAY

The Richmond & Petersburg Electric Railway spans Sections AA, BB, and CC. The Preferred Alternative for all three sections is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will rebuild a second rail line across the resource, which is located just east of Chimney Corner in Chesterfield County. The rail line had been in existence for almost 70 years when the electric rail line was established in the early-twentieth century. This resource has always crossed the rail line in this exact spot and the rail line contained two active tracks when the electric rail line was active. However, the Project designs will impact a utility bridge that historically carried the Richmond & Petersburg Electric Railway over the rail corridor immediately south of Hundred Road in Chester. This bridge is a contributing resource to the railway resource. Because of the removal of a contributing element to the historic property, the Preferred Alternative will have an adverse effect on this resource.

(It should be noted that the Tier II DEIS identified the Project alternatives as having no adverse effect on the Richmond & Petersburg Electric Railway. Subsequent to the publication of the Tier II DEIS, the utility bridge was identified as a contributing element to the resource. This resulted in the change in effect.)

4.12.2.1.15 HOUSE AT 3619 THURSTON RD

The Preferred Alternative in Section AA is VA1, the common alignment of VA1, VA2, and VA3. The House at 3619 Thurston Road is located west of the proposed railroad. Although the parcel is not within the APE of the rail modifications, a new roadway will be created west of the house, running from Thurston Road on the northwest, across the railroad tracks, and connecting to Chester Road on the southeast. The road will be located about 250 feet west of the dwelling. The house will be separated from the road ROW by a modern home and a vegetative buffer, and there will be no land takes from this resource. Because the road will not alter the resource's location, design, materials, workmanship, and feeling, the Preferred Alternative will have no adverse effect on this property.

4.12.2.1.16 CENTRALIA POST OFFICE

The Preferred Alternative in Section BB is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will construct an overpass on Centralia Road across the rail corridor to replace the existing at-grade crossing the railroad tracks. The fill slope from the bridge will be approximately 30 feet tall and located less than 30 feet south of the resource. The driveway for the property will be moved and the road itself will be shifted south. This will disconnect the resource from the local attributes that rendered its construction necessary. The Preferred Alternative will have an adverse effect on this resource.

4.12.2.1.17 RAGLAND HOUSE/4626 CENTRALIA RD

The Preferred Alternative in Section BB is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will construct an overpass on Centralia Road across the rail corridor to replace the existing at-grade crossing the railroad tracks. The fill slope from the bridge will be approximately 30 feet tall and located less than 30 feet south of the resource. A portion of Centralia Road will be rerouted just east of Ragland House. No roadwork will be completed on the Ragland property, and the viewshed from the main house will be only slightly modified as the new road meets the old road southeast of the house. Because the road change will not alter any of the characteristics that make Ragland House eligible for the NRHP, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.18 CIRCLE OAKS/4510 CENTRALIA ROAD

The Preferred Alternative in Section BB is VA1, the common alignment of VA1, VA2, and VA3. Circle Oaks is located east of Ragland House, listed above. The Preferred Alternative will construct an overpass on Centralia Road across the rail corridor to replace the existing at-grade crossing the railroad tracks. The approach to the bridge will be visible from Circle Oaks and will require reconfiguring a section of driveway. The modifications have the potential to diminish the characteristics that make the property eligible for the NRHP. As such, the Preferred Alternative will have an adverse effect on this resource.

4.12.2.1.19 CENTRALIA EARTHWORKS

The Preferred Alternative in Section BB is VA1, the common alignment of VA1, VA2, and VA3. Although the rail improvements are not in the vicinity of the earthworks, the designs include associated road improvements along Hopkins Road and Centralia Road to accommodate traffic rerouted from the closure of nearby at-grade rail crossings. The Centralia Earthworks are located east of Hopkins Road and run north-south parallel to the roadway. Although the earthworks were once larger, previous changes to the road system in this area in the early- and mid-twentieth century have destroyed all physical remnants of the earthworks within and immediately adjacent to the road corridor. The proposed changes to the roadway will, therefore, not impact any intact above-ground features or below-ground deposits associated with this historic property. As such, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.20 CHESTER HISTORIC DISTRICT

The Preferred Alternative in Section BB is VA1, the common alignment of VA1, VA2, and VA3. Although the rail modifications in the vicinity of the Chester Historic District will require a slight widening to the existing rail corridor, the more notable changes will occur due to road improvements. Several original road alignments will be rerouted and rail crossing points will be closed. The Preferred Alternative will result in notable modifications to the district's original plan, thus the Preferred Alternative will have an adverse effect on this district.

4.12.2.1.21 PRETLOW HOUSE

The Preferred Alternative in Section BB is VA1, the common alignment of VA1, VA2, and VA3. The Pretlow House is located at the intersection of Curtis and Winfree Streets in Chester, VA. The property is one block away from the rail tracks, but the Project alternatives will lower Curtis Street under the rail tracks with an underpass, removing the existing at-grade crossing. This change will require modifications to the Curtis Street between the rail tracks and Winfree Street. At Pretlow House, the road changes have been minimized through the creation of curb and gutter designs, thus avoiding impacts to vegetation currently in existence at the corner of the property and avoiding any impacts to the existing store wall. As such, the only adjustments to the property may be the addition of a sliver of pavement and a new curb at the eastern corner of the property. The Preferred Alternative will have no adverse effect on this resource. As a condition of this effect determination, the VDHR requested that the all efforts be made during construction to avoid impacts to the existing stone wall and adjacent vegetation.

4.12.2.1.22 EICHELBERGER HOUSE

The Preferred Alternative in Section BB is VA1, the common alignment of VA1, VA2, and VA3. The Eichelberger House was once part of a large parcel of land that covered the entire block. It was designed to accommodate both the home life and work pattern of its owner, Harry Eichelberger, a railroad executive who caught the train at the station in Chester, VA, every day to travel to his office in Richmond, VA. He reached the station by a trail that wound through his property, exiting onto Curtis Street from an ornate stone gate. The Preferred Alternative will widen Curtis Street as part of the new railroad underpass. This will require the removal of the original stone gate and part of the trail. Both of these resources are contributing elements to the larger Eichelberger House property. The Preferred Alternative will have an adverse effect on this property.

4.12.2.1.23 APPOMATTOX RIVER RAILROAD BRIDGE

The Preferred Alternative in Section CC is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will add a new, parallel bridge for high speed passenger trains just east of the existing bridge. The historic structural system will not be altered during this process. Although a new span will be built between the old structure and the viewshed between the bridge and the various downtown Petersburg, VA, historic districts, the distance between the bridge and the districts is over 1,500 feet and there is dense vegetation within the extant vista. Because the alteration will not diminish the physical characteristics of the historic structure or diminish the viewshed from downtown Petersburg, VA, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.24 BATTERSEA

The Preferred Alternative in Section CC is VA1, the common alignment of VA1, VA2, and VA3. Battersea is located just south of the Appomattox River in Petersburg, VA. There are no road changes proposed for this section of the Project. The main house of Battersea is not within the APE of the Project; however, the western boundary of the larger property abuts the rail line. Thus the larger parcel is within the general APE. The main house and all above-ground resources are shielded from the rail corridor by distance (the closest above-ground contributing element is over 750 feet from the rail track and the main house is 1,200 feet from the tracks), topography, and dense vegetation. The corridor is not at all visible from the primary occupation areas of the house, and this will not change with the reinstallation of a second rail within the existing corridor. Thus, the Preferred Alternative will have no adverse effect on this property.

4.12.2.1.25 NORTH BATTERSEA/PRIDE'S FIELD HISTORIC DISTRICT

The Preferred Alternative in Section CC is VA1, the common alignment of VA1, VA2, and VA3. The North Battersea district is located east of the rail corridor in Petersburg, VA. Most of the district itself is outside of the Project APE; however, Battersea mansion (a contributing element to the district) is located between the rail tracks and the remainder of the district. As such, the district is tangentially included within the Project APE. With the exception of Battersea itself, the closest contributing element to the rail corridor is over 2,000 feet east of the rail line, and no road changes are proposed in this area. The Preferred Alternative will not impact the physical or historic integrity of the resource. The Preferred Alternative will have no adverse effect on this district. As a condition of this effect determination, the VDHR requested that the Project Team coordinate with the City of Petersburg, VA, to identify measures to minimize impacts to this resource.

4.12.2.1.26 DEFENSE ROAD

The Preferred Alternative in Section CC is VA1, the common alignment of VA1, VA2, and VA3. Defense Road is perpendicular to the railroad corridor in this area. The Preferred Alternative will add a second railroad bridge over Defense Road (directly adjacent to the existing railroad bridge), which will necessitate the removal of a small section of the original roadway and lowering the overall road grade near the bridge to allow for vehicular passage beneath the new span. This change will impact the road's location, design, setting, materials, workmanship, and feeling. Therefore, the Preferred Alternative will have an adverse effect on this resource.

4.12.2.1.27 DIMMOCK LINE/EARTHWORKS

The Preferred Alternative in Section CC is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will add a second railroad bridge over Defense Road (directly adjacent to the existing railroad bridge). Construction of the bridge and associated improvements to Defense Road will necessitate large disturbances to the segment of the earthworks within the Project APE. Therefore, the Preferred Alternative will have an adverse effect on the resource.

4.12.2.1.28 BRIDGE OVER DEFENSE ROAD

The Preferred Alternative in Section CC is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will construct a second bridge directly east of the existing span, thus introducing a new element adjacent to the current bridge. Due to the introduction of this large new element, the Preferred Alternative will have an adverse effect on the bridge.

4.12.2.1.29 FORT DAVIS EARTHWORKS

The Preferred Alternative in Section DD is VA3. The three Project alternatives vary slightly in this area based on their curvature; however, they are all located within the same general vicinity. Although the 4,000-foot long earthworks generally run perpendicular through the Study Area, the 300-foot long segment where the earthworks intersect the Study Area were completely destroyed in 1900 when the Seaboard Air Line Railroad cut through the resource to construct the original rail line in this area. As such, the portion of this historic property within the project APE does not contribute to the overall eligibility of this resource. Therefore, the Preferred Alternative, as well as VA1 and VA2, will have no adverse effect on this resource.

4.12.2.1.30 BOWEN HOUSE

The Preferred Alternative in Section C is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will add a set of tracks within the existing rail corridor on the west side of US-1. The rail corridor is approximately 75 feet west of the western boundary of this resource and over 150 feet from the main house. However, the road system in this area will also be modified by rerouting the corridor to the south of the Bowen House and bridging Glebe Road over the rail lines. This new bridge will be just southwest of the Bowen House boundaries. It is possible that the new structure will be visible from the main house. However, any modifications to the viewshed will be tempered by a vegetative screen, distance, and the US-1 corridor. The Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.31 BANK OF MCKENNEY

The Preferred Alternative in Section C is VA1, the common alignment of VA1, VA2, and VA3. The bank building is located on Rives Avenue in the community of McKenney, VA. The building is separated from the Project impact area by Rives Avenue itself, located between the bank and the rail corridor, a distance of 70 feet. Road modifications are restricted to the area south of the bank building, over 160 feet away. The Preferred Alternative will add a new visual element to the viewshed of this property, namely the rail itself, but the modification will actually restore the historic appearance of this area by putting the rail back where it was originally designed. Therefore, the Preferred Alternative will have no adverse effect on this historic property.

It should be noted that the Tier II DEIS identified the Project alternatives as having no effect on the Bank of McKenney. Subsequent to the publication of the Tier II DEIS, the building was reevaluated for eligibility. This resulted in the change in effect.

4.12.2.1.32 CHESAPEAKE AND POTOMAC TELEPHONE COMPANY (C & P) BUILDING

The Preferred Alternative in Section C is VA1, the common alignment of VA1, VA2, and VA3. The C & P Building is located north of a road modification area just outside of the Town of McKenney, VA. The Preferred Alternative will result in the widening of the roadway, but no alterations to the building or its associated landscape will occur. The Project will therefore not diminish any of the characteristics that render this property eligible for the NRHP, although the road footprint along the primary elevation will be slightly modified. Therefore, the Preferred Alternative will have no adverse effect on this historic property.

4.12.2.1.33 ZEHMER FARM/HONEYMOON HILL FARM

The Preferred Alternative in Section C is VA1, the common alignment of VA1, VA2, and VA3. The Preferred Alternative will shift the rail corridor slightly west of its existing location in order to straighten a curve. The new corridor will cross the Zehmer Farm along its easternmost boundary. The Project alternatives will also reroute Jack Zehmer Road, which currently crosses the railroad corridor at-grade from the east and provides access southward to the Town of McKenney, VA, wastewater treatment plant (which is located with the listed boundary of the Zehmer Farm). The existing at-grade crossing of the rail corridor will be closed and the rerouted road will tie into Community Street (along the eastern boundary of Sunnyside Elementary School), and then parallel the railroad south (on the west side of the tracks) to connect with the existing access road. The proposed changes are located more than 600 feet from the main buildings on the farm and will be blocked from view of the house by extensive vegetation. Therefore, the Preferred Alternative will have no adverse effect on this resource.

4.12.2.1.34 WYNNHURST

The Preferred Alternative in Section D is VA4, which is located to the northwest of Wynnhurst, running through the small community of Rawlings, VA. Given the distance from the resource, VDHR determined the Preferred Alternative is outside of the APE of Wynnhurst.

Designs for the VA2 Project alternative are located 300 feet west of the main house of Wynnhurst, and the rail corridor would be shielded from this resource by several modern dwellings and vegetation. Therefore, the VA2 Project alternative would have no effect on this resource.

The VA1 and VA3 Project alternatives are on common alignment in the vicinity of Wynnhurst, running in a straight line south of the Dinwiddie/Brunswick, VA, county line. This alignment runs through the southeastern half of the Wynnhurst property, located north of Route 629. The new rail corridor is 100 feet from the main house and entirely within the larger property boundaries. Due to alterations to the property’s location, design, setting, feeling, and association, the VA1/VA3 Project alternative would have an adverse effect on this resource.

4.12.2.1.35 BLICK'S STORE

The Preferred Alternative in Section D is VA4, which will rebuild the railroad tracks through this area in the existing corridor. Along with the VA2 alternative, the Preferred Alternative will reroute Route 629 behind the Blick’s Store property, about 300 feet south of the store building.

The road movement will not impact the physical characteristics of the resource. Therefore, the Preferred Alternative and the VA2 Project alternative will have no adverse effect on this resource.

The VA1 and VA3 Project alternatives are on common alignment in this area and include no roadwork in the vicinity of the Blick's Store. Therefore, the VA1/VA3 Project alternative would have no effect on this resource.

4.12.2.1.36 HOUSE/428 SECOND AVENUE

The Preferred Alternative in Section E is VA1, the common alignment of VA1 and VA3. However, all three of the Project alternatives are on common alignment near this resource. Although the road general road system in this area will be modified to remove at-grade crossings in the downtown area, the roadways adjacent to this resource will not be changed. Since the general approach to the home will be altered, but the change will not diminish any of the characteristics that render this property eligible for the NRHP, the Preferred Alternative and the VA2 Project alternative will have no adverse effect on this resource.

4.12.2.1.37 ORGAIN HOUSE

The Preferred Alternative in Section G is VA3. The Preferred Alternative will add a bridge on Old Indian Road over the relocated rail corridor approximately 500 feet south of the recommended boundary of the Orgain House historic resource. Given the distance of the designs from the main house, the Preferred Alternative will have no adverse effect on this resource.

The VA1 and VA2 Project alternatives are located across from both Old Indian Road and the existing rail corridor from the Orgain House and would have no effect on the resource.

The VA4 Project alternative was designed to serve as the avoidance alternative for impacts to the Oak Shades and Tourist Guest House resources described below. The designs for VA4 pass directly through the Orgain House property and, moreover, the main house itself. The main house, nearby 1840s foundation, and several outbuildings would be destroyed by this alternative. Therefore, the VA4 alternative would have an adverse effect on this resource.

4.12.2.1.38 TOURIST GUEST HOUSE

The Preferred Alternative in Section G is VA3. The Tourist Guest House was recorded during an investigation to locate an avoidance alternative to the Oak Shades property described below. The Preferred Alternative will locate the railroad tracks directly behind the main house of the Tourist Guest House. Construction of this new rail line will be within the viewshed of the home. Therefore, the Preferred Alternative will have an adverse effect on this property.

The VA1 and VA2 Project alternatives are located over 300 feet southeast of the property. Therefore, the VA1 and VA2 Project alternatives would have no effect on this resource.

The VA4 Project alternative would locate the railroad tracks approximately 350 feet from the eligible boundary of the Tourist Guest House. The new rail line would be visible from a portion of the property, but would not impact the physical characteristics of the resource. Therefore, the VA4 Project alternative would have no adverse effect on this resource.

4.12.2.1.39 OAK SHADES

The Preferred Alternative in Section G is VA3. Oak Shades is located south of the Tourist Guest House, to the east of Route 639 in Brunswick County, VA, and west of the abandoned Seaboard Coast Line railroad tracks. The VA3 alternative is located over 300 feet from the Oak Shades property and blocked from view by several homes and roadways. Therefore, the Preferred Alternative will have no effect on this resource.

The VA1 Project alternative would relocate the railroad corridor on new location just southeast of the main house at Oak Shades. The new rail corridor would be less than 50 feet from the home. Because of the impacts to the building's physical and historic integrity, the VA1 Project alternative would have an adverse effect on this resource.

The VA2 Project alternative would modify the inactive rail line southeast of the property. The rail tracks would be located down a steel escarpment and not visible from the main house. However, the rail alignment would be shifted away from the historic location of the railroad and would cut into the hill slope by about 30 feet. Because of these changes to its setting, the VA2 Project alternative would have an adverse effect on this resource. (It should be noted that the Tier II DEIS identified the VA2 Project alternative as having no adverse effect on Oak Shades. This determination was revised based on additional coordination with VDHR and review of the designs within Section G.)

The VA4 Project alternative is located over 800 feet from the Oak Shades property and blocked from view by several homes and roadways. Therefore, the VA4 Project alternative would have no effect on this resource.

4.12.2.1.40 EVANS HOUSE

The Preferred Alternative in Section H is VA1, the common alignment of VA1 and VA3. However, all three of the Project alternatives are on common alignment near this resource. The Preferred Alternative will add a set of tracks just east of the existing rail corridor that is located adjacent to the southeastern boundary of the Evans House. In addition, the road system in this area will also be modified by rerouting Wilson Road north of the Evans House to provide an overpass of the rail corridor. This new bridge will be northwest of the Evans House boundaries. It is possible that the new structure will be visible from the house. However, any modifications to the viewshed will be tempered by a vegetative screen and distance, and no character-defining features of this resource will be diminished by this change. Therefore, the Preferred Alternative will have no adverse effect on this resource. (It should be noted that the Tier II DEIS mistakenly listed the VA1 Project alternative as having no effect on the Evans House.)

4.12.2.1.41 LA CROSSE, VA, COMMERCIAL HISTORIC DISTRICT

The Preferred Alternative in Section I is VA1, the common alignment of VA1 and VA2. However, all three of the Project alternatives are on common alignment near this resource. The railroad tracks will run through town at the same grade as the surrounding roadways and above-ground resources. Changes include remodeling the road system through town and the demolition of at least two contributing resources. Because of these changes, the Preferred Alternative and the VA3 Project alternative will have an adverse effect on this district.

4.12.2.1.42 LA CROSSE HOTEL

The Preferred Alternative in Section I is VA1, the common alignment of VA1 and VA3. However, all three of the Project alternatives are on common alignment near this resource. The La Crosse Hotel is located immediately adjacent to the existing railroad ROW. The designs shown in the Tier II DEIS required a small amount of ROW from the hotel property (but not impacting the hotel itself) in order to accommodate the Town of La Crosse, VA, plans to use the property as a future HSR station. Subsequent to the Tier II DEIS, the designs were revised to no longer require any ROW from the resource. Moreover, although the Project will install a new set of rails within the viewshed of the primary elevation of this historic property, similar rails were in place when the hotel was constructed. The rail system was, in fact, the impetus for the development of this lot. Thus, the changes will not diminish the resource's integrity of location, design, setting, materials, workmanship, feeling or association. Based on these changes, the

Preferred Alternative, along with the VA2 and VA3 Project alternatives, will have no adverse effect on this property.

4.12.2.1.43 WRIGHT FARMSTEAD

The Preferred Alternative in Section J is VA2. In the vicinity of the Wright Farmstead, which is south of Belfield Road in Mecklenburg County, VA, the Preferred Alternative is located more than 500 feet away. The alternative will not be visible from the above-ground remains due to dense vegetation and distance. The Project will also not physically impact any portions of the associated archaeological site. Therefore, the Preferred Alternative will have no effect on this resource.

The VA1 and VA3 Project alternatives are on common alignment near the Wright Farmstead and run directly through the western two-thirds of the resource. Therefore, the VA1/VA3 Project alternative would have an adverse effect on this property.

4.12.2.1.44 SARDIS METHODIST CHURCH

The Preferred Alternative in Section J is VA2; however, all three Project alternatives are on common alignment near this resource, which is located east of the old railroad tracks. All alternatives will require rerouting of the current driveway for the Sardis Methodist Church. The existing access road is an at-grade crossing over the rail bed. Under the Project alternatives, the driveway will be rerouted slightly north to utilize an overpass. Visitors will approach the church from the north instead of from the west. Although this change alters the property's setting, it does not diminish any of the characteristics that render the resource eligible for the NRHP. Therefore, the Preferred Alternative, as well as the VA1 and VA3 Project alternatives, will have no adverse effect on this resource.

4.12.2.1.45 BRACEY HISTORIC DISTRICT

The Preferred Alternative in Section K is VA1, the common alignment of VA1 and VA3. The proposed Bracey Historic District is linear, running roughly east-west along Route 619. The town was founded due to the intersection of the road and railway to cater to rail traffic. The Preferred Alternative will construct the rail corridor west of the original Seaboard Air Line tracks. The work will be outside of the district, but will reintroduce an important element of the district's history that has been removed will result in an altered viewshed from contributing resources within the historic district. As such, the Preferred Alternatives will have no adverse effect on the district.

The VA2 Project alternative would reestablish rail on the abandoned Seaboard tracks. However, the existing rail corridor in this area is too narrow to accommodate the proposed line, thus the corridor would be widened to the east. This would result in construction directly adjacent to the existing Bracey Railroad Depot, which is a contributing element to the district. Although the depot would not be destroyed, the work has the potential to diminish the district's design, setting, feeling, and association by modifying the original rail corridor and risking impacts to contributing elements. As such, the VA2 Project alternative will have an adverse effect on this district.

4.12.2.1.46 BRACEY DEPOT

The Preferred Alternative in Section L is VA1/NC1, the common alignment of VA1/NC1 and VA3/NC3. The Bracey Depot is located adjacent to the rail tracks, but this building has been moved further away from the rail footprint and reoriented. Changes to the rail corridor in this area will result in an altered viewshed from the current orientation of the depot, but the alternative will not diminish any of the characteristics that render this resource eligible for the NHRP. Therefore, the Preferred Alternative will have no adverse effect on this resource.

The VA2 Project alternative would reestablish rail on the abandoned Seaboard tracks. However, the existing rail corridor in this area is too narrow to accommodate the proposed line, thus the corridor would be widened to the east. This would result in construction directly adjacent to the Bracey Depot. As a result of these changes, the VA2 Project alternative would have an adverse effect on this resource.

4.12.2.1.47 BRACEY STORE

The Preferred Alternative in Section L is VA1/NC1, the common alignment of VA1/NC1 and VA3/NC3. The Bracey Store is located east of the rail corridor. The viewshed between the store and the rail tracks is partially blocked by the presence of the Bracey Store, although the rail crossing of Bracey Road is visible from the primary elevation of this resource. The Preferred Alternative would reintroduce rail tracks in this area, which will alter this resource's integrity of setting. However, it will not diminish the integrity of location, design, materials, workmanship, feeling or association. Therefore, the Preferred Alternative will have no adverse effect on this resource.

The VA2 Project alternative would reestablish rail on the abandoned Seaboard tracks. However, the existing rail corridor in this area is too narrow to accommodate the proposed line, thus the corridor would be widened to the east. Changes to the rail corridor in this area would result in an altered viewshed from the current orientation of the store, but the alternative would not diminish any of the characteristics that render this resource eligible for the NHRP. Therefore, the VA2 Project alternative would have no adverse effect on this resource.

4.12.2.1.48 GRANITE HALL/FITTS HOUSE

The Preferred Alternative in Section L is VA1/NC1, the common alignment of VA1/NC1 and VA3/NC3. Granite Hall is located at the northeastern quadrant of the intersection of Route 712 and the North Carolina/Virginia state line. The Preferred Alternative rail alignment is located 700 feet west of Granite Hall and several dwellings, vegetation, and roadways are between the home and the alignments. Therefore, the Preferred Alternative will have no effect on the resource.

The VA2/NC2 Project alternative runs along the abandoned Seaboard Air Line rail corridor. While the rail changes would occur within the existing alignment several hundred feet southwest of the main house, the alternative requires construction of a new bridge on Route 712 over the rail line. The fill slope for the new bridge would be located in front of the main house. This would alter both the driveway and the approach to the home and also introduce a new visual element outside of the primary elevation of the home. Because of impacts to the resource's design, setting, feeling, and association, the VA2/NC2 Project alternative will have an adverse effect on this resource.

4.12.2.2 *BATTLEFIELDS – VIRGINIA*

The follow sections describe the effect of the Project alternatives on battlefields in Virginia within the project APE. The impacts were determined in conjunction with the VDHR, the NPS Petersburg National Battlefield, and NPS Richmond National Battlefield.

As discussed in Section 3.12.2.2, the American Battlefield Protection Program (ABPP) proposed new National Register-eligible boundaries for the 10 Project battlefields in July 2009. The impacts described in the sections below are based on the boundaries determined by the state historic preservation office (VDHR). Although there are differences between the individual battlefield boundaries, when considered in total, the VDHR boundaries within the Project APE encompass all of the ABPP boundaries with the following exceptions:

- Just south of Highway 288 in Chester, VA – all Project alternatives are on common alignment within existing railroad ROW
- Vicinity of Walthall Industrial Parkway just north of Colonial Heights, VA – all Project alternatives are on common alignment; rail alignments are within existing railroad ROW; new access road proposed to connect Walthall Industrial Parkway with Pine Forest Road
- Vaughn Road near the Burgess Connector – all Project alternatives are on common alignment; rail alignments are within existing railroad ROW; new bridge over the railroad on Vaughn Road
- Carson Road near the Dinwiddie, VA, Courthouse community – the Preferred Alternative (VA1, which is the common alignment of VA1 and VA3) shifts the rail slightly outside of existing railroad ROW and provides a new bridge over the railroad on Carson Road; the VA2 Project alternative is within existing railroad ROW
- Courthouse Road near the Dinwiddie, VA, Courthouse community – the Preferred Alternative (VA1, which is the common alignment of VA1 and VA3) and the VA2 Project alternative are separated by less than 150 feet in this area and extend just outside of the existing railroad ROW; no road improvements are proposed
- Gatewood Road south of the Dinwiddie, VA, Courthouse community – all Project alternatives are on common alignment; no rail work proposed in this location; Gatewood Road will be slightly realigned to accommodate a new bridge over the railroad
- Keelers Mill Road south of the Dinwiddie, VA, Courthouse community - all Project alternatives are on common alignment; rail alignments are within existing railroad ROW; Keelers Mill Road will be slightly realigned to connect with a new access road on the west side of the railroad (outside battlefield boundaries)

The seven segments listed above comprise an extremely small area. It is estimated that at least 95 percent of the area within the two sets of battlefield boundaries overlap. As such, none of the improvements proposed by the Project in these areas will result in a change to the recommended Section 106 effects described in the sections below.

4.12.2.2.1 PROCTOR'S CREEK

The Proctors Creek battlefield spans Sections AA and BB. The Preferred Alternative for both sections is VA1, the common alignment of VA1, VA2, and VA3. The resource straddles the existing rail corridor. Unfortunately, due to expansive commercial and residential development much of the battlefield itself has lost its physical integrity. Despite efforts to preserve parts of the battlefield, such as Fort Darling, large swaths have diminished setting, feeling, and association. As such, while the battlefield is eligible for the NRHP under Criterion A, it is not eligible under Criterion C. The Preferred Alternative will return a second rail line to the existing corridor, a condition that was present at the time of the battle. Because of the compromised integrity of the region as well as the reintroduction of the second rail line, the Preferred Alternative will have no adverse effect on this battlefield.

4.12.2.2.2 PORT WALTHALL JUNCTION

The Port Walthall Junction battlefield is located in Section BB. The Preferred Alternative for Section BB is VA1, the common alignment of VA1, VA2, and VA3. This battlefield encompasses 880 acres straddling the I-95 corridor. The Preferred Alternative will require road modifications to remove at-grade crossings in the very southwestern corner of the larger battlefield. The epicenter of the engagement is located north of the Study Area and remains untouched. The portion of the battlefield within the Study Area, however, has been completely destroyed by development and the creation of an extensive system of roads. While portions of the battlefield retain their original setting and feeling, the Study Area does not retain its integrity of design, setting, materials, feeling, and association. The Preferred Alternative will have no adverse effect on this battlefield.

4.12.2.2.3 SWIFT CREEK/ARROWFIELD CHURCH

The Swift Creek/Arrowfield Church battlefield is located in Section CC. The Preferred Alternative for Section CC is VA1, the common alignment of VA1, VA2, and VA3. Oriented roughly east-west, this 3,800 acre resource is south of Port Walthall Battlefield and partially within the City of Colonial Heights, VA. Development within Colonial Heights, VA, has destroyed the primary engagement area as well as other segments of the larger battlefield, thus the resource is not eligible under Criterion C. The Project alternatives will minimally widen one existing roadway in the very northern portion of the battlefield. The overall impact area is thus very small compared to the size and scope of this large battlefield. Because of the minimal impacts to a resource that already has compromised physical integrity, the Preferred Alternative will have no adverse effect on this battlefield.

4.12.2.2.4 PETERSBURG III/THE BREAKTHROUGH

The Petersburg III/The Breakthrough battlefield spans Sections CC and DD, although the Project alternatives are on common alignment through the battlefield. The Preferred Alternative for Section CC is VA1, the common alignment of VA1, VA2, and VA3; the Preferred Alternative for Section DD is VA3. The rail line runs north-south through the center of the battlefield. The Preferred Alternative will return a second set of tracks within the existing rail corridor. In addition, three road modifications will occur within the battlefield boundaries: 1) the existing railroad bridge over I-85 in the very northern portion of the battlefield will be widened to accommodate the second set of tracks; 2) the bridge over Defense Road will be widened (see discussion of Defense Road above); and 3) a short segment of Halifax Road east of the rail tracks will be straightened to remove a curve that runs adjacent to the rail line. In all, the changes include a very small percentage of the overall battlefield area. Most of the core areas of engagement are protected within Pamplin Historical Park, but areas outside the park boundaries have been negatively impacted by development. The Preferred Alternative will have no adverse effect on this battlefield.

4.12.2.2.5 WELDON RAILROAD/GLOBE TAVERN

The Weldon Railroad/Globe Tavern battlefield spans Sections CC and DD. The Project alternatives are common through Section CC and vary slightly in the vicinity of the battlefield in Section DD. The Preferred Alternative for Section CC is VA1, the common alignment of VA1, VA2, and VA3; the Preferred Alternative for Section DD is VA3. All of the Project alternatives will add a second set of tracks, a bridge over the CSX A-line tracks, and road work along Halifax Road. The impacted areas comprise a very small segment of the larger 4,370 acre battlefield. The difference in the three alternatives is related to the way they bridge the active CSX A-line and a small access road in the vicinity of where Halifax Road crosses the CSX A-line within Section DD. Refer to Section 2.2.6.1 for more details.

The bridge in Section DD proposed for the Preferred Alternative (VA3) is significantly shorter than the bridge proposed under both the VA1 and VA2 Project alternatives, but will require the greatest amount of fill material through the battlefield.

The VA2 Project alternative maximizes the use of existing railroad ROW. However, the proposed bridge over the CSX A-line is the longest and would be most visible of the three Project alternatives.

The Preferred Alternative and the VA1 Project alternative would require more new ROW than VA2. The Preferred Alternative and the VA1 Project alternative primarily follow the same rail alignment, but the proposed bridges are different lengths. Both alternatives will have shorter bridges over the CSX A-line than the VA2 alternative.

The Preferred Alternative, as well as the VA1 and VA2 Project alternatives, will have no adverse effect on this battlefield. As a condition of this effect determination, the NPS Petersburg National Battlefield requested that the fill slopes for the proposed bridge have tree plantings to minimize the visual intrusion on the landscape. The VDHR also requested to view the engineering and vegetation plans before construction.

4.12.2.2.6 PEEBLES FARM

The Peebles Farm battlefield spans Sections CC and DD, although the Project alternatives are on common alignment through the battlefield. The Preferred Alternative for Section CC is VA1, the common alignment of VA1, VA2, and VA3; the Preferred Alternative for Section DD is VA3. This 2,800-acre resource includes two bounded areas. The rail corridor runs east-west between these two areas, thus the actual rail corridor is not within the boundaries of this resource. However, the Preferred Alternative will widen a small segment of Vaughn Road running north-south near the northeastern section of the southern battlefield section. This road modification area only clips the very northeastern corner of the southern battlefield area. The northern battlefield section will not be impacted, and the majority of the southern section will remain untouched. Due to the very minimal scope of the proposed change, the Preferred Alternative will have no adverse effect on this battlefield.

4.12.2.2.7 BOYDTON PLANK ROAD

The Boydton Plank Road battlefield spans Sections DD and A. The Project alternatives are common through Section DD and vary slightly through the battlefield in Section A in the vicinity of the Burgess Connector, an inactive railroad corridor between the CSX S-Line (currently inactive) and the CSX A-Line (currently active). The Preferred Alternative for Section DD is VA3; the Preferred Alternative for Section A is VA2. In Section A, the Preferred Alternative extends slightly outside of the existing ROW from Smith Grove Road to Dabney Mill Road, a distance of approximately two miles, in order to flatten out a severe curve in the existing rail alignment. The VA1/VA3 Project alternative stays within the existing railroad ROW in this area.

The existing rail corridor runs through the center of the resource from its northeastern corner diagonally to its southwestern edge. The Project alternatives will add a new set of rails on an abandoned rail track, which was in operation during the period of significance of this resource. In addition, a very small segment of Squirrel Level Road will be modified, located on the eastern edge of the larger resource. Re-establishing the rail line will restore a notable element of this resource that was removed in the twentieth century, and the changes to the road are quite minimal. These two alterations will not diminish the characteristics that rendered this property eligible for the NRHP under Criterion A. The Preferred Alternative, as well as the VA1 and VA2 alternatives in Section DD and the VA1 and VA3 alternatives in Section A, will have no adverse effect on this battlefield.

4.12.2.2.8 HATCHER’S RUN

The Hatcher’s Run battlefield spans Sections DD and A and the Project alternatives vary slightly through the battlefield in the vicinity of the Burgess Connector in Section A, as described above for Boydton Plank Road battlefield. The Preferred Alternative for Section DD is VA3; the Preferred Alternative for Section A is VA2. As described above, Project changes in this general area will include reintroducing the second set of tracks within the rail corridor and road modifications. Two small road changes are proposed: widening a small segment of Vaughn Road, which runs perpendicular to the tracks, and improving a small section of Squirrel Level Road near the east-west oriented rail tracks. Both road improvement areas are located in the very northeastern corner of the larger battlefield. The vast majority of the battlefield will not be impacted by this small amount of road work, and the Project will not alter the characteristics that render this property eligible for the NRHP. Therefore, the Preferred Alternative, as well as the VA1 and VA2 alternatives in Section DD and the VA1 and VA3 alternatives in Section A, will have no adverse effect on this battlefield.

4.12.2.2.9 LEWIS FARM

The Lewis Farm battlefield is located in Section A. The Preferred Alternative in Section A is VA2; however, all three of the Project alternatives are on common alignment through this battlefield. The Preferred Alternative will reintroduce a second line within the existing rail corridor. A segment of Quaker Road, located in the northwestern corner of the battlefield, will be rerouted for a distance of about 100 feet. The minimal changes to the road configuration will not alter the property's association with Civil War events, modify the viewshed within the battlefield boundaries, or diminish the property's integrity in any other way. As such, the Preferred Alternative will have no adverse effect on this battlefield.

4.12.2.2.10 DINWIDDIE, VA, COURTHOUSE

The Dinwiddie, VA, Courthouse battlefield is located in Section B. The Preferred Alternative in Section B is VA1, the common alignment of VA1 and VA3; however, all three of the Project alternatives are common through the battlefield. This large battlefield encompasses over 3,300 acres northwest of the community of Dinwiddie, VA. The eastern boundary of the battlefield is located adjacent to the western boundary of the rail corridor, thus the battlefield is within the visual APE of the rail work in this area. All modifications will be restricted to the existing rail corridor. The proposed rail alignments are not physically within the battlefield boundaries, and the viewshed of the larger battlefield is shielded from the rail corridor by excessive distance, vegetation, the presence of US-1, numerous modern developments within the community of Dinwiddie, VA, and topography. As such, the Preferred Alternative will have no adverse effect on this battlefield.

4.12.2.3 *HISTORICAL RESOURCES – NORTH CAROLINA*

The following discussion provides details on the effect of the Project alternatives on historical resources in North Carolina where FRA and NCDOT determined that the Project has no adverse effect or adverse effects for at least one alternative. For all other resources, the Project has been determined to have no effect for all alternatives. This includes the Holtzmann Farm, which was presented in the Tier II DEIS as having no adverse effect from all Project alternatives. A subsequent change to road designs in the Ridgeway, NC, area resulted in a shift away from this resource.

4.12.2.3.1 CHAPEL OF THE GOOD SHEPHERD

The Preferred Alternative in Section M is NC1, the common alignment of NC1 and NC3. All three of the Project alternatives are on common alignment through Ridgeway and in the vicinity of the Chapel of the Good Shepherd. The designs presented in the Tier II DEIS will reroute Ridgeway Warrenton Road from its current location in front of the church to a new location immediately behind the church in order to access a proposed grade separation over the railroad corridor. Due to the changes in access and the visual environment, FRA and NCDOT determined that the NC1, NC2, and NC3 Project alternatives have an adverse effect on the Chapel of the

Good Shepherd. In response to comments on the Tier II DEIS and in coordination with Warren County, NC, the Kerr-Tar Council of Governments (the Rural Planning Organization) and the NCDOT Transportation Planning Branch, several modifications were made to the proposed roadwork for the Ridgeway area. The revised designs will put the grade separation over the railroad corridor on Ridgeway Drewry Road rather than on Ridgeway Warrenton Road. Ridgeway Drewry Road will be shifted approximately 650 feet to the northeast to cross over US-1 and the railroad on a bridge, and connect to a new alignment for Axtell Ridgway Road on the south side of the railroad. Additional traffic will pass in front of Chapel of the Good Shepherd to use the new grade separation. Therefore, the Preferred Alternative, as well as the NC2 Project alternative, will have no adverse effect on the resource.

4.12.2.3.2 DR. THOMAS B. WILLIAMS HOUSE AND OFFICE

The Preferred Alternative in Section M is NC1, the common alignment of NC1 and NC3. As discussed above for the Chapel of the Good Shepherd, all three of the Project alternatives are on common alignment through Ridgeway and changes to the designs presented in the Tier II DEIS will put the grade separation over the railroad corridor on Ridgeway Drewry Road rather than on Ridgeway Warrenton Road. Ridgeway Drewry Road will be shifted approximately 650 feet to the northeast to cross over US-1 and the railroad on a bridge, and connect to a new alignment for Axtell Ridgway Road on the south side of the railroad. The grade separation will be located approximately 500 feet to the west of the Dr. Thomas B. Williams House and Office. Therefore, the Preferred Alternative, as well as the NC2 Project alternative, will have no adverse effect on the resource.

4.12.2.3.3 MARSHALL HOUSE/TAVERN

The Preferred Alternative in Section M is NC1, the common alignment of NC1 and NC3. As discussed above for the Chapel of the Good Shepherd, all three of the Project alternatives are on common alignment through Ridgeway and changes to the designs presented in the Tier II DEIS will put the grade separation over the railroad corridor on Ridgeway Drewry Road rather than on Ridgeway Warrenton Road. Ridgeway Drewry Road will be shifted approximately 650 feet to the northeast to cross over US-1 and the railroad on a bridge, and connect to a new alignment for Axtell Ridgway Road on the south side of the railroad. The grade separation will be located approximately 700 feet to the east of the Marshall House/Tavern, and a short section of the old Ridgeway Drewry Road in front of the Marshall House/Tavern will be used to provide a connection between US-1 and the new road and bridge. The designs will require a minor amount of road frontage ROW from the resource for the new connection, but the change will not alter the viewshed from the resource’s primary elevation. Therefore, the Preferred Alternative, as well as the NC2 Project alternative, will have no adverse effect on the resource.

4.12.2.3.4 WILLIAM J. HAWKINS HOUSE

The Preferred Alternative in Section N is NC1, the common alignment of NC1 and NC3. All three of the Project alternatives are on common alignment in the vicinity of the William J. Hawkins House, and will require a small amount of additional railroad ROW be taken from the resource. In addition, the current driveway access for the property will be relocated to a proposed service road that will provide access to Axtell Ridgeway Road, north of the property. Because of these impacts to the resource, the Preferred Alternative, as well as the NC2 Project alternative, will have no adverse effect on this resource. NC-HPO’s concurrence with this determination is conditional; the Project Team must coordinate with the property owner about the access issue, i.e., a temporary construction easement will be required to maintain access.

4.12.2.3.5 HOLLOWAY FARM

The Preferred Alternative in Section O is NC3. The Project alternatives vary in the vicinity of the Holloway Farm. No property impacts to the historic resource are anticipated from the Preferred Alternative; therefore, the Preferred Alternative will have no effect on this resource.

The proposed NC1 and NC2 rail alignments alternatives would bisect this resource; therefore, the NC1 and NC2 alternatives would have an adverse effect on this resource.

4.12.2.3.6 FORREST ELLINGTON FARM

The Preferred Alternative in Section O is NC3. All three of the Project alternatives are on common alignment in the vicinity of the Forrest Ellington Farm and will require a minor amount of road frontage ROW from the northwest corner of the property at the intersection of Brookston Road and Carver School Road. Therefore, the Preferred Alternative, as well as the NC1 and NC2 Project alternatives, will have no adverse effect on this resource.

4.12.2.3.7 HENDERSON, NC, HISTORIC DISTRICT AND PROPOSED BOUNDARY EXPANSION

The Preferred Alternative in Section P is NC1, the common alignment of NC1, NC2, and NC3. All three of the proposed Project alternatives are on common alignment through Henderson, NC, and will grade-separate Andrews Avenue (NC Hwy 39) within the Henderson, NC, Historic District. A retaining wall is included in the design to minimize impacts to the district from the grade separation. However, the retaining wall will require a small amount of ROW be taken from a house along Andrews Avenue and necessitate re-grading a driveway. It will also impact landscaping along Andrews Avenue, potentially removing several trees. Due to these impacts, the Preferred Alternative will have an adverse effect on the district.

4.12.2.3.8 SOUTH HENDERSON, NC, INDUSTRIAL HISTORIC DISTRICT

The Preferred Alternative in Section P is NC1, the common alignment of NC1, NC2, and NC3. All three of the Project alternatives are on common alignment through Henderson, NC, and will grade-separate Alexander Avenue on new alignment through the South Henderson, NC, Industrial Historic District. Currently, Alexander Avenue tees into Nicholas Street; the proposed alternatives will carry it over the railroad tracks to connect to the Dabney Drive Extension. In order to accommodate the new bridge on Alexander Avenue, the SEHSR alternatives will require the closing of the Nicholas Street intersection with Alexander Avenue. Due to these impacts, the Preferred Alternative will have an adverse effect on the district.

4.12.2.3.9 HOUSES (5 WORKER HOUSES ON 1400 BLOCK OF NICHOLAS ST)

The Preferred Alternative in Section P is NC1, the common alignment of NC1, NC2, and NC3. These houses are located within the South Henderson, NC, Industrial Historic District. All three of the Project alternatives are on common alignment through Henderson, NC, and will require minor ROW from the resources directly adjacent to the railroad corridor (at the rear end of the properties). Therefore, the Preferred Alternative will have no adverse effect on these resources provided that there is no taking of the structures.

4.12.2.3.10 HOUSES (3 SIDE GABLE HOUSES ON 1500 BLOCK OF NICHOLAS ST)

The Preferred Alternative in Section P is NC1, the common alignment of NC1, NC2, and NC3. These houses are located within the South Henderson, NC, Industrial Historic District. All three of the Project alternatives are on common alignment through Henderson, NC, and will require minor ROW from the resources directly adjacent to the railroad corridor (at the rear end of the properties). Therefore, the Preferred Alternative will have no adverse effect on these resources provided that there is no taking of the structures.

4.12.2.3.11 FRANKLINTON, NC, HISTORIC DISTRICT (INCLUDES STERLING MILL HISTORIC DISTRICT)

The Preferred Alternative in Section S is NC1, the common alignment of NC1 and NC3. All three of the Project alternatives are on common alignment through Franklinton, NC, and will eliminate the railroad crossing at Mason Street and also replace the railroad bridge at Green Street, which is a contributing element to the historic district. Due to these impacts, the Preferred Alternative, as well as the NC2 Project alternative, will have an adverse effect on the district.

4.12.2.3.12 STERLING COTTON MILL

The Preferred Alternative in Section S is NC1, the common alignment of NC1 and NC3. Sterling Mill is located within the Franklinton, NC, Historic District. All three of the Project alternatives are on common alignment through Franklinton, NC, and will require minor ROW for the Green Street underpass improvements (including sidewalks). Therefore, the Preferred Alternative, as well as the NC2 Project alternative, will have no adverse effect on this resource.

4.12.2.3.13 CEDAR CREEK RAILROAD BRIDGE PIERS

The Preferred Alternative in Section S is NC1, the common alignment of NC1 and NC3. Currently, active railroad traffic in the proposed Project corridor crosses Cedar Creek on a bridge that spans the historic Cedar Creek Railroad Bridge Piers. All three of the Project alternatives will be on new location in this location. The Preferred Alternative and the NC3 Project alternative will cross Cedar Creek on a new bridge just to the east of the piers; the NC2 Project alternative would cross on a new bridge just to the west of the existing piers. With implementation of any of the three Project alternatives, the existing railroad bridge will no longer be used for rail traffic. Therefore, the Preferred Alternative, as well as the NC2 Project alternative, will have no adverse effect on this resource. NC-HPO’s concurrence with this determination is conditional; the Project must commit to ensuring the piers are not taken down during the construction or life of the Project.

4.12.2.3.14 YOUNGSVILLE, NC, HISTORIC DISTRICT

The Preferred Alternative in Section T is NC1, the common alignment of NC1 and NC3. All three of the Project alternatives are on common alignment through Youngsville, NC, and will grade-separate Main Street in the vicinity of the Youngsville, NC, Historic District. In order to accommodate the new bridge, the alternatives will require the removal of several on-street parking spots in front of the Youngsville, NC, Community Center at 115 East Main Street. Therefore, the Preferred Alternative, as well as the NC2 Project alternative, will have no adverse effect on this resource. NC-HPO’s concurrence with this determination is conditional; the Project must provide tree protection along Cross Street during construction of the Project.

It should be noted that the eligible historic district boundary shown on the Project mapping varies slightly from the district boundary shown on the North Carolina state “Study List.” The Study List is a list of properties that appear to be "potentially eligible” for listing in the NRHP. It is used as a preliminary step in the review of potential nominations to the NRHP and is codified in the state administrative code (Subchapter 4R, Section .0304). The boundary for the Youngsville, NC, Historic District shown on the Study List was identified prior to the surveys completed for the Project to determine eligibility for the NRHP.

4.12.2.3.15 GLEN ROYALL MILL VILLAGE HISTORIC DISTRICT

The Preferred Alternative in Section U is NC1. All three of the Project alternatives are on common alignment in the vicinity of the Glen Royall Mill Village Historic District. No property impacts within the historic district are anticipated from any of the three proposed alternatives; however, a pedestrian crossing of the railroad tracks is proposed directly adjacent to the district. As a result, the Preferred Alternative, as well as the NC2 and NC3 Project alternatives, will have no adverse effect on this resource. NC-HPO's concurrence with this determination is conditional; the Project Team must design the pedestrian crossing in a manner that minimizes its opaqueness and that fits in with the character of its surroundings.

4.12.2.3.16 WAKE FOREST, NC, HISTORIC DISTRICT

The Preferred Alternative in Section U is NC1. All three of the Project alternatives are on common alignment through Wake Forest, NC,. The designs presented in the Tier II DEIS would have closed the existing at-grade crossing at Elm Avenue and were determined to have no effect on the Wake Forest, NC, Historic District. Comments on the Tier II DEIS from the public and the Town of Wake Forest, NC, indicated a strong desire to maintain access across the railroad at Elm Avenue, if not vehicular, at least pedestrian. This led to the design of a pedestrian underpass, developed in coordination with the Town and the NC-HPO. The new design also included development of alternative access for properties on the northwest side (contributing elements to the district) that will lose the existing illegal access off of Elm Avenue along Railroad Street, which lies within the railroad right of way. The new designs were presented at a May 15, 2012, Public Update Meeting. Strong opposition to the property impacts associated with the designs led to their elimination.

Following the Public Update Meeting, additional coordination with the Town and the NC-HPO led to the development of a design for a pedestrian bridge with stairs. As part of the consultation with the NC-HPO, it was determined that although the Project will not necessarily prevent access with the pedestrian bridge nor require enforcement of the rail right of way, loss of access to Railroad Street is a foreseeable consequence of the Project; therefore, the Project will need to address access to Railroad Street. The pedestrian bridge and associated new access to the properties on Railroad Street are included in the Project designs presented in this Tier II FEIS. Based on these changes to the designs, the Preferred Alternative, as well as the NC2 and NC3 Project alternatives, will have no adverse effect on the Wake Forest, NC, Historic District. NC-HPO's concurrence with this determination is conditional; the Section 106 Memorandum of Agreement for the Project must specifically address coordination with owners of the four residences for temporary construction easements. In addition, standardized and aesthetic closures of at-grade crossings within the district must be employed (e.g., no guard rails or "T" closures).

4.12.2.3.17 CRABTREE CREEK RAILROAD BRIDGE PIER

The Preferred Alternative in Section V is NC5; however, all four of the Project alternatives are on common alignment in the vicinity of the Crabtree Creek Railroad Bridge Pier. The pier is located immediately adjacent to the existing rail bridge that spans both Crabtree Creek and Hodges Street. The Project alternatives will construct a new bridge adjacent to the existing single-track bridge. The new bridge will span the pier and require a small amount of ROW under the span to allow for access and maintenance. This ROW includes the land where the pier is situated. The pier will not be otherwise impacted. Therefore, the Preferred Alternative, as well as the NC1, NC2, and NC3 Project alternatives, will have no adverse effect on this resource. NC-HPO's concurrence with this determination is conditional; the Project must ensure that the pier is not impacted during construction of the new bridge.

4.12.2.3.18 GULF PETROLEUM PRODUCTS WAREHOUSE

The Preferred Alternative in Section V is NC5. The Project alternatives vary slightly in the vicinity of the Gulf Petroleum Products Warehouse. However, all four of the Project alternatives add an additional railroad track within the existing active rail corridor adjacent to the resource. The Preferred Alternative, as well as the NC1, NC2, and NC3, Project alternatives all require ROW from the side of the warehouse closest to the existing CSX railroad corridor. Final designs may require the warehouse building to be demolished and also impact the masonry foundation at the northeast corner of the parcel, which historically held a series of above-ground tanks and is a contributing element to the resource. Therefore, the Preferred Alternative, as well as the NC1, NC2, and NC3 Project alternatives, will have an adverse effect on the resource.

4.12.2.3.19 ROANOKE PARK HISTORIC DISTRICT

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Roanoke Park Historic District. The Preferred Alternative, NC1, and NC2 rail alignments are located across Capital Boulevard from the district; therefore, the Preferred Alternative, as well as the NC1 and NC2 Project alternatives, will have no effect on this resource.

The NC3 Project alternative would require additional ROW directly adjacent to the railroad corridor behind four properties on Bickett Boulevard within the historic district. The ROW is necessary to maintain the operation of the nearby Norfolk Southern railroad yard. The necessary ROW would impact the backyards of these properties; in particular, one property would lose approximately 0.15 acres, including a garage. Due to these impacts, the NC3 Project alternative would have an adverse effect on this resource.

4.12.2.3.20 NOLAND PLUMBING COMPANY BUILDING

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Noland Plumbing Company Building. The Preferred alternative, as well as the NC1 and NC2 rail alignments, are located across Capital Boulevard from the Noland Plumbing Company Building source. Therefore, the Preferred Alternative, as well as the NC1 and NC2 Project alternatives, will have no effect on this resource.

The NC3 Project alternative would require a minor amount of ROW directly adjacent to the railroad corridor along the rear of the Noland Plumbing Company Building property. The ROW is necessary to maintain the operation of the nearby Norfolk Southern railroad yard. Two modern storage buildings would potentially be impacted by the additional ROW; neither is a contributing element to the resource. Due to these impacts, the NC3 Project alternative would have no adverse effect on this resource.

4.12.2.3.21 GLENWOOD-BROOKLYN HISTORIC DISTRICT

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Glenwood-Brooklyn Historic District. The NC5 Project alternative is located on the east side of the Norfolk Southern railroad tracks adjacent to the Glenwood-Brooklyn Historic District. Therefore, the Preferred Alternative will have no effect on this resource.

The proposed NC1 and NC2 rail alignments are located across Capital Boulevard from the district; therefore, the NC1 and NC2 Project alternatives would have no effect on this resource.

The NC3 Project alternative would require a minor amount of ROW and easements directly adjacent to the railroad corridor along the Glenwood-Brooklyn Historic District in order to maintain the operation of the nearby Norfolk Southern railroad yard. A minor amount of ROW would be required from one residence on Adams Street and one residence on Washington Street (at the rear end of the properties). In addition, an easement would be required within the parking lots for several commercial properties along Dale Street and Jefferson Street. These easements are necessary to construct and maintain a retaining wall along the railroad corridor. Due to these impacts, the NC3 Project alternative would have no adverse effect on this resource.

4.12.2.3.22 SEABOARD RAILWAY STATION

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Seaboard Railway Station, which is located adjacent to the Mordecai Historic District. The Preferred Alternative and the NC3 rail alignments are located across Capital Boulevard from the district; therefore, the Preferred Alternative, as well as the NC3 alternative, will have no effect on this resource.

The NC1 and NC2 rail alignment alternatives may require temporary construction easements from this resource, but no additional ROW. Therefore, the NC1 and NC2 Project alternatives would have no adverse effect on this resource.

4.12.2.3.23 SEABOARD RAILWAY WAREHOUSES

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Seaboard Railway Warehouses, which are located adjacent to the Mordecai Historic District. The Preferred Alternative and the NC3 Project alternative are located across Capital Boulevard from the district; therefore, the Preferred Alternative, as well as the NC3 alternative, will have no effect on this resource.

The NC1 and NC2 rail alignment alternatives may require temporary construction easements from this resource, but no additional ROW. Therefore, the NC1 and NC2 alternatives would have no adverse effect on this resource.

4.12.2.3.24 RALEIGH COTTON MILLS

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Raleigh Cotton Mills. The Preferred Alternative and the NC3 Project alternative are located across Capital Boulevard from the resource; therefore, the Preferred Alternative, as well as the NC3 alternative, will have no effect on this resource.

The NC1 and NC2 rail alignment alternatives would require minor ROW from the resource; however, no buildings would be taken. Therefore, the NC1 and NC2 Project alternatives would have no adverse effect on this resource.

4.12.2.3.25 RALEIGH ELECTRIC COMPANY POWER HOUSE

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Raleigh Electric Company Power House. The Preferred Alternative and the NC3 Project alternative will close the existing at-grade railroad crossing at West Jones Street and provide a pedestrian crossing across the tracks. The ROW required for the closing will not have a property impact on the Raleigh Electric Company Power House; however, the pedestrian bridge will be visible directly in front of the building. Therefore, the Preferred Alternative, as well as the NC3 alternative, will have no adverse effect on this resource. The NC-HPO’s concurrence with this determination is conditional; the Project must provide aesthetic treatments for the bridge be outlined in the Memorandum of Agreement (MOA) for the Project in coordination with the consulting parties and property owners in this location.

The NC1 Project alternative would grade-separate West Jones Street. The bridge would be visible directly in front of the Raleigh Electric Company Power House and a minor amount of

ROW would be required from the property (with no impacts to the building itself). Therefore, the NC1 Project alternative would have an adverse effect on this resource.

The NC2 Project alternative would be almost identical to the NC1 Project alternative in the vicinity of the Raleigh Electric Company Power House, with a minor shift in rail alignment. The NC2 Project alternative would also grade-separate West Jones Street and will have the same visual and property impacts as the NC1 Project alternative. Therefore, the NC2 Project alternative would have an adverse effect on this resource.

4.12.2.3.26 CAROLINA POWER AND LIGHT COMPANY CAR BARN AND AUTOMOBILE GARAGE

The Preferred Alternative in Section V is NC5. The Project alternatives vary in the vicinity of the Carolina Power and Light Company Car Barn and Automobile Garage. The Preferred Alternative and the NC3 Project alternative will close the existing at-grade railroad crossing at West Jones Street. The ROW required for the closing will not impact the Carolina Power and Light Company Car Barn and Automobile Garage. Therefore, the Preferred Alternative, as well as the NC3 alternative, will have no effect on this resource.

The NC1 Project alternative would grade-separate West Jones Street. The bridge would be visible directly in front of the Carolina Power and Light Company Car Barn and Automobile Garage and a minor amount of ROW would be required from the property (with no impacts to the building itself). Therefore, the NC1 Project alternative would have an adverse effect on this resource.

The NC2 Project alternative would be almost identical to the NC1 Project alternative in the vicinity of the Carolina Power and Light Company Car Barn and Automobile Garage, with a minor shift in rail alignment. The NC2 Project alternative would also grade-separate West Jones Street and will have the same visual and property impacts as the NC1 Project alternative. Therefore, the NC2 Project alternative would have an adverse effect on this resource.

4.12.2.3.27 DEPOT HISTORIC DISTRICT AND PROPOSED EXPANSION AREA

The Preferred Alternative in Section V is NC5. The Project alternatives vary slightly in the vicinity of the Depot Historic District and Proposed Expansion Area. All four of the Project alternatives add an additional railroad track within the existing active rail corridor adjacent to the district, but do not require ROW from resource. However, they all close the existing at-grade railroad crossing on W. Hargett Street within the proposed expansion area for the district. Therefore, the Preferred Alternative, as well as the NC1, NC2, and NC3 Project alternatives, will have no adverse effect on these resources.

On March 12, 2014, FRA, in partnership with NCDOT, completed an Environmental Assessment for Phase I of the proposed Raleigh Union Station to be constructed at the Boylan Wye to support the expansion of intercity passenger rail service in Raleigh, NC; for which FRA subsequently issued a Finding of no Significant Impact (FONSI) on June 24, 2014. In support of the FONSI, FRA, NCDOT and the NC-HPO executed a Memorandum of Agreement (MOA) for Phase I of the proposed Raleigh Union Station on May 22, 2014.

The MOA determined that Phase I of the Raleigh Union Station project will have an Adverse Effect upon the Depot Historic District and the Proposed Boundary Amendment to the Depot Historic District. Specific areas of effect include the Capital Feed and Grocery and Southern Railway Passenger Station, which may be subject to demolition for Phase I of the Raleigh Union Station project. Although Phase I of the Raleigh Union Station project will provide the primary station building and access facility, it is considered independent from the Richmond to Raleigh Project Tier II EIS. A future phase of the Raleigh Union Station will include the expansion of facilities to construct a platform and passenger access to the CSX S-Line on the SEHSR corridor. This future phase will require a separate environmental determination from the Phase I activity as well as this Richmond to Raleigh Project Tier II FEIS.

4.12.2.3.28 RALEIGH, NC, AND GASTON, NC, RAILROAD CORRIDOR

The Preferred Alternative in Sections M through V is a combination of the various Project alternatives (NC1 in Sections M, N, P, Q, R, S, T, and U; NC3 in Section O; and NC 5 in Section V). All of the Project alternatives are located within the Raleigh, NC, and Gaston, NC, Railroad Corridor for the majority of their lengths (approximately 74% for NC1, 72% for NC3, and 67% for NC3). The NC5 alternative in Raleigh, NC, is also almost entirely within the corridor. The Project alternatives do not impact the vast majority of contributing elements to the corridor. However, all Project alternatives will replace at least one of the reinforced concrete bridges and potentially impact at least one of the stone-lined culverts. In addition, the NC2 Project alternative would require the relocation of the repeater tower in Norlina, NC. Due to these impacts, all alternatives will have an adverse effect on the Raleigh, NC, and Gaston, NC, Railroad Corridor.

4.12.3 SUMMARY AND POTENTIAL MITIGATION MEASURES

In summary, there are 149 unique historic resources within the Project corridor that are protected under Section 106 of the NHPA. (Several properties are considered both historic architecture and archaeology resources.) Of these, 36 resources would be adversely affected by one or more of the Project alternatives. The Preferred Alternative will have an adverse effect on 26 resources.

Efforts were made to identify Project alternatives that avoid adverse effects to Section 106 resources. Where avoidance was not possible, measures will be undertaken to minimize and mitigate for impacts. Section 5.11 outlines measures to minimize harm to historic resources. Section 5.12 describes the coordination that has taken place between the Project Team and state historic preservation offices, resource owners, historic societies, and other consulting parties.

4.13 PARKLANDS, RECREATIONAL AREAS AND REFUGES

The following section describes the Federal parklands, city/county parks, and local greenways that have potential impacts from the Project alternatives, and the extent of the potential impacts. There are no state parks, natural area preserves, forests or recreation areas located within the Study Area.

4.13.1 FEDERAL PARKLANDS

The National Park Service (NPS) manages the Fort Wadsworth Unit of Petersburg National Battlefield, which is located directly adjacent to the rail corridor near Collier rail yard. The Preferred Alternative in Section DD is VA3; however, the three Project alternatives were on common alignment in the vicinity of the Fort Wadsworth Unit and would require obtaining between 30 feet and 50 feet of ROW along the western portion of the Fort Wadsworth Unit. This ROW is needed for the additional track necessary to accommodate the high speed trains associated with the Project.

The Project Team met with the NPS regarding this issue on February 26, 2009. In a letter dated March 4, 2009, the Petersburg National Battlefield superintendent stated that the Project could mitigate potential adverse effects to the Fort Wadsworth Unit under Section 106 with a land exchange (see Tier II DEIS, Appendix M). This land exchange would be worked out as the Project is implemented.

4.13.2 COUNTY/CITY PARKLANDS

4.13.2.1 *VIRGINIA*

4.13.2.1.1 CANAL WALK (RICHMOND, VA)

The City of Richmond, VA, Canal Walk is located between 5th and 17th Streets along the James River and the Kanawha and Haxall Canals. Alternative VA1 is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) are on common alignment in this area and would not require any ROW from the Canal Walk. The existing rail line has daily freight and passenger rail traffic that can be heard and seen from the walkway. Therefore, the addition of SEHSR will not negatively impact the Canal Walk.

4.13.2.1.2 JAMES RIVER PARK SYSTEM – SLAVE TRAIL (RICHMOND, VA)

The Slave Trail is located within the City of Richmond, VA, James River Park System. Alternative VA1 is the Preferred Alternative in Section AA. The VA1, VA2, and VA3 Project alternatives are on common alignment through Richmond, VA, and would require the construction of a new rail bridge over the James River, immediately adjacent to the existing rail bridge located between the South 14th Street and I-95 roadway bridges. A small amount of ROW under the span of the bridge is required to allow for access and maintenance. Included in this ROW is approximately 0.03 acre of the Slave Trail within the James River Park System. The existing rail bridge has daily freight rail traffic that can be heard and seen from the trail; therefore, the new, parallel bridge will not alter the character, setting, or use of the trail. The Project would not negatively impact this resource.

4.13.2.1.3 GREAT SHIPLOCK PARK (RICHMOND, VA)

This park is located outside the Study Area on the north bank of the James River, east of the Project alternatives and I-95 crossing of the James River. There are no impacts to this resource from the Project.

4.13.2.1.4 JEFFERSON PARK (RICHMOND, VA)

This park is east of the Study Area. There are no impacts to this resource from the Project.

4.13.2.1.5 THOMAS B. SMITH COMMUNITY CENTER (RICHMOND, VA)

The City of Richmond, VA - Department of Parks, Recreation, and Community Facilities operates the Thomas B. Smith Community Center at 2015 Ruffin Road. Alternative VA1 is the Preferred Alternative in Section AA. The VA1, VA2, and VA3 Project alternatives are on common alignment, and would provide a railroad bridge over Ruffin Road just west of the community center and park. This bridge would ensure the safety of automobiles crossing the Project corridor. Due to the need to lower Ruffin Road to accommodate the bridge, a small amount of ROW is needed in the southwest corner of the Thomas B. Smith Community Center and Park. The ROW is approximately 0.07 acres along Ruffin Road adjacent to the community center. Automobile access to the community center would be maintained. In addition, the grade-separated rail-over-road crossing would greatly improve safety for pedestrians and bicyclists accessing the community center from west of the rail line. The Project will not have a negative impact on this resource.

4.13.2.1.6 FALLING CREEK PARK EXPANSION (PLANNED) (CHESTERFIELD COUNTY, VA)

Chesterfield County is planning to acquire property just north of Falling Creek and east of Jefferson Davis Highway to use for a public park, expanding on the Falling Creek Ironworks Park directly south of the creek. Alternative VA1 is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) are on common alignment in the vicinity of the planned Falling Creek Park Expansion. Although the Project rail designs are located within the existing CSX railroad corridor and would not impact the park, the proposed grade separation of Station Road would relocate Station Road onto the parcel where the park is planned. Although ROW is needed from the parcel, the designs do not impact the proposed "Resource Protection Area" for the park as shown on the rendered site plan provided by Chesterfield County to the Project Team in June 2012. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the trail. In addition, there is vehicular traffic along Jefferson Davis Highway immediately adjacent to the proposed park. Therefore, the Project would not negatively impact this resource.

4.13.2.1.7 FALLING CREEK IRONWORKS PARK (UNDER DEVELOPMENT) (CHESTERFIELD COUNTY, VA)

Chesterfield County is developing a park at the site of the Falling Creek Ironworks, the first ironworks in English North America. Alternative VA1 is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) are located within the existing CSX railroad corridor where it crosses through Falling Creek Ironworks Park. The Project alternatives would cross Falling Creek on the existing structure and would not require any new ROW. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the Falling Creek Ironworks Park. Therefore, the addition of the Project should not negatively impact the park.

4.13.2.1.8 CHESTER LINEAR PARK EXPANSION (PLANNED) (CHESTERFIELD COUNTY, VA)

Chesterfield County operates Chester Linear Park, a strip of land situated in the Chester Village area. Alternative VA1 is the Preferred Alternative in Section BB. All three of the proposed Project alternatives (VA1, VA2, and VA3) would add an additional railroad track within the existing CSX railroad corridor in the location where the planned expansion of Chester Linear Park would cross. Chesterfield County does not currently have an agreement from CSX to cross the active railroad corridor in this area. Therefore, the proposed changes associated with the Project would not create a barrier to the expansion of Chester Linear Park (because that barrier already exists). The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the expanded Chester Linear Park. Therefore, the addition of the SEHSR track should not negatively impact the trail.

4.13.2.1.9 CHESTER KIWANIS HISTORICAL PARK (PLANNED) (CHESTER, VA)

In 2008, the Chesterfield County Board of Supervisors accepted the Kiwanis Club of Chester's donation of their 5.3 acre property at 4001 Gill Street in Chester, VA, for development as the Chester Kiwanis Historical Park. The property is planned to be used as a public park for passive recreation and historical interpretation. Alternative VA1 is the Preferred Alternative in Section BB. All The VA1, VA2, and VA3 Project alternatives are on common alignment through this area and would require ROW from the parcel along Curtis Street and Richmond Street planned for the Chester Kiwanis Historical Park. However, Chesterfield County made the acceptance of the donated land conditional upon reserving the necessary ROW for the Project (100 feet from the centerlines of both Curtis Street and Richmond Street) for non-park uses. In addition, a grade-separated rail-over-road crossing would improve safety for pedestrians and bicyclists accessing the park from east of the rail line. The Project would not negatively impact this planned resource.

4.13.2.1.10 ETTRICK RIVERSIDE PARK (CHESTERFIELD, VA)

This park is east of the Study Area. The Project would not physically impact the park nor the visual or recreational value of the park.

4.13.2.1.11 ETTRICK PARK & MAYES-COLBERT ETTRICK COMMUNITY BUILDING (ETTRICK, VA)

This park and community building are located in the Chesterfield County community of Ettrick, VA. The existing and active rail line bounds the southeastern portion of the park with the Ettrick Rail Station (Petersburg, VA, Amtrak Station) adjacent to the southern limits of the park. Alternative VA1 is the Preferred Alternative in Section CC. The VA1, VA2, and VA3 Project alternatives are on common alignment along the park boundary and would not require any ROW from the park. The existing rail line has daily freight and passenger rail traffic that can be heard and seen from the park and community center. Therefore, the addition of SEHSR should not negatively impact the park. The construction of a Dupuy Road bridge over the rail line would improve the safety of those accessing the park from east of the rail line.

4.13.2.1.12 WEST END PARK FAIRGROUNDS (PETERSBURG, VA)

This park is located approximately one quarter mile east of the Study Area. There are no direct impacts from the Project. Alternative VA1 is the Preferred Alternative in Section CC. The VA1, VA2, and VA3 Project alternatives are on common alignment through Petersburg, VA, and would pass near the West End Park Fairgrounds. In this area, the existing rail bridge is being widened. This would result in temporary delays accessing the property from east of the rail line during construction, but these delays would end once construction is completed. There may be some increase in noise associated with the Project; however, it is not anticipated that any increase would limit use of this resource.

4.13.2.1.13 PAMPLIN HISTORICAL PARK (DINWIDDIE COUNTY, VA)

This park is located more than two miles from the Study Area. There are no impacts to this resource from the Project alternatives.

4.13.2.1.14 CENTENNIAL PARK (LA CROSSE, VA)

This park is located in downtown La Crosse, VA, at the intersection of Main Street and the abandoned Norfolk Southern railroad line (which is intended for use by the planned Tobacco Heritage Trail, discussed in Section 4.13.2). The primary focus of the park is a train caboose, which recognizes the town as a place where railroads once crossed. Alternative VA1 is the Preferred Alternative in Section I. The VA1, VA2, and VA3 Project alternatives are on common alignment through this area and would close the existing pedestrian crossing just east of Centennial Park and require a small amount of ROW (approximately 0.06 acres) to accommodate the railroad improvements. Although the new rail traffic would be heard from the park, it is in character with its rail theme; therefore, the required ROW should not negatively impact the park.

4.13.2.2 *NORTH CAROLINA*

4.13.2.2.1 VULCAN GREYSTONE MINING OPERATIONS PARK (HENDERSON, NC)

There are no impacts to this private park from the Project alternatives.

4.13.2.2.2 FRANKLINTON ELEMENTARY SCHOOL (FRANKLINTON, NC)

The Franklinton Elementary School, located at 431 South Hillsborough Street in Franklinton, NC, has playgrounds, a practice field, a baseball field, a football field, and a soccer field that are available for public use. Alternative NC1 is the Preferred Alternative in Section S. The NC1, NC2, and NC3 Project alternatives are on common alignment through this area and would require ROW in the vicinity of the Franklinton Elementary School to provide pedestrian access from Hawkins Street, under the railroad tracks, to South Main Street. However, no land would be required from the school. The existing rail line has daily freight rail traffic that can be heard and seen from the school's playground. Therefore, the addition of SEHSR should not negatively impact the playground. The new, pedestrian-only rail overpass would improve the safety of those accessing the school facilities and playground from east of the rail line.

4.13.2.2.3 J.B. FLAHERTY PARK (WAKE FOREST, NC)

This park is located just outside the Study Area. There are no impacts to this resource from the Project alternatives.

4.13.3 GREENWAYS

4.13.3.1 *JAMES RIVER GREENWAY (KINGSLAND CREEK) (CHESTERFIELD COUNTY, VA)*

Chesterfield County plans to develop a greenway on the north side of Kingsland Creek in the vicinity of the Defense Supply Center Richmond (DSCR) in Bellwood. Alternative VA1 is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) would add an additional railroad track within the existing CSX railroad corridor in the location where the greenway would cross. Chesterfield County has not yet obtained a legal crossing of the active railroad corridor in this area. Therefore, the proposed changes associated with the Project would not create a barrier to the development of the trail (because that barrier already exists). The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the trail. The addition of the SEHSR track is not expected to negatively impact the trail.

4.13.3.2 *APPOMATTOX RIVERFRONT TRAIL (ETTRICK, VA)*

Alternative VA1 is the Preferred Alternative in Section CC. The VA1, VA2, and VA3 Project alternatives are on common alignment through this area and would construct a new rail bridge over the Appomattox River, immediately adjacent to the existing rail bridge near Virginia State University. The bridge would be located just to the east of the existing bridge and would require a small amount of ROW under the span of the bridge to allow for access and maintenance. Included in the ROW needed for the Project is approximately 0.8 acres of the easement for the planned Appomattox Riverfront Trail. The existing rail bridge has daily freight and passenger rail traffic that can be heard from the surrounding area; therefore, the new bridge should not negatively impact the planned trail.

4.13.3.3 *UPPER APPOMATTOX CANAL TRAIL (PETERSBURG, VA)*

The Upper Appomattox Canal Trail in the City of Petersburg, VA, is a 3.6 mile trail following the towpath of the Upper Appomattox canal. Alternative VA1 is the Preferred Alternative in Section CC. The VA1, VA2, and VA3 Project alternatives are on common alignment through this area and would require a new rail bridge over the Appomattox River, immediately adjacent to the existing rail bridge near Virginia State University. A small amount of ROW under the span of the bridge is required to allow for access and maintenance. Included in this ROW is approximately 0.1 acre of the Upper Appomattox Canal Trail. The existing rail bridge has daily freight and passenger rail traffic that can be heard and seen from the trail; therefore, the new bridge and SEHSR activity should not alter the character, setting, or use of the trail. The Project would not negatively impact this resource.

4.13.3.4 *TOBACCO HERITAGE TRAIL (VA)*

The Tobacco Heritage Trail is a partially constructed rails-to-trails corridor that will connect Southern Virginia counties via over 160 miles of abandoned railroad ROW, 110 miles of on-road trail, new trail, and active rail ROW. Within the Study Area, the Tobacco Heritage Trail intersects the Study Area in Alberta, VA, and La Crosse, VA (Appendix R, map sheets 66 and 83). In La Crosse, VA, the Tobacco Heritage Trail makes use of the old Norfolk Southern rail line that intersects the Project corridor in the downtown area; a location intended to provide a central access point for residents and tourists. The East Coast Greenway (discussed below) plans to use 55 miles of the Tobacco Heritage Trail, including the section that connects Alberta, VA, to La Crosse, VA,. Completed sections of the Tobacco Heritage Trail include an unimproved, 4-mile section of trail along the abandoned rail line from Brodnax, VA, to La Crosse, VA. The Master Plan for the Tobacco Heritage Trail states that:

"The Southeast High Speed Rail line is slated to run through La Crosse, VA, on the former north-south rail alignment at some point in the future. Trail crossings and pedestrian links to a potential rail station should be anticipated. In addition, the East Coast Greenway plans to use this portion of the Tobacco Heritage Trail to complete their Maine-to-Florida trail. The greatest cost factors for trail improvements within Region 1 are the replacement cost for the missing bridges and constructing an I-85 crossing. Additional costs may include improving trail crossings over the high speed rail line and constructing extra trail footage to link the trail with potential high speed rail stations." (p. 34)

Within Alberta, VA, the Tobacco Heritage Trail follows the abandoned Norfolk Southern line and crosses the Project corridor and the inactive CSX S-Line in the vicinity of Second Avenue. The VA1, VA2, and VA3 Project alternatives are on common alignment through this area. To maintain continuity of the existing trail and to provide a safe crossing by Tobacco Heritage Trail users, the Project will provide a pedestrian/non-motorized overpass of the proposed rail alignment. In addition, the realignment of Second Avenue, which is necessary to provide a vehicle bridge over the proposed rail alignment, will require a small amount of ROW from the trail.

Within La Crosse, VA, the trail follows the abandoned Norfolk Southern line and crosses the Study Area in the vicinity of Central Avenue. Alternative VA1 is the Preferred Alternative in Section E and Section I. VA1, VA2, and VA3 are on common alignment through this area. The proposed Project will re-route the Tobacco Heritage Trail north along Main Street approximately 300 feet, where it will then cross under the proposed rail alignment and rejoin the existing rails-to-trails corridor.

The Project Team worked with representatives from Alberta, VA, La Crosse, VA, and the Roanoke River Rails-to-Trails, Inc. (RRRT) in the development of Project designs to ensure that the Project will not impede the development or planned use of the trail. The Project will not negatively impact this recreation resource.

4.13.3.5 *NEUSE RIVER GREENWAY (NC) (RALEIGH, NC)*

Alternative NC1 is the Preferred Alternative in Section U. All three of the Project alternatives (NC1, NC2, and NC3) would cross over the Neuse River Greenway. No ROW from the greenway would be required. The existing rail line in this area has daily freight traffic that can be heard and seen from the greenway. The addition of SEHSR should not alter the character, setting, or use of the greenway. In addition, the SEHSR bridge at this location would have a covered deck, which would meet the requirements from the City requesting a protected cover to protect patrons from falling debris. Therefore, the Project would not negatively impact the resource.

4.13.3.6 *SIMMS BRANCH GREENWAY (PROPOSED) (RALEIGH, NC)*

Alternative NC1 is the Preferred Alternative in Section U. All three of the proposed Project alternatives (NC1, NC2, and NC3) would cross the proposed location of the Simms Branch Greenway within the existing, active railroad corridor. The City of Raleigh, NC, does not currently have an agreement with CSX to cross the active railroad corridor in this area. Therefore, the proposed changes associated with the Project would not create a barrier to the development of the Simms Branch Greenway (because that barrier already exists). The City could route the greenway south to Gresham Lake Road or north to Durant Road to cross the rail corridor. Gresham Lake Road and Durant Road would both be grade-separated (road over rail) with the Project, and the bridges would accommodate bikes and pedestrians. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the proposed location of the greenway. The addition of the SEHSR track should not alter the character, setting, or use of the trail. Therefore, the Project would not negatively impact the resource.

4.13.3.7 *MARSH CREEK GREENWAY (PROPOSED) (RALEIGH, NC)*

Alternative NC5 is the Preferred Alternative in Section V. All four of the proposed Project alternatives (NC1, NC2, NC3, and NC5) would cross the proposed location of the Marsh Creek Greenway within the existing, active railroad corridor. The City of Raleigh, NC, has not yet obtained a legal crossing of the corridor at this location. Therefore, the proposed changes associated with the Project would not create a barrier to the development of the Marsh Creek Greenway (because that barrier already exists). The City could route the greenway south to Millbrook Road to cross the rail corridor. Millbrook Road would be grade-separated (road under rail) with the Project, and the underpass would accommodate bikes and pedestrians. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the proposed location of the greenway. The addition of the SEHSR track should not alter the character, setting, or use of the trail. Therefore, the Project would not negatively impact on the resource.

4.13.3.8 *MIDDLE CRABTREE CREEK GREENWAY (RALEIGH, NC)*

Alternative NC5 is the Preferred Alternative in Section V. Middle Crabtree Creek Greenway is part of the City of Raleigh, NC, Capital Area Greenway system. Near Hodges Street, the greenway parallels the north bank of Crabtree Creek, and passes under the existing single-track railroad bridge. All four of the proposed Project alternatives (NC1, NC2, NC3, and NC5) are on common alignment in this location, and would construct a new bridge adjacent to the existing single-track bridge. The new bridge would cross both the greenway and the creek. The existing rail bridge has daily freight rail traffic that can be heard from the trail; therefore, the new bridge will not negatively impact the trail.

4.13.3.9 *EAST COAST GREENWAY (VA & NC)*

The East Coast Greenway (ECG) has identified possible trail routes for the corridor between Richmond, VA, and Raleigh, NC (East Coast Greenway website, 2013). The Project is coordinating with ECG so that the proposed rail and roadway improvements do not impede the development of the ECG. At locations where the SEHSR and/or the associated roadway improvements and grade-separations impact the interim ECG on-road routing, it will be necessary to update the routes to ensure the safety of ECG users. Possible impacts to ECG users include temporary delays and reroutes due to construction activities.

4.13.3.10 *MULTIUSE GREENWAY CONCEPT (VA & NC)*

The concept of a greenway located parallel to the Project corridor from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC) was introduced in the Richmond to Raleigh Project Tier II DEIS. The rationale for its inclusion was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Project, the process of developing the environmental documentation for the greenway has changed since publication of the Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than being included in the Richmond to Raleigh Project Tier II FEIS, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time, rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within this Tier II FEIS, but rather in a separate Greenway Corridor Plan. This Corridor Plan is currently under development, with completion anticipated at the time of the ROD for Project. The SEHSR Corridor website www.sehsr.org will provide additional details on this separate plan and opportunities for its public review and comment.

The location recommended by DRPT and NCDOT for the greenway will be based on the Preferred Alternative for the Project. Therefore, the Project will not have a negative impact on the greenway.

4.14 TRANSPORTATION

When built, the Project will become part of the larger transportation network that includes roads, transit, aviation, and other rail. This section provides an assessment of potential impacts from the Project to that transportation network. The Richmond to Raleigh Project is designed to be completely grade separated by bridges or underpasses, yet maintain connectivity across the railroad. Impacts to connectivity across the railroad are evaluated below in Section 4.14.2, while impacts to traffic conditions in the communities throughout the corridor are evaluated in Section 4.14.3. (Note that the impacts from proposed changes to roadwork on the human environment were discussed previously in Section 4.11.) The impacts to existing freight and passenger rail operations are also evaluated, followed by a general discussion about impacts related to potential station locations, local public transit, and aviation facilities.

4.14.1 **ROADS**

The existing road network within the Study Area was described in Section 3.14. Major roads crossing the existing rail ROW with Annual Average Daily Traffic (AADT) counts greater than 1,000 vehicles per day were highlighted. Because the SEHSR is designed to be completely grade separated through bridges or underpasses, it is important to assess the impact from the Preferred Alternative on connectivity, i.e., the ability to move across the corridor. Potential impacts to the major east-west travel corridors throughout the Study Area are discussed below. In addition to the discussion regarding these major corridors, designs for all crossings and associated roadwork are included in Appendix F. Maps displaying the proposed roadwork are included in Appendix R.

4.14.1.1 *CITY OF RICHMOND, VA*

Section AA of the Project is located within the City of Richmond, VA; the Preferred Alternative for Section AA is Alternative VA1.

The most heavily traveled roads carrying east-west traffic across the railroad in Richmond, VA, have existing bridges or underpasses over or under the rail corridor. The Preferred Alternative utilizes these existing structures. In addition, the Preferred Alternative provides grade separated crossings at:

- Maury Street
- East Commerce Road
- West Bells Road
- Ruffin Road.

All the major public road facilities in the City of Richmond, VA, identified in Section 3.14 will be grade separated; therefore, the Preferred Alternative will not significantly impact east-west connectivity within the City of Richmond, VA.

4.14.1.2 *CHESTERFIELD COUNTY, VA*

A portion of Project Section AA, as well as Section BB, and a portion of Section CC are located within Chesterfield County, VA; the Preferred Alternative in each of these sections is Alternative VA1.

Within Chesterfield County the major east/west corridors are Chippenham Parkway, Highway 288, and West Hundred Road; all three roads cross the railroad on existing bridges. The Preferred Alternative utilizes the existing bridges and also provides grade separated crossings at:

- Station Road
- Kingsland Road
- Centralia Road
- Woods Edge Road
- Pine Forest Drive
- Branders Bridge Road
- Dupuy Road
- Curtis Street

Therefore, the Preferred Alternative will not significantly impact east-west connectivity in Chesterfield County.

4.14.1.3 *CITY OF COLONIAL HEIGHTS, VA*

A small portion of Project Section CC is located within the City of Colonial Heights, VA; the Preferred Alternative in Section CC is Alternative VA1.

The Preferred Alternative maintains grade-separated crossings at the two roads that cross the railroad in Colonial Heights, VA; therefore, the Preferred Alternative will not impact east-west connectivity.

4.14.1.4 *CITY OF PETERSBURG, VA*

A portion of Section CC is located within the City of Petersburg, VA; the Preferred Alternative in Section CC is Alternative VA1.

The greatest east/west traffic volume in Petersburg, VA, is carried by Boydton Plank Road, which feeds into Washington Street. I-85 provides some east/west connectivity across the railroad in addition to serving as a north/south traffic corridor. The Preferred Alternative maintains the grade-separated crossings at each of the major public road facilities that cross the Preferred Alternative:

- Washington Street
- Farmer Street
- Halifax Street
- I-85
- Defense Road
- Halifax Road.

All the major public road facilities in the City of Petersburg, VA, that cross the Preferred Alternative will be grade separated; therefore, the Preferred Alternative will not significantly impact east-west connectivity in this area.

4.14.1.5 *DINWIDDIE COUNTY, VA*

The Preferred Alternative within Dinwiddie County, VA, varies by Project section. In Section DD, the Preferred Alternative is Alternative VA3; in Section A, the Preferred Alternative is Alternative VA2; and in Sections B and C, the Preferred Alternative is Alternative VA1.

The largest volume of north/south traffic in Dinwiddie County, VA, is carried by I-85 and US-1/Boydton Plank Road; both roads cross the CSX S-Line ROW on existing bridges. The Preferred Alternative maintains grade separated crossings at these locations and retains the existing bridge at Courthouse Road in the community of Dinwiddie, VA. VA 703/Carson Road carries the greatest east/west traffic volume across the Study Area in the northern part of the county, while VA 40/Doyle Boulevard, which passes through the Town of McKenney, VA, serves as the major east/west corridor in southern Dinwiddie County, VA. The Preferred Alternative provides new grade separated crossings for these two roads.

All the major public road facilities in Dinwiddie County, VA, that cross the Preferred Alternative will be grade separated; therefore, the Preferred Alternative will not significantly impact east-west connectivity within Dinwiddie County, VA.

4.14.1.6 *BRUNSWICK COUNTY, VA*

The Preferred Alternative within Brunswick County, VA, varies by Project section. In Section D, the Preferred Alternative is Alternative VA4; in Sections E, F, and H, the Preferred Alternative is Alternative VA1; and in Section G, the preferred Alternative is Alternative VA3.

Within Brunswick County, VA, the largest volume of north/south traffic is carried by I-85 and US-1/Boydton Plank Road; both roads closely parallel as well as cross the CSX S-Line ROW and the Study Area. In the Town of Alberta, VA, Main Street runs north/south and carries the largest volume of traffic through the town; however, Second Avenue provides the east-west connectivity. The Preferred Alternative provides a realignment of Second Avenue and a new bridge over the railroad, thereby maintaining the cross-town connection. Throughout the remainder of Brunswick County, VA, grade separated crossings for all major public road facilities that cross the Preferred Alternative are maintained; therefore, the Preferred Alternative will not significantly impact connectivity.

4.14.1.7 MECKLENBURG COUNTY, VA

The Preferred Alternative within Mecklenburg County, VA, varies by Project section. In Sections H, I, K and L, the Preferred Alternative is Alternative VA1; in Section, J the Preferred Alternative is Alternative VA2.

US 58 carries the largest east/west traffic load through the county, crossing the Study Area in La Crosse, VA, on a bridge that is retained by the Preferred Alternative. Main Street in La Crosse, VA, carries the bulk of local traffic across the railroad on an existing at-grade crossing. The Preferred Alternative closes the existing Main Street crossing, but provides a new grade separated crossing approximately 600 feet south to replace the function currently served by Main Street and provide the same level of connectivity across the railroad. The Preferred Alternative provides a grade separated crossing of the railroad for the major east-west travel corridors in Mecklenburg County, therefore, the Preferred Alternative will not significantly impact connectivity.

4.14.1.8 WARREN COUNTY, NC

A portion of Project Section L, as well as Sections M and N, are located within Warren County, NC. The Preferred Alternative in each of these sections is Alternative NC1.

US-158 serves as the primary east/west connector in Warren County, NC, and crosses the CSX S-Line by way of an underpass in Norlina, NC, where the CSX S-Line becomes an active freight railroad. The Preferred Alternative maintains a grade-separated crossing at US-158 through an expansion of the existing underpass. In addition, five new bridged crossings are proposed throughout the rest of the county; therefore, the Preferred Alternative will not significantly impact connectivity.

4.14.1.9 VANCE COUNTY, NC

The Preferred Alternative within Vance County, NC, varies by Project section. In Section O, the Preferred Alternative is Alternative NC3; in Sections P and Q, the Preferred Alternative is Alternative NC1.

US1 Bypass crosses the active CSX S-Line on a bridge north of Henderson, NC. US-158 provides east/west access through the Henderson, NC, area, but does not cross the railroad, while Andrews Avenue/NC 39 provides a connection from US-1 to the east. There are many public roads that cross the active CSX S-Line at grade as it moves through the central areas of Middleburg, NC, Henderson, NC, and Kittrell, NC.

In Middleburg, NC, at the north end of the county, there is no major road that provides continuous connectivity across the proposed rail corridor. However, Carol Street/Allison Cooper Road (SR 1151) provides a connection from US-1 to the east. Because the Preferred Alternative provides a grade separated crossing at Carol Street, connectivity in this area will not be significantly impacted.

In the Henderson, NC, area the Preferred Alternative includes several revisions to the DEIS road designs. The revisions were made in response to comments from the City of Henderson, and several of the changes were made to improve both east-west and north-south connectivity; refer to Section 2.2.22.4 for more information. The Preferred Alternative retains the existing US-1 Bypass bridge over the railroad north of the city. In addition, Andrews Avenue/NC 39, which provides a connection from US-1 to the east, and currently crosses the railroad at-grade, is designed to be grade separated under the Preferred Alternative. A new roundabout west of the railroad provides east-west connectivity via Main Street and N. Beckford Drive, and north-south connectivity via N. Chestnut Street and N. Garnett Street. The Preferred Alternative maintains the existing underpass at Charles Street. The designs for a new bridge over the railroad at Alexander Avenue were revised for the FEIS to allow Nicholas Street to connect on the east side of the railroad, thereby retaining existing north-south connectivity. Just south of town, the Preferred Alternative provides bridges over the railroad for JP Taylor Road and Bear Pond Road, and retains the US-1 Bypass bridges over the railroad. Because the Preferred Alternative provides grade separated crossings for the major east-west travel corridors in Henderson, NC, the Project is not expected to significantly impact connectivity in this area.

There is no continuous roadway that provides for east-west travel through the town of Kittrell, NC. Main Street, however, does provide a connection to the east, with Kittrell College Road (SR 1105) connecting to the west. Main Street will be closed under the Preferred Alternative, with traffic relocated to a new bridged crossing approximately 650 feet south. While this would have some effect on traffic flow, it accommodates the traffic volume and provides approximately the same level of connectivity as currently exists.

4.14.1.10 *FRANKLIN COUNTY, NC*

Sections R, S and T of the Project are located within Franklin County, NC; the Preferred Alternative in these sections is Alternative NC1.

Highway NC 56 provides the main east/west connection through the county, crossing the railroad in Franklinton, NC, by way of an underpass. The Preferred Alternative maintains a grade-separated crossing at NC 56 (Green Street) through an expansion of the existing underpass.

Bert Winston Road crosses the railroad at grade in a location midway between Franklinton, NC, and Youngsville, NC. Under the Preferred Alternative, the road would be grade-separated through construction of a bridge, maintaining connectivity across the railroad in this part of the county. Highway NC 96 also provides east/west connectivity through the county, and currently crosses the railroad with an at-grade crossing in Youngsville, NC. The Preferred Alternative provides an extension/realignment of NC 96; crossing the railroad on a bridge north of town, then connecting with an extension of Cross Street on the east side of town. This design will enhance the connectivity for east/west through traffic. The east/west connectivity for local traffic will be maintained by the provision of a bridge over the railroad at Main Street.

4.14.1.11 *WAKE COUNTY, NC*

The Preferred Alternative within Wake County, NC, varies by Project section. In Section U, the Preferred Alternative is Alternative NC1; in Section V, the Preferred Alternative is Alternative NC5.

A network of roads provides east/west access across the railroad in Wake County. As listed in Section 3.14, there are 30 major public road facilities in Wake County that cross the Preferred Alternative. Some of these major road facilities cross the railroad on existing bridges or underpasses, some cross at grade. The Preferred Alternative maintains connectivity by utilizing existing or constructing new bridges or underpasses for all but two of the major public road facilities in Wake County. Therefore, the Preferred Alternative will not significantly impact connectivity.

4.14.2 TRAFFIC CONDITIONS

Detailed traffic analyses were performed at locations throughout the Project corridor to determine the effects of rail crossing closures and consolidations on local traffic conditions. Section 3.14 identified these locations and outlined the existing traffic conditions for each location. For select intersections anticipated to experience an increase in traffic volume due to changes associated with the Project, Synchro (for signalized and unsignalized intersections) and HCS (for unsignalized intersections) were used to determine the change in level of service (LOS) and delay. Also, several intersections were analyzed to determine the expected queue for a particular movement (e.g., turning, through) to determine if "spillback" (queuing from one intersection affecting traffic flow through an adjacent intersection) would affect nearby intersections.

It should be noted that the purpose of these analyses was to help ensure that traffic operations with the Project were comparable to operations without the Project. While additional enhancements would be preferable in certain locations, improvements presented here are to provide similar or improved level of service and delay (as constraints allow) with the Project, not to mitigate all traffic operational issues in the Study Area. The removal of all at-grade rail crossings within the Study Area would improve traffic safely along the corridor considerably. The analysis is described in greater detail in the SEHSR Traffic Review (Hatch Mott MacDonald, 2014), which is available on CD from NCDOT by request.

Appendix P includes figures displaying future traffic configurations (e.g., crossing closures, new bridges/underpasses, new/extended turn lanes) and predicted 2030 traffic volumes with and without the Project.

4.14.2.1 *OVERVIEW*

The following sections describe the effects on traffic from the proposed Project at each of the evaluated locations. The anticipated LOS for the Project alternatives in the year 2030 is compared to the LOS in the same location were the Project not constructed (i.e., a No Build scenario) for both the morning (AM) and evening (PM) peak traffic conditions. The LOS system stratifies travelers' perceptions of the quality of service provided by the transportation facilities on a scale from A to F with A representing the best level of service. Level of service is not reported where a movement does not experience delay, such as a through movement with no stop condition or a free flowing right turn. In addition, LOS is not reported for future No Build conditions at intersections that would not exist without the Project (e.g., completely new roadway alignments).

It should be noted that the Build and No Build conditions might have movements or approaches that have the same LOS rating at a given intersection, but still result in varying travel delay times per vehicle. In other words, even if an intersection, approach, or movement has the same level of service in the No Build or Build conditions, more than likely one will experience more travel time delay than the other will. For details on the estimated delay at evaluated intersections, refer to the SEHSR Traffic Review (Hatch Mott MacDonald, 2014).

Of the intersections evaluated for potential traffic impacts, the following have the greatest predicted change in 2030 LOS with and without the Project, or are notable for other traffic-related changes due to the Project:

Virginia

Improvements

- **Chester Road and Perrymont Road** (unsignalized), Chesterfield County – In the No Build conditions the eastbound approach is anticipated to operate at LOS F in the AM and PM peak periods. In the Build conditions the delay improves by 78.5 seconds per vehicle and 72 seconds per vehicle in the AM and PM peaks respectively and the LOS improves to LOS E in the PM peak period (see Section 4.14.2.2.1).
- **Chester Road and Park Road** (unsignalized No Build / signalized Build), Chesterfield County – As a signalized intersection, the level of service experiences noticeable improvement on the side streets (southeast bound and northwest bound approaches), improving from LOS F to LOS E (see Section 4.14.2.2.1)

- **Centralia Road and Chester Road** (signalized), Chesterfield County – With the conversion of this intersection to two three-leg intersections, the approach movement levels of service improve from three operating at LOS F and two at LOS E (AM and PM combined) in the No Build conditions to one operating at LOS E in the Build conditions (see Section 4.14.2.3.1).

Degradation

- **Old Lane and Chester Road** (signalized No Build / unsignalized Build), Chesterfield County – While the level of service and or/delay does degrade considerably for Old Lane in the Build conditions, it should be noted that the volumes are noticeably lighter than in the No Build conditions and based on modelling the maximum queue length would be approximately 50 feet (see Section 4.14.2.3.1).

North Carolina

Improvements

- **Chestnut Street and Andrews Avenue** (signalized), Henderson, NC – With the Project, multiple movements improve from LOS E and F between the No Build and Build conditions (see Section 4.14.2.7.2).
- **Garnett Street and Andrews Avenue** (signalized), Henderson, NC – In the No Build conditions, this intersection has one approach operating at LOS E in AM Peak and two approaches operating at LOS F in the PM Peak. The Project will remove this intersection. Modelling results indicate that the analyzed intersections will operate similarly between the No Build and Build conditions (see Section 4.14.2.7.2).
- **Williams Street and Andrews Avenue** (unsignalized), Henderson, NC – In the No Build conditions, this intersection has one approach operating at LOS F in AM Peak and one approach operating at LOS E and one at LOS F in the PM Peak. The Project will remove this intersection. Modelling results indicate that the analyzed intersections will operate similarly between the No Build and Build conditions (see Section 4.14.2.7.2).
- **US-1 Business and Welcome Avenue/Belmont Avenue** (signalized), Henderson, NC – In the No Build conditions, all intersection approaches except for the northbound approach operate at LOS F in both the AM and PM peaks. The westbound leg is removed as part of the Project which results in no movement operating below LOS C. Modelling results indicate that the intersections in the surrounding network impacted by the work at this intersection will operate al LOS C or better (see Section 4.14.2.7.4).
- **US-1 Business and JP Taylor Road** (signalized), Henderson, NC – In the No Build conditions, this intersection has an approach operating at LOS F in the AM Peak and LOS E in the PM peak. This intersection is removed as part of the Project. Modelling results indicate that the replacement intersection of JP Taylor Road Extension and Belmont Drive will not have any movements operating worse than LOS C (see Section 4.14.2.7.4).
- **US-1 Business and Bear Pond Road** (signalized), Henderson, NC – In the No Build conditions, this intersection has several approaches operating at LOS E or LOS F. This intersection is removed as part of the Project. Based on modelling results, the replacement intersections of US-1 Business and New Connector south of Bear Pond Road and Bear Pond Road and New Connector west of US-1 Business would not have any movements operating worse than LOS C (see Section 4.14.2.7.5).

- **US-1 Business and Peter Gill Road** (signalized No Build / unsignalized Build), Henderson, NC – In the No Build conditions, this intersection has several approaches operating at LOS E or LOS F. This eastern leg of this intersection is removed as part of the Project. The remaining movements are expected to operate at LOS C or better in the Build conditions. Also, the proposed intersection of US-1 Business and Wildlife Lane, which would serve traffic from both the intersections of Peter Gill Road and Eastern Minerals Road with US-1 Business, is expected to operate at LOS D or better with no approach operating below LOS D (see Section 4.14.2.7.5).
- **Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue** (signalized), Raleigh, NC – this intersection has several approaches operate at LOS F in the No Build conditions. In the PM peak, the overall operations are anticipated to operate at LOS F in the No Build conditions. With the provision of a grade separation in the Build conditions, no approach is expected to operate worse than LOS C. However, the replacement intersection of Wolfpack Lane and Beechleaf Court is expected to have an approach operate at LOS E in the PM peak, and rerouted traffic will result in one approach of the Highwoods Boulevard and Beechleaf Court intersection to degrade to LOS F (see Section 4.14.2.10.1).

Degradation

- **Alexander Avenue and Nicholas Street** (unsignalized), Henderson, NC – With the Project, three movements degrade to LOS E or LOS F. If the City of Henderson determines that a signal is warranted and it is installed by the design year, all movements are anticipated to operate at LOS D or better. A simulation of the intersection did not indicate considerable queuing under two-way stop control with a maximum queue of 221 feet eastbound and 75 feet westbound. The appropriate intersection control will be investigated near the time of construction and be based on volume, geometric conditions, and constraints among other factors (see Section 4.14.2.7.3).
- **Montgomery Street and Garnett Street** (signalized No Build / unsignalized Build), Henderson, NC – With the Project, this intersection is essentially converted to a "T" intersection and was analyzed under stop control. In this instance, the eastbound approaches drop in level of service from LOS B to LOS E in the PM peak. It should be noted that operating unsignalized allows Garnett Street to operate with considerably less delay than in the No Build conditions. Also, the anticipated queue is only expected to be approximately 100 feet and, if it warrants signalization by 2030, the intersection is anticipated to operate as well as if not better than No Build conditions (see Section 4.14.2.7.2).
- **Highwoods Boulevard and Beechleaf Court** (signalized), Raleigh, NC – With the rerouted traffic associated with the Project, the southwest bound approach is expected to degrade from LOS D to LOS F with 146.8 seconds per vehicle increase in delay in PM peak period. Given the southwest bound leg serves a parking lot with alternative access, no improvements were provided to this leg as part of the Project (see Section 4.14.2.10.1).

As evidenced by the bullets above, only a few of the numerous locations analyzed vary considerably between the No Build and Build conditions with most resulting in improvements in the Build conditions. This is because effort was taken to provide a concept that would allow traffic to operate at similarly or at better levels of service than it would without the Project. When traffic operations degraded in comparison to conditions under the No Build, it generally was the result of either the fact that low traffic volumes were affected or there were human or environmental constraints in the intersection area.

It should be noted that the above bullets are based on level of service and when operations reach capacity, other measures such as delay or simulations can provide a better comparison of operations. However, a majority of the intersections along the Project corridor that are affected by the Project are not expected to operate at or above capacity.

4.14.2.2 CHESTERFIELD COUNTY, VA

4.14.2.2.1 KINGSLAND ROAD/NORCLIFF ROAD AND PERRYMONT ROAD - BELLWOOD AREA

The Preferred Alternative in this area is the common alignment of the VA1, VA2, and VA3 Project alternatives. Refer to map sheet 8 in Appendix R for a map of the proposed designs in this location. To facilitate east-west traffic movements in this area, which are affected by the proposed closure of the Kingsland Road at-grade rail crossing near Chester Road, a realignment of Kingsland Road, including a new grade separated crossing over the proposed Project railroad alignment and Chester Road, is proposed. This facility will connect Kingsland Road from its intersection with Dorsey Road to Perrymont Road, replacing the church driveway as the western leg of the intersection of Perrymont Road and Norcliff Road. Traffic utilizing the existing at-grade rail crossing of Kingsland Road located just west of Chester Road would utilize the new alignment and associated grade separated crossing in the proposed design. Some of that traffic is anticipated to use the intersection of Norcliff Road and US-1 to perform their desired maneuvers. The anticipated operations for Chester Road and Perrymont Road, Norcliff Road and Perrymont Road, Norcliff Road and US-1, and Kingsland Road and Dorsey Road intersections are provided below.

<u>Chester Road/Bellwood Road and US-1</u>: The traffic volumes for this intersection are similar between the No Build and Proposed conditions; therefore, no modifications are proposed as part of the Project. Appendix P Figures 3 and 4 provide the 2030 proposed laneage and peak hour traffic volumes for the Chester Road/Bellwood Road and US-1 intersection. Table 4-50 provides the intersection approach level of service for the Chester Road/Bellwood Road and US-1intersection in the 2030 No Build and proposed conditions. As shown in Table 4-50, each approach maintains the same or improves the level of service in the proposed conditions. The overall intersection level of service improves one letter grade for both the AM and PM peak periods with the proposed conditions.

Table 4-50
Chester Road/Bellwood Road and US-1 – Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	F	F	F	D
No Build (PM)	E	E	C	C
Proposed (AM)	F	F	E	D
Proposed (PM)	E	E	C	C

Source: Hatch Mott MacDonald, 2014.

<u>Perrymont Road and Chester Road/Driveway</u>: At this intersection, aside from increasing the radius of the southbound right-turn, the proposed laneage is identical to the existing laneage. Appendix P Figures 3 and 4 provide the 2030 proposed laneage and peak hour traffic volumes for the Chester Road and Perrymont Road intersection, respectively. Table 4-51 provides the intersection approach level of service for the Chester Road and Perrymont Road intersection in the 2030 No Build and proposed conditions. With the provision of the Kingsland Road extension, the volumes at this intersection decrease. As expected, and shown in Table 4-51, the

operations are very similar for most movements in the proposed and No Build conditions; however, the eastbound movement is noticeably improved in the 2030 proposed conditions.

Table 4-51
Chester Road and Perrymont Road/Driveway – Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	F	B	A	A
No Build (PM)	F	B	A	A
Proposed (AM)	F	B	A	A
Proposed (PM)	E	B	A	A

Source: Hatch Mott MacDonald, 2014.

<u>Kingsland Road and Chester Road</u>: The Chester Road and Kingsland Road intersection is removed as part of the Project; therefore, no analysis was performed for the 2030 proposed conditions. Traffic from this intersection will be rerouted to the extension of Kingsland Road to Norcliff Road.

<u>Norcliff Road and Perrymont Road/Church Parking Lot</u>: With the proposed Kingsland Road realignment, the existing church parking lot on the west side of the Perrymont Road and Norcliff Road intersection is replaced by the realigned Kingsland Road. The only proposed change in laneage is to restripe the westbound approach to provide a westbound left-turn lane. Appendix P Figures 3 and 4 provide the 2030 proposed laneage and peak hour traffic volumes for the Norcliff Road and Perrymont Road intersection, respectively. Table 4-52 provides the level of service for the 2030 No-Build and proposed scenarios. As shown in Table 4-52, even with the additional traffic associated with the Kingsland Road extension, the No Build and proposed scenarios operate similarly. Also, all movements are anticipated to operate at LOS B or better in the design year with the proposed design.

Table 4-52 Norcliff Road and Perrymont Road/Church Parking Lot – Level of Service in 2030				
	Eastbound	**Westbound**	**Northbound**	**Southbound**
No Build (AM)	A	A	A	A
No Build (PM)	B	B	A	A
Proposed (AM)	B	B	A	A
Proposed (PM)	C	B	A	A

Source: Hatch Mott MacDonald, 2014.

Norcliff Road and US-1: With the connection of the realignment of Kingsland Road to the existing driveway on the west side of the Perrymont Road and Norcliff Road intersection, turning movements from/to the western leg of the Norcliff Road and US-1 intersection are anticipated to increase. The only proposed laneage modification for the Norcliff Road and US-1 intersection is to restripe the eastbound approach to provide an exclusive eastbound left-turn lane. Appendix P Figures 3 and 4 provide the 2030 proposed laneage and peak hour traffic volumes for the Norcliff Road and US-1 intersection, respectively. This intersection was analyzed as a four-leg intersection operating under stop control with Norcliff Road experiencing the stop condition. Table 4-53 provides the level of service for the Norcliff Road and US-1 intersection in the future No- Build and proposed conditions. As shown in Table 4-53, even with the eastbound left-turn lane, operation of the eastbound approach degrades in the 2030 proposed scenario, while the remaining approaches operate similarly in the proposed scenario as compared to the No Build. It should be noted that providing an exclusive left-turn lane removes the effect the through and right-turn movements have on the operations, which would improve the overall reported operations, but worsen the through and right-turn movement reported operations. Based on a request from Chesterfield County, this intersection was analyzed under signal control. While the need for a signal will be determined at/near the time of construction, under signal control, this intersection is expected to operate at LOS C or better in the design year.

Table 4-53 Norcliff Road and US-1 – Level of Service in 2030				
	Eastbound	**Westbound**	**Northbound**	**Southbound**
No Build (AM)	E	F	A	A
No Build (PM)	F	F	A	A
Proposed (AM)	F	F	A	A
Proposed (PM)	F	F	A	A

Source: Hatch Mott MacDonald, 2014.

Kingsland Road and Dorsey Road: The Project proposes to extend Kingsland Road from Dorsey Road to Norcliff Road and remove the at-grade rail crossing of Kingsland Road. These modifications will considerably alter traffic flow at the Kingsland Road and Dorsey Road intersection. The Kingsland Road and Dorsey Road intersection will be converted from a three-leg intersection to a four-leg intersection and the predominant traffic flow is anticipated to be east-west instead of north-south. During final design, the Project Team will coordinate with VDOT and Chesterfield County to consider making the intersection northbound and southbound approaches stop controlled, and the eastbound and westbound approaches free flowing movements. The intersection was analyzed with that configuration for the 2030 proposed conditions.

Appendix P Figures 3 and 4 provide the 2030 proposed laneage and peak hour traffic volumes for the Kingsland Road and Dorsey Road intersection, respectively. Table 4-54 provides the level of service for the Kingsland Road and Dorsey Road intersection in the 2030 No Build and proposed conditions. As shown in Table 4-54, this intersection is anticipated to have all movements operate at LOS B or better in both the 2030 No Build and proposed conditions.

Table 4-54
Kingsland Road and Dorsey Road – Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	A	--	A	--
No Build (PM)	B	--	A	--
Proposed (AM)	A	A	B	A
Proposed (PM)	A	A	B	B

Source: Hatch Mott MacDonald, 2014.

4.14.2.2.1 CHESTER ROAD AND BRINKLEY ROAD - BELLWOOD AREA

The Preferred Alternative in this area is the common alignment of the VA1, VA2, and VA3 Project alternatives. Refer to map sheet 9 in Appendix R for a map of the proposed designs in this location. Under the proposed design conditions, the existing at-grade rail crossing of Brinkley Road located just west of Chester Road will be closed. To service the Brinkley Road traffic and other local area traffic currently using that at-grade rail crossing, a new grade separated crossing including a new connection from Thurston Road to Park Road is proposed as part of the Project. The traffic currently using the Brinkley Road crossing will be able to utilize the new grade separated crossing and access Chester Road as the west leg of the intersection of Chester Road and Park Road. Traffic can also use the connection to bypass part of Hopkins Road or Chester Road depending on their origin and destination. The intersections in this area were analyzed to determine the impacts of this option.

Chester Road and Brinkley Road: With the proposed Project, the existing at-grade rail crossing adjacent to the Brinkley Road and Chester Road intersection will be closed. This will remove the current access of Brinkley Road to Chester Road. This traffic will reroute to other surrounding intersections.

Hopkins Road and Thurston Road: With the proposed Project, which includes the at-grade crossing closure at Old Lane Road, additional traffic will be rerouted to the intersection of Hopkins Road and Thurston Road. Traffic will be rerouted to use the new connector to access Chester Road. Some traffic currently using the Brinkley Road at-grade rail crossing may also reroute to this intersection. No laneage modifications were proposed to the Hopkins Road and Thurston Road intersection. Appendix P Figures 7 and 8 provide the 2030 proposed laneage and traffic volumes for the Hopkins Road and Thurston Road intersection, respectively. Table 4-55 below provides the level of service for the Hopkins Road and Thurston Road intersection 2030 No Build and proposed conditions. As shown in Table 4-55, all movements for the Hopkins Road and Thurston Road intersection are anticipated to operate at LOS C or better in 2030 with and without the proposed Project.

Table 4-55
Hopkins Road and Thurston Road - Level of Service in 2030

	Southbound	Northwest bound
No Build (AM)	A	C
No Build (PM)	A	B
Proposed (AM)	A	C
Proposed (PM)	A	C

Source: Hatch Mott MacDonald, 2014.

Kingsdale Road and Chester Road: With the proposed new connection between Thurston Road and Park Road and associated grade separation, the overall traffic at the Kingsdale Road and Chester Road intersection is anticipated to decrease slightly. Even though traffic volumes decreased slightly, an improvement is proposed to the northbound approach to extend the right-turn lane south to the upstream intersection of Chester Road and Park Road/Thurston Road Connection. While this improvement is more closely tied to the Chester Road and Park Road/Thurston Road Connector intersection, it will improve northbound operations on Chester Road. The 2030 proposed laneage and peak hour volumes for the Kingsdale Road and Chester Road intersection are shown by Appendix P Figures 7 and 8, respectively. Table 4-56 provides the level of service for the 2030 No Build and proposed conditions. As shown in Table 4-56, the proposed design provides overall better level of service for the Kingsdale Road and Chester Road intersection in the PM peak period of the 2030 design year and the same level of service and reduced delay in the AM peak period. One approach, westbound, degrades from LOS D to LOS E in the AM peak period but the overall delay improves slightly in the proposed conditions and that same movement improves from LOS F to LOS E in the PM peak period with the proposed design. As previously mentioned, it should be noted that the overall volumes with the proposed design are anticipated to be less at this intersection as compared to the No Build conditions.

Table 4-56
Kingsdale Road and Chester Road – Level of Service in 2030

	Westbound	Northbound	Southbound
No Build (AM)	D	B	A
No Build (PM)	F	B	D
Proposed (AM)	E	A	B
Proposed (PM)	E	A	D

Source: Hatch Mott MacDonald, 2014.

Thurston Road and Thurston Connector: This intersection is created with the proposed Project design, which includes the new connection from Thurston Road to Chester Road. This new connection, which provides a grade separation over the proposed Project railroad alignment, will provide access to/from Chester Road to help mitigate the closure of the Brinkley Road and Old Lane Road at-grade crossings. This intersection was analyzed under stop control. Appendix P Figures 7 and 8 provide the 2030 proposed laneage and peak hour volumes, while Table 4-57 provides the level of service for the 2030 proposed conditions. Based on the level of service analysis, all movements are anticipated to operate at LOS B or better in the 2030 proposed conditions

Table 4-57
Thurston Road and Thurston Connector - Level of Service in 2030

	Westbound	Northbound
No Build (AM)	--	--
No Build (PM)	--	--
Proposed (AM)	A	B
Proposed (PM)	A	B

Source: Hatch Mott MacDonald, 2014.

Park Road/Thurston Connector and Chester Road: The function of this intersection changes with the proposed design, which includes the new connection from Thurston Road to Chester Road. This new connection, which provides a grade separation over the proposed P alignment, will add considerably more traffic to the west leg of this intersection and to the turning movements from Chester Road to the new connector. To help mitigate the effect of the increased volume, turn lane improvements were provided for this intersection. Also, a proposed improvement to the Kingsdale Road and Chester Road intersection is expected to considerably improve operations of this intersection. Appendix P Figures 7 and 8 provide the 2030 proposed laneage and peak hour volumes, while Table 4-58 provides the level of service for the 2030 No Build and proposed conditions. Based on the level of service analysis, the side street approaches for the intersection of Chester Road and Park Road will experience LOS F conditions by 2030 without the proposed Project and LOS E with the Project. The Chester Road approaches are anticipated to operate at LOS D or better with or without the Project.

Table 4-58
Chester Road and Park Road/Thurston Connector- Level of Service in 2030

	Northbound	Southbound	Southeast bound	Northwest bound
No Build (AM)	A	B	D	F
No Build (PM)	B	A	F	F
Proposed (AM)	B	B	D	E
Proposed (PM)	C	D	E	E

Source: Hatch Mott MacDonald, 2014.

It should be noted that the No Build conditions were analyzed as an unsignalized two-way stop controlled intersection with the driveway and Park Road movements operating under stop control while the proposed conditions were analyzed under signal control based on the proposed laneage and estimated 2030 volumes. It should also be noted that while not included in this analysis, there is a northbound lane addition from the VA 288 interchange with Chester Road that results in weaving operations between the interchange and the Park Road and Chester Road intersection. The provision of a signal at this location will extend the northbound queues, and therefore considerably reduce the allowable weaving distance for these maneuvers. Therefore, it is recommended to tie in the existing northwest bound right-turn lane from VA 288 and remove the weave that exists today if the intersection of Chester Road and Park Road/Thurston Connector is signalized. This enhancement may be needed by the design year with or without the Project.

4.14.2.3 *CHESTER, VA*

4.14.2.3.1 OLD LANE, CENTRALIA ROAD AND CHESTER ROAD

The Preferred Alternative in this area is the common alignment of the VA1, VA2, and VA3 Project alternatives. Refer to map sheet 10 in Appendix R for a map of the proposed designs in this location. As a result of the crossing consolidation, Virginia DRPT assumed that traffic currently utilizing the Old Lane and Centralia Road at-grade rail crossings would use the proposed grade separations on the revised Centralia Road connection or the proposed Thurston Road Connector to Park Road. Traffic volumes were estimated for these intersections and analyses performed to determine the effect the proposed Project would have on traffic.

<u>Old Lane and Hopkins Road</u>: Current designs for the Project include removal of the Old Lane at-grade rail crossing , which will decrease the amount of traffic on the eastern leg of the Old Lane and Hopkins Road intersection, but will increase traffic on the western leg and alter the traffic patterns. It is anticipated that this traffic will reroute either to the new grade separated crossing at Centralia Road or at the Thurston Road Connector. Based on anticipated traffic volumes, this intersection was analyzed as a stop condition for the southbound leg only in the 2030 proposed conditions. Appendix P Figures 11 and 12 provide the proposed laneage and associated 2030 peak hour volumes, respectively. Table 4-59 provides the level of service for the 2030 No Build and proposed conditions. As shown in Table 4-59, the intersection of Old Lane and Hopkins

Road is expected to operate similarly in the 2030 No Build and proposed conditions with no movement operating worse than LOS D.

Table 4-59
Old Lane and Hopkins Road - Level of Service in 2030

	Eastbound	Southbound
No Build (AM)	A	B
No Build (PM)	A	D
Proposed (AM)	A	B
Proposed (PM)	A	B

Source: Hatch Mott MacDonald, 2014.

Old Lane and Chester Road: The Old Lane at-grade rail crossing is proposed to be closed as part of the Project, considerably reducing the traffic volume at the intersection of Old Lane and Chester Road. It is anticipated that this traffic will reroute either to the new grade separated crossing at Centralia Road or at the Thurston Road Connector. Based on anticipated traffic volumes, this intersection was analyzed under signal control for the 2030 No Build conditions, but a signal must be deemed to be warranted before it is provided. The intersection was analyzed under stop control for the No Build conditions due to the minor volume on that section of Old Lane. Appendix P Figures 11 and 12 provide the 2030 proposed laneage and peak hour volumes, respectively. Table 4-60 provides the level of service for the 2030 No Build and proposed conditions for the Old Lane and Chester Road intersection. As shown in Table 4-60, while both the eastbound left-turn and right-turn movements are expected to operate at LOS F in the 2030 proposed conditions, it should be noted that these volumes are light (considerably less than the No Build condition) and the maximum queue is anticipated to be approximately 50 feet.

Table 4-60
Old Lane and Chester Road – Level of Service in 2030

	Eastbound	Northbound	Southbound
No Build (AM)	D	A	C
No Build (PM)	F	C	C
Proposed (AM)	F	A	--
Proposed (PM)	F	C	--

Source: Hatch Mott MacDonald, 2014.

Centralia Road and Chester Road: As previously mentioned, the existing at-grade rail crossing of Centralia Road at Chester Road is proposed to be removed as part of the Project. The traffic using this crossing is anticipated to relocate to the new grade separated crossing of Centralia Road and the proposed Project railroad alignment. With the proposed design, the existing Centralia Road and Chester Road intersection will remain, but convert to a “T” intersection as the western leg is removed. The grade separation will relocate the western leg to the eastern side of Chester Road approximately 950 feet south of the existing intersection. Based upon the proposed laneage and anticipated volumes, this intersection was analyzed under signal control for each condition and location. Appendix P Figures 11 and 12 provide the 2030 proposed laneage and peak hour volumes for both intersections of Centralia Road and Chester Road, respectively. Table 4-61 and Table 4-62 provide the level of service for both Centralia Road and Chester Road intersections for the 2030 No Build and proposed conditions.

Table 4-61
Centralia Road and Chester Road - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	E	F	E	C
No Build (PM)	F	F	F	D
Proposed (AM)	--	E	B	B
Proposed (PM)	--	D	B	B

Source: Hatch Mott MacDonald, 2014.

As shown by Table 4-61, while the westbound movement is anticipated to operate at LOS E in the AM peak period, the overall intersection operations are improved over the No Build Conditions due to the removal of the eastbound leg of the intersection and its associated traffic.

Table 4-62
New Connection of Centralia Road and Chester Road - Level of Service in 2030

	Westbound	Northbound	Southbound
No Build (AM)	--	--	--
No Build (PM)	--	--	--
Proposed (AM)	B	D	D
Proposed (PM)	C	C	C

Source: Hatch Mott MacDonald, 2014.

Based on the level of service analysis results shown in Table 4-62, the intersection of the new connection of Centralia Road and Chester Road will operate at an improved level of service over the 2030 No Build operations of the Chester Road and Centralia Road intersection. It is important to note that based on the anticipated design year volumes, Chester Road will warrant multi-lanes by the design year. With only one northbound through lane, the available "green" time for the competing movements is limited and considerable queuing is anticipated in the northbound direction. Chester Road will need to be widened to provide additional lanes in this area by the 2030 design year with or without the Project as indicated in the No Build analysis.

Centralia Road and Hopkins Road: With the closure of the existing Old Lane at-grade crossing and the provision of the Thurston Road Connector proposed as part of the Project, traffic at the intersection of Centralia Road and Hopkins Road will change from the No Build conditions. Turn lane enhancements were provided at this intersection to help mitigate the additional traffic flow due to the Project. Based on the projected volumes in 2030, this intersection was analyzed under signal control for each condition; however, this assumes that a signal study would take place prior to the design year to determine if a signal was warranted. Appendix P Figures 11 and 12 provide the 2030 proposed laneage and peak hour volumes for the intersection of Centralia Road and Hopkins Road, respectively. Table 4-63 provides the level of service for the 2030 No Build and proposed conditions. As shown in Table 4-63, with the SEHSR and proposed intersection improvements and traffic pattern modifications associated with the modifications, the Centralia Road and Hopkins Road intersection is anticipated to improve the level of service in the PM peak period as compared to the No Build conditions.

Table 4-63 Centralia Road and Hopkins Road - Level of Service in 2030				
	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	D	C	D	D
No Build (PM)	E	F	F	F
Proposed (AM)	C	C	D	D
Proposed (PM)	D	F	F	F

Source: Hatch Mott MacDonald, 2014.

4.14.2.4 *LA CROSSE, VA*

4.14.2.4.1 PINE STREET AND MAIN STREET

The Preferred Alternative in this area is the common alignment of the VA1, VA2, and VA3 Project alternatives. Refer to map sheet 83 in Appendix R for a map of the proposed design in this location. The proposed design will disallow east-west travel along Pine Street at the old rail corridor between Main Street and Montgomery Street. The analysis for this section assumed all rerouted traffic would utilize US 58 as the east-west facility. As part of that analysis, traffic was rerouted to the intersections of US 58 and Main Street, Pine Street and Main Street, and Carter Street and Pine Street to evaluate the traffic operations related to the effects of this scenario. Also of note, the current design calls for Carter Street to be extended to the north. This extension is to provide access to a small number of parcels and connect to Northington Road to the north. This extension was assumed to not generate significant traffic volumes at the intersection of Carter Street and US 58.

A roundabout is proposed at the relocated intersection of Main Street, Jones Street, and Meredith Street. This intersection, along with the proposed grade separation over the proposed Project railroad alignment, will serve to replace the connection that is currently provided by Main Street and would be severed under the Project.

<u>US 58 and Main Street/Country Club Road</u>: With the proposed closure of the Pine Street at-grade crossing, east-west traffic on Pine Street is rerouted to US 58 with some of that traffic using Main Street to access US 58. Appendix P Figures 15 and 16 provide the Proposed 2030 laneage and peak hour volumes, respectively. Table 4-64 provides the level of service for the 2030 No Build and proposed conditions. As shown by Table 4-64, in the No Build and proposed conditions, all approaches are anticipated to operate at LOS D or better in the design year with the Project in place. Based on these operations, no modifications were proposed to the intersection geometry as part of the Project.

Table 4-64 US 58 and Main Street/Country Club Road - Level of Service in 2030				
	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	C	C	B
No Build (PM)	B	B	C	C
Proposed (AM)	C	C	C	B
Proposed (PM)	C	B	D	C

Source: Hatch Mott MacDonald, 2014.

<u>Pine Street and Main Street:</u> The proposed Project will sever Pine Street between Main Street and Montgomery Street. East-west traffic along Pine Street will have to reroute to perform their desired maneuver. Some traffic is anticipated to use Main Street to access US 58 and perform an

east-west maneuver. Appendix P Figures 15 and 16 provide the 2030 proposed laneage and peak hour volumes, respectively. Table 4-65 provides the level of service for the 2030 No Build and proposed conditions. As shown by Table 4-65, with the rerouted traffic all movements are anticipated to operate at LOS B or better in the 2030 design year No Build and proposed conditions. Based on these operations, no modifications were proposed to the intersection as part of the Project.

Table 4-65
Pine Street and Main Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	B	A	A
No Build (PM)	B	B	A	A
Proposed (AM)	B	A	A	A
Proposed (PM)	B	B	A	A

Source: Hatch Mott MacDonald, 2014.

Carter Street and Pine Street: As with Main Street, with the closure of the Pine Street crossing at the proposed Project railroad alignment, some traffic will reroute to use Carter Street to access US 58 or travel south to reach the provided grade separation at Main Street to travel east-west. Appendix P Figures 15 and 16 provide the 2030 proposed laneage and peak hour volumes, respectively. Table 4-66 provides the level of service for the 2030 No Build and proposed conditions. As shown by Table 4-66, with the rerouted traffic all movements are anticipated to operate at LOS A in the 2030 design year proposed conditions. Based on this information, no modifications were proposed as part of the Project.

Table 4-66
Carter Street and Pine Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	A	A	A	A
No Build (PM)	A	A	A	A
Proposed (AM)	A	A	A	A
Proposed (PM)	A	A	A	A

Source: Hatch Mott MacDonald, 2014.

US 58 and Pine Street: With the closure of Pine Street to through traffic at the proposed Project railroad alignment, traffic may also take Pine Street to Main Street or Carter Street to access US 58 to perform an east-west maneuver. Appendix P Figures 15 and 16 provide the 2030 proposed laneage and peak hour volumes, respectively. Table 4-67 provides the level of service for the 2030 No Build and proposed conditions. As shown by Table 4-67, with the rerouted traffic, all movements are anticipated to operate as well as or better in the proposed conditions than in the No Build conditions. Also, all movements operate at LOS B or better in the 2030 proposed conditions. Based on this information, no modifications were proposed as part of the Project.

Table 4-67
US 58 and Pine Street - Level of Service in 2030

	Eastbound	Westbound	Northbound
No Build (AM)	A	A	B
No Build (PM)	B	A	C
Proposed (AM)	A	A	B
Proposed (PM)	A	A	B

Source: Hatch Mott MacDonald, 2014.

4.14.2.5 *NORLINA, NC*

4.14.2.5.1 WARREN PLAINS ROAD AND YANCEY ROAD

The Preferred Alternative in Norlina, NC, (Section M) is Alternative NC1. Refer to map sheets 98 and 99 in Appendix R for maps of the proposed designs in Norlina, NC. The proposed Project railroad alignment will split Warren Plains Road just west of its intersection with Yancey Road. To the east of the split, Warren Plains Road is proposed to be extended northwest to intersect US-1/US 401. This relocation will provide a grade separated crossing of the proposed Project railroad alignment. The SEHSR design also proposes to provide a connection to the existing section of Warren Plains Road between the Project railroad alignment and the relocated Warren Plains Road. This connection is accomplished by relocating existing Warren Plains Road to access the new section of Warren Plains Road. This access provides a connection from Yancey Road to the extended Warren Plains Road and would be facilitated by a new alignment and "T" connection between the existing and the relocated Warren Plains Road. This connection will provide access to/from Yancey Road to/from Warren Plains and US-1/US 401. Also, the connection of existing Warren Plains Road from Yancey Road to Hyco Street (west of the Yancey Road intersection) would be removed. To access downtown Norlina, NC, from existing Yancey Road, drivers would use US-158/US 401 on the south end of Yancey Road, or use the new connector to access US-1/US 401 north of Norlina, NC. The Project will also sever the connection of Weldon Road with US-1/US 401. This traffic will now need to use the new connection of Warren Plains Road and US-1/US 401.

<u>US-1/US 401 and New Warren Plains-Norlina Road Connection/Norlina Pines Drive</u>: The proposed Project railroad alignment would split Warren Plains-Norlina Road west of Yancey Road; therefore, the projected volumes at the intersection of Yancey Road and Warren Plains-Norlina Road wishing to access US-1 or downtown Norlina, NC, would be relocated to the new connection of US-1 and Warren Pines Road. This new connection will form the fourth leg of the existing intersection of Norlina Pines Drive and US-1. It is important to note this intersection is approximately 450 feet from the intersection of US-1 and Elementary Avenue, which provides access to an elementary school. The intersection is proposed as an unsignalized intersection with the new Warren Plains-Norlina Road connection and Norlina Pines Drive experiencing the stop condition. The 2030 proposed laneage and volumes are shown by Appendix P Figures 19 and 20, respectively. Table 4-68 provides the level of service for the 2030 No Build and the proposed conditions. As shown in Table 4-68, with the rerouted traffic associated with the proposed Project and proposed laneage, all movements are anticipated to operate at LOS B or better in the 2030 proposed conditions, except for the southeast approach, which is anticipated to operate at LOS C in the AM peak period.

Table 4-68
Warren Plains–Norlina Road Extension/Norlina Pines Drive and US-1/US 401 - Level of Service in 2030

	Southeast bound	Northeast bound	Southwest bound	Northwest bound
No Build (AM)	B	A	--	--
No Build (PM)	B	A	--	--
Proposed (AM)	C	B	A	A
Proposed (PM)	B	B	A	A

Source: Hatch Mott MacDonald, 2014.

Warren Plains-Norlina Road and Yancey Road: The existing intersection of Warren Plains-Norlina Road and Yancey Road will be removed as part of the Project.

Warren Plains-Norlina Road and Warren Plains-Norlina Road Connector: The Warren Plains-Norlina Road and Warren Plains Road-Norlina Connector intersection is a new intersection proposed as part of the Project. The Project railroad alignment as proposed will split Warren Plains-Norlina Road west of Yancey Road. At this point east of the alignment, Warren Plains-Norlina Road will begin at its intersection with Yancey Road. The projected volumes at the intersection of Yancey Road and Warren Plains-Norlina Road wishing to access US-1 or downtown Norlina, NC, would be relocated to the new connection of US-1 and Warren Plains-Norlina Road via the Warren Plains-Norlina Road and Warren Plains Road Connector. This intersection was analyzed as an unsignalized intersection with the Warren Plains Connector approach experiencing the stop condition. Appendix P Figures 19 and 20 provide the 2030 proposed laneage and peak hour volumes, respectively. Table 4-69 provides level of service for the 2030 proposed conditions. As shown by Table 4-69, in the 2030 proposed conditions, all approaches are expected to operate at LOS A.

Table 4-69
Warren Plains–Norlina Road and Warren Plains–Norlina Road Connector - Level of Service in 2030

	Westbound	Northbound
No Build (AM)	--	--
No Build (PM)	--	--
Proposed (AM)	A	A
Proposed (PM)	A	A

Source: Hatch Mott MacDonald, 2014.

Weldon Road and Warren Plains-Norlina Road: The Project railroad alignment will sever the Weldon Road connection to US-1/US 401; therefore, this traffic will be rerouted to the new Warren Plains-Norlina Road and US-1/US 401 intersection. The Warren Plains-Norlina Road and Weldon Road intersection was analyzed under the same traffic control conditions as existing, an unsignalized "T" intersection with Weldon Road experiencing the stop condition. Appendix P Figures 19 and 20 provide the 2030 proposed laneage and peak hour volumes, respectively. Table 4-70 provides the delay and level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-70, all approaches are expected to operate at LOS A in both the 2030 design year No Build and proposed conditions. Based on this analysis, no modifications were proposed to the Warren Plains-Norlina Road and Weldon Road intersection as part of the Project.

Table 4-70 Weldon Road and Warren Plains–Norlina Road - Level of Service in 2030		
	Eastbound	Southbound
No Build (AM)	A	A
No Build (PM)	A	A
Proposed (AM)	A	A
Proposed (PM)	A	A

Source: Hatch Mott MacDonald, 2014.

4.14.2.5.2 WARREN PLAINS ROAD AND HYCO STREET

The Preferred Alternative in Norlina, NC, (Section M) is Alternative NC1. Refer to map sheet 100 in Appendix R for a map of the proposed designs. With the proposed Project, the connection between Division Street and Warren Plains Road will be removed, Warren Plains Road will be severed between Yancey Road and Washington Street, and the intersections of Liberty Street and Hyco Street with US-158/US 401 will be removed. Traffic from these closures would be rerouted to US 401/US-158 via other surrounding roadways such as Main Street and US-1/US 401.

Warren Plains Road and Hyco Street: With the removal of the Division Street and Warren Plains Road intersection, the removal of the Hyco Street and US-1/US-158 intersection, and the splitting of Warren Plains Road east of Hyco Street due to the Project, most traffic at the Hyco Road and Warren Plains Road intersection would have to reroute. This traffic is anticipated to use US-1/US 401, Main Street, and US-1/US-158. Appendix P Figures 19 and 20 provide the 2030 proposed laneage and peak hour volumes for the Warren Plains Road and Hyco Street intersection. Table 4-71 provides the level of service for the 2030 No Build and proposed conditions. As shown by Table 4-71, with the new traffic patterns associated with the Project, which reduces traffic at this intersection, and the proposed design, all approaches are anticipated to operate at LOS A or better in the 2030 design year for both the No Build and proposed conditions. Therefore, no modifications are proposed for this intersection as part of the Project

Table 4-71 Warren Plains Road and Hyco Street - Level of Service in 2030		
	Westbound	Southbound
No Build (AM)	A	A
No Build (PM)	A	A
Proposed (AM)	A	A
Proposed (PM)	A	A

Source: Hatch Mott MacDonald, 2014.

US-1/US 401 and Hyco Street/North Street: No modifications are proposed to the US-1/US 401 and Hyco Street/North Street intersection as part of the Project. While the rerouting of traffic due to the Project reduces turning movements at this intersection, it increases the through traffic on US-1/US 401 as traffic diverts to US-1/US-158 or Warren Plains Road to reach their destination. Appendix P Figures 19 and 20 provide the 2030 proposed laneage and peak hour volumes for the US-1/US 401 and Hyco Street/North Street intersection. Table 4-72 provides a comparison of the 2030 No Build and Proposed operations for the US-1/US 401 and Hyco Street/North Street intersection. As shown by Table 4-72, with the rerouted traffic and the proposed design, all approaches are anticipated to operate at LOS C or better in the 2030 design year proposed conditions, which is comparable to the No Build conditions. Therefore, no modifications are proposed to this intersection as part of the Project.

Table 4-72
US-1/US 401 and Hyco Street/North Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	A	A	B	B
No Build (PM)	A	A	B	B
Proposed (AM)	A	A	C	B
Proposed (PM)	A	A	B	B

Source: Hatch Mott MacDonald, 2014.

Warren Plains Road and Division Street: The Warren Plains Road and Division Street intersection is proposed to be removed as part of the Project and the traffic will be rerouted.

Liberty Street and US 401/US-158: The existing intersection of Liberty Street and US-158/US 401 will be removed as part of the Project. It is less than 100 feet from the existing grade separation of the rail line and US-1/US-158; the proposed new grade separation constructed for this Project will be at the same location as the existing grade separation. This new structure has the potential to cause sight distance issues for drivers wishing to turn from Liberty Street to US-158/US 401, but this concern is removed with the elimination of the intersection.

Liberty Street and Division Street: The existing intersection of Liberty Street and Division Street is less than 100 feet from the proposed Project railroad alignment and will be removed as part of the Project.

Main Street and US 401/US-158: With the proposed closure of Division Street between Liberty Street and Hyco Street, the traffic using the existing at-grade crossing was rerouted to Main Street. Traffic currently using this section of Division Street has multiple facilities in the grid network to access US 401/US-158 and reach their intended destination. For the purposes of this analysis, the majority of this traffic was rerouted to the intersection of Main Street and US 401/158. The closure of the east leg of the intersection of Liberty Street and US 401/158 will route traffic to Elm Street or Division Street and back to Main Street. The closure of the east and west legs of the intersection of Hyco Street and US 401/US-158 is anticipated to route traffic back to US-1/US 401 and US-1/US-158 to reach their desired destination.

With the closure of the crossing at Division Street and the additional changes to the above intersections, the intersection of Main Street and US 401/US-158 was analyzed to estimate operations with the proposed SEHSR in place in the 2030 design year. The Project proposes to provide a northbound and southbound left-turn lane along US-1/US-158 at the Main Street intersection. Appendix P Figures 19 and 20 provide the 2030 proposed laneage and peak hour volumes for the Main Street and US-158/US 401 intersection. Table 4-73 provides a comparison of the 2030 No Build and proposed operations for the Main Street and US-158/US 401 intersection. As shown by Table 4-73, with the anticipated volumes and proposed laneage, all approaches are anticipated to operate at the same level of service between the 2030 No build and Proposed conditions.

Table 4-73
Main Street and US 401/US-158 - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	C	C	A	A
No Build (PM)	C	C	A	A
Proposed (AM)	C	C	A	A
Proposed (PM)	C	C	A	A

Source: Hatch Mott MacDonald, 2014.

4.14.2.5.3 US-1 AND AXTELL-RIDGEWAY ROAD AND RIDGEWAY-DREWRY ROAD

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. It should be noted that the road designs for this area were revised from what was presented in the Tier II DEIS based on comments from local officials and the public. (See Section 2.2.19 for more information on this change.) Refer to map sheets 101 and 102 in Appendix R for maps of the proposed designs. With the proposed closures of the at-grade rail crossings at Axtell Ridgeway Road and Ridgeway-Warrenton Road, traffic from these locations will be rerouted across the proposed Ridgeway-Drewry Road grade separated crossing of the Project railroad alignment. The grade separated crossing on the proposed extension of Ridgeway-Drewry Road will allow vehicles to travel to/from US-1/US-158.

<u>US-1/US-158 and Axtell Ridgeway Road/Driveway</u>: The Axtell Ridgway Road leg of the US-1/US-158 and Axtell Ridgeway Road intersection will be removed under the Project; the driveway which serves as the northern leg of the intersection will remain. Appendix P Figures 23 and 24 provide the 2030 laneage and Proposed peak hour volumes for the US-1/US-158 and Driveway intersection (Axtell Ridgeway Road is removed from the intersection) while Table 4-74 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-74, all movements are anticipated to operate at LOS C better in the 2030 No Build and Proposed conditions. Therefore, no additional enhancements are proposed as part of the Project.

Table 4-74
US-1/US-158 and Axtell Ridgeway Road/Driveway - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	A	A	B	C
No Build (PM)	A	A	C	C
Proposed (AM)	A	--	--	C
Proposed (PM)	A	--	--	B

Source: Hatch Mott MacDonald, 2014.

<u>US-1/US-158 and Ridgeway-Drewry Road</u>: The Project will provide an extension of Ridgeway-Drewry Road, which includes a grade separated crossing of the proposed Project railroad alignment. This new connection will extend northward from US-1 for approximately one half mile to connect back to existing Ridgeway-Drewry Road. This extension and associated grade separation will provide access for vehicles on Axtell Ridgeway Road and Ridgeway-Warrenton Road to access US-1/US-158 and vice versa, replacing the removed at-grade rail crossings on each of these facilities. Appendix P Figures 23 and 24 provide the 2030 laneage and proposed peak hour volumes for the US-1/US-158 and Ridgeway-Drewry Road intersection, while Table 4-75 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-75, all movements are anticipated to operate at LOS C better in the 2030 No Build and Proposed conditions; therefore, no additional enhancements are proposed as part of the Project.

Table 4-75
US-1/US-158 and Ridgeway-Drewry Road - Level of Service in 2030

	Eastbound	Southbound
No Build (AM)	A	C
No Build (PM)	A	C
Proposed (AM)	A	C
Proposed (PM)	A	C

Source: Hatch Mott MacDonald, 2014.

US-1/US-158 and Ridgeway-Warrenton Road/Grant Lane: The Ridgeway-Warrenton Road leg of the US-1/US-158 and Ridgeway-Warrenton Road/Grant Lane intersection is removed in the proposed SEHSR designs. Appendix P Figures 23 and 24 provide the 2030 proposed laneage and peak hour volumes for the US-1/US-158 and Grant Lane intersection (Ridgeway-Warrenton Road is removed), while Table 4-76 provides the level of service the 2030 No-Build and proposed conditions. As shown by Table 4-76, all movements are anticipated to operate at LOS D or better in the 2030 No Build conditions and LOS B or better in the 2030 proposed conditions; therefore, no additional enhancements are proposed by the Project.

Table 4-76
US-1 and Ridgeway-Warrenton Road/Grant Lane - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	A	A	C	C
No Build (PM)	A	A	C	C
Proposed (AM)	A	--	--	B
Proposed (PM)	A	--	--	B

Source: Hatch Mott MacDonald, 2014.

US-1/US-158 and Saint Tammany Road: In the design presented in the Tier II DEIS, the intersection configuration and volumes of the US-1/US-158 and Saint Tammany intersection changed due to the Project. With the current design, the existing configuration of the US-1/US-158 and St. Tammany Road intersection will not change with the Project. Also, the volumes are not anticipated to change between the Build and proposed conditions. Therefore, a traffic analysis was not performed.

Ridgeway-Warrenton Road and Ridgeway-Drewry Road Connector: The Ridgeway-Warrenton Road and Ridgeway-Drewry Road Connector intersection is a new intersection that would be created as part of the Project. This intersection provides access from Ridgeway-Warrenton Road and Axtell Ridgeway Road to US-1/US-158 and Ridgeway-Drewry Road and vice versa. The traffic volumes at this intersection were estimated using the counts at US-1/US-158 with Axtell Ridgeway Road, Ridgeway-Warrenton Road, and Ridgeway-Drewry Road. Appendix P Figures 23 and 24 provide the 2030 proposed laneage and peak hour volumes for the Ridgeway-Warrenton Road and Ridgeway-Drewry Road Connector intersection, while Table 4-77 provides the level of service for the 2030 proposed conditions. As shown by Table 4-77 all movements are anticipated to operate at LOS B better in the 2030 proposed conditions.

Table 4-77
Ridgeway-Warrenton Road and Ridgeway-Drewry Road Connector - Level of Service in 2030

	Eastbound	Southbound
No Build (AM)	--	--
No Build (PM)	--	--
Proposed (AM)	A	A
Proposed (PM)	A	B

Source: Hatch Mott MacDonald, 2014.

Ridgeway-Drewry Road and Ridgeway-Drewry Road Connector: The Ridgeway-Drewry Road and Ridgeway-Drewry Road Connector intersection is a new intersection that would be created as part of the Project. This intersection provides access from Ridgeway-Warrenton Road and Axtell Ridgeway Road to US-1/US-158 and Ridgeway-Drewry Road and vice versa. The traffic volumes at this intersection were estimated using the counts at US-1/US-158 with Axtell Ridgeway Road, Ridgeway-Warrenton Road, and Ridgeway-Drewry Road. Appendix P Figures

23 and 24 provide the 2030 proposed laneage and peak hour volumes for the Ridgeway-Drewry Road and Ridgeway-Drewry Road Connector intersection, while Table 4-78 provides the level of service for the 2030 proposed conditions. As shown by Table 4-78 all movements are anticipated to operate at LOS B better in the 2030 proposed conditions.

Table 4-78
Ridgeway-Warrenton Road and Ridgeway-Drewry Road Connector - Level of Service in 2030

	Eastbound	Southbound
No Build (AM)	--	--
No Build (PM)	--	--
Proposed (AM)	A	A
Proposed (PM)	A	B

Source: Hatch Mott MacDonald, 2014.

4.14.2.5.4 COLLINS ROAD AND SOUL CITY BOULEVARD – SOUL CITY AREA

The Preferred Alternative in this area (Section N) is Alternative NC1. Refer to map sheet 104 in Appendix P for a map of the proposed designs. The designs would relocate the intersection of Collins Road and Soul City Boulevard and realign Soul City Boulevard to allow a grade separated crossing over the proposed Project railroad alignment north of the intersection. Soul City Boulevard will maintain the same intersection location with US-1; however, the intersection of Soul City Boulevard and Collins Road will be shifted slightly. The proposed Project railroad alignment crossing of Collins Road west of Manson-Axtell Road will result in a continuous movement from Manson-Axtell Road to Collins Road and remove access from Manson-Axtell Road and Collins Road east of Manson-Axtell Road, to US-1/US-158 (as the existing crossing will be closed). Traffic using the intersection of Collins Road and US-1/US-158 to access Collins Road US-1 or US-1 was rerouted to the intersection of Soul City Boulevard and US-1.

Soul City Boulevard and US-1/US-158: The analysis for the intersection of Soul City Boulevard and US-1/US-158 is based on a diversion of traffic from Manson-Axtell Road currently traveling westbound on Collins Road to US-1/US-158. This traffic is diverted to the intersection of Soul City Boulevard and US-1/US-158, via the proposed grade separation. Appendix P Figures 27 and 28 provide the 2030 proposed laneage and peak hour volumes for intersection of Soul City Boulevard and US-1/US-158, respectively. Table 4-79 provides the level of service for the 2030 No-Build and proposed conditions. As shown in Table 4-79, no movement is anticipated to operate below LOS B in the No Build conditions or LOS C in the proposed conditions. While the at-grade rail crossing closures at Collins Road, Kimball Road, and Soul City Boulevard will result in rerouting of traffic, it is not expected to have considerable effects on the operations of the Soul City Boulevard and US-1/US-158 intersection. Therefore, no geometric modifications were proposed as part of the Project.

Table 4-79
Soul City Boulevard and US-1/US-158 - Level of Service in 2030

	Westbound	Northbound
No Build (AM)	A	B
No Build (PM)	A	B
Proposed (AM)	A	C
Proposed (PM)	A	C

Source: Hatch Mott MacDonald, 2014.

Collins Road and Manson-Axtell Road: This intersection is converted to a free-flow movement with the SEHSR designs. Therefore, an analysis was not performed for the proposed conditions.

Collins Road and Soul City Boulevard: Given the low volumes in the design year along Soul City Boulevard at US-1/US-158 (north of this intersection) and on Collins Road at Manson-Axtell Road (west of this intersection), the Project Team anticipates that the impacts on traffic operations at this intersection will be minimal. Based on this information, the intersection of Collins Road and Soul City Boulevard was not analyzed.

4.14.2.6 *MIDDLEBURG, NC*

4.14.2.6.1 SOUTH CAROL STREET AND US-1/US-158

The Preferred Alternative in this area (Section O) is Alternative NC3. Refer to map sheet 108 and 109 in Appendix R for maps of the proposed designs. The Tier II DEIS included alternatives that would affect traffic movements in the Middleburg, NC, area. However, the Preferred Alternative includes a grade separated crossing for South Carol Street, and the Project Team does not expect changes to existing traffic patterns. Therefore, as a result of the Project railroad alignment, no additional traffic will operate through the intersection and traffic volumes will not increase.

4.14.2.7 *HENDERSON, NC*

In the City of Henderson, NC, the Preferred Alternative is the common alignment of the NC1, NC2, and NC3 Project alternatives, which is located along existing rail ROW with active freight service. The Project designs were developed in an attempt to balance the need for an adequate number of safe grade-separated crossings, with the desire to minimize impacts to surrounding development. Within city limits, the Project alternatives call for eight existing public crossings to be closed, with traffic re-routed to three new and one existing bridged crossings. Of note, there is also a pedestrian-only underpass proposed.

4.14.2.7.1 MAIN STREET/BECKFORD DRIVE AND OLD NORLINA ROAD

The Preferred Alternative is the common alignment of the NC1, NC2, and NC3 Project alternatives in this area. Refer to map sheet 114 in Appendix R for a map of the proposed designs in this location. Based on coordination with the Henderson, NC, City Council and City staff, Main Street will be extended from its current terminus at David Street east to provide better east-west connectivity. To further improve this connectivity, several alternatives were studied under the Project to enhance the connection to US-1 Business/US-158. Options included removing the US-1 Business/US-158 (North Garnett Street) leg of the intersection of US-1 Business/US-158 (North Garnett Street) with North Beckford Drive and North Chestnut Street, and removing the Chestnut Street leg of the same intersection. The Tier II FEIS designs would provide a roundabout at this location in order to accommodate the existing intersection movements and provide the direct connection to Main Street as a fifth leg of the intersection.

As a result of constructing a grade separated crossing of Main Street and the Project railroad alignment, the intersection of Old Norlina Road and Main Street will be removed. Traffic from Old Norlina Road will not be able to travel past Main Street. The existing at-grade rail crossing of Harris Street will also be removed. Traffic on the east side of the existing crossing will likely use David Street to reach the Beckford Drive/Main Street, Chestnut Street, and Garnett Street intersection while traffic on the west side of the crossing will use one of the several available roadways to access Garnet Street to reach the Beckford Drive/Main Street, Chestnut Street, and Garnett Street intersection.

Beckford Drive/Main Street, Chestnut Street, and US-1 Business/US-158 (Garnett Street): By creating a revised five-leg intersection, the traffic on Main Street will have a direct connection to Garnett Street, Chestnut Street, and Beckford Drive. Traffic from the proposed at-grade rail closures at Harris Street and Old Norlina Road will be rerouted to the Beckford Drive/Main Street and Garnett Street intersection.

The intersection is proposed as a dual-lane roundabout. One benefit to a roundabout configuration is to simplify traffic operations when Main Street is connected to the intersection. To help introduce roundabout operations to the area, a single lane roundabout may adequately service the traffic volumes in intermediate years; however, a dual-lane roundabout is needed by the design year. Therefore, while this intersection may initially operate as a single lane roundabout, it was analyzed as a dual lane roundabout in order to determine 2030 design year operations.

Appendix P Figures 31 and 32a, 32b provide the 2030 proposed laneage and AM and PM peak hour volumes for the Beckford Drive/Main Street, Chestnut Street, and Main Street intersection, respectively. Table 4-80 provides the level of service for the 2030 No-Build and proposed conditions. As shown in Table 4-80, the proposed conditions are expected to operate at the same or better LOS than the No Build conditions. It should also be noted that this configuration is in keeping with the long range plan to extend Main Street and provides more direct movements from Main Street to major facilities in downtown Henderson, NC.

Table 4-80
Beckford Drive/Main Street, Chestnut Street and US-1 Business/US 158 (Garnett Street) - Level of Service in 2030

	Eastbound	Northbound	Southbound	Northeast bound	Westbound
No Build (AM)	B	C	A	B	--
No Build (PM)	C	C	B	C	--
Proposed (AM)	A	A	A	A	A
Proposed (PM)	B	A	A	B	B

Source: Hatch Mott MacDonald, 2014.

Main Street and Old Norlina Road: With the Project, the existing at-grade crossing on Main Street east of this intersection is proposed to be grade separated. Due to the structure that would be constructed, Main Street would not intersect with Old Norlina Road, and vehicles on Old Norlina Road would not be able to cross Main Street. As such, this intersection will no longer exist. Therefore, a 2030 design year proposed analysis was not performed

4.14.2.7.2 US-1 BUSINESS (GARNETT STREET) AND NC 39 (ANDREWS AVENUE)

The Preferred Alternative is the common alignment of the NC1, NC2, and NC3 Project alternatives in this area. Refer to map sheets 114 and 115 in in Appendix R for a map of the proposed designs in this location. The Project designs would close the existing at-grade rail crossings on Rock Spring Street, Montgomery Street, and other more minor at-grade rail crossings in the vicinity, and construct a grade separated crossing on NC 39 (Andrews Avenue) over Williams Street, the proposed Project railroad alignment, and US-1 Business (Garnett Street). The proposed closures and grade separated crossings will alter traffic along Williams Street, Chestnut Street, Andrews Avenue, and Garnett Street among others in this area.

Rock Spring Street and Chestnut Street: With the Project, traffic patterns at the Rock Spring Street and Chestnut Street intersection will change due to the closure of the at-grade rail crossing of Rock Spring Street between Garnett Street and Williams Street. Some of the traffic currently using the at-grade crossing on Rock Spring Street is expected to reroute at this intersection in order to access either the proposed grade separation on Andrews Avenue or the exiting grade separation on Charles Street. Also, vehicles currently using Andrews Avenue from the east to access Garnett Street will no longer be able to do so due to the proposed grade separation. Therefore, some of those vehicles will also use this intersection to access Garnett Street. With the change in traffic patterns and increase in traffic volume, this intersection was analyzed under signal control in the proposed conditions; however, a signal must be warranted before being installed. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Rock Spring Street and Chestnut Street intersection. Table 4-81 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-81, all movements are anticipated to operate at LOS C or better in the 2030 No Build conditions. Under signal control, each approach is anticipated to operate at LOS D or better in the 2030 proposed conditions.

Table 4-81
Rock Spring Street and Chestnut Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	B	A	A
No Build (PM)	B	C	A	A
Proposed (AM)*	A	B	C	B
Proposed (PM)*	B	C	D	B

* Signalized
Source: Hatch Mott MacDonald, 2014.

Rock Spring Street and Garnett Street: With the Project, traffic patterns at the Rock Spring Street and Garnett Street intersection will change due to the closure of the at-grade rail crossing of Rock Spring Street between Garnett Street and Williams Street. The removal of the at-grade rail crossing would convert this intersection to a "T" configuration with Rock Spring Street still experiencing the stop condition. As vehicles on the east side of the proposed SEHSR alignment wish to access the west side and vice-versa, some will use this intersection as they travel to/from the intersection of Chestnut Street and Andrews Avenue, which provides access to the proposed grade separated crossing on Andrews Avenue. While the removal of the east leg of the Rock Spring Street and Garnett Street intersection will reduce some volumes, the rerouting associated with the Project is expected to result in an increase of some turning movements (southbound right-turns and eastbound left-turns) at this intersection. Appendix P Figures 33 and 34 provide the 2030 proposed laneage peak hour volumes for the Rock Spring Street and Garnett Street intersection. Table 4-82 provides the level of service for the 2030 No-Build and proposed Build scenarios. As shown by Table 4-82, the eastbound and westbound movements are anticipated to operate under failing conditions in the PM peak period of the 2030 No Build conditions. Under the proposed conditions, the westbound approach is removed, but the eastbound approach still operates at LOS F in the PM peak period. There is also an increase in delay over the No Build conditions, which is attributed to the change in traffic patterns in the proposed conditions. Traffic from the proposed grade separation on Andrews Avenue destined for Garnett Street and Garnett Street traffic destined for the grade separation on Andrews Avenue would use this intersection. Even though the eastbound approach operates at LOS F with an increase in delay in the PM peak period, no improvements were recommended due to the ROW constraints at this location. This intersection was also evaluated under signal control to determine operations if a signal were warranted in the design year. Under signal control, the intersection is expected to operate better than LOS D in the proposed conditions.

Table 4-82 Rock Spring Street and Garnett Street - Level of Service in 2030				
	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	B	A	A
No Build (PM)	F	F	A	A
Proposed (AM)	C	--	A	--
Proposed (PM)	F	--	A	--

Source: Hatch Mott MacDonald, 2014.

Rock Spring Street and Williams Street: With the Project, traffic patterns at the Rock Spring Street and Williams Street intersection will change due to the removal of the at-grade rail crossing of Rock Spring Street between Garnett Street and Williams Street and the fact that traffic currently turning onto Andrews Avenue from Williams Street and vice-versa may relocate to this intersection. The removal of the at-grade rail crossing would convert this intersection to a "T" configuration with Williams Street still experiencing the stop condition. The modifications associated with the Project result in some volumes increasing and some decreasing in the proposed conditions. Appendix P Figures 33 and 34 provide the 2030 proposed laneage peak hour volumes for the Rock Spring Street and Williams Street intersection. Table 4-83 provides the level of service for the 2030 No-Build and Proposed conditions. As shown by Table 4-83, all approaches are expected to operate at LOS B or better in the No Build and proposed conditions.

Table 4-83 Rock Spring Street and Williams Street - Level of Service in 2030				
	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	A	A	B	B
No Build (PM)	A	A	B	B
Proposed (AM)	--	A	A	B
Proposed (PM)	--	A	A	B

Source: Hatch Mott MacDonald, 2014.

Chestnut Street and Andrews Avenue (NC 39): The intersection of Chestnut Street and Andrews Avenue remains a four-leg signalized intersection under the proposed conditions. However, with the grade separation of Andrews Street with Garnett Street and Williams Street, considerably more turning traffic would move through this intersection. Vehicles currently using the at-grade rail crossings in the area that are proposed for removal will likley either use this intersection to access the proposed grade separation on Andrews Avenue or use Charles Street to make their desired maneuver. Additional turn lanes were provided at this intersection to help facilitate the additional traffic volume anticipated to use this intersection with the Project. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Chestnut Street and Andrews Avenue intersection. Table 4-84 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-84, the south and east approaches both operate at LOS F in the 2030 No Build PM peak period. NCDOT projects that Chestnut Street willcarry considerably more traffic during the PM peak period than the AM peak period, resuting in more delay and congestion in the PM peak period. While two approaches, north and south, operate at LOS E during the PM peak period in the 2030 proposed conditions, both approaches experience less delay than in the No Build conditions. It should also be noted that in the 2030 PM peak period the overall intersection level of service improves from LOS E in the No Build conditions to LOS D in the proposed conditions.

Table 4-84 Rock Spring Street and Williams Street - Level of Service in 2030				
	Eastbound	**Westbound**	**Northbound**	**Southbound**
No Build (AM)	C	B	C	C
No Build (PM)	F	C	E	E
Proposed (AM)	C	C	D	C
Proposed (PM)	D	C	E	D

Source: Hatch Mott MacDonald, 2014.

Garnett Street and Andrews Avenue (NC 39): This intersection would be removed by the Project and traffic would be rerouted along the surrounding network.

Williams Street and Andrews Avenue (NC 39): The intersection of Williams Street and Andrews Avenue would be removed by the Project and traffic currently using this intersection would be rerouted into the surrounding network with most vehicles likely using either the new grade separated crossing on Andrews Avenue or the existing grade separated crossing at Charles Street.

Montgomery Street and Chestnut Street: The intersection of Montgomery Street and Chestnut Street remains a four-leg signalized intersection in the proposed conditions; however, traffic patterns change and traffic would be rerouted to this intersection as a result to the Project. The proposed removal of the at-grade rail crossing on Montgomery Street and the grade separation of Andrews Avenue with Garnett Street and Williams Street would affect the traffic patterns and volumes at this intersection. Therefore, turn lane enhancements are provided as part of the Project to help mitigate the traffic pattern changes. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Chestnut Street and Montgomery Street intersection. Table 4-85 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-85, the intersection of Montgomery Street and Chestnut Street is expected to operate similarly in the 2030 No Build and proposed conditions.

Table 4-85 Montgomery Street and Chestnut Street - Level of Service in 2030				
	Eastbound	**Westbound**	**Northbound**	**Southbound**
No Build (AM)	B	B	C	C
No Build (PM)	B	B	B	B
Proposed (AM)	B	B	B	B
Proposed (PM)	B	C	C	C

Source: Hatch Mott MacDonald, 2014.

Montgomery Street and Garnett Street: With the closure of the at-grade rail crossing on Montgomery Street southwest of this intersection, it essentially becomes a "T" intersection with the southwest leg currently serving a business parking lot. Since there would be little to no traffic on the southwest leg, this intersection was analyzed under stop control for the proposed conditions, but remained under signal control for the No Build conditions. The Montgomery Street traffic that currently uses the at-grade crossing will be forced to reroute, and the most likely route will be either to Charles Street or the proposed grade separated crossing on Andrews Avenue. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Montgomery Street and Garnett Street intersection. Table 4-86 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-86, the intersection of Montgomery Street and Garnett Street is expected to operate at LOS D or better in the 2030 No Build conditions. With the Project and under stop control, the eastbound movements are anticipated to operate at LOS E in the 2030 proposed conditions in the PM peak period with an anticipated queue of 100 feet. While this is not unusual for an unsignalized movement, if the City of Henderson determines that it is appropriate to maintain the signal after the Project is constructed, the overall level of service is expected to be as good as or better than the No Build conditions.

Table 4-86
Montgomery Street and Garnett Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	A	D	D
No Build (PM)	B	C	D	C
Proposed (AM)	E	--	A	--
Proposed (PM)	E	--	A	--

Source: Hatch Mott MacDonald, 2014.

Montgomery Street and Williams Street: With the Project and the associated removal of the at-grade rail crossing on Montgomery Street northwest of this intersection, the Montgomery Street and Williams Street intersection would essentially function as a "T" intersection. Traffic currently using this intersection to travel across the at-grade intersection would have to reroute, with the most likely options being the existing grade separation at Charles Street or the proposed grade separation of Andrews Avenue over the Project railroad alignment, Garnett Street, and Williams Street. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Williams Street and Montgomery Street intersection. Table 4-87 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-87, all movements for the intersection of Montgomery Street and Williams Street are expected to operate at LOS D or better in the 2030 No Build conditions and LOS B or better in the 2030 proposed conditions.

Table 4-87
Williams Street and Montgomery Street - Level of Service in 2030

<table>
<tr><th rowspan="2"></th><th rowspan="2">Eastbound</th><th rowspan="2">Westbound</th><th colspan="2">Northbound</th><th colspan="2">Southbound</th></tr>
<tr><th>Left</th><th>Thru-Right</th><th>Left</th><th>Thru-Right</th></tr>
<tr><td>No Build (AM)</td><td>A</td><td>A</td><td>B</td><td>B</td><td>C</td><td>B</td></tr>
<tr><td>No Build (PM)</td><td>A</td><td>A</td><td>D</td><td>C</td><td>C</td><td>C</td></tr>
<tr><td>Proposed (AM)</td><td>--</td><td>B</td><td colspan="2">--</td><td colspan="2">A</td></tr>
<tr><td>Proposed (PM)</td><td>--</td><td>B</td><td colspan="2">--</td><td colspan="2">A</td></tr>
</table>

Source: Hatch Mott MacDonald, 2014.

Charles Street/Church Street and Garnett Street (Southwest): The western intersection of Charles Street/Church Street and Garnett Street would not change configuration with the Project. Even though the geometry is not affected by the Project, the traffic flow through the intersection is affected. More vehicles are anticipated to use Charles Street to take advantage of the existing grade separation on Charles Street and fewer vehicles are anticipated to use Garnett Street at this location with the closure of the at-grade rail crossings in the area. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Charles Street/Church Street and Garnett Street intersection (southwest). Table 4-88 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-88, even though traffic patterns change, the intersection of Charles Street/Church Street and Garnett Street (southwest) is expected to operate well in the 2030 Proposed conditions. While the traffic on Charles Street increases as more vehicles take advantage of the existing grade separation, the through traffic volumes on Garnett Street decrease due to the removal of nearby at-grade rail crossings. As shown in Table 4-88, all approaches are anticipated to operate at LOS B or better with the Project.

Table 4-88
Charles Street/Church Street and Garnett Street (Southwest) - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	D	D	A	A
No Build (PM)	D	E	A	A
Proposed (AM)	A	B	B	B
Proposed (PM)	B	B	B	A

Source: Hatch Mott MacDonald, 2014.

Charles Street and Garnett Street (Northeast): The configuration of the northeastern intersection of Charles Street and Garnett Street would not change with the Project. As with the southwest intersection, even though the geometry is not affected by the Project, the traffic flow through the intersection is affected. More vehicles are anticipated to use Charles Street to take advantage of the existing grade separation on Charles Street and fewer vehicles are anticipated to use Garnett Street in the area due to the closure of nearby at-grade rail crossings. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Charles Street and Garnett Street intersection (northeast). Table 4-89 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-89, even though traffic patterns change, the intersection of Charles Street and Garnett Street (northeast) is expected to operate very similarly in the No Build and the proposed conditions. This is due, in part, to the fact that while traffic on Charles Street increases as more vehicles use the existing grade separation on Charles Street, less traffic is anticipated on Garnett Street in this area due to the removal of nearby at-grade rail crossings.

Table 4-89
Charles Street and Garnett Street (Northeast) - Level of Service in 2030

	Westbound	Southbound
No Build (AM)	B	A
No Build (PM)	B	A
Proposed (AM)	A	A
Proposed (PM)	B	A

Source: Hatch Mott MacDonald, 2014.

Williams Street and Charles Street: While the configuration of the intersection of Williams Street and Charles Street does not change with the Project, the traffic volumes and patterns would change. More traffic is anticipated to use Charles Street to take advantage of the existing grade separation, while flow on Williams Street varies with some volumes increasing and some decreasing due to the closing of nearby at-grade crossings and the provision of a grade separation at Andrews Avenue. Appendix P Figures 33 and 34 provide the 2030 proposed laneage and peak hour volumes for the Williams Street and Charles Street intersection. Table 4-90 provides the level of service for the 2030 No Build and proposed conditions. As shown by Table 4-90, even though traffic patterns change, the intersection of Charles Street and Williams Street is expected to operate similarly in the 2030 No Build and proposed conditions.

Table 4-90
Williams Street and Charles Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	C	A	A
No Build (PM)	A	A	A	A
Proposed (AM)	A	B	B	A
Proposed (PM)	B	A	B	A

Source: Hatch Mott MacDonald, 2014.

4.14.2.7.3 CHAVASSE AVENUE/DABNEY DRIVE/ALEXANDER AVENUE

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. Refer to map sheet 115 in Appendix R for a map of the proposed designs in this location. As part of the proposed Project, Dabney Drive would be relocated approximately 550 feet south of its current intersection with US-1 Business (Raleigh Road). Alexander Avenue would be extended to tie into the relocated intersection of Dabney Drive and US-1 Business with a grade separated crossing over the proposed Project railroad alignment. The proposed closure of the existing at-grade rail crossing on Chavasse Avenue, approximately 50 feet west of Williams Street, would result in traffic being rerouted to the new intersection of Dabney Drive and US-1 Business.

Chavasse Avenue and Williams Street: The proposed at-grade rail crossing closure on Chavasse Avenue near Williams Street would result in traffic rerouting to the new intersection of Dabney Drive and US-1 Business. With the closing of the rail crossing, the intersection of Chavasse Avenue and Williams Street would convert to a "T" intersection and traffic on Chavasse Avenue would reduce due to the removal of the western leg. As such, the intersection was analyzed under stop control in the 2030 proposed conditions with Chavasse Avenue experiencing the stop condition. Appendix P Figures 37 and 38 provide the 2030 proposed laneage and peak hour volumes for the Chavasse Avenue and Williams Street intersection. Table 4-91 provides the level of service for the 2030 No-Build and Proposed conditions. As shown by Table 4-91, with the rerouted traffic and the proposed design, all approaches are anticipated to operate at LOS B or better in the design year, which is an improvement over the No Build conditions.

Table 4-91
Chavasse Avenue and Williams Street - Level of Service in 2030

<table>
<tr><th></th><th>Eastbound</th><th colspan="2">Westbound</th><th>Northbound</th><th>Southbound</th></tr>
<tr><td>No Build (AM)</td><td>B</td><td colspan="2">C</td><td>D</td><td>C</td></tr>
<tr><td>No Build (PM)</td><td>B</td><td colspan="2">C</td><td>D</td><td>B</td></tr>
<tr><td>Proposed (AM)</td><td>--</td><td>Left: B</td><td>Right: A</td><td>--</td><td>A</td></tr>
<tr><td>Proposed (PM)</td><td>--</td><td>Left: B</td><td>Right: A</td><td>--</td><td>A</td></tr>
</table>

Source: Hatch Mott MacDonald, 2014.

Chavasse Avenue/Oxford Street and Dorsey Avenue and US-1 Business: With the proposed rail crossing closure on Chavasse Avenue near Williams Street, traffic patterns at the Chavasse Avenue/Oxford Street and Dorsey Avenue and US-1 Business intersection are anticipated to change. Less traffic is expected to approach from and leave to the east, while other turning movements may increase as vehicles are rerouted. Appendix P Figures 37 and 38 provide the 2030 proposed laneage and peak hour volumes for the Chavasse Avenue/Oxford Street and Dorsey Avenue and US-1 Business intersection. Table 4-92 provides the level of service for the 2030 No-Build and proposed conditions. As shown in Table 4-92, with the change in traffic patterns associated with the closure of the at-grade crossing of Chavasse Avenue at Williams Street, both the AM and PM peak periods operate at LOS C in the 2030 No Build conditions, while the AM and PM peak periods operate at LOS B in the 2030 proposed conditions. One movement, the stop-controlled southwest bound right-turn improves to LOS D from LOS E in the proposed conditions as compared to the No Build conditions. Overall, operations are improved for the intersection in the 2030 proposed conditions as compared to the No Build conditions. Based on this information, no improvements are proposed for this intersection as part of the Project.

Table 4-92
Chavasse Avenue/Oxford Street and Dorsey Avenue and US-1 Business - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound	Southwest bound
No Build (AM)	D	D	B	B	D
No Build (PM)	D	D	B	C	E
Proposed (AM)	D	C	A	A	D
Proposed (PM)	D	C	A	B	D

Source: Hatch Mott MacDonald, 2014.

Dabney Drive and Oxford Road: The extension of Alexander Avenue, the realignment of Dabney Drive, and the closure of the Chavasse Avenue at-grade crossing would all have an effect on the traffic patterns at the Dabney Drive and Oxford Road intersection. Vehicles currently using the at-grade rail crossing on Chavasse Avenue would reroute to use the proposed grade separation on Alexander Avenue. This is expected to increase the intersection volumes to/from the south and reduce the volumes to/from the east. The intersection would remain a four-leg signalized intersection; however, an additional northbound left-turn lane is proposed to help mitigate the anticipated change in traffic patterns associated with the Project. There are already dual westbound through lanes to receive the dual northbound left-turn lanes. Appendix P Figures 37 and 38 provide the 2030 proposed laneage and peak hour volumes for the Dabney Drive and Oxford Road intersection. Table 4-93 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-93, with the rerouted traffic and the proposed design, conditions are expected to be similar with the Project as compared to the No Build conditions.

Table 4-93
Dabney Drive and Oxford Road - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	D	C	B	D
No Build (PM)	E	F	D	E
Proposed (AM)	D	E	C	C
Proposed (PM)	E	E	E	E

Source: Hatch Mott MacDonald, 2014.

Dabney Drive and Garnett Street/Deer Court: Neither the traffic volumes nor the configuration of the intersection of Dabney Drive and Garnett Street/Deer Court will alter due to the Project; however, operations are expected to change due to the different traffic patterns at the closely spaced signalized intersection of Dabney Drive and Oxford Road. Appendix P Figures 37 and 38 provide the 2030 proposed laneage and peak hour volumes for the Dabney Drive and Garnett Street/Deer Court intersection. Tables 4-94 and 4-95 provide the level of service for the future No-Build and proposed scenarios for both the southeast and northwest intersections. As shown by Table 4-94, with the rerouted traffic and the proposed design, the southeast intersection level of service is anticipated to be very similar in the AM and PM peak periods. It should be noted that in the 2030 proposed conditions, one approach (northeast bound) improves to LOS E from LOS F in the PM peak period and one (southwest bound) improves from LOS E to LOS D in the AM peak period. Based on this information, no mitigation is proposed as part of the Project.

Table 4-94
Dabney Drive and Garnett Street/Deer Court (Southeast Intersection) - Level of Service in 2030

	Southeast bound	Northwest bound	Northeast bound	Southwest bound
No Build (AM)	E	B	E	E
No Build (PM)	D	E	F	E
Proposed (AM)	E	B	E	D
Proposed (PM)	D	E	E	E

Source: Hatch Mott MacDonald, 2014.

The Project does not affect the projected volumes or the existing configuration for the northwest intersection in the design year. As shown by Table 4-95, the rerouted traffic associated with the design is expected to have minimal effect on the operations of the Dabney Drive and Garnett Street/Deer Court northwest intersection; therefore, no modifications are proposed as part of the Project.

Table 4-95
Charles Street and Garnett Street (Northeast) - Level of Service in 2030

	Southeast bound	Northwest bound
No Build (AM)	B	A
No Build (PM)	B	A
Proposed (AM)	B	A
Proposed (PM)	B	A

Source: Hatch Mott MacDonald, 2014.

Dabney Drive/Shopping Center and US-1 Business: This intersection would be converted to two separate intersections as part of the Project. Dabney Drive would be relocated approximately 500 feet south of its existing intersection with US-1 Business and will then continue east, travel over the proposed Project railroad alignment via a grade separation and form the fourth leg of the Alexander Avenue and Nicolas Street intersection. The existing intersection of Dabney Drive/Shopping Center and US-1 Business would remain; however, the existing western leg (Dabney Drive) would be converted to a short “No Outlet” access facility.

The Dabney Drive Extension is proposed as a three-lane facility. Appendix P Figures 37 and 38 provide the proposed laneage and 2030 Build peak hour volumes for both the new Dabney Drive Extension and US-1 Business intersection and the modified Dabney Drive/Shopping Center and US-1 Business intersection. Tables 4-96 and 4-97 provide the level of service for the 2030 No-Build and proposed conditions for the Dabney Drive Extension and US-1 Business and Dabney Drive/Shopping Center and US-1 Business intersections, respectively. In order to help mitigate the traffic at the new (southern) intersection, turn lane enhancements were recommended by the Project Team. As shown by Table 4-96, with the proposed extension and relocation of Dabney Drive, the rerouted traffic due to the proposed Project railroad alignment, and the proposed design, all approaches to the southern intersection are anticipated to operate at LOS D or better in the AM and PM peak periods.

Table 4-96 Dabney Drive/Shopping Center and US-1 Business (Southern) - Level of Service in 2030				
	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	--	--	--	--
No Build (PM)	--	--	--	--
Proposed (AM)	C	D	C	B
Proposed (PM)	C	D	C	C

Source: Hatch Mott MacDonald, 2014.

As shown by Table 4-97, with the proposed relocation of Dabney Drive and associated improvements, the Dabney Drive/Shopping Center and US-1 Business intersection (northern intersection) level of service is anticipated to improve. While the westbound approach (the shopping center access) is anticipated to operate at LOS E in the PM peak period of the No Build condition, it improves to LOS D in the proposed conditions.

Table 4-97 Dabney Drive/Shopping Center and US-1 Business (Northern) - Level of Service in 2030				
	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	C	D	C	B
No Build (PM)	B	E	C	B
Proposed (AM)	C	D	A	A
Proposed (PM)	C	D	A	A

Source: Hatch Mott MacDonald, 2014.

<u>Alexander Avenue and Nicholas Street</u>: With the Project, the western leg of this intersection would be extended with a grade separation of the proposed SEHSR alignment to intersect with the relocated Dabney Drive/US-1 Business intersection. The extension is proposed as a three-lane section. Appendix P Figures 37 and 38 provide the 2030 proposed laneage and peak hour volumes for the Alexander Avenue and Nicholas Street intersection. Table 4-98 provides the level of service for the 2030 No-Build and proposed conditions for the Alexander Avenue and Nicolas Street intersection. As shown by Table 4-98, with the proposed extension and relocation of Dabney Drive, delay will increase at the Alexander Avenue and Nicholas Street intersection due to the increase in volume. In the AM peak period, all approaches are anticipated to operate at LOS D or better; however, in the PM peak, two movements are anticipated to operate at LOS F and one at LOS E.

<table>
<tr><th colspan="6">Table 4-98
Alexander Avenue and Nicholas Street- Level of Service in 2030</th></tr>
<tr><th></th><th colspan="2">Eastbound</th><th>Westbound</th><th>Northbound</th><th>Southbound</th></tr>
<tr><td>No Build (AM)</td><td colspan="2">B</td><td>B</td><td>A</td><td>A</td></tr>
<tr><td>No Build (PM)</td><td colspan="2">C</td><td>B</td><td>A</td><td>A</td></tr>
<tr><td>Proposed (AM)</td><td>Left: D</td><td>Thru/ Right: B</td><td>C</td><td>A</td><td>A</td></tr>
<tr><td>Proposed (PM)</td><td>Left: F</td><td>Thru/ Right: E</td><td>F</td><td>A</td><td>A</td></tr>
</table>

Source: Hatch Mott MacDonald, 2014.

During final design, the Project Team will coordinate with NCDOT Highway Division 5 and the City of Henderson, NC, regarding consideration of converting Nicolas Street to the stopped condition and Alexander Avenue to the free-flow movement. This is expected to improve the eastbound and westbound approaches to LOS A, but the northbound approach is expected to degrade to LOS F with this configuration. If a signal is warranted and installed by the design year, all movements are anticipated to operate at LOS D or better.

4.14.2.7.4 BELMONT DRIVE AND WELCOME AVENUE

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. Refer to map sheet 116 in Appendix R for a map of the proposed designs in this location. Under the Project designs, the Welcome Avenue at-grade rail crossing would be closed and JP Taylor Road would be grade separated and extended to connect with Belmont Drive, resulting in the rerouting of traffic in this area of Henderson, NC. Traffic currently using the at-grade crossing on Welcome Avenue will likely divert to the new connection of JP Taylor Road and Belmont Drive. Nicolas Street is proposed to extend to Warehouse Road at its intersection with JP Taylor Road creating a four-leg intersection and providing access from Welcome Avenue to the proposed grade separated crossing on JP Taylor Road. Based on the low anticipated volumes at the new JP Taylor Road and Nicolas Street/Warehouse Road intersection, an analysis was not performed for that intersection. However, traffic was estimated for the new connection of Nicolas Street and JP Taylor Road and an analysis was performed for that intersection.

US-1 Business (Raleigh Road) and Welcome Avenue/Belmont Drive: The closure of the Welcome Avenue at-grade rail crossing would result in this intersection functioning as a “T” intersection. The crossing closure, along with the extension of JP Taylor Road to connect with Belmont Drive and the associated grade separated crossing of the Project railroad alignment and US-1 Business, would result in rerouting of traffic at this intersection. Traffic using the at-grade crossing is anticipated to reroute to the proposed grade separation at JP Taylor Road. Turn lane enhancements are proposed as part of the Project to help mitigate the changes in traffic patterns anticipated with the Project. Appendix P Figures 41 and 42 provide the 2030 proposed laneage and peak hour volumes for the US-1 Business and Welcome Road/Belmont Drive intersection, while Table 4-99 provides the level of service for the future No-Build and proposed conditions. As shown by Table 4-99, with the proposed laneage and anticipated volumes in 2030, the intersection of US-1 Business and Welcome Avenue/Belmont Drive operates considerably better than in the No Build conditions. This is due in large part to the removal of the eastern leg (Welcome Avenue) and its traffic volume, as well as the intersection enhancements proposed as part of the Project.

Table 4-99
US-1 Business (Raleigh Road) and Welcome Avenue/Belmont Drive - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	F	F	C	F
No Build (PM)	F	F	E	F
Proposed (AM)	B	--	C	C
Proposed (PM)	C	--	C	C

Source: Hatch Mott MacDonald, 2014.

Welcome Avenue and Nicolas Street: With the closure of the at-grade rail crossing on Welcome Avenue just west of this intersection, the intersection will function as a “T” intersection with the Project. This conversion, along with the proposed extension of Nicholas Street to JP Taylor Road and Warehouse Road, is expected to result in revised traffic patterns. The extension will allow traffic on the east side of the Project railroad alignment to access the proposed grade separated crossing on the JP Taylor Road extension. This extension is expected to increase traffic volume on the southern leg of Nicholas Street. Appendix P Figures 41 and 42 provide the 2030 proposed laneage and peak hour volumes for the Welcome Avenue and Nicholas Street intersection, while Table 4-100 provides the level of service for the future No-Build and proposed conditions. As shown by Table 4-100, the intersection of Welcome Avenue and Nicolas Street is expected to operate with minimal congestion in both the 2030 No Build and proposed conditions. Based on this information, no additional mitigation is proposed as part of the Project.

Table 4-100
Welcome Avenue and Nicolas Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	A	A	A	A
No Build (PM)	A	A	A	A
Proposed (AM)	--	A	--	A
Proposed (PM)	--	A	--	A

Source: Hatch Mott MacDonald, 2014.

US-1 Business (Raleigh Road) and JP Taylor Road: The intersection of US-1 Business and JP Taylor Road would be removed under the Project. The Project proposes to shift JP Taylor Road and provide a grade separation over the Project railroad alignment and US-1 Business. The Project would then extend JP Taylor Road to tie into Belmont Road west of its intersection with US-1 Business. The intersection of US-1 Business and JP Taylor Road would be replaced by the new intersection of JP Taylor Road and Belmont Drive along with the existing Belmont Drive and US-1 Business intersection.

JP Taylor Road Extension and Belmont Drive: The intersection of JP Taylor Road Extension and Belmont Drive is a new intersection created as part of the Project. This intersection, along with the grade separation of JP Taylor over the proposed Project railroad alignment and US-1 Business and the intersection of US-1 Business and Belmont Drive, will replace the intersection of JP Taylor Road and US-1 Business, which is proposed to be removed as part of the Project. This intersection was analyzed under signal control for the 2030 design year traffic. Appendix P Figures 41 and 42 provide the 2030 proposed laneage and peak hour volumes for the JP Taylor Road Extension and Belmont Drive intersection, while Table 4-101 provides the level of service for the 2030 proposed conditions. As shown by Table 4-101, each approach to the intersection of JP Taylor Road Extension and Belmont Drive is expected to operate at LOS C or better in 2030 with the proposed laneage and projected traffic volumes.

Table 4-101
JP Taylor Road Extension and Belmont Drive - Level of Service in 2030

	Westbound	Northbound	Southbound
No Build (AM)	--	--	--
No Build (PM)	--	--	--
Proposed (AM)	C	B	A
Proposed (PM)	C	C	B

Source: Hatch Mott MacDonald, 2014.

4.14.2.7.5 US-1 BUSINESS (RALEIGH ROAD) AND BEAR POND ROAD AND PETER GILL ROAD

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. Refer to map sheet 117 in Appendix R for a map of the proposed designs in this location. Under the Project designs, the existing Bear Pond Road at-grade rail crossing would be closed and a new grade separated crossing would be constructed over the proposed Project railroad alignment and US-1 Business (Raleigh Road) approximately 200 feet south of the existing intersection. Traffic using the existing intersection would be rerouted to the new jug-handle type connection that provides connectivity between US-1 Business and Lynnbank Road/Bear Pond Road. Also in this area, the existing at-grade crossing of Peter Gill Road is also proposed for closure as part of the Project. Traffic wishing to use this intersection is expected to reroute to either Bear Pond Road or the proposed grade separation of Wildlife Lane, which will be extended to intersect with US-1 Business.

<u>US-1 Business (Raleigh Road) and Bear Pond/Lynnbank Road</u>: The intersection of US-1 Business (Raleigh Road) and Bear Pond Road/Lynnbank Road is proposed for removal as part of the Project. Bear Pond Road would be relocated and have a grade separation over US-1 Business and the proposed Project railroad alignment. This would require the construction of two "T" intersections. A new connector would be constructed between US-1 Business and the relocated Bear Pond Road as an extension of JP Taylor Road. Both the new intersection with Bear Pond Road and with US-1 Business were analyzed under signal control for the 2030 proposed conditions to determine operations if a signal was warranted by the design year. Appendix P Figures 45 and 46 provide the 2030 proposed laneage and peak hour volumes for the US-1 Business and Bear Pond Road/Lynnbank Road, Bear Pond Road and New Connector, and US-1 Business and New Connector intersections, while Tables 4-102, 4-103, and 4-104 provide the level of service for the future No-Build and proposed conditions. As shown in Tables 4-102, 4-103, and 4-104, while the existing intersection of US-1 Business and Bear Pond Road has approaches that operate at LOS E in the PM peak period of the 2030 No Build conditions, both new intersections have no approach operate below LOS D.

Table 4-102
US-1 Business and Bear Pond Road/Lynnbank Road - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	E	F	E	D
No Build (PM)	E	E	D	C

Source: Hatch Mott MacDonald, 2014.

Table 4-103
US-1 Business (Raleigh Road) and New Connector South of Bear Pond Road - Level of Service in 2030

	Eastbound	Northbound	Southbound
Proposed (AM)	C	B	C
Proposed (PM)	D	B	B

Source: Hatch Mott MacDonald, 2014.

Table 4-104 Bear Pond Road and New Connector West of US-1 Business - Level of Service in 2030			
	Eastbound	Westbound	Northbound
Proposed (AM)	A	B	C
Proposed (PM)	A	B	C

Source: Hatch Mott MacDonald, 2014.

US-1 Business (Raleigh Road) and US-1 NB Ramp/Eastern Minerals Road: The at-grade rail crossing on the eastern leg of this intersection (Eastern Minerals Road) is proposed for removal under the Project. Traffic currently using this crossing would need to reroute. Vehicles could use Commerce Drive to access Bear Pond Road and US-1 Business via Bear Pond Road to the north or use Commerce Drive to access Peter Gill Road, than access Bobbitt Road to access the proposed grade separated crossing at Wildlife Lane. As part of the proposed grade separation of Wildlife Lane, Wildlife Lane would be extended to intersect US-1 Business by traversing under the proposed Project railroad alignment. The reverse movements can be made to travel from US-1 Business to the eastern side of the proposed Project railroad alignment. Given the anticipated traffic volumes, both the US-1 Business and US-1 NB Ramps/Eastern Minerals Road and the Wildlife Lane and US-1 Business intersections were analyzed under signal control in 2030 to determine operations if a signal were to be warranted by the design year. It should be noted that a signal should be warranted before one is installed.

Appendix P Figures 45 and 46 provide the 2030 proposed laneage and peak hour volumes for the US-1 Business and US-1 NB Ramps/Eastern Minerals Road and US-1 Business and Wildlife Lane intersections. Table 4-105 provides the level of service for the 2030 No-Build and proposed conditions for the US-1 Business and US-1 NB Ramp/Eastern Minerals Road intersection. Table 4-106 provides the level of service for the 2030 proposed conditions for the US-1 Business and Wildlife Lane intersection.

Table 4-105 US-1 Business and US-1 NB Ramps/Eastern Minerals Road - Level of Service in 2030				
	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	D	C	A	B
No Build (PM)	E	D	A	A
Proposed (AM)	D	--	A	A
Proposed (PM)	D	--	A	A

Source: Hatch Mott MacDonald, 2014.

Table 4-106 US-1 Business (Raleigh Road) and Wildlife Lane - Level of Service in 2030			
	Westbound	Northbound	Southbound
Proposed (AM)	D	D	C
Proposed (PM)	D	D	C

Source: Hatch Mott MacDonald, 2014.

As shown in Table 4-105, the eastbound approach of US-1 Business and US-1 NB Ramps/Eastern Minerals Road intersection is expected to operate at LOS E in the PM peak period, but no other approach is expected to operate below LOS D in the 2030 No Build conditions. With the proposed Project railroad alignment, the eastern leg would be removed and the intersection would function as a "T" intersection. In the 2030 proposed conditions, no approach to the US-1 Business and US-1 NB Ramps intersection is anticipated to operate below LOS D. As shown in Table 4-106, no approach to the new US-1 Business and Wildlife Lane intersection in the 2030 proposed conditions will operate below LOS D.

US-1 Business (Raleigh Road) and Peter Gill Road: The at-grade rail crossing on Peter Gill Road just east of its intersection with US-1 Business is proposed for removal under the Project. Traffic currently using this crossing would need to reroute their trips. Vehicles could use Commerce Drive to access Bear Pond Road and US-1 Business via Bear Pond Road to the north or use Commerce Drive to access Bobbitt Road via Peter Gill Road to access the proposed grade separated crossing at Wildlife Lane. As part of the proposed grade separation of Wildlife Lane, Wildlife Lane would be extended to intersect US-1 Business by traversing under the proposed Project railroad alignment. The reverse movements could be made to travel from US-1 Business to the eastern side of the proposed Project railroad alignment. Due to the projected traffic volumes at the US-1 Business and Peter Gill Road intersection, it was analyzed under signal control in the 2030 No Build conditions to determine operations if a signal were to be warranted by the design year. It is worth noting that a signal should be warranted before one is installed.

Appendix P Figures 45 and 46 provide the 2030 proposed laneage and peak hour volumes for the US-1 Business and Wildlife Lane intersection and the US-1 Business and Peter Gill Road/Driveway intersection, while Table 4-107 and Table 4-106 (above) provide the level of service for the 2030 No-Build and proposed conditions for the US-1 Business and Peter Gill Road/Driveway intersection and the 2030 proposed conditions for the US-1 Business and Wildlife Lane intersection, respectively. As shown in Table 4-107, the, eastbound, westbound, and northbound approaches to the intersection of US-1 Business and Peter Gill Road/Driveway are expected to operate at LOS E or LOS F in the AM peak period, while the eastbound and westbound approaches operate at LOS E in the PM peak period. This intersection was analyzed under stop control in the 2030 proposed conditions due to the removal of the eastern leg with the Project railroad alignment. Under this configuration, all movements are anticipated to operate at LOS C or better in the 2030 proposed conditions. Also as shown by Table 4-106 (above), the proposed intersection of US-1 Business and Wildlife Lane, which would serve traffic from both the intersections of Peter Gill Road and Eastern Minerals Road with US-1 Business, is expected to operate with no approach below LOS D in the 2030 proposed conditions, which is an improvement over the 2030 No Build conditions of the US-1 Business and Peter Gill Road intersection.

Table 4-107
US-1 Business and Peter Gill Road/Driveway - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	F	F	E	D
No Build (PM)	E	E	D	C
Proposed (AM)*	C	--	A	--
Proposed (PM)*	B	--	A	--

* Unsignalized
Source: Hatch Mott MacDonald, 2014.

4.14.2.7.6 US-1 BUSINESS (RALEIGH ROAD) AND CHAVIS ROAD

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. Refer to map sheets 119 and 120 in Appendix R for a map of the proposed designs in this location. Under the Project designs, an extension of Edwards Road over the proposed Project railroad alignment to Chavis Road would provide a new connection to US-1 Business (Raleigh Road). This extension would tie into the westbound leg of the intersection of

US-1 Business and Edwards Road. This new connector would serve to replace multiple low volume at-grade rail crossings in this area that are proposed to be closed under the Project.

US-1 Business and Chavis Road: As mentioned previously, this intersection will be removed with the Project and the traffic using this intersection is expected to use the new connection at the intersection of US-1 Business and Edwards Road. The new connection is proposed to have a grade separated crossing with the proposed Project railroad alignment.

US-1 Business and Edwards Road: Based on the closure of the Chavis Road intersection with US-1 Business, all traffic was rerouted from that intersection to the new connector planned at Edwards Road and US-1 Business for the purposes of this analysis. This new connector is proposed to have a grade separated crossing with the Project railroad alignment. Traffic on other minor at-grade rail crossings in the area is expected to use this intersection as well; however, the volumes on these crossings are anticipated to be minor and not have a considerable effect on the intersection operations. Appendix P Figures 49 and 50 provide the 2030 proposed laneage and peak hour volumes for the US-1 Business and Edwards Road intersection, while Table 4-108 provides the level of service for the 2030 No-Build and proposed conditions. As shown in Table 4-108, based on the two-way stop controlled analysis, the intersection is expected to have no movement operate below LOS B in the proposed or No Build conditions. This is expected due to the low existing volumes at this intersection and the low volumes on the surrounding roadways in the immediate area. While traffic from all the surrounding crossings was not included in this analysis, the intersection is still anticipated to operate within the desired LOS D criteria due to the fact these crossings appear to be minor and are not expected to add considerable volume to the intersection.

Table 4-108
US-1 Business (Raleigh Road) and Edwards Road/New Connector - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	--	A	--
No Build (PM)	A	--	A	--
Proposed (AM)	B	B	A	A
Proposed (PM)	B	B	A	A

Source: Hatch Mott MacDonald, 2014.

4.14.2.8 *KITTRELL, NC*

4.14.2.8.1 US-1 (CAPITAL BOULEVARD) AND KITTRELL COLLEGE ROAD/NEW CONNECTOR

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. Refer to map sheet 121 in Appendix R for a map of the proposed designs in this location. Under the Project designs, the existing at-grade rail crossings of Main Street and McClanahan Street are proposed to be removed. These crossings will be replaced by a proposed grade separated crossing on McClanahan Street, which will tie into the existing intersection of US-1 Business and Kittrell Vance Avenue forming the fourth (eastern leg) of the intersection.

US-1 and Kittrell College Road/College Street: The existing at-grade rail crossings of Main Street and McClanahan Street are proposed to be closed as part of the Project. McClanahan Street would be realigned with a grade separation over the Project railroad alignment. It would also be extended to the north and south to connect Main Street to the north and Kittrell Vance Avenue to the south. The extension to Kittrell Vance Avenue would form the fourth leg of the US-1 and Kittrell Vance Road intersection. Traffic east of the existing rail line that currently uses Main

Street or McClanahan Street to access US-1, along with US-1 traffic that currently uses Main Street to cross the rail line eastbound, would be routed along the new facility. With the new configuration, this traffic would use the intersection of Kittrell Vance Avenue and US-1. Appendix P Figures 53 and 54 provide the proposed laneage and 2030 peak hour volumes for the US-1 and Kittrell College Road/College Street intersection while Table 4-109 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-109, all approaches of this intersection are anticipated to operate very similarly and at LOS D or better in both the No Build and proposed conditions.

Table 4-109
US-1 Business (Raleigh Road) and Kittrell College Road/College Street - Level of Service in 2030

	Eastbound		Westbound	Northbound	Southbound
	Left	Thru-Right			
No Build (AM)	C	B	C	A	B
No Build (PM)	D	C	D	B	B
Proposed (AM)	C	B	D	A	B
Proposed (PM)	D	B	C	B	A

Source: Hatch Mott MacDonald, 2014.

US-1 and Kittrell Vance Road/New Connector: The intersection traffic patterns and configuration of US-1 and Kittrell Vance Road would be modified as part of the Project. Traffic from the closure of the Main Street and McClanahan Street at-grade rail crossings was rerouted to the grade separation proposed on the realigned McClanahan Street for this analysis. This realignment ties into the US-1 and Kittrell Vance Road intersection. This intersection was analyzed under stop control for both the No Build and proposed conditions. Turn lane enhancements are provided at this intersection by the Project to help mitigate the rerouted traffic. Appendix P Figures 53 and 54 provide the proposed laneage and 2030 Build peak hour volumes for the US-1 and Kittrell Vance Road intersection, while Table 4-110 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-110, all approaches to this intersection are anticipated to operate at LOS C or better in the No Build conditions. Also, as shown in Table 4-110, with the addition of the fourth (eastern) leg, the rerouted traffic volumes associated with the Project and the laneage proposed as part of the Project design, no approach is expected operate worse than LOS C.

Table 4-110
US-1 and Kittrell Vance Road/New Connector - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	--	A	--
No Build (PM)	C	--	B	
Proposed (AM)	C	C	A	B
Proposed (PM)	C	C	B	B

Source: Hatch Mott MacDonald, 2014.

Main Street and Railroad Street: With the closure of the Main Street at-grade crossing just east of this intersection, movements at this intersection would become free flowing with the Project. Due to design constraints, they will be low speed movements and, if needed, one or both could become stop controlled, but there should be no conflicting movements. Based on this information, no analysis was performed for the proposed conditions.

4.14.2.9 FRANKLINTON, NC

4.14.2.9.1 MAIN STREET AND NC 56 (GREEN STREET)

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. Refer to map sheet 127 in Appendix R for a map of the proposed designs in this location. Under the Project designs, the at-grade rail crossings on Mason Street and College Street would be closed. The existing grade separation of the rail line and NC 56 would be maintained with the Project; however, the intersection of Elm Street and NC 56 would be removed due to the close spacing of the proposed rail structure over NC 56. Tanyard Street and a new connection proposed to link College Street and NC 56 would allow traffic on Mason Street and College Street to access NC 56 and its grade separated crossing of the Project railroad alignment.

Mason Street and Main Street: As mentioned above, the at-grade rail crossing on Mason Street east of Main Street would close under the Project. This will affect the amount of traffic using this intersection, essentially turning it into a three-leg intersection. Traffic using the Mason Street crossing was routed to the NC 56 and Main Street intersection, using the grade separated crossing on NC 56. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the Mason Street and Main Street intersection, while Table 4-111 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-111, all approaches are anticipated to operate at LOS C or better in both the No Build conditions and with the proposed Project.

Table 4-111
Mason Street and Main Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	C	A	A
No Build (PM)	C	C	A	A
Proposed (AM)	C	C	A	A
Proposed (PM)	C	B	A	A

Source: Hatch Mott MacDonald, 2014.

NC 56 (Green Street) and Main Street: As mentioned above, with the proposed closure of the at-grade rail crossings on Mason Street and College Street as part of the Project, traffic from those crossings would have the option to divert to the NC 56 grade separated crossing of the Project railroad alignment. This rerouting would affect traffic patterns and volumes at the NC 56 and Main Street intersection. Appendix P Figures 57 and 58 provide the proposed laneage and 2030 peak hour volumes for the NC 56 and Main Street intersection, while Table 4-112 provides the level of service for the 2030 No-Build and Proposed conditions. As shown by Table 4-112, all approaches are anticipated to operate at LOS C or better in both the 2030 No Build conditions and with the proposed Project.

Table 4-112
NC 56 (Green Street) and Main Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	B	B	A
No Build (PM)	B	C	B	B
Proposed (AM)	B	C	B	B
Proposed (PM)	B	B	B	B

Source: Hatch Mott MacDonald, 2014.

College Street and Main Street: As mentioned above, the existing at-grade rail crossing on College Street is proposed for closure under the Project. Traffic from this crossing would have the option to use a proposed connector linking College Street and NC 56 to access the grade separation on NC 56 or use the proposed extension of Hawkins Street to access the proposed grade separation at Cedar Creek Road. Appendix P Figures 57 and 58 provide the proposed 2030 laneage and peak hour volumes for the College Street and Main Street intersection, while Table 4-113 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-113, all approaches are anticipated to operate at LOS B or better in both the 2030 No Build conditions and with the proposed Project.

Table 4-113
College Street and Main Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	B	B	A	A
No Build (PM)	B	B	A	A
Proposed (AM)	B	B	A	A
Proposed (PM)	B	B	A	A

Source: Hatch Mott MacDonald, 2014.

College Street and Hawkins Street: With the proposed closure of the existing at-grade rail crossing on College Street west of this intersection, traffic currently using the at-grade rail crossing would have to reroute with the Project. Traffic from this crossing would have the option to use a proposed connector linking College Street and NC 56 to access the grade separation on NC 56 or use the proposed extension of Hawkins Street to access the proposed grade separation at Cedar Creek Road. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the College Street and Hawkins Street intersection, while Table 4-114 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-114, with the low anticipated volumes in this area, the College Street and Hawkins Street intersection is anticipated to operate well with or without the Project in 2030. All approaches are anticipated to operate at LOS A both in the No Build condition and with the proposed Project.

Table 4-114
College Street and Hawkins Street - Level of Service in 2030

	Westbound	Northbound
No Build (AM)	A	A
No Build (PM)	A	A
Proposed (AM)	A	A
Proposed (PM)	A	A

Source: Hatch Mott MacDonald, 2014.

NC 56 (Green Street) and New Connector: A new connection is proposed between College Street and NC 56 to allow traffic currently using the at-grade rail crossing on College Street to access the proposed grade separated crossing of the Project railroad alignment on NC 56. Volumes at this intersection were estimated using counts at the intersections of College Street and Hawkins Street, NC 56 and Main Street, and Hawkins Street/Hillsborough Street and Main Street. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the NC 56 and New Connector intersection, while Table 4-115 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-115, the proposed New Connector intersection with NC 56 is anticipated to have all movements operate at LOS D or better in the design year with the Project.

Table 4-115 NC 56 (Green Street) and New Connector - Level of Service in 2030		
	Westbound	**Northbound**
No Build (AM)	--	--
No Build (PM)	--	--
Proposed (AM)	A	D
Proposed (PM)	A	D

Source: Hatch Mott MacDonald, 2014.

College Street and New Connector: A new connection is proposed between College Street and NC 56 to allow traffic currently using the at-grade rail crossing on College Street to access the proposed grade separated crossing on NC 56. This new connection will create a new intersection with College Street. Volumes at this intersection were estimated using counts at the intersections of College Street and Hawkins Street, NC 56 and Main Street, and Hawkins Street/Hillsborough Street and Main Street. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the College Street and New Connector intersection while Table 4-116 provides the level of service for the 2030 proposed conditions. As shown by Table 4-116 the proposed New Connector intersection with College Street is anticipated to have all movements operate at LOS A in the design year with the Project.

Table 4-116 College Street and New Connector - Level of Service in 2030		
	Eastbound	**Southbound**
No Build (AM)	--	--
No Build (PM)	--	--
Proposed (AM)	A	A
Proposed (PM)	A	A

Source: Hatch Mott MacDonald, 2014.

4.14.2.9.2 CEDAR CREEK ROAD AND MAIN STREET

The Preferred Alternative in this area is the common alignment of the NC1, NC2, and NC3 Project alternatives. Refer to map sheet 128 in Appendix R for a map of the proposed designs in this location. Under the Project designs, the Cedar Creek Road intersection of Main Street is relocated approximately 500 feet south of the existing location. Additionally, Hawkins Street is proposed to be extended to intersect with Cedar Creek Road as a "T" intersection approximately 1,000 feet east of the Main Street and Cedar Creek Road intersection. Due to the proposed at-grade rail crossing closures, additional traffic from College Street and Hawkins Street will be rerouted to Main Street and Cedar Creek Road and the proposed grade separation on Cedar Creek Road. Some traffic from the College Street at-grade rail crossing is expected to also use proposed new connector to NC 56 to access the grade separated crossing on NC 56. The traffic patterns and volumes at the intersection of Person Street and Main Street, which services school traffic, also have the potential to change due to the Project.

Person Street and Main Street: The configuration of the Person Street and Main Street intersection will not change due to the Project; however, traffic patterns and volumes may change. Given its proximity to the Project and school, an analysis was performed for this intersection to determine the effects of the Project on its operations. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the College Street and Main Street intersection, while Table 4-117 provides the level of service for the 2030 No-Build and proposed conditions. After performing traffic rerouting in the area, it was estimated that the volumes at this intersection would not change with the Project. As shown by Table 4-117, even with volumes altering at adjacent intersections, the operations of the Person Street and Main Street intersection are anticipated to be the same with and without the proposed Project with no movement operating below LOS B.

Table 4-117
Person Street and Main Street - Level of Service in 2030

	Eastbound	
	Left	Right
No Build (AM)	B	B
No Build (PM)	B	A
Proposed (AM)	B	B
Proposed (PM)	B	A

Source: Hatch Mott MacDonald, 2014.

Hillsborough Street/Hawkins Street and Main Street: As mentioned above, the existing at-grade rail crossing on Hawkins Street would be closed under the Project. Traffic from this crossing would have the option to use a proposed connector linking College Street and NC 56 to access the proposed grade separation on NC 56 or use the proposed extension of Hawkins Street to access the proposed grade separation at Cedar Creek Road. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the Hillsborough Street/Hawkins Street and Main Street intersection, while Table 4-118 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-118, the operations of the Hillsborough Street/Hawkins Street and Main Street intersection will improve with the Project. This improvement is due to the anticipated traffic reductions to and from the west, which are based on the removal of the existing at-grade rail crossing associated with the Project.

Table 4-118
Hillsborough Street/Hawkins Street and Main Street - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	C	C	A	A
No Build (PM)	B	B	A	A
Proposed (AM)	B	B	A	A
Proposed (PM)	A	B	A	A

Source: Hatch Mott MacDonald, 2014.

Cedar Creek Road and Main Street: As part of the Project, Cedar Creek Road is proposed to be relocated approximately 500 feet south of its current intersection with Main Street and have a grade separated crossing over the Project railroad alignment. Traffic from existing at-grade rail crossings on College Street and Hawkins Street that are proposed for removal would have the option to use the proposed grade separation on Cedar Creek Road. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the Cedar Creek Road and Main Street intersection, while Table 4-119 provides the level of service for the 2030 No-Build and Proposed conditions. As shown by Table 4-119, with the proposed design, the Cedar Creek Road and Main Street intersection operates very similarly in the design year with and without the Project. All movements are anticipated to operate at LOS B or better in both the No Build and proposed conditions.

Table 4-119 Cedar Creek Road and Main Street - Level of Service in 2030		
	Westbound	Southbound
No Build (AM)	B	A
No Build (PM)	A	A
Proposed (AM)	B	A
Proposed (PM)	B	A

Source: Hatch Mott MacDonald, 2014.

Cedar Creek Road and New Connector: An extension of Hawkins Street is proposed to provide a new connection to Cedar Creek Road east of the proposed grade separated crossing. This new connection would create a new intersection on Cedar Creek Road and allow traffic currently using the at-grade rail crossings on College Street and Hawkins Street to access the proposed grade separated crossing on Cedar Creek Road. Volumes at this intersection were estimated using counts at the intersections of College Street and Hawkins Street, Hawkins Street/Hillsborough Street and Main Street, Cedar Creek Road and Main Street, and projected school trip assignments. Appendix P Figures 57 and 58 provide the 2030 proposed laneage and peak hour volumes for the Cedar Creek Road and New Connector intersection, while Table 4-120 provides the level of service for the 2030 proposed conditions. As shown by Table 4-120, the proposed New Connector intersection with Cedar Creek Road is anticipated to have all movements operate at LOS A in 2030 with the Project.

Table 4-120 Cedar Creek Road and New Connector - Level of Service in 2030		
	Southbound	Southwest bound
No Build (AM)	--	--
No Build (PM)	--	--
Proposed (AM)	A	A
Proposed (PM)	A	A

Source: Hatch Mott MacDonald, 2014.

4.14.2.10 *RALEIGH, NC*

4.14.2.10.1 ATLANTIC AVENUE AND WOLFPACK LANE/HIGHWOODS BOULEVARD

The Preferred Alternative in this area is the common alignment of the NC1, NC2, NC3, and NC5 Project alternatives. Refer to map sheets 146 and 147 in Appendix R for a map of the proposed designs in this location. Under the Project designs, a bridge would be provided at Wolfpack Lane and the proposed Project railroad alignment, located just west of the intersection of Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue in Raleigh, NC. In order to maintain all movements across Atlantic Avenue, Tarheel Drive, and Wolfpack Lane and provide the grade separated crossing, Tarheel Drive will be realigned and three closely spaced intersections created. The analysis discussed in this section was performed to determine the effects of the proposed grade separation over the Project railroad alignment to the surrounding intersections and how operations will compare to future operations if the Project was not implemented. The three closely spaced intersections that would be created by the Project: Highwoods Boulevard and Atlantic Avenue, Highwoods Boulevard and Beechleaf Court, and Wolfpack Lane and Beechleaf Court were all analyzed under signal control.

While the concept of maintaining all movements at these intersections may not be ideal, both the public and the City of Raleigh, NC, supported them, and they result in adequate intersection level of service, minimize overall impacts, and, based on the analysis, result in relatively efficient traffic flow.

Wolfpack Lane and Tarheel Drive: Neither the existing configuration nor the design year traffic volumes for the Wolfpack Lane and Tarheel Drive intersection are expected to change with the Project. The only considerable effect on operations could be the proposed signal at the intersection of Wolfpack Lane and Beechleaf Court. Appendix P Figures 61 and 62 provide the 2030 proposed laneage and peak hour volumes for the Wolfpack Lane and Tarheel Drive intersection, while Table 4-121 provides the level of service for the future No-Build and proposed conditions. As shown by Table 4-121, the intersection of Wolfpack Lane and Tarheel Drive is expected to operate very similarly in the design year with and without the proposed Project, and no movements are anticipated to operate below LOS B.

Table 4-121
Wolfpack Lane and Tarheel Drive - Level of Service in 2030

	Southbound	Southeast bound
No Build (AM)	B	A
No Build (PM)	B	A
Proposed (AM)	B	A
Proposed (PM)	B	A

Source: Hatch Mott MacDonald, 2014.

Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue: With the proposed removal of the at-grade rail crossing on Wolfpack Lane, this intersection would become a “T” type intersection. The removal of the fourth leg is anticipated to improve operations; however, with the new proposed closely spaced signalized intersections, coordination will be a key factor in future operations. It should be noted that in the analysis, this intersection was coordinated with these three intersections and not intersections along Atlantic Avenue which could affect operations of Atlantic Avenue in the future. Appendix P Figures 61 and 62 provide the 2030 proposed laneage and peak hour volumes for the Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue intersection, while Table 4-122 provides the level of service for the 2030 No-Build and proposed conditions. As shown by Table 4-122, the intersection of Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue operates with less congestion in the design year with the proposed Project and its associated design. No approaches are anticipated to operate below LOS C in the proposed conditions, while several movements are expected to operate at LOS F in the No Build PM peak period.

Table 4-122
Wolfpack Lane/Highwoods Boulevard and Atlantic Avenue - Level of Service in 2030

	Eastbound	Westbound	Northbound	Southbound
No Build (AM)	F	D	D	D
No Build (PM)	F	F	F	D
Proposed (AM)	--	C	C	B
Proposed (PM)	--	C	C	C

Source: Hatch Mott MacDonald, 2014.

Beechleaf Court and Wolfpack Lane: In order to help facilitate all movements, Wolfpack Lane is proposed to extend to Beechleaf Court, which will create a new “T” intersection. This new connection will allow traffic from Wolfpack Lane to access Highwoods Boulevard and Atlantic Avenue. Conversely, it will also allow traffic from Highwoods Boulevard and Atlantic Avenue to access Wolfpack Lane. Based on laneage and for coordination purposes, this intersection was analyzed under signal control. Appendix P Figures 61 and 62 provide the 2030 proposed laneage and peak hour volumes for the Wolfpack Lane and Beechleaf Court intersection, while Table 4-123 provides the level of service for the 2030 proposed conditions. As shown by Table 4-123, while one approach (northeast bound) in the PM peak is expected to operate at LOS E in the 2030 design year, the remaining movements are expected to operate at an overall LOS D or better in the proposed conditions.

Table 4-123
Wolfpack Lane and Beechleaf Court - Level of Service in 2030

	Southbound	Northeast bound	Southwest bound
Proposed (AM)	D	D	B
Proposed (PM)	D	E	A

Source: Hatch Mott MacDonald, 2014.

Highwoods Boulevard and Beechleaf Court: With the proposed Project design, traffic patterns and geometrics at this intersection will change considerably. Due to projected volumes, proposed laneage, and for coordination purposes, this intersection was analyzed under signal control in the design year for both the proposed and No Build conditions. Appendix P Figures 61 and 62 provide the 2030 proposed laneage and peak hour volumes for the Highwoods Boulevard and Beechleaf Court intersection, while Table 4-124 provides the level of service for the 2030 proposed conditions. As shown by Table 4-124, while one approach (southwest bound) in the PM peak is expected to operate at LOS F in the 2030 design year, the remaining movements are expected to operate LOS D or better in the proposed conditions.

Table 4-124
Highwoods Boulevard and Beechleaf Court - Level of Service in 2030

	Southeast bound	Northwest bound	Northeast bound	Southwest bound
No Build (AM)	A	A	D	D
No Build (PM)	A	B	D	C
Proposed (AM)	C	C	A	C
Proposed (PM)	D	D	A	F

Source: Hatch Mott MacDonald, 2014.

Highwoods Boulevard and Smoketree Court: The Highwoods Boulevard and Smoketree Court intersection traffic volumes, traffic patterns, and intersection geometry are not expected to alter with the Project; therefore, no analysis was performed for this intersection. Appendix P Figures 61 and 62 provide the 2030 proposed laneage and peak hour volumes for the Highwoods Boulevard and Smoketree Court intersection.

4.14.2.11 *DOWNTOWN RALEIGH, NC, AREA*

In downtown Raleigh, NC, the Preferred Alternative is NC5. Refer to map sheets 148-150 in Appendix R for maps of the proposed designs in this area. The Project designs in downtown Raleigh, NC, locate proposed grade separated crossings adjacent to existing grade separated crossings; however, two existing at-grade crossings, Jones Street and Hargett Street, will be closed to vehicular traffic. Given the expansive grid system in downtown Raleigh, NC, the system is expected to be able to adequately service the rerouted traffic. The analysis discussed in this section was performed to determine the effects of the proposed at-grade crossing closures on multiple nearby downtown intersections. Aside from Jones Street and Hargett Street, no intersection geometry is anticipated to alter due to the Project. Appendix P Figures 65 and 66 provide the 2030 proposed laneage and peak hour volumes for the downtown intersections while Table 4-125 provides the level of service for the 2030 No Build and proposed conditions.

Table 4-125
Downtown Raleigh, NC - Level of Service in 2030

Intersection	Movement	Period	2030 No Build	2030 Proposed
Glenwood Avenue/North Street (signalized)	all	AM	A	B
		PM	B	B
North Street/West Street (unsignalized)	Eastbound	AM	B	B
		PM	B	B
	Westbound	AM	B	B
		PM	B	C
	Northbound	AM	A	A
		PM	A	A
	Southbound	AM	A	A
		PM	A	A
North Street/Harrington Street (unsignalized)	Eastbound	AM	A	A
		PM	A	A
	Northbound	AM	A	A
		PM	A	A
Harrington Street/Lane Street (unsignalized)	Eastbound	AM	A	A
		PM	A	A
	Westbound Left	AM	A	A
		PM	B	B
	Westbound Thru/Right	AM	A	A
		PM	A	A
	Northbound	AM	A	A
		PM	A	A
Glenwood Avenue/Jones Street (signalized)	all	AM	A	A
		PM	B	A
West Street/Jones Street (unsignalized)	Eastbound	AM	A	A
		PM	A	A
	Westbound	AM	A	A
		PM	A	A
	Northbound	AM	A	A
		PM	A	A
	Southbound	AM	A	A
		PM	A	A
Harrington Street/Jones Street (unsignalized)	Eastbound	AM	A	A
		PM	A	A

Table 4-125
Downtown Raleigh, NC - Level of Service in 2030

Intersection	Movement	Period	2030 No Build	2030 Proposed
	Northbound	AM	B	B
		PM	B	B
	Southbound	AM	B	B
		PM	B	B
Glenwood Avenue/Hillsborough Street (signalized)	all	AM	B	C
		PM	B	C
Edenton Street/West Street (signalized)	all	AM	C	B
		PM	B	B
Boylan Street/Morgan Street (signalized)	all	AM	C	C
		PM	B	B
Glenwood Avenue/Morgan Street (signalized)	all	AM	B	A
		PM	C	B
Boylan Street/Hargett Street (signalized)	all	AM	B	B
		PM	B	B
Hargett Street/West Street (unsignalized)	Eastbound	AM	A	--
		PM	A	--
	Westbound	AM	A	A
		PM	A	A
	Northbound	AM	B	A
		PM	B	B
	Southbound	AM	B	B
		PM	B	B
Hargett Street/Harrington Street (unsignalized)	Eastbound	AM	A	A
		PM	A	A
	Westbound	AM	A	A
		PM	A	A
	Northbound	AM	B	B
		PM	B	B
	Southbound	AM	B	B
		PM	B	B

Source: Hatch Mott MacDonald, 2014.

As shown by Table 4-125, all analyzed signalized intersections in the Raleigh, NC, downtown area are expected to operate LOS C or better in the 2030 design year No Build and proposed conditions. Each unsignalized movement is also expected to operate LOS C or better in the 2030 design year No Build and proposed conditions. Based on this information, the downtown grid network, which provides the ability for trips to divert in numerous ways, is expected to have adequate capacity to service the rerouted traffic associated with the proposed Project.

The downtown grid network is anticipated to be able to service the design year traffic with the proposed Project railroad alignment. However, during final design the Project Team will coordinate with the City of Raleigh, NC, regarding the following:

- Accommodations for cyclists (such as identification of an alternate route) for the proposed closure of Hargett Street at-grade crossing. Hargett Street currently services the signed bicycle route Cross Town Route 8.
- Accommodations for cyclists (such as identification of an alternate route) for Jones Street, which currently serves as a signed bicycle route, Cross Town Route 9. The Preferred Alternative includes closing the existing at-grade crossing to vehicular traffic, and building a pedestrian bridge with towers.
- The City of Raleigh, NC, is currently in the process of upgrading their City Signal System. The Project Team will continue to coordinate with the City related to the signals in the areas of the rail crossing closures and grade separations to service the final reconfigured traffic as well as traffic shifts during construction. Updates may include signal timings as well as signal and signal system equipment including interconnections.
- The Project Team will coordinate with the school system on potential school bus rerouting due to the crossing closures, grade separations, and associated. While it should be noted the Underwood Gifted and Talented Magnet, Project Enlightenment, and Wiley Elementary schools are in the vicinity of this alignment, a concern with school bus routing is not anticipated. This is based on the fact that the current US DOT Crossing Inventory Sheets as of March 26, 2009 for the crossings of Jones Street (Crossing Number 630-629N), West Street (Crossing Number 630-628G), Harrington Street (Crossing Number 630-627A), and Hargett Street (Crossing Numbers 735-364G and 630-632W), indicate the average number of school busses per day over those crossings is zero.

4.14.3 RAIL

As described in Section 3.14, the two main Class I railroads operating in Virginia and North Carolina are CSX and NS. A large portion of the existing rail network is single-track, which creates bottlenecks in high traffic areas. The Preferred Alternative provides improvements to the rail network through provision of additional tracks, which increases capacity; through designs for straighter track, which allows increased speeds; and through use of grade-separated crossings, which improve safety. In addition, this Project could provide relief to the congested CSX A-line over much of the corridor and also provide a detour route should the A-line be closed due to damage or derailments. Refer to Section 1.4 for a full description of rail improvements throughout the corridor. For a description of the designs for river and major creek bridges, and description of the track configuration by Project section, refer to Chapter 2. The track charts provided in the Tier II DEIS have been updated and can be found in Appendix E.

4.14.4 STATIONS

Section 4.14.4 of the Tier II DEIS contained a discussion regarding station locations. However, as noted in Chapter 3 of this Tier II FEIS, this study does not evaluate environmental impacts related to specific station locations, but rather provides a general discussion of potential station locations in relationship to the larger transportation network. Therefore, the discussion regarding stations was determined to be more appropriately placed within the Project description in Section 1.4.

4.14.5 TRANSIT

The Project is being planned to allow connectivity with other rail transit in the major metropolitan areas along the Project corridor as well as to other forms of transit. In addition, Virginia and North Carolina have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states. The Project, as part of the SEHSR Corridor, would serve as the spine to these added routes, allowing conventional rail service passengers to connect to the proposed SEHSR service and other points in the Northeast, Southeast, and beyond. The Project enhances the connectivity through greatly enhanced speed, reliability, and reductions in travel time, as discussed in Section 1.5.

Section 3.11.3 discussed the associated local and regional transit services planned to connect to the Project, as well as which agencies are responsible for planning the transportation needs in the two-state Study Area. For example, rail transit plans for the Richmond, VA, region include several commuter rail and light rail lines providing service to Main Street Station. In addition, TT's regional rail plans for the Raleigh, NC, region involve a light rail line that could potentially share the same general corridor as the Project railroad alignment from north Raleigh, NC, to downtown Raleigh, NC, and then continue west along existing rail lines to Orange and Durham Counties. As noted in Chapter 3, planning between the TT Regional Transit project and the Project (especially in those areas where the proposed ROW's for the two systems are immediately adjacent to each other) is on-going and has included extensive coordination with the NCDOT Rail Division and the Project Team.

As discussed in Section 3.11.3.1, there is currently at least one public transit service agency that provides bus or van services for SEHSR riders at each of the planned SEHSR station locations within the Study Area. This includes the following bus transit agencies/systems listed by proposed SEHSR station location:

- Richmond, VA - Greater Richmond Transit Company (GRTC)
- Petersburg, VA - Petersburg Area Transit (PAT)
- La Crosse, VA - Lake Area Bus (LAB)
- Henderson, NC - Kerr Area Rural Transportation System (KARTS)
- Raleigh, NC - Capital Area Transit (CAT) & Triangle Transit (TT)

These existing systems are likely to be expanded and/or supplemented with additional systems once the Project is constructed and anticipated ridership on the SEHSR Corridor becomes a reality. As noted in Section 3.11.3.1, each of the regional transportation agencies in the Study Area is committed to provide enhanced transit opportunities surrounding the proposed SEHSR Corridor stops.

4.14.6 AVIATION

This section is new to the Tier II FEIS and was added to address agency comments on the Tier II DEIS.

As noted in Section 3.14.6, according to Federal Aviation Administration (FAA) Advisory Circular 150/5300, a Notice of Proposed Construction or Alteration (FAA Form 7460-1) is required for projects that exceed specific standards listed in 14 CFR 77.9. The three airports located near the Preferred Alternative do not meet the need for this Notice, as detailed in Table 4-126.

Table 4-126
Airports Located Near Preferred Alternative

Name	Location	Runway Length (ft)	Distance Between Runway and SEHSR (ft)	SEHSR Largest Height Above Ground (ft)	Is FAA Notice Required? If Not, Why? (see Notes Below)
Chesterfield County	Richmond, VA	5,500	18,900	~40	No – Exempt (§ 77.9 (e)(1)); also SEHR height will not exceed 189 ft (§ 77.9(b)(1))
Dinwiddie County	Petersburg, VA	5,000	10,000	~40	No – Exempt (§ 77.9 (e)(1)); also SEHR height will not exceed 100 ft (§ 77.9(b)(1))
Mecklenburg-Brunswick Regional Airport	South Hill, VA	5,000	10,300	~40	No – SEHR height will not exceed 103 ft (§ 77.9(b)(1))

NOTES:
§ 77.9 Construction or alteration requiring notice. If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of:
(a) Any construction or alteration that is more than 200 ft. Above Ground Level (AGL) at its site.
(b) Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:
(1) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway more than 3,200 ft. in actual length, excluding heliports.
(2) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway no more than 3,200 ft. in actual length, excluding heliports.
(c) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) or (b) of this section.
(d) Any construction or alteration on any of the following airports and heliports: (1) A public use airport listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;
(e) You do not need to file notice for construction or alteration of:
(1) Any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation.

4.15 UTILITIES

Utility impacts for the Preferred Alternative vary widely throughout the length of the Project. Table 4-147 displays a summary of the projected costs associated with impacts to utility infrastructure, by section for the Preferred Alternative.

Utility cost estimated were developed initially for the Tier II DEIS. Appendix N of the Tier II DEIS provided a breakdown of utility impacts by type (power, telephone, cable television, water, gas, and sewer) for each alternative, by section. These costs were evaluated during selection of the Preferred Alternative, as described in Chapter 2. The costs for the Preferred Alternative shown in Table 4-127 are from the Tier II DEIS, with the exception of Section V where a new alternative (NC5) was developed based on stakeholder input. NCDOT developed utility costs for the new portion of this alignment in 2011. Based on this information and the existing utility costs north of Whitaker Mill Road for Section V, the utility impacts for NC5 were estimated. For the other sections, the minor adjustments made to the designs were not deemed to be sufficient to substantially change the costs estimated in the Tier II DEIS.

Table 4-127
Utility Cost Impacts by Section (in dollars)

Section	Preferred Alternative	Utility Costs
AA	VA1	$20,469,250
BB	VA1	$3,874,350
CC	VA1	$4,486,800
DD	VA3	$2,421,500
A	VA2	$415,675
B	VA1	$264,000
C	VA1	$1,874,650
D	VA4	$1,283,500
E	VA1	$765,900
F	VA1	$409,925
G	VA3	$191,700
H	VA1	$727,900
I	VA1	$990,950
J	VA2	$996,550
K	VA1	$397,900
L (VA)	VA1	$459,200
L (NC)	NC1	$543,597
M	NC1	$1,343,111
N	NC1	$505,185
O	NC3	$189,972
P	NC1	$2,683,653
Q	NC1	$681,550
R	NC1	$21,882
S	NC1	$1,054,977
T	NC1	$906,535
U	NC1	$2,114,507
V	NC5	$2,279,020

Source: NCDOT, 2008, 2009. 2011; DRPT, 2006, 2009.

4.15.1 GROUNDWATER WELLS AND SURFACE WATER SUPPLY INTAKES

4.15.1.1 *SURFACE WATER SUPPLY INTAKES*

The Preferred Alternative will not directly impact any surface water supply intakes.

The Project will employ best management practices in both Virginia and North Carolina to control erosion and sedimentation, and to prevent spills. Section 4.1 lists all mitigation and minimization techniques that will be followed to minimize water quality impacts from the Project.

Potential impacts to public water distribution systems will be verified during final design and local utilities will be contacted during the right of way phase of the Project, if necessary.

4.15.1.2 *GROUNDWATER WELLS*

Subsequent to the publication of the Tier II DEIS, it was determined that the Project would impact two private wells. The Preferred Alternative will impact a private well serving Hillcrest Mobile Home Park, located north of La Crosse, VA in Section I. The Mecklenburg County, VA, Health Department has indicated that there is sufficient land available within the Hillcrest property to accommodate relocation of the drinking water well. During final design, a suitable new water source will be identified to ensure a continuous, safe, and sanitary water source for the residents.

The Preferred Alternative will also impact the Aqua North Carolina well on Ligon Mill Road in Wake Forest, NC, in Section U. It is anticipated that the impact to the Agua North Carolina well can be mitigated with a connection to a public water supply or the well can be relocated. This issue will be addressed during the final design stage of the Project, at which time coordination with the owner of the well will take place.

4.16 SAFETY AND SECURITY

This section has been revised in response to public comments on the Tier II DEIS.

As discussed in Section 1.8.6, passenger rail has consistently been one of the safest ways to travel nationally. Since 1970, over 94% of all transportation fatalities have been motor vehicle related, while less than 4% have been related to rail operations (and the majority of those are due to highway-rail collisions or trespassers, as opposed to train accidents). Following this national trend, passenger rail has consistently been one of the safest ways to travel in Virginia and North Carolina, with railroad related fatalities representing only 0.1% of total transportation related fatalities for both states in 2010. The safety improvements discussed in Section 1.8.6, along with the full grade separations proposed with this Project, will result in improved overall rail passenger safety within the Project corridor when compared to existing rail service and will create an even safer mode of transportation than currently available in the Study Area. Increasing the safety of the transportation system within the travel corridor is one of the primary purposes for the Project.

4.16.1 **HIGH SPEED RAIL (HSR) SAFETY**

The Code of Federal Regulations (CFR) Title 49 (Transportation) requires high speed trains and track to be designed and maintained at a very high standard for safety and ride quality. The proposed Project improvements will be designed to meet American Railway Engineering and Maintenance-of-way Association (AREMA) standards for high speed track and will exceed the requirements of CFR Title 49. The design will include such items as modern track components and geometry and advanced signal systems that separate trains. In addition, risk of derailment is significantly reduced by the elimination of at-grade crossings, where the potential of a collision is highest. Maintenance requirements of CFR Title 49 include frequent inspection of vehicles and track, and independent testing by FRA.

In addition, FRA currently administers a comprehensive set of safety standards and program guidance for conventional and high-speed operations. These standards include requirements for track, equipment, operating rules and practices, signals and train control, communications, emergency preparedness, and certification of locomotive engineers, among others. In 2009, FRA began amending those existing safety standards through a High-Speed Passenger Rail Safety Strategy that will support a very high level of safety for new passenger rail services, including final design and operations of the SEHSR Corridor (USDOT FRA, 2009). This Strategy will update and augment existing FRA design and operation standards based on lessons learned from high speed systems around the world. New factors being evaluated include: volume and nature of freight operations sharing the system, construction of shared equipment on the system, ability to respond to emergencies, and degree of isolation of the system from hazards (vehicles, unauthorized access, vandalism, and natural hazards). Under this FRA Strategy, operators of HSR along the SEHSR Corridor will be required to prepare and follow the following safety elements: Right-of-Way Safety Plan, Maintenance-of-Way Safety Management Plan, On-Board Emergency Systems and System Safety Programs.

4.16.2 GRADE SEPARATION

As discussed in Chapter 2, the existing rail corridors contain 200-plus rail-road crossings, many of which are at-grade, which pose inherent hazards to existing train operations, motor vehicles, non-motorized vehicles, and pedestrians. Since 1994, USDOT policy has supported consolidation or elimination of at-grade roadway crossings on all active rail lines (freight and/or passenger) because roadway-rail crossings are the most difficult to control and therefore present the areas with the highest risk, given the involvement of two independent modes of transportation (USDOT, 1994).

According to recent FRA guidelines for highway-rail crossings for high-speed passenger rail special care must be observed where rail lines carry high-speed passenger trains to ensure that road traffic does not present an obstruction that could result in a collision and subsequent derailment (USDOT FRA, 2009). The presence of both high-speed passenger trains and slower-moving freight trains (as proposed within the Project corridor) creates another dimension of risk, warranting additional attention to governance of all traffic over the roadway-rail intersection. Under these circumstances, exclusive reliance on sight distance or audible warnings to judge the arrival of trains is not practical. Particularly where there are two or more tracks (as proposed with some portions the Project), the potential for an event involving more than the single train initially impacting a road user adds to the potential for even greater additional risk.

For these reasons, as well as the other safety and operability purposes detailed in Section 2.2.1.2, the Project is proposing the safest design possible by consolidating and grade separating all railroad-roadway crossings. Included in the Project are over 80 new bridges/overpasses/underpasses that, when combined with existing bridges/overpasses and proposed roadway realignments and closures, will create a fully grade-separated system to ensure absolute automobile/truck – train collision avoidance (which is the primary cause for derailments), thereby assuring the highest level of safety to both passengers and the surrounding communities. Detailed information about proposed treatments for existing at-grade crossings (both public and private), can be found in Appendix F and are shown on the designs in Appendix R.

4.16.3 PEDESTRIAN SAFETY

The ability of pedestrians to move safely across the HSR corridor is another important safety consideration. In Virginia, one existing public pedestrian-only underpass will be retained with the Preferred Alternative (there are no existing public pedestrian-only bridges or underpasses in North Carolina). The Preferred Alternative also proposes twelve new pedestrian-only bridges/underpasses to provide increased pedestrian access in certain downtown areas. All of the proposed new bridge and underpass designs will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses. At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and VDOT pedestrian policies. In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists.

4.16.4 FENCING

Fencing that would direct pedestrians to bridges/underpasses may be proposed for some locations in urbanized areas. The location and type of fencing will be determined during final design, based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities. Such fencing, along with the proposed crossing closures may prevent unauthorized access onto the rail corridor in some areas, as well as help direct pedestrians to safe crossings (bridges/underpasses), thereby improving safety along the corridor.

4.16.5 OTHER SECURITY CONCERNS

Section 3.19 provided a discussion about railroad security in the current security climate. Just as it exists currently, the future developed Project corridor will remain accessible from many miles of arterial and secondary roadways where no security measures are practicable. It should be noted that any crossing of the railroad (either existing or proposed with the Project) where no legal crossings currently exist is not only unsafe, it is considered trespassing.

4.17 INDIRECT AND CUMULATIVE EFFECTS

This section is completely revised from the Tier II DEIS to address public and agency comments on the Tier II DEIS.

The purpose of this section is to examine the indirect and cumulative effects (ICEs) of the Project. NEPA, as amended, requires the assessment of direct, indirect, and cumulative impacts as part of the Project decision-making process. The CEQ guidelines define direct, indirect, and cumulative impacts as follows:

- Direct effects are caused by the action and occur at the same time and place.
- Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
- Cumulative effects are the impact on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Descriptions of the Study Area's history and how past actions shaped the present are provided in the Phase I and Phase II architectural and archaeological reports prepared for this Project and are summarized in Chapter 3.12 of the 2010 Tier II DEIS and this Tier II FEIS. Present conditions of the Study Area, including land use, transportation planning, communities, protected species and habitats, and other human and natural resources, are documented in Chapter 3 of this Tier II FEIS. The direct effects of the Project on human and natural resources are documented throughout Chapters 4 and 5 of this Tier II FEIS. Potential indirect and cumulative effects are based on the information provided in Chapters 3, 4, and 5 of this Tier II FEIS.

The implementation of the Project would have varying degrees of indirect and cumulative effects at national, regional, and local levels. Contributing factors to indirect and cumulative effects are other major planned actions and the Project's compatibility with future land use and transportation plans. Mitigating factors that could offset any impacts would include locally adopted ordinances and land use controls. Summaries of concerns relative to the potential for indirect and cumulative effects, as further discussed in this section, are provided in Table 4-128 and Table 4-129, respectively.

Table 4-128
Issues/Concerns and Potential Indirect Effects (Dependent on Location)

Area of Concern	Potential Indirect Effects	Potential Mitigation Actions
Water Resources: Streams, Wetlands, Riparian Areas, Floodplains, Water Quality	• Potential negative impacts to wetlands, streams, riparian areas, floodplains, water quality from potential secondary development surrounding the proposed stations in more rural areas. • Potential water quality effects associated with construction, operation, and maintenance of the rail system.	• Stormwater controls and locally administered monitoring • Local and use controls limiting development and runoff • Local low impact development guidelines • Stormwater facility maintenance • Following sediment and erosion control guidance during construction
Farmlands	• Potential loss of prime farmland soils as a result of secondary development surrounding the proposed stations in more rural areas.	• Local land use controls that concentrate development around station
Air Quality	• Localized air quality impacts from increased traffic due to potential secondary development surrounding the proposed stations in more rural areas. • Regional air quality improvements from switch to auto-related trips to rail-related trips.	• Travel demand management strategies that reduce trip making as applied locally
Noise & Vibration	• Noise and vibration impacts from increased traffic due to potential secondary development surrounding the proposed stations in more rural areas.	• Local zoning and land use controls that require buffering around stations
Biological Resources: Terrestrial & Aquatic Communities	• Potential terrestrial and aquatic wildlife and habitat impacts from secondary development surrounding the proposed stations in more rural areas. • Potential water quality effects associated with construction, operation, and maintenance of the rail system.	• Local land use controls that concentrate development around stations • Local monitoring programs of habitats • Stormwater facility maintenance • Following sediment and erosion control guidance during construction
Rare & Protected Species	• Potential for secondary development to put pressures on existing protected species and habitats surrounding the proposed stations in more rural areas. • Potential water quality effects associated with construction, operation, and maintenance of the rail system.	• Local land use controls that concentrate development around stations • Local monitoring programs of habitats • Stormwater facility maintenance • Following sediment and erosion control guidance during construction
Community Resources:	• Potential secondary development could place additional demands on community resources such as schools, emergency response, and infrastructure surrounding the proposed stations.	• Local land use planning (use of proffers or development requirements to meet new demand for services)
Socioeconomics	• Economic development around rail stations, with increased employment opportunities and induced development.	• None required, beneficial impact potential

Table 4-128
Issues/Concerns and Potential Indirect Effects (Dependent on Location)

Area of Concern	Potential Indirect Effects	Potential Mitigation Actions
	• Potential for additional employment opportunities around secondary development areas.	
Neighborhood & Community Impacts	• Effects on communities due to change in development patterns, densities and property values, and associated traffic impacts due to induced development surrounding the proposed stations.	• Local land use controls to limit impacts including traffic mitigation measures
Land Use	• Change in development, including increased redevelopment to higher densities and increased property values, around stations • Local economic effects from change in development and property values around stations • Potential for secondary development around station areas is greatest in the La Crosse area, given the amount of undeveloped land currently available; however, all station areas will see secondary development pressures.	• None required – land use would be determined by local authorities in terms of any changes that occur
Archaeological & Historical Resources	• Potential for secondary development surrounding the proposed stations to put pressures on archaeological resources and to alter historic quality of towns and communities.	• Local land use controls – historic preservation codes and local enforcement
Transportation: Roads, Traffic, Rail, Stations	• Increased traffic from potential induced development surrounding the proposed stations. • Increased multi-modal system linkage	• Local land use controls including traffic analyses and local investments would mitigate any impacts

Table 4-129
Concerns and Potential Cumulative Effects (Dependent on Location)

Area of Concern	Potential Cumulative Effects	Potential Mitigation Actions
Water Resources	• Possible cumulative effects due to increased impervious ground surfaces related to road work, resulting in stormwater run-off and reduction in water quality. • Possible cumulative effects of development pressures on water resources of wetlands, streams, rivers, riparian areas.	• Stormwater contols and locally administered monitoring • Local and use controls limiting development and runoff • Local low impact development guidelines • Local land use controls that limit growth in undeveloped areas along corridor and concentrate growth and infill development in areas best suited to accommodate it.
Air Quality	• Regionally, automobile emissions may decrease as drivers switch to passenger rail as their mode of transportation.	• None required
Noise & Vibration	• Increased freight rail in addition to passenger rail could cumulatively impact those in the vicinity of the rail line.	• Locally administered mitigation programs including buffering, noise insulation.

Table 4-129 Concerns and Potential Cumulative Effects (Dependent on Location)		
Area of Concern	**Potential Cumulative Effects**	**Potential Mitigation Actions**
	• Impact would be worse in areas where rail service is not currently provided.	
Biological Resources	• Possible cumulative effects of development pressures on biological resources of terrestrial and aquatic wildlife and habitat.	• Local land use controls that limit growth in undeveloped areas along corridor and concentrate growth and infill development in areas best suited to accommodate it.
Communities and Community Resources	• Potential for increased population and employment in areas around rail stations, leading to an increase in community resource demands in city centers. • Benefit from improved mobility option offered by passenger rail. • The combination of increased noise and vibration and changes to circulation patterns from crossing closures and consolidations could reduce the feeling of community. However, to some, the addition of HSR and a station could improve a community's sense of identity and offer employment and development opportunities that might not otherwise be possible.	• Local land use planning and provision of services to meet demand.
Land Use	• A possible increase in new development and redevelopment to higher density uses near proposed stations may shift some urban growth away from suburban and greenfield areas and into city centers, increasing the demand for urban services in downtowns but reducing the impact of growth on sensitive natural environmental resources.	• None required, land use would be controlled locally to define what patterns of development would occur over time.
Archaeological & Historical Resources	• The combination of secondary development near the proposed stations with the direct effects of the project could potentially threaten the integrity of archaeological and historical resources. • Although the increase in redevelopment pressures nearest the proposed HSR stations may threaten some historic resources, other areas of downtown may see additional interest in the restoration of historic structures for homes and small businesses.	• Locally administered preservation programs to reduce potential impacts to these resources.
Traffic	• The combination of removing at-grade rail crossings and replacing with grade-separated crossings, along with roadway trips switching to passenger rail trips, would have a cumulative benefit on the roadway network in terms of improving overall safety and reducing traffic volumes on the interstate. • Localized station area traffic increase due to induced demand and provision of stations over time.	• No mitigation required for beneficial impacts • Traffic mitigation measures implemented by local land use controls as development occurs near stations and as stations are developed by localities involved.
Freight Rail Operations	• The potential for increased freight rail shipping from separate but ongoing road and rail projects could result in overall truck traffic reduction on interstate facilities and an economic benefit to the freight rail industry and supporting services	• No mitigation required.

4.17.1 NATIONAL EFFECTS

The Project, as part of the SEHSR Corridor (one of the ten Federally-designated HSR corridors), will play an important role in modernizing America's transportation system. A national HSR network will help fulfill the strategic transportation goals identified in the American Recovery and Reinvestment Act of 2009 and the Passenger Rail Investment and Improvement Act of 2008. Cumulatively, the Project, when combined with other HSR projects, would help achieve the following national transportation goals:

Safe and Efficient Transportation Choices

Provide safe and efficient transportation choices by promoting the safest possible movement of goods and people and optimizing the use of existing and new transportation infrastructure.

Foundation for Economic Competitiveness

Build a foundation for economic competitiveness by laying the groundwork for near-term and ongoing economic growth by facilitating efficient movement of people and goods, while renewing critical domestic manufacturing and supply industries. America's transportation system is the lifeblood of the economy. Providing a robust rail network can help serve the needs of national and regional commerce in a cost-effective, resource-efficient manner, by offering travelers and freight convenient access to economic centers.

Energy Efficiency and Environmental Quality

Promote energy efficiency and environmental quality by reinforcing efforts to foster energy independence and renewable energy, and reduce pollutants and greenhouse gas emissions. Rail is already among the cleanest and most energy-efficient of the passenger transportation modes.

Findings from the National Surface Transportation Policy and Revenue Study Commission indicate that the expansion of intercity passenger rail would improve the nation's transportation system by reducing congestion on other modes and offering mobility options to travelers. As noted above, it would also address important national goals related to climate change and energy use. The following summarizes the benefits associated with an expanded intercity passenger rail service.

- Relieve highway and airway congestion;
- Improve public safety and air quality;
- Reduce fuel consumption per passenger mile, potentially reducing the nation's dependence on imported oil;
- Help mitigate the negative impacts of short or prolonged energy supply disruptions and energy price increases;
- Provide land use and travel pattern changes that could improve air and water quality, as well as aesthetic appeal;
- Provide mobility and economic development opportunities to smaller communities with little or no other access to public transport;
- Assure a redundant transportation mode for use in emergency situations; and
- Provide a mobility option for individuals who do not drive or fly.

4.17.2 REGIONAL EFFECTS

As stated in the Tier I EIS for the SEHSR Corridor between Washington, DC and Raleigh, NC, implementation of HSR in the SEHSR Corridor would enhance the existing transportation network along the SEHSR Corridor, providing many indirect benefits. It would link cities and major metropolitan areas where highway and airline travel volumes are the greatest, thereby providing a travel alternative that will help ease congestion on the existing highway and airway systems. The proposed Project would offer an alternative mode of transportation between Virginia and North Carolina.

The increased speeds and frequencies proposed for the Project will allow people to make trips that they otherwise would not make, increasing capacity to the overall transportation network and the ability for people to travel. The auto trip diversions to the new HSR service would aid in improving air quality throughout the Study Area. The extension of HSR service into states to the south would allow both Virginia and North Carolina to be more accessible by rail to residents, tourists, and business travelers arriving from the north and south.

Implementation of HSR in the SEHSR Corridor, including the Project corridor would provide access to rural areas and communities through links with additional intercity passenger rail service.

Virginia and North Carolina have both evaluated the feasibility of adding passenger train service and routes to eastern and western portions of their respective states. The proposed SEHSR program would serve as the spine to these added routes, allowing passengers to link conventional service to HSR service and connect to points in the Northeast, Southeast, and beyond. These new passenger train services and routes in Virginia and North Carolina would provide linkages to the SEHSR service from parts of Virginia and North Carolina not currently served by rail. Passenger rail linkages would be provided to existing and planned commuter rail services at multimodal stations, allowing for connections to suburbs and airports in Washington, DC, Richmond, VA, Raleigh-Durham-Chapel Hill (the Triangle), NC, and Charlotte, NC.

4.17.3 LOCAL EFFECTS

As reported in the Tier I EIS for the SEHSR Corridor between Washington, DC and Charlotte, NC, and the Project Tier II DEIS (see Chapter 4.11.4), implementation of HSR within the SEHSR Corridor is not expected to alter development patterns in the Study Area except in the vicinity of the rail stations in Richmond, VA, (Main Street Station), Raleigh, NC, (the new Union Station to be completed by 2017), and the yet-to-be-determined station locations in Petersburg, VA, and La Crosse, VA, and Henderson, NC. The Tier I ROD for the SEHSR Corridor between Washington, DC and Charlotte, NC, states that future development will occur primarily around these stations, with commensurate levels of noise and traffic associated with the increased use of the stations, as well as with secondary commercial and residential development that may be drawn to the station areas. The chief potential negative impact would be noise and vibration caused by the reintroduction of service along the CSX S-Line in Virginia where there is presently no rail service.

The implementation of SEHSR service could result in undeveloped land in the vicinity of these stations developing at a faster pace than would happen without the Project. This would most likely be the case at the more rural rail station in La Crosse, VA where there is an abundance of undeveloped land. The remaining station locations are in moderately urbanized areas to highly urbanized areas with limited available vacant land. In these urban areas, nearest the stations, the potential for additional, large-scale new development and redevelopment of previously developed lands would be the greatest. New or retrofitted passenger stations in Richmond, VA; Petersburg, VA; Henderson, NC; and Raleigh, NC, could assist in urban redevelopment efforts of these localities and several of the localities have been doing local land use planning in anticipation of new services at these stations.[2] This local land use planning and control over the local land development process could help focus development around the existing infrastructure and minimize the use of undeveloped lands, and thus could help to limit suburban sprawl and therefore the impact on natural resources. In areas where no current rail service exists (e.g., the CSX S-Line from Petersburg, VA, to Norlina, NC),

[2] As discussed previously in this document, NCDOT has secured funding to construct a new Raleigh Union Station, the City of Richmond is rehabilitating Main Street Station, and the Tri-Cities Municipal Planning Organization has recently initiated an Environmental Assessment for a new multimodal passenger station in the Tri-Cities area.

there may be secondary industrial development because of the new availability of freight access. This could also include the need for local governments to expand infrastructure and supporting services required by industrial development (e.g., roads, water/sewer, food service, residential development). Again, any such growth would be controlled locally through the local land development process.

The secondary impacts of increased traffic from the new and retrofitted stations and the traffic diverted as a result of grade-crossing consolidations are expected to be minimal because traffic volumes on surrounding streets are low and can absorb added traffic without reducing the existing level of service.

As previously noted, construction-related employment from the Project would be relatively short-term. Long-term development, economic activity, and job creation would likely occur within a three to five mile radius of the potential station areas with the highest ridership and the greatest market conditions. This would likely occur in Richmond, VA, Petersburg, VA, and Raleigh, NC, given their existing urban development, multimodal transportation network, and diversified economies. This potential is contingent upon many factors such as current financial and real estate market conditions, and local land use and zoning regulations. Section 4.11.1 identifies potential changes in economic activity that might precipitate secondary development. Additional detail on the potential for secondary development will be more specifically assessed when as yet determined station locations are identified and subjected to their own NEPA process (if Federally funded) and as directed by the information provided by the localities that would determine the form and pattern of any secondary development. This activity could take place during each state and locality's evaluation of the individual stations, a step that will come after the Record of Decision for this Tier II EIS.

Secondary development could adversely impact natural resources such as streams, wetlands, riparian areas, floodplains, protected species, wildlife, habitats, watersheds, and water quality if not mitigated or controlled locally. As discussed in Section 4.1, Water Resources, and Section 4.10, Biological Resources, activities associated with secondary development can include conversion of farmland to impermeable development, clearing and grubbing of forests and stream banks, riparian canopy removal, loss of wildlife and aquatic habitats, increased sedimentation and nutrient loading, and increased demands on water resources. As previously noted, the most likely secondary development pressures would be within a three to five mile radius of the stations and controlled locally. Because developable land in the La Crosse, VA, area is more plentiful than at other station areas, the potential for secondary impacts to natural resources will likely be the greatest in this community. While the La Crosse, VA, area is rich in undeveloped land, sensitive resources such as wetlands, streams, floodplains, protected species or habitat are not in abundance, so prudent local land use planning should consider how to balance development patterns with sensitive resources. The other stations are proposed in highly urbanized areas where secondary development would not likely adversely impact most natural resources.

From a watershed perspective, in Virginia, both the Richmond, VA, and Petersburg, VA, station areas are within the James River Basin, the La Crosse, VA, station would be within the Roanoke River Basin. In North Carolina, the Henderson, NC, station would be within the Roanoke and the Tar-Pamlico River Basins, and the Raleigh, NC, station is in the Neuse River Basin. Any secondary development within these watersheds would be subject to local, state, and Federal water quality regulations, erosion and sediment controls, and permit requirements. Being subject to these regulations and requirements is a line of defense protecting sensitive natural resources.

FRA has developed a "Station Area Planning" guide that can assist localities in managing the consequences and leveraging the opportunities offered by potential HSR stations USDOT FRA, 2011). The document provides concepts, topics, and ideas to assist local jurisdictions and others to accomplish successful station area planning and achieve an optimal integration of the station in its context – to ensure ridership growth and capture livability, sustainability and economic benefits. In addition, many other guides are available to localities to draw upon transit-oriented development

(TOD) and low impact development concepts, such as encouraging compact development and enhancing transit, pedestrian, and bike transportation options. In addition, the recent results of a study on the California HSR can assist localities with better assessing how the proposed Project could bring positive urban transformations by considering complementarities with other station cities and how to integrate their station into the regional context (Mineta Transportation Institute, 2011).

The overall air quality effect is beneficial based on the number of trips diverted from automobiles (see Section 4.6). This benefit would increase proportionally if the cumulative effect of improvements results in the railroad mode capturing more of the corridor trips than currently modeled. The net energy use per passenger mile is substantially less for rail than either air or auto, giving a net positive energy benefit. There is a net positive safety benefit because of the safety advantages of train versus auto travel in the corridor, along with the net positive effect of increased mobility choices for all populations, including minority and low income. These net positive impacts would grow if the cumulative effect of the improvements results in higher use of the rail transportation system.

4.17.3.1 *LOCAL INDIRECT EFFECTS TO NATURAL RESOURCES*

Waters, wetlands, aquatic and terrestrial communities, and threatened and endangered species and their habitats have some potential to be indirectly affected by the project. Indirect effects associated with habitat fragmentation (See Section 4.10.1.1 for discussion of direct impacts) may result in creation of more edge habitat, barriers to wildlife movement, reduction in patch size, loss of interior or area-sensitive species, disruption of wildlife foraging patterns, increased opportunity for invasive species establishment, and generally reduced biological diversity. Indirect effects to major riparian corridors may be realized through restriction of movements by wildlife into and out of them as a result of fragmentation of the wildlife corridors, as well as more localized movements of wildlife into and out of these areas.

The primary indirect effect associated with the introduction of pollutants from railroad construction, use, and maintenance is the degradation of nearby terrestrial and aquatic habitats. That degradation can take place in the form of increased deposition of sediments or contamination from chemical pollutants in the form of heavy metals and petroleum products and their byproducts. When this runoff enters waters that are already impaired, the impacts can accumulate and result in accelerated changes in the macrobenthic community structure and composition, which in turn can affect the fish and amphibian populations that rely on them as a food source, as well as the birds and aquatic mammals that prey on the fish and amphibians. The effects can result in changes in community structure at a local level, but may also extend further to include changes in ecosystem structure and function in the absence of proper mitigation.

The disruption or alteration of natural processes leads to the indirect effect of changing the flow of energy through the local natural communities and sometimes altering the energy flow at the ecosystem level such that it changes the ability of the system to maintain itself. A major pathway for energy flows in the study area may be through the riparian corridors. Some of the potential effects that may occur as a result of the disruption of hydrology in these systems and wetlands of the study area include changes to floodwater storage capacity and retention times, vegetative community composition and structure, nutrient cycling, and aquatic life movement. However, these riparian corridors are dynamic systems both hydrologically and vegetatively; with changes in stream channel morphology, flow characteristics, floodwater storage capacity and retention time, vegetative community composition, and nutrient cycling occurring regularly throughout the systems due to natural causes. Hydrologic modifications due to beaver activity are commonplace, and these low gradient stream systems are adapted to these constantly changing hydrologic modifications. The changes that occur to the parameters identified above tend to be localized around the disturbance sites, and because the systems are adapted to regular changes in hydrologic flow, the changes have little to no effect on the system's ability to maintain itself. These systems are already highly segmented due to current and historic utility, roadway, (and beaver) activity. While railroad crossings represent a more permanent impact to the system than natural beaver modifications, measures can be implemented to minimize and mitigate impacts to the systems.

4.17.4 OTHER PLANNED ACTIONS

The Project takes into account other planned actions by local, state, and Federal authorities within the Study Area, as discussed in Sections 3.11 and 4.11. Long-range planning data was incorporated into the Project. The effects of other planned roadway improvements were evaluated and documented in the SEHSR Draft Traffic Review (Hatch Mott MacDonald, June 2013). The Richmond to Raleigh Project would not adversely impact the ability of these other planned projects to be constructed. Overall, the Project would have a beneficial impact on these planned roadway improvements by way of redirecting a portion of roadway users to SEHSR trains, thereby reducing roadway congestion and improving air quality. Other planned actions in the Study Area are identified below, as well as in Sections 3.11.3 and 3.11.4 and Section 4.11.3. As with planned roadway improvements, these separate, planned projects would have a positive, synergistic effect with the Project.

4.17.4.1 *SEHSR: I-95 CORRIDOR*

The Commonwealth of Virginia Statewide Rail Plan established the I-95 Corridor as a part of the SEHSR Corridor. The I-95 Corridor runs from Washington, DC, to Richmond, VA, and includes an extension to Hampton Roads, VA. The I-95 corridor was identified as a top priority corridor for passenger rail improvements in Virginia, in the state's request for $1.57 billion in Federal funding under the American Recovery and Reinvestment Act of 2009 (ARRA). Key projects within the corridor include:

- Washington, DC/Richmond, VA, Rail Improvement - Virginia DRPT has recommended a ten-year $370 million rail improvement program along this corridor that includes a proposal for a parallel, third main line track over most of the corridor and identifies other track and signal improvements to increase railroad capacity and maximum speeds for both freight and passenger rail operations.
- Richmond, VA, to Hampton Roads, VA, SEHSR Corridor – Virginia DRPT is investigating improved passenger rail service between Richmond, VA, and Hampton Roads, VA, to ultimately connect to the Southeast, Northeast, and Mid-Atlantic regions as an extension of the SEHSR Corridor between Washington, DC and Charlotte, NC. The Study Area includes two routes, the existing Amtrak route from Richmond, VA, to Williamsburg, VA, to Newport News, VA, via the CSX route and another route south of the James River along the Norfolk Southern route between Petersburg, VA, and Norfolk, VA. Additional information on this project is provided in Section 3.14.3.
- Virginia Railway Express Cherry Hill, VA, Station and Third Track – Virginia Railway Express (VRE) provides commuter rail service from the Northern Virginia suburbs to Alexandria, VA, Crystal City, VA, and downtown Washington, DC. Virginia DRPT is partnering with VRE to fund the evaluation of potential enhancements to improve VRE service. Studies are currently underway to evaluate potential improvements to the Fredericksburg VRE line, including construction of a third track in the CSX ROW, design and construction of a new VRE station and slope stabilization at Cherry Hill, VA, a public commuter parking structure to serve the new Cherry Hill, VA, station, and a new highway grade separation over the CSX line.

4.17.4.2 SEHSR: RALEIGH, NC TO CHARLOTTE, NC

The NCDOT's Statewide Multimodal Transportation Plan identifies the Raleigh, NC, to Charlotte, NC, corridor as one of its top passenger rail priorities. NCDOT has completed extensive planning and financial analyses for the incremental development of this important section of the SEHSR Corridor, including expanding existing capacity through additional trackage, straightening curves to improve travel times, and grade-separations to improve safety. NCDOT has applied for more than $5 billion in Federal funding through the ARRA program to complete many of these planned projects. To date, approximately $550 million has been awarded.

4.17.4.3 FORT LEE MILITARY RESERVATION: BRAC EXPANSION

As a part of the US Department of Defense's Base Realignment and Closure (BRAC) activities, Fort Lee is on the receiving end of many base consolidations and expansion. Fort Lee serves as the focal point for Army Logistics and is approximately four to six miles east of Petersburg, VA. The expansion included establishing a Sustainment Center of Excellence, a Joint Center for Consolidated Transportation Management Training, and a Joint Center of Excellence for Culinary Training, as well as relocating all Defense Commissary Agency and relocating Mobilization Processing Functions to Fort Lee. At the conclusion of the BRAC process, more than seven million square feet of buildings were constructed on Fort Lee. It is estimated that approximately 64 percent of the population growth in the areas surrounding Fort Lee are or will be the result of the Fort Lee expansion. Fort Lee is the Crater District's economic engine. BRAC expansion resulted in growth of its average daily student population from 6,000 to 10,000. Over 8,000 new military, civilian, and contract employees, along with their families, have moved or will be moving to the Fort Lee area. Out of town travelers would benefit from the ease of access to Fort Lee via HSR, regardless of which Petersburg, VA, area station is selected.

4.17.4.4 HEARTLAND CORRIDOR RAIL PROJECT & NATIONAL GATEWAY PROJECT

Two major freight rail improvement projects are underway in the Crater Planning District region. Norfolk Southern's Heartland Corridor Rail Project was completed in 2010. It extends from Columbus, OH, through Petersburg, VA, and terminates in Norfolk, VA. It substantially enhances the Crater Planning District area's transportation and distribution capabilities by shortening rail shipments from Norfolk, VA, to the Midwest.

The CSX's National Gateway Project is a multi-state project extending from North Carolina to Ohio and includes a spur that connects to the Ports of Hampton Roads. The Heartland Corridor and the National Gateway Projects intersect at Collier Yard in the City of Petersburg, VA, making the Crater Planning District region well suited to serve as an East Coast hub for freight distribution.

4.17.4.5 CITY OF RICHMOND, VA: MAIN STREET STATION IMPROVEMENTS

The restoration and construction of Richmond, VA, Main Street Station into a multimodal transportation center is one of the Richmond, VA, Area MPO's Priority Projects. As a multimodal center, Main Street Station will serve not only SEHSR trains, but Amtrak trains, GRTC local buses, airport shuttles, taxis, and tour buses, along with bicycle and pedestrian access, at one centralized location in downtown Richmond, VA. Additional information on this project is provided in Section 3.11.3 of this document.

4.17.4.6 CITY OF HENDERSON, NC: DOWNTOWN REVITALIZATION

One of the primary goals of the City of Henderson, NC, is to promote downtown revitalization projects, the major three of which include the restoration of the Historic downtown District, the Embassy Center and Embassy Cultural Center, and the Recreation, Economic Development, Education, and Family (REEF) Project. As noted in the City of Henderson, NC, website, revitalizing the "Historic downtown" is an ongoing process with many storefront shops restoring their original construction. The Henderson-Vance, NC, downtown Development Commission provided grants for improving facades. The city, local property owners, and the Henderson-Vance, NC, downtown Development Commission received two $1,000,000 grants from the U.S. Department of Housing and Urban Development to add 30 apartments above store front buildings on Garnett Street, the main street in downtown.

The Embassy Center is a ten-acre, two city block site in historic downtown Henderson, NC. Within it are the Embassy Center, a 25,000 square foot Police Headquarters, and a large garden area and green spaces available for community festivals and outdoor events. The Embassy Cultural Center will host a 35,000 square foot Performing Arts Theater. A 40,000 square foot Public Library was completed in 2006. Adjoining the two is a 5,000 square foot open gallery space used for a variety of public functions.

The REEF project is a combined effort by the Gateway Corporate Development Commission, the Henderson-Vance, NC, downtown Development Commission, and the North Carolina Community Development Initiative. The project involves renovating an 86,000 square foot tobacco warehouse. The new facility will house a new Community & Business Center, including a Boys & Girls Club center, an off-campus facility for Vance-Granville Community College, 5 Star child care, an urgent care/medical clinic, various retail spaces, cultural arts and farmer's market spaces, and other spaces to be decided on in the future.

4.17.4.7 *TRIANGLE COMMUTER RAIL SERVICE*

Triangle Transit (TT), the Capital Area MPO, and the Durham-Chapel Hill-Carrboro MPO adopted the Regional Rail Plan in the mid-1990s. The plan includes regional rail service, expanded bus service, shuttles, park-and-ride facilities, and enhanced transit access for pedestrians and bicycles. As discussed in Section 3.11, plans for this project have continued to evolve since a 2003 Federal Transit Administration ROD on the Phase I Regional Rail System FEIS. TT's current focus for regional light rail is on Orange and Durham Counties, which are outside corridor for this Project. However, planning for the TT corridor in Wake County is on-going, and includes five stations and ROW adjacent and parallel to the proposed Project railroad ROW.

4.17.4.8 *CITY OF RALEIGH, NC, NEW RALEIGH UNION STATION*

The City of Raleigh, NC, TT, and NCDOT are currently moving forward with plans to construct the Raleigh Union Station, a new passenger train station, at 510 West Martin Street in downtown Raleigh, NC (see Figure 4-3). It will accommodate current and future demand for intercity passenger rail, including SEHSR service, TT's planned commuter rail, light rail, city bus, regional bus, taxis, bicycles, and other modes of transportation. The new station is among the improvements to North Carolina's railroads between Raleigh, NC, and Charlotte, NC, intended to increase railroad capacity, efficiency, and safety. The new station will replace the existing Amtrak Station on Cabarrus Street. The new station is almost fully funded, and FRA has completed the NEPA review. Construction is expected to begin in 2015 and operations are expected to begin in 2017. Subsequent phases of the station are currently under way as well, including plans to build a new parking deck near the station and move the existing Moore Square Bus Transit Facility to be closer to the new station. Refer to Section 1.4 for additional information.

Figure 4-3
Raleigh Union Station Plan

4.17.4.9 *CITY OF RALEIGH, NC, LONG-RANGE PLAN*

The City of Raleigh, NC, 2030 Comprehensive Plan (adopted October 2009) was last amended October 2013. The amendments included the city's vision to be a "sustainable city", including implementation of SEHSR Corridor service and related "growth framework elements". The Raleigh Comprehensive Plan Growth Framework Map designates several "future rail stations" along the TT light rail system proposed between Chapel Hill, NC, and Raleigh, NC, as well as along the proposed Wake Forest, NC, commuter rail line. These stations are located in downtown Raleigh, NC, (Raleigh Union Station discussed above), west Raleigh, NC, as well as north and south of downtown. The land around these stations is planned for a normal amount of Transit Oriented Development, except for the proposed new Raleigh Union Station, which has a much larger growth center called "downtown Regional Center". The downtown Regional Center is planned as the City's urban core with the area's most intense growth and highest levels of transit, bicycle, and pedestrian access" and "a true hub for a rapidly growing region, served by highways, rail transit, high-speed intercity rail, and local and express bus." The proposed new Raleigh Union Station is identified as the heart of this Center. The city's future land use was developed based on a vision to redirect a full 60 percent of anticipated future growth (120,000 new households and 170,000 additional jobs projected by 2030) into "downtown, a series of seven city growth centers, 12 transit-oriented centers, and over 40 mixed-use community centers, connected via a network of parkways, multimodal corridors, and urban streets", based on the availability of SEHSR service, as well as TT's regional rail, other transit services, and major thoroughfares and interstate highways.

4.18 RELATIONSHIP BETWEEN SHORT-TERM IMPACTS AND LONG-TERM BENEFITS

This section addresses in general terms the proposed Project's relationship between local short-term impacts/use of resources and the maintenance and enhancement of long-term productivity. The Preferred Alternative was selected based upon sound planning for local, regional, and statewide transportation needs within the context of present and possible future traffic requirements and land use patterns. Coupled with the environmentally sensitive design of the proposed Project and BMPs, this helps to ensure that the short-term use of resources related to construction will be out-weighed by the long-term impacts of implementing the proposed Project.

The most disruptive local short-term impacts associated with the Preferred Alternative would occur during land acquisition and Project construction. The short-term use of the environment and of human, socioeconomic, cultural, and natural resources contributes to the long-term productivity of the Study Area. Most short-term, construction-related impacts would occur within or in close proximity to the proposed ROW.

Existing homes, farms, and businesses within the selected alternative's ROW would be displaced. However, adequate replacement housing, land, and space are available for homeowners, tenants, and business owners within the Study Area. Improved access within the Study Area would contribute to long-term residential and business growth.

Construction activities would create short-term air quality impacts, such as dust due to earthwork, road and rail improvements, and exhaust from construction vehicles. Short-term noise impacts would be unavoidable due to use of heavy equipment. Air and noise abatement measures, discussed in Section 4.6 and Section 4.7, would be used to minimize these short-term impacts during construction.

Short-term visual impacts would occur in the vicinity of the construction corridor. Mitigation measures, such as reducing slope cuts outside necessary road widths, reducing vegetation removal, leaving native vegetation screens in place, and minimizing the alteration of scenic viewsheds, would be used to reduce long-term visual resource impacts.

Implementation of the BMPs for the protection of surface waters would minimize potential water quality impacts.

A short-term impact from construction would be the removal of biotic communities and wildlife within the proposed ROW and construction staging areas. However, recovery rates of local wildlife populations are expected to be relatively fast, and no effect on long-term productivity is expected.

Overall, the Preferred Alternative would have minimal short-term impacts relative to the long-term benefits of HSR between Richmond, VA, and Raleigh, NC, and the ultimate extension of the SEHSR Corridor along the East Coast. In addition, the elimination of at-grade rail crossings and construction of grade-separated crossings would greatly improve the safety of rail crossings throughout the Project corridor. Construction-related activities would be localized and temporary. Short-term gains to the local economy should be recognized as a result of hiring local firms and labor, as well as purchasing local services and supplies to construct the proposed Project. Once completed, the benefits of long-term productivity in terms of improved mobility and safety would be realized. The implementation of the Project would enhance the existing transportation network between Richmond, VA, and Raleigh, NC, and provide a viable travel alternative for residents and users. This is consistent with the purpose of the proposed Project. Based upon the significant contribution to the long-term objectives of regional and local plans for development, the proposed Project is consistent with the maintenance and enhancement of the long-term productivity at the local, regional, state, and national levels.

4.19 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction of the Preferred Alternative would require certain irreversible and irretrievable commitments of natural resources, manpower, materials, and fiscal resources. Because most of the Project will be constructed within existing railroad ROW, land acquisition for construction of the proposed Project will be minimized. However, there will be an irreversible conversion of land to a transportation use in areas of new alignment and in areas where the existing road network will be modified to accommodate rail crossing closures and consolidations, and to avoid historic resources. If a greater need for the use of the land was to arise or if the transportation facility were no longer needed, it could be converted to another use. At present there is no reason to believe such a conversion would be necessary or desirable.

The acquisition of new ROW and new construction within the existing ROW may result in both short-term and long-term losses and alterations to the natural resources in the area. Upland and aquatic biotic communities, as well as agricultural land may be committed to rail service where new ROW is required. The most apparent impact may be the loss of aquatic or terrestrial habitat productivity and connectivity; therefore, wildlife abundance may decline in the area as a result of habitat destruction. Increased noise associated with the Project may be intolerable to some wildlife species. Forested areas may be cleared in some locations, and wetlands and other surface waters may be filled to accommodate new bridges and underpasses. Riprap may be placed along stream banks at bridge crossings, reducing habitat within riparian zone. After construction, some habitat types may be restored within the construction limits, although their value to wildlife is unlikely to equate to that which was lost. If wetlands are filled for new construction, mitigation of impacts will likely involve restoration of degraded wetlands within the same watershed. In the long-term, this will offset the loss of wetland habitats within the Project construction limits. The commitment of natural resources within existing and new ROW is a permanent loss of productive wildlife habitat.

In addition, the construction of the Project would increase habitat fragmentation within the Project corridor. As described in Section 4.10.1.1, habitat fragmentation can increase the risk of predation or displacement of native species by invasive, exotic species. Loss of habitat, mortality due to collisions, barrier effect, and reduction in habitat quality are the main impacts of habitat fragmentation by railroads. On a local scale, trains may affect wildlife habitats through the introduction of exotic plant species (e.g. seeds), emission of toxic contaminants like heavy metals, or ROW management (e.g. herbicide application). Section-specific habitat fragmentation effects are discussed in Section 4.10.1.1,

Fossil fuels, labor, and construction materials would be expended in the fabrication and preparation of construction materials, as well as during the construction of the Preferred Alternative. While these materials are generally not retrievable, they are not in short supply and their use would not have an adverse effect on the continued availability of these resources. It should be noted that the steel rails required for the Project could be recycled should an alternate use of the property be selected in the future. Any construction would also require a substantial, one-time expenditure of both state and Federal funds, which are not retrievable and could be used instead on other projects within the local community or in other parts of the country.

Specific natural resource impacts for the Preferred Alternative have been previously detailed in this chapter. When reviewed in the overall context of the Project and taken in total, they are proportionately small compared to the benefits of the Project.

5 FINAL SECTION 4(F) EVALUATION

A condensed format was used for this Final Environmental Impact Statement (EIS), as explained in the Introduction to this report. However, because the Section 4(f) Evaluation is intended to be *a stand-alone document, it is included in its entirety. Changes from the Richmond to Raleigh Project Tier II DEIS are spelled out and address new resources identified subsequent to publication of the Richmond to Raleigh Project Tier II DEIS and changes to impacts as a result of design modifications.*

In this chapter, the term "Project" refers to the Richmond to Raleigh Project Tier II EIS project. The study area for the natural and physical environment, cultural resources, and infrastructure varies from 300 to 1,000 feet in width depending on the resource, and is centered about the existing rail line or right of way (ROW). In areas where the existing railroad curves do not meet the design standards for high speed rail, the study area expands to approximately 500 feet outside of the proposed rail realignments.

The study areas for the human environment, noise, and air quality are generally larger than the project area boundaries. The larger study areas are defined by regions of influence in which a resource may potentially have noticeable project-related impacts. Regions of influence for human resources account for factors such as community sizes, geographical and political boundaries, and census boundaries. These human resources include social and economic issues, community resources, and land use planning. The air quality study area is influenced by local and regional atmospheric conditions. The noise study area is determined by the limit of noise intrusions associated with the project.

*All references to "study area" and "*Project" below pertain to the Richmond to Raleigh Project, unless otherwise noted.

Section 4(f) of the Department of Transportation Act of 1966 (Section 4(f)), as set forth in Title 49 United States Code (USC) Section 303, protects publicly owned parks, recreation areas, and wildlife/waterfowl refuges, as well as historic sites listed or eligible for listing in the National Register of Historic Places (NRHP), and archaeological sites that are listed or eligible for inclusion in the NRHP and warrant preservation in place. These lands can only be used for a Federally-funded transportation project if there is no other feasible and prudent alternative, and the project incorporates all possible planning to minimize harm.

This document was prepared in accordance with Federal Railroad Administration (FRA) Procedures for Considering Environmental Impacts (64 FR 28545, May 26, 1999). In addition, this document also follows the procedures for implementing Section 4(f) outlined in 23 CFR 774 (March 12, 2008), which apply to the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). Although FRA is not directly subject to this rule, FRA has determined these procedures are appropriate for use for the Richmond to Raleigh Project Tier II EIS.

Section 4(f) use, as defined in 23 CFR 774.17, occurs in the following cases:

- Land is permanently incorporated into a transportation facility through partial or full acquisition (i.e., "use")
- There is temporary occupancy of land that is adverse in terms of the preservationist purpose of Section 4(f) (i.e., "temporary use")
- There is no permanent incorporation of land, but the proximity of a transportation facility results in impacts so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (i.e., "constructive use"). Examples of constructive use include substantial increases in noise levels at an outdoor amphitheater, impairment to aesthetics, and restrictions on access to a resource

If the use of a Section 4(f) resource will occur due to a proposed action, a Section 4(f) evaluation must be prepared. The Section 4(f) evaluation determines whether there is no feasible and prudent alternative to the use of land from a Section 4(f) resource and whether the proposed action includes all possible planning to minimize harm to the resource resulting from its use.

According to 23 CFR 774.17, an alternative is not feasible if it cannot be built as a matter of sound engineering judgment. Likewise, an alternative is not prudent if:

i. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
ii. It results in unacceptable safety or operational problems;
iii. After reasonable mitigation, it still causes:
    a. Severe social, economic, or environmental impacts;
    b. Severe disruption to established communities;
    c. Severe disproportionate impacts to minority or low income populations; or
    d. Severe impacts to environmental resources protected under other Federal statutes;
iv. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
v. It causes other unique problems or unusual factors; or
vi. It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

Where analysis concludes there is no feasible and prudent avoidance alternative, the alternative that causes the least overall harm to Section 4(f) resources must be selected. This determination is made by balancing the factors listed in 23 CFR 774.3(c):

i. The ability to mitigate adverse impacts of each Section 4(f) property (including any measures that result in benefits to the property);
ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
iii. The relative significance of each Section 4(f) property;
iv. The views of the official(s) with jurisdiction over each Section 4(f) property;
v. The degree to which each alternative meets the purpose and need for the project;
vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
vii. Substantial differences in costs among the alternatives.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005 (23 USC 101), amended existing Section 4(f) legislation to simplify the processing and approval of projects that have only *de minimis* impacts on resources protected by Section 4(f). For historic resources, a *de minimis* impact means that the Federal transportation agency has determined that, in accordance with 36 CFR 800, no historic property is affected by the project or the project will have no adverse effect on the property in question. If after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, a transportation project results in a *de minimis* impact on a Section 4(f) property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete. The State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), and the Advisory Council on Historic Preservation (ACHP) (if participating in the consultation process), must concur in writing with this determination.

5.1 DESCRIPTION OF THE PROPOSED ACTION

5.1.1 PURPOSE FOR THE PROJECT

The Richmond, VA, to Raleigh, NC, portion of the SEHSR is an integral part of the overall Washington, DC, to Charlotte, NC, SEHSR Corridor. It constitutes 162 miles of the approximately 450-mile SEHSR Corridor that was evaluated in the 2002 Tier I Environmental Impact Statement (EIS) (NCDOT and VA DRPT, 2002). The purpose for the segment from Richmond, VA to Raleigh, NC is tied to implementation of the larger SEHSR Corridor. Therefore, the purpose of the Richmond to Raleigh Project proposed action is to facilitate the previously approved purpose for the SEHSR Corridor Tier I EIS, which includes the following and is applicable to the Richmond to Raleigh Project section:

- Divert trips from air and highway within the travel corridor, thus reducing the growth rate of congestion (the I-95 portion of the corridor is included in this Richmond to Raleigh Project section and it carries a significant portion of the automobile traffic)
- Provide a more balanced use of the corridor's transportation infrastructure
- Increase the safety and effectiveness of the transportation system within the travel corridor
- Serve both long-distance business and leisure travelers between and beyond Virginia and North Carolina, including Amtrak's Northeast Corridor, which extends from Washington, DC, to Boston, MA (with extensions planned beyond Boston), as well as points south (this specific project section serves as the key link for these travelers to the busy Northeast).

More information about the purpose of the SEHSR Corridor can be found in the 2002 SEHSR Corridor Tier I EIS and on the program's website at www.sehsr.org.

5.1.2 PROJECT DESCRIPTION AND APPROACH

The SEHSR Corridor project involves the incremental development, implementation, and operation of high speed rail (HSR) service in the approximately 450-mile travel corridor from Washington, DC, through Richmond, VA, and Raleigh, NC, to Charlotte, NC. A "tiered" approach was adopted for the required environmental studies because of the length of the corridor. The Tier I EIS covered the entire Washington, DC, to Charlotte, NC, corridor at a program level, establishing the overall purpose and need, along with the preferred corridor. This Richmond to Raleigh Project Tier II study includes detailed environmental documents appropriate to the proposed actions planned within the preferred corridor between Richmond, VA, and Raleigh, NC. Other environmental documentation will be prepared separately for implementation of the remainder of the corridor, as necessary.

The North Carolina Department of Transportation Rail Division (NCDOT) and the Virginia Department of Rail and Public Transportation (DRPT), with their Federal partners, the Federal Railroad Administration (FRA) and the Federal Highway Administration (FHWA), determined that the SEHSR Corridor should be analyzed using an "incremental" HSR approach with fossil fuel train sets (versus electrified). The incremental approach minimizes impacts to both the human and natural environments by using existing rail infrastructure and rail right of way (ROW) over the majority of the corridor. Use of existing infrastructure also reduces the initial capital investment required by the system. In addition, the approach does not preclude future electrification of the corridor.

The Tier I EIS examined nine Study Area alternatives (centered around existing rail ROW). In addition to these Study Area alternatives, a No Build alternative was also considered. It was determined the No Build alternative did not meet the purpose and need of the SEHSR Corridor because it would not improve air quality or reduce net energy per passenger mile traveled in the corridor, nor would it offer additional transportation choices, ease congestion, or improve overall transportation system safety and effectiveness. Thus, the No Build Alternative was dropped from consideration and is not included in this Richmond to Raleigh Project Tier II analysis, except as needed to provide a baseline for quantitative analyses such as noise and vibration.

The preferred SEHSR Corridor that was selected in the Tier I EIS runs from Washington, DC, through Richmond, VA, Petersburg, VA, Henderson, NC, Raleigh, NC, and Greensboro, NC, to Charlotte, NC, with a connection to Winston-Salem, NC (NCDOT and VA DRPT, 2002). There is existing freight and conventional passenger rail service operating within the SEHSR Corridor north of Petersburg, VA, and west of Raleigh, NC. The portion of the SEHSR Corridor from Petersburg to Raleigh is inactive in Virginia and northern North Carolina (from the Virginia state line to Norlina, NC), with only freight service from Norlina, NC, to Raleigh, NC.

The Richmond to Raleigh Project Tier II EIS is focused on the portion of the SEHSR Corridor between Richmond, VA, and Raleigh, NC, which includes the section without existing rail service. Figure 1-2 shows the Study Area for the Richmond to Raleigh Project Tier II EIS.

5.1.3 PROJECT ALTERNATIVES

The Richmond to Raleigh Project Tier II EIS applies the incremental approach to the development of alternative alignments that was adopted in the Tier I study. This incremental approach utilizes existing rail lines or segments of existing rail lines in conjunction with areas of new track, taking advantage of existing rail ROW and infrastructure through improvements such as track upgrades, double tracking, additional sidings, curve straightening, train signal improvements, crossing consolidations, and grade separated crossings.

Alternatives were developed based on a variety of design parameters and environmental considerations. Initially, alignment options were narrowed to two optimum alignments for further study. As more detailed information became available throughout the design process, a third alignment was added. In most cases, the third alignment provides an avoidance alternative in areas with potential impacts to historic properties.

For the Richmond to Raleigh Project Tier II DEIS, the Project Study Area was divided into 26 sections labeled AA to V, from Richmond, VA, south to Raleigh, NC (Figure 2-1). Throughout much of the Study Area, the alignments are on common location within existing rail ROW in order to minimize impacts. The endpoints of each of the 26 sections are in locations where the alternative alignments are in a common location. The alternative alignments are called VA1, VA2, VA3 in Virginia, and NC1, NC2, NC3 in North Carolina. Except where otherwise specified, the VA3 and NC3 alignments are concurrent with VA1 and NC1, respectively.

In response to comments on the Richmond to Raleigh Project Tier II DEIS, an additional rail alternative was developed for evaluation in three Project sections: the VA4 Project alternative was developed for Section D in Brunswick County, VA; the VA4 Project alternative was developed for Section G in Brunswick County, VA; and the NC5 Project alternative was developed for Section V in Raleigh, NC. A discussion of the development of these alternatives, overviews of the alignments in each of the 26 sections, and identification of the Preferred Alternative are provided in Chapter 2 of this FEIS.

5.2 DESCRIPTION OF THE 4(F) RESOURCES – PARKS, RECREATION AREAS, WILDLIFE REFUGES

The Project will not use land from any recreation area or wildlife refuge; however, it will cross 11 publicly-owned trails in 12 locations, require a small amount of ROW from three public parks (two local and one national park), and come in close proximity to four planned or existing public parks and two playgrounds (Table 5-1). The resources are listed in the order they appear in the Project study area from north to south. An asterisk denotes resources identified subsequent to publication of the Richmond to Raleigh Project Tier II DEIS.

Table 5-1
Parks, Recreation Areas, and Wildlife Refuges in the Project Corridor

Resource Name	Section(s)/ Mapsheet(s)	County	State
Richmond Canal Walk	AA/1	Richmond	VA
James River Park System – Slave Trail	AA/1	Richmond	VA
Thomas B. Smith Community Center	AA/4	Richmond	VA
Falling Creek Park Expansion*	AA/6	Chesterfield	VA
Falling Creek Ironworks Park *	AA/6	Chesterfield	VA
James River Greenway (Kingsland Creek) (Planned) *	AA/8	Chesterfield	VA
Chester Linear Park Expansion (Planned) *	BB/11	Chesterfield	VA
Chester Kiwanis Historical Park (Planned)	BB/12	Chesterfield	VA
Ettrick Park & Mayes-Colbert Ettrick Community Building	CC/20	Chesterfield	VA
Appomattox Riverfront Trail (Planned)	CC/24	Chesterfield	VA
Upper Appomattox Canal Trail	CC/24	Petersburg	VA
Petersburg National Battlefield (Fort Wadsworth Unit)	DD/28	Petersburg	VA
Tobacco Heritage Trail	E/66 and I/83	Brunswick and Mecklenburg	VA
Centennial Park	I/83	Mecklenburg	VA
Town of La Crosse Playground*	I/83	Mecklenburg	VA
Franklinton Elementary School	S/128	Franklin	NC
Neuse River Greenway*	U/141	Wake	NC
Simms Branch Greenway Expansion (Proposed) *	U/142-143	Wake	NC
Marsh Creek Greenway Expansion (Proposed)*	V/145	Wake	NC
Middle Crabtree Creek Greenway	V/148	Wake	NC

* Identified subsequent to publication of the Richmond to Raleigh Project Tier II DEIS.

5.2.1 RICHMOND CANAL WALK (VA)

The City of Richmond's Canal Walk on the north side of the James River stretches 1.25 miles along the James River and the Kanawha and Haxall Canals, with access points at nearly every block between 5th and 17th Streets. The Canal Walk presents four centuries of Richmond's history interpreted through medallions, monuments, and exhibits along the Canal Walk and Brown's Island.

5.2.2 JAMES RIVER PARK SYSTEM – SLAVE TRAIL (VA)

The City of Richmond, VA, James River Park System includes nearly 550 acres lining both banks of the James River from Huguenot Flatwater to Ancarrow's Landing. The Project will cross the Slave Trail portion of the park. The Slave Trail starts at Ancarrow's Landing/Manchester Slave

Dock, a boat landing and fishing spot where slave ships docked in the 1700s and 1800s. The Slave Trail departs the landing and follows a 1.3 mile path that chronicles the history of the slave trade of Africans brought to Richmond until 1865. It follows a route through former slave markets, beside the Reconciliation Statue, past Lumpkin's Slave Jail and the Negro Burial Ground to First African Baptist Church, a center of African-American life in pre-Civil War Richmond. The Richmond City Council established the Richmond Slave Trail Commission in the late 1990s to raise the level of awareness and informational accuracy about Richmond's role in the slave trade.

5.2.3 THOMAS B. SMITH COMMUNITY CENTER (VA)

The City of Richmond, VA, Department of Parks, Recreation, and Community Facilities operates the Thomas B. Smith Community Center at 2015 Ruffin Road. This facility contains an athletic field, baseball diamond, basketball courts, community center, lighted areas, playground shelters, restrooms, tennis courts, and a "tot lot."

5.2.4 FALLING CREEK PARK EXPANSION (VA)

Chesterfield County has acquired property just north of Falling Creek and east of Jefferson Davis Highway to use for a public park, expanding on the Falling Creek Ironworks Park directly south of the creek. The park expansion (known as Falling Creek Park – Adjacent Property Acquisition) will be constructed by the end of 2015 to include walking trails, observation areas, interpretive signage, work to preserve mill ruins, and enhancement of streamside habitat. Connections between north end trails, south bank park facilities and pedestrian access to the existing parking lot and visitor's center area south of the request property will be constructed by the end of 2015.

5.2.5 FALLING CREEK IRONWORKS PARK (VA)

Chesterfield County is constructing a park at the site of the Falling Creek Ironworks, the first ironworks in English North America. The target date for completion is the end of 2015. The Project will include a half-mile trail, interpretative signage, a parking lot, and an engineering study to preserve an old stone bridge on Route 1. The Project will provide public access to the ironworks site and the remnants of an old grist mill across the creek. The Virginia Company of London built an iron-making furnace on the site in 1619, creating the first heavy industry in the New World. The ironworks were destroyed in 1622 during a Native American uprising.

5.2.6 JAMES RIVER GREENWAY (KINGSLAND CREEK) (PLANNED) (VA)

Chesterfield County plans to develop a greenway on the north side of Kingsland Creek in the vicinity of the Defense Supply Center Richmond (DSCR) in Bellwood. The planned greenway will accommodate the planned development of the James River Greenway trail system.

5.2.7 CHESTER LINEAR PARK EXPANSION (PLANNED) (VA)

Chesterfield County currently operates Chester Linear Park, a strip of land situated in the Chester Village area. This land was formerly a railroad right-of-way that has been adapted for trail use. The park currently includes 0.68 miles of walking trail. The County plans to extend the park across the existing CSX railroad right of way as part of the planned development of the County's Linear Park and Trails Master Plan.

5.2.8 CHESTER KIWANIS HISTORICAL PARK (PLANNED) (VA)

In 2008, the Kiwanis Club of Chester donated the property at 4001 Gill Street in Chester, VA, to Chesterfield County for development known as the Chester Kiwanis Historical Park. The land was formerly owned by the Chester Hotel Company and was the business, social, and church center of the original Chester Village. The property is planned to be used as a public park for passive recreation and historical interpretation. Planned improvements include walking trails, landscaping, and interpretive signage.

5.2.9 ETTRICK PARK & MAYES-COLBERT ETTRICK COMMUNITY BUILDING (VA)

Chesterfield County, VA, Parks and Recreation Department operates the Ettrick Park and Mayes-Colbert Ettrick Community Building at 20400 Laurel Road in Ettrick. In addition to a community center that is open to the public and available for rent, the park offers multiple athletic fields, tennis courts, and basketball courts.

5.2.10 APPOMATTOX RIVERFRONT TRAIL (PLANNED) (VA)

A portion of the planned Appomattox / Chester Linear Park is being developed by the Chesterfield County Department of Parks and Recreation and will be located on the north side of the Appomattox River near Ettrick, VA. The trail will extend for 1.8 miles along the riverfront behind Randolph Farm, a part of Virginia State University (VSU). The project is currently in the design phase.

5.2.11 UPPER APPOMATTOX CANAL TRAIL (VA)

The Upper Appomattox Canal Trail in the City of Petersburg, VA, is a 3.6 mile trail following the towpath of the Upper Appomattox canal. It is included in the Appomattox River Corridor Plan, an initiative to explore creation of a greenway and blueway corridor along the Lower Appomattox River undertaken jointly by the Crater Planning District Commission, Friends of the Lower Appomattox River (FOLAR), and the six jurisdictions along the twenty-two mile stretch of Appomattox River. The Upper Appomattox Canal Trail begins at Appomattox Riverside Park (historic Ferndale Park) and ends at Campbell's Bridge on Fleet Street (State Highway 36) near Virginia State University and downtown Petersburg. The trail provides access to many historic spots along the river, including the Abutment Dam.

5.2.12 PETERSBURG NATIONAL BATTLEFIELD (FORT WADSWORTH UNIT) (VA)

The Fort Wadsworth Unit of Petersburg National Battlefield is operated by the National Park Service. It is approximately 10.54 acres in size and is located adjacent to Collier rail yard in Petersburg, VA. Built following the Battle of the Weldon Railroad in August 1864, Fort Wadsworth anchored the extreme left of the Union siege lines for more than a month. It secured the Union grip on the Petersburg and Weldon Railroad. Interpretive markers within the fort discuss its significance.

5.2.13 TOBACCO HERITAGE TRAIL (VA)

The Tobacco Heritage Trail, a rails-to-trails corridor being developed along an abandoned Norfolk Southern rail corridor, intersects the Study Area in Alberta and La Crosse, VA. The Tobacco Heritage Trail will connect existing trail segments and create a new trail within five Virginia counties: Brunswick, Mecklenburg, Halifax, Charlotte, and Lunenburg, with a potential spur trail connection to Dinwiddie County. The trail is managed by the Roanoke River Rails-to-Trails (RRRT), a 501(c)(3) tax-exempt Virginia corporation. RRRT is a consortium of Southern Virginia localities, organized to facilitate acquisition and development of the abandoned railroad ROW required for the trail. Within Alberta, VA, the Tobacco Heritage Trail follows the abandoned Norfolk Southern line and crosses the Project corridor in the vicinity of Second Avenue. Within La Crosse, VA, the trail follows the abandoned Norfolk Southern line and crosses the Project corridor in the vicinity of Central Avenue.

5.2.14 CENTENNIAL PARK (VA)

The Town of La Crosse, VA, operates Centennial Park at the intersection of Main Street and the abandoned Norfolk Southern railroad line. The primary focus of the park is a train caboose, which recognizes the town as a place where railroads once crossed.

5.2.15 TOWN OF LA CROSSE PLAYGROUND (VA)

The Town of La Crosse, VA, operates a playground on a vacant parcel at the intersection of College Street and Central Avenue, just south of the historic La Crosse Hotel. The playground is in a fenced-in area and is open to the public during daylight hours. Although the entire parcel was donated to the Town, FRA considers only the enclosed playground to be a Section 4(f) resource.

5.2.16 FRANKLINTON ELEMENTARY SCHOOL (NC)

The Franklinton Elementary School located at 431 South Hillsborough Street in Franklinton, NC, has playgrounds, a practice field, a baseball field, a football field, and a soccer field that are available for public use. Members of the public and organizations can apply to use these facilities. The principal reviews the facility use applications. The school system has first priority for use, then the Franklin County Parks and Recreation Department, and then the general public.

5.2.17 NEUSE RIVER GREENWAY (NC)

The portion of the Neuse River Greenway in Raleigh, NC, that crosses the rail corridor was constructed in 2011. This segment, the Upper Neuse Greenway, provides connections from the Falls Canoe Launch and Falls Lake Recreation Area at Falls of Neuse Road to the soccer complex on Perry Creek Road. The greenway is a component of the Neuse River Regional Park Master Plan, adopted by the City of Raleigh in 1996. The greenway crosses the corridor just west of where it crosses Capital Boulevard (north of Durant Road).

5.2.18 SIMMS BRANCH GREENWAY EXPANSION (PROPOSED) (NC)

The proposed Simms Branch Greenway corridor crosses the rail corridor between Gresham’s Lake Road and Durant Road in Raleigh, NC. The City of Raleigh has existing greenway property on either side of the rail corridor and constructed trail near each side of the corridor.

5.2.19 MARSH CREEK GREENWAY EXPANSION (PROPOSED) (NC)

The proposed Marsh Creek Greenway corridor crosses the proposed rail line just north of Millbrook Road in Raleigh, NC. The City of Raleigh currently has greenway easement on either side of the existing rail corridor.

5.2.20 MIDDLE CRABTREE CREEK GREENWAY (NC)

The Middle Crabtree Creek Greenway is located in Northern Raleigh and extends approximately 11 miles, from Milburnie Road to just short of Duraleigh Road. The trail is owned by the City of Raleigh and provides (via connections) access to the Raleigh downtown area, North Carolina Museum of Art, and area shopping malls. A connection is proposed to Umstead State Park, located west of Raleigh and to the Neuse River east of Raleigh. The trail crosses the rail corridor in Raleigh, just south of the I-440 Belt Line and Yonkers Road and north of Hodges Street.

5.3 DESCRIPTION OF THE 4(F) RESOURCES – HISTORIC ARCHITECTURE SITES

Section 3.12 of the FEIS describes the historic architecture resources within the Area of Potential Effects (APE) of the Project that were determined to be eligible for listing or are listed in the NRHP. Listed and eligible resources must meet at least one of the four NRHP key criteria:

- Criterion A - associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B - associated with the lives of persons significant in our past; or
- Criterion C - embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D - have yielded or may be likely to yield, information important in prehistory or history

The historic architecture resources (excluding battlefields) eligible for protection under Section 4(f) are described in Tables 5-2 and 5-3. The resources are listed in the order they appear in the Project Study Area from north to south. An asterisk denotes resources identified subsequent to publication of the Richmond to Raleigh Project Tier II DEIS. More detailed information can be found in Section 3.12 of this FEIS. Correspondence with the Virginia Department of Historic Resources (VDHR) and North Carolina State Historic Preservation Office (NC-HPO) is included in Appendix K.

It should be noted that one historic resource described in the Richmond to Raleigh Project Tier II DEIS was subsequently determined by NC-HPO to no longer be eligible for the NRHP. The Commercial Block at 524-530 Hillsborough Street in Raleigh, NC (referred to as “National Art Interiors” in the Richmond to Raleigh Project Tier II DEIS), lacks sufficient integrity to be eligible for the NRHP due to alterations to the first-floor storefronts and the interior of the property. Therefore, it is no longer included in the Section 4(f) Evaluation.

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Seaboard Air Line Railroad Corridor	AA-L/ all VA	Chesterfield, Colonial Heights, Petersburg, Richmond	Eligible/A	Historic railroad corridor that represents the origins and growth of the railroad industry in the Richmond to Petersburg corridor; reflects the post-Civil War trend of merging smaller operations to provide better service while being more economical
C. & O. & Seaboard Railroad Depot	AA/1	Richmond	Listed/A, C	Built 1901, the monumental structure symbolizes the importance of the rail terminal as an entrance gateway to Richmond ; example of the influence of the French Ecole des Beaux Arts on American building
Shockoe Valley & Tobacco Row Historic District	AA/1	Richmond	Listed/A, C	Circa 1740, Encompasses the area of Richmond's earliest residential, commercial, and manufacturing activity; architectural styles ranging from Federal through 20th-century industrial vernacular
Shockoe Slip Historic District	AA/1	Richmond	Listed/A, C	Circa late 19th and early 20th century, erected as wholesale food or tobacco warehouses, with some serving light industry; buildings generally are modified Italianate in style
James River and Kanawha Canal Historic District	AA/1	Richmond	Listed/A, C	Circa 1785, canal improved navigation on the James River from Richmond to Botetourt County a distance of approximately 200 miles; District comprises of the canal and canal towpath
Atlantic Coast Line Railroad Corridor	AA, BB, CC/ 10-24	Chesterfield, Colonial Heights, Petersburg, Richmond	Eligible/A	Historic railroad corridor that represents the origins and growth of the railroad industry in the Richmond to Petersburg corridor; reflects the post-Civil War trend of merging smaller operations to provide better service while being more economical

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Manchester Industrial Warehouse Historic District	AA/1-2	Richmond	Listed/A, C	Post 1880, 42 block industrial area related to the post-war community of Manchester, VA
Williams Bridge Company	AA/2	Richmond	Eligible/A, C, D	Built in 1919 to assist with World War I war efforts; also used by the US government during World War II; eligible boundary contains main factory and apartment structures used to house workers during both world wars
Lucky Strike/RJ Reynolds Tobacco	AA/2	Richmond	Eligible/A,C	Circa 1955 industrial complex made up of brick buildings and metal storage facilities
Transmontaigne Product Services, Inc.	AA/2	Richmond	Eligible/A	Used to refine, store, ship, and process oil extracts for almost 80 years; founded in 1928 as Gulf Refinery Company; associated with the history of oil production and transport in Richmond
Davee Gardens Historic District	AA/4	Richmond	Eligible/A, C	Planned, symmetrical suburb of Richmond, established in 1947
DuPont Spruance	AA/5-6	Chesterfield, Richmond	Eligible/A	1,500 acre processing plant; first building constructed in 1929; factory played a significant role in the development of textiles and plastics in the US
Sheffields; Auburn Chase; Bellwood; Building 42 - DSCR Officer's Club; New Oxford (LD)	AA/8	Chesterfield	Listed/B, C	Circa 1797, representative of the changes in the Richmond area economy, from plantation to tenant farm to military depot; The main dwelling is a Federal style structure with Greek Revival modifications;
USDOD Supply Center Historic District; Bellwood-Richmond Quartermaster Depot Historic District	AA/7-8	Chesterfield	Eligible/A, B, C, D	Resource encompasses Sheffields -Bellwood described above; Circa 1940, compound established as the central depot for Richmond area activities associated with World War II

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Richmond & Petersburg Electric Railway	AA, BB, CC/ 4-12, 18, 22-23	Chesterfield, Colonial Heights, Petersburg, Richmond	Eligible/A	Circa 1902, creation of this line was the direct impetus for large-scale modifications to settlement patterns in central Virginia
House at 3619 Thurston Rd	AA/9	Chesterfield	Eligible/C	Circa 1900, 1.5-story Colonial Revival dwelling with a gambrel roof and flared eaves
Centralia Post Office	BB/10	Chesterfield	Eligible/A	Served as one of the pivotal social and economic centers of the Centralia community
Ragland House/4626 Centralia Rd (LD)	BB/10	Chesterfield	Eligible/C	Circa 1890, 2.5-story frame single-family dwelling with brick foundation and raised basement
Circle Oaks/4510 Centralia Road (LD)	BB/10	Chesterfield	Eligible/C	Circa 1840, two-story single family dwelling with slave quarters and a kitchen
Centralia Earthworks*	BB/10	Chesterfield	Eligible/A, C; Potentially Eligible/D	Earthworks built in 1862 as part of the Confederate outer defensive for Drewry's Bluff; associated with the battle at Wooldridge's Hill and the Bermuda Hundred Campaign; example of Civil War military engineering
Chester Historic District	BB/11-13	Chesterfield	Eligible/A, C	About 10 blocks within Village of Chester; demonstrates a successful planned community in the mid-nineteenth century; high number of extant architectural resources within its period of significance (1830 to 1958)
Chester #94 Masonic Lodge	BB/12	Chesterfield	Eligible/A	Circa 1905, simple two-story, one-bay, frame meeting hall; important at the local level as a historic Masonic lodge that received its charter in 1878

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Pretlow House	BB/12	Chesterfield	Eligible/B	Circa 1850 home to two notable Chester residents, Joseph Snead and Thomas Pretlow
Eichelberger House	BB/12-13	Chesterfield	Eligible/C	Circa 1890, 1.5-story vernacular Queen Anne-Eastlake style single dwelling with Central Passage plan; eligible boundary includes a stone gate near of the intersection of the former Richmond & Petersburg Railroad
Ellerslie	CC/17-18	Colonial Heights	Listed/A, C	Circa 1857, associated with the development of Colonial Heights; an excellent example of Italianate architecture
Appomattox River Railroad Bridge*	CC/24	Petersburg	Eligible/A, C	Built 1915, open steel, deck-plate-girder bridge with 11 steel latticework bents; of the three railroad bridges that crossed the Appomattox River into Petersburg during the first half of the twentieth century, it is the only one that survives
Battersea	CC/24	Petersburg	Listed/A, B, C, D	Built 1768 for Colonel John Banister, the first mayor of Petersburg and a signer of the Articles of Confederation; a substantial stuccoed brick house that still retains its historic rural character
North Battersea/Pride's Field Historic District	CC/23-24	Petersburg	Listed/C	Circa mid-to-late 19th and early 20th century, Italianate, Gothic Revival and Colonial Revival styles residences
Defense Road	CC/25-27	Petersburg	Eligible/A, C	Colonial Revival-era public parkway designed by the National Park Service in the 1920s and built by the Civilian Conservation Corps as a means of aiding tourists visiting the numerous Petersburg area Civil War earthworks and forts; maintains its original white/grey pavement and the surrounding park-like setting.

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Dimmock Line/Earthworks	CC/26-27	Petersburg	Eligible/A, B, C	Series of Confederate defenses around Petersburg; construction began in 1862 and was primarily built with slave labor under the guidance of Captain Charles Dimmock; great example of a trench line used throughout the Civil War
Bridge over Defense Road	CC/26-27	Petersburg	Eligible/A, C	Single-span, three-lane, segmental arch bridge constructed in 1936 as part of the larger Defense Road parkway Project
Fort Davis Earthworks*	DD/34	Dinwiddie	Eligible/A, C; Potentially Eligible/D	Civil War era earthworks constructed by Union troops in 1864 during the Siege of Petersburg; good physical integrity
Evergreen	A/37	Dinwiddie	Eligible/C	Circa 1790, example of a Federal-era dwelling
Courtworth	C/44	Dinwiddie	Eligible/C	Circa 1878, example of a late nineteenth-century vernacular dwelling incorporating Victorian motifs
Bowen House	C/45	Dinwiddie	Eligible/C	Circa 1878, example of late Victorian domestic vernacular architecture
W. Boisseau's Store, Warehouse, Dwelling	C/45	Dinwiddie	Eligible/A, C	Circa 1900, examples of rural commercial/domestic complexes of the early twentieth century in southern Virginia
Bank of McKenney (referred to as Bank Building in Richmond to Raleigh Project Tier II DEIS)	C/50	Dinwiddie	Eligible/A	Circa 1906 commercial building; one of the few surviving early banks associated with the trend of small communities opening banks and one of earliest banks in all of Dinwiddie County
Chesapeake and Potomac Telephone Company (C & P) Building*	C/50	Dinwiddie	Eligible/A, C	Circa mid-1920s industrial building; represents a time when the telephone forever changed communication; excellent example of elaborate local telephone company building with notable percentage of original elements intact

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Mayton House	C/51	Dinwiddie	Eligible/C	Circa 1905, example of early twentieth-century vernacular Colonial Revival domestic architecture
Zehmer Farm/Honeymoon Hill Farm	C/51	Dinwiddie	Listed/C	Circa late 19th century; good example of a vernacular dwelling
Wynnhurst	D/54-55	Brunswick	Eligible/C	Built 1925, example of an early twentieth-century Dutch Colonial dwelling
Blick's Store	D/54-55	Brunswick	Potentially Eligible/C	Circa 1909, example of an early 20th century crossroads store
House/458 Second Avenue*	E/66	Brunswick	Eligible/C	Circa 1924 Craftsman style house, rare example of an unmodified kit dwelling
Orgain House*	G/73	Brunswick	Eligible/A, C, D	Circa 1840 Tudor Revival dwelling; associated with regional landscape changes and the cultural memory of a single family struggling to maintain their familial land in a rapidly-changing economic environment; contains above-ground remnants of original mid-nineteenth century plantation complex
Tourist Guest House	G/74	Brunswick	Eligible/C	Circa 1926, Craftsman-style tourist house
Oak Shades	G/74	Brunswick	Eligible/C	Built 1812, rural interpretation of the Federal style
Evans House	H/78-79	Meckenburg	Eligible/C	Built 1930, ornate example of an American Foursquare dwelling
Smelley House	I/82	Mecklenburg	Eligible/C	Built 1880, Victorian-era house represents a rural interpretation of the highly ornate Queen Anne style

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
La Crosse Commercial Historic District	I/83	Mecklenburg	Eligible/A, C	Collection of early twentieth century commercial buildings; significant as a boom community created by the construction of the railroad that brought economic expansion to the region
La Crosse Hotel*	I/83	Mecklenburg	Listed/A, C	Early 20th century small town railroad hotel with excellent integrity; occupies a prominent position across the tracks from the former location of the Seaboard Air Line depot and the main commercial strip in La Crosse
Wright Farmstead	J/84-85	Mecklenburg	Potentially Eligible/A, C, D	Associated with the history of agriculture in this area, particularly the late-nineteenth/early-twentieth century change in the meat-smoking industry; farmstead includes a main house, four outbuildings, and an archaeological site
Sardis Methodist Church	J/86	Mecklenburg	Eligible/C	Built 1911, example of a vernacular early-twentieth century ecclesiastic structure
Bracey Historic District	K/89	Mecklenburg	Eligible/A, C	Circa late 19th century, example of a small community created by the construction of the railroad that brought economic expansion to the region; architectural example of a railroad community
Bracey Depot*	K/89	Mecklenburg	Eligible/A, C, Consideration B (as a moved property)	Rare surviving example of an early-twentieth century depot with much of its original architectural elements; associated with large county-wide, state-wide, and nation-wide trend of development of railroad across the American landscape in the second half of the nineteenth century and early-twentieth century

Table 5-2
Historic Architecture Resources in the Project Corridor - Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Bracey & Company Store*	K/89	Mecklenburg	Eligible/A, C	Circa 1917 commercial building; excellent example of an important early-twentieth century type of commerce that was common in rural areas though the US; rare intact example of vernacular commercial form of architecture
Granite Hall/Fitts House	L/92-93	Mecklenburg	Eligible/C	Circa early 20th century, example of Classical Revival architecture

* Identified subsequent to publication of the Richmond to Raleigh Project Tier II DEIS.

Source: *Berger, 2005; Dovetail (see Appendix K for list of Dovetail reports).*

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Warren County Training School	L/94-95	Warren	Eligible/A, C	Built 1922, first and only high school for African Americans in the county; large and architecturally sophisticated example of the rural schools built for black communities
Wise School	L/95	Warren	Eligible/A, C	Built 1904, reflects the era of school consolidation in NC; imposing and rare surviving example of the rural public schools
House (East side of US 1, Wise, NC)	M/96	Warren	Eligible/C	Circa 1890, especially stylish expression of a common regional design
Holtzmann Farm	M/101	Warren	Eligible/A	Circa 1880, illustrates the agricultural practices and self-sufficiency of a middling Ridgeway farmer
Chapel of the Good Shepherd	M/101-102	Warren	Listed/A, C	Built 1871, Gothic Revival chapel; landmark in Ridgeway community
Dr. Thomas B. Williams House and Office	M/102	Warren	Eligible/C	Circa 1890 residence, size and architectural embellishments reflected the wealth and status of the Williams family

Table 5-3 Historic Architectures Resources in the Project Corridor – North Carolina				
Resource Name	**Section(s)/ Mapsheet(s)**	**County**	**Status/Criteria**	**Description**
Marshall House/Tavern (House No 245) *	M/102	Warren	Eligible/C	Early timber-framed structure, which has been expanded over time to become one of the largest dwellings in the vicinity of Ridgeway; unique example of Colonial, vernacular, and Folk Victorian architecture in Warren County; associated with the planning and development of the town of Ridgeway and the Ridgeway Company
William J. Hawkins House	N/103	Warren	Listed/A, B, C	Circa 1850, Greek Revival and Italianate residence; illustration of the prosperous plantation society; home of Dr. William J. Hawkins;
Middleburg Community House (Middleburg Steakhouse)	O/108	Vance	Eligible/A, C	Circa 1930, financed by the Civil Works Administration; rustic style for Depression era residence
House (Allison Cooper Rd, Middleburg vicinity)	O/108	Vance	Eligible/C	Circa 1880, Greek Revival residence
Holloway Farm	O/109-110	Vance	Eligible/A, C	Late 19th century farm, illustrates the rise of tobacco cultivation; traditional domestic and agricultural buildings
William Haywood Harris Farm	O/109-110	Vance	Eligible/A, C	Built 1860 for tobacco cultivation; Greek Revival residence
Forrest Ellington Farm	O/110	Vance	Eligible/A	Circa 1920-1950 farmstead
R. B. Carter House	P/114	Vance	Eligible/C	Built 1892, adaptation of up-to-date picturesque architecture to traditional forms
Henderson Historic District and Proposed Boundary Expansion	P/114-115	Vance	Listed/A, C	Circa 1890-1930, tobacco market and regional industrial center; represents the national design and style trends of the period
Vance County Courthouse*	P/115	Vance	Listed/A, C	1884 and 1908 Neoclassical Revival courthouse

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Zollicoffer's Law Office*	P/115	Vance	Listed/A, B, C	1887 small brick Victorian commercial building; landmark of downtown Henderson; one of the best preserved reminders of the town's post-Civil War prosperity; associated with the A. C. Zollicoffer, who was prominent in local and regional legal, political, and business circles
Henderson Fire Station and Municipal Building*	P/115	Vance	Listed/A, C	1908 brick firehouse with tower; associated with early 20th century improvement of municipal service and safety, and improved firefighting efforts
Houses (2 bungalows on E Young Ave)	P/115	Vance	Eligible/A, C	Circa 1900, gabled bungalows
Mistletoe Villa	P/115	Vance	Listed/C	Built in 1885, Queen Anne residence
South Henderson Industrial Historic District	P/115-116	Vance	Eligible/A, C	Early 20th century small-scale commercial buildings, workers dwellings, and three industrial complexes; illustrates rail-oriented industrial development
Vance Flour Mill (Sanford Milling Co.)	P/115-116	Vance	Eligible/A, C	Circa 1920 factory; contributing element to South Henderson Industrial Historic District; represents innovation in industrial construction
Houses (5 worker houses on 1400 block of Nicholas St)	P/116	Vance	Eligible/A, C	Circa 1910-1920 worker dwellings; contributing elements to South Henderson Industrial Historic District
Houses (3 side gable houses on 1500 block of Nicholas St)	P/116	Vance	Eligible/A, C	Circa 1910-1920 worker dwellings; contributing elements to South Henderson Industrial Historic District
Esso Gasoline Station	P/117	Vance	Eligible/A, C	Circa 1930, pre-World War II gasoline station; Spanish Colonial Revival

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Confederate Cemetery	Q/121	Vance	Eligible/A	Circa 1864-1865, one of the few Confederate cemeteries in North Carolina
Saint James Episcopal Church	Q/121	Vance	Listed/C	Circa 1850, Carpenter Gothic style church
Hedgepetch and Finch Store	Q/121	Vance	Eligible/A, C	Late 19th century general merchandise store; marshalling point for agricultural products
Kittrell Residential Historic District*	Q/121	Vance	Eligible/A, C	Circa 1865-1960, district of historic houses embodying diversity in style, scale, and lot size that illustrate the Town of Kittrell’s small population and relatively slow pace at which this area was developed; reflects the efforts of several local merchants and companies to use their proximity to the Raleigh and Gaston Railroad and other area roadways to an economic benefit; associated with important events at the local level, such as the establishment of the Raleigh and Gaston Railroad and the broad impacts it made on Kittrell’s economic and socio-cultural development by extension
Josiah Crudup House*	Q/123	Vance	Listed/C	1830s Federal 2-story tripartite frame house; circa 1900 expansion
Person-McGhee Farm	Q, R/124-125	Franklin, Vance	Listed/A, C	Circa 1830, well-preserved farmstead; Queen Anne dwelling surrounded by an array of outbuildings
Raleigh and Gaston Railroad Bridge Piers (Tar River)	Q, R/124	Vance	Eligible/A, C	Circa 1840 railroad piers; oldest railroad structures in the state; illustrate the design, material, and method of construction employed in building before the Civil War

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Franklinton Historic District (Includes Sterling Mill Historic District)	S/127-128	Franklin	Eligible/A, C	Epitomizes the development of a Piedmont railroad town circa 1890-1920; remains one of the most intact, small railroad towns in the Piedmont
Aldridge H. Vann House*	S/127	Franklin	Listed/C	Built 1918, Classical Revival 2-story brick house
Franklinton Depot*	S/127	Franklin	Listed/A, C	Built 1886, Raleigh & Gaston Railroad frame depot, associated with one of North Carolina's s first and most important railroads and with the development of the Town of Franklinton
Church	S/127-128	Franklin	Eligible/A, C	Circa 1891, Gothic Revival church
Sterling Cotton Mill	S/127-128	Franklin	Listed/A, C	Circa 1895, two-story, simplified Italianate mill; largest textile operation in Franklin County
Cedar Creek Railroad Bridge Piers	S/129	Franklin	Eligible/A, C	Circa 1840 railroad piers, illustrate the design, material, and method of construction employed in building before the Civil War
Youngsville Historic District	T/132	Franklin	Eligible/A, C	Circa 1890, tobacco market; common commercial and residential building types of the period; stone veneered and several fine, Queen Anne residences
J. B. Perry House	T/132	Franklin	Eligible/C	Circa 1900, Queen Anne residence
Glen Royall Mill Village Historic District (LD)	U/135	Wake	Listed/A, C	Circa 1900, village that provided housing for workers at the Royall Cotton Mill; district includes a company commissary, additional stores, churches, and schools
Wake Forest Historic District (LD)	U/135-136	Wake	Listed/A, C	Original campus of Wake Forest College circa 1820-1890; oldest denominational college in NC; Colonial Revival buildings, Greek Revival, Italianate, Queen Anne, and Classical Revival residences

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Downtown Wake Forest Historic District	U/136	Wake	Listed/A	Epitomizes the small, rail-oriented business districts circa 1820-1890; Colonial Revival, Moderne, and Art Deco elements
Purefoy-Chappell House and Outbuildings*	U/137	Wake	Listed/C	Built 1838 and 1895 2-story frame house and outbuildings
Oakforest (LD)*	U/138	Wake	Listed/C	Circa 1807, Federal style hall and parlor home; various additions during the nineteenth century converted it into a Greek Revival house
Powell House	U/139-140	Wake	Listed/A, C	Circa 1790, centerpiece of a large plantation; one of the most imposing and earliest dwellings remaining in Wake County
Neuse Railroad Station	U/142	Wake	Eligible/A, C	Circa 1900 station, typical of the period railway stations
Crabtree Creek Railroad Bridge Pier	V/148	Wake	Eligible/A, C	Circa 1840 railroad pier; illustrates the design, material, and method of construction employed in building before the Civil War
Gulf Petroleum Products Warehouse*	V/148	Wake	Eligible/A, C	Circa 1926 warehouse with utilitarian, small-scale, industrial architecture; associated with commerce and industry in Wake County during the period between the World Wars; reflects a larger historic trend for oil and gas companies to establish distribution centers for gasoline and other petroleum products adjacent to major railroads following the exponential growth in automobiles across the country after the end of World War I
Raleigh Bonded Warehouse	V/148-149	Wake	Listed/A, C	Built 1923, cotton warehouse with a million cubic feet of storage space strategically located between the cotton growers of the Coastal Plain and the textile mills in the Piedmont

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Mordecai Place Historic District	V/148-149	Wake	Listed/A, C	Circa 1916, subdivision of the plantations that once encircled Raleigh; variety of revival style dwellings, bungalows, and minimal traditional domestic designs
Pilot Mill (LD)	V/149	Wake	Listed/A, C	Built 1892, illustrates the emergence of the Piedmont textile industry; example of the simple, brick buildings with long, rectangular plans and limited ornamentation
Roanoke Park Historic District	V/149	Wake	Listed/A, C	Circa 1913-1926, residential neighborhood; Colonial Revival, American Foursquare, Dutch Colonial, Tudor Revival, Minimal Traditional, Period Cottage, and ranch residences
Noland Plumbing Company Building	V/149	Wake	Eligible/A, C	Built 1960, represents wholesale distribution companies during the postwar years when suppliers built facilities near customers in the new subdivisions; illustrates the postwar modernist movement
John A. Edwards and Company Building	V/149	Wake	Eligible/C	Built 1960, example of postwar commercial modernism
Glenwood-Brooklyn Historic District	V/149	Wake	Listed/A, C	Circa 1905, first of a series of suburban neighborhoods; Queen Anne, Craftsman, Tudor Revival, and Colonial Revival style residences
Seaboard Railway Station	V/149	Wake	Eligible/A, C	Built 1942, Colonial Revival railroad station; represents the important role of rail transportation
Seaboard Railway Warehouses	V/149	Wake	Eligible/A, C	Circa 1940, represents the important role of rail transportation; representative of planned warehousing
Raleigh Cotton Mills (LD)	V/149	Wake	Eligible/A, C	Circa 1890, illustrates the rise of the textile industry; typifies the small-scale textile mills of the period

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Pine State Creamery (LD)	V/150	Wake	Listed/A, C	Built 1928, dairy farmers' cooperative; Art Moderne building
Seaboard Coast Line Railroad Company Office Building (LD)*	V/150	Wake	Listed/C	Built 1861, brick commercial building with restrained Italianate design
Melrose Knitting Mill	V/150	Wake	Eligible/A, C	Built 1902, illustrates the rise of rail-oriented manufacturing; typifies the small-scale textile mills of the period
Raleigh Electric Company Power House (LD)	V/150	Wake	Listed/A	Built 1910 primarily to power the city's electric streetcar system
Carolina Power and Light Company Car Barn and Automobile Garage (LD)	V/150	Wake	Listed/A, C	Built 1925, housed and repaired the company's streetcars and service vehicles; Art Deco style garage
St. Paul A.M.E. Church (LD)*	V/150	Wake	Listed/A, B, C	Built 1909, Gothic Revival brick church, constructed by the first independent African-American congregation of Raleigh, ministers were influential leaders of African-American community during Reconstruction
Depot Historic District	V/150	Wake	Listed/A, C	Circa 1880-1952, illustrates the transformation of a downtown neighborhood into a specialized industrial zone and transportation center; area comprises Raleigh's only important collection of rail-related, industrial, and warehouse buildings
Depot Historic District Expansion Area*	V/150	Wake	Eligible/A, C	Ten additional warehouses and commercial buildings and their associated tax parcels that abuts the northwest side of the existing historic district; they form a cohesive collection of resources that contribute to the industrial and commercial significance of the historic district during its period of significance.

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Montfort Hall (LD)*	V/150-151	Wake	Listed/C	1858 Italianate-style plantation home located at the northern entrance to the Boylan Heights Historic District ; one of the few mansions in Raleigh that survived during the American Civil War era
Boylan Heights Historic District (LD)	V/150-151	Wake	Listed/A, B, C	Circa 1907, Colonial Revival, Neo-Classical Revival, and picturesque dwellings; exemplifies early twentieth century suburban development; associations with developers and civic leaders, Frank Ellington and J. Stanhope Wynne
Joel Lane House (LD)*	V/150-151	Wake	Listed/A, B, C	Built in late 1760s; manor plantation house overlooking the future site of Raleigh; associated with Joel Lane who was a member of the colonial General Assembly, lobbied to create Wake County, and was directly involved in the decision to locate the permanent capital of the state in Wake County; during the Revolutionary War, house was the site of important government meetings, both formal and informal; National Society of Colonial Dames of America in the State of North Carolina continues to operate this Raleigh Historic Landmark as a house museum
Boylan Apartments (LD)*	V/150-151	Wake	Listed/A, C	Built 1935, three-story brick Colonial Revival apartments
Raleigh Hosiery Company Building	V/151	Wake	Eligible/A	Circa 1900,illustrates the small-scale industrial and warehousing properties built along the rail lines
North Carolina School Book Depository	V/151	Wake	Eligible/A	Circa 1940, exemplifies the auxiliary buildings erected to serve the expanding statewide public school system

Table 5-3
Historic Architectures Resources in the Project Corridor – North Carolina

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Governor Morehead School Historic District*	V/151	Wake	Eligible/A, C	The North Carolina Institution of the Deaf and Dumb and Blind (now the Governor Morehead School) opened in 1845 and moved to its current location in 1923; significant state-wide for its role in the training of blind, white students in North Carolina; well-preserved collection of Colonial Revival scholastic architecture
Raleigh and Gaston Railroad Corridor	M-V/all NC	Franklin, Warren, Vance, Wake	Eligible/A	Circa 1836-1840, one of the state's first two railroads and grew to become one of the major rail lines in the southeastern United States

Source: Mattson, Alexander, and Associates, 2005, 2007, 2009; Dovetail (see Appendix K for list of Dovetail reports).

* Identified subsequent to publication of the Richmond to Raleigh Project Tier II DEIS.

LD - Also a locally-designated historic site.

5.4 DESCRIPTION OF THE 4(F) RESOURCES – BATTLEFIELDS

Section 3.12.2.2 of the Richmond to Raleigh Project Tier II DEIS describes the battlefields within the APE of the Project that were determined to be eligible for listing in the NRHP. The 10 battlefields eligible for protection under Section 4(f) are described in Table 5-4. The battlefields are listed in the order they appear in the Project Study Area from north to south.

As discussed in Section 3.12.2.2, the American Battlefield Protection Program (ABPP) proposed new National Register-eligible boundaries to VDHR for the 10 battlefields within the Project APE in July 2009. VHDR disagreed with these boundaries. Although there are differences between the individual VDHR and ABPP battlefield boundaries, when considered in total, the two sets of boundaries almost completely overlap within the Project APE.

Table 5-4
Battlefields in the Project Corridor – Virginia

Resource Name	Section(s)/ Mapsheet(s)	County	Status/Criteria	Description
Proctor's Creek	AA, BB/7-10	Chesterfield	Eligible/A	The battlefield consists of monuments, interpretive markers, a cemetery, historic road bed, buildings and trenches
Port Walthall Junction	BB/14-16	Chesterfield	Eligible/A	Area associated with the Battle at Port Walthall Junction; consists of a historic road bed, trenches, and an old railroad bed
Swift Creek/Arrowfield Church	CC/16-18	Chesterfield, Colonial Heights	Eligible/A	Area associated with the Battle at Swift Creek
Petersburg III/The Breakthrough	CC, DD/25-28	Dinwiddie, Petersburg	Eligible/A	Area associated with the Battle of Petersburg
Weldon Railroad/Globe Tavern	CC, DD/26-30	Dinwiddie, Petersburg	Eligible/A	Area associated with the Civil War battles fought near the Weldon Railroad
Peebles Farm	CC, DD/27, 31-33	Dinwiddie, Petersburg	Eligible/A	Location of the Battle of Peebles Farm
Boydton Plank Road	DD, A/32-37	Dinwiddie	Eligible/A	Location of the Battle of Boydton Plank Road
Hatcher's Run	DD, A/31-36	Dinwiddie	Eligible/A	Area associated with the Battle near Hatcher's Run
Lewis Farm	A/36-38	Dinwiddie	Eligible/A	Location of an episode in the initial phase of Grant's final drive to outflank Lee's Petersburg force
Dinwiddie Courthouse	B/40-41	Dinwiddie	Eligible/A	Location of the Battle at Dinwiddie Courthouse

Source: Berger, 2005; Dovetail, 2008, 2009b.

5.5 DESCRIPTION OF THE 4(F) RESOURCES – ARCHAEOLOGY SITES

Section 4(f) applies to all archaeological sites that are listed or eligible for inclusion in the NRHP and warrant preservation in place. As stated in 23 CFR 774.13(b), Section 4(f) does not apply to archeological sites where the Federal agency, after consultation with the SHPO and ACHP, “determines that the archeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place.” Archaeological sites that meet the aforementioned criteria are considered Section 4(f) resources regardless of whether or not the historic resource is publicly owned or open to the public.

This section identifies the NRHP eligibility determinations for archaeological sites within the APE for the Preferred Alternative, and describes the evaluations of whether the eligible sites warrant preservation in place. As discussed in the draft Section 4(f) Evaluation in the Richmond to Raleigh Project Tier II DEIS, the Project used a phased approach to determine the eligibility of archaeological sites within the APE per 36 CFR 800.4(b)(2). For the Richmond to Raleigh Project Tier II DEIS, archaeologists completed Phase I investigations to determine previously recorded archaeological sites and identify additional archaeological resources within the APE. After the selection of the Preferred Alternative, archaeologists completed Phase II investigations to determine the eligibility of archaeological resources along the Preferred Alternative for the NRHP. These studies identified 17 archaeological resources listed in or eligible for the NRHP, all of which are located in Virginia (Table 5-5). Several of these resources are associated with historic architecture resources, and the potential Section 4(f) impacts to those resources are included in the associated historic architecture discussions.

Table 5-5
Archaeological Sites in the Preferred Alternative APE Listed in or Eligible for the NRHP

Resource Name	Section	Associated with Historic Architecture Resource	NHRP Eligibility Criteria	Section 4(f) Applies (Merits Preservation in Place)
Williams Bridge Company	AA	Yes	A, C, D	Yes
Falling Creek Ironwork	AA	No	D	No
USDOD Supply Center District	AA	Yes	A, B, C, D	Yes
Centralia Earthworks	BB	Yes	A, C, D (potential)	Yes
Chester Hotel Site	BB	No	A, D	No
Swanee Site	BB	No	D	No
Site 44CF0707	BB, CC	No	D	No
Arrowfield Plantation	CC	No	A, D	No
Site 44CF0710	CC	No	D	No
Battersea	CC	Yes	A, B, C, D	Yes
Dimmock Line/Earthworks	CC	Yes	A, B, C, D (potential)	Yes
Fort Davis Earthworks	DD	Yes	A, C, D (potential)	Yes
Orgain House	G	Yes	A, C, D	Yes
Oak Shades House Site	G	No	D	No
Davis Site	H	No	A, D	No
La Crosse Hotel	I	Yes	A, C, D	Yes

Table 5-5
Archaeological Sites in the Preferred Alternative APE Listed in or Eligible for the NHRP

Resource Name	Section	Associated with Historic Architecture Resource	NHRP Eligibility Criteria	Section 4(f) Applies (Merits Preservation in Place)
Wright Farmstead	J	Yes	Potentially A, C, D	Potentially

Table 5-5 indicates whether FRA has determined, in consultation with ACHP and VDHR, that the archeological sites are chiefly important for what can be learned from data recovery investigations and whether they have any have value for preservation in place. The nine sites associated with above-ground historic architecture resources listed in or eligible for the NRHP are assumed to warrant preservation in place. Of the remaining archaeological resources, those determined eligible for the NRHP under only Criterion D (eligible solely because of their potential to yield information important in prehistory or history) were determined not to merit preservation in place. The remaining three archaeological sites were then evaluated to determine whether the archeological sites are chiefly important for what can be learned from data recovery investigations and whether they merit preservation in place. This evaluation yielded the following:

5.5.1 CHESTER HOTEL SITE

The Chester Hotel Site is a mid-nineteenth through early-twentieth century site representing many occupations ranging from the Chester Hotel to its transformation to a domestic residence and doctor's office in the 1930s. The site has the potential to reveal information on the early years of Chester. As an archaeological resource, the Chester Hotel Site is chiefly important because of what can be learned by data recovery and has minimal value for preservation in place. On the basis of this qualification, Section 4(f) does not apply to the Chester Hotel Site.

5.5.2 ARROWFIELD PLANTATION

This site contains the archaeological remains of Arrowfield, an early-nineteenth through mid-twentieth century farmstead with a prehistoric component dating to the Middle Woodland and Late Archaic Periods. The site has the potential to yield a plethora of data on Antebellum Chesterfield County, VA. As an archaeological resource, the Arrowfield Plantation is chiefly important because of what can be learned by data recovery and has minimal value for preservation in place. On the basis of this qualification, Section 4(f) does not apply to Arrowfield Plantation.

5.5.3 DAVIS SITE

The Davis Site is a mid-nineteenth through early-twentieth century domestic site, likely occupied around 1914 by Charlie Davis, an African American resident. The site has the potential to reveal information on rural domestic sites and/or settlement patterns in the Piedmont during the Reconstruction and Growth Period (1865–1917) and the World War I and World War II Period (1917–1945). This also has the potential to reveal significant data on nineteenth century domestic life in Brunswick County, VA. As an archaeological resource, the Davis Site is chiefly important because of what can be learned by data recovery and has minimal value for preservation in place. On the basis of this qualification, Section 4(f) does not apply to the Davis Site.

Based on the above evaluation, there are no archaeological resources in the Project APE (other than those associated with a historic architecture resource) that are protected by Section 4(f).

Impacts to archaeological resources that are associated with historic architecture resources are described in Section 5.7.

5.6 SECTION 4(F) PROPERTY IMPACTS – PARKS, RECREATION AREAS, WILDLIFE REFUGES

The Project alternatives will require a *de minimis* Section 4(f) use of eight public parks or trails as listed in Table 5-6 and described below, with the Tobacco Heritage trail used in two locations. *De minimis* concurrence letters are included in Appendix L. The Preferred Alternative is identified in **bold**.

Table 5-6
Section 4(f) Determinations for Parks, Recreation Areas, and Wildlife Refuges
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1/NC1 Section 4(f) Use	VA2/NC2 Section 4(f) Use	VA3/NC3 Section 4(f) Use	VA4/NC5 Section 4(f) Use
Richmond Canal Walk	AA	**No Use**	No Use	No Use	N/A
James River Park System – Slave Trail	AA	**Use, *De Minimis***	Use, *De Minimis*	Use, *De Minimis*	N/A
Thomas B. Smith Community Center	AA	**Use, *De Minimis***	Use, *De Minimis*	Use, *De Minimis*	N/A
Falling Creek Park Expansion	AA	**No Use**	No Use	No Use	N/A
Falling Creek Ironworks Park	AA	**No Use**	No Use	No Use	N/A
James River Greenway (Kingsland Creek) (Planned)	AA	**No Use**	No Use	No Use	N/A
Chester Linear Park Expansion (Planned)	BB	**No Use**	No Use	No Use	N/A
Chester Kiwanis Historical Park (Planned)	BB	**No Use**	No Use	No Use	N/A
Ettrick Park & Mayes-Colbert Ettrick Community Building	CC	**No Use**	No Use	No Use	N/A
Appomattox Riverfront Trail (Planned)	CC	**Use, *De Minimis***	Use, *De Minimis*	Use, *De Minimis*	N/A
Upper Appomattox Canal Trail	CC	**Use, *De Minimis***	Use, *De Minimis*	Use, *De Minimis*	N/A
Petersburg National Battlefield (Fort Wadsworth Unit)	DD	Use, *De Minimis*	Use, *De Minimis*	**Use, *De Minimis***	N/A
Tobacco Heritage Trail (resource spans sections)	E	**Use, *De Minimis***	Use, *De Minimis*	Use, *De Minimis*	N/A
	I	**Use, *De Minimis***	Use, *De Minimis*	Use, *De Minimis*	N/A
Centennial Park	I	**Use, *De Minimis***	Use, *De Minimis*	Use, *De Minimis*	N/A
Town of La Crosse Playground	I	**No Use**	No Use	No Use	N/A
Franklinton Elementary School	S	**No Use**	No Use	No Use	N/A
Neuse River Greenway	U	**No Use**	No Use	No Use	N/A

Resource Name	Section	VA1/NC1 Section 4(f) Use	VA2/NC2 Section 4(f) Use	VA3/NC3 Section 4(f) Use	VA4/NC5 Section 4(f) Use
Table 5-6 Section 4(f) Determinations for Parks, Recreation Areas, and Wildlife Refuges (Preferred Alternative Identified in Bold)					
Simms Branch Greenway Expansion (Proposed)	U	**No Use**	No Use	No Use	N/A
Marsh Creek Greenway Expansion (Proposed)	V	No Use	No Use	No Use	**No Use**
Middle Crabtree Creek Greenway	V	Use, *De Minimis*	Use, *De Minimis*	Use, *De Minimis*	**Use, *De Minimis***

5.6.1 RICHMOND CANAL WALK (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) will construct a new rail bridge over the James River, immediately adjacent to the existing rail bridge located between the South 14th Street and I-95 roadway bridges (Appendix R, mapsheet 1). No ROW from the Canal Walk will be required. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the walkway. The addition of the Richmond to Raleigh Project should not alter the character, setting, or use of the Canal Walk. Therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.2 JAMES RIVER PARK SYSTEM – SLAVE TRAIL (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) will construct a new rail bridge over the James River, immediately adjacent to the existing rail bridge located between the South 14th Street and I-95 roadway bridges (Appendix R, mapsheet 1). A small amount of ROW under the span of the bridge is required to allow for access and maintenance. Included in this ROW is approximately 0.03 acres of the Slave Trail within the James River Park System. The existing rail bridge has daily freight rail traffic that can be heard from the trail; therefore, the new bridge should not alter the character, setting, or use of the trail.

The City of Richmond Department of Parks, Recreation, & Community Facilities, as the official with jurisdiction over the Slave Trail, concurred in a letter dated May 7, 2009, that the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

5.6.3 THOMAS B. SMITH COMMUNITY CENTER (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) will provide a railroad bridge over Ruffin Road just west of the Thomas B. Smith Community Center and Park (Appendix R, mapsheet 4). This bridge will ensure the safety of automobiles crossing the rail corridor. Due to the need to lower Ruffin Road to accommodate the bridge, a small amount of ROW is needed in southwest corner of the Thomas B. Smith Community Center and Park. The ROW is approximately 0.07 acres along Ruffin Road adjacent to the community center. Automobile access to the community center will be maintained. The existing rail crossing has daily freight rail traffic that can be heard from the community center and park; therefore, the new bridge should not alter its character or setting.

The City of Richmond Department of Parks, Recreation, & Community Facilities, as the official with jurisdiction over the Thomas B. Smith Community Center, concurred in a letter dated January 8, 2010, that the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

5.6.4 FALLING CREEK PARK EXPANSION (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) are on common alignment in the vicinity of the Falling Creek Park Expansion (Appendix R, mapsheet 6). Although the Richmond to Raleigh Project rail designs are located within the existing CSX railroad corridor and will not impact the park, the proposed grade separation of Station Road will relocate Station Road onto the parcel where the park is planned. The designs for the grade separation of Station Road have been altered from what was presented in the Richmond to Raleigh Project Tier II DEIS to no longer require ROW from within the proposed “Resource Protection Area” for the park as shown on the rendered site plan provided by Chesterfield County to the Project Team in June 2012.

The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the trail. In addition, there is vehicular traffic along Jefferson Davis Highway immediately adjacent to the proposed park. The addition of the Richmond to Raleigh Project rail and road improvements should not alter the character, setting, or use of the trail. Therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.5 FALLING CREEK IRONWORKS PARK (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) are located within the existing CSX railroad corridor where it crosses through Falling Creek Ironworks Park (Appendix R, mapsheet 6). The Richmond to Raleigh Project alternatives will cross Falling Creek on the existing structure and will not require any new ROW. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the Falling Creek Ironworks Park. The addition of the Project should not alter the character, setting, or use of the park. Therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.6 JAMES RIVER GREENWAY (KINGSLAND CREEK) (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives (VA1, VA2, and VA3) will add an additional railroad track within the existing CSX railroad corridor in the location where the planned greenway on the north side of Kingsland Creek will cross (Appendix R, mapsheet 8). Chesterfield County has not yet obtained a legal crossing of the active railroad corridor in this area. Therefore, the proposed changes associated with the Project will not create a barrier to the development of the trail (because that barrier already exists). The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the trail. The addition of the Richmond to Raleigh Project track should not alter the character, setting, or use of the trail. Therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.7 CHESTER LINEAR PARK EXPANSION (PLANNED) (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. All three of the proposed Project alternatives (VA1, VA2, and VA3) will add an additional railroad track within the existing CSX railroad corridor in the location where the planned expansion of Chester Linear Park will cross (Appendix R, mapsheet 11). Chesterfield County has not yet obtained a legal crossing of the active railroad corridor in this area. Therefore, the proposed changes associated with the Project will not create a barrier to the expansion of Chester Linear Park (because that barrier already exists). The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the expanded Chester Linear Park. The addition of the Richmond to Raleigh Project track should not alter the character, setting, or use of the trail. Therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.8 CHESTER KIWANIS HISTORICAL PARK (PLANNED) (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. All three of the proposed Project alternatives (VA1, VA2, and VA3) will require ROW from the parcel along Curtis Street and Richmond Street planned for the Chester Kiwanis Historical Park (Appendix R, mapsheet 12). However, Chesterfield County made the acceptance of the donated land conditional upon reserving the necessary ROW for the Project (100 feet from the centerlines of both Curtis Street and Richmond Street) for non-park uses. Therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.9 ETTRICK PARK & MAYES-COLBERT ETTRICK COMMUNITY BUILDING (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. All three of the proposed Project alternatives (VA1, VA2, and VA3) are on common alignment along the park boundary, which is immediately adjacent to the existing railroad ROW (Appendix R, mapsheet 20). None of the proposed Project alternatives will require any ROW from the park. The existing rail line has daily freight and passenger rail traffic that can be heard and seen from the park and community center. The addition of the Richmond to Raleigh Project should not alter the character, setting, or use of the park. Therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.10 APPOMATTOX RIVERFRONT TRAIL (PLANNED) (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. All three of the proposed Project alternatives (VA1, VA2, and VA3) will construct a new rail bridge over the Appomattox River, immediately adjacent to the existing rail bridge near Virginia State University (Appendix R, mapsheet 24). The bridge will be located just to the east of the existing bridge and will require a small amount of ROW under the span of the bridge to allow for access and maintenance. In addition, it may be necessary to provide Virginia State University with an access drive under the bridge. Included in the ROW needed for the Project is approximately 0.8 acres of the planned Appomattox Riverfront Trail. The existing rail bridge has daily freight and passenger rail traffic that can be heard from the surrounding area; therefore, the new bridge should not alter the character, setting, or use of the planned trail.

The Chesterfield County Department of Parks and Recreation, as the official with jurisdiction over the planned Appomattox Riverfront Trail, in a correspondence dated January 5, 2010, concurred that the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f), with the stipulation that the Richmond to Raleigh Project not impede access for pedestrians and bicyclists to traverse the full length of the trail without interruption at the railroad bridge. Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

5.6.11 UPPER APPOMATTOX CANAL TRAIL (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. All three of the proposed Project alternatives (VA1, VA2, and VA3) will construct a new rail bridge over the Appomattox River, immediately adjacent to the existing rail bridge near Virginia State University (Appendix R, mapsheet 24). A small amount of ROW under the span of the bridge is required to allow for access and maintenance. Included in this ROW is approximately 0.1 acres of the Upper Appomattox Canal Trail associated with Appomattox Riverside Park. The existing rail bridge has daily freight and passenger rail traffic that can be heard from the trail; therefore, the new bridge should not alter the character, setting, or use of the trail.

The Project Team sent a letter to the City of Petersburg Department of Parks and Leisure Services, as the official with jurisdiction over the Upper Appomattox Canal Trail, on April 22, 2009, outlining the proposed Project alternatives in the vicinity of the Upper Appomattox Canal Trail and stating that the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). No response has been received at the time of publication of this Richmond to Raleigh Project Tier II DEIS. Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

5.6.12 PETERSBURG NATIONAL BATTLEFIELD (FORT WADSWORTH UNIT) (VA)

The VA3 Project alternative is the Preferred Alternative in Section DD. All three of the proposed Project alternatives (VA1, VA2, and VA3) will require obtaining approximately 30 feet of ROW (subject to final design) along the western portion of the Fort Wadsworth Unit of Petersburg National Battlefield (Appendix R, mapsheet 28). This ROW is immediately adjacent to the existing railroad ROW at Collier rail yard. The ROW is needed for the additional track necessary to accommodate the high speed trains associated with the Project.

The National Park Service Petersburg National Battlefield superintendent, as the official with jurisdiction over the Fort Wadsworth Unit, stated in a letter dated March 4, 2009, that the Project could mitigate potential adverse effects to the Fort Wadsworth Unit with a land exchange. Based on the land exchange, the ROW required by the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

5.6.13 TOBACCO HERITAGE TRAIL (VA)

The VA1 Project alternative is the Preferred Alternative in Section E and Section I. All three of the proposed Project alternatives (VA1, VA2, and VA3) will cross the Tobacco Heritage Trail in the Towns of Alberta and La Crosse, VA (Appendix R, mapsheets 66 and 83, respectively). In Alberta, VA, the Project will provide a pedestrian/non-motorized overpass of the proposed rail alignment. In addition, the realignment of Second Avenue, which is necessary to provide a vehicle bridge over the proposed rail alignment, will require ROW from the trail. In La Crosse, VA, the Project will re-route the Tobacco Heritage Trail north along Main Street approximately 300 feet, where it will then cross under the proposed rail alignment, and rejoin the existing rails-to-trails corridor. The Project Team worked with representatives from both towns and the RRRT in the development of the designs to ensure that the Project will not impede the development or planned use of the trail.

The RRRT and the Towns of Alberta and La Crosse, VA, as the officials with jurisdiction over the Tobacco Heritage Trail, concurred in letters dated May 20, 2009 (RRRT), September 22, 2009 (Alberta, VA), and April 27, 2009 (La Crosse, VA), that the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

The RRRT included in their concurrence the following stipulations:

- The pedestrian/non-motorized overpass of the proposed rail alignment in Alberta, VA, must accommodate all forms of non-motorized traffic, including equestrian use
- The overpass in Alberta, VA, must be of sufficient width and construction to accommodate maintenance vehicles
- A pedestrian/non-motorized route must be provided adjacent to the Second Avenue realignment in Alberta, VA
- The re-routed trail in La Crosse, VA, should re-connect to the Tobacco Heritage Trail in a location that provides the safest and best accommodation
- The underpass in La Crosse, VA, must accommodate all forms of non-motorized traffic, including equestrian use
- The underpass in La Crosse, VA, must be of sufficient width and construction to accommodate maintenance vehicles

5.6.14 CENTENNIAL PARK (VA)

The VA1 Project alternative is the Preferred Alternative in Section I. All three of the proposed Project alternatives (VA1, VA2, and VA3) will close the existing pedestrian crossing just east of Centennial Park and require a small amount of ROW (approximately 0.06 acres) to accommodate the railroad improvements (Appendix R, mapsheet 83). The Project will provide a new pedestrian underpass along the Tobacco Heritage Trail, approximately 300 feet to the north along Main Street, which will allow trail users to cross under the proposed rail alignment and rejoin the existing rails-to-trails corridor. Although the new rail traffic will be heard from the park, it is in character with its rail theme; therefore, the required ROW should not alter the character, setting, or use of the park.

The Town of La Crosse, as the official with jurisdiction over Centennial Park, concurred in a letter dated September 30, 2009, that the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

5.6.15 TOWN OF LA CROSSE PLAYGROUND (VA)

The VA1 Project alternative is the Preferred Alternative in Section I. All three of the proposed Project alternatives (VA1, VA2, and VA3) will rebuild rail through the Town of La Crosse within the existing rail corridor, close the existing at-grade crossing at Main Street, and provide a new grade-separated crossing of the existing CSX rail corridor approximately 500 feet south of the existing crossing (Appendix R, mapsheet 83). The Project will make improvements to Central Avenue and College Street in the vicinity of the playground in order to provide a connection to the new grade separation. Although a construction easement may be required that will temporarily require removal of a small portion of the playground fencing, no ROW will be permanently required from the playground. Although the new rail traffic will be heard from the park, it is in character with its rail theme; therefore, the Preferred Alternative (and VA2 and VA3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.16 FRANKLINTON ELEMENTARY SCHOOL (NC)

The NC1 Project alternative is the Preferred Alternative in Section S. All three of the proposed Project alternatives (NC1, NC2, and NC3) will require ROW in the vicinity of the Franklinton Elementary School to provide pedestrian access from Hawkins Street, under the railroad tracks, to South Main Street (Appendix R, mapsheet 128). However, no land will be required from the school and the pedestrian access will have no effect on the use of its facilities. Therefore, the Preferred Alternative (and NC2 and NC3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.17 NEUSE RIVER GREENWAY (NC)

The NC1 Project alternative is the Preferred Alternative in Section U. All three of the proposed Project alternatives (NC1, NC2, and NC3) will cross over the Neuse River Greenway. No ROW from the greenway will be required. The existing rail line in this area has daily freight traffic that can be heard and seen from the greenway. The addition of the Richmond to Raleigh Project should not alter the character, setting, or use of the greenway. In addition, the Richmond to Raleigh Project bridge at this location will have a covered deck, which will meet the requirements from the City requesting a protected cover to protect patrons from falling debris. Therefore, the Preferred Alternative (and NC2 and NC3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.18 SIMMS BRANCH GREENWAY EXPANSION (PROPOSED)

The NC1 Project alternative is the Preferred Alternative in Section U. All three of the proposed Project alternatives (NC1, NC2, and NC3) will cross the proposed location of the Simms Branch Greenway within the existing, active railroad corridor. The City of Raleigh has not yet obtained a legal crossing of the corridor at this location. Therefore, the proposed changes associated with the Project will not create a barrier to the development of the Simms Branch Greenway (because that barrier already exists). The City could route the greenway south to Gresham Lake Road or north to Durant Road to cross the existing CSX rail corridor. Gresham Lake Road and Durant Road will both be grade-separated (road over rail) with the Project, and the bridges will accommodate bikes and pedestrians. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the proposed location of the greenway. The addition of the Richmond to Raleigh Project track should not alter the character, setting, or use of the trail. Therefore, the Preferred Alternative (and NC2 and NC3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.19 MARSH CREEK GREENWAY EXPANSION (PROPOSED)

The NC5 Project alternative is the Preferred Alternative in Section V. All four of the proposed Project alternatives (NC1, NC2, NC3, and NC5) will cross the proposed location of the Marsh Creek Greenway within the existing, active railroad corridor. The City of Raleigh has not yet obtained a legal crossing of the corridor at this location. Therefore, the proposed changes associated with the Project will not create a barrier to the development of the Marsh Creek Greenway (because that barrier already exists). The City could route the greenway south to Millbrook Road to cross the existing CSX rail corridor. Millbrook Road will be grade-separated (road under rail) with the Project, and the underpass will accommodate bikes and pedestrians. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the proposed location of the greenway. The addition of the Richmond to Raleigh Project track should not alter the character, setting, or use of the trail. Therefore, the Preferred Alternative (and NC1, NC2, and NC3) will have no effect on this resource and will not constitute a Section 4(f) use of the resource.

5.6.20 MIDDLE CRABTREE CREEK GREENWAY (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. All four of the proposed Project alternatives (NC1, NC2, NC3, and NC5) will construct a new single track bridge adjacent to the existing rail bridge that spans Crabtree Creek and Hodges Street in Raleigh, NC (Appendix R, mapsheet 148). The new rail bridge will provide an additional track that is necessary to accommodate the high speed trains associated with the Project. A small amount of ROW under the span of the bridge is required to allow for access and maintenance. Included in this ROW is approximately 0.15 acres of the City of Raleigh's Middle Crabtree Creek Greenway. The existing rail bridge has daily freight and passenger rail traffic that can be heard from the trail; therefore, the new bridge should not alter the character, setting, or use of the trail.

The City of Raleigh Parks and Recreation Department, as the official agency with jurisdiction over the Middle Crabtree Creek Greenway, concurred on September 11, 2009, that the Project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f), with the stipulation that continuous operation of the greenway trail during construction will need to be addressed. Therefore, FRA has made a *de minimis* determination for this resource for all Project alternatives.

5.7 SECTION 4(F) PROPERTY IMPACTS – HISTORIC ARCHITECTURE SITES

Of the 131 historic architecture resources (excluding the 10 battlefields) determined to be eligible for listing or listed in the NRHP within the Project corridor, 76 will have property impacts or proximity impacts from one or more of the Project alternatives (Tables 5-7 and 5-8). None of the Project alternatives will have an effect on the remaining 55 resources under Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800) nor will they require the acquisition of any ROW from any of these properties. There is no Section 4(f) use of these properties; therefore, no further action is required for these resources.

Where one or more of the Project alternatives has been determined to affect a Section 4(f) resource (either no adverse effect or adverse effect under Section 106 of the NHPA or ROW required), details are provided below regarding each alternative's impact on the resource. Tables 5-7 and 5-8, as well as the discussion below, identify where FRA has determined that impacts are *de minimis* or do not constitute a Section 4(f) use. Resources in Tables 5-7 through 5-8 are ordered from north to south as they appear in the Richmond to Raleigh Project Study Area. The Preferred Alternative is identified in **bold**. For resources that span more than one section of the project, all portions of the Preferred Alternative crossed by the resource are identified in bold.

The VDHR concurred with the determinations in a letter dated July 29, 2014. The VDHR concurred with *de minimis* findings in a separate letter dated July 10, 2014.

The NC-HPO concurred with the determinations of effect for resources in North Carolina in a meeting held June 17, 2013, and signed a form confirming these effects on August 14, 2013. This form included concurrence with *de minimis* findings.

Impacts to the 10 historic battlefields are discussed separately in Section 5.8.

Table 5-7
Section 4(f) Determinations for Historic Architecture Resources – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect/ Section 4(f) Use	VA2 Section 106 Effect/ Section 4(f) Use	VA3 Section 106 Effect/ Section 4(f) Use	VA4 Section 106 Effect/ Section 4(f) Use
Seaboard Air Line Railroad Corridor (resource spans sections)	AA-L	**Adverse Effect/ Use**	**Adverse Effect/ Use**	**Adverse Effect/ Use**	**Adverse Effect/ Use**
C. & O. & Seaboard Railroad Depot	AA	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Shockoe Valley & Tobacco Row Historic District	AA	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Shockoe Slip Historic District	AA	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
James River and Kanawha Canal Historic District	AA	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Atlantic Coast Line Railroad Corridor (resource spans sections)	AA	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
	BB	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
	CC	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Manchester Industrial Warehouse Historic District	AA	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Williams Bridge Company	AA	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Lucky Strike/RJ Reynolds Tobacco	AA	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Transmontaigne Product Services, Inc.	AA	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Davee Gardens Historic District	AA	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
DuPont Spruance	AA	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Sheffields; Auburn Chase; Bellwood; Building 42 - DSCR Officer's Club; New Oxford	AA	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A

Table 5-7
Section 4(f) Determinations for Historic Architecture Resources – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect/ Section 4(f) Use	VA2 Section 106 Effect/ Section 4(f) Use	VA3 Section 106 Effect/ Section 4(f) Use	VA4 Section 106 Effect/ Section 4(f) Use
USDOD Supply Center Historic District; Bellwood-Richmond Quartermaster Depot Historic District	AA	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Richmond & Petersburg Electric Railway (resource spans sections)	AA	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
	BB	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
	CC	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
House at 3619 Thurston Rd	AA	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Centralia Post Office	BB	**Adverse Effect/ No Use**	Adverse Effect/ No Use	Adverse Effect/ No Use	N/A
Ragland House/4626 Centralia Road	BB	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Circle Oaks/4510 Centralia Road	BB	**Adverse Effect/ No Use**	Adverse Effect/ No Use	Adverse Effect/ No Use	N/A
Centralia Earthworks	BB	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Chester Historic District	BB	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Chester #94 Masonic Lodge	BB	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Pretlow House	BB	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Eichelberger House	BB	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Ellerslie	CC	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Appomattox River Railroad Bridge	CC	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A

Table 5-7
Section 4(f) Determinations for Historic Architecture Resources – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect/ Section 4(f) Use	VA2 Section 106 Effect/ Section 4(f) Use	VA3 Section 106 Effect/ Section 4(f) Use	VA4 Section 106 Effect/ Section 4(f) Use
Battersea	CC	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
North Battersea/Pride's Field Historic District	CC	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Defense Road	CC	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Dimmock Line/Earthworks	CC	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Bridge over Defense Road	CC	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Fort Davis Earthworks	DD	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	N/A
Evergreen	A	No Effect/ No Use	**No Effect/ No Use**	No Effect/ No Use	N/A
Courtworth	C	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Bowen House	C	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
W. Boisseau's Store, Warehouse, Dwelling	C	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Bank of McKenney (referred to as Bank Building in Richmond to Raleigh Project Tier II DEIS)	C	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Chesapeake and Potomac Telephone Company (C & P) Building	C	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Mayton House	C	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Zehmer Farm/Honeymoon Hill Farm	C	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Wynnhurst	D	Adverse Effect/ Use	No Effect/ No Use	Adverse Effect/ Use	**Outside APE/ No Use**
Blick's Store	D	No Effect/ No Use	No Adverse Effect/ Use, *De Minimis*	No Effect/ No Use	**No Adverse Effect/ Use, *De Minimis***

Table 5-7
Section 4(f) Determinations for Historic Architecture Resources – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect/ Section 4(f) Use	VA2 Section 106 Effect/ Section 4(f) Use	VA3 Section 106 Effect/ Section 4(f) Use	VA4 Section 106 Effect/ Section 4(f) Use
House/458 Second Avenue	E	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Orgain House	G	No Effect/ No Use	No Effect/ No Use	**No Adverse Effect / No Use**	Adverse Effect/ Use
Tourist Guest House	G	No Effect/ No Use	No Effect/ No Use	**Adverse Effect/ Use**	No Adverse Effect/ No Use
Oak Shades	G	Adverse Effect/ Use	Adverse Effect/ Use	**No Effect/ No Use**	No Effect/ No Use
Evans House	H	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Smelley House	I	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
La Crosse Commercial Historic District	I	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
La Crosse Hotel	I	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Wright Farmstead	J	Adverse Effect/ Use	**No Effect/ No Use**	Adverse Effect/ Use	N/A
Sardis Methodist Church	J	No Adverse Effect/ No Use	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	N/A
Bracey Historic District	K	**No Adverse Effect/ No Use**	Adverse Effect/ Use	No Adverse Effect/ No Use	N/A
Bracey Depot	K	**No Adverse Effect/ No Use**	Adverse Effect / Use	No Adverse Effect/ No Use	N/A
Bracey & Company Store	K	**No Adverse Effect/ No Use**	No Adverse Effect / Use, *De Minimis*	No Adverse Effect/ No Use	N/A
Granite Hall/Fitts House	L	**No Effect/ No Use**	Adverse Effect/ Use	No Effect/ No Use	N/A

Table 5-8
Section 4(f) Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Section	NC1 Section 106 Effect/ Section 4(f) Use	NC2 Section 106 Effect/ Section 4(f) Use	NC3 Section 106 Effect/ Section 4(f) Use	NC5 Section 106 Effect/ Section 4(f) Use
Warren County Training School	L	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Wise School	L	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
House (East side of US 1, Wise, NC)	M	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Holtzmann Farm	M	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Chapel of the Good Shepherd	M	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Dr. Thomas B. Williams House and Office	M	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Marshall House/Tavern (House No 245)	M	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
William J. Hawkins House	N	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Middleburg Community House (Middleburg Steakhouse)	O	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**	N/A
House (Allison Cooper Rd, Middleburg vicinity)	O	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**	N/A
Holloway Farm	O	Adverse Effect/ Use	Adverse Effect/ Use	**No Effect/ No Use**	N/A
William Haywood Harris Farm	O	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**	N/A
Forrest Ellington Farm	O	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	N/A
R. B. Carter House	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Henderson Historic District and Proposed Boundary Expansion	P	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Vance County Courthouse	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Zollicoffer's Law Office	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A

Table 5-8
Section 4(f) Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect/ Section 4(f) Use	NC2 Section 106 Effect/ Section 4(f) Use	NC3 Section 106 Effect/ Section 4(f) Use	NC5 Section 106 Effect/ Section 4(f) Use
Henderson Fire Station and Municipal Building	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Houses (2 bungalows on E Young Ave)	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Mistletoe Villa	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
South Henderson Industrial Historic District	P	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A
Vance Flour Mill (Sanford Milling Co.)	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Houses (5 worker houses on 1400 block of Nicholas St)	P	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Houses (3 side gable houses on 1500 block of Nicholas St)	P	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Esso Gasoline Station	P	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Confederate Cemetery	Q	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Saint James Episcopal Church	Q	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Hedgepetch and Finch Store	Q	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Kittrell Residential Historic District	Q	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Josiah Crudup House	Q	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Person-McGhee Farm (resource spans sections)	Q	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
	R	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Raleigh and Gaston Railroad Bridge Piers (Tar River) (resource spans sections)	Q	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
	R	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Franklinton Historic District (Includes Sterling Mill Historic District)	S	**Adverse Effect/ Use**	Adverse Effect/ Use	Adverse Effect/ Use	N/A

Table 5-8
Section 4(f) Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect/ Section 4(f) Use	NC2 Section 106 Effect/ Section 4(f) Use	NC3 Section 106 Effect/ Section 4(f) Use	NC5 Section 106 Effect/ Section 4(f) Use
Aldridge H. Vann House	S	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Franklinton Depot	S	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Church (within proposed Franklinton Historic District)	S	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Sterling Cotton Mill	S	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Cedar Creek Railroad Bridge Piers	S	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Youngsville Historic District	T	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
J. B. Perry House	T	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Glen Royall Mill Village Historic District	U	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A
Wake Forest Historic District	U	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Downtown Wake Forest Historic District	U	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Purefoy-Chappell House and Outbuildings	U	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Oakforest	U	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Powell House	U	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Neuse Railroad Station	U	**No Effect/ No Use**	No Effect/ No Use	No Effect/ No Use	N/A
Crabtree Creek Railroad Bridge Pier	V	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***
Gulf Petroleum Products Warehouse	V	Adverse Effect/ Use	Adverse Effect/ Use	Adverse Effect/ Use	**Adverse Effect/ Use**
Raleigh Bonded Warehouse	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**

Table 5-8
Section 4(f) Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect/ Section 4(f) Use	NC2 Section 106 Effect/ Section 4(f) Use	NC3 Section 106 Effect/ Section 4(f) Use	NC5 Section 106 Effect/ Section 4(f) Use
Mordecai Place Historic District	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Pilot Mill	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Roanoke Park Historic District	V	No Effect/ No Use	No Effect/ No Use	Adverse Effect/ Use	**No Effect/ No Use**
Noland Plumbing Company Building	V	No Effect/ No Use	No Effect/ No Use	No Adverse Effect/ Use, *De Minimis*	**No Effect/ No Use**
John A. Edwards and Company Building	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Glenwood-Brooklyn Historic District	V	No Effect/ No Use	No Effect/ No Use	No Adverse Effect/ Use, *De Minimis*	**No Effect/ No Use**
Seaboard Railway Station	V	No Adverse Effect/ No Use	No Adverse Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Seaboard Railway Warehouses	V	No Adverse Effect/ No Use	No Adverse Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Raleigh Cotton Mills	V	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	No Effect/ No Use	**No Effect/ No Use**
Pine State Creamery	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Seaboard Coast Line Railroad Company Office Building	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Melrose Knitting Mill	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Raleigh Electric Company Power House	V	Adverse Effect/ Use	Adverse Effect/ Use	No Adverse Effect/ No Use	**No Adverse Effect/ No Use**
Carolina Power and Light Company Car Barn and Automobile Garage	V	Adverse Effect/ Use	Adverse Effect/ Use	No Effect/ No Use	**No Effect/ No Use**
St. Paul A.M.E. Church	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Depot Historic District	V	No Adverse Effect/ No Use	No Adverse Effect/ No Use	No Adverse Effect/ No Use	**No Adverse Effect/ No Use**

Table 5-8
Section 4(f) Determinations for Historic Architecture Resources – North Carolina
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	NC1 Section 106 Effect/ Section 4(f) Use	NC2 Section 106 Effect/ Section 4(f) Use	NC3 Section 106 Effect/ Section 4(f) Use	NC5 Section 106 Effect/ Section 4(f) Use
Depot Historic District Proposed Boundary Amendment	V	No Adverse Effect/ No Use	No Adverse Effect/ No Use	No Adverse Effect/ No Use	**No Adverse Effect/ No Use**
Montfort Hall	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Boylan Heights Historic District	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Joel Lane House	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Boylan Apartments	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Raleigh Hosiery Co. Building	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
North Carolina School Book Depository	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Governor Morehead School Historic District	V	No Effect/ No Use	No Effect/ No Use	No Effect/ No Use	**No Effect/ No Use**
Raleigh and Gaston Railroad Corridor*	M-V	**Adverse Effect/ Use**	Adverse Effect/ Use	**Adverse Effect/ Use**	**Adverse Effect/ Use**

* Impacts to the Raleigh and Gaston Railroad corridor are common among all Project alternatives.

5.7.1 SEABOARD AIR LINE RAILROAD CORRIDOR (VA)

The Preferred Alternative in Sections AA through L is a combination of the various Project alternatives (VA1 in Sections AA, BB, CC, B, C, E, F, H, and I; VA2 in Sections A and J; VA3 in Sections DD and G; and VA4 in Section D). All of the proposed Project alternatives (VA1, VA2, VA3, and VA4) are located within the Seaboard Air Line Railroad corridor for the majority of their lengths. The alternatives will require a use of the resource in order to add a second set of tracks. Although most of the rail corridor will remain unchanged, the removal of the rail bridge over US 1 South near Alberta, VA (in Section F), a contributing element to the historic resource, will alter the resource and diminish the resource's integrity of design, setting, materials, workmanship, feeling, and association. The location will not change, but a notable visual element will be removed from the resource. This element is representative of the modifications that occurred along the track in the second quarter of the twentieth century associated with transportation improvements and the establishment of a multi-state vehicular corridor. Therefore, the Preferred Alternative (and all other alternatives in Virginia) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.2 C. & O. & SEABOARD RAILROAD DEPOT (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives are on common alignment in the vicinity of the C. & O. & Seaboard Railroad Depot and will add a second set of tracks. However, they will not require any modifications to the existing building or the surrounding tracks and will not alter the property's location, design, setting, materials, workmanship, feeling, or association. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the depot; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.3 SHOCKOE VALLEY & TOBACCO ROW HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives are on common alignment in the vicinity of the Shockoe Valley & Tobacco Row Historic District and will add a second set of tracks. However, all work will be between one and three stories above the historic district atop existing support and the addition of the second track will not alter the physical composition or viewshed of the district in any way. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this district under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the district; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.4 SHOCKOE SLIP HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. All three of the proposed Project alternatives are on common alignment in the vicinity of the Shockoe Slip Historic District and will add a second set of tracks. However, all work will be between one and three stories above the historic district atop existing support and the addition of the second track will not alter the physical composition or viewshed of the district in any way. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this district under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the district; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.5 JAMES RIVER AND KANAWHA CANAL HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment in the vicinity of this district. The Project alternatives will add a second set of tracks. However, the modifications will not impact the integrity of any aspects of this district, and the addition of the second track on the existing pier will not alter the district's significance or character. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this district under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the district; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.6 ATLANTIC COAST LINE RAILROAD CORRIDOR (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA, Section BB, and Section CC. The three Project alternatives are on common alignment in the vicinity of the Atlantic Coast Line Railroad corridor. The Project alternatives will require a use of the resource in order to add a second set of tracks. Although most of the rail corridor will remain unchanged, the removal of a utility bridge for the crossing of the Richmond & Petersburg Electric Railway and abandoned abutments associated with the historic alignment of US Highway 10, both of which are contributing elements to the historic resource, will alter the resource and diminish the resource's integrity of design, setting, materials, workmanship, feeling, and association. The location will not change, but notable visual elements will be removed from the resource. These elements are located along the Atlantic Coast Line Railroad corridor and were constructed during its period of significance in response to the railroad tracks below. Because of the proposed demolition of contributing elements, the Preferred Alternative (and VA2 and VA3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.7 MANCHESTER INDUSTRIAL WAREHOUSE HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment in the vicinity of this district. The Project alternatives will require a use of the resource in order to add a second set of tracks. However, alterations to the rail corridor itself will be minimal and road work in this area will primarily comprise modifications to change the intersection of Maury Street and the CSX rail tracks from an at-grade crossing to a bridged crossing. In addition, the Preferred Alternative will change relocated Maury Street within the Manchester Industrial Historic District to a new road and grade separation over the railway, located just north of the existing I-95 ramps and within the Citgo Petroleum above-ground storage tanks property. In addition to the new roadway, a roundabout will be constructed at the intersection of the relocated Maury Street/I-95 ramps/E. 4th Street, as proposed in the City of Richmond’s Long Range Transportation Plan for this area. This new design for Maury Street will avoid property impacts to the expanded Manchester Industrial Historic District.

Although the Project will change the road configuration east of the historic district boundaries, it will not modify the historic road pattern or any above-ground contributing elements within the district itself. No buildings will be altered during this work. The construction of the new roundabout will be at-grade and thus not alter the viewshed of the district's contributing resources. The modifications in this area will not diminish the characteristics that make this property eligible for the NRHP. As such, the Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.8 WILLIAMS BRIDGE COMPANY (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource to add a second set of tracks and to reroute the entry and roadways near this complex. This has the potential to diminish the property’s integrity of location, design, setting, feeling, and association. The Preferred Alternative (and VA2 and VA3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.9 TRANSMONTAIGNE PRODUCT SERVICES, INC. (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks and provide an underpass of Goodes Street. However, a retaining wall will be constructed on the north side of Goodes Street to eliminate any modifications to this historic property and the viewshed will not be modified. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.10 DAVEE GARDENS HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks and widen a 2,300-foot long stretch of Ruffin Road, which is located along the northern perimeter of the district. The modifications will not alter any of the characteristics that render this district eligible for the NRHP. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.11 DUPONT SPRUANCE (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks. Although the Project has the potential to slightly alter the setting of the resource, it will not diminish the characteristics that make this property eligible for the NRHP. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.12 SHEFFIELDS; AUBURN CHASE; BELLWOOD; BUILDING 42 - DSCR OFFICER'S CLUB; NEW OXFORD (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment near this resource. The Sheffields home and surrounding archaeological site are located over 1,500 feet west of the rail alignment. The viewshed from the main house to the rail tracks is obscured by distance, topography and vegetation, thus rendering the rail area virtually invisible from the historic house. The Preferred Alternative involves reconstructing a second rail within the existing right-of-way, thus the current viewshed will not be modified during the Project. The rail and road work will also not physically impact the intact archaeological remains associate with this property. As such, the Preferred Alternative will have no adverse effect on this property under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to Sheffields; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.13 USDOD SUPPLY CENTER HISTORIC DISTRICT; BELLWOOD-RICHMOND QUARTERMASTER DEPOT HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment near this resource. The massive USDOD historic district is located west of the existing rail line. Only the southeastern 500 feet is adjacent to the current railway corridor boundaries, as the eastern boundary veers away from the rail track along the northeastern 3,000 feet. This southeastern area was once the location of a railroad spur providing rail access to the US Department of Defense complex off of the main rail tracks. Thus, the presence of the rail in this area is associated with the location and association of this resource. At the time the supply center was in operation, rail traffic along this line was higher and trains traveled on dual lines. The Preferred Alternative will add a second rail line in the right-of-way, thus restoring the rail configuration in this area to resemble the system in existence during the resource's Period of Significance. Because the changes will restore the dual tracks in this area, the Preferred Alternative will have no adverse effect on this property under Section 106 of the

NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the USDOD Supply Center Historic District; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.14 RICHMOND & PETERSBURG ELECTRIC RAILWAY (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA, Section BB, and Section CC. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks. Although most of the rail corridor will remain unchanged, the removal of a utility bridge for the crossing of the Richmond & Petersburg Electric Railway and abandoned abutments associated with the historic alignment of US Highway 10, both of which are contributing elements to the historic resource, will alter the resource and diminish the resource's integrity of design, setting, materials, workmanship, feeling, and association. The location will not change, but notable visual elements will be removed from the resource. These elements are located along the Atlantic Coast Line Railroad corridor and were constructed during its period of significance in response to the railroad tracks below. Because of the proposed demolition of contributing elements, the Preferred Alternative (and VA2 and VA3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.15 HOUSE AT 3619 THURSTON RD (VA)

The VA1 Project alternative is the Preferred Alternative in Section AA. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to provide a new roadway about 250 feet west of the dwelling. The house will be separated from the road ROW by a modern home and a vegetative buffer and will not alter the resource's location, design, materials, workmanship, and feeling. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this property under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.16 CENTRALIA POST OFFICE (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment near this resource. The Project alternatives will construct an overpass on Centralia Road. The fill slope from the bridge will be approximately 30 feet tall and located less than 30 feet south of the resource and its driveway will be moved. The Preferred Alternative (and VA2 and VA3) will have an adverse effect on this resource under Section 106 of the NHPA.

Although the Project will have an adverse effect on the Centralia Post Office under Section 106, the Project will not require any ROW from the resource. A visualization (i.e., computer-generated "before and after" images) of the view from the Centralia Post Office was prepared to convey the visual impact of the Project alternatives (Appendix L). These images were shared with VDHR. Based on the visual change anticipated, the FRA has determined that the proximity impacts do not cause a substantial impairment to the Centralia Post Office. Therefore, the impacts do not constitute a Section 4(f) use of the resource and the resource is not included in the remainder of the Section 4(f) evaluation.

5.7.17 RAGLAND HOUSE/4626 CENTRALIA RD (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment near the Ragland House. The Project alternatives will construct an overpass on Centralia Road and a portion of Centralia Road will be rerouted just east of Ragland House. However, no roadwork will be completed on the Ragland property, and the viewshed from the main house will be only slightly modified as the new road meets the old road southeast of the house. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Ragland House; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.18 CIRCLE OAKS/4510 CENTRALIA ROAD (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment near this resource. The Project alternatives will construct an overpass on Centralia Road. The approach to the bridge will be visible from Circle Oaks and will require reconfiguring a section of driveway. The modifications have the potential to diminish the characteristics that make the property eligible for the NRHP. The Preferred Alternative (and VA2 and VA3) will have an adverse effect on this resource under Section 106 of the NHPA.

Although the Project will have an adverse effect on Circle Oaks under Section 106, the Project will not require any ROW from the resource. A visualization (i.e., computer-generated “before and after” images) of the view from the front porch of Circle Oaks was prepared to convey the visual impact of the Project alternatives (Appendix L). These images were shared with VDHR. Based on the visual change anticipated, the FRA has determined that the proximity impacts do not cause a substantial impairment to Circle Oaks. Therefore, the impacts do not constitute a Section 4(f) use of the resource and the resource is not included in the remainder of the Section 4(f) evaluation.

5.7.19 CENTRALIA EARTHWORKS (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment near this resource. The Project designs include associated road improvements along Hopkins Road and Centralia Road to accommodate traffic rerouted from the closure of nearby at-grade rail crossings. The Centralia Earthworks are located east of Hopkins Road and run north-south parallel to the roadway. The Preferred Alternative will require a small amount of ROW from the resource. Although the earthworks were once larger, previous changes to the road system in this area in the early- and mid-twentieth century have destroyed all physical remnants of the earthworks within and immediately adjacent to the road corridor. The Preferred Alternative will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.20 CHESTER HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment through the Chester Historic District. The Project alternatives will require a use of the resource in order to add a second set of tracks, reroute several original road alignments, and close at-grade rail crossings. The Project alternatives will result in notable modifications to the district’s original plan. The Preferred Alternative (and VA2 and VA3) will have an adverse effect on this district under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.21 PRETLOW HOUSE (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to accommodate modifications to Curtis Street between the rail tracks and Winfree Street. At Pretlow House, the road changes have been minimized through the creation of curb and gutter designs, thus avoiding impacts to vegetation currently in existence at the corner of the property and avoiding any impacts to the existing stone wall. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. As a condition of this effect recommendation, the VDHR requested that all efforts be made during construction to avoid impacts to the existing stone wall and adjacent vegetation. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.22 EICHELBERGER HOUSE (VA)

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks and widen Curtis Street as part of the new railroad underpass. This will require the removal of the original stone gate and part of the trail to the Eichelberger House. Both of these resources are contributing elements to the larger Eichelberger House property. The Preferred Alternative (and VA2 and VA3) will have an adverse effect on this property under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.23 APPOMATTOX RIVER RAILROAD BRIDGE (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. The three Project alternatives are on common alignment near the Appomattox River Railroad Bridge and will all add a new, parallel single track bridge for high speed passenger trains just east of the existing bridge. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA.

Based on the visual change anticipated, the FRA has determined that the proximity impacts do not cause a substantial impairment to the Appomattox River Railroad Bridge. Therefore, the impacts do not constitute a Section 4(f) use of the resource and the resource is not included in the remainder of the Section 4(f) evaluation.

5.7.24 BATTERSEA (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks. However, the main house and all above-ground resources are shielded from the rail corridor by distance (the closest above-ground contributing element is over 750 feet from the rail track and the main house is 1,200 feet from the tracks), topography, and dense vegetation. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this property under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.25 NORTH BATTERSEA/PRIDE'S FIELD HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. The three Project alternatives are on common alignment near this district. The Project alternatives will require a use of the resource in order to add a second set of tracks in the vicinity of Battersea mansion (a contributing element to the district). With the exception of Battersea, the closest contributing element to the rail corridor is over 2,000 feet east of the rail line and the Project alternatives will not impact the physical or historic integrity of the resource. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this district under Section 106 of the NHPA. As a condition of this effect recommendation, the VDHR requested that the Project Team coordinate with the City of Petersburg to identify measures to minimize impacts to this resource. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.26 DEFENSE ROAD (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second railroad bridge over Defense Road (directly adjacent to the existing railroad bridge), which will necessitate the removal of a small section of the original roadway and lowering the overall road grade near the bridge to allow for vehicular passage beneath the new span. This change will impact the road's location, design, setting, materials, workmanship, and feeling. The Preferred Alternative (and VA2 and VA3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.27 DIMMOCK LINE/EARTHWORKS (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second railroad bridge over Defense Road (directly adjacent to the existing railroad bridge). Construction of the bridge and associated improvements to Defense Road will necessitate large disturbances to the segment of the earthworks within the Project APE. The Preferred Alternative (and VA2 and VA3) will have an adverse effect on the resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.28 BRIDGE OVER DEFENSE ROAD (VA)

The VA1 Project alternative is the Preferred Alternative in Section CC. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second bridge directly east of the existing span, thus introducing a new element adjacent to the current bridge. Due to the introduction of this large new element, it is recommended that the Preferred Alternative (and VA2 and VA3) will have an adverse effect on the resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.29 FORT DAVIS EARTHWORKS (VA)

The VA3 Project alternative is the Preferred Alternative in Section DD is VA3. The three Project alternatives vary slightly in this area based on their curvature; however, they are all located within the same general vicinity. Although the 4,000-foot long earthworks generally run perpendicular through the Project corridor, the 300-foot long segment where the earthworks intersect the Project area were completely destroyed in 1900 when the Seaboard Air Line Railroad cut through the resource to construct the original rail line in this area. As such, the portion of this historic property within the Project APE does not contribute to the overall eligibility of this resource. Therefore, the Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.30 BOWEN HOUSE (VA)

The VA1 Project alternative is the Preferred Alternative in Section C. The three Project alternatives are on common alignment near this resource, which is on the east side of US 1. The

Project alternatives will add a set of tracks within the existing rail corridor on the west side of US 1. The rail corridor is approximately 75 feet west of the western boundary of this resource and over 150 feet from the main house. However, the road system in this area will also be modified by rerouting the corridor to the south of the Bowen House and bridging Glebe Road over the rail lines. This new bridge will be just southwest of the Bowen House boundaries. It is possible that the new structure will be visible from the main house. However, any modifications to the viewshed will be tempered by a vegetative screen, distance, and the US 1 corridor. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Bowen House; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.31 BANK OF MCKENNEY (VA)

The VA1 Project alternative is the Preferred Alternative in Section C. The three Project alternatives are on common alignment near this resource. Road modifications are restricted to the area south of the bank building, over 160 feet away. The Preferred Alternative will add a new visual element to the viewshed of this property, namely the rail itself, but the modification will actually restore the historic appearance of this area by putting the rail back where it was originally designed. Therefore, the Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Bank of McKenney; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.32 CHESAPEAKE AND POTOMAC TELEPHONE COMPANY (C & P) BUILDING (VA)

The VA1 Project alternative is the Preferred Alternative in Section C. The C & P Building is located north of a road modification area just outside of the Town of McKenney. The Preferred Alternative will result in the widening of the roadway, but no alterations to the building or its associated landscape will occur. The Project will therefore not diminish any of the characteristics that render this property eligible for the NRHP, although the road footprint along the primary elevation will be slightly modified. Therefore, the Preferred Alternative will have no adverse effect on this historic property. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the C & P Building; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.33 ZEHMER FARM/HONEYMOON HILL FARM (VA)

The VA1 Project alternative is the Preferred Alternative in Section C. The three Project alternatives are on common alignment near this resource. The alternatives will shift the rail corridor slightly west of its existing location in order to straighten a curve. The new corridor will cross the Zehmer Farm along its easternmost boundary. The Project alternatives will also reroute Jack Zehmer Road, which currently crosses the railroad corridor at-grade from the east and provides access southward to the Town of McKenney's wastewater treatment plant (which is located with the listed boundary of the Zehmer Farm). The existing at-grade crossing of the rail corridor will be closed and the rerouted road will tie into Community Street (along the eastern boundary of Sunnyside Elementary School), and then parallel the railroad south (on the west side of the tracks) to connect with the existing access road. The proposed changes are located more than 600 feet from the main buildings on the farm and will be blocked from view of the house by extensive vegetation. Therefore, the Preferred Alternative (and VA2 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.34 WYNNHURST (VA)

The VA4 Project alternative is the Preferred Alternative in Section D. The proposed Project alternatives vary near this resource. The Preferred Alternative veers off to the northwest of Wynnhurst and runs through the small community of Rawlings, VA. Wynnhurst is outside of the APE of the Preferred Alternative; the Preferred Alternative will not require a Section 4(f) use of the resource.

The VA1 and VA3 alternatives are on common alignment and require a use of the resource in order to add a second set of tracks. This alternative runs through the southeastern half of the Wynnhurst property; the new rail corridor is 100 feet from the main house and entirely within the larger property boundaries. Due to alterations to the property's location, design, setting, feeling, and association, the VA1/VA3 Project alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

The VA2 alternative follows a similar alignment to the Preferred Alternative in the vicinity of this resource, veering off to the northwest of Wynnhurst, and running through the small community of Rawlings, VA. The VA2 Project alternative would have no effect on this resource under Section 106 of the NHPA; the alternative would not require a Section 4(f) use.

5.7.35 BLICK'S STORE (VA)

The VA4 Project alternative is the Preferred Alternative in Section D. The proposed Project alternatives vary near this resource. All Project alternatives will rebuild the railroad tracks through this area in the existing corridor.

The Preferred Alternative and the VA2 Project alternative will require a use of the resource in order to reroute Route 629 behind the property, about 300 feet south of the store building. The road movement will not impact the physical characteristics of the resource. The Preferred Alternative and the VA2 Project alternative will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impact from these alternatives is *de minimis*.

The VA1 and VA3 alternatives are on common alignment. This alternative includes no roadwork in the vicinity of the Blick's Store. The VA1/VA3 Project alternative would have no effect on this resource under Section 106 of the NHPA; the alternative would not require a Section 4(f) use.

5.7.36 HOUSE/458 SECOND AVENUE (VA)

The VA1 Project alternative is the Preferred Alternative in Section E. This alternative is the common alignment of VA1 and VA3. However, all three of the Project alternatives are on common alignment near this resource. Although the general road system in this area will be modified to remove at-grade crossings in the downtown area, the roadways adjacent to this resource will not be changed. Since the general approach to the home will be altered, but the change will not diminish any of the characteristics that render this property eligible for the NRHP, the Preferred Alternative (and VA2) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the House at 458 Second Avenue; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.37 ORGAIN HOUSE (VA)

The VA3 Project alternative is the Preferred Alternative in Section G. The proposed Project alternatives vary near this resource. The Preferred Alternative will add a bridge on Old Indian Road over the relocated rail corridor approximately 500 feet south of the recommended boundary of the Orgain House historic resource. Given the distance of the designs from the main house, the Preferred Alternative will have no adverse effect on this resource under Section 106 of the NHPA. The Preferred Alternative will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Orgain House; therefore, the impacts do not constitute a Section 4(f) use of the resource.

The VA1 and VA2 Project alternatives are located more than 500 feet east of the property. These alternatives would have no effect on this resource under Section 106 of the NHPA and would not require a Section 4(f) use.

The VA4 Project alternative would directly impact the resource, which sits within its construction limits. The VA4 Project alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.38 TOURIST GUEST HOUSE (VA)

The VA3 Project alternative is the Preferred Alternative in Section G. The proposed Project alternatives vary near this resource. The Preferred Alternative will require a use of the resource in order to locate the railroad tracks directly behind the main house of the Tourist Guest House. Construction of this new rail line will be within the viewshed of the home. The Preferred Alternative will have an adverse effect on this property under Section 106 of the NHPA and result in a Section 4(f) use.

The VA1 and VA2 Project alternatives are located over 300 feet southeast of the property. These alternatives would have no effect on this resource under Section 106 of the NHPA and would not require a Section 4(f) use.

The VA4 Project alternative would locate the railroad tracks approximately 350 feet from the eligible boundary of the Tourist Guest House. The new rail line would be visible from a portion of the property, but would not impact the physical characteristics of the resource. Therefore, the VA4 Project alternative would have no adverse effect on the Tourist Guest House. The alternative would not require any ROW from the resource. The FRA has determined that the proximity impacts from the VA4 Project alternative do not cause a substantial impairment to the Tourist Guest House; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.39 OAK SHADES (VA)

The VA3 Project alternative is the Preferred Alternative in Section G. The proposed Project alternatives vary near this resource. The Preferred Alternative is located over 300 feet from the Oak Shades property. This alternative will have no effect on this resource under Section 106 of the NHPA. The Preferred Alternative will not require any ROW from the resource; the alternative will not require a Section 4(f) use.

The VA1 Project alternative would require a use of the resource in order to relocate the railroad corridor on new location just southeast of the main house at Oak Shades. The new rail corridor would be less than 50 feet from the home. Because of the impacts to the building’s physical and historic integrity, the VA1 Project alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

The VA2 Project alternative would require a use of the resource in order to add a second set of tracks and smooth a curve in the existing inactive railroad corridor. The rail tracks would be located down a steel escarpment and not visible from the main house. However, the rail alignment would be shifted away from the historic location of the railroad and would cut into the hill slope by about 30 feet. The VA2 Project alternative would have an adverse effect on this property under Section 106 of the NHPA and result in a Section 4(f) use. (It should be noted that the Richmond to Raleigh Project Tier II DEIS identified VA2 as having a *de minimis* impact on Oak Shades. This determination was revised based on additional coordination with VDHR and review of the designs within Section G.)

The VA4 Project alternative is located over 800 feet from the Oak Shades property. This alternative would have no effect on this resource under Section 106 of the NHPA and would not require a Section 4(f) use.

5.7.40 EVANS HOUSE (VA)

The VA1 Project alternative is the Preferred Alternative in Section E. This alternative is the common alignment of VA1 and VA3. However, all three of the Project alternatives are on common alignment near this resource. The Preferred Alternative will add a set of tracks just east of the existing rail corridor that is located adjacent to the southeastern boundary of the Evans House. In addition, the road system in this area will also be modified by rerouting Wilson Road north of the Evans House to provide an overpass of the rail corridor. This new bridge will be northwest of the Evans House boundaries. It is possible that the new structure will be visible from the house. However, any modifications to the viewshed will be tempered by a vegetative screen and distance, and no character-defining features of this resource will be diminished by this change. Therefore, the Preferred Alternative (and VA2) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Evans House; therefore, the impacts do not constitute a Section 4(f) use.

5.7.41 LA CROSSE COMMERCIAL HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section I. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to reestablish rail through town and remodel the road system to remove at-grade railroad crossings. The alternatives will require the demolition of at least two contributing resources. The Preferred Alternative will have an adverse effect on this district under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.42 LA CROSSE HOTEL (VA)

The VA1 Project alternative is the Preferred Alternative in Section I. This alternative is the common alignment of VA1 and VA3. However, all three of the Project alternatives are on common alignment near this resource. The La Crosse Hotel is located immediately adjacent to the existing railroad ROW. The designs shown in the Richmond to Raleigh Project Tier II DEIS required a small amount of ROW from the hotel property (but not impacting the hotel itself) in order to accommodate the Town of La Crosse’s plans to use the property as a future high speed rail station. Subsequent to publication of the Richmond to Raleigh Project Tier II DEIS, the designs for the Preferred Alternative were revised to no longer require any ROW from the resource. Moreover, although the Preferred Alternative will install a new set of rails within the viewshed of the primary elevation of this historic property, similar rails were in place when the hotel was constructed. The rail system was, in fact, the impetus for the development of this lot. Thus, the changes will not diminish the resource’s integrity of location, design, setting, materials, workmanship, feeling or association. Based on these changes, the Preferred Alternative (and VA2) will have no adverse effect on this property under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Evans House; therefore, the impacts do not constitute a Section 4(f) use.

5.7.43 WRIGHT FARMSTEAD (VA)

The VA2 Project alternative is the Preferred Alternative in Section J. The proposed Project alternatives vary near this resource. The Preferred Alternative is located more than 500 feet from the Wright Farmstead. The Preferred Alternative will have no effect on this resource under Section 106 of the NHPA and will not require a Section 4(f) use.

The VA1 and VA3 Project alternatives would require a use of the resource in order to relocate the railroad corridor directly through the western two-thirds of the resource. The VA1/VA3 Project alternative would have an adverse effect on this property under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.44 SARDIS METHODIST CHURCH (VA)

The VA2 Project alternative is the Preferred Alternative in Section J. The three Project alternatives are on common alignment near this resource. The Project alternatives will reroute the current driveway for the church in order to close an at-grade railroad crossing. Although this change alters the property's setting, it does not diminish any of the characteristics that render the resource eligible for the NRHP. The Preferred Alternative (and VA1 and VA3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Sardis Methodist Church; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.45 BRACEY HISTORIC DISTRICT (VA)

The VA1 Project alternative is the Preferred Alternative in Section K. This alternative is the common alignment of VA1 and VA3. The proposed Project alternatives vary near this resource. The Preferred Alternative will construct the rail corridor west of the original Seaboard Air Line tracks. The alternative will have no effect on this district under Section 106 of the NHPA and will not require a Section 4(f) use.

The VA2 Project alternative would require a use of the resource in order to reestablish rail on the abandoned Seaboard tracks. This would result in construction directly adjacent to the existing Bracey Railroad Depot, which is a contributing element to the district. Although the depot would not be destroyed, the work has the potential to diminish the district's design, setting, feeling, and association by modifying the original rail corridor and risking impacts to contributing elements. The VA2 Project alternative would have an adverse effect on this district under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.46 BRACEY DEPOT (VA)

The VA1 Project alternative is the Preferred Alternative in Section K. This alternative is the common alignment of VA1 and VA3. The proposed Project alternatives vary near this resource. The Bracey Depot is located adjacent to the rail tracks, but this building has been moved further away from the rail footprint and reoriented. Changes to the rail corridor in this area from the Preferred Alternative will result in an altered viewshed from the current orientation of the depot, but the alternative will not diminish any of the characteristics that render this resource eligible for the NHRP. Therefore, the Preferred Alternative will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Bracey Depot; therefore, the impacts do not constitute a Section 4(f) use of the resource.

The VA2 Project alternative would reestablish rail on the abandoned Seaboard tracks. However, the existing rail corridor in this area is too narrow to accommodate the proposed line, thus the corridor would be widened to the east. This would result in construction directly adjacent to the Bracey Depot. As a result of these changes, the VA2 Project alternative would have an adverse effect on this district under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.47 BRACEY & COMPANY STORE (VA)

The VA1 Project alternative is the Preferred Alternative in Section K. This alternative is the common alignment of VA1 and VA3. The proposed Project alternatives vary near this resource. The Bracey Store is located east of the rail corridor. The viewshed between the store and the rail tracks is partially blocked by the presence of the Bracey Store, although the rail crossing of Bracey Road is visible from the primary elevation of this resource. The Preferred Alternative would reintroduce rail tracks in this area, which will alter this resource's integrity of setting. However, it will not diminish the integrity of location, design, materials, workmanship, feeling or association. Therefore, the Preferred Alternative will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Bracey Depot; therefore, the impacts do not constitute a Section 4(f) use of the resource.

The VA2 Project alternative would reestablish rail on the abandoned Seaboard tracks. However, the existing rail corridor in this area is too narrow to accommodate the proposed line, thus the corridor would be widened to the east. Changes to the rail corridor in this area would result in an altered viewshed from the current orientation of the store, but the alternative would not diminish any of the characteristics that render this resource eligible for the NHRP. Therefore, the VA2 Project alternative would have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impact from this alternative is *de minimis*.

5.7.48 GRANITE HALL/FITTS HOUSE (VA)

The VA1 Project alternative is the Preferred Alternative in Section L in Virginia. The proposed Project alternatives vary near this resource. The Preferred Alternative and the VA3 Project alternative share a common alignment near Granite Hall. The rail alignments are located 700 feet west of Granite Hall and several dwellings, vegetation, and roadways are between the home and the alignments. The Preferred Alternative (and VA3) will have no effect on the resource under Section 106 of the NHPA and will not require a Section 4(f) use.

The VA2 Project alternative runs along the abandoned Seaboard Air Line rail corridor. The alternative would require a use of the resource in order to construct a new bridge on Route 712 over the rail line. The fill slope for the new bridge would be located in front of the main house. This would alter both the driveway and the approach to the home and also introduce a new visual element outside of the primary elevation of the home. Because of impacts to the resource's design, setting, feeling, and association, the VA2 Project alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.49 CHAPEL OF THE GOOD SHEPHERD (NC)

The NC1 Project alternative is the Preferred Alternative in Section M. This alternative is the common alignment of NC1 and NC3, and all three Project alternatives are on common alignment near this resource. The designs presented in the Richmond to Raleigh Project Tier II DEIS would have rerouted Ridgeway Warrenton Road from its current location in front of the church to a new location immediately behind the church in order to access a proposed grade separation over the railroad corridor. Due to the changes in access and the visual environment, all three Project alternatives were determined to have an adverse effect on the Chapel of the Good Shepherd under Section 106 of the NHPA.

In response to comments on the Richmond to Raleigh Project Tier II DEIS and in coordination with Warren County, the Kerr-Tar Council of Governments (Rural Planning Organization), and the NCDOT Transportation Planning Branch, several modifications were made to the proposed roadwork for the Ridgeway area. The revised designs will put the grade separation over the railroad corridor on Ridgeway Drewry Road rather than on Ridgeway Warrenton Road. Ridgeway Drewry Road will be shifted approximately 650 feet to the northeast to cross over US 1 and the railroad on a bridge, and connect to a new alignment for Axtell Ridgway Road on the south side of the railroad. Additional traffic will pass in front of Chapel of the Good Shepherd to use the new grade separation. Based on the revised designs, the Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project would not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Chapel of the Good Shepherd; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.50 DR. THOMAS B. WILLIAMS HOUSE AND OFFICE (NC)

The NC1 Project alternative is the Preferred Alternative in Section M. This alternative is the common alignment of NC1 and NC3, and all three Project alternatives are on common alignment near this resource. As discussed above for the Chapel of the Good Shepherd, changes to the designs presented in the Richmond to Raleigh Project Tier II DEIS will put the bridge over the railroad corridor in Ridgeway, NC, on Ridgeway Drewry Road rather than on Ridgeway Warrenton Road. Ridgeway Drewry Road will be shifted approximately 650 feet to the northeast to cross over US 1 and the railroad on a bridge, and connect to a new alignment for Axtell Ridgway Road on the south side of the railroad. The bridge will be located approximately 500 feet to the west of the Dr. Thomas B. Williams House and Office. The Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Dr. Thomas B. Williams House and Office; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.51 MARSHALL HOUSE/TAVERN (NC)

The NC1 Project alternative is the Preferred Alternative in Section M. This alternative is the common alignment of NC1 and NC3, and all three Project alternatives are on common alignment near this resource. As discussed above for the Chapel of the Good Shepherd, changes to the designs presented in the Richmond to Raleigh Project Tier II DEIS will put the bridge over the railroad corridor in Ridgeway, NC, on Ridgeway Drewry Road rather than on Ridgeway Warrenton Road. Ridgeway Drewry Road will be shifted approximately 650 feet to the northeast to cross over US 1 and the railroad on a bridge, and connect to a new alignment for Axtell Ridgway Road on the south side of the railroad. The bridge will be located approximately 700 feet to the east of the Marshall House/Tavern, and a short section of the old Ridgeway Drewry Road in front of the Marshall House/Tavern will be used to provide a connection between US 1 and the new road and bridge. The designs will require a minor amount of road frontage ROW from the resource for the new connection. The Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.52 WILLIAM J. HAWKINS HOUSE (NC)

The NC1 Project alternative is the Preferred Alternative in Section N. This alternative is the common alignment of NC1 and NC3, and all three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks. In addition, the current driveway access for the property will be relocated. The Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. NC-HPO's concurrence with this determination is conditional; the Richmond to Raleigh Project must coordinate with the property owner about the access issue (i.e., a temporary construction easement will be required to maintain access). FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.53 HOLLOWAY FARM (NC)

The NC3 Project alternative is the Preferred Alternative in Section O. The proposed Project alternatives vary near this resource. The Preferred Alternative is located more than 500 feet east of the resource. This alternative will have no effect on this resource under Section 106 of the NHPA and will not require a Section 4(f) use.

The proposed NC1 and NC2 Project alternatives would both require a use of the resource to relocate the railroad corridor and would bisect Holloway Farm. The NC1 and NC2 alternatives would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.54 FORREST ELLINGTON FARM (NC)

The NC3 Project alternative is the Preferred Alternative in Section O. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to provide a new bridge over the railroad. A minor amount of road frontage ROW from the northwest corner of the property will be required at the intersection of Brookston Road and Carver School Road. The Preferred Alternative (and NC1 and NC2) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.55 HENDERSON HISTORIC DISTRICT AND PROPOSED BOUNDARY EXPANSION (NC)

The NC1 Project alternative is the Preferred Alternative in Section P. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to bridge Andrews Avenue (NC Hwy 39) within the Henderson Historic District. A retaining wall is included in the design to minimize impacts to the district from the bridge. However, the retaining wall will require a small amount of ROW be taken from a house along Andrews Avenue and necessitate re-grading a driveway. It will also impact landscaping along Andrews Avenue, potentially removing several trees. The Preferred Alternative (and NC2 and NC3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.56 SOUTH HENDERSON INDUSTRIAL HISTORIC DISTRICT (NC)

The NC1 Project alternative is the Preferred Alternative in Section P. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to bridge Alexander Avenue on new alignment through the South Henderson Industrial Historic District. These changes will require a small amount of ROW from contributing resources. The Preferred Alternative (and NC2 and NC3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.57 HOUSES (5 WORKER HOUSES ON 1400 BLOCK OF NICHOLAS ST) (NC)

The NC1 Project alternative is the Preferred Alternative in Section P. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks. The alternatives will require minor ROW from the resources directly adjacent to the railroad corridor (i.e., from their backyards). The Preferred Alternative (and NC2 and NC3) will have no adverse effect on these resources under Section 106 of the NHPA, provided that there is no taking of the structures. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.58 HOUSES (3 SIDE GABLE HOUSES ON 1500 BLOCK OF NICHOLAS ST) (NC)

The NC1 Project alternative is the Preferred Alternative in Section P. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to add a second set of tracks. The alternatives will require minor ROW from the resources directly adjacent to the railroad corridor (i.e., from their backyards). The Preferred Alternative (and NC2 and NC3) will have no adverse effect on these resources under Section 106 of the NHPA, provided that there is no taking of the structures (which is not anticipated). FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.59 FRANKLINTON HISTORIC DISTRICT (INCLUDES STERLING MILL HISTORIC DISTRICT) (NC)

The NC1 Project alternative is the Preferred Alternative in Section S. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to eliminate the railroad crossing at Mason Street and replace the railroad bridge at Green Street, which is a contributing element to the historic district. The Preferred Alternative (and NC2 and NC3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.60 STERLING COTTON MILL (NC)

The NC1 Project alternative is the Preferred Alternative in Section S. The three Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to provide an underpass of the railroad at Green Street, including sidewalks. A minor amount of ROW will be needed for these improvements. The Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.61 CEDAR CREEK RAILROAD BRIDGE PIERS (NC)

The NC1 Project alternative is the Preferred Alternative in Section S. The proposed Project alternatives vary in the vicinity of this resource. The Preferred Alternative alignment and the NC3 alignment will cross Cedar Creek on a new bridge just to the east of the piers; the NC 2 alignment will cross on a new bridge just to the west of the existing piers. With implementation of any of the three Project alternatives, the existing railroad bridge will no longer be used for rail traffic. The Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. The NC-HPO's concurrence with this determination is conditional; NCDOT must commit to ensuring the piers are not taken down during the construction of the Project.

The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Cedar Creek Railroad Bridge Piers; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.62 YOUNGSVILLE HISTORIC DISTRICT (NC)

The NC1 Project alternative is the Preferred Alternative in Section T. The three Project alternatives are on common alignment near this resource. The Project alternatives bridge Main Street over the railroad in the vicinity of the Youngsville Historic District. In order to accommodate the new bridge, the alternatives will require the removal of several on-street parking spots in front of the Youngsville Community Center within the district. The NC1, NC2, and NC3 alternatives will have no adverse effect on this resource under Section 106 of the NHPA.

The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the proposed Youngsville Historic District; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.63 GLEN ROYALL MILL VILLAGE HISTORIC DISTRICT (NC)

The NC1 Project alternative is the Preferred Alternative in Section U. The three Project alternatives are on common alignment near this resource. The Project alternatives include a pedestrian crossing of the railroad tracks directly adjacent to the district. The Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. This determination is conditional; the Richmond to Raleigh Project must design the pedestrian crossing in a manner that minimizes its opaqueness and fits in with the character of its surroundings (based on coordination with NC-HPO).

The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Glen Royall Mill Village Historic District; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.64 WAKE FOREST HISTORIC DISTRICT (NC)

The NC1 Project alternative is the Preferred Alternative in Section U. The three Project alternatives are on common alignment through Wake Forest and will provide a pedestrian-only grade separation of Elm Avenue within the Wake Forest Historic District. The designs also provide a new access road to allow four residences, which are contributing elements to the district, to access their properties. The Preferred Alternative (and NC2 and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. This determination is conditional; the Section 106 Memorandum of Agreement (MOA) for the Project must specifically address coordination with owners of the four residences for temporary construction easements. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.65 CRABTREE CREEK RAILROAD BRIDGE PIER (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The four Project alternatives are on common alignment near this resource. The Project alternatives will require a use of the resource in order to provide a new rail bridge that will accommodate an additional track. The new bridge will span the historic pier and require a small amount of ROW under the span to allow for access and maintenance. This ROW includes the land where the pier is situated; the pier will not be otherwise impacted. The Preferred Alternative (and NC1, NC2, and NC3) alternatives will have no adverse effect on this resource under Section 106 of the NHPA. This determination is conditional; the Richmond to Raleigh Project must ensure that the pier is not impacted during construction of the new bridge. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.7.66 GULF PETROLEUM PRODUCTS WAREHOUSE (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary to a slight degree in the vicinity of this resource. However, all four of the Project alternatives will add an additional railroad track within the existing active rail corridor adjacent to the resource. The four Project alternatives all require ROW from the side of the warehouse closest to the existing CSX railroad corridor. The designs potentially require the warehouse building to be demolished and also impact the masonry foundation at the northeast corner of the parcel, which historically held a series of above-ground tanks and is a contributing element to the resource. The Preferred Alternative (and NC1, NC2, and NC3) will have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.67 ROANOKE PARK HISTORIC DISTRICT (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary in the vicinity of this resource. The Preferred Alternative and the NC1 and NC2 rail alignments are located across Capital Boulevard from the district. The Preferred Alternative (and NC1 and NC2) will have no effect on this resource under Section 106 of the NHPA and do not require a Section 4(f) use.

The NC3 Project alternative would require a use of the resource in order to maintain the operation of the nearby Norfolk Southern railroad yard. The additional ROW would be located directly adjacent to the railroad corridor behind four properties on Bickett Boulevard within the historic district. The necessary ROW would impact the backyards of these properties; in particular, one property would lose approximately 0.15 acres, including a garage. The NC3 alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.68 NOLAND PLUMBING COMPANY BUILDING (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary in the vicinity of this resource. The Preferred Alternative and the NC1 and NC2 rail alignments are located across Capital Boulevard from the resource. The Preferred Alternative (and NC1 and NC2) will have no effect on this resource under Section 106 of the NHPA and do not require a Section 4(f) use.

The NC3 Project alternative would require a use of the resource in order to maintain the operation of the nearby Norfolk Southern railroad yard. A small amount of ROW would be required directly adjacent to the railroad corridor along the rear of the Noland Plumbing Company Building property. Two modern storage buildings may be impacted by the additional ROW; neither is a contributing element to the resource. The NC3 Project alternative would have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impact from the NC3 alternative is *de minimis*.

5.7.69 GLENWOOD-BROOKLYN HISTORIC DISTRICT (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary in the vicinity of this resource. The Preferred Alternative is located on the east side of the Norfolk Southern railroad tracks adjacent to the Glenwood-Brooklyn Historic District. The Preferred Alternative will have no effect on this resource under Section 106 of the NHPA and will not require a Section 4(f) use.

The proposed NC1 and NC2 rail alignments are located across Capital Boulevard from the district. The NC1 and NC2 Project alternatives would have no effect on this resource under Section 106 of the NHPA; the alternatives would not require a Section 4(f) use.

The NC3 Project alternative would require a use of the resource in order to maintain the operation of the nearby Norfolk Southern railroad yard. A small amount of ROW would be required from one residence on Adams Street and one residence on Washington Street (from the backyards of the properties). In addition, an easement would be required within the parking lots for several commercial properties along Dale Street and Jefferson Street. These easements are necessary to construct and maintain a retaining wall along the railroad corridor. The NC3 Project alternative would have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impact from the NC3 alternative is *de minimis*.

5.7.70 SEABOARD RAILWAY STATION (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary near this resource. The Preferred Alternative and the NC3 rail alignments are located across Capital Boulevard from the resource. The Preferred Alternative (and NC3) will have no effect on this resource under Section 106 of the NHPA and would not require a Section 4(f) use.

The NC1 and NC2 Project alternatives may require temporary construction easements from this resource. The NC1 and NC2 alternatives would have no adverse effect on this resource under Section 106 of the NHPA. The NC1 and NC2 Project alternatives would not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Seaboard Railway Station; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.71 SEABOARD RAILWAY WAREHOUSES (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary near this resource. The Preferred Alternative and the NC3 rail alignments are located across Capital Boulevard from the resource. The Preferred Alternative (and NC3) will have no effect on this resource under Section 106 of the NHPA and would not require a Section 4(f) use.

The NC1 and NC2 Project alternatives may require temporary construction easements from this resource. The NC1 and NC2 alternatives would have no adverse effect on this resource under Section 106 of the NHPA. The NC1 and NC2 Project alternatives would not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Seaboard Railway Station; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.72 RALEIGH COTTON MILLS (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary near this resource. The Preferred Alternative and the NC3 rail alignments are located across Capital Boulevard from the resource. The Preferred Alternative (and NC3) will have no effect on this resource under Section 106 of the NHPA and would not require a Section 4(f) use.

The NC1 and NC2 Project alternatives would require a use of the resource in order to add a second set of tracks. A small amount of ROW would be required from the resource; however, no buildings would be taken. The NC1 and NC2 alternatives would have no adverse effect on this resource under Section 106 of the NHPA. FRA has determined that the impacts from the NC1 and NC2 alternatives are *de minimis*.

5.7.73 RALEIGH ELECTRIC COMPANY POWER HOUSE (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary near this resource. The Preferred Alternative and the NC3 rail alignments will close the existing at-grade railroad crossing at West Jones Street and provide a pedestrian crossing across the tracks. No ROW will be required from the resource. The Preferred Alternative and the NC3 Project alternative will have no adverse effect on this resource under Section 106 of the NHPA. The Project will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Raleigh Electric Company Power House; therefore, the impacts do not constitute a Section 4(f) use of the resource.

The NC1 Project alternative would require a use of the resource in order to bridge West Jones Street. The bridge would be visible directly in front of the Raleigh Electric Company Power House and a minor amount of ROW would be required from the property (with no impacts to the building itself). The NC1 alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

The NC2 Project alternative would be almost identical to the NC1 alternative in the vicinity of the resource, with a minor shift in rail alignment. The NC2 alternative would also require a use of the resource in order to bridge West Jones Street and would have the same visual and property impacts as the NC1 alternative. The NC2 alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.74 CAROLINA POWER AND LIGHT COMPANY CAR BARN AND AUTOMOBILE GARAGE (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The proposed Project alternatives vary near this resource. The Preferred Alternative and the NC3 rail alignments will close the existing at-grade railroad crossing at West Jones Street. No ROW will be required from the resource. The Preferred Alternative and the NC3 Project alternative will have no effect on this resource under Section 106 of the NHPA and will not require a Section 4(f) use.

The NC1 Project alternative would require a use of the resource in order to bridge West Jones Street. The bridge would be visible directly in front of the Carolina Power and Light Company Car Barn and Automobile Garage and a minor amount of ROW would be required from the property (with no impacts to the building itself). The NC1 alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

The NC2 Project alternative would be almost identical to the NC1 alternative in the vicinity of the resource, with a minor shift in rail alignment. The NC2 alternative would also require a use of the resource in order to bridge West Jones Street and would have the same visual and property impacts as the NC1 alternative. Therefore, the NC2 alternative would have an adverse effect on this resource under Section 106 of the NHPA and result in a Section 4(f) use.

5.7.75 DEPOT HISTORIC DISTRICT & PROPOSED BOUNDARY AMENDMENT (NC)

The NC5 Project alternative is the Preferred Alternative in Section V. The Project alternatives vary slightly in the vicinity of the Depot Historic District Proposed Boundary Amendment. All four of the Project alternatives would add an additional railroad track within the existing active rail corridor adjacent to the district. The Preferred Alternative and the NC1, NC2, and NC3 Project alternatives will not require ROW from resource. However, they all close the existing at-grade railroad crossing on W. Hargett Street within the proposed expansion area for the district. Therefore, the Preferred Alternative (and NC1, NC2, and NC3) will have no adverse effect on this resource under Section 106 of the NHPA. The FRA has determined that the proximity impacts do not cause a substantial impairment to the Depot Historic District & Proposed Boundary Amendment; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.7.76 RALEIGH AND GASTON RAILROAD CORRIDOR (NC)

The Preferred Alternative in Sections M through V is a combination of the various Project alternatives (NC1 in Sections M, N, P, Q, R, S, T, and U; NC3 in Section O; and NC 5 in Section V). All of the proposed Project alternatives (NC1, NC2, NC3, and NC5) are located within the Raleigh and Gaston Railroad corridor for the majority of their lengths. The alternatives will require a use of the resource in order to add a second set of tracks. Although the alternatives will not impact the vast majority of contributing elements to the corridor, they all replace at least one of the historic concrete bridges and potentially impact at least one of the historic stone-lined culverts. Therefore, the Preferred Alternative (and all other alternatives in North Carolina) will have an adverse effect on the Raleigh and Gaston Railroad corridor under Section 106 of the NHPA and result in a Section 4(f) use.

5.8 SECTION 4(F) PROPERTY IMPACTS – BATTLEFIELDS

Impacts to the 10 battlefields eligible for the NRHP within the APE for the Project are described in Table 5-9 and the sections below. All battlefields are impacted similarly by the Project. The battlefields in Table 5-9 are ordered from north to south as they appear in the Richmond to Raleigh Project Study Area.

As discussed in Section 4.12.2.2, there are minor differences between the National Register-eligible battlefield boundaries proposed by ABPP in July 2009 within the Project APE and those currently adopted by VHDR. There are seven areas where the VDHR boundaries within the Project APE do not encompass all of the ABPP boundaries. None of the improvements proposed by the Project in these areas would result in a change to the Section 4(f) uses described below.

Table 5-9
Section 4(f) Determinations for Battlefields – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Section	VA1 Section 106 Effect/ Section 4(f) Use	VA2 Section 106 Effect/ Section 4(f) Use	VA3 Section 106 Effect/ Section 4(f) Use	VA4 Section 106 Effect/ Section 4(f) Use
Proctor's Creek (resource spans sections)	AA	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A

Table 5-9
Section 4(f) Determinations for Battlefields – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect/ Section 4(f) Use	VA2 Section 106 Effect/ Section 4(f) Use	VA3 Section 106 Effect/ Section 4(f) Use	VA4 Section 106 Effect/ Section 4(f) Use
	BB	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Port Walthall Junction	BB	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Swift Creek/Arrowfield Church	CC	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
Petersburg III/The Breakthrough (resource spans sections)	CC	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
	DD	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	N/A
Weldon Railroad/Globe Tavern (resource spans sections)	CC	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
	DD	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	N/A
Peebles Farm (resource spans sections)	CC	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	N/A
	DD	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	N/A
Boydton Plank Road (resource spans sections)	DD	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	N/A
	A	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	N/A
Hatcher's Run (resource spans sections)	DD	No Adverse Effect/ Use, *De Minimis*	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	N/A
	A	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	N/A

Table 5-9
Section 4(f) Determinations for Battlefields – Virginia
(Preferred Alternative Identified in Bold)

Resource Name	Sec-tion	VA1 Section 106 Effect/ Section 4(f) Use	VA2 Section 106 Effect/ Section 4(f) Use	VA3 Section 106 Effect/ Section 4(f) Use	VA4 Section 106 Effect/ Section 4(f) Use
Lewis Farm	A	No Adverse Effect/ Use, *De Minimis*	**No Adverse Effect/ Use, *De Minimis***	No Adverse Effect/ Use, *De Minimis*	N/A
Dinwiddie Courthouse	B	**No Adverse Effect/ No Use**	No Adverse Effect/ No Use	No Adverse Effect/ No Use	N/A

5.8.1 PROCTOR'S CREEK

The VA1 Project alternative is the Preferred Alternative in Section AA and Section BB. The three Project alternatives are on common alignment through this battlefield. The alternatives will require a use of the resource in order to add a second set of tracks. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.2 PORT WALTHALL JUNCTION

The VA1 Project alternative is the Preferred Alternative in Section BB. The three Project alternatives are on common alignment through this battlefield. The alternatives will require a use of the resource in order to add a second set of tracks and to remove at-grade crossings in the very southwestern corner of the larger battlefield. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.3 SWIFT CREEK/ARROWFIELD CHURCH

The VA1 Project alternative is the Preferred Alternative in Section CC. The three Project alternatives are on common alignment through this battlefield. The alternatives will require a use of the resource in order to add a second set of tracks and to minimally widen one existing roadway in the very northern portion of the battlefield. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.4 PETERSBURG III/THE BREAKTHROUGH

The VA1 Project alternative is the Preferred Alternative in Section CC and the VA3 Project alternative is the Preferred Alternative in Section DD. The three Project alternatives are on common alignment through this battlefield. The alternatives will require a use of the resource in order to add a second set of tracks and to modify three roads within the battlefield boundaries: the existing railroad bridge over I-85 in the very northern portion of the battlefield will be widened to accommodate the second set of tracks, the bridge over Defense Road will be widened (see discussion of Defense Road above), and a short segment of Halifax Road east of the rail tracks will be straightened to remove a curve that runs adjacent to the rail line. In all, the changes include a very small percentage of the overall battlefield area. The Preferred Alternative (and VA2 and VA3 in Section CC, as well as VA1 and VA2 in Section DD) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.5 WELDON RAILROAD/GLOBE TAVERN

The VA1 Project alternative is the Preferred Alternative in Section CC and the VA3 Project alternative is the Preferred Alternative in Section DD. The proposed Project alternatives vary slightly through this battlefield. All of the Project alternatives will require a use of the resource in order to add a second set of tracks, provide a bridge over the CSX A-line tracks, and modify Halifax Road. The impacted areas comprise a very small segment of the larger 4,370 acre battlefield. The difference in the three alternatives is related to the way they bridge the active CSX A-line and a small access road in the vicinity of where Halifax Road crosses the CSX A-line (see Section 2.2.6 for more details). The Preferred Alternative (and VA2 and VA3 in Section CC, as well as VA1 and VA2 in Section DD) will have no adverse effect on this battlefield under Section 106 of the NHPA. As a condition of this effect recommendation, the National Park Service (NPS) Petersburg National Battlefield requested that the fill slopes for the proposed bridge over the CSX A-line have tree plantings to minimize the visual intrusion on the landscape. The VDHR also requested to view the engineering and vegetation plans before construction. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.6 PEEBLES FARM

The VA1 Project alternative is the Preferred Alternative in Section CC and the VA3 Project alternative is the Preferred Alternative in Section DD. The three Project alternatives are on common alignment through this battlefield. The alternatives will require a use of the resource in order to add a second set of tracks and to widen a small segment of Vaughn Road running north-south near the northeastern section of the southern battlefield section. The Preferred Alternative (and VA2 and VA3 in Section CC, as well as VA1 and VA2 in Section DD) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.7 BOYDTON PLANK ROAD

The VA3 Project alternative is the Preferred Alternative in Section DD and the VA2 Project alternative is the Preferred Alternative in Section A. The proposed Project alternatives vary slightly through this battlefield in the vicinity of the Burgess Connector, an inactive railroad corridor between the CSX S-Line (currently inactive) and the CSX A-Line (currently active) in Section A. The VA1/VA3 Project alternative stays within the existing railroad ROW in this area. The Preferred Alternative (VA2) extends slightly outside of the existing ROW from Duncan Road to Dabney Mill Road, a distance of approximately two miles, in order to flatten out a severe curve in the existing rail corridor alignment. All of the Project alternatives will require a use of the resource in order to add a second set of tracks and modify a segment of Squirrel Level Road (in Section DD). The Preferred Alternative (and VA1 and VA2 in Section DD, as well as VA1 and VA3 in Section A) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.8 HATCHER'S RUN

The VA3 Project alternative is the Preferred Alternative in Section DD and the VA2 Project alternative is the Preferred Alternative in Section A. The proposed Project alternatives vary slightly through this battlefield in the vicinity of the Burgess Connector, as described above for Boydton Plank Road battlefield. All of the Project alternatives will require a use of the resource in order to add a second set of tracks and modify two roads. A small section of Vaughn Road will be widened and a small section of Squirrel Level Road will be improved. Both road improvement areas are located in the very northeastern corner of the larger battlefield. The Preferred Alternative (and VA1 and VA2 in Section DD, as well as VA1 and VA3 in Section A) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.9 LEWIS FARM

The VA2 Project alternative is the Preferred Alternative in Section A. The three Project alternatives are on common alignment through this battlefield. All of the Project alternatives will require a use of the resource in order to add a second set of tracks and to reroute a segment of Quaker Road. The Preferred Alternative (and VA1 and VA3) will have no adverse effect on this battlefield under Section 106 of the NHPA. FRA has determined that the impacts from all three Project alternatives are *de minimis*.

5.8.10 DINWIDDIE COURTHOUSE

The VA1 Project alternative is the Preferred Alternative in Section B. The three Project alternatives are on common alignment through this battlefield. All of the Project alternatives will add a second set of tracks in this area. The Preferred Alternative (and VA2 and VA3) will have no adverse effect on this battlefield under Section 106 of the NHPA. The Project alternatives will not require any ROW from the resource. The FRA has determined that the proximity impacts do not cause a substantial impairment to the battlefield; therefore, the impacts do not constitute a Section 4(f) use of the resource.

5.9 SECTION 4(F) PROPERTY IMPACTS – ARCHAEOLOGY SITES

As described in Section 5.5, Section 4(f) applies to archeological sites that are on or eligible for the NRHP and that warrant preservation in place. Based on these criteria, Section 4(f) applies to nine archeological resources in the Project Study Area. All of these resources are associated with historic architecture resources whose impacts are described in Section 5.7. The impacts are also summarized in Table 5-10 below.

Table 5-10 Section 4(f) Determinations for Archaeological Resources		
Resource Name	**Section**	**Preferred Alternative Section 106 Effect/ Section 4(f) Use**
Williams Bridge Company*	AA	Adverse Effect/Use
USDOD Supply Center District*	AA	No Adverse Effect/No Use
Centralia Earthworks*	BB	No Adverse Effect/*De Minimis* Use
Battersea*	CC	No Adverse Effect/*De Minimis* Use
Dimmock Line/Earthworks*	CC	Adverse Effect/Use
Fort Davis Earthworks*	DD	No Adverse Effect/*De Minimis* Use
Orgain House*	G	No Adverse Effect/No Use
La Crosse Hotel*	I	No Adverse Effect/*De Minimis* Use
Wright Farmstead*	J	No Effect/No Use

* Archaeology site is associated with a historic architecture resource.

5.10 AVOIDANCE ALTERNATIVES

The Section 4(f) statute requires the selection of an alternative that avoids the use of Section 4(f) property if that alternative is deemed feasible and prudent. For all resources that would require a Section 4(f) use (not *de minimis*) by one or more of the proposed Project alternatives (listed in Table 5-11), avoidance alternatives were investigated as described below. The Preferred Alternative is highlighted in **bold**.

Table 5-11 Resources Where at Least One Alternative Would Require a Section 4(f) Use (Not *De Minimis*)					
Resource Name	**Section/ State**	**VA1/NC1 Section 4(f) Use**	**VA2/NC2 Section 4(f) Use**	**VA3/NC3 Section 4(f) Use**	**VA4/NC5 Section 4(f) Use**
Seaboard Air Line Railroad Corridor	AA – L / VA	**Use**	**Use**	**Use**	**Use**
Atlantic Coast Line Railroad Corridor	AA, BB, CC / VA	**Use**	Use	Use	N/A
Williams Bridge Company	AA / VA	**Use**	Use	Use	N/A
Richmond & Petersburg Electric Railway	AA, BB, CC / VA	**Use**	Use	Use	N/A
Chester Historic District	BB / VA	**Use**	Use	Use	N/A
Eichelberger House	BB / VA	**Use**	Use	Use	N/A
Defense Road	CC / VA	**Use**	Use	Use	N/A
Dimmock Line/Earthworks	CC / VA	**Use**	Use	Use	N/A
Bridge over Defense Road	CC / VA	**Use**	Use	Use	N/A
Wynnhurst	D / VA	Use	No Use	Use	**No Use**
Orgain House	G / VA	No Use	No Use	**No Use**	Use
Tourist Guest House	G / VA	No Use	No Use	**Use**	No Use
Oak Shades	G / VA	Use	Use	**No Use**	No Use

Table 5-11 Resources Where at Least One Alternative Would Require a Section 4(f) Use (Not *De Minimis*)					
Resource Name	**Section/ State**	**VA1/NC1 Section 4(f) Use**	**VA2/NC2 Section 4(f) Use**	**VA3/NC3 Section 4(f) Use**	**VA4/NC5 Section 4(f) Use**
La Crosse Commercial Historic District	I / VA	**Use**	Use	Use	N/A
Wright Farmstead	J / VA	Use	**No Use**	Use	N/A
Bracey Historic District	K / VA	**No Use**	Use	No Use	N/A
Bracey Depot	K / VA	**No Use**	Use	No Use	N/A
Granite Hall/Fitts House	L / VA	**No Use**	Use	No Use	N/A
Holloway Farm	O / NC	Use	Use	**No Use**	N/A
Henderson Historic District and Proposed Boundary Expansion	P / NC	**Use**	Use	Use	N/A
South Henderson Industrial Historic District	P / NC	**Use**	Use	Use	N/A
Franklinton Historic District (Includes Sterling Mill Historic District)	S / NC	**Use**	Use	Use	N/A
Gulf Petroleum Products Warehouse	V / NC	Use	Use	Use	**Use**
Roanoke Park Historic District	V / NC	No Use	No Use	Use	**No Use**
Raleigh Electric Company Power House	V / NC	Use	Use	No Use	**No Use**
Carolina Power and Light Company Car Barn and Automobile Garage	V / NC	Use	Use	No Use	**No Use**
Raleigh and Gaston Railroad Corridor	M – V / NC	**Use**	**Use**	**Use**	**Use**

In several locations, historic resources that would require a Section 4(f) use by one or more Project alternatives are located in close proximity to one another. In addition, the potential adverse effects to historic districts are very similar in nature. Therefore, the discussion of potential avoidance alternatives for resources in close proximity and historic districts are consolidated in the discussion below to avoid redundancy.

5.10.1 ALTERNATIVES THAT AVOID ALL SECTION 4(F) RESOURCES

A total avoidance alternative is a feasible and prudent alternative that would avoid use of all Section 4(f) resources. Alternatives that do not meet the purpose and need for the Project are not considered feasible and prudent. Avoidance alternatives for individual Section 4(f) resources were developed and evaluated as field work and research revealed these resources during the Project development process.

A fundamental goal of the “incremental” high speed rail approach established in the Tier I ROD is the utilization of existing rail ROW, to the maximum extent practicable, in order to best minimize the overall impacts to both the human and natural environments. To avoid impacts to all Section 4(f) resources would necessitate relocating the rail corridor along lengthy sections of the Project. The ability of the Richmond to Raleigh Project to effectively divert trips to rail from the current and future air and highway travel in the corridor (thus helping reduce the growth rate of congestion in the corridor and resulting in a more balanced use of the corridor's transportation infrastructure) is greatly affected by the ability to serve the city/town centers along the Project corridor. These cities and towns grew up historically along the railroad ROW for the transportation benefits provided in the movement of both people and goods. The presence of rail serving the city/town centers promoted, and continues to promote, sustainable transportation and sustainable development patterns. The implementation of the Project would provide not only high speed passenger service, but also the opportunity for conventional passenger service and, in some areas, commuter service, both of which could allow stops in many of the small cities and towns along the corridor. This improved service would provide the traveling public and special populations, such as the elderly and the disabled, with improved transportation choices.

Avoidance alternatives for individual Section 4(f) resources were designed in less developed areas where it was possible to shift the rail alignment onto new ROW while continuing to meet the overall purpose and need of the Project. These avoidance alternatives were successful at avoiding Section 4(f) uses of 11 of the 27 resources that would be impacted by one or more of the Project alternatives.

The unavoidable Section 4(f) impacts addressed in this document are located either along existing rail ROW (primarily within the developed areas of cities and towns) or within the rail corridor itself (such as the historic Raleigh and Gaston Railroad corridor). Avoidance of these areas by means of bypasses fails to meet the Project purpose and need as just described. In addition, the design goals of one degree of curvature (both horizontally and vertically) result in substantially increased corridor lengths for bypasses, which increases travel times, while resulting in additional, and likely significant, impacts to natural resources (e.g., streams and wetlands), along with residential and/or business relocations. In addition, the required ROW would result in significantly more expensive Project costs. Cumulatively, these alternatives are not prudent per 23 CFR 774.17.

5.10.2 AVOIDANCE ALTERNATIVES FOR THE USE (NOT *DE MINIMIS*) OF INDIVIDUAL SECTION 4(F) RESOURCES

The following sections discuss the evaluation of avoidance alternatives for individual Section 4(f) resources used by the Project. Resources are presented as they appear in the Project corridor from north to south. Avoidance alternatives are not required when a finding of *de minimis* use is made for Section 4(f) historic resources because Section 4(f) is satisfied once *de minimis* applies.

An avoidance alternative for an individual Section 4(f) resource used by the Project must be evaluated within the section of the Project where the resource is located. As explained in Section 2 of this FEIS, the endpoints of each of the 26 sections of the Project are in locations where the alternative alignments are in a common location. A Preferred Alternative has been selected for each section and joined together across the length of the Project. Avoidance alternatives may not use another resource protected under Section 4(f) within the same section of the Project.

5.10.3 CHESTER, LA CROSSE COMMERCIAL, HENDERSON, FRANKLINTON, AND SOUTH HENDERSON INDUSTRIAL HISTORIC DISTRICTS

Several concepts to avoid adverse impacts to the Chester, La Crosse Commercial, Henderson, South Henderson Industrial, and Franklinton historic districts were assessed during the Project planning process. In each of these historic districts, all Project alternatives are on common alignment due to the significant constraints, and the Preferred Alternative is this common alignment (referred to as VA1 in Virginia and NC1 in North Carolina). The following discussion describes the concepts that were objectively evaluated to avoid the use of the Section 4(f) resources and explains the rationale for the dismissal of each concept. The following avoidance concepts were examined:

- At-grade crossing instead of grade separation
- Relocation of grade separation
- Bypass of historic district.

5.10.3.1 *AVOIDANCE CONCEPT 1: AT-GRADE CROSSING*

In each of the historic districts, the adverse effect/Section 4(f) use is directly tied to the proposed grade separation within the district as described in Section 5.3. The use of at-grade crossings instead of grade separations was considered as a means of avoiding the impacts. At-grade crossings would avoid or minimize uses of the Section 4(f) resources; however, they are not prudent per the definition of "feasible and prudent alternative" in 23 CFR 774.17 because they would result in the continuation of unacceptably unsafe conditions and would neither address nor correct the transportation purpose and need for the proposed Project.

The overarching philosophy of the design of the Richmond to Raleigh Project from Richmond, VA, to Raleigh, NC, is to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. At-grade crossings inherently have risk of train-automobile collisions. A collision at a crossing on a higher speed track is a significant event often causing a death in the vehicle and in the case of larger, heavier trucks, the possible derailment of the train and associated injuries.

Section 1.4.1.7 of this FEIS outlines additional reasons for grade separations:

- Elimination of railroad/roadway traffic issues
- Elimination of possible system failure and associated delays
- Elimination of easy trespasser access
- Elimination of train horn noise
- Comparable capital cost to grade-separated structure
- Improved long term cost of maintenance
- Allows for future speed increases.

For these reasons, at-grade crossings fail to meet one of the purposes of the Project, which is to increase the safety and operability of the transportation system within the travel corridor. Therefore, FRA has determined that retaining at-grade crossings is not prudent per 23 CFR 774.17.

5.10.3.2 *AVOIDANCE CONCEPT 2: RELOCATE GRADE SEPARATION*

As described above, the adverse effect from the Project on each of the historic districts is a direct result of the proposed grade separation. To avoid these impacts, relocations of the proposed grade separations to areas outside of or elsewhere within the historic districts were considered. In all cases, the potential relocations were not prudent because the changes to the road network would result in significant traffic problems, there were constructability issues, or there were other problems as explained in Table 5-12. Based on the unacceptable operational problems this concept would cause, FRA has determined that relocating grade separations to outside of historic districts is not prudent per 23 CFR 774.17.

Table 5-12 Grade Separation Locations Considered		
Historic District	**Location**	**Reasons Selected or Excluded**
Chester	Curtis St	*Selected* – Curtis St was selected for the grade separation because it carries the majority of traffic going north-south through Chester, VA. It continues beyond W Petersburg St to join VA Route 10 (W Hundred Rd) north of town.
	West St	*Excluded* – West St was excluded as a potential grade separation location because it lacks the connectivity of Curtis St. Additionally, locating the grade separation on West St would require routing traffic across West St and back up to Curtis St via Winfree St or W Petersburg St; the improvements necessary for this would potentially result in severe residential relocations along these streets.
	Snead St	*Excluded* – Snead Street was excluded as a potential grade separation location because it was too far south of the center of Chester, VA, to carry the flow of traffic north-south across the railroad. It would also have the same potential residential impacts as West St.
La Crosse Commercial	Meredith St/ Hillcrest Rd	*Selected* – Meredith St/Hillcrest Rd was selected for the grade separation because it provides the east-west connectivity required by the community of La Crosse for its downtown. A grade separation outside of town would have resulted in negative community impacts, notably the removal of traffic and associated commerce for downtown businesses.
	W Pine St	*Excluded* – W Pine St was excluded as a potential grade separation because it is too close to the existing grade separation at US 58. It would not provide the east-west connectivity needed within the town of La Crosse.
	Seaboard Ave/ College St	*Excluded* – Seaboard Ave/ College St was excluded as a potential grade separation because it would likely result in substantial commercial relocations in downtown La Crosse.
	Marengo Rd/ St Tammany Rd	*Excluded* – A grade separation that would connect Marengo Rd to St Tammany Rd with a bridge over the railroad was explored at the request of the community of La Crosse. This concept would have resulted in a long bridge approximately 30 feet over the proposed rail alignment. Visualizations of the design were shown to members of the community who then expressed concerns about accessibility and connectivity within downtown. In addition, this grade separation would have resulted in a similar or larger impact to the historic district.
Henderson	W Andrews Ave	*Selected* – W Andrews St (NC39) was chosen for the grade separation in Henderson because it is the primary east-west route through the town; closing this rail crossing would result in inoperable traffic operations.

Table 5-12
Grade Separation Locations Considered

Historic District	Location	Reasons Selected or Excluded
	Chavasse Ave	*Excluded* – Chavasse Ave was excluded from consideration for a grade separation because of constructability issues. It was not possible to provide the required vertical clearance under the rail line and still maintain the existing side street intersections. Cutting off these side streets would alter the road network in the town to such a degree as to render the option imprudent.
South Henderson Industrial	Alexander Ave	*Selected* – Alexander Ave was chosen for the grade separation through the South Henderson Industrial District at the request of the Town of Henderson; any crossing to the north of Alexander Ave would have an impact on the Henderson historic district.
	Miriam Ave/ Wilkins Ln	*Excluded* – A crossing at Miriam Ave/Wilkins Ln (or any other crossing south of the historic district) would not provide the necessary east-west connectivity required to maintain traffic operations within Henderson.
Franklinton	Green St	*Selected* – Green St was selected for the grade separation through downtown Franklinton because it is the location of an existing grade separation (the Project would replace and widen the existing bridge); therefore, it would have the fewest residential and commercial relocations and maintain continuity in traffic operations.
	Mason St	*Excluded* – Mason St was excluded as a location for a grade separation because it would have substantial impacts to the commercial district as well as the historic district. It was not possible to evaluate placement of grade separations entirely outside the historic district because of the need to maintain connectivity within the downtown area.

5.10.3.3 *AVOIDANCE CONCEPT 3: BYPASS OF HISTORIC DISTRICT*

Impacts to the historic districts could be avoided if the Project were to bypass the districts on new rail alignments. Such bypasses could be located in the general vicinity of an individual historic district (less than a mile from the district boundary) or bypass multiple districts (at a distance further away).

Either type of bypass would require leaving existing rail ROW and locating the alternatives on land that is either currently used for other purposes or undeveloped. This would likely result in significant residential and/or business relocations and impacts to natural resources (e.g., streams and wetlands). Such unacceptable and severe adverse social and environmental impacts are not prudent per 23 CFR 774.17.

In addition, bypasses would increase travel time by adding length to the alternatives and, potentially, by requiring slower speeds through sharper turns. Increases to travel time would have a negative impact on ridership. As discussed above, bypasses fail to meet one of the purposes of the Project, which is to divert trips from air and highway within the travel corridor. Therefore, FRA has determined that this concept is not prudent per 23 CFR 774.17.

5.10.4 SEABOARD AIR LINE RAILROAD CORRIDOR (VA)

The Richmond to Raleigh Project rail alternatives are on common alignment and located within the existing rail corridor when they are in the vicinity of the Seaboard Air Line Railroad corridor, which spans the entire Project corridor in Virginia (Sections AA through L). Although the majority of this resource will remain unchanged with the implementation of the Richmond to Raleigh Project, the Project will impact one contributing element to the resource. The Project will remove the rail bridge over US 1 South near Alberta in Section F (where all alternatives are common).

The Section 4(f) use of the rail bridge over US 1 South is due to the relocation of US 1 South to a location adjacent to US 1 North in this area, as well as a slight realignment of the existing rail corridor. The existing rail bridge does not meet current design standards for vertical or horizontal clearance of US 1 South and there is anecdotal evidence of drainage issues on US 1 South under the bridge. Therefore, the designs propose to remove (i.e., fill in) the bridge and provide a new bridge for US 1 South approximately 500 feet to the south of the current location. To avoid this Section 4(f) use of the bridge would require keeping both the rail corridor and US 1 South in their current location and the bridge in its current condition. Any relocation of the rail corridor or US 1 South necessitates the bridge being removed for safety reasons (i.e., the lack of sufficient vertical and horizontal clearance). One of the purposes of the Project is to increase the safety and operability of the transportation system within the travel corridor and maintaining the rail bridge in place would result in unacceptable safety problems. Therefore, FRA has determined that an avoidance alternative for the Seaboard Air Line Railroad corridor is not prudent per 23 CFR 774.17.

5.10.5 ATLANTIC COAST LINE RAILROAD CORRIDOR AND RICHMOND & PETERSBURG ELECTRIC RAILWAY (VA)

The Richmond to Raleigh Project rail alternatives are on common alignment and are located within the existing, active rail corridor in the vicinity of the Atlantic Coast Line Railroad corridor and Richmond & Petersburg Electric Railway historic resources, which span Sections AA, BB, and CC. Although the majority of these resources will remain unchanged with the implementation of the Richmond to Raleigh Project, the Project will impact contributing elements to the historic resources. Within the Atlantic Coast Line Railroad corridor, the Project will remove a utility bridge for the crossing of the Richmond & Petersburg Electric Railway and abandoned abutments associated with the historic alignment of US Highway 10 (W. Hundred Road). Within the corridor of the Richmond & Petersburg Electric Railway, the Project will remove a utility bridge that historically carried the electric railway over the rail corridor immediately south of Hundred Road in Chester. (Note that the utility bridge impact is common to both the Atlantic Coast Line Railroad corridor and Richmond & Petersburg Electric Railway resources.)

An avoidance alternative for impacts to the utility bridge and abandoned abutments would require relocating the rail alignments out of the existing rail corridor in the vicinity of the Town of Chester. To avoid these Section 4(f) uses of the resources would result in replacing the existing grade separated crossing of US Highway 10 and relocating the alternatives on developed land in this predominantly urban area. This would cause unacceptable and severe adverse social and environmental impacts such as significant residential and/or business relocations and impacts to natural resources. In addition, the required ROW and new grade separation of US Highway 10 would result in significantly greater Project costs. Cumulatively, these impacts are not prudent per 23 CFR 774.17.

5.10.6 WILLIAMS BRIDGE COMPANY (VA)

The Richmond to Raleigh Project rail alternatives are on common alignment and require a small amount of ROW along the western boundary of the Williams Bridge Company. Rail alignment options in the vicinity of the Williams Bridge Company are severely constrained due to the need to utilize the existing James River railroad bridge (located just north of the Williams Bridge Company) and the Richmond flood wall gate (located just south of the Williams Bridge Company). The Richmond flood wall serves as a protective concrete wall against a sizeable flood. The gate is a large opening to provide passage except during periods of flooding, when it is closed. These constraints make it imprudent to relocate the rail alternatives off of the Williams Bridge Company property.

In addition to the ROW impacts from the railroad alternatives, the Section 4(f) use of the Williams Bridge Company is due to the additional driveway that was added to the Richmond to Raleigh Project designs at the request of the company. This driveway will provide tandem tractor trailers leaving the Williams Bridge Company with a means to access the proposed grade separation at Goodes Street. These trucks are too large to utilize the existing tunnel under the railroad located at the entrance to the property. According to representatives of Williams Bridge Company, the failure of the Project to provide access for tandem tractor trailers would result in closure of the company’s Richmond location. This would be an unacceptable and severe adverse social and economic impact. As a result of these potential impacts, FRA has determined that an avoidance alternative for the Williams Bridge Company is not prudent per 23 CFR 774.17.

5.10.7 EICHELBERGER HOUSE (VA)

The Project alternatives are on common alignment in the vicinity of the Eichelberger House. Avoidance of the gated entrance to the Eichelberger House would require a realignment of the Richmond to Raleigh Project rail alternatives through the Chester Historic District, with a shift to the south. This shift would impact a planned public park on the opposite corner of Curtis Street, which is also protected by Section 4(f). In addition, the realignment would likely result in significant residential impacts due to the terrain in the vicinity of the Eichelberger House. As a result of these potential impacts, FRA has determined that an avoidance alternative for the Eichelberger House is not prudent per 23 CFR 774.17.

5.10.8 DEFENSE ROAD, DIMMOCK LINE/EARTHWORKS, AND BRIDGE OVER DEFENSE ROAD (VA)

These three resources are all located directly adjacent to one another along Defense Road in Petersburg, VA. The Project alternatives are on common alignment in this area. Defense Road runs east-west through Petersburg and crosses the existing CSX rail line approximately 250 feet south of I-85. Rail alignment options for the Project are severely constrained in this area due to the need to utilize the existing rail underpass at I-85 and provide rail access to Collier rail yard, which is located approximately one mile south of Defense Road. Use of the existing rail underpass at I-85 is necessitated by the extraordinary costs and operational issues (e.g., maintaining highway and rail traffic) associated with constructing a new rail underpass. Access to Collier rail yard is also essential to maintenance of railroad operations. The yard serves as an interchange between the CSX and Norfolk Southern rail lines, and provides storage areas, staging areas, bulk transfer, and industrial switching facilities. Due to these constraints, it is not possible to realign the Project alternatives in such a way as to avoid crossing Defense Road in the vicinity of the existing railroad bridge over Defense Road. Therefore, FRA has determined that an avoidance alternative for Defense Road, Dimmock Line/Earthworks, and the Bridge over Defense Road is not prudent per 23 CFR 774.17.

5.10.9 WYNNHURST (VA)

Although the Preferred Alternative in Section D (VA4) veers to the northwest of Wynnhurst through the small community of Rawlings, VA, and does not require a Section 4(f) use of the resource, it is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section D, all Project alternatives will result in a Section 4(f) use of the Seaboard Air Line Railroad corridor. As described above, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, FRA has determined that an avoidance alternative for Wynnhurst is not prudent per 23 CFR 774.17.

Although the VA2 alternative also would not result in a Section 4(f) use of Wynnhurst, it would result in a severe amount of wetland impacts within Section D of the Project. This alternative would also result in a Section 4(f) use of the Seaboard Air Line Railroad corridor.

The VA1 and VA3 Project alternatives would result in a Section 4(f) use of the Wynnhurst property. These alternatives would also result in a Section 4(f) use of the Seaboard Air Line Railroad corridor.

5.10.10 ORGAIN HOUSE, TOURIST GUEST HOUSE, AND OAK SHADES (VA)

The Preferred Alternative in Section G is VA3. The four Project alternatives within Section G were designed at various stages of the Project development process. Initially, the VA1 and VA2 alternatives were developed to straighten the "S" curves through Section G while generally following the existing inactive railroad corridor (with the VA2 alternative more closely following the corridor than VA1). Subsequent cultural resource investigations determined that both alternatives would result in a Section 4(f) use of the Oak Shades historic resource. Alternative VA3 was then developed in an attempt to avoid impacts to Oak Shades. However, the Tourist Guest House was identified along the VA3 alignment, and the VA3 alternative would require a Section 4(f) use of this resource. Based on this information and public comments, the VA4 alternative was developed in an effort to avoid impacts to both Oak Shades and the Tourist Guest House. However, the Orgain House was identified along the VA4 alignment, and the VA4 alternative would result in a Section 4(f) use of this resource.

Given the constraints above, it was not possible to develop a prudent and feasible Project alternative that would avoid a use of all Section 4(f) resources within Section G. An avoidance alternative of the Orgain House, Tourist Guest House, and Oak Shades would require relocating the rail alignment significantly east of the existing inactive railroad corridor or west of US 1 (Boydton Plank Road). Such relocation would require a new bridge across the Meherrin River, which would represent a substantial Project cost. Crossing US 1 would also require an additional road bridge. In addition, relocating the alternatives would impact land that is either currently used for other purposes or undeveloped. This would cause unacceptable and severe adverse social and environmental impacts such as property impacts and impacts to natural resources. Cumulatively, FRA has determined that these impacts are not prudent per 23 CFR 774.17.

5.10.11 WRIGHT FARMSTEAD (VA)

Although the Preferred Alternative in Section J (VA2) is located more than 500 feet from the boundary of the Wright Farmstead and will not require a Section 4(f) use of the resource, it is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section J, all Project alternatives will result in a Section 4(f) use of the Seaboard Air Line Railroad corridor. As described above, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, FRA has determined that an avoidance alternative for Wright Farmstead is not prudent per 23 CFR 774.17.

The VA1 and VA3 Project alternatives, which are on common alignment, would result in a Section 4(f) use of the Wright Farmstead within Section J of the Project. Their alignment runs directly through the western two-thirds of the resource. These alternatives would also result in a Section 4(f) use of the Seaboard Air Line Railroad corridor.

5.10.12 BRACEY HISTORIC DISTRICT (VA)

Although the Preferred Alternative in Section K (the common alignment of VA1 and VA3) will construct a new rail alignment west of the original Seaboard Air Line tracks, outside of the Bracey Historic District, and will not result in a Section 4(f) use of the resource, it is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section K, all Project alternatives will result in a Section 4(f) use of the Seaboard Air Line Railroad corridor. As described above, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, an avoidance alternative for Bracey Historic District is not prudent per 23 CFR 774.17.

The VA2 Project alternative would result in a Section 4(f) use of the Bracey Historic District within Section K of the Project. It would result in construction directly adjacent to the Bracey Railroad Depot, which is a contributing element to the historic district. This alternative would also result in a Section 4(f) use of the Seaboard Air Line Railroad corridor.

5.10.13 GRANITE HALL/FITTS HOUSE (VA)

Although the Preferred Alternative in Section L (the common alignment of VA1 and VA3) is located approximately 700 feet west of the Granite Hall/Fitts House, and will not result in a Section 4(f) use of the resource, it is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section L, all Project alternatives will result in a Section 4(f) use of the Seaboard Air Line Railroad corridor. As described above, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, FRA has determined that an avoidance alternative for the Granite Hall/Fitts House is not prudent per 23 CFR 774.17.

The VA2 Project alternative would result in a Section 4(f) use of Granite Hall/Fitts House within Section L of the Project. The fill slope for the new bridge on Route 712 would be located in front of the main house. This alternative would also result in a Section 4(f) use of the Seaboard Air Line Railroad corridor.

5.10.14 HOLLOWAY FARM (NC)

Although the Preferred Alternative in Section O (NC3) is located more than 500 feet from Holloway Farm and will not result in a Section 4(f) use of the resource, it is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section O, all Project alternatives will result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor. As described below, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, FRA has determined that an avoidance alternative for Holloway Farm is not prudent per 23 CFR 774.17.

The NC1 and NC2 Project alternatives would bisect the Holloway Farm and result in a Section 4(f) use of the resource. This alternative would also result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor.

5.10.15 GULF PETROLEUM PRODUCTS WAREHOUSE (NC)

The Preferred Alternative in Section V (NC5), as well as the NC1, NC2, and NC3 Project alternatives, will all require a Section 4(f) use of the Gulf Petroleum Products Warehouse. An avoidance alternative is not prudent for several reasons. First, an avoidance alternative in the same general location as the existing alternatives would require the use of retaining walls in a "cut" area. Without a structural analysis of the existing structures and geotechnical properties of the existing ground, it is not possible to determine if a retaining wall would undermine the integrity of the structures. Such an analysis will take place during the final design stage of the Project.

Second, an avoidance alternative that shifts the Richmond to Raleigh Project rail alignment to the east to avoid the Gulf Petroleum Products Warehouse property entirely would conflict with the existing, active rail (CSX) that is located immediately east of the resource (i.e., the Gulf Petroleum Products Warehouse property abuts the railroad ROW). This would result in a "chain reaction" of impacts. A shift of the Richmond to Raleigh Project tracks would require a shift in the CSX tracks to maintain a safe distance between the CSX tracks and the Richmond to Raleigh Project tracks. This shift of the CSX tracks would encroach into the right of way Triangle Transit purchased from CSX for the planned future light rail corridor. It would also require a shift of the at-grade crossing between CSX and Norfolk Southern. As a result, Triangle Transit would need to shift their alignment east, which would result in a conflict with the Atlantic Avenue bridge south of Whitaker Mill Ave and Triangle Transit's proposed station platform. All of the components of this "chain reaction" would have substantial costs and would be complicated by the existing active railroad traffic in the area.

These unique problems cumulatively cause impacts of extraordinary magnitude; therefore, FRA has determined that an avoidance alternative for the Gulf Petroleum Products Warehouse is not prudent per 23 CFR 774.17.

5.10.16 ROANOKE PARK HISTORIC DISTRICT (NC)

The Preferred Alternative in Section V (NC5) is located across Capital Boulevard from the Roanoke Park Historic District and will not result in a Section 4(f) use of the resource. However, it is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section V, all Project alternatives will result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor. As described below, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, an avoidance alternative for the Roanoke Park Historic District is not prudent per 23 CFR 774.17.

Although the NC1 and NC2 Project alternatives would not result in a Section 4(f) use of the Roanoke Park Historic District, they are also not avoidance alternatives because they would use other resources protected under Section 4(f) within the same section of the Project. Within Section V, NC1 and NC2 would result in Section 4(f) uses of the Raleigh Electric Company Power House and the Carolina Power and Light Company Car Barn and Automobile Garage. In addition, they would result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor.

The NC3 alternative would take ROW from the eastern boundary of the Roanoke Park Historic District and result in a Section 4(f) use of the resource. In addition, it would result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor.

5.10.17 RALEIGH ELECTRIC COMPANY POWER HOUSE (NC)

The Preferred Alternative in Section V (NC5) will not require ROW from the Raleigh Electric Company Power House and FRA has determined that the proximity impacts do not cause a substantial impairment to the resource; therefore, the impacts do not constitute a Section 4(f) use of the Raleigh Electric Company Power House. However, the Preferred Alternative is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section V, all Project alternatives will result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor. As described below, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, an avoidance alternative for the Roanoke Park Historic District is not prudent per 23 CFR 774.17.

Although the NC3 Project alternative would not result in a Section 4(f) use of the Raleigh Electric Company Power House, it is not an avoidance alternative because it would use another resource protected under Section 4(f) within the same section of the Project. Within Section V, NC3 would result in a Section 4(f) use of the Roanoke Park Historic District. In addition, it would result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor.

The NC1 and NC2 alternatives would require minor amount of ROW from the Raleigh Electric Company Power House in order to bridge West Jones Street and would result in a Section 4(f) use of the resource. In addition, they would result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor.

5.10.18 CAROLINA POWER AND LIGHT COMPANY CAR BARN AND AUTOMOBILE GARAGE (NC)

The Preferred Alternative in Section V (NC5) will not require ROW from the Carolina Power and Light Company Car Barn and Automobile Garage and FRA has determined that the proximity impacts do not cause a substantial impairment to the resource; therefore, the impacts do not constitute a Section 4(f) use of the Raleigh Electric Company Power House. However, the Preferred Alternative is not an avoidance alternative because it will use another resource protected under Section 4(f) within the same section of the Project. Within Section V, all Project alternatives will result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor. As described below, it is not possible for the Project alternatives to avoid a use of the railroad corridor. Therefore, an avoidance alternative for the Roanoke Park Historic District is not prudent per 23 CFR 774.17.

Although the NC3 Project alternative would not result in a Section 4(f) use of the Carolina Power and Light Company Car Barn and Automobile Garage, it is not an avoidance alternative because it would use another resource protected under Section 4(f) within the same section of the Project. Within Section V, NC3 would result in a Section 4(f) use of the Roanoke Park Historic District. In addition, it would result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor.

The NC1 and NC2 alternatives would require minor amount of ROW from the Carolina Power and Light Company Car Barn and Automobile Garage in order to bridge West Jones Street and would result in a Section 4(f) use of the resource. In addition, they would result in a Section 4(f) use of the Raleigh and Gaston Railroad corridor.

5.10.19 RALEIGH AND GASTON RAILROAD CORRIDOR (NC)

The Raleigh and Gaston Railroad corridor spans Sections M through V of the Project. An avoidance alternative for the Raleigh and Gaston Railroad corridor would require relocating the rail alignments to avoid all reinforced concrete bridges and stone-lined culverts within the existing railroad ROW between Norlina, NC, and Raleigh, NC. To avoid these Section 4(f) uses of the resources would result in relocating the alternatives on land that is either currently used for other purposes or undeveloped. This would cause unacceptable and severe adverse social and environmental impacts such as significant residential and/or business relocations and impacts to natural resources. In addition, acquiring the required ROW would result in significantly greater Project costs. Cumulatively, these impacts are not prudent per 23 CFR 774.17.

5.10.20 SUMMARY

In summary, there are 27 historic resources where one or more of the Project alternatives would result in a Section 4(f) use (not de minimis). Due to the unavoidable Section 4(f) use of the Seaboard Air Line Railroad corridor in Virginia and Raleigh and Gaston Railroad corridor in North Carolina, there are no instances where there is a reasonable and prudent avoidance alternative that would not result in a Section 4(f) use within the section of the Project where the resource is located.

5.11 LEAST OVERALL HARM ANALYSIS

According to Section 4(f), where the above analysis determined that there is no feasible and prudent avoidance alternative, the alternative that causes the least overall harm to Section 4(f) resources must be selected. The following discussion identifies the least overall harm alternative by Project section using the factors identified in 23 CFR 774.3(c):

(1) The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);

(2) The relative severity of remaining harm, after mitigation, to the protected activities, attributes, or; features that qualifies each property for Section 4(f) protection;

(3) The relative significance of each Section 4(f) property;

(4) The views of the officials with jurisdiction over each Section 4(f) property;

(5) The degree to which each alternative meets the Project purpose and need;

(6) After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f);

(7) Substantial differences in costs among the alternatives.

5.11.1 SECTION AA (VA)

All alternatives are on common alignment in Section AA and would require a Section 4(f) use of the Seaboard Air Line Railroad corridor, Atlantic Coast Line Railroad corridor, Williams Bridge Company, and the Richmond & Petersburg Electric Railway. Because all alternatives are identical, a least harm analysis is not appropriate in this section of the Project.

5.11.2 SECTION BB (VA)

All alternatives are on common alignment in Section BB and would require a Section 4(f) use of the Chester Historic District, Eichelberger House, Richmond & Petersburg Electric Railroad, Atlantic Coast Line Railroad corridor, and the Seaboard Air Line Railroad corridor. Because all alternatives would result in the same harm to the resources, a least harm analysis is not appropriate in this section of the Project.

5.11.3 SECTION CC (VA)

All alternatives are on common alignment in Section CC and would require a Section 4(f) use of the Defense Road, Dimmock Line/Earthworks, Bridge over Defense Road, Richmond & Petersburg Electric Railroad, Atlantic Coast Line Railroad corridor, and the Seaboard Air Line

Railroad corridor. Because all alternatives are identical, a least harm analysis is not appropriate in this section of the Project.

5.11.4 SECTION DD (VA)

The Project alternatives within Section DD would all require a use of the Seaboard Air Line Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section DD is the VA3 alternative. The Preferred Alternative (which has the shortest bridge length) is the least visually intrusive to the Weldon Railroad/Globe Tavern battlefield. Alternatives VA1 and VA2 would require less ROW from the battlefield, but would have a greater visual impact to the surrounding area. In addition, the ROW required for the Preferred Alternative can be landscaped to blend into the surrounding viewshed. This determination was validated in coordination with historians from the National Park Service (Petersburg National Battlefield) at a meeting on February 26, 2009.

5.11.5 SECTION A (VA)

The Project alternatives within Section A would all require a use of the Seaboard Air Line Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section A is the VA2 alternative. The Preferred Alternative has the fewest wetland and stream impacts; similar impacts to historic resources compared to the VA1/VA3 alternative; a better operability rating; and accommodates higher speeds.

5.11.6 SECTION B (VA)

The Project alternatives within Section B would all require a use of the Seaboard Air Line Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section B is the common alignment of the VA1 and VA3 alternatives. The Preferred Alternative has greater impacts to forested uplands and prime and other important farmland, two more residential relocations, and a larger total cost compared to the VA2 Alternative. However, VA2 has had a much lower limiting speed and a negative rating for operability and constructability. In addition, VA2 has five more potential noise and vibration impacts (compared to the Preferred Alternative) and one business relocation (whereas the Preferred Alternative has none).

5.11.7 SECTION C (VA)

All alternatives are on common alignment in Section C and would require a Section 4(f) use of the Seaboard Air Line Railroad corridor. Because all alternatives are identical, a least harm analysis is not appropriate in this section of the Project.

5.11.8 SECTION D (VA)

The Preferred Alternative (VA4) is the alternative within Section D that causes the least overall harm to Section 4(f) resources. It would require a use of the Seaboard Air Line Railroad corridor (as would the VA1, VA2, and VA3 alternatives), but would not require a use of Wynnhurst. Compared to the VA1, VA2, and VA3 alternatives, the Preferred Alternative also avoids an impact to a species protected under the Endangered Species Act, while the VA1 and VA3 alternatives would result in an impact. In addition, the Preferred Alternative has fewer stream and wetland impacts than the VA2 alternative. All efforts will be made during final design to further avoid and minimize impacts to streams and wetlands.

5.11.9 SECTION E (VA)

The Project alternatives within Section E would all require a use of the Seaboard Air Line Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section E is the common alignment of the VA1 and VA3 alternatives. The Preferred Alternative has fewer wetland and stream impacts, residential relocations, and vibration impacts when compared to the VA2 alternative, as well as a lower cost. The Preferred Alternative also has a better operability and constructability rating.

5.11.10 SECTION F (VA)

All alternatives are on common alignment in Section F and would require a Section 4(f) use of the Seaboard Air Line Railroad corridor. Because all alternatives are identical, a least harm analysis is not applicable in this section of the Project.

5.11.11 SECTION G (VA)

The four Project alternatives within Section G vary and would all require a use of at least one historic resource. The following factors were included in the least overall harm analysis:

- Preferred Alternative (VA3) – Section 106 adverse effect and Section 4(f) use of Tourist Guest House; 500 feet of stream impacts; positive rating for operability and constructability; total cost of $36.92 million
- VA1 Alternative – Section 106 adverse effect and Section 4(f) use of Oak Shades; 654 feet of stream impacts; neutral rating for operability and constructability (which is related to the ability of the alternative to meet the purpose and need for the Project); total cost of $36.46 million
- VA2 Alternative – Section 106 adverse effect and Section 4(f) use of Oak Shades; 914 feet of stream impacts; negative rating for operability and constructability; total cost of $29.47 million
- VA4 Alternative – Section 106 adverse effect and Section 4(f) use of Orgain House; 1,095 feet of stream impacts; positive rating for operability and constructability; total cost of $40.73 million.

Input from the cultural and natural resource agencies was also used to evaluate the alternatives. In a discussion with VDHR on October 11, 2011, it was determined that:

- VA4 alternative would have the most substantial impact to historic resources (because the main house on the Orgain property is within its construction limits)
- VA1 alternative would have the second most substantial impact (because it would bring the rail alignment within 50 feet of the main house on the Oak Shades property)
- The impacts of the VA2 alternative (to Oak Shades) and Preferred Alternative (to the Tourist Guest House) can be mitigated. Such mitigation could include landscaping to shield visual impacts and documentation of the history of these resources.

From a water resources perspective, the resource agencies endorsed the Preferred Alternative. In a correspondence dated May 25, 2011, VDEQ noted that while they “recognize the problems associated with impacting the Tourist Guest House and/or Oak Shades,” they identified the VA3 alternative as “the least environmentally damaging option that preserves the operational purpose of the Project, followed by VA1." Subsequently, in a letter dated June 29, 2011, USACE stated that they believe the VA3 alternative is the "least environmentally damaging practicable alternative" in Section G and noted that if another alternative was selected, "further avoidance and minimization will have to be incorporated into the Project to reduce the impacts to aquatic resources of the selected alternative to a level comparable to or less than those of VA3 in order for [them] to consider authorizing it."

Based on the above, the Preferred Alternative is the least overall harm alternative in Section G because it is possible to mitigate the impacts to the Tourist Guest House, the impacts to historic resources are not as severe (compared to the VA2 and VA4 alternatives), it minimizes impacts to streams (of all alternatives), and it meets the purpose and need for the Project to the greatest degree (compared to the VA1 and VA2 alternatives, which do not have positive operability and constructability).

5.11.12 SECTION H (VA)

The Project alternatives within Section H would all require a use of the Seaboard Air Line Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section H is the common alignment of the VA1 and VA3 alternatives. The Preferred Alternative has fewer impacts to streams, prime and important farmland, and forested uplands; along with fewer noise and vibration impacts. Although the Preferred Alternative has a somewhat higher total cost, the long-term maintenance cost will be lower compared to the VA2 alternative.

5.11.13 SECTION I (VA)

The Project alternatives within Section I would all require a use of the Seaboard Air Line Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and the VA2 alternative have identical impacts to water resources with nominal stream impacts and no wetlands impacts. However, the Preferred Alternative has fewer impacts to prime and important farmland and forested uplands and a lower cost.

5.11.14 SECTION J (VA)

The Preferred Alternative (VA2) is the alternative within Section J that causes the least overall harm to Section 4(f) resources. It would require a use of the Seaboard Air Line Railroad corridor (as would the VA1 and VA3 alternatives), but would not require a use of the Wright Farmstead. Compared to the VA1 and VA3 alternatives, the Preferred Alternative has fewer impacts to streams and similar impacts to other resources. The Preferred Alternative also has similar costs to the VA1 and VA3 alternatives. However, the Preferred Alternative has a greater number of impacted noise receptors than the VA1 and VA3 alternatives. Noise abatement measures will be analyzed during the final design process.

5.11.15 SECTION K (VA)

The Preferred Alternative (the common alignment of VA1 and VA3) is the alternative within Section K that causes the least overall harm to Section 4(f) resources. It would require a use of the Seaboard Air Line Railroad corridor (as would the VA2 alternative), but would not require a use of the Bracey Historic District. Compared to the VA2 alternative, the Preferred Alternative minimizes impacts to streams, wetlands, and prime and important farmlands. It also has a better operability and constructability rating, which would result in lower long-term maintenance for the rails and train equipment.

5.11.16 SECTION L (VA/NC)

The Preferred Alternative (the common alignment of VA1/NC1 and VA3/NC3) is the alternative within Section L that causes the least overall harm to Section 4(f) resources. It would require a use of the Seaboard Air Line Railroad corridor (as would the VA2/NC2 alternative), but would not require a use of Granite Hall/Fitts House. Compared to the VA2 alternative, the Preferred Alternative has greater stream and wetland impacts compared to VA2/NC2, but fewer impacts to prime and important farmlands, less residential relocation, fewer noise and vibration impacts, and a lower total cost. It also has a neutral constructability and operability rating (compared to a negative rating for the VA2/NC2 alternative) and has better support from the public.

5.11.17 SECTION M (NC)

The Preferred Alternative (NC1) is the alternative within Section M that causes the least overall harm to Section 4(f) resources. Within Section M, the Project alternatives would all require a use of the Raleigh and Gaston Railroad corridor. The Preferred Alternative in Section M is the common alignment of the NC1 and NC3 alternatives. While throughout the remainder of North Carolina, the alternatives generally have the same impacts to the resource, the impacts vary to a greater degree in Section M. In this section, the Preferred Alternative would not impact a repeater tower that is a contributing element to the resource, whereas Alternative NC2 would require its relocation. In addition, the Preferred Alternative minimizes stream impacts and has fewer impacts to forested uplands compared to the NC2 alternative. Neither alternative would impact wetlands. Based on these impacts, Preferred Alternative would result in the least overall harm to Section 4(f) resources in Section M.

5.11.18 SECTION N (NC)

The Project alternatives within Section N would all require a use of the Raleigh and Gaston Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section N is the common alignment of the NC1 and NC3 alternatives. The Preferred Alternative minimizes impacts to streams, prime and important farmlands, and forested uplands compared to the NC2 alternative. It also has less residential relocations and potentially impacted noise receptors.

5.11.19 SECTION O (NC)

The Preferred Alternative (NC3) alternative is the alternative within Section O that causes the least overall harm to Section 4(f) resources. It would require a use of the Raleigh and Gaston Railroad corridor (as would the NC1 and NC2 alternatives), but would not require a use of Holloway Farm. Compared to the NC1 and NC2 alternatives, the Preferred Alternative would result in fewer impacts to wetlands, greater impacts to streams, fewer noise and vibration impacts, and fewer relocations. Although the difference in stream impacts is significant (3,102 feet for NC3 compared to 693 feet for NC1 and 915 feet for NC2), those impacts would be fully mitigated.

5.11.20 SECTION P (NC)

All alternatives are on common alignment in Section P and would require a Section 4(f) use of the Henderson Historic District, South Henderson Industrial Historic District, and Raleigh and

Gaston Railroad corridor. Because all alternatives are identical, a least harm analysis is not appropriate in this section of the Project.

5.11.21 SECTION Q (NC)

The Preferred Alternative (NC1) is the alternative within Section M that causes the least overall harm to Section 4(f) resources. The Project alternatives within Section Q would all require a use of the Raleigh and Gaston Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative in Section Q is the common alignment of the NC1 and NC3 alternatives. This alternative meets the purpose and need of the Project to a greater degree than the NC2 alternative because the NC2 alternative has a lower limiting speed and negative rating for operability and constructability. The Preferred Alternative has slightly greater impacts to prime and important farmland and forested uplands, and three more residential relocations compared to the NC2 alternative, but otherwise the impacts are comparable between alternatives.

5.11.22 SECTION R (NC)

The Project alternatives within Section R would all require a use of the Raleigh and Gaston Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section R is the common alignment of the NC1 and NC3 alternatives. This alternative meets the purpose and need of the Project to a greater degree than the NC2 alternative (based on the more favorable operability and constructability rating). Otherwise, it has a similar degree of impacts to the human and natural environment compared to the NC2 alternative.

5.11.23 SECTION S (NC)

Within Section S, all alternatives are on common alignment through the Franklinton Historic District and would require a Section 4(f) use of the resource. In addition, all alternatives would require a use of the Raleigh and Gaston Railroad corridor and would have a similar degree of impacts to the resource. Therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative in Section S is the common alignment of the NC1 and NC3 alternatives. This alternative has strong public support and a smaller impact to streams. Other impacts to the human and natural environment are similar across the Project alternatives.

5.11.24 SECTION T (NC)

The Project alternatives within Section T would all require a use of the Raleigh and Gaston Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section T is the common alignment of the NC1 and NC3 alternatives. This alternative meets the purpose and need of the Project to a greater degree than the NC2 alternative (based on the more favorable operability and constructability rating). The Preferred Alternative has slightly greater impacts to streams, wetlands, farmland and forested uplands than the NC2 alternative. However, the greater stream and wetland impacts for the Preferred Alternative (approximately 300 feet of stream and less than 0.1 acre of wetlands) are not significant in light of the entire Project and would be fully mitigated. Further, there would likely be 100 feet more stream impacts associated with the NC2 alternative as a result of a railroad detour route required during construction, so the effective difference in stream impacts is closer to 200 feet.

5.11.25 SECTION U (NC)

The Project alternatives within Section U would all require a use of the Raleigh and Gaston Railroad corridor. All alternatives would have a similar degree of impacts to the resource; therefore, the least overall harm alternative is based on the other factors described in 23 CFR 774.3(c). The Preferred Alternative and overall least harm alternative in Section U is the NC1 alternative. While all three alternatives have some degree of impact on the baseball complex, the NC1 alternative would be least harmful to its operation. Although The Factory is a private facility, its construction costs were defrayed by a grant from Wake County, NC, in recognition of the financial contributions of visitors attending annual tournaments. The facility is required to host baseball and softball tournaments throughout each year as a condition of the grant. Additionally, the NC1 alternative would avoid impacts to a large planned apartment complex located along Rogers Road.

5.11.26 SECTION V (NC)

The NC5 alternative is the alternative within Section V that causes the least overall harm to Section 4(f) resources and is the Preferred Alternative in this section of the Project. It would require a use of the Gulf Petroleum Products Warehouse, Depot Historic District Proposed Boundary Amendment, and Raleigh and Gaston Railroad corridor (as would the NC1, NC2, and NC3 alternatives), but would not require a use of the Roanoke Park Historic District, Raleigh Electric Company Power House, or Carolina Power and Light Company Car Barn, which are impacted by one or more of the other alternatives. Compared to the NC1, NC2, and NC3 alternatives, the NC5 alternative would result in the fewest impacts to streams, no residential relocations, fewer business relocations compared to NC3 (but greater than NC1 and NC2), and only one severely impacted noise receptor (compared to 40 for the other alternatives).

5.12 MEASURES TO MINIMIZE HARM

The discussion of measures to minimize harm focuses on the 16 resources where the Preferred Alternative in a section of the Project would result in a Section 4(f) use. Resources are ordered from north to south as they appear in the Richmond to Raleigh Project Study Area. Minimization measures are not required when a finding of *de minimis* use is made for Section 4(f) resources because Section 4(f) is satisfied once *de minimis* applies.

The minimization measures presented here do not represent the full suite of measures that will ultimately be undertaken by the Project. The specific minimization measures for the Project are being developed though coordination under Section 106 of the NHPA with the FRA, ACHP, VDHR, NC-HPO, and consulting parties. The process being used for compliance with Section 106 is outlined in a draft Programmatic Agreement (PA) for the SEHSR Corridor that is provided for public comment in Appendix K of this FEIS. After the PA is executed by the signatories, an MOA will be developed for both the Virginia and North Carolina portions of the Richmond to Raleigh Project that specifies the mitigation measures for impacts to historic resources, including the 16 resources where the Project would result in a Section 4(f) use. The MOAs will be included in the ROD for the Project.

5.12.1 SEABOARD AIR LINE RAILROAD CORRIDOR (VA)

The Project alternatives do not impact the vast majority of contributing elements to the Seaboard Air Line Railroad corridor. The rail improvements will be located within the existing rail corridor. Historically, the corridor contained two to three sets of parallel tracks. Over the years, the number of tracks have been reduced, thus now the corridor only contains one or two sets of tracks within the wider right-of-way. The addition of an additional set of tracks will return most of the corridor to its original historic appearance and configuration. In addition, the existing tracks have been replaced with in-kind materials numerous times over the past 150 years including new rails, cross ties, spikes, and ballast.

The impacts to the rail bridge over US 1 South in Alberta cannot be minimized because the Project requires this structure to be replaced. The bridge is a contributing element to the resource as a whole. It is emblematic of early-twentieth century bridge construction associated with the development of the Route 1 corridor in this area. Mitigation has not been determined, but initial dialogues with the Virginia DRPT and VDHR suggest that thorough Historic American Engineering Record (HAER)-level documentation (including drawings and large-format photography) prior to removal followed by a study of rail-related bridges along the Route 1 corridor in this area may be warranted, as it could develop a context for similar structures in the area for future evaluations of other transportation projects. The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with FRA, VDHR, and CSX.

5.12.2 ATLANTIC COAST LINE RAILROAD CORRIDOR (VA)

The Project alternatives do not impact the vast majority of contributing elements to the Atlantic Coast Line Railroad, as it has many of the same design considerations and historical modifications noted above regarding the Seaboard Airline Railroad. The impacts to the utility bridge for the crossing of the Richmond & Petersburg Electric Railway and the abandoned abutments associated with the historic alignment of Highway 10 cannot be minimized because the Project requires these structures to be replaced. Dialogues on mitigation are ongoing. Initial concepts include HAER-level documentation (including drawings and large-scale photography) of the abutments prior to demolition and the creation of a narrative on the historic of the Richmond & Petersburg Electric Railway for public dissemination. The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, VDHR, and CSX.

5.12.3 WILLIAMS BRIDGE COMPANY (VA)

Members of the Project Team met with a representative of the Williams Bridge Company on May 12, 2009, to discuss ways to minimize the impacts of the Project on the resource. The Williams Bridge Company expressed concerns about whether the changes in access to the property would accommodate the tandem tractor trailers (as much as 150 feet long) they use to deliver large steel structures. They explained that the highest priority for the company is to maintain access to the adjacent road and rail network; this access is vital to being able to operate their business. In response, designs for a driveway access to the proposed railroad bridge on Goodes Street were added to the Project, which will serve this need.

In addition, the Project Team asked the Williams Bridge Company if there was any additional mitigation the Project could provide. They responded that they might be interested in allowing historians to interview members of their staff who have been working for the company dating back to the WWII period. This information would then be shared with their staff and the general public.

The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, VDHR, and the resource owner.

5.12.4 RICHMOND & PETERSBURG ELECTRIC RAILWAY (VA)

The Project alternatives do not impact the vast majority of contributing elements to the Richmond & Petersburg Electric Railway such as the general corridor's setting and feeling and other contributing structures along the rail corridor. The impacts to the utility bridge south of Highway 10 in Chester cannot be minimized because the Project requires these structures to be replaced. Mitigation activities suggested to date include HAER-level documentation of the structure prior to removal (including measured drawings and large-scale photography). The historic context developed for the electric railway mentioned above under the Atlantic Coast Line Railway (see Section 5.12.2) could also function to mitigate the adverse effects to the electric railway itself. The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, VDHR, and CSX.

5.12.5 CHESTER HISTORIC DISTRICT (VA)

Members of the Project Team met with the Chesterfield Historical Society on April 8, 2009, to discuss ways to minimize the impacts of the Project on historic resources in Chesterfield County, VA. Representatives of the society stated they would consider minimization measures and follow up with the Project Team at a later date. Possible mitigation measures suggested by the Richmond to Raleigh Project team included NRHP nomination assistance and interpretive signs within the district.

A meeting was held at the Chesterfield County Public Library Enon Branch in Chester, VA, on May 12, 2009, with property owners of historic resources within the Chester Historic District. Several property owners expressed concerns that the proposed railroad overpass on Curtis Street would increase the volume and speed of vehicles on Curtis Street and were also concerned about the wide cross-section (i.e., footprint) shown on the Richmond to Raleigh Project designs at that time. In response, the designs were altered to provide a more context-sensitive cross-section with curb and cutter. This minimizes the ROW necessary for the Project along Curtis Street and is more in keeping with the existing setting.

The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, VDHR, and resource owner in the district.

5.12.6 EICHELBERGER HOUSE (VA)

Members of the Project Team met with owners of the properties comprising the Eichelberger House on April 8, 2009, and May 12, 2009, to discuss ways to minimize the impacts of the Project on the resource. Possible mitigation measures include relocating the stone gate and walking path outside of the required ROW. In addition, the owner of the main house of the Eichelberger House asked for information about possible assistance in nominating the property for inclusion on the NRHP. The Project Team will follow up with him about this opportunity during the development of the Section 106 MOA for the Project.

The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, VDHR, and the resource owner.

5.12.7 DEFENSE ROAD, DIMMOCK LINE/EARTHWORKS, AND BRIDGE OVER DEFENSE ROAD (VA)

Members of the Project Team met with the NPS Petersburg National Battlefield and City of Petersburg Preservation Planning office on May 12, 2009, to discuss ways to minimize the impacts of the Project on the resources in the vicinity of Defense Road. The NPS and City of Petersburg requested that the design for the new bridge and associated retaining wall be comparable, but not identical, to the existing structures in order to minimize impacts to the historic resources. In addition, the City of Petersburg requested that an interpretive Civil War Trails sign about the history of Defense Road be placed in Lee Memorial Park, which is located on Defense Road just south of the railroad overpass. The NPS also asked that all efforts be made to minimize disturbance to the Dimmock Line/Earthworks. This will be reflected in the Section 106 MOA that is developed for the Project.

5.12.8 TOURIST GUEST HOUSE (VA)

The Project Team sent a certified letter to the owner of the Tourist Guest House on July 29, 2013, explaining the impact of the Preferred Alternative on his property and inviting him to participate in the development in the Section 106 MOA. Subsequently, the owner has communicated with the Project Team by phone (due to the fact that he resides in California). Discussions on the mitigation are also underway with the VDHR and Virginia DRPT. Mitigation activities recommended to date include a NRHP nomination for the Tourist Guest House, the development of a historic context for travel-related architecture in Southside Virginia, and vegetative screening to block the view of the new rail corridor from the main house. The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, VDHR, and the property owner.

5.12.9 LA CROSSE COMMERCIAL HISTORIC DISTRICT (VA)

The proposed Project alternatives through the La Crosse Commercial Historic District represent the result of extensive coordination with the La Crosse town manager, town council, and local citizens. The Project Team met with representatives of the town and members of the public to discuss the Project on July 22, 2003; December 10, 2004; January 30, 2006; May 10, 2006; and September 18, 2006. Visualizations (i.e., computer-generated “before and after” images) of some of the early Project designs were prepared in 2005 to assist the public in understanding the design constraints and options.

The design that is presented in this Richmond to Raleigh Project Tier II DEIS has addressed the concerns and desires expressed by the local community, which included maintaining the historic feeling of the town. In a letter dated September 15, 2006, the La Crosse town manager acknowledged that representatives of the Project had “made every effort to accommodate the Town’s requests” through the design process and “included the Town’s input on many key issues, which the Town feels is important for its future growth and success.”

The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, VHDR, and resource owners in the district.

5.12.10 HENDERSON HISTORIC DISTRICT AND PROPOSED BOUNDARY EXTENSION (NC)

Members of the Project Team met with representatives of the Town of Henderson, NC, and members of the public to discuss the Project on June 24, 2003; February 14, 2006; and September 20, 2007. At these meetings, proposed designs were reviewed and suggestions were solicited from the town. Cultural resource impacts were included in the discussion. As a result of this coordination, a pedestrian underpass within the Henderson Historic District was added to the Project design in order to accommodate the non-motorized traffic through the historic downtown area.

Members of the Project Team met with the NC-HPO on September 8, 2008, to discuss the impacts of the proposed Project on cultural resources. The following were identified as potential measures to minimize impacts to the Henderson Historic District:

- Minimize the taking of trees in the vicinity of the bridge over Andrews Avenue
- Minimize impacts to contributing elements to the historic district

The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, NC-HPO, and resource owners in the district.

5.12.11 SOUTH HENDERSON INDUSTRIAL HISTORIC DISTRICT (NC)

Members of the Project Team met with representatives of the Town of Henderson, NC, and members of the public to discuss the Project on June 24, 2003; February 14, 2006; and September 20, 2007. At these meetings, proposed designs were reviewed and suggestions were solicited from the town. Cultural resource impacts were included in the discussion. The designs presented in the Richmond to Raleigh Project Tier II DEIS were based on input provided at the meetings.

In order to minimize property impacts within the South Henderson Industrial District, the Richmond to Raleigh Project Tier II DEIS showed that the connection of Nicholas Street to Alexander Avenue would be closed under the Project alternatives. Without this closure, it would be necessary to raise Nicholas Street to meet the new elevation of Alexander Avenue, which would be higher due to the proposed bridge over the railroad tracks. Raising the elevation of Nicholas Street would require greater ROW along Nicholas Street through the historic district.

Letters from the Project Team were sent to all property owners located within the South Henderson Industrial Historic District in August 2009 inviting them to provide input on impacts to historic resources. Several comments received expressed concern about the impact that the closure of Nicholas Street would have on travel patterns with the district, particularly for truck traffic. The Project Team reevaluated the closure of Nicholas Street in coordination with NC-HPO, the Town of Henderson, and the resource owners, and adjusted the FEIS designs to allow Nicholas Street to remain open at Alexander Avenue, despite the fact that additional ROW was needed within the historic district.

The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, NC-HPO, and resource owners in the district.

5.12.12 FRANKLINTON HISTORIC DISTRICT (NC)

The Project Team met with representatives of the Town of Franklinton, NC, and members of the public to discuss the Project on June 26, 2003, and May 9, 2008. At these meetings, proposed designs were reviewed and suggestions were solicited from the town. As a result of this input, the Preferred Alternative includes two pedestrian-only grade-separated crossings of the railroad to accommodate the non-motorized traffic through the historic downtown area (at Mason Street and College Street). In addition, the vehicular underpass at Greene Street was designed to include pedestrian sidewalks. The Preferred Alternative also includes north-south connector streets just outside the historic district, which serve to address concerns raised by the town about the loss of connectivity due to the closure of at-grade railroad crossings. The Project Team also investigated several railroad bridge locations proposed by town; however, these bridges were ruled out due to impacts to contributing elements to the historic district and streams.

Based on input from representatives of the Town of Franklinton, Capital Area Metropolitan Planning Organization, and NC-HPO obtained during meetings subsequent to publication of the

Richmond to Raleigh Project Tier II DEIS, the pedestrian crossing proposed as an overpass of Mason Street in the Richmond to Raleigh Project Tier II DEIS was redesigned as an underpass for the FEIS. This redesign will be less visually intrusive to the historic district than an overpass. The final designs for the underpass will be developed in coordination with representatives from the Town so that they may provide input regarding the appearance of the structure and associated landscaping.

The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, NC-HPO, and resource owners in the district.

5.12.13 GULF PETROLEUM PRODUCTS WAREHOUSE (NC)

The Project Team sent a certified letter to the owner of the Gulf Petroleum Products on July 29, 2013, explaining the impact of the Preferred Alternative on his property and inviting him to participate in the development of the Section 106 MOA for the Project. To date, no response has been received. Based on input from NC-HPO, if the Project requires demolition of the warehouse and main building, the Project will provide photo documentation of the warehouse and main building prior to construction. As noted above, efforts will be during the final design stage of the project to use retaining walls, if possible, to avoid demolition of the structures. The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, NC-HPO, and CSX.

5.12.14 RALEIGH AND GASTON RAILROAD CORRIDOR (NC)

The Project alternatives do not impact the vast majority of contributing elements to the Raleigh and Gaston Railroad corridor (e.g., several historic stations, a section house, a defect and dragging detection equipment shed, and the railroad turntable in Raleigh). The impacts to the reinforced concrete bridges and stone-lined culverts cannot be minimized because the Project requires these structures to be replaced. Based on input from NC-HPO, the Project will fund a contextual study of the impacts of railroads in North Carolina, which can be used to evaluate the effects of future Projects on historic railroad structures and corridors. The specific mitigation measures for the Project will be determined during development of the Section 106 MOA for the Project based on coordination with the FRA, NC-HPO, and CSX.

5.13 COORDINATION

The Project Team met with VDHR and NC-HPO several times during the development of Project alternatives to discuss impacts to historic resources. Measures to minimize and mitigate for impacts, as well as potential avoidance measures, were also discussed. Determination of effects meetings were held with VDHR on April 15, 2009, August 7, 2009, November 20, 2009, September 27, 2010, October 4, 2013, November 6, 2013, January 10, 2014, and March 20, 2014. Similar determination of effects meetings with NC-HPO were held on August 20, 2008, September 2, 2009, September 29, 2009, July 12, 2011, and June 17, 2013.

The following discussion describes the coordination between the Project Team and individual property owners or officials with jurisdiction over resources protected under Section 4(f). Although coordination has taken place with numerous individuals and organizations, the discussion below focuses on the resources where all Project alternatives would result in a Section 4(f) use. Resources are ordered from north to south as they appear in the Richmond to Raleigh Project Study Area.

5.13.1 SEABOARD AIR LINE RAILROAD CORRIDOR (VA)

The Project Team met with representatives of CSX Transportation on January 31, 2013, to discuss the impact of the Project on the Seaboard Air Line Railroad corridor and Raleigh and Gaston Railroad corridor, which are currently owned by CSX. In addition, the Project Team invited CSX to participate in the Section 106 process as a consulting party. On March 8, 2013, CSX confirmed their status as a consulting party.

5.13.2 WILLIAMS BRIDGE COMPANY (VA)

A Richmond to Raleigh Project meeting was held at the Williams Bridge Company in Richmond, VA, on May 12, 2009. The meeting focused on measures to minimize impacts to the resource.

5.13.3 ATLANTIC COAST LINE RAILROAD CORRIDOR AND RICHMOND & PETERSBURG ELECTRIC RAILWAY (VA)

The contributing elements to the Atlantic Coast Line Railroad corridor and Richmond & Petersburg Electric Railway are within active railroad ROW owned by CSX. CSX is a consulting party in the Section 106 process and will be invited to comment on methods to mitigate for the impacts to these resources as part of the development of the Section 106 MOA.

5.13.4 RESOURCES LOCATED IN CHESTERFIELD COUNTY (VA)

The Project Team held two meetings in Chesterfield County, VA, to solicit input on measures to minimize impacts to historic resources within the county. The first meeting was held at the Chesterfield Historical Society in Chesterfield County, VA, on April 8, 2009. In attendance were representatives of the historic society and two property owners for the Eichelberger House. A second meeting was held at the Chesterfield County Public Library Enon Branch in Chester, VA, on May 12, 2009. In attendance were property owners representing the Chester Historic District, Eichelberger House, Centralia Post Office, Circle Oaks, and Ragland House.

5.13.5 DEFENSE ROAD, DIMMOCK LINE/EARTHWORKS, AND BRIDGE OVER DEFENSE ROAD (VA)

A meeting was held at the NPS Petersburg National Battlefield office in Petersburg, VA, on May 12, 2009, with representatives from the NPS and the City of Petersburg Preservation Planning office. The Project alternatives were presented and input was solicited on measures to minimize impacts to Defense Road, Dimmock Line/Earthworks, and the Bridge over Defense Road.

5.13.6 TOURIST GUEST HOUSE (VA)

The Project Team sent a certified letter to the owner of the Tourist Guest House on July 29, 2013, explaining the impact of the Preferred Alternative on his property and inviting him to participate in the development in the Section 106 MOA. Subsequently, the owner has communicated with the Project Team by phone (due to the fact that he resides in California). He has provided suggestions for potential mitigation for the impacts to his property and has agreed to participate in the development of the MOA.

5.13.7 LA CROSSE COMMERCIAL HISTORIC DISTRICT (VA)

The Project Team met with representatives of the Town of La Crosse, VA, and members of the public to discuss the Project on July 22, 2003; December 10, 2004; January 30, 2006; May 10, 2006; and September 18, 2006. At these meetings, the proposed Project designs were presented for comment. Impacts to the historic district were considered in the evaluation of the designs.

5.13.8 HENDERSON HISTORIC DISTRICT AND PROPOSED EXTENSION AND SOUTH HENDERSON INDUSTRIAL HISTORIC DISTRICT (NC)

Members of the Project Team met with representatives of the Town of Henderson, NC, and members of the public to discuss the Project on June 24, 2003; February 14, 2006; and September 20, 2007. At these meetings, the proposed Project designs were presented for comment. Impacts to the historic district were considered in the evaluation of the designs.

Letters were sent to all property owners located within the Henderson Historic District and South Henderson Industrial Historic District in August 2009 inviting them to participate in the Richmond to Raleigh Project Section 106 process. A meeting to discuss the impact of the Project on the districts and potential minimization and mitigation measures was held on March 10, 2010, with representation from eight property owners within the districts.

5.13.9 FRANKLINTON HISTORIC DISTRICT (NC)

The Project Team met with representatives of the Town of Franklinton, NC, and members of the public to discuss the Project on June 26, 2003, and May 9, 2008. At these meetings, the proposed Project designs were presented for comment. Impacts to the historic district were considered in the evaluation of the designs.

Letters were sent to all property owners located within the Franklinton Historic District in August 2009 inviting them to participate in the Richmond to Raleigh Project Section 106 process. A meeting to discuss the impact of the Project on the district and potential minimization and mitigation measures was held on December 19, 2011, with representation from the Town of Franklinton, Capital Area Metropolitan Planning Organization, and NC-HPO.

5.13.10 GULF PETROLEUM PRODUCTS WAREHOUSE (NC)

The Project Team sent a certified letter to the owner of the Gulf Petroleum Products on July 29, 2013, explaining the impact of the Preferred Alternative on his property and inviting him to participate in the development in the Section 106 MOA. To date, no response has been received.

5.13.11 RALEIGH AND GASTON RAILROAD CORRIDOR (NC)

The Project Team met with representatives of CSX Transportation on January 31, 2013, to discuss the impact of the Project on the Seaboard Air Line Railroad corridor and Raleigh and Gaston Railroad corridor, which are currently owned by CSX. In addition, the Project Team invited CSX to participate in the Section 106 process as a consulting party. On March 8, 2013, CSX confirmed their status as a consulting party.

5.13.12 CONSULTING PARTIES

Section 106 of the NHPA encourages early coordination with groups or individuals who have a demonstrated interested in historic properties that may be affected by a proposed Project. These groups or individuals, known as Section 106 consulting parties, have the opportunity to comment on the identification and evaluation of historic resources, as well as provide their views on effects and proposed strategies to avoid, minimize, or mitigate adverse effects. The following entities were invited to participate as consulting parties under the Section 106 process for the Project (* indicates acceptance of invitation):

- Advisory Council on Historic Preservation*
- Alliance to Conserve Old Richmond Neighborhoods
- American Battlefield Protection Program
- Atlantic Coast Line & Seaboard Air Line Railroad Historical Society

- Battersea, Inc.*
- Brunswick County Historical Society (VA)
- Catawba Indian Tribe
- Central Virginia Battlefields Trust
- Chesterfield Historical Society (VA)*
- Civil War Preservation Trust
- CSX Transportation*
- Dinwiddie County Historical Society (VA)
- Historic Richmond Foundation (VA)*
- Historic Petersburg Foundation (VA)
- Mecklenburg Historical Society (VA)
- National Park Service – Petersburg National Battlefield*
- National Park Service – Richmond National Battlefield*
- Preservation North Carolina*
- Raleigh Historic Districts Commission (NC)*
- Southside Virginia Genealogical Society
- Virginia Council on Indians* (invitation accepted, but organization no longer active).

In addition to these organizations, letters were sent to all property owners located within the Henderson Historic District (NC), Franklinton Historic District (NC), and South Henderson Industrial Historic District (NC) inviting them to participate in the Richmond to Raleigh Project Section 106 process. There are no historic societies within the counties where these districts are located.

5.13.13 US DEPARTMENT OF INTERIOR

The US Department of Interior (DOI) was provided with this revised Section 4(f) Evaluation for review during the fall of 2014.

5.14 FINAL SECTION 4(F) DETERMINATION

The FRA will make its Section 4(f) approval as part of the ROD for this Project.

6 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS STATEMENT ARE SENT

The Final Environmental Impact Statement is being distributed to the following federal, state, regional, and local agencies and other interested parties for their review and comment.

6.1 FEDERAL AGENCIES AND ORGANIZATIONS

6.1.1 US DEPARTMENT OF DEFENSE

- US Army Corps of Engineers – Norfolk District
- US Army Corp of Engineers – Wilmington District

6.1.2 US DEPARTMENT OF THE INTERIOR

- US Fish and Wildlife Service
  - Virginia Ecological Services Field Office
  - Raleigh (NC) Ecological Services Field Office
- National Park Service
  - Petersburg National Battlefield
  - Richmond National Battlefield
  - American Battlefield Protection Program
- Bureau of Indian Affairs
- Office of Environmental Policy & Compliance

6.1.3 US ENVIRONMENTAL PROTECTION AGENCY

- Region 4 NEPA Program Office
- Region 3 NEPA Program Office

6.1.4 US NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

- National Marine Fisheries Service- Gloucester, MA
- National Marine Fisheries Service- Beaufort, NC

6.1.5 NATIONAL MARINE FISHERIES SERVICE

6.1.6 US DEPARTMENT OF TRANSPORTATION

- Federal Rail Administration
- Federal Highway Administration
- Federal Transit Administration

6.1.7 US DEPARTMENT OF HOMELAND SECURITY

- US Coast Guard
- Federal Emergency Management Agency
  - Region 4
  - Region 3

6.1.8 US DEPARTMENT OF COMMERCE

- Ecology and Environmental Conservation Office

6.1.9 US DEPARTMENT OF HEALTH AND HUMAN SERVICES

- Region 4
- Region 3

6.1.10 US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

6.1.11 US DEPARTMENT OF AGRICULTURE

6.1.12 COUNCIL ON ENVIRONMENTAL QUALITY

6.1.13 ADVISORY COUNCIL ON HISTORIC PRESERVATION

6.2 STATE AGENCIES

6.2.1 VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, OFFICE OF IMPACT REVIEW

Coordinates review with state agencies through one central location. Distribution list includes:

6.2.1.1 *VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY*

- Office of Environmental Impact Review
- Piedmont Regional Office
- Air Division
- Waste Division
- Division of Water Quality, Office of Wetlands and Stream Protection
- Erosion and Sediment Control
- Virginia Stormwater Management Program
- Chesapeake Bay Program

6.2.1.2 *VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES*

6.2.1.3 *VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION*

- Division of Planning and Recreation Resources
- Division of Natural Heritage Resources

6.2.1.4 *VIRGINIA DEPARTMENT OF FORESTRY*

6.2.1.5 *VIRGINIA DEPARTMENT OF GAME AND INLAND FISHERIES*

6.2.1.6 *VIRGINIA DEPARTMENT OF HEALTH*

6.2.1.7 *VIRGINIA DEPARTMENT OF HISTORIC RESOURCES*

6.2.1.8 *VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION*

6.2.1.9 *VIRGINIA DEPARTMENT OF TRANSPORTATION*

6.2.1.10 *VIRGINIA MARINE RESOURCES COMMISSION*

6.2.2 VIRGINIA OUTDOORS FOUNDATION

Virginia Outdoors Foundation is a public organization, created by the Virginia General Assembly in 1966 to promote preservation of open-space lands.

6.2.3 NORTH CAROLINA STATE CLEARINGHOUSE

Coordinates review with state agencies through one central location. Distribution list includes:

6.2.3.1 *NC DEPARTMENT OF AGRICULTURE*

6.2.3.2 *NC DEPARTMENT OF CRIME CONTROL AND PUBLIC SAFETY*

- Division of Emergency Management – Floodplains Management Program

6.2.3.3 *NC DEPARTMENT OF CULTURAL RESOURCES*

6.2.3.4 *NC DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES*

- NC Wildlife Resources Commission
- Natural Heritage
- Public Water Supply
- Parks and Recreation

6.3 LOCAL GOVERNMENTS AND ORGANIZATIONS

6.3.1 VIRGINIA LOCAL GOVERNMENTS AND ORGANIZATIONS

6.3.1.1 *CHESTERFIELD COUNTY*

6.3.1.2 *DINWIDDIE COUNTY*

6.3.1.3 *BRUNSWICK COUNTY*

6.3.1.4 *MECKLENBURG COUNTY*

6.3.1.5 *CITY OF RICHMOND*

6.3.1.6 *CITY OF COLONIAL HEIGHTS*

6.3.1.7 *CITY OF PETERSBURG*

6.3.1.8 *TOWN OF MCKENNEY*

6.3.1.9 *TOWN OF ALBERTA*

6.3.1.10 *TOWN OF SOUTH HILL*

6.3.1.11 *TOWN OF LA CROSSE*

6.3.1.12 *RICHMOND REGIONAL PLANNING DISTRICT COMMISSION*

6.3.1.13 *RICHMOND REGIONAL METROPOLITAN PLANNING ORGANIZATION*

6.3.1.14 *TRI-CITIES METROPOLITAN PLANNING ORGANIZATION*

6.3.1.15 *CRATER PLANNING DISTRICT COMMISSION*

6.3.1.16 *SOUTHSIDE PLANNING DISTRICT COMMISSION*

6.3.1.17 *HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION*

6.3.1.18 *HAMPTON ROADS PLANNING DISTRICT COMMISSION*

6.3.2 NORTH CAROLINA LOCAL GOVERNMENTS AND ORGANIZATIONS

6.3.2.1 *WARREN COUNTY*

6.3.2.2 *VANCE COUNTY*

6.3.2.3 *FRANKLIN COUNTY*

6.3.2.4 *WAKE COUNTY*

6.3.2.5 *TOWN OF NORLINA*

6.3.2.6 *TOWN OF MIDDLEBURG*

6.3.2.7 *CITY OF HENDERSON*

6.3.2.8 *TOWN OF KITTRELL*

6.3.2.9 *TOWN OF FRANKLINTON*

6.3.2.10 *TOWN OF YOUNGSVILLE*

6.3.2.11 *TOWN OF WAKE FOREST*

6.3.2.12 *CITY OF RALEIGH*

6.3.2.13 *CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION*

6.3.2.14 *KERR-TAR COUNCIL OF GOVERNMENTS (REGION K)*

6.3.2.15 *TRIANGLE J COUNCIL OF GOVERNMENTS*

6.3.3 OTHER

6.3.3.1 *TRIANGLE TRANSIT*

6.3.3.2 *AMTRAK*

6.3.3.3 *CSX TRANSPORTATION*

6.3.3.4 *NORFOLK SOUTHERN RAILROAD*

6.3.3.5 *NORTH CAROLINA RAILROAD*

6.4 DOCUMENT DISTRIBUTION LOCATION LIST

The Final Environmental Impact Statement (FEIS) is being made available to the public and other interested parties for their review and comment at 12 locations. Document viewing locations and addresses are listed below.

6.4.1 RICHMOND REGIONAL PLANNING DISTRICT COMMISSION

9211 Forest Hill Avenue, Suite 200

Richmond, VA 23235

(804) 323-2033

6.4.2 RICHMOND MAIN PUBLIC LIBRARY

101 East Franklin Street

Richmond, VA 23219

(804) 646-7223

6.4.3 CHESTERFIELD COUNTY CENTRAL LIBRARY

9501 Lori Road

Chesterfield, VA 23832-6631

(804) 748-1774

6.4.4 COLONIAL HEIGHTS PUBLIC LIBRARY

1000 Yacht Basin Drive

Colonial Heights, VA 23834

(804)-520-9384

6.4.5 CRATER PLANNING DISTRICT COMMISSION

1964 Wakefield Street

Petersburg, VA 23805

(804) 861-1666

6.4.6 PETERSBURG CENTRAL PUBLIC LIBRARY

137 S. Sycamore St.

Petersburg, VA 23803

(804) 733-2387

6.4.7 DINWIDDIE COUNTY PLANNING DEPARTMENT

14016 Boydton Plank Road

Dinwiddie, VA 23841

(804) 469-4500

6.4.8 SOUTHSIDE PLANNING DISTRICT COMMISSION

200 South Mecklenburg Avenue

South Hill, VA 23970

(434) 447-7101

6.4.9 HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION

The Regional Building

723 Woodlake Drive

Chesapeake, VA 23320

6.4.10 WARREN COUNTY PLANNING/ZONING AND CODE ENFORCEMENT DEPARTMENT

542 W. Ridgeway Street

Warrenton, NC 27589

(252) 257-7027

6.4.11 NCDOT DIVISION 5, DISTRICT 3 OFFICE (FRANKLIN, VANCE, WARREN COUNTIES)

321 Gillburg Rd.

Henderson, NC 27537

(252) 492-0111

6.4.12 FRANKLINTON BRANCH PUBLIC LIBRARY (FRANKLIN COUNTY)

9 West Mason Street

Franklinton, NC 27563

(919) 494-2736

6.4.13 NCDOT DIVISION 5, DISTRICT 1 OFFICE (WAKE COUNTY)

4009 District Drive

Raleigh, NC 27606

(919) 733-3213

7 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

Agency and public involvement are core elements in the NEPA process, and have always been a top priority for the SEHSR project team. Because of the length and associated complexity of this project, regular coordination with resource agencies, local, state, and federal officials, and the public has proven to be vital to the project.

The Federal Railroad Administration (FRA) has oversight of passenger and freight rail throughout the country and is the lead federal transportation agency for this project. Because of the extensive roadway work associated with this project, FRA invited the Federal Highway Administration (FHWA) to participate as a cooperating agency. The US Coast Guard, US Army Corps of Engineers (USACE), US Fish & Wildlife Service (USFWS), and US Environmental Protection Agency were also invited to participate as formal cooperating agencies. Input on the FEIS was solicited from all cooperating agencies in September and October 2014, prior to publication of the FEIS.

The North Carolina Department of Transportation (NCDOT) and the Virginia Department of Rail and Public Transportation (DRPT) serve as the lead state transportation agencies.

7.1 Tier II Agency Coordination

As stated in Section 7.1 of the DEIS, FRA issued a Notice of Intent (NOI) for filing a Tier II DEIS on May 22, 2003 (Volume 68, Number 99). On February 3, 2006, FRA issued a NOI for extending the northern terminus of the project from Collier Rail Yard in Petersburg, VA to Main Street Station in Richmond, VA (Volume 71, Number 23).

On June 7, 2010, FRA issued a Notice of Availability (NOA) for the Tier II DEIS and public hearings for the Southeast High Speed Rail, Richmond, VA, to Raleigh, NC Project (Volume 75, Number 108; Appendix A). In this notice, FRA established a comment period from May 28, 2010, through August 30, 2010, and invited all interested agencies and the public to comment on the DEIS. The NOA provided information on the dates and locations for the public hearings, information on availability of the DEIS for review, who to contact with questions, and how to provide comments.

In response to a high degree of interest in the project, as exhibited by robust attendance at the public hearings and a large number of comments submitted early in the comment period, FRA, NCDOT, and DRPT decided to extend the DEIS comment period. On August 19, 2010, FRA issued a notice of extension of comment period for the Tier II DEIS for the Southeast High Speed Rail, Richmond, VA to Raleigh, NC Project (Volume 75, Number 160; Appendix A). This notice extended the comment period to September 10, 2010.

7.1.1 AGENCY SCOPING MEETINGS

Section 7.1.1 of the DEIS described the scoping meetings that were held in 2003 at the beginning of the Tier II study. The following agencies were in attendance or participated in the scoping process by correspondence:

- Alberta Planning Commission
- City of Henderson
- The Chamber of Commerce of Warren County
- County of Dinwiddie
- Crater Planning District Commission
- Federal Railroad Administration
- Federal Highway Administration
- Henderson-Vance Chamber of Commerce
- Henderson-Vance Downtown Development Commission

- Kerr-Tar Rural Planning Organization
- NC Department of Transportation
- NC Railroad Company
- NC Department of Environment and Natural Resources
- NC Wildlife Resources Commission
- Norlina Community Development Association
- Southside Planning District Commission
- Town of La Crosse
- Town of McKinney
- Town of Wake Forest
- Triangle Transit Authority
- US Army Corps of Engineers
- US Coast Guard
- US Environmental Protection Agency
- US Fish and Wildlife Service
- Vance County Economic Development Commission
- VA Department of Conservation and Recreation
- VA Department of Environmental Quality
- VA Department of Historic Resources
- VA Department of Mines, Minerals, & Energy
- VA Department of Rail and Public Transportation
- VA Department of Transportation
- Warren County Planning Department.

7.1.2 ADVISORY COMMITTEE MEETINGS

Section 7.1.2 of the DEIS provided information on the Advisory Committee, which was established to help guide the project through the regulatory approval and planning processes. In addition to the agencies listed above, the following organizations and agencies have participated in the work of the Advisory Committee:

- Amtrak
- Brunswick County Board of Supervisors
- Mecklenburg County Board of Supervisors
- CSX Transportation
- Capital Area Metropolitan Planning Organization (CAMPO)
- Chesterfield County
- City of Colonial Heights
- City of Petersburg
- City of Raleigh
- City of Richmond
- Commonwealth Transportation Board
- Dinwiddie County Board of Supervisors
- Federal Transit Administration
- Franklin County Commissioners
- Kerr-Tar Regional Council of Governments (COG) (Region K)
- NC Department of Cultural Resources
- NC Board of Transportation
- Norfolk Southern
- Northern VA Transportation Commission
- Sprint – LTD
- Town of Kittrell

- Town of Franklinton
- Town of Youngsville
- Town of Middleburg
- Town of Norlina
- Triangle J COG
- VA Department of Agriculture & Consumer Services
- VA Department of Forestry
- VA Department of Health, Office of Drinking Water
- VA Department of Game & Inland Fisheries
- VA Outdoors Foundation
- Wake County Commissioners
- Warren County Commissioners.

In May 2010, the local, state, and federal government entities listed above were provided a copy of the DEIS, and invited to attend the public hearings and provide comments. Many of these agencies did provide comments. Following the public hearings, coordination with these entities shifted in focus to responding to the comments submitted. Refer to Chapter 8 for a summary of agency comments and responses.

7.1.3 AGENCY-SPECIFIC COORDINATION

The SEHSR team is dedicated to a proactive approach in dealing with regulatory agencies. As potential areas of concern were identified, the SEHSR team conducted prompt coordination with the appropriate agencies. These coordination activities are summarized below.

7.1.3.1 *US FISH AND WILDLIFE SERVICE (USFWS)*

In 2003, a population of the federally protected Michaux's sumac (*Rhus michauxii*) was found in the project study area in Brunswick County, VA. As detailed in Section 4.10, the SESHR project team entered into informal consultations under Section 7 of the Endangered Species Act (ESA) with USFWS to minimize and/or mitigate for potential impacts to this endangered species. A meeting was held with USFWS on August 12, 2004 as part of the informal consultation, and a biological assessment (BA) was prepared. The BA was submitted to USFWS on September 29, 2004. On November 8, 2004, USFWS has issued a "not likely to adversely effect" determination for this population and therefore formal consultation was not required. A subsequent field meeting with representatives from USFWS and the project team was held on May 19th, 2010 to assess the condition of the previously identified sumac population. The population was re-delineated and the project team determined that the population had migrated further into the inactive railroad corridor. This updated delineation information was used in the selection of the preferred alternative for Section D (see Chapter 2 for detailed discussion). Correspondence and meeting minutes for coordination with USFWS are included in Appendix A.

After the project was extended to Richmond, additional protected species surveys were conducted to evaluate resources north of Collier Yard. In September 14, 2005, a pair of bald eagles was observed along the Appomattox River, just west of the City of Petersburg. On November 21, 2005, the SEHSR rail team began coordination with the VA Department of Game and Inland Fisheries to obtain additional information about bald eagle activity in the project study area. In February 2006, after leaf out, additional surveys were conducted to determine the location of bald eagle nests in the project area. On March 30, 2006 the USFWS was informed of the issue. Coordination with USFWS on April 17, 2006, resulted in an informal effects determination of "not likely to adversely effect" with the condition that the project is located more than 1,250 feet away from the nest.

Scheduling of a detailed re-survey for the Roanoke Logperch will be conducted prior to project construction. The Information, Planning, and Conservation (IPaC) decision support system will be completed prior to Section 404 permitting. Both of these activities will be coordinated in the future with USFWS.

7.1.3.2 *US ARMY CORPS OF ENGINEERS (USACE)*

Several comments on the DEIS asked why the SEHSR project has not followed the Merger Process in North Carolina. Merger is a process to streamline the project development and permitting processes, agreed to by the US Army Corps of Engineers (ACE), North Carolina Department of Natural Resources (NCDENR), FHWA, and NCDOT, which provides a forum for appropriate agency representatives to discuss and reach consensus on ways to facilitate meeting the regulatory requirements of Section 404 of the Clean Water Act during the NEPA decision-making phase of transportation projects. At the outset of the SEHSR project, NCDOT and DRPT decided that a single, consistent process in both states should be used to obtain environmental regulatory agency input on the SEHSR project, given that Virginia does not have a Merger counterpart, and that FRA is the lead federal agency for the project. The project team therefore coordinated with USACE and both state water quality agencies in selection of the Least Environmentally Damaging Practicable Alternative (LEDPA) for each section of the project.

Refer to Section 7.1.2.2 of the DEIS for a description of the field delineations of waters of the United States, including streams and wetlands along the study corridor, that were conducted during development of alternatives presented in the DEIS. Section 7.1.2.2 of the DEIS section also provides a description of the verification and written concurrence that was provided by USACE.

In Virginia, the project team met on April 12, 2011, with USACE – Norfolk District, USFS, the Virginia Department of Environmental Quality (VDEQ), and the Virginia Department of Historic Resources to discuss new alternatives in Section D and Section G in Brunswick County, VA, and confirm the preferred alternatives in those sections; discuss recommendations for preferred alternatives in Sections B and L and confirm the preferred alternatives; and confirm the LEDPA for the remaining sections in Virginia. The proposed schedule for USACE field verifications was also discussed. A summary of this meeting is provided in Appendix A.

Field assessments for streams and wetlands in areas of non-common alignment for the preferred alternative in Virginia were completed in October 2012. Field assessments of the Keelers Mill Road area (DeWitt, VA, area), where revised designs fell outside the original study corridor, also took place in October 2012.

In April 2013, the project team conducted field visits with USACE- Norfolk District representatives to verify jurisdictional stream and wetland delineation in Virginia for areas of non-common alignment and the Keelers Mill Road area referenced above. During final design the project team will prepare and submit the appropriate permit application based on the field work from 2013, and conduct updated field review if required.

In July 2011, the project team completed a map and field review with the USACE-Wilmington District representative for jurisdictional wetland locations in North Carolina delineated outside the original study area and locations with significant changes since the 2004 determination. During final design the project team will prepare and submit the appropriate permit application based on the field work from 2013, and conduct updated field review if required.

On March 26, 2012, the project team contacted USACE- Wilmington District (and the NC Division of Water Quality) to provide information on a change to the recommended preferred alternative in Section U, in Wake Forest, NC, which resulted in selection of an alternative with greater stream and wetland impacts. Refer to Chapter 2 for discussion related to selection of the Preferred Alternative, and Section 4.1 for a discussion on the stream and wetland impacts.

7.1.3.3 *STATE HISTORIC PRESERVATION OFFICES*

The SEHSR project team coordinated with the Virginia Department of Historic Resources (VDHR) and the North Carolina Department of Cultural Resources State Historic Preservation office (HPO) to determine impacts to resources determined eligible for inclusion in the National Register of Historic Places (NRHP) under Section 106 of the National Historic Preservation Act. Section 3.12 describes the cultural resource investigations and eligibility determinations by VDHR and HPO. Section 4.12 describes the effects of the project on resources protected under Section 106. Historic resource correspondence is included in Appendix L.

The project team met with VDHR and HPO several times during the development of project alternatives for the DEIS to discuss impacts to historic resources. Measures to minimize and mitigate for impacts, as well as potential avoidance measures, were also discussed. Determination of effects meetings were held with VDHR on April 15, 2009, August 7, 2009, and November 20, 2009. Similar determination of effects meetings with HPO were held on August 20, 2008, September 2, 2009, and September 29, 2009.

Subsequent to publication of the DEIS in 2010, the SEHSR project team held additional meetings with VHDR and HPO to obtain updated determinations of effect as a result of design changes and to coordinate the determination of effect for resources not previously identified by the project.

In Virginia, the SEHSR project team corresponded with the HPO in a letter dated June 30, 2014, recommending effects for the Preferred Alternative for the Project. The HPO concurred in a written response dated July 29, 2014.

In North Carolina, the SEHSR project team held the following meetings with HPO after the publication of the DEIS:

- December 22, 2010 – to discuss comments received from municipalities and local businesses regarding the designs shown in the DEIS for three historic districts (Wake Forest Historic District, South Henderson Industrial Historic District, and Youngsville Historic District); to present possible design alternatives to address these issues; and to discuss possible changes in determinations of effect on the historic districts based on the possible design changes
- March 8, 2011 – to obtain effects determinations for the Wake Forest Historic District (based on updated designs) and Oakforest (resource in Wake Forest area previously omitted from evaluation), and to discuss comments from Capital Area Preservation on the Hartsfield House in Wake Forest
- July 25, 2011 – to obtain effects determinations for the NC5 alternative in downtown Raleigh and to obtain updated effects determinations for the Raleigh Electric Company Power House and the Joel Lane House based on design changes
- January 20, 2012 – to present new design concepts for a grade separation of Mason Street in the Franklinton Historic District; to obtain effects determinations for the new concepts; and to determine which concept to move forward with in the FEIS

- June 17, 2013 – to obtain effects for properties not previously identified in the DEIS and updated effects for resources where design changes have been made.

7.1.4 LOCAL OFFICIAL COORDINATION

Section 7.1.4 of the DEIS provided information about meetings that were held to solicit input at the regional and community level and used to develop the project designs. Representatives from local governments within the SESHR study area were included in the SEHSR Advisory Committee and their cooperation was vital in the successful completion of the SEHSR DEIS. To maintain safety and speed requirements for effective high speed transport, many roads within the project study area were realigned, closed, or grade separated (bridged). Input from local mayors, planners, MPOs, water and sewer officials, EMS managers, and other officials was vital to ensure that the SEHSR project did not compromise community development plans, cut off local neighborhoods, or add an undue burden on users of transportation facilities in the project study area.

Coordination with local officials subsequent to the DEIS was primarily focused on responding to comments on the DEIS. In many cases, these comments led to design revisions as described in Chapter 2. In some instances, the comments resulted in a number of re-designs, and additional studies, requiring a greater level of coordination. Refer to Table 7-1 for a list of coordination meetings with local governments that were held as part of the development of designs presented in this FEIS.

Table 7-1
Meetings with Local Governments

Entity	Date	Attendees	Purpose
Chesterfield County, VA	8/9/2011	County staff, Virginia Department of Transportation (VDOT) staff, project team	Update County staff on the status of the overall project, present additional traffic analysis conducted for the Centralia Road area, discuss designs for Centralia Road
Chesterfield County, VA	1/31/2012	County Staff, Board of Supervisors, project team	Update County staff and Board of Supervisors on the project, discuss traffic analysis for Centralia Road area and review road designs
Chesterfield County, VA	3/21/2012	County staff, project team	Discussion of traffic and road designs in Chesterfield County

Table 7-1
Meetings with Local Governments

Entity	Date	Attendees	Purpose
Chesterfield County, VA	02/25/2013	DRPT staff, County staff	Discussion of traffic and road designs in Chesterfield County to be shown at 5/26/2013 Project Update Meeting
Chesterfield County, VA	02/27/2013	DRPT staff, County Board of Supervisors	Discussion of traffic and road designs in Chesterfield County shown at 5/26/2013 Project Update Meeting
City of Henderson, NC	11/17/2010	Mayor, City staff, project team	Discuss concerns expressed by Resolution 10-74 & comments on DEIS
City of Henderson, NC	4/25/2011	City Council, City staff, project team	Update City Council on design revisions made in response to comments on DEIS
City of Henderson, NC	3/15/2012	City staff, project team	Provide review of new designs for Andrews Ave area
City of Henderson, NC	5/14/2012	City Council, Mayor, City staff, project team	Update City Council on additional design revisions made in response to comments on DEIS that will be shown at the September 2012 Project Update Meeting
City of Raleigh, NC	2/22/2011	City staff, project team	Discuss City comments on DEIS and discuss design changes
Town of Franklinton, NC	9/7/2010	Board of Commissioners, Mayor, Town staff, NCDOT Rail Director, project team	Presentation to Board of Commissioners and respond to questions about the project

Table 7-1
Meetings with Local Governments

Entity	Date	Attendees	Purpose
Franklin County & Town of Franklinton, NC	1/20/2011	Franklin County Comprehensive Transportation Plan (CTP) Advisory Subcommittee, NCDOT, project team	Discuss local concerns related to proposed closure of Mason Street at-grade crossing, other connectivity issues, and coordination between the CTP and the SEHSR project
Town of Franklinton, NC	12/19/2011	Mayor, Town staff, NCDOT Division 5 staff, CAMPO staff, North Carolina State Historic Preservation Office (NC-HPO) staff, project team	Discuss design changes developed in response to comments on DEIS. Also provide additional background on Section 106 protections, in terms of how they affect design considerations, and a Question/Answer period provided by NC-HPO staff
Town of La Crosse, VA	5/14/2012	Town Council, Mayor, Town staff, Citizen, VDOT staff, project team	Review of history of coordination with Town which led to DEIS designs, review comments on DEIS, discuss recent comments from Council Member
Town of Wake Forest, NC	6/18/2012	Town staff, NC-HPO, NCDOT, project team	Discuss comments received on Elm Ave grade separation presented at Public Update Meeting, Revisit design & recommend concept to carry forward

Table 7-1
Meetings with Local Governments

Entity	Date	Attendees	Purpose
Warren County, NC Ridgway Volunteer Fire Department (VFD)	4/18/2012	County Fire Marshall, County EMS, Ridgeway VFD Fire Chief, project team	Provide update on project, discuss potential impacts to fire department operations from SEHSR project and obtain additional information related to County Fire and EMS services
Warren County, NC	12/18/2012	County staff, County Manager, County Fire Marshall, Kerr-Tar COG/RPO, project team	Discuss potential alternative design for grade separation in Ridgeway, NC, determine which design (DEIS design or new) is preferred by the County
City of Richmond, VA	11/10/2014 & 12/1/2014 (by phone)	City staff, Virginia Department of Transportation (VDOT) staff, project team	Discuss proposed revisions to Maury Street grade separation

7.2 Tier II Public Involvement

Section 7.2 of the DEIS contained a description of the public involvement outreach that occurred prior to the June 2010 publication of the DEIS. What follows in this section is a description of the actions and efforts that took place since then, including the period of time when the DEIS public hearings were held.

7.2.1 MAILING LIST

A database containing contact information for state and federal environmental regulatory and resource agencies, elected officials, civic and business groups, local government agencies, and interested persons was developed at the beginning of the Tier I environmental study and updated throughout the study process. Following publication of the DEIS, the database has been maintained and updated primarily for email addresses, and used for electronic distribution of project updates and notification of public meetings. Interested individuals sign up through the project website and at public meetings. At the time of the FEIS preparation, the list contained approximately 5,000 active email addresses.

7.2.2 EMAIL UPDATES

An announcement regarding the release of the DEIS was distributed via email on June 3, 2010. The announcement included information about the public hearings, how to obtain additional information, and how to provide comments. Between August 2010 and the 2013 preparation of the FEIS, five project updates/public meeting announcements have been provided via email using the database described above. Copies of the email updates are included in Appendix B.

7.2.3 SOCIAL MEDIA

In advance of the 2010 public hearings, the project began using Twitter as an additional means for reaching out to the public. Under the handle @SEHSR, Tweets have announced the availability of the DEIS, provided reminders for public hearings and other meetings, provided updates on the project status, and relayed interesting high speed rail related news and facts. At the time of the FEIS preparation there were more than 500 followers.

7.2.4 PROJECT WEBSITE

The project website www.sehsr.org provides current information on the project including links to provide comments via email, as well as to sign up for the project mailing list. The site organizes other information on these tabs: Project History; Reports & Publications; News Releases; FAQs; Contacts/Links. The DRPT website http://www.drpt.virginia.gov/ and the NCDOT Rail Division website http://bytrain.org also provide information on the project and a link to the project website.

The DEIS was made available on the SEHSR website on June 3, 2010, in conjunction with a press release announcing publication of the document. Information about the eight public hearings was posted, including downloadable files for the hearing handout materials. A link to a download page was provided for the hearing maps for each alternative for the 26 project sections. The comment form was available for individuals to download and return by mail, and a link to an internet version of the comment form was also provided.

A link to information about the public hearings in Spanish language was also posted on the website (Section 7.2.7 provides additional discussion regarding Limited English Proficiency).

Following publication of the DEIS and completion of the public hearings, the website has continued to be used for project updates, press releases and information about the five Project Update Meetings that were held between July 2011 and February 2013 (refer to Section 7.2.9 below, for more information about the Project Update Meetings).

A Draft Recommendation Report was made available on the website February 2012 along with information on how to provide comments. The final report submitted to FRA was made available on the website May 16, 2012. The report identified the recommended preferred rail alternative for each of the 26 sections of the project.

7.2.5 PRESS RELEASES

Press releases have continued to be used as a public outreach tool. NCDOT and DRPT issued a press release on June 3, 2010, announcing the completion of the DEIS and ways to view and comment on the document, along with information about the eight public hearings scheduled throughout the corridor.

Press releases were issued for each of the five public update meetings that were held between July 2011 and February 2013 (refer to Section 7.2.9 for more information about the Project Update Meetings).

A press release was issued February 9, 2012, announcing completion of the Draft Recommendation Report identifying recommended preferred rail alternatives for each of the 26 project sections. A press release was also issued on May 16, 2012, announcing that the final report had been submitted to FRA and was available on the project website.

All project press releases are also located on the project website.

7.2.6 PROJECT HOTLINE

The toll-free line (1-877-749-7245 or 1-877-749-RAIL) has been in place for more than 12 years. In the period of time between publication of the DEIS and the publication of the FEIS, more than 150 people called the hotline with questions about the project. Topics ranged from questions about the projected project timeline, the location of public hearings and other meetings, to questions about potential impacts to specific properties. All phone calls were returned and all questions from residents were answered satisfactorily. Maps and/or other printed materials were also mailed to individuals who requested them.

7.2.7 LIMITED ENGLISH PROFICIENCY

Wake County was the only county in the project area to meet the Limited English Proficiency threshold triggering the need for Spanish translation assistance with the project's public involvement. Thus, all public meetings and hearings in Wake County (including Raleigh and Wake Forest), had translators available. In addition, Spanish translations of all the handouts and display boards were available at the Wake County hearings and meetings, and all property owner notification letters for the county were mailed with both English and Spanish versions. Also, there was a link on the project website that takes the reader to info in Spanish about the project

7.2.8 DEIS PUBLIC HEARINGS

Following publication of the DEIS, FRA, DRPT, and NCDOT hosted eight public hearings (four in Virginia and four in North Carolina). Public hearing dates, locations, and approximate attendance at each of the meetings are shown in Table 7-2. The hearings allowed members of the public to view the proposed project designs, ask questions, and provide comments (either orally or via a comment form). Each hearing consisted of a 2-hour open-house meeting, followed by a presentation and time for citizens to provide formal comments.

In addition to the hearing maps showing the alternative designs, display boards provided information on: how to review the hearing maps and provide comments; information on how noise and vibration are evaluated; next steps in the study process; and reasons for bridging highway/railroad intersections. Printed handouts provided at the meeting consisted of:

- Schematic maps with tables that compared impacts and operational and physical characteristics for each alternative by project section;
- Hearing packet containing a project summary, history of the SEHSR corridor, study corridor map, frequently asked questions, information on right-of-way procedures and relocation assistance for each of the two states, information on how to provide comments, and a comment sheet.
- Map request forms that meeting attendees could complete at the hearing and submit to a “Print Station” to receive a section of the hearing maps, printed to scale, on 8.5” x 11” paper, displaying the alternative alignments in the location they requested.

Downloadable PDF versions of all the materials distributed during the public hearings were made available on the project website.

Over 2,000 people attended the hearings, which were publicized in the Federal Register, local newspapers, on the project website, through Tweets, email updates, and with a direct mailing to owners of property located within the project study area. More than 1,850 individuals and 50 agencies and organizations submitted comments to the project team. Many of the comments were several pages in length, and most covered multiple topics (refer to Chapter 8, Responses to Comments). As discussed earlier in this chapter, the high level of interest shown at the public hearings, and the large number of comments submitted, led FRA, NCDOT, and DRPT to extend the comment period from August 30, 2010 to September 10, 2010. The extension of the comment period was publicized in the Federal Register, on the project website, and through a press release.

Table 7-2
DEIS Public Hearings

Location	Date	Area Served	Attendance
Northside Elementary School, Norlina, NC	July 13, 2010	Warren County, NC	250
Southside VA Community College, Alberta, VA	July 15, 2010	Brunswick and Mecklenburg Counties, VA	183
Virginia DMV Cafeteria, Richmond, VA	July 20, 2010	City of Richmond, VA	193
Union Station, Petersburg, VA	July 21, 2010	City of Petersburg, VA	255
Sunnyside Elementary School, McKenney, VA	July 22, 2010	Dinwiddie County, VA	198
Raleigh Convention Center, Raleigh, NC	July 26, 2010	Wake County, NC	470
Aycock Elementary School, Henderson, NC	July 27, 2010	Vance County, NC	302
Franklinton High School, Franklinton, NC	July 29, 2010	Franklin County, NC	373

7.2.9 PROJECT UPDATE MEETINGS

As described in Chapter 2, comments on the DEIS led the project team to develop new rail alternatives in three project sections: Section D and Section G, both in Brunswick County, VA, and Section V in downtown Raleigh, NC. Project Update Meetings were held in mid-2011 to present the new rail alternatives to the public and obtain comments prior to selection of the preferred rail alternatives.

The project team also made numerous revisions to road work throughout the corridor based on comments on the DEIS, particularly in the areas of Chesterfield County, VA, and Henderson, Wake Forest and north Raleigh, NC. Project Update Meetings were held for these areas after the alternative designs had been developed to present the new designs and obtain comments.

The meetings followed an open-house format, which provided opportunity for citizens to view public hearing-style maps and ask questions one-on-one with members of the project team. In addition to project staff, VDOT or NCDOT Right of Way staff was on hand to answer questions about Right of Way and Relocation procedures. Similar to what was made available at the DEIS public hearings, maps were printed by request, showing the project designs in relation to individual properties. Project Update Meetings were announced using a variety of media: press releases, advertisements in local papers, announcements on the project website, through Twitter, email, and through letters to property owners. Interested citizens were encouraged to provide comments at the meetings or by mail, or on the project website. The meeting dates, locations, and approximate attendance at each of the Project Update Meetings are shown in Table 7-3. Summaries of the meetings and comments are found in Appendix B.

Throughout the history of the project, the use of direct mailings to property owners has been one of the most useful and reliable methods for communicating with citizens potentially impacted by the project. Announcements of Public Hearings and Project Update Meetings were sent via First Class Mail through the United States Postal Service. Mailing addresses were compiled using county tax parcel data.

On January 22, 2013, letters were mailed to 1,588 owners of property located in the study corridor in Chesterfield County, VA, to invite them to attend the Project Update Meeting on February 26, 2013. Twenty one days after the meeting, calls made to the project hotline suggested that there had been a problem with delivery of some of these direct-mail letters. Between March 18, 2013, and March 21, 2013, 17 people called the project hotline to complain that they had just received the letters. DRPT staff called back to speak with each individual, to offer an apology and provide information on the project. Additional follow-up phone calls were made as needed, in an attempt to ensure that direct contact was made with the individual who placed the hotline call. Meeting materials and maps were mailed or emailed to those who requested them.

It was impossible to determine the number of letters that were delayed in delivery; however many of the people who attended the meeting mentioned having received the property owner letter; indeed many had the letters in hand at the meeting. The project team contacted the US Postal Service for help in determining the extent of letters delayed in delivery, and an explanation. In addition, the project team lodged a complaint with the Postal Service, which promised an investigation. At the time of preparation of the FEIS, the US Postal Service had not been able to provide any additional information or explanation for the delay.

Table 7-3
Post DEIS Project Update Meetings

Location	Date	Area Served	Attendance
Southside VA Community College, Alberta, VA	July 14, 2011	Mecklenburg County, VA	60
Raleigh Convention Center, Raleigh, NC	Sept 27, 2011	Downtown Raleigh, NC	212
North Raleigh Hilton, Raleigh, NC	May 15, 2012	Wake Forest and north Raleigh, NC	166
Aycock Recreation Center, Henderson, NC	Sept 11, 2012	Henderson, NC	110
Public Safety Training Facility, Chesterfield County, VA	Feb 26, 2013	Chesterfield County, VA	146

7.2.10 SMALL GROUP INFORMATIONAL MEETINGS

One small group informational meeting was held subsequent to the DEIS, to address comments regarding impacts to a family cemetery from the proposed realignment of Keelers Mill Road in Dewitt, VA. The project team studied alternatives and developed a conceptual design that would avoid impacting the cemetery, yet still serve the local transportation needs. The project team scheduled a meeting with family members and others living near the cemetery to discuss the new conceptual design. On August 15, 2012, at the Virginia Department of Transportation (VDOT) District Office in Colonial Heights, VA, the project team and VDOT representatives met with 12 members of the nearby community to discuss the new concept. Based on the meeting and additional design and environmental work, a revised design was completed that was favorably received and has been incorporated into the project designs (see Chapter 2).

On May 13, 2013 DRPT staff attended a Chesterfield County, VA, Matoaca District citizen's meeting to answer questions about the project.

The project team also met with individual property owners and businesses in instances when the team determined that additional coordination was needed to help address comments that had been provided.

7.3 Section 106 Coordination with Resource Owners

The project team coordinated with numerous individual property owners or officials with jurisdiction over resources protected under Section 106 of the NHPA, with particular focus on resources where the project alternatives would result in an adverse effect. The meetings and correspondence presented below is organized by resource location, north to south through the project corridor.

7.3.1 MEETINGS

Prior to publication of the DEIS, the SEHSR project team met with the following resource owners:

- Williams Bridge Company - May 12, 2009
- Chesterfield County, VA (historic districts and individual resource owners) - April 8, 2009; May 12, 2009
- Petersburg National Battlefield office - May 12, 2009
- Town of La Crosse, VA - July 22, 2003; December 10, 2004; January 30, 2006; May 10, 2006; and September 18, 2006
- Town of Henderson, NC - June 24, 2003; February 14, 2006; and September 20, 2007
- Town of Franklinton, NC - June 26, 2003, and May 9, 2008
- City of Raleigh, NC - July 15, 2003; January 13, 2005; September 21, 2005; April 7, 2008; and April 17, 2008; October 20, 2009.

Subsequent to publication of the DEIS, the SEHSR project team met with the following resource owners:

- City of Henderson, NC – On March 10, 2010, the project team met with representatives of the City of Henderson, Kerr Tar Regional Council of Governments, and HPO to provide an introduction to the project and background information on Section 106, describe potential impacts to historic resources in Henderson, and discuss potential mitigation for these impacts. Note that this meeting occurred prior to publication of the DEIS, but was inadvertently not discussed in the DEIS.
- Chapel of the Good Shepherd in Warren County, NC – On July 16, 2010, the project team met with representatives of the Chapel of the Good Shepherd (listed on the NRHP) to describe the project, potential impacts to the church, and possible mitigation for impacts. It should be note that subsequent to this meeting, an alternative was developed that would avoid the adverse effect on the resource.
- Raleigh Electric Company Power House and the Carolina Power and Light (CP&L) Company Car Barn and Automobile Garage in Raleigh, NC – On March 18, 2011, the project team met with the Advisory Council on Historic Preservation (ACHP), HPO, the City of Raleigh, and resource owners to discuss possibilities for a pedestrian crossing on West Jones Street over the railroad in the vicinity of the Raleigh Electric Company Power House and the Carolina Power and Light Company Car Barn and Automobile Garage resources (both of which are listed on the NRHP).

- Town of Franklinton, NC – On January 13, 2011, the project team met with representatives of the Town of Franklinton and HPO to provide clarification and background information on Section 106, the background on the eligibility of the Franklinton Historic District (eligible for the NRHP), and conceptual designs for a grade separation at Mason Street.
- Town of La Crosse, VA – On May 14, 2012, the project team met with Town of La Crosse representatives to review the proposed preliminary designs for the downtown area and discuss design constraints related to La Crosse Hotel (listed on NRHP). Subsequent correspondence led to Town representatives withdrawing request for pedestrian crossing near hotel due to the impacts to the resource.
- CSX Transportation – On January 31, 2013, the SEHSR project team met with representatives from CSX to explain the Section 106 coordination process, review the impacts of the project on the historic S-line corridor, and reiterate the invitation to CSX to participate as a consulting party. Subsequent to the meeting, CSX accepted consulting party status, which is granted to individuals and organizations with a demonstrated interest in a project due to their relationship to the project's effect on historic resources. Consulting parties share their views, offer ideas, and provide input on possible mitigation for adverse effects to historic resources.
- CSX Transportation – On October 17, 2014, the SEHSR project team held a web conference call with representatives from CSX to review the Section 106 coordination process and the impacts of the project on the historic S-line corridor. Subsequently, the project team provided CSX with information on potential mitigation concepts for their review and comment.
- City of Henderson, NC – On December 19, 2014, the project team met with property owners in the Henderson Historic District and South Henderson Industrial Historic District to obtain their input on potential mitigation for impacts to these historic districts..

7.3.2 CORRESPONDENCE

Letters were sent to all property owners located within the following historic districts inviting them to participate in the SEHSR Section 106 process:

- Henderson Historic District and South Henderson Industrial Historic District (NC)
- Franklinton Historic District (NC)
- Roanoke Park Historic District (Raleigh, NC).

7.3.3 CONSULTING PARTIES

The following entities were invited to participate as consulting parties under the Section 106 process for the SEHSR project (* indicates acceptance of invitation):

- Advisory Council on Historic Preservation*
- Alliance to Conserve Old Richmond Neighborhoods
- American Battlefield Protection Program*
- Atlantic Coast Line & Seaboard Air Line Railroad Historical Society
- Battersea, Inc.*
- Brunswick County Historical Society (VA)* (as part of the Southside Virginia Genealogical Society)
- Catawba Indian Tribe
- Central Virginia Battlefields Trust
- Chesterfield Historical Society (VA)*
- Civil War Preservation Trust*
- CSX Transportation*
- Dinwiddie County Historical Society (VA)

- Historic Richmond Foundation (VA)*
- Historic Petersburg Foundation (VA)
- Mecklenburg Historical Society (VA)
- National Park Service – Petersburg National Battlefield*
- National Park Service – Richmond National Battlefield*
- Preservation North Carolina*
- Raleigh Historic Development Commission (NC)*
- Southside Virginia Genealogical Society
- Virginia Council on Indians* (invitation accepted, but organization no longer active).

In addition to these organizations, letters were sent to all property owners located within the Henderson Historic District (NC), Franklinton Historic District (NC), and South Henderson Industrial Historic District (NC) inviting them to participate in the SEHSR Section 106 process. No historic societies were identified within the counties where these districts are located.

8 RESPONSES TO COMMENTS

The public comment period for the Tier II DEIS extended from the date of publication in May 2010 through September 10, 2010. Agencies, organizations, and members of the public supplied comments on the DEIS through letters or emails to NCDOT or DRPT, a project telephone hotline, an internet survey form, or at public hearings (either orally or using a comment form). More than 1,850 individuals and 50 agencies and organizations submitted comments to the project team. Many of the comments were several pages in length, and most covered multiple topics.

Responses are provided for individual agency and local government comments (Section 8.1). Due to the large number of public comments, many of which addressed similar issues or presented similar preferences, the comments have been summarized and responses are provided for these summary comments (Section 8.2).

8.1 AGENCY AND LOCAL GOVERNMENT COMMENTS AND RESPONSES

This section presents the comments on the DEIS submitted by state and Federal environmental and resource agencies and local governments and commissions. Responses are provided to individual statements from within the correspondence for ease of reading.

Federal Agencies

AG44 United States Dept. of Interior, Office of Environmental Policy and Compliance - Willie R. Taylor, Director	
Comment	**Response**
The Department concurs that there is no prudent and feasible alternative to the proposed use of Section 4(f) land, which includes parks, recreational areas, historic architectural sites, battlefields, and archeological sites. We note that the Draft Section 4(f) Evaluation includes additional mitigation measures to be agreed upon with the Virginia and North Carolina State Historic Preservation Officers (SHPOs) and Section 106 Consulting parties, including the National Park Service: specifically, preparation of a Memorandum of Agreement (MOA) and a potential land exchange with Petersburg National Battlefield, as stated in a letter dated March 4, 2009, from the park's Superintendent. We encourage continued consultation with the SHPOs, the National Park Service, and additional Section 106 consulting parties to ensure that all of these mitigation measures be satisfactorily implemented. We also recommend that a signed copy of the MOA be included in the Final Environmental Impact Statement.	Where the Project has been determined to have an adverse effect on historic resources, Section 106 requires that efforts be undertaken to avoid, minimize, or mitigate the adverse effects. As part of this process, consultation has taken place and is ongoing with the Virginia Department of Historic Resources (VDHR), North Carolina State Historic Preservation Office (NC-HPO), and other "consulting parties," such as the National Park Service, local historical societies, and property owners. FRA, the Virginia State Historic Preservation Officer, the North Carolina State Historic Preservation Officer, DRPT, NCDOT, and the Advisory Council on Historic Preservation have developed a draft Programmatic Agreement (Process PA) to ensure compliance with Section 106 of the Historic Preservation Act for the Proposed SEHSR project. (It is included in this FEIS for public review.) This provides a consistent process for considering the effects of each portion of the SEHSR on historic properties and resolving adverse effects where appropriate. As per the Process PA, "When the State Rail Transportation Agency proposes a finding of adverse effects to historic properties, it shall notify FRA. FRA shall initiate consultation with the appropriate SHPO and other consulting parties, interested Federal and state recognized Indian tribes, ACHP, FRA and the State Rail Transportation Agency shall develop a Memorandum of Agreement (MOA) to identify measures to avoid, minimize, and mitigate the adverse effects prior to beginning any work on that portion of the SEHSR Project. The State Rail Transportation Agency shall submit a draft of each MOA to the appropriate SHPO for review and comment. NCDOT and DRPT shall ensure that all comments received within thirty (30) days of SHPO's receipt of the draft MOA are addressed in the final MOA. One (1) copy of each final MOA shall be provided to the appropriate SHPO and other consulting parties and one (1) copy shall be provided to any consulting party or other group who may have a vested interest in a particular property." The Project Team is continuing dialogue with consulting parties for the Section 106 MOAs and will have signed agreements prior to a Record of Decision (ROD) for the Project.

AG33 US Environmental Protection Agency Regions 3 & 4, Heinz J. Mueller, NEPA Program Office (Agency Contact - Christopher Militscher), Project FRA-D40344-00	
Comment	**Response**
The U.S. Environmental Protection Agency (EPA) Regions 4 and 3 have reviewed the subject document and are commenting in accordance with Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA). We are providing cooperating agency input for your consideration. In addition, EPA also included technical review comments from the Centers for Disease Control and Prevention (CDC) under a 2010 Partnership Agreement with EPA and on behalf of the Department of Health and Human Services (DHHS). The Federal Railroad Administration (FRA), North Carolina Department of Transportation (NCDOT) Rail Division and the Virginia Department of Rail and Public Transportation (DRPT) are proposing to make rail improvements for an approximate distance of 162 miles between Richmond, Virginia and Raleigh, North Carolina. EPA Regions 3 and 4 provided comments on the Final Tier I Environmental Impact Statement (FEIS) in 2002. EPA Region 4 also provided review comments on the Preliminary Draft EIS for Tier I1 on December 18, 2009. EPA and CDC's technical review comments on the Tier II DEIS are attached to this letter (See Attachment A). Specific advisory comments on the Environmental Justice analysis contained in Chapter 4 are also attached to this letter (See Attachment B). EPA rated the Tier I1 DEIS as 'Environmental Concerns' (EC-2) indicating that the review identified some environmental concerns requiring potentially minor changes to the preferred alternative or the application of mitigation measures that can reduce environmental impacts. The review disclosed the opportunity for possible avoidance and minimization measures and mitigation measures related to wetland and stream impacts, water quality, and environmental justice and community health issues. The '2' rating indicates that DEIS information and environmental analysis requires some additional information and clarification, including wetland and stream impacts, Section 303(d) listed impaired waters, socio-economic and community health issues, and a reassessment of potential minority and low-income population impacts. Overall, EPA supports the development of additional mass transit options for the populations in Virginia and North Carolina because it provides an alternative to the sole reliance on highways for transportation demand. We also support the proposed project's purpose and need and detailed study alternatives. With appropriate disclosure and proper mitigation, this project should result in fewer adverse impacts. EPA recommends that all of the technical comments in the attachments be addressed in a Final EIS (FEIS). Furthermore, all relevant environment impacts that have not been disclosed in this document or covered in the FEIS should be addressed in additional NEPA documentation prior to the issuance of a Record of Decision (ROD).	Comment noted. The Project Team appreciates EPA's participation in the Project.

AG33 US Environmental Protection Agency Regions 3 & 4, Heinz J. Mueller, NEPA Program Office (Agency Contact - Christopher Militscher), Project FRA-D40344-00	
Comment	**Response**
1) Purpose and Need for the Proposed Project – EPA and CDC generally support the purpose and need for the Southeast High Speed Rail (SEHSR) project from Richmond, VA to Raleigh, NC. Section 1.2 of the DEIS identifies other current and planned projects for the entire Washington, D.C. to Charlotte, N.C. corridor.	Comment noted.
2) Detailed Study Alternatives – a. The DEIS identifies 3 rail alignments (Detailed Study Alternatives) each for the portions in Virginia (i.e., VA1, VA2 and VA3) and for North Carolina (i.e., NC1, NC2 and NC3). The DEIS does not evaluate the impacts with the specific rail stations. Section 2.2.4 indicates that specific station locations will be determined in the future by the municipalities and appropriate levels of environmental documentation will be undertaken at that time. The DEIS does address where general station locations might be, including Richmond, VA, Petersburg, VA (Ettrick and 3 alternative station locations), La Crosse, VA, Henderson, NC and Raleigh, NC. Servicing the SEHSR long-term and meeting future ridership demands appears to depend on these stations. These stations may have an impact on air quality, community resources, land use, stormwater management, etc. Low-impact development practices, as well as 'Green building' initiatives, should be considered during planning and design. EPA requests that all of the potential human and natural resource impacts from these stations are addressed in future NEPA documentation.	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations or design needs because the development of stations is a unique undertaking at an individual location. As noted, generalized sites were evaluated, but only to the level to ensure that a station placed along the Project corridor in this general location would provide sufficient accessibility to the larger transportation network. All public and agency comments received regarding specific station locations have been noted and will be provided to transportation planning organizations in each station location. Those governments at the individual station locations will perform separate environmental evaluations and make the final decision on the station location and design at a later date. As noted in revised Section 4.17 in the Tier II FEIS, locating the HSR stations in developing urban and suburban areas that serve as population centers, rather than undeveloped, sparsely populated rural areas, is likely to avoid and minimize many potential direct and indirect environmental impacts from the Project.

AG33 US Environmental Protection Agency Regions 3 & 4, Heinz J. Mueller, NEPA Program Office (Agency Contact - Christopher Militscher), Project FRA-D40344-00	
Comment	**Response**
b. Section 2.4 of the DEIS discusses the Multiuse Greenway Concept and that the exact location of it will not be determined until the preferred alternative for the SEHSR project is selected. A separate decision document (e.g., Finding of No Significant Impact) is expected to be prepared for the Greenway Concept. The associated impacts for the Greenway Concept are proposed to be documented in the FEIS. EPA requests that the environmental analysis and impact disclosure be addressed in the FEIS and that consideration should be given to incorporate this information into the SEHSR project. As a result, additional NEPA documentation will not be required.	The concept of a greenway located parallel to the Richmond to Raleigh Project from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC) was introduced in the Richmond to Raleigh Project DEIS. The rationale for its inclusion was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Richmond to Raleigh Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Richmond to Raleigh Project (with the understanding that existing rail ROW not required for the Preferred Alternative may potentially be available for segments of a future greenway) the process of developing the environmental documentation for the greenway has changed since publication of the Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than being included in the Tier II FEIS for the Richmond to Raleigh Project, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within the Richmond to Raleigh Project FEIS, but rather in a separate Greenway Corridor Plan. This document is currently under development, with completion anticipated at the time of the ROD for Richmond to Raleigh Project. The Project website will provide additional details on this separate plan and opportunities for its public review and comment.
c. Page 2-56 of the DEIS included a discussion of impact evaluation for the 30-foot trail greenway on 60-foot of right of way. The width of the trail itself is proposed at 10 feet. Each section of trail is independently managed and representative of the needs of its respective region. The Multiuse Greenway Concept may be incorporated into the East Coast Greenway. EPA and CDC request that several environmental enhancements be considered in the development of the SEHSR's Multiuse Greenway Concept trail, including the use of renewable materials for rural sections (e.g., wood-chip based), an invasive plant species management plan that avoids the excessive use of herbicides, and appropriate 'solar' lighting in more urbanized settings. Safety features that minimize conflicts between the bicycle and pedestrian use and the adjacent high-speed rail should be considered during FRA, USDOT and municipalities final planning and design.	These requested enhancements have been forwarded to the team preparing the Greenway Corridor Plan (discussed in response "b," above). Please note that individual greenway segments will be developed by local governments, and that any greenway enhancements will be considered during the final design phase (i.e., when greenway construction funding is secured).

AG33 US Environmental Protection Agency Regions 3 & 4, Heinz J. Mueller, NEPA Program Office (Agency Contact - Christopher Militscher), Project FRA-D40344-00	
Comment	**Response**
3) Community Resources: Demographics and Public Educational Facilities a. According to Table 3-23 (pg. 3-67), over 18% of the population in the Colonial Heights study area in Virginia is 65 years or older compared to 11.2% statewide. The population of resident's age 65 or older in the study area in Mecklenburg, Virginia is 17.8% compared to 11.2% statewide. Population projections in the US show a rapidly growing population of those ages 65 and older with many living below or near the poverty line, especially in minority populations (DHHSIAOA, 201 0; DHHS/AOA(b), 2010). Health and social impacts due to changes in transportation systems and local roadway connectivity may be more severe in older populations who rely more heavily on pedestrian infrastructure and/or transit (Balfour and Kaplan, 2002). The Community Resources Section 3.1 1.1.3 describes the age of the population, but the DEIS does not assess potential impacts to this population in the Environmental Consequences section related to Community Resources (i.e., Section 4.1 1). The assessment of how vulnerable populations, such as the elderly, may or may not be impacted by the proposed high-speed rail project should be addressed in the FEIS.	Section 4.11.5.1 of the Tier II FEIS has been amended to address concerns with impacts to elderly (and disabled) populations.
b. On Page 3-93 of the DEIS, Forest Pines Drive Elementary is identified as being in the project study area. The school is located on East Perry Avenue in Wake Forest, but the closest access road crossing the existing corridor near the school appears to be either at Brick Street or East Cedar Avenue (see Map #135 of 151 from Appendix Q). The map and the narrative on page 3-93 needs to be consistent in FEIS.	Page 3-93 of the Tier II DEIS incorrectly stated that Perry Avenue is the closest access road that crosses the rail corridor for Forest Pines Drive Elementary. In fact, Perry Avenue does not cross the railroad. However, Forest Pines Drive Elementary was only temporarily located on the campus of the former DuBois school at 530 E. Perry Avenue in Wake Forest, NC. The school has since relocated outside the study corridor, to Forest Pines Drive, which is southwest of the town core. Section 3.11.5.1.2.4 and associated mapping have been corrected in the Tier II FEIS.

<table>
<tr><th colspan="2">AG33
US Environmental Protection Agency Regions 3 & 4, Heinz J. Mueller, NEPA Program Office (Agency Contact - Christopher Militscher), Project FRA-D40344-00</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>4) Socio-economic Issues

a. Section 4.1 1.1 provides a general assessment of the potential socio-economic benefits of the proposed project to the impacted communities but does not provide as much detail of the potential socio-economic consequences. Socio-economic impacts can affect the health of communities and individuals. The effect of increased rail-related activity on residential property values appears to be impacted either positively or negatively by a number of factors including proximity to tracks and changes in volume of activity such as the number of trains per day (Simons, 2004) as well as accessibility and/or proximity to rail stations (Diaz, nd). Communities without a rail station are likely to be disproportionately impacted by this project. This concern is mentioned in Sections 4.11.2.1.1 and 4.11.2.1.2 (Page 4-67), but a more robust assessment of any potential economic consequences is not included. For communities without rail station/stops, where rail activity will be re-introduced after having been absent, and where rail activity increases, potential socio-economic consequences should to be considered and more fully assessed in the FEIS.</td><td>Section 4.11 of the Tier II FEIS has been amended to better identify both the benefits and impacts to communities from a socio-economic standpoint from the preferred alternative. Additionally, the referenced study “The Effect of Freight Railroad Tracks and Train Activity on Residential Property Values” (Simons, 2004) was reviewed by the Project Team. Although train horn noise has been shown to affect property values, the Project proposes to eliminate all at-grade crossings, which will remove horn noise in the Project corridor.</td></tr>
<tr><td>b. Section 4.11.2.1.2 of the DEIS discusses 'Neighborhood Disruptions'. On Page 4-68, the DEIS notes that residents and businesses [within the communities not currently living with an active rail line] could experience a sense that their community is being bisected by the new active rail line and that previously unencumbered access would now only be possible at designated bridges and underpasses. The DEIS also notes that community travel patterns will not be substantially altered because consolidated crossings are designed to be no more than one mile apart from each other.

However, changes to the pedestrian environment can affect health outcomes and health determinants in a variety of ways, including but not limited to injury rates, physical activity levels, and accessibility. Rural residents are more likely than urban or suburban individuals to report barriers to physical activity, including barriers in the pedestrian or built environment (Parks, 2003). For example, long distances to schools are a primary barrier to walking (Dellinger, 2002). Impacts to the pedestrian environment occur at intervals less than 1 mile. Impacts to the pedestrian environment should be considered in ¼ of mile increments, which is the more commonly used measure. Such impacts to the human environment ought to be considered separately from impacts to driving patterns and traffic in the assessment of impacts to the transportation network.</td><td>Section 4.11.5.1 of the Tier II FEIS has been amended to address impacts to the pedestrian environment (as well as overall benefits/impacts) within affected communities from the preferred alternative.</td></tr>
</table>

AG33 US Environmental Protection Agency Regions 3 & 4, Heinz J. Mueller, NEPA Program Office (Agency Contact - Christopher Militscher), Project FRA-D40344-00	
Comment	**Response**
c. Section 4.1 1.2.2 includes information on the impacts from changes to the transportation network. The DEIS assesses potential impacts from changes to the transportation network by tabulating rail crossing consolidations by type and section (Pages 4-70 to 4-74) and then describes impacts to specific communities. According to the DEIS between 56 and 64 public crossings will be relocated due to crossing consolidations, two pedestrian-only crossings will be maintained, and eight to nine new pedestrian-only crossings will be built. It is not clear which of the existing bridges/underpasses [that will be maintained] or which of the new bridges/ underpasses [that will be built] have pedestrian or bicycle facilities (e.g., sidewalks, ramps, stairs, bike lanes, etc.). Including this information is important in the assessment of impacts to the transportation network and ought to be considered in the FEIS. We recommend that all new crossings [not specifically identified as pedestrian-only crossings] follow a 'Complete Streets' model aligned with both Virginia and North Carolina Complete Streets Policies, so as to safely accommodate both pedestrians and bicycles.	Sections 4.11.5.1 and 4.16 of the Tier II FEIS state that all of the new bridges and underpasses will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses.* At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and VDOT pedestrian policies (i.e. Complete Streets). In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists. The Project designs also include 12 new pedestrian-only crossings of the rail corridor within municipalities to provide increased pedestrian access. The locations of these pedestrian crossings were determined in coordination with local government representatives and in response to comments from the public on the Tier II DEIS. * Section 4.16 of the Tier II DEIS mistakenly stated that all bridge designs would include sidewalks to facilitate pedestrian access. While pedestrians will be able to cross at all bridges, the inclusion of sidewalks will depend on the current NCDOT and VDOT pedestrian policy at the time the Richmond to Raleigh Project is constructed.
d. The DEIS includes general information that two ball parks will be displaced due to the proposed project alignment (Page 4-83). It is unclear how the loss of these community ball fields will potentially impact the amount of accessible greenspace and/or recreation facilities in this community. Loss of community access to greenspace and recreation facilities can impact community health and community cohesion (Sullivan, 2004; TPL, 2004). Furthermore, rural residents are more likely than urban or suburban individuals to report barriers to physical activity, including limited access to exercise facilities (Parks, 2003). It is recommended that the FEIS include a contextual description of these ball fields in relation to other community recreation facilities and greenspace/parks in the Wake Forest, N.C. area. The community's use of these fields should be described and, if appropriate, possible mitigation measures to ensure adequate community recreation and greenspace access.	Sections 3.11.3.2 and 4.13.2 of the Tier II FEIS explain that preferred alternative (NC1) in Section U does not displace the private ball fields and that the Project has coordinated with the owner of the ball fields.

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e. Section 4.11.3 of the DEIS addresses Community Facilities and Services. Under 'Schools', the section assesses the alternatives in light of changes in accessibility and safety improvements due to crossing consolidations and elimination of at-grade crossings. On page 4-85 the DEIS states that: "The negative impacts of potentially longer driving distances to cross the rail line would be minimal and offset by the benefits gained in safety and unimpeded access." This statement does not take into consideration students and/or teachers who might walk (or bicycle) to school. Changes to the pedestrian environment can affect health outcomes and health determinants in a variety of ways, including but not limited to injury rates, physical activity levels, and accessibility. Rural residents are more likely than urban or suburban individuals to report barriers to physical activity, including barriers in the pedestrian or built environment (Parks, 2003). For example, long distances to schools are a primary barrier to walking (Dellinger, 2002). The importance of pedestrian access to schools may differ amongst the various locations/study areas, but should be considered separately from auto access or driving distances.	Section 1.4 (Project Description) and Section 4.11 (Community Resources) of the Tier II FEIS have been amended to clarify that grade separations will provide access across the rail corridor and will have sidewalks if the current route does. Sections 4.11.5.1 and 4.16 have been amended to indicate that all of the new bridges and underpasses will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses.* At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and VDOT pedestrian policies (i.e. Complete Streets). In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists. The Project designs also include 12 new pedestrian-only crossings of the rail corridor within municipalities to provide increased pedestrian access. The locations of these pedestrian crossings were determined in coordination with local government representatives and in response to comments from the public on the Tier II DEIS. * Section 4.16 of the Tier II DEIS mistakenly stated that all bridge designs would include sidewalks to facilitate pedestrian access. While pedestrians will be able to cross at all bridges, the inclusion of sidewalks will depend on the current NCDOT and VDOT pedestrian policy at the time the Richmond to Raleigh Project is constructed.

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f. Forest Pines Drive Elementary is noted to exist in Wake Forest, N.C. at 530 E. Perry Avenue. This school, and any related impacts due to rail crossing consolidation, is not included in the Environmental Consequences chapter, Section 4.1 1.3.1, Table 4-28, along with the other schools. In Table 4-28 on Page 4-88, impacts to Wake Forest Elementary include the closing of the at-grade crossing on East Elm Street. This crossing at Elm Street provides the most direct access from the school to the business district on the east side of the tracks. With the current consolidation plan, crossings would be realigned at Roosevelt Avenue and Holding Avenue, each of which is approximately 1,750 feet from the current crossing at Elm St. While this distance might seem insignificant to most drivers this adds almost 2/3 of a mile for a pedestrian-trip to access either the school or the business district just across the tracks. Because this area appears to be fairly congested (population and development) and the opportunity for children to walk to school is evident, we recommend that FRA and other transportation agencies consider a pedestrian crossing be considered for the Elm Street crossing. Similarly, the FEIS should also consider pedestrian access to places of worship and how the proposed project might alter current patterns and use.	Section 3.11.5.1.2.4 of the Tier II FEIS has been amended to indicate that Forest Pines Drive Elementary was only temporarily located on the campus of the former DuBois school at 530 E. Perry Avenue in Wake Forest, NC. The school has since been relocated outside the study corridor, to Forest Pines Drive, which is southwest of the town core. This change in location is noted in Chapter 3 of the Tier II FEIS. With regard to accessibility for Wake Forest Elementary School, please note that in response to these comments on the Tier II DEIS as well as comments from the Town and from the public, a new rail underpass was designed for this location. There are numerous design constraints in this location including the terrain, the Wake Forest Historic District, dense development, and driveway encroachment on the rail ROW. Coordination with the Town and with the North Carolina State Historic Preservation Office (NC-HPO) took place as the new bridge design was developed. (See Section 2.2, Preferred Alternative by Section, in the Tier II FEIS for more information.) Section 2.2 also includes expanded public involvement activities related to this issue. The public was provided an opportunity to view and comment on the underpass at a public update meeting (PUM) on May 15, 2012. Strong opposition to the underpass was voiced at the PUM, particularly from the businesses and residences impacted by the new design. A meeting with the Town and with a representative from the NC-HPO was held on Monday, June 18, 2012, to discuss the responses, and the Town stated that the impacts of a grade separation at this location were too severe. It was decided that a minimal footprint pedestrian bridge (i.e., steps only, no ramps) over the railroad would be a better fit at this location. The pedestrian bridge would minimize impacts to adjacent businesses, yet it would still allow students from Wake Forest Elementary School to cross the tracks. The maintenance of pedestrian access across the railroad at Elm Street is included in Table 4-28 of the Tier II FEIS.

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g. On Page 4-107 of the DEIS, it is unclear which crossings would be closed due to consolidation under alternatives NC113 or NC2. For the Ridgeway Volunteer Fire Department the notable difference in 5-minute response coverage areas between the No Build versus Build scenarios is of potential concern. Until the budgeted satellite facilities in Warren County (Cited on Page 4- 1 08) are built, further impeding emergency response times in this area is not recommended. It is recommended that different locations for crossing consolidations be assessed to increase the 5-minute response coverage area in the Build scenarios for this community and that the results from such an assessment be included in the FEIS.	The DEIS designs included a grade separation at Ridgeway Warrenton Road, approximately three quarters of a mile to the north of the Ridgeway Volunteer Fire Department (VFD), in keeping with the County thoroughfare plan. Following the Tier II DEIS, coordination with Warren County Fire and EMS representatives led to development of a new design for a bridge over the railroad located closer to the Ridgway VFD, to replace the design at Ridgway Warrenton Road. The Warren County thoroughfare plan was modified, with planned routing that include a grade separation in the new location. Chapter 4 of the Tier II FEIS contains a discussion of the GIS analysis of the 5-minute response time coverage under the new design. The results indicate some difference between the overall EMS service area for the Ridgeway Volunteer Fire Department under the Preferred Alternative compared to a No Build scenario. However, the difference is less substantial than the difference for the designs in the Tier II DEIS.

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h. Section 4.11.6 addresses Relocations and Associated Right of Way Costs and provides a summary of the state DOT relocation policies within the project areas as well as the number of residential and business relocations by SEHSR project section and alternative (pages 4-130 and 4-131). The number of potential residential relocations proposed for this project is not negligible. Potential impacts to the human environment from inadequate housing can include crowding and increased disease transmission, a loss of protective social connections, and general declines in health (Bashir, 2002; Fullilove, 2004). This section of the DEIS does not assess the availability of comparable replacement properties in the project areas. It is recommended that the FEIS impact analysis include a general survey of available comparable replacement properties (e.g. average local rental unit vacancy rates and average number of active residential and commercial real estate listings) to provide a description of typical availability by project section. Table 4-35 is not totaled for each of the alternatives (VA1, VA2 and VA3 and NC1, NC2 and NC3). EPA and CDC note that number of expected relocations for each alternative appears to be the same or of similar magnitude. However, it would be helpful to discern numerically if there are any differences between the alternatives. Alternative VA1, VA2 and VA3 have 124/30,119/1 9, and 124/30, residential and business relocations, respectively. Alternative NC1, NC2 and NC3 have 97/51, 105/48, and 91/81 residential and business relocations, respectively. It is important to note that VA2 has fewer residential and business relocations overall than either VA1 or VA3. Alternative NC3 has the least residential relocations (91) but the greatest number of business relocations (81). Furthermore, 54 of the 8 1 business relocations for NC3 all occur in Segment V in the City of Raleigh. There is no further description of the magnitude or intensity of this potential impact. The FEIS should include an analysis of the potential Regional economic impact associated with the different alternatives and their business impacts (e.g., Number of employees, opportunities for relocation, etc.).	Section 4.11 of the Tier II FEIS has been amended to include this analysis for the Preferred Alternative.

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5) Farmland Impacts a. Section 4.3 addresses Prime and Other Important Farmlands. In the analysis of environmental consequences to prime and other important farmlands the narrative notes that the NRCS did not provide the Land Evaluation Criterion Values for project sections AA through C requested by September of 2009. The DEIS further notes that the 45-day review period had passed and, therefore, these sections were assumed to require no mitigation for farmland losses. The statement on Page 4-17 concerning 'no compensation' for farmland loss is also not believed to be accurate. As with any business, active farmlands would still potentially qualify for compensation. These should be verified by the NRCS in the FEIS.	Attempts were made to obtain NRCS input on Sections A through C, and to note any changes to prime and important farmland impacts caused by alignment adjustments made between the Tier II DEIS and FEIS. This information is presented in Section 4.3 of the Tier II FEIS.
b. Page 3-76 of the DEIS states that Agriculture is an important element of the economies of both Virginia and North Carolina. Specifically noted are Dinwiddie County, VA and Warren County, NC, where agriculture sales amount to 23% of total sales within these counties. Additionally, it states that 'agri-tourism' is the most common tourism activity in Franklin County, NC. Table 4-9 includes the impacts of the three alternatives by State and the prime and State important farmland for each section of the project. Total impacts (rounded to a tenth of an acre) for each alternative and each State is not included and should be addressed in the FEIS. EPA recognizes that prime farmland and other impacts for each section are included in the executive summary tables (e.g., ES-9). However, it is difficult to make a comparison between the alternatives (i.e., VA1, VA2, VA3, NCI, NC2, and NC3) without providing the appropriate totals. The FEIS should include this information.	As stated in Section 2.2 of the Tier II DEIS, the Project Study Area was divided into 26 segments. A preferred alternative will be selected for each of the 26 sections, and is independent of the selection made in any other segment. For this reason, a tally of all VA1/NC1 segments, collectively, would not influence the selection within an individual segment. For example, the selection of Alternative VA1 for Section D would not generate a preference for Alternative VA1 in Section E. The FEIS provides total prime and important farmland impacts for each state in Section 4.3.
c. Impacts to prime and State important farmland should be avoided and minimized to the extent practicable. The transportation agencies should also consult with the Virginia Department of Agriculture and Consumer Services and the North Carolina Department of Agricultural and Consumer Services for other applicable requirements concerning farmlands (e.g., In North Carolina, the Voluntary Agricultural District program) and appropriate compensation proposed for impacted prime and State important farmlands.	Comment noted.

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6) Noise and Vibration Impacts a. Section 4.7 of the DEIS explains in depth the criteria used for determining noise and vibration impacts within the project area that will result from the proposed project. The DEIS includes an analysis of projected Noise Impacts in Table 4-16 and projected Vibration Impacts in Table 4-18. These tables summarize potential impacts for each section alternative. Noise and vibration impacts not only impact the socioeconomic wellbeing of neighborhoods, they also impact human health outcomes (Evans, 2004). Some populations are particularly sensitive to noise and/or vibration impacts. There appears to be severe noise impacts anticipated in many section alternatives (in Tables 4-16), but it is unclear what particular populations will be impacted by this noise. It is not possible to determine if specific or vulnerable populations will bear more or less of the potential environmental consequences from noise impacts. It is recommended that the FEIS include in the analysis of noise impacts a clear characterization of the populations impacted within each project segment and/or alternative. Any mitigation measures developed should consider the specific population for which they are being developed so as to more effectively protect public health and well-being and promote environmental justice. Likewise, for vibration impact mitigation development, specific population characterization should to be considered by FRA, where applicable.	FRA's *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (October 2005) procedures have been followed for this Project. It is anticipated that mitigation will be used to abate for noise and vibration impacts, particularly severe impacts, and will be evaluated during final design. It should be noted that prior to determination of mitigation, FRA's procedures provide for more detailed impact analysis during the final design stage. It is possible that some of the potential severe impacts identified in the Tier II DEIS and Tier II FEIS will be determined to be moderate or no impact when more detailed survey-level information is available.

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7) Mobile Source Air Toxics (MSATs) a. Sections 3.6.1.6,4.6.2 (Locomotive Operations) and 4.6.5 (Highway Vehicle Operations) and Appendix P generally address potential MSAT issues. One obvious deficiency in these sections is the discussion and identification of potential near-roadway/near-railway sensitive receptors, such as day care facilities, schools, hospitals and nursing homes. If there are no existing or future near-roadway/near-railway sensitive receptors, there would not be a need to perform any type of qualitative or quantitative analysis regardless of the Federal Highway Administration (FHWA) guidance criteria. b. While EPA does not anticipate that MSAT impacts to be significant from the standpoint of the current scope of the proposed high speed rail improvements as well as from roadway access changes, the FEIS might include an analysis of sensitive receptors that are near the proposed improvements and what changes in traffic patterns might occur at these locations. The FEIS might also indicate the relative significance of these changes in relation to the estimated existing MSAT emissions conditions.	The FEIS MSAT discussion has been updated to more fully address potential MSAT issues. Please note that sensitive receptors along the corridor were not identified for the Tier II FEIS as this task is no longer recommended by FHWA for qualitative analyses. Performing the highly intensive task of identifying sensitive sites from Raleigh, NC, to Richmond, VA, and looking at anticipated traffic volume change for each of these sites would not produce meaningful information, especially given the low volumes of the roads along the Project and the fact that MSATs are anticipated to decrease throughout the United States based on improvements in vehicle standards.
8) Mitigation During Construction and Operation a. Under Sections 4.7.3.1 and 4.7.3.2 of the DEIS, EPA and CDC recommend that the concept of a community liaison program should be developed and implemented during construction and that reducing noise and vibration impacts for long-term operations should be given full consideration by the transportation agencies. The use of building insulation and noise barriers should continue to be evaluated under current FRA other transportation agency criteria. FRA, NCDOT and DRPT should continue to coordinate with impacted receptors, local community officials and other interested parties to protect public health and wealth. This coordination should be documented in the FEIS. Any environmental commitments identified during additional NEPA planning and final design efforts for the preferred alternative should be included in the Record of Decision (ROD) for the proposed project.	As stated above, FRA's *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (September 2012) procedures have been followed for this Project. A Detailed Noise Analysis will be conducted during final design, which will allow for site-specific noise predictions and mitigation evaluations for full consideration of noise impacts at specific receptors identified through the initial assessment. While the initial assessment involves the use of generalized, overall noise source levels and simplified noise projection models, a Detailed Noise Analysis considers the noise from each subsource component, with each component defined in terms of a noise generating mechanism (e.g., propulsion, wheel-rail, aerodynamic), reference noise level, location along the train, and speed dependency. The Detailed Noise Analysis also uses more precise methods to estimate adjustments for horizontal and vertical geometry, ground absorption, and shielding. The analysis is completed after preliminary engineering and NEPA have been completed because more detailed information is required to perform a Detailed Noise Analysis, including the type of vehicle equipment to be used, train schedules, speed profiles, plan and profiles of guideways, locations of access roads, and landform topography, including adjacent terrain and building features. Recommendation for a community liaison program is noted

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9) Natural Resources Impacts - Jurisdictional Streams and Wetlands a. Sections 3.1, 4.1.1 and Appendix H provide information on jurisdictional streams and surface waters, drainage basins and related information. The FEIS should identify if the streams are perennial, intermittent or ephemeral.	Section 3.1 has been revised to note that identification of the perennial/intermittent/ephemeral nature of affected streams will take place during Section 401 Water Quality Certification and Section 404 permitting required by of the Clean Water Act (CWA) (33 USC 1344).
b. Tables 4-1 and 4-2 provide information of the potential information to jurisdictional streams for the different alternatives in Virginia and North Carolina. Of the totals provided in the tables, the linear feet of impact should be identified in the FEIS to include the quantification of impact to 303(d) listed impaired waters (from Appendix H) and the cause(s) of the water impairment.	Potential impacts to jurisdictional stream channels with Section 303(d) impaired waters were added to Tables 4-1 and 4-2 of the Tier II FEIS for the Preferred Alternative, and discussion regarding the source of the impairment was added to Section 4.1.1.1.
c. Section 4.1.1.2 includes impacts to riparian buffers and other jurisdictional waters (e.g., Lakes, ponds and reservoirs). Water supply reservoirs should be further identified and potential impacts detailed in the FEIS.	Potential impacts to water supply reservoirs were included in Section 4.1.1.2 of the Tier II FEIS for the Preferred Alternative.
d. The Virginia minimum/maximum of stream impact ranges between 27,304 and 31,163 linear feet. The North Carolina minimum/maximum of stream impact ranges between 11,774 and 18,292 linear feet. The DEIS sections should have clearly described how impacts are being calculated (e.g., Proposed right of way, construction limits plus 25 feet, etc.).	Section 4.1.1.1 of the Tier II FEIS was amended to clarify exactly how stream impacts were calculated.
e. For the Tar-Pamlico alternatives NC1, NC2 and NC3, the stream impact numbers do not appear to be accurate for the minimum/maximum (i.e., 5,330; 7,025; and 7,739 linear feet, respectively). Similarly, the stream impact numbers for the Neuse watershed in Table 4-2 also appear to be inaccurate (i.e., 5,238; 4,211; and 5,082 linear feet). All of the impact numbers presented in the tables should be re-calculated and confirmed in the FEIS. The FEIS should provide this information as well as the relevant avoidance and minimization efforts. Referring to Appendix H, the transportation agencies should explain the VA classification and special standard designation.	The river basin minimum and maximum impact figures shown in Tables 4-1 and 4-2 of the Tier II DEIS are correct. The minimum was defined as the combination of the alternatives with the least impact for the respective sections in the basin (e.g., for the Roanoke Basin in North Carolina, that would be NC2 in Section L (922 lf); NC1/NC3 in Sect M (442 lf); and, NC1/NC2/NC3 in Section N (41 lf), Section O (53 lf), and Section P (777 lf), which altogether totals 2,235). The impact numbers for the Preferred Alternative presented in the various tables of Section 4.1 of the Tier II FEIS have been confirmed. Section 4.1.6 of the Tier II FEIS was amended to include additional avoidance and minimization efforts. Appendix H of the Tier II FEIS explains the Virginia classification and special standard designation.

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f. According to EPA's estimate, 303(d) listed impacts for Virginia and North Carolina streams from Appendix H are approximately 14,960, 15,520, and 15,001 linear feet for VA1, VA2 and VA3, respectively, and 849,849, and 664 linear feet for NC1, NC2 and NC3, respectively. For Virginia, the potential impacts to 303(d) listed streams is relatively substantial (i.e., 2.83, 2.94 and 2.84 miles, respectively) and EPA requests that FRA consider very pro-active avoidance and minimization efforts in these impaired watersheds as well as the most stringent Best Management Practices (BMPs) for stormwater management. The DEIS identifies two primary avoidance and minimization measures for reducing jurisdictional impacts, including reducing fill slopes and the conservative use of culverts.	As noted in response 9b above, potential impacts to jurisdictional stream channels with impaired waters (and the source of the impairment) were added to Tables 4-1 and 4-2 of the Tier II FEIS for the Preferred Alternative. Proposed avoidance and minimization efforts are updated in Section 4.1.6 of the Tier II FEIS.
g. Once the preferred alternative is selected, EPA recommends that FRA begin the evaluation of bridging versus culverts during the final design process. FRA should seriously consider the use of bridges over culverts for major drainage structures (e.g., Greater than or equal to 3-barrel reinforced concrete box culverts - RCBCs) and/or where there are potential floodplain/floodway issues associated with crossing. The discussion of avoidance and minimization measures used to reduce impacts to streams, wetlands and other jurisdictional waters from Section 4.1.6 should be more robust and site specific once the preferred alternative is selected. Please include other appropriate measures such as sequencing, time-of-year restrictions for sensitive ecosystems, engineering controls, monitoring, and adaptive management techniques. The FEIS should further discuss how the proposed project and associated activities will not contribute to additional impairment of the 303(d) listed streams.	Avoidance and minimization efforts, including a review of crossing structures, will be evaluated during final design. The FEIS includes a list of avoidance and minimization measures (see Section 4.1.6). Bridges have been included in the designs where practicable. However, a key difference should be noted regarding the design of bridges for passenger HSR projects compared to highway projects due to restrictions on grade (generally 1%). To raise the grade to carry rail up and over a bridge can result in impacts along the rail line for a long distance on the approach and departure from the bridge. Due to these impacts and associated costs, culverts are often a more practicable option. For new culverts constructed in streams, the inverts will be buried at least one foot below the bed of the stream for culverts greater than 48 inches in diameter. For culverts 48 inches in diameter or smaller, the inverts will be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert.

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h. Jurisdictional wetland impacts are specifically identified in Tables 4-6 and 4-7. For Virginia, Alternative VA2 has substantially more wetland impact than either VAI or VA3. The minimum/maximum numbers for the Chowan watershed in Table 4-6 do not appear to be accurate. For VA1, the impact is 9.46 acres. For VA2, the impact is 17.74 acres. For VA3 the impact is 9.5 acres. The difference in the minimum/maximum for the impacted wetlands in North Carolina is also potentially substantial (i.e., 1.65 acres versus 5.31 acres). The minimum impact number for the Neuse watershed is not 0.25 acres but 0.27 acres. All of the totals and calculations presented in the DEIS should be reaffirmed for the FEIS. The DEIS does not provide a specific identification of the function or quality of the wetlands being impacted. For North Carolina jurisdictional wetlands, the FRA should identify and provide the North Carolina Division of Water Quality (NCDWQ) score or the North Carolina Wetlands Assessment Methodology (NCWAM) scoring in the FEIS.	As stated in Section 2.2 of the Tier II DEIS, the Project Study Area was divided into 26 segments. A preferred alternative will be selected for each of the 26 sections, and is independent of the selection made in any other segment. For this reason, a tally of all VA1/NC1 segments, collectively, would not influence the selection within an individual segment. For example, the selection of Alternative VA1 for Section D would not generate a preference for Alternative VA1 in Section E. The need for specific identification of wetland functions or quality (beyond that determined during the jurisdictional determination process) will be determined during the Section 404 permitting process. If USACE determines the need for impacted wetland functional/quality analysis in order to evaluate mitigation options, then an appropriate method will be applied.
i. In general, FRA should identify any special wetland type system or high quality wetland system that might be potentially impacted such as a headwater system or Cypress-gum forest. Temporary and permanent impacts should also be identified and disclosed during the final NEPA process and during the Section 404 permitting process. The issue of remnant wetland systems that are not directly impacted 'from proposed dredge and fill activities should also be discussed during future Section 404 coordination with resource and permitting agencies. Regarding the maps in Appendix Q, the Transportation agencies should confirm that all proposed impacts to jurisdictional resources are identified and included in the appropriate tables in the FEIS.	The need for specific identification of wetland functions or quality (beyond that determined during the jurisdictional determination process) will be determined during the Section 404 permitting process. Temporary and permanent impacts will be specified during the 404 permitting process as well as appropriate “wetland function/quality” determination if required by USACE. The issue of remnant wetland systems that are not directly impacted from proposed dredge and fill activities will be addressed with the Corps during 404 permitting.
j. All jurisdictional delineations should be updated and confirmed with the U.S. Army Corps of Engineers (USACE) and included in the FEIS for the preferred alternative. EPA understands that National Wetlands Inventory (NWI) mapping can be potentially inaccurate. The transportation agencies need to confirm these differences between the NWI mapping and the delineated jurisdictional mapping efforts in the FEIS.	NWI mapping was only used as one of many mapping aids in the jurisdictional determination process. All wetlands listed in the Tier II DEIS were field delineated and verified by the USACE. The Project Team is working with USACE to re-verify the jurisdictional determination for all potentially impacted wetlands on the Preferred Alternative. This information is listed in Section 4.1.2 of the Tier II FEIS.

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k. Compensatory mitigation for jurisdictional impacts to waters of the U.S. is discussed on Page 4.1.6.3 of the DEIS. FRA should immediately begin consultation with the respective regulatory agencies once a preferred alternative is identified and more accurate impact numbers are verified with additional final design efforts. Estimated compensatory mitigation needs should be provided to the N.C. Ecosystem Enhancement Program as soon as possible following the identification of the preferred alternative. Because there are no mitigation banks currently available in the Roanoke Rapids (03010106) hydrologic unit (HU), the transportation agencies should also begin immediate coordination with the regulatory agencies for compensatory mitigation of the impacts in that watershed. To be consistent with the watershed approach that also includes permittee-responsible mitigation, EPA recommends identifying and prioritizing the immediate and long-term aquatic resource needs within the impacted watersheds. This information will be useful in determining the approach to compensatory mitigation and may require a combination of on-site and off-site mitigation. The transportation project team should work with EPA and other state and federal agencies to develop an acceptable compensatory mitigation plan, including the identification of potential on-site mitigation opportunities. FRA should also consider evaluating the use of the 12-digit HUC for compensatory mitigation needs.	Mitigation for stream impacts is discussed in Sections 4.1.1.1, 4.1.1.2, and 4.1.6, and of the Tier II FEIS. Mitigation for stream and wetland impacts will be secured prior to project permitting. While 12-digit HUCs will be examined, mitigation will be secured based on USACE and state regulations in place during the permitting process.
l. Regarding other general aquatic resources issues, please provide more detailed information in the FEIS concerning the potential impacts to other jurisdictional waters (such as lakes, ponds and reservoirs). EPA requests that FRA consider the need for compensatory mitigation for these resources as well, and provide the rationale supporting the determination. For the FEIS, please elaborate on the construction practices that will be implemented to protect stream bottom habitat and the integrity of riparian buffers. Confirm that sediment and erosion control measures will not be placed in wetlands or streams and that outfalls will be designed to prevent adverse impacts to the receiving stream or wetland. For additional water quality issues, activities resulting in impacts include fertilizer and pesticide application during re-vegetation. In the FEIS or Record of Decision (ROD), please provide detailed application program information that fully explains the need to use these agents, the agents to be used, frequency, timing, qualification of applicators, etc. The FRA should also comply with the requirements under Executive Order 13112 on Invasive Species. On-site mitigation, landscaping for future station locations, and other associated activities should prevent the establishment and/or spread of invasive plant species and native plants should be utilized.	More detailed information concerning the potential impacts to "other waters" and mitigation may be developed during the final design and permitting phases of the Project. Section 4.1.6.2 of the Tier II FEIS was updated to include: • Sediment and erosion control measures will not be placed in wetlands or streams and that outfalls will be designed to prevent adverse impacts to the receiving stream or wetland. Impacts to riparian buffers and stream bottom habitat will be minimized to the extent practicable. • All relevant directives with regards to invasive species will be complied with during construction.

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10) Natural Resources Impacts - Terrestrial Forests a. Terrestrial forest community impacts are detailed in Section 4.10.1.1 of the DEIS. Table 4-24 provides the potential project impacts to natural communities in acres for each section of the project under each alternative. However, the total impacts to terrestrial communities for each alternative are not summarized in the table. Furthermore, the table lists maintained/disturbed areas that are not necessarily 'natural communities'. The table does not define how the impacts were calculated (e.g., Right of way versus construction limits). Efforts to minimize clearing should be made to minimize impacts to terrestrial forest communities. (Note: Removed Page Break during PDF Redo)	As stated in Section 2.2 of the Tier II DEIS, the Project Study Area was divided into 26 segments. A preferred alternative will be selected for each of the 26 sections, and is independent of the selection made in any other segment. For this reason, a tally of all VA1/NC1 segments, collectively, would not influence the selection within an individual segment. For example, the selection of Alternative VA1 for Section D would not generate a preference for Alternative VA1 in Section E. EPA is correct that Maintained/Disturbed is not a natural community. However, NCDENR requires that all relevant ecosystem impacts be quantified, including those for Maintained/Disturbed communities. Impacts were calculated using Southeast GAP data for the slope stakes buffered by 25 feet.
11) Natural Resources Impacts - Threatened and Endangered Species a. Section 4.10.2.1 addresses issues associated with the Endangered Species Act. There appear to be several protected species that are undergoing informal Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS), including the Roanoke logperch, Dwarf wedgemussel and the James River spinymussel. EPA defers to the USFWS and State wildlife agencies on these issues but recommends that these unresolved issues be addressed by FRA prior to the issuance of the FEIS.	The Project Team has continued to coordinate with USFWS regarding these species as discussed in Section 4.10.2 of the Tier II FEIS.
12) Minority and Low-Income Populations: Environmental Justice (Appendix A) a. The discussion in Section 4.11.5 on Executive Order 12898, Environmental Justice (EJ) should be revised to the actual language in the order that can be found at http://ejnet.org/ej/execorder.html.	Section 4.11.5 of the Tier II FEIS has been amended to address this comment.
b. The following statement on Page 4-118 needs to be reconsidered or fully explained in the FEIS: *As shown in Tables 3-20 and 3-21 in Chapter 3, there are no concentrations of Hispanic populations in the study area; thus, the analysis of racial and ethnic minorities focuses on race only.* The Executive Order references minority populations and low-income populations. Hispanic populations are minority populations. The DEIS EJ analysis should be performed with regard to all minority and low-income populations.	Sections 3.11 and 4.11 of the Tier II FEIS have been corrected and updated, as well as data updated to year 2010.

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c. The tables found in the FEIS do not appear to be consistent. The application of the EJ criteria using the 50% affected area or the greater than 10% threshold for the appropriate unit of geographic analysis does not appear to be consistent with CEQ's EJ Guidance under NEPA. The CEQ guidance states that minority populations should be identified where "either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." It appears that in some cases both procedures are used for a single analysis. However, Brunswick County (VA) which is 54% minority and therefore exceeds the first criteria is not included as an area of potential EJ concern. EPA recommends that it be considered an area of EJ concern in the FEIS. In some cases, it appears that minority communities in the study area are not flagged as being areas of EJ concern because they do not exceed the county average by more than 10%. Because these communities are more than 50%, FRA should identify them as communities with potential EJ concerns. The DEIS identifies the State of Virginia as being 28% minority. Areas within the project study area that meet the 50% affected area criteria should be identified as areas of EJ concern.	Sections 3.11 and 4.11 of the Tier II FEIS and the data in each chapter have been corrected and properly used, along with new FHWA EJ guidance. Also, the data was updated using 2010 data.
d. The tables on Pages 4- 121 to 4- 123 need to be clarified in the FEIS. The EJ analyses in these tables are presented as either minority or low-income communities. If they meet either criterion, they are considered to be areas of potential EJ concern. All EJ communities should be evaluated for potential impacts. For additional advisory comments on EJ that should be addressed in the FEIS, please see Attachment B.	Tables 4-38 and 4-39 of the Tier II FEIS have been updated using 2010 data for the Preferred Alternative. Also, Section 4.11.5 of the Tier II FEIS has been updated using new FHWA EJ guidance.

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13) Advisory Comments on Environmental Justice (Appendix B) In addition to those Environmental Justice (EJ) issues identified in Attachment A, the FEIS should also consider the following assessment and evaluation: a. Chapter 4 of the DEIS uses the following criteria to define and identify low income populations, "Low-Income - Defined by the US Department of Transportation (USDOT) Order on Environmental Justice, low-income refers to a person whose median household income is at or below the Department of Health and Human Services poverty guidelines. The data available for populations on a detailed geographic basis is the poverty threshold, which is related to the poverty guideline as explained in the Tier I EIS for this project; consistent with the Tier I EIS, the poverty threshold is used for this analysis." This seems to indicate that the threshold values in fact are the poverty threshold. The DEIS did not specifically identify this value. It is not listed in Table 4-34 in Chapter 4. The table lists the percentage below poverty for each county and community in the study area. If those values are being used as the thresholds: Chesterfield, VA, Colonial Heights, VA, Dinwiddie, VA, and Brunswick, VA should be identified as areas of concern, because these areas all have low-income population percentages that exceed the county thresholds. For example, Brunswick, VA includes a low-income population of 18% and was not identified as an area of concern. Alberta, VA, with a low-income population percentage of 16% was identified as such, even though they are both in Brunswick County with a low-income population percentage of 17%. From the analysis provided in the DEIS, the application of the criteria does not appear to be consistent.	Tables 4-38 and 4-39 of the Tier II FEIS have been updated using 2010 data for the Preferred Alternative. Also, Section 4.11.5 of the Tier II FEIS has been updated using new FHWA EJ guidance.

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b. Questions arise related to the appropriate use of threshold values. An examination of the results of the evaluation process leaves a number of questions and concerns that need to be addressed in the FEIS. First, the assessment process seems to be highly subjective. Even though guidelines are provided for how assessment and identification of low-income and minority populations is to be conducted, the results do not seem to follow those guidelines. Clearly, populations that are more than 50% minority are not identified as communities of concern. In looking at the make up of the population of this country, and in looking at the populations of the states, it seems unreasonable to fail to identify any community that is more than 50% minority as not being a community of Environmental Justice concern. The CEQ guidance suggests that if the first benchmark is not met, then the second benchmarking technique should be employed. EPA recommends that conservative approaches to identifying 'at risk populations' should be employed in the E.J. analysis. The approach taken in the DEIS does not appear to be conservative, and could potentially put additional persons 'at risk' from the negative environmental impacts from the proposed project.	Section 4.11.5 of the Tier II FEIS has been corrected and updated using new FHWA EJ guidance.
c. The assessment criteria chosen to identify the low-income populations in the study are vague and not equally applied. The assessment does not identify what the relevance the state percentages of minority and low-income populations play in the overall analysis. Many of the communities in the study have minority and/or low-income populations that exceed the state averages. It is not clear if this information was used in the assessment and if not, why was the information included in the DEIS. The FEIS should clearly identify the relevance of the state percentage, the county percentage, the project study area percentage and the potential impacted minority and low-income residents. All comparative and relevant data should be used in the FEIS re-assessment.	Section 4.11.5 of the Tier II FEIS has been corrected and updated using new FHWA EJ guidance

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d. The potential impacts on the minority and low-income populations in the study area should be fully disclosed. It appears that determinations were made based upon the use of alignments associated with previous construction and existing infrastructure. Any potential additional construction activities associated with the proposed project, including station locations should be included in the FEIS re-assessment. Based upon the reassessment, the actual negative or adverse impacts to the community should be reasonably identified.	Section 4.11.5 of the Tier II FEIS has been corrected and updated using new FHWA EJ guidance. Also, Section 4.11.2.1 has been amended to include a new table and discussion of community impacts and benefits from the project. The FEIS does not evaluate the environmental impacts of stations or recommend specific station locations or design needs, because the development of stations is a unique undertaking at an individual location. As noted, generalized sites were evaluated, but only to the level to ensure that a station placed along the Project corridor in this general location would provide sufficient accessibility to the larger transportation network. Applicable governments at the individual station locations will perform separate environmental evaluations and make the final decision on the station location and design at a later date. It should be noted that Chapter 2 of the Tier II FEIS contains an expanded discussion of station design standards, and the types of information and detailed studies that those future NEPA evaluations would likely need to contain. And, as noted in revised Section 4.17 in the Tier II FEIS, locating HSR stations in center cities rather than greenfield or suburban areas is likely to avoid and minimize many of the project's potential direct and indirect environmental impacts.
e. It is assumed that the project will be beneficial to all parties in the project study area. A detailed socio-economic evaluation should be discussed in the FEIS to fully describe the claimed benefits. The FEIS re-assessment should fully address the issue of adverse and disproportional impacts to EJ communities in relation to documented benefits from the proposed project.	Chapter 1 of the Tier II FEIS provides additional information on the benefit of the project in terms of Purpose and Need. Section 4.11.1 has been amended and updated to address socio-economic changes and impacts. Also, Section 4.11.2.1 of the Tier II FEIS has been amended to include a new table and discussion of community impacts and benefits from the project.
f. The re-assessment should describe how the community is meaningfully being involved in the decision-making process.	Chapter 7 of the Tier II FEIS has been expanded to better describe the outreach efforts undertaken throughout the Project Study Area. As evidenced by the public hearing attendance, the project has received good participation from all affected communities.
g. The re-assessment should also utilize more current U.S. Census data and other more recent socio-economic data sources.	Various sections of Chapters 3 and 4 of the Tier II FEIS have been updated using 2010 Census data as well as 2006-2010 American Community Survey data.
h. From the table provided below, EPA suggests that practically all of the study areas listed below could indeed be identified as areas of concern, Table 3-25.	Chapters 3 and 4 of the Tier II FEIS have been updated using new FHWA EJ Guidance as well as 2010 Census data and 2006-2010 American Community Survey (ACS) data.

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The Norfolk District Corps of Engineers is a cooperating agency in accordance with the National Environmental Policy Act (NEPA; 40 CFR 1501.6). The Norfolk District is providing comments on the project from Richmond to Norlina, NC; the Wilmington District is reviewing the remaining portion of the project from Norlina to Raleigh. We have provided page-specific comments about the document on the attachment. 1) Based on the information in the document, the project will involve a discharge of fill into waters of the United States and will require authorization from the Corps of Engineers. The Norfolk District Engineer will ultimately make a permit decision after conducting a full public interest review, following review of the Final EIS and the responses to a public notice we will release upon receipt of a complete application.	Comment noted. The Project Team will coordinate with USACE through the Tier II FEIS, ROD, and final design/permitting phase of the project.
2) In comments we provided during scoping for the Tier II EIS, by a letter dated June 27, 2003, we noted that existing rail corridors should be used as much as possible for the project, and that avoidance of impacts to aquatic resources should be an important consideration in the development of alternatives.	The Project designs attempt to maximize use of the existing rail corridor. However, due to the need to straighten curves (which relates to the Purpose and Need for the project) or to avoid impacts to other resources (such as historic properties), there are occasions when it is necessary for the designs to extend outside the existing corridor.
3) We also indicated that conceptual options for compensating for unavoidable impacts to aquatic resources should be presented in the Tier II Draft EIS, and that potential compensation sites should be identified as part of the development of alternatives. While it is clear that minimizing impacts to aquatic resources was an important consideration in the development of the alternatives, the proposed impacts in Virginia are substantial. Wetland impacts are estimated to range from approximately 22 to 32 acres, and stream impacts are estimated to range from approximately 27 to 31 thousand linear feet.	Section 4.1.6 of the Tier II FEIS was amended to clarify proposed project compensation.
4) We have evaluated and compared the alternatives in each of the sections of the project in Virginia and the sections south to and including Norlina in NC. As discussed with your consultants, some sections are of concern, because they differ in impacts to aquatic resources, but other resources will be impacted if the aquatic resources are avoided. These segments were reviewed and discussed during an interagency field visit on May 19, 2010.	Comment noted. The Project Team will coordinate with USACE through the Tier II FEIS, ROD, and final design/permitting phase of the project

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5) In accordance with the 404(b) (1) Guidelines, the Corps can authorize only the least environmentally damaging practicable alternative (LEDPA). Below is a summary of our consideration of the various alternatives in each section, with a preliminary determination of the LEDPA for each section. We are providing these preliminary determinations of LEDPA in order to assist you in identifying the selected alternative. For each, we have provided an explanation of our preliminary determination, and we have identified factors we are willing to consider further for those sections where the LEDPA is not clear. We have considered operability/constructability, cost, and impacts to the social/economic factors as well as the natural environment in making these preliminary determinations.	Comment noted. The Project Team will coordinate with USACE through the Tier II FEIS, ROD, and final design/permitting phase of the project
a. For the following sections, the impacts to aquatic resources were the same regardless of the alternative, and there were no impacts to federally listed threatened or endangered species or more than minimal differences in impacts to other resources: AA, BB, CC, C, F, and I.	Comment noted.
b. For the following sections, there were relatively minimal differences between the alignments with regard to aquatic resource impacts: i. DD: While VA2 has somewhat more stream impact, it has somewhat less wetland impact. More importantly, you have determined that this alternative has a negative rating for operability/constructability, whereas VA1 is neutral and VA3 is positive. Either VA1 or VA3 appears to be the LEDPA.	Alternative VA3 is the preferred alternative in the Tier II FEIS for Section DD.
ii. A: VA2 has less impact to aquatic resources than VA1 or VA3, and the same effect on historic resources. It costs somewhat more, but has a neutral rating for operability/constructability while VA1/VA3 has a negative rating. VA2 appears to be the LEDPA.	Alternative VA2 is the preferred alternative in the Tier II FEIS for Section A.
iii. E: VA2 has more stream and wetland impacts than VA1/VA3. Costs are similar and historic resource impacts are the same. VA1/VA3 appears to be the LEDPA.	Alternative VA1 is the preferred alternative in the Tier II FEIS for Section E.
iv. H. VA1/VA3 has less stream and wetland impacts and is rated as positive for operability/constructability, although VA2 costs somewhat less. VA2 is rated neutral. VA1/VA3 appears to be the LEDPA.	Alternative VA1 is the preferred alternative in the Tier II FEIS for Section H.
v. M. This section is located in NC. NC2 has more stream impact than NC1/NC3. Although it costs somewhat less, it is rated as negative for operability/constructability whereas NC1/NC3 is rated as neutral. NC1/NC3 appears to be the LEDPA.	Alternative NC1 is the preferred alternative in the Tier II FEIS for Section M.

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c. For the following sections, there were relatively substantial differences between the alternatives with regard to aquatic resource impacts: i. B. VA2 has substantially less stream impacts and somewhat less wetland impacts and the same historic resource effects as VA1/VA3. However, VA2 is rated negative for operability/constructability, whereas VA1/VA3 is rated as neutral. VA2 is less costly than the other alternatives. Given that VA2 is projected to impact 450 linear feet less of stream than VA1/VA3, we would like to discuss further the factors that led to a negative rating for this alternative before making a preliminary determination of the LEDPA. We need further justification that this alternative is not practicable since it appears to be less environmentally damaging.	Alternative VA1 is the preferred alternative in the Tier II FEIS for Section B. As discussed during an interagency meeting on April 12, 2011, the difference in stream and wetland impacts between the alternatives will be significantly reduced from what was presented in the Tier II DEIS. In the Tier II DEIS, Alternative VA1 had approximately 450 additional feet of stream impacts and 0.35 acres of wetland impacts compared to Alternative VA2. Of these, more than 300 feet of stream impacts and 0.3 acres of wetland impacts associated with Alternative VA1 are attributed to the proposed new access road that intersects Carson Road. This road has been re-designed in such a way as to minimize or negate the stream and wetland impacts. Any remaining stream and wetland impacts will be fully mitigated, and the design work will include coordination with the USACE. The revised stream and wetland impacts for Alternative VA1 appear in the Tier II FEIS. With these reductions, the stream and wetland impacts for Alternative VA1 are more in line with Alternative VA2. At the April 12, 2011, meeting, USACE noted that if the stream and wetland impacts from the access road can be removed for the Alternative VA1, this alternative is acceptable as the preferred alternative in Section B.
ii. D. This section of the project is of greatest concern to the Norfolk District. VA2 impacts more than seven acres of wetlands, while VA1/VA3 are on common location and impact about one acre. VA2 not only impacts more wetlands, it will cross through an expansive and complex wetland system. While there is an existing abandoned fill corridor through that system, locating the proposed railway through the wetland complex will greatly increase the fragmentation of the system by the additional noise and activity associated with the trains and construction, in addition to the direct loss of wetlands from the footprint of the fill. VA2 also has about 500 linear feet more of stream impact than VA1/VA3. However, the U. S. Fish and wildlife has determined that VA1/VA3 may affect/is likely to adversely affect the Michaux's sumac (Rhus michauxii), a plant that is federally listed as endangered. In addition, VA1/VA3 will have an adverse effect on an historic property, and VA2 will not. All alternatives are rated as neutral, but VA2 is less costly. At this time, we cannot identify the LEDPA, given the complexity of the issues involved and the uncertainty about factors related to the sumac and the historic property. A site visit and meeting have been scheduled so that we can pursue these matters further. Our strong preference is that the wetland impacts associated with VA2 are avoided, but we will consider this section again after the scheduled meetings.	Alternative VA4 is the preferred alternative in the Tier II FEIS for Section D. Alternative VA4 was developed after the completion of the public comment period for the Tier II DEIS, through coordination and consultation with the USACE, VDHR, US Fish and Wildlife Service (USFWS), and the Virginia Division of Environmental Quality (VDEQ). Alternative VA4 does not require a Section 4(f) use of the Wynnhurst historic property, avoids impacts to the delineated population of the Michaux's Sumac, and minimizes wetland impacts (compared to Alternative VA2). This alternative was determined to be an acceptable preferred alternative by USACE, VDHR, USFWS, and VDEQ at an interagency meeting held on April 12, 2011.

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iii.	G. VA2 has no effect to historic properties and costs less. However, it impacts more streams and wetlands than VA1 VA3 and has a negative rating for operability/constructability. VA1 and VA3 both have effects to historic properties. VA1 impacts more streams than VA3 and has a neutral rating, while VA3 has the least wetland and stream impacts and a positive rating for operability/constructability. Considering all factors, VA3 appears to be the LEDPA. We recognize that the impacts to the historic property may result in a Section 4(f) use. However, based on the information discussed at previous meetings regarding the site, the impacts to the historic property do not preclude VA3 from identification as the LEDPA.	Alternative VA3 is the preferred alternative in the Tier II FEIS for Section G.
iv.	J. VA2 has substantially less stream impact than VA1/VA3, 698 linear feet vs. 2,061 linear feet. VA1/VA3 has an adverse effect to an historic property. VA1/VA3 is rated positive for operability/constructability, while VA2 is rated neutral. VA2 costs somewhat less. Although VA2 is not rated as highly as VA1/VA3 for operability/constructability, it appears that VA2 is the LEDPA.	Alternative VA2 is the preferred alternative in the Tier II FEIS for Section J.
v.	K. VA2 has substantially more stream impacts than VA1/VA3, as well as an adverse effect to an historic resource, which VA1/VA3 does not have. VA2 is rated negative for operability/constructability, whereas VA1/VA3 is rated as neutral. VA2 is less costly than the other alternatives. VA1/VA3 appears to be the LEDPA.	Alternative VA1 is the preferred alternative in the Tier II FEIS for Section K.
vi.	L. This section includes portions in VA and in NC. VA2/NC2 impacts considerably less stream length than VA/NC1/VA/NC3, almost 1400 linear feet less. It also has somewhat less wetland impact. However, it has an adverse effect to an historic property, whereas VA/NC1/VA/NC3 do not, costs more, and has a negative rating for operability/constructability, whereas VA/NC1/VA/NC3 is rated as neutral. Given that VA/NC2 is projected to have substantially less stream impacts than VA/NC1/VA/NC3, we would like to discuss further the factors that led to a negative rating for this alternative before making a preliminary determination of the LEDPA.	Alternative VA1/NC1 is the preferred alternative in the Tier II FEIS for Section L. The issues associated with the VA2/NC2 alternative in this section were discussed at an interagency meeting on April 12, 2011. Alternative VA2/NC2 stays within existing rail ROW near the Granite Hall/Fitts House historic resource; however, the proposed road realignment and bridge construction along Paschall Road would result in an adverse effect on the property under Section 106 of the National Historic Preservation Act and require a Section 4(f) use of the resource. The operability and constructability rating is negative and the limiting speed is 100 mph. The negative rating stems from a sharper curvature in the rail alignment, which means an increase in long-term maintenance for the rails and train equipment, and a lower speed and longer alignment, which means an increase in schedule time and fuel use (due to the deceleration and acceleration through the curves). At the April 12, 2011, meeting, USACE stated that that Alternative VA1/NC1 would be acceptable as the preferred alternative in Section L.

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6) The document indicates compensation for these impacts will be provided through the use of mitigation banks and/or the Virginia Aquatic Resources Trust Fund (VARTF). In the discussion of compensatory mitigation on page 4-15, it is noted that not all of the watersheds in Virginia where aquatic resource impacts occur are served by existing banks. It is likely that insufficient credits exist, particularly for stream impacts, in some of the watersheds that are currently served by banks. It is likely that a determination will be made that the impacts are too extensive for compensation to be provided by the VARTF. As we recommended in our 2003 comments, investigation should be conducted now for potential compensation sites for anticipated impacts, rather than delaying a full effort to identify compensation closer to construction. It does not appear that any potential compensation sites have been identified, and sufficient bank credits may or may not be available when you begin the permitting process.	Section 4.1.6 of the Tier II FEIS provides updated information on the availability of mitigation banks in the Project Study Area.
7) It appears that any of the alternatives under consideration have the potential to affect cultural and historic resources. According to 36 CFR 800.2(a)(2): *" ... If more than one Federal agency is involved in an undertaking, some or all [of] the agencies may designate a lead Federal agency, which shall identify the appropriate official to serve as the agency official who shall act on their behalf, fulfilling their collective responsibilities under section 106. Those Federal agencies that do not designate a lead Federal agency remain individually responsible for their compliance with this part."* *Since FRA is the lead Federal agency for compliance with NEPA and would have a greater amount of Federal control and responsibility over the entire project than the Corps, we designate FRA as the lead Federal agency to fulfill the collective Federal responsibilities under Section 106 for the proposed undertaking. The Norfolk District authorizes FRA to conduct Section 106 coordination on its behalf. Any Memorandum of Agreement prepared by FRA under 36 CFR 800.6 for concerning historic resources located between and including Richmond and Norlina should include the following clause in the introductory text:* *"WHEREAS, pursuant to Section 10 and/or Section 404 of the Clean Water Act, a Department of the Army permit will likely be required from the Corps of Engineers for this project, and the Norfolk District has designated FRA as the lead Federal agency to fulfill Federal responsibilities under Section 106; and"*	Comment noted.

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8) Norfolk District Specific comments regarding the details of the Tier II DEIS a. Permits: i. In the section on permits, beginning on page 4-11, you note that any action that proposes to dredge into waters or wetlands is subject to Corps of Engineers regulations. It should be noted that some excavation/dredging in waters of the U.S. is not a jurisdictional activity for the Norfolk District, depending on how the activity is conducted. We concur with the assessment in the DEIS that an individual permit will be required from the Norfolk District for this project, given the extent of expected impacts.	Comment noted.
ii. Under the discussion of stormwater permits on page 4-13, you list several measures that would be taken as part of a stormwater management plan. Included in the list is the elimination of construction staging areas in floodplains or adjacent to streams. Such areas should also not be located in wetlands.	Section 4.1.5.2 of the Tier II FEIS was updated to state that elimination of construction staging areas in floodplains or adjacent to streams, wetlands, and tributaries to help reduce the potential for petroleum contamination or discharges of other hazardous materials into receiving waters.
iii. Regarding permit requirements of the U.S. Coast Guard (USCG; page 4-13), we recommend that you coordinate with the USCG soon regarding their permit requirements. The document states that permits would not be required for the crossings of the Appomattox, Nottoway, or Meherrin Rivers in Virginia. However, our coordination with USCG indicates that a USCG permit may be required for these waterways. You should coordinate with them directly about the specific locations of your proposed bridges to ascertain permit requirements. You should also coordinate with them about any existing bridges that will be upgraded (such as the one at Lake Gaston), because if the characteristics of use of bridge change, a permit or permit amendment may be required from the USCG.	As stated in Section 3.1.5 of the Tier II DEIS and 4.1.5.3 of the Tier II FEIS, in a letter dated November 5, 2009, the USCG verified that the Richmond to Raleigh Project crossing of the James River in Richmond, VA, is the only waterway in the Project Study Area subject to USCG jurisdiction. The Richmond to Raleigh Project crossings of the Appomattox River (near Ettrick, VA), Nottoway River (near McKenney, VA), Meherrin River (vicinity of US-1 near South Hill, VA), Tar River (vicinity of US-1 at the border of Vance County, NC, and Franklin County, NC), and Neuse River (near Capital Boulevard just north of Raleigh, NC) are not under USCG jurisdiction because they are not subject to tidal influence (Giese et al., 1985) nor are they used for interstate commerce. These rivers have active recreational use (e.g., kayaks and canoes), but cannot support commercial watercraft at the location where the Richmond to Raleigh Project crosses. In addition, a permit is not required for the crossing of Lake Gaston because the Project will use the existing bridge piers; work will involve upgrading the deck of the bridge to the Project design standards.
iv. This section also discusses vertical and horizontal clearance for the proposed James River bridge. The crossing of this waterway should be coordinated with the Operations Branch of the Norfolk District to verify proposed clearances are acceptable in relation to the federal project channel. We recognize that the bridge is being planned with the same clearance as the existing bridge, but future plans for the channel may necessitate a change in that clearance, and the new bridge may be required to meet any such future plans even if the existing bridge does not.	This issue will be addressed during final design to ensure the standards in place at that time are met.

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b. Compensatory Mitigation: i. On page 4-15, the document lists typical mitigation ratios. Generally what is presented represents what is typically required by the Norfolk District, but some ratios given do not represent the full range applied in Virginia. Generally the Norfolk District requires 2:1 for forested wetland restoration and 3:1 for creation, as indicated in the document. However, for enhancement activities to compensate for all types of wetlands, we require in the range of 3:1 to 9:1, depending on the particular situation. For preservation, the document indicates 10:1; we typically require from 10:1 to 20:1, depending on the type and quality of the wetland being preserved and the extent of uplands included in the preserved area. Our typical ratio for wetland restoration for scrub shrub wetlands is 1.5:1 and 2:1 for creation. Our typical ratio for wetland restoration for emergent wetlands is 1:1 and 1.5:1 for creation. Please refer to these ratios when developing your compensation plan for wetlands.	Section 4.1.6 of the Tier II FEIS was amended to clarify mitigation ratios, as indicated in this comment.
ii. The document also gives typical ratios for stream mitigation. In Virginia, the Unified Stream Methodology (USM), developed jointly by the Norfolk District and the Virginia Department of Environmental Quality, provides a guide for determining appropriate stream compensation requirements. The USM, including instructions, can be found at http://www.nao.usace.army.mil/technical%20services/Regulatory%20branch/USM.asp. The USM should be used for the development of the stream compensation plan for impacts in Virginia, whether compensation is provided by the applicant or through the purchase of bank credits.	Section 4.1.6 of the Tier II FEIS was amended to clarify stream compensation requirements, as indicated in this comment.
c. Other issues: i. Page ES-6: The document notes that specific locations for the railway stations within La Crosse will be determined by the town as appropriate. Railway station locations should be anticipated, so that railway alternatives are located such that any station to be constructed as a result of this project can be positioned where impacts to aquatic resources are avoided.	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations or design needs, because the development of stations is a unique undertaking at an individual location. As noted, generalized sites were evaluated, but only to the level to ensure that a station placed along the Project corridor in this general location would provide sufficient accessibility to the larger transportation network. All public and agency comments received regarding specific station locations have been noted and will be provided to transportation planning organizations in each station location. Those governments at the individual station locations will perform separate environmental evaluations and make the final decision on the station location and design at a later date. As noted in revised Section 4.17 in the Tier II FEIS, locating HSR stations in center cities rather than greenfield or suburban areas is likely to avoid and minimize many potential direct and indirect environmental impacts from the project.

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	Comment	**Response**
ii.	Page 4-8 notes that culverts will be countersunk. We concur, because countersinking of pipes/culverts in streams is a requirement in the Norfolk District. You may find additional information regarding our countersinking requirements at http://www.nao.usace.army.mil/technical%20services/Regulatory%20branch/NWP2007/2007%20Nationwide%20Permits%20Regional%20Conditions.pdf.	Comment noted.
iii.	Page 4-14 includes information regarding avoidance and minimization. Please note that bridges are preferred over culverts for road crossings, to minimize impacts to streams.	Comment noted
iv.	Page 4-59: The discussion of impacts to terrestrial habitats and wildlife seems inadequate, because no information is given regarding fragmentation of habitat and wildlife corridors. Considering the length of the project through largely undeveloped areas, it appears that fragmentation could be a substantial impact. Fragmentation of riparian corridors should also be evaluated. There may also be impacts to forest interior-dependent species, and this issue is not addressed in the document. Similarly, the discussion of the commitment of irreversible and irretrievable resources in section 4.19 on page 4-207 does not address these issues in its discussion of wildlife resources.	A discussion of habitat fragmentation was added to Sections 4.10.1.1 and 4.19 of the Tier II FEIS.
v.	Page 4-200: Section 4.17 on Indirect and Cumulative Effects appears inadequate. The definition of cumulative impacts in this section includes past, present, and reasonably foreseeable future actions. Yet, there is very little if any description of past actions or the history of land use and development in the area of the project. It is difficult for the reader to assess cumulative effects when present conditions and how the region has changed over time are not provided. The document does note that certain areas are urban and others rural, but very little else is provided concerning past and present actions. There is a discussion of future actions, but with the exception of development planned as part of the expansion of Ft. Lee, all of the future actions presented are railway-related. This section should address not only how this project may link with other transportation projects, but how the human environment has and will be affected, cumulatively. With regard to aquatic resources, cumulative effects should be addressed in relation to river watersheds.	Sections 4.11 and 4.17 of the Tier II FEIS have been amended to include additional discussion of secondary/cumulative impacts of the project.

State Agencies

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Comment	**Response**
1) Multiple agencies, localities and planning district commissions participated in the review of the DEIS for this proposal. Based on the information provided in the DEIS and comments from reviewers, the Commonwealth of Virginia has no objection to the proposal as presented, provided the proponent agencies comply with all applicable laws and regulations. Reviewers identified potential adverse impacts to resources and submitted recommendations to mitigate them. Future coordination with these agencies is required as follows: Water quality and wetland impacts will require authorization by the appropriate DEQ regional office (Piedmont Regional Office or Blue Ridge Regional Office) under the Virginia Water Protection Permit Program. Erosion and sediment control, stormwater management and impacts to Chesapeake Bay Preservation Areas will require review and approval by the Department of Conservation and Recreation. Impacts to state subaqueous lands fall under the authority of the Virginia Marine Resources Commission. Air quality and waste impacts are administered by DEQ. Development of the rail line should be coordinated with the U.S. Fish and Wildlife Service, Virginia Department of Game and Inland Fisheries, Department of Conservation and Recreation Division of Natural Heritage and Virginia Department of Agriculture and Consumer Services to ensure the protection of federally- and state-listed wildlife species. Project impacts on the Commonwealth's forest resources are administered by the Virginia Division of Forestry. Proponent agencies must continue to work with the Virginia Department of Historic Resources regarding the proposed Memorandum of Agreement guiding the treatment of impacted historic and archaeological resources.	Coordination with all required agencies to ensure compliance with all applicable laws and regulations will continue as the project moves forward to permitting and construction.
2) Water Quality and Wetlands. a. According to the DEIS (page ES-7), total potential stream impacts for the project corridor in Virginia may range from 27,304 linear feet up to 31,163 linear feet of jurisdictional channel, depending on the combination of alternatives selected. The greatest difference between alternatives occurs in the Roanoke River Basin, in Section J. In this section, VA1 and VA3 are on common alignment and would have 2,061 linear feet of impacts, compared to VA2 which has only 698. Total potential impacts to lakes, ponds and reservoirs for the project corridor in Virginia may range from 1.64 to 3.67 acres. The document (pages ES-9-ES-10) shows that potential project impacts to wetlands in Virginia would be from 22.03 to 31.48 acres. Selection of the VA2 project alternative would result in the least wetland impacts in the Chowan River Basin for Sections DO, A, and B. Alternatives VA1 or VA2 would best minimize impacts for Sections 0, E, and G.	For Section J, VA2 is the preferred alternative, due in part to the avoidance of stream impacts. For Section DD, Alternative VA3 was selected to minimize the effect to the Weldon Railroad/Globe Tavern Battlefield, which is eligible for the National Register of Historic Places (NRHP). VA2 was selected for Section A in part to minimize stream and wetland impacts. VA1/VA3 was selected for Section B in part to minimize noise impacts, business relocations and to maintain desired operating speed. A new alternative (VA4) was developed to avoid effects to an historic property, avoid impacts to a Michaux's sumac population, and reduce wetland impacts compared with alternative VA2. Alternative VA1/VA3 was selected for Section E, in part to minimize stream and wetland impacts. Alternative VA3 was selected for Section G, in part because stream impacts for this alternative had been reduced to 500 feet, which is less than the impacts calculated for the other alternatives in this section.

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Comment	**Response**
b. According to the DEIS (ES-11), in Virginia, mitigation would be provided through the use of mitigation banks and/or the Virginia Aquatic Resources Trust Fund (VAQRTF). However, no banks are currently listed serving the Roanoke Rapids hydrologic unit (HU 03010106). The VAQRTF pursues stream and wetland mitigation projects throughout Virginia as an in-lieu fee program. It is administered in partnership with the Corps Norfolk District and The Nature Conservancy in Virginia. The use of the VAQRTF as a mitigation option is at the discretion of the appropriate regulatory agencies.	Mitigation for stream impacts has been updated in Sections 4.1.1.1, 4.1.1.2, and 4.1.6, of the Tier II FEIS, which provide updated information on established mitigation banks. Mitigation for stream and wetland impacts will be secured prior to project permitting.
c. Agency Jurisdiction. The State Water Control Board (SWCB) promulgates Virginia's water regulations, covering a variety of permits to include Virginia Pollutant Discharge Elimination System (VPDES) Permit, Virginia Pollution Abatement Permit, Surface and Groundwater Withdrawal Permit, and the Virginia Water Protection Permit (VWPP). The VWPP is a state permit which governs wetlands, surface water, and surface water withdrawals/impoundments. It also serves as § 401 certification of the federal Clean Water Act§ 404 permits for dredge and fill activities in waters of the U.S. The VWPP Program is under the Office of Wetlands and Water Protection/Compliance, within the DEQ Division of Water Quality Programs. In addition to central office staff that review and issue VWP permits for transportation and water withdrawal projects, the six DEQ regional offices perform permit application reviews and issue permits for the covered activities.	Permits are discussed in Section 4.1.6 of the Tier II DEIS. The specific need for the VWPP was included in Section 4.1.5 of the Tier II FEIS, which includes the following text: The USACE cannot issue a Section 404 permit until a Section 401 certification is issued. Therefore, the Richmond to Raleigh Project must apply to VDEQ and NCDWQ for Section 401 Water Quality Certification as part of the permit process. Based on the assessments summarized in Sections 4.1.1 and 4.1.2, it is likely that a Section 404 IP requiring mitigation will be required for the Richmond to Raleigh Project. Temporary activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction or rehabilitation should also be included in the permit application. The USACE will determine what permit(s) will be required to authorize project construction. In Virginia, the Richmond to Raleigh Project would complete a Joint Permit Application to apply for a Section 404 permit, Section 401 certification (Virginia Water Protection Permit), and a subaqueous permit from the Virginia Marine Resources Commission (VMRC). The Virginia Water Protection Permit (VWPP) is a state permit which governs wetlands, surface water, and surface water withdrawals/impoundments. It also serves as § 401 certification of the federal Clean Water Act § 404 permits for dredge and fill activities in waters of the U.S. The subaqueous permit is needed to encroach upon or over bottomlands under VMRC jurisdiction, which include submerged lands (beds of lakes, rivers, and streams) including non-tidal, perennial tributaries draining five square miles or greater. To issue the permit, the VMRC must determine that the Project is necessary, that there are no reasonable alternatives requiring less environmental disruption, and that adverse effects do not unreasonably interfere with other private and public rights to the use of waterways and bottomlands.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>d. Agency Comments. DEQ's Piedmont Regional Office (PRO) notes that there is the potential for adverse impacts to many natural resources in the study area (sections AA-H) due to the size, scope, and the number of alternatives considered for this project. The DEQ Blue Ridge Regional Office (BRRO) generally finds that significant long-term environmental impacts are not expected from this project (sections I-L). Principal impacts will be related to short-term construction activities. Requirements. According to DEQ-PRO and DEQ-BRRO, construction activities that adversely impact wetlands or streams will require review and approval under the VWPP program.</td><td>Comment noted. See VWPP discussion above.</td></tr>
<tr><td>e. Recommendations. DEQ-PRO recommends all efforts should be taken to ensure that the adjacent wetlands and waterways are not adversely affected by the proposed activities. DEQ-BRRO recommends the implementation of construction best management practices (BMPs) and the utilization of existing structures as recommended in the DEIS to minimize environmental impacts. In general, DEQ recommends that stream and wetland impacts be avoided to the maximum extent practicable. To minimize unavoidable impacts to wetlands and waterways, DEQ recommends the following practices:

i. Stockpile material excavated for stream crossings for replacement, to the extent practicable.
ii. Consider using a work bridge rather than a causeway to reduce temporary impacts.
iii. Operate machinery and construction vehicles outside of stream-beds and wetlands; use synthetic mats when in-stream work is unavoidable;
iv. Construct trenches in a manner that does not drain the wetlands.
v. Preserve the top 12 inches of material removed from wetlands for use as wetland seed and root-stock in the excavated area.
vi. Erosion and sedimentation controls (ESCs) should be designed in accordance with the most current edition of the Virginia Erosion and Sediment Control Handbook (1992, 3rd Edition). These controls should be in place prior to clearing and grading, and maintained in good working order to minimize impacts to state waters. ESCs and BMPs should be inspected and repaired before and after rain events. The controls should remain in place until the area is stabilized. Monitor construction activities to ensure that erosion and stormwater management practices are adequately preventing sediment and pollutant migration into surface waters, including wetlands.
vii. Place heavy equipment, located in temporarily impacted wetland areas, on mats, geotextile fabric, or use other suitable measures to minimize soil disturbance, to the maximum extent practicable.
viii. Restore a" temporarily disturbed wetland areas to pre-construction conditions</td><td>Construction of the proposed Richmond to Raleigh Project will follow all permit conditions, as described in Section 4.1.4 of the Tier II DEIS and Section 4.1.5 of the Tier II FEIS.</td></tr>
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and plant or seed with appropriate wetlands vegetation in accordance with the cover type (emergent, scrub-shrub, or forested). The applicant should take all appropriate measures to promote re-vegetation of these areas. Stabilization and restoration efforts should occur immediately after the temporary disturbance of each wetland area instead of waiting until the entire project has been completed. ix. Any temporary impact should be restored to their original contours and revegetated with the same or similar species. x. Place all materials which are temporarily stockpiled in wetlands, designated for use for the immediate stabilization of wetlands, on mats, geotextile fabric in order to prevent entry in state waters. These materials should be managed in a manner that prevents leachates from entering state waters and must be entirely removed within thirty days following completion of that construction activity. The disturbed areas should be returned to their original contours, stabilized within thirty days following removal of the stockpile, and restored to the original vegetated state. xi. All non-impacted surface waters within the project or right-of-way limits that are within 50 feet of any clearing, grading, or filling activities should be clearly flagged or marked for the life of the construction activity within that area. The project proponent should notify all contractors that these marked areas are surface waters where no activities are to occur. xii. Measures should be employed to prevent spills of fuels or lubricants into state waters.	
f. Regulatory and Coordination Needs. Water quality and wetland impacts associated with this proposal will require a Virginia Water Protection Permit issued by the DEQ Piedmont Regional Office (sections AA-H) or Blue Ridge Regional Office (sections I-L) pursuant to Virginia Code §62.1-44.15:5. A Joint Permit Application may be obtained from and submitted to the Virginia Marine Resources Commission which serves as a clearinghouse for the joint permitting process involving the VMRC, DEQ, Corps, and local wetlands boards. For additional information and coordination regarding the VWPP, contact Cory Chamberlain (DEQ-PRO) at (804) 527-5081 or Kip Foster (DEQ-BRRO) at (540) 562-6782.	Comment noted. See VWPP discussion above.

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Comment	**Response**
3) Subaqueous Lands. a. According to the DEIS (page 4-12), in Virginia, the SEHSR project would complete a Joint Permit Application for a subaqueous permit from the Virginia Marine Resources Commission (VMRC). The document notes that the subaqueous permit is needed to encroach upon or over bottom lands under VMRC jurisdiction, which include submerged lands (beds of lakes, rivers, and streams) including non-tidal, perennial tributaries draining five square miles or greater.	Comment noted. See VWPP discussion above.
b. Agency Jurisdiction. The Virginia Marine Resources Commission, pursuant to Section 28.2-1204 of the Code of Virginia, has jurisdiction over any encroachments in, on, or over any state-owned rivers, streams, or creeks in the Commonwealth. For any development that involves encroachments channelward of ordinary high water along natural rivers and streams, a permit is required from VMRC. The VMRC serves as the clearinghouse for the Joint Permit Application used by the: • VMRC for encroachments on or over state-owned subaqueous beds as well as tidal wetlands; • U.S. Army Corps of Engineers (Corps) for issuing permits pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act; • DEQ for issuance of a Virginia Water Protection Permit; and local wetlands board for impacts to wetlands.	Comment noted. See VWPP discussion above.
c. Regulatory and Coordination Needs. According to VMRC, as noted in the DEIS, a JPA is required for a Section 404 Clean Water Act (CWA) permit, Section 401 CWA certification (i.e. VWPP) and a subaqueous permit from VMRC, pursuant to Section 28.2-1200 et seq. of the Code of Virginia, to encroach upon or over bottom lands under VMRC jurisdiction. VMRC must determine that the project is necessary, that there are no reasonable alternatives requiring less environmental disruption, and that adverse effects do not unreasonably interfere with other private and public rights to the use of waterways and bottom lands prior to issuing a subaqueous lands permit. Any impacts will be reviewed by VMRC with the submission of the Joint Permit Application. For additional information, contact Ben Stagg, VMRC at (757) 247-2009.	Comment noted. See VWPP discussion above.

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Comment	**Response**
4) Erosion and Sediment Control, and Stormwater Management. a. According to the DEIS (page 4-2), in order to minimize potential impacts to water resources in the project area, the most recent edition of Virginia Department of Conservation and Recreation's Erosion Sediment Control Handbook will be strictly enforced during the construction phase of the project. The document (page 4-5) states that the SEHSR project is committed to complying with all applicable water quality regulations and permit requirements, as well as to minimizing all impacts to water quality as designs are finalized. This includes complying with the Virginia Erosion and Sediment Control Law and the Virginia Stormwater Management Act. Agency Jurisdiction. DCR's Division of Soil and Water conservation administers the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R) and Virginia Stormwater Management Law and Regulations (VSWML&R).	Comment noted. As stated in the Tier II DEIS, the Richmond to Raleigh Project will comply with the Virginia Erosion and Sediment Control Law and the Virginia Stormwater Management Act.
b. Erosion and Sediment Control and Stormwater Management Plans. According to the Department of Conservation and Recreation (DCR), the proponent agencies and their authorized agents conducting regulated land-disturbing activities on private and public lands in the state must comply with VESCL&R, VSWML&R (including coverage under the general permit for stormwater discharge from construction activities) and other applicable federal nonpoint source pollution mandates (e.g. Clean Water Act-Section 313, federal consistency under the Coastal Zone Management Act). Clearing and grading activities, installation of staging areas, parking lots, roads, buildings, utilities, borrow areas, soil stockpiles, and related land-disturbing activities that result in the land disturbance of greater than 10,000 square feet (2,500 square feet in a Chesapeake Bay Preservation Area) would be regulated by VESCL&R and VSWML&R. Accordingly, proponent agencies must prepare and implement an erosion and sediment control (ESC) plan and a stormwater management (SWM) plan to ensure compliance with state law and regulations. The ESC and SWM plans are submitted to the DCR Regional Office that serves the area where the construction is located for review for compliance. The project proponent is ultimately responsible for achieving project compliance through oversight of on site contractors, regular field inspection, prompt action against non-compliant sites, and other mechanisms consistent with agency policy. [Reference: VESCL §10.1-567; Virginia Stormwater Management Act §10.1-603.3; Virginia Stormwater Management Program (VSMP) Permit Regulations' 4 VAC 50-60-110].	Section 4.1.5.2 of the Tier II FEIS was updated with the following text: Since the Richmond to Raleigh Project would disturb more than 10,000 square feet, it must obtain a Virginia Stormwater Management Program (VSMP) general National Pollutant Discharge Elimination System (NPDES) permit through the Virginia Department of Conservation and Recreation (VDCR). A site-specific Stormwater Pollution Prevention Plan (SWPPP) will need to be prepared and implemented. The SWPPP outlines the steps and techniques the operator will take to comply with the terms and conditions of the permit, including water quality and quantity requirements that are consistent with the VSMP permit regulations, to reduce pollutants in the stormwater runoff from the construction site. The SWPPP also includes a description of post development stormwater management measures to be installed, including design calculations. Prior to construction, an erosion and sediment control (ESC) plan and a stormwater management (SWM) plan to ensure compliance with state law and regulations will be prepared and implemented.

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Comment	**Response**
c. Virginia Stormwater Management Program General Permit for Stormwater Discharges from Construction Activities. OCR is responsible for the issuance, denial, revocation, termination and enforcement of the Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities related to municipal separate storm sewer systems (MS4s) and construction activities for the control of stormwater discharges from MS4s and land disturbing activities under the Virginia Stormwater Management Program. The operator or owner of construction activities involving land-disturbing activities equal to or greater than one acre (2,500 square feet in Chesapeake Bay Preservation Areas) are required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit and the SWPPP must address water quality and quantity in accordance with the Virginia Stormwater Management Program (VSMP) Permit Regulations. General information and registration forms for the General Permit are available on OCR's website at: http://www.dcr.virginia.gov/soil and water/vsmp.shtml. [Reference: Virginia Stormwater Management Act §10.1-603.1 et seq.; VSMP Permit Regulations 4 VAC-50 et seq.] Specific questions regarding the Stormwater Management Program requirements should be directed to Holly Sepety, OCR, at (804) 225-2613. Future development must be conducted in compliance with Virginia's Erosion and Sediment Control Law (Virginia Code 10.1-567) and Regulations (4 VAC 50-30-30 et seq.) and Stormwater Management Law (Virginia Code 10.1-603.5) and Regulations (4 VAC 3-20-210 et seq.). Activities that disturb 10,000 square feet or more of land (2,500 square feet or more in Chesapeake Bay Preservation Areas) would be regulated by VESCL&R and VSWML&R. Proponent agencies are encouraged to contact OCR's Richmond Regional Office (sections AA-C) at (804) 225-3390 or the Clarksville Regional Office (sections D-L) at (434) 374-3648, for assistance with developing or implementing any future ESC plans to ensure project conformance.	Compliance with stormwater permits is discussed in Section 4.1.6.2 of the Tier II DEIS. Compliance with the Chesapeake Bay Act is discussed in Section 4.1.1.2.

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Comment	**Response**
5) Chesapeake Bay Preservation Areas. a. According to the DEIS (page 4-4), within Tidewater Virginia, the Chesapeake Bay Preservation Act (Bay Act) regulates Chesapeake Bay Preservation Areas that include land areas adjacent to water bodies. Within the project area, the cities of Richmond, Colonial Heights, and Petersburg, as well as Chesterfield County, are subject to the Bay Act. The document (page 4-4) notes that Chapter 20 Section 9 VAC 10-20-150 of the Chesapeake Bay Preservation Area Designation and Management Regulations, "Nonconformities, exemptions, and exceptions," excludes public utilities, railroads, public roads, and facilities from the requirements of the Bay Act. The document concludes that the SEHSR project is subject to this exemption, provided that the project and related construction activities follow local, state, and federal water quality regulations. Agency Jurisdiction. OCR's Division of Chesapeake Bay local Assistance (DCBLA) administers the coastal lands management enforceable policy of the VCP which is governed by the Chesapeake Bay Preservation Act (Virginia Code §10.1-2100- 10.1-2114) and Chesapeake Bay Preservation Area Designation and Management Regulations (Regulations) (9 VAC 10-20 et seq.).	Compliance with the Chesapeake Bay Act is discussed in Section 4.1.1.2 of the Tier II DEIS.
b. Agency Findings. According to DCR-DCBLA, in the City of Richmond, the areas protected by the Bay Act, as locally implemented, require conformance with performance criteria. These areas include Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) as designated by the local government. RPAs include: • tidal wetlands; • non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or perennial water bodies; • tidal shores; and • lands within a 100-foot vegetated buffer area located adjacent to and landward of the aforementioned features and along both sides of any water body with perennial flow. RMAs, which require less stringent performance criteria, include: • floodplains; • nontidal wetlands which are not included in the RPA; • highly erodible soils including steep slopes which are contiguous to an RPA; • highly permeable soils which are contiguous to an RPA; plus • a 500-foot wide land area located adjacent to any RPA.	Comment noted. The Chesapeake Bay Preservation Act is discussed in the Tier II DEIS in Sections 3.1.1.1.1 and 4.1.1.2.

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Comment	**Response**
c. In Chesterfield County, the areas protected by the Bay Act, as locally implemented, require conformance with performance criteria. These areas include RPAs and RMAs. RPAs include: • tidal wetlands; • non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow; • tidal shores; and • a 100-foot vegetated buffer area located adjacent to and landward of the aforementioned features and along both sides of any water body with perennial flow. RMAs, which require less stringent performance criteria, include: • one hundred year floodplains; • highly erodible soils (including steep slopes); • highly permeable soils; and • nontidal wetlands not included in the RPA	Comment noted. The Chesapeake Bay Preservation Act is discussed in the Tier II DEIS in Sections 3.1.1.1.1 and 4.1.1.2.
d. In the City of Petersburg, the areas protected by the Bay Act, as locally implemented, require conformance with performance criteria. These areas include RPAs and RMAs as designated by the local government. RPAs include: • tidal wetlands; • non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or perennial water bodies; • tidal shores; and • lands within a 100-foot vegetated buffer area located adjacent to and landward of the aforementioned features and along both sides of any water body with perennial flow that are within the Chesapeake Bay watershed. • RMAs, which require less stringent performance criteria, include: • floodplains; • nontidal wetlands which are not included in the RPA; • highly erodible soils including steep slopes which are contiguous to an RPA; • highly permeable soils which are contiguous to an RPA; and • a 100-foot land area located along any RPA where none of the components previously listed are present. For additional information and coordination, contact Joan Salvati, DCR-DCBLA, at (804) 225-3440.	Comment noted. The Chesapeake Bay Preservation Act is discussed in the Tier II DEIS in Sections 3.1.1.1.1 and 4.1.1.2.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>6) Coastal Zone Management Act and Federal Consistency. Pursuant to the Coastal Zone Management Act of 1972, as amended, proponent agencies are required to determine the consistency of its activities affecting Virginia's coastal resources or coastal uses with the Virginia Coastal Zone Management Program (VCP) (previously called the Virginia Coastal Resources Management Program) (see § 307(c)(3)(A) of the Act and 15 CFR Part 930, Sub-part 0, § 930.50 et seq.). This involves an analysis of the activities in light of the Enforceable Policies of the VCP (see Attachment 1*), and submission of a Federal Consistency Certification (FCC) reflecting that analysis and committing the proponent agencies to comply with the Enforceable Policies. Section 930.58 gives content requirements for the consistency certification, or you may visit the DEQ Website at, http://www.deg.virginia.gov/eir/federal.html. We encourage the proponent agencies to consider the Advisory Policies of the VCP (see Attachment 2*).

The FCC must be submitted and DEQ's concurrence obtained prior to any land disturbance with the Commonwealth's designated coastal zone.

* See end of this table for these attachments.</td><td>The Coastal Zone Management Act and the Virginia Coastal Zone Management Program (VCP are discussed in the Tier II DEIS in Section 4.1.5.1. All relevant conditions of these acts will be followed during the permitting stage of the Project, before construction.</td></tr>
<tr><td>7) Federal Stormwater Management Commitments.
a. The 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan requires the signatories to fully cooperate with local and state governments in carrying out voluntary and mandatory actions to comply with the management of stormwater. The agencies also committed to encouraging construction design that:
i. minimizes natural area loss on new and rehabilitated federal facilities;
ii. adopts low impact development and best management technologies for stormwater, sediment and erosion control and reduces impervious surfaces; and
iii. considers the Conservation Landscaping and Bay-Scapes Guide for Federal Land Managers.

In addition, the Chesapeake 2000 Agreement committed the government agencies to a number of sound land use and stormwater quality controls. The signatories additionally committed the agencies to lead by example with respect to controlling nutrient, sediment and chemical contaminant runoff from government properties. In December 2001, the Executive Council of the Chesapeake Bay Program issued Directive No. 01-1, Managing Storm Water on State, Federal and District-owned Lands and Facilities, which includes specific commitments for agencies to lead by example with respect to stormwater control.</td><td>Comment noted. Compliance with stormwater permits is discussed in Section 4.1.5.2 of the Tier II DEIS.</td></tr>
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Comment	**Response**
b. Requirements. Construction, installation, operation and maintenance of railroads and their appurtenant structures are conditionally exempt from the Regulations provided they are constructed in accordance with: i. Regulations promulgated pursuant to the Erosion and Sediment Control Law (§10.1-560 et seq. of the Code of Virginia) and the Stormwater Management Act (§10.1-603.1 et seq. of the Code of Virginia) ii. An erosion and sediment control plan and a stormwater management plan approved by the Virginia Department of Conservation and Recreation, or iii. Local water quality protection criteria at least as stringent as the above state requirements. Conclusion. DCR-DCBLA concurs that the proposed activity would be consistent with the Bay Act and Regulations, provided adherence to the above requirements.	Comment noted.
8) Air Quality. a. According to the Tier II DEIS (page ES-15), air quality impacts associated with the SEHSR project were assessed for both the proposed railroad engine operations and affected (i.e., diverted) motor vehicles. Air quality impacts from the project are not expected to substantially vary by alternative due to the Similarity in operation and design. An air quality analysis was performed for the locomotive operations subject to federal air quality conformity regulations (40 CFR 51.853). The document states that the calculated annual emissions for carbon monoxide (CO), oxides of nitrogen (NOx), particulate matter (PM), and hydrocarbons (HC) for all alternatives are well below the de minimis levels. Agency Jurisdiction. DEQ's Air Quality Division, on behalf of the State Air Pollution Control Board, is responsible to develop regulations that become Virginia's Air Pollution Control Law. DEQ is charged to carry out mandates of the state law and related regulations as well as Virginia's federal obligations under the Clean Air Act as amended in 1990. The objective is to protect and enhance public health and quality of life through control and mitigation of air pollution. The division ensures the safety and quality of air in Virginia by monitoring and analyzing air quality data, regulating sources of air pollution, and working with local, state and federal agencies to plan and implement strategies to protect Virginia's air quality. The appropriate regional office is directly responsible for the issue of necessary permits to construct and operate all stationary sources in the region as well as to monitor emissions from these sources for compliance. As a part of this mandate, the environmental documents of new projects to be undertaken in the state are also reviewed. In the case of certain projects, additional evaluation and demonstration must be made under the general conformity provisions of state and federal law.	Comment noted.

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Comment	**Response**
b. Agency Findings. According to the DEQ Air Division, the route for the SEHSR is located in ozone (03) attainment areas (Mecklenburg County, Brunswick County, Dinwiddie County) and in the Richmond Ozone Maintenance area (City of Petersburg, City of Colonial Heights, City of Richmond and Chesterfield County), an emission control area for the contributors to ozone pollution, which are volatile organic compounds (VOCs) and nitrogen oxides (NOx). DEQ-BRO anticipates that air quality issues will be construction-related (heavy equipment idling and fugitive dust) and that calculated locomotive emissions will be well below de minimis limits. Recommendations. All reasonable precautions should be undertaken to limit emissions of VOCs and NOx, principally by controlling or limiting the burning of fossil fuels, related to construction of the SEHSR project. DEQ-PRO recommends following all air quality standard and specifications to reduce or avoid the emissions of VOCs, especially during periods of high ozone.	Comment noted. Reasonable precautions will be undertaken to limit emissions.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>c. Requirements - The SEHSR project is subject to the following air regulations administered by the Department of Environmental Quality:

i. Fugitive Dust - During construction, fugitive dust must be kept to a minimum by using control methods outlined in 9 VAC 5-50-60 et seq. of the Regulations for the Control and Abatement of Air Pollution. These precautions include, but are not limited to, the following:
• Use, where possible, of water or chemicals for dust control;
• Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
• Covering of open equipment for conveying materials; and
• Prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried sediments resulting from soil erosion.

ii. Open Burning - If construction activities include the burning of construction or demolition material, this activity must meet the requirements under 9 VAC 5-130 et seq. of the Regulations for open burning, and it may require a permit. The Regulations for open burning provide for, but do not require, the local adoption of a model ordinance concerning open burning. Some applicable provisions of the regulation include, but are not limited to:
• All reasonable effort shall be made to minimize the amount of material burned, with the number and size of the debris piles;
• The material to be burned shall consist of brush, stumps and similar debris waste and clean burning demolition material;
• The burning shall be at least 500 feet from any occupied building unless the occupants have given prior permission, other than a building located on the property on which the burning is conducted;
• The burning shall be conducted at the greatest distance practicable from highways and air fields,
• The burning shall be attended at all times and conducted to ensure the best possible combustion with a minimum of smoke being produced;
• The burning shall not be allowed to smolder beyond the minimum period of time necessary for the destruction of the materials; and
• The burning shall be conducted only when the prevailing winds are away from any city, town or built-up area.

For additional information and coordination, contact James Kyle (DEQ-PRO) at (804) 527-5047 or Jed Brown (DEQ-BRRO) at (434) 582-6210. Also, contact the appropriate locality for any local requirements on open burning.</td><td>Section 4.6 of the Tier II FEIS has been amended to specify the North Carolina and Virginia regulations that the Project will comply with to regulate construction air quality impacts from fugitive dust and open burning.</td></tr>
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<tr><th colspan="2">AG18
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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>9) Solid and Hazardous Wastes and Hazardous Materials.
a. The DEIS (page 3-174) states that municipalities along the SEHSR study area either manage their own solid waste collection program or contract with a private enterprise to manage a program for the municipality. The document (page 3-25) notes that Environmental Data Resources (EDR) conducted a review of records in several state and federal databases to gather data on sites that are listed in various hazardous waste inventories for the Petersburg to Raleigh corridor in 2004 and for the Richmond to Petersburg corridor in 2008. The purpose of this review was to determine if sites listed in these inventories were located within the proposed SEHSR corridor. According to the review, there were 254 sites in Virginia within 2,000 feet of the project corridor. The majority of the sites were located between Richmond and Petersburg (225 sites).

Agency Findings. DEQ-BRRO finds that hazardous waste sites along the proposed alternative alignments (sections I-L) are minimal (2 or 3 sites, depending on the alignment) and principally related to underground storage tanks (USTs).

Agency Recommendations. DEQ encourages all construction projects and facilities to implement pollution prevention principles, including the reduction, reuse, and recycling of all solid wastes generated for construction projects and facilities. All generation of hazardous wastes should be minimized and handled appropriately.</td><td>Comment noted. All generation of hazardous wastes will be minimized and handled appropriately.</td></tr>
<tr><td>b. Requirements. All solid waste, hazardous waste, and hazardous materials must be characterized and managed in accordance with all applicable federal, state, and local environmental regulations. Some of the applicable state laws and regulations are:

• Virginia Waste Management Act (Code of Virginia Section 10.1-1400 et seq.);
• Virginia Hazardous Waste Management Regulations (VHWMR) (9 VAG 20-60);
• Virginia Solid Waste Management Regulations (VSWMR) (9 VAG 20-80); and
• Virginia Regulations for the Transportation of Hazardous Materials (9 VAG 20-110).
• Some of the applicable Federal laws and regulations are:
• Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Section 6901 et seq.);
• Title 40 of the Code of Federal Regulations; and
• U.S. Department of Transportation Rules for Transportation of Hazardous materials (49 CFR Part 107).</td><td>The DEIS described the hazardous waste impact assessments performed for the Project alternatives and listed the number of hazardous waste sites potentially impacted by each alternative. Chapter 4 of the Tier II FEIS contains further assessment of all impacted hazardous waste sites that could not be avoided by the Preferred Alternative. The FEIS is also updated to indicate the applicable federal, state, and local environmental regulations that will be followed prior to project construction, related to the management and disposal of solid waste, hazardous waste, and hazardous materials.</td></tr>
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i. Database Search - DEQ's Waste Division notes that for each area in Virginia where any work is to take place, the proponent agencies must conduct an environmental investigation on and near the property to identify any solid or hazardous waste sites or issues before work can commence. This investigation should include a search of waste-related databases (attached). However, the Waste Division notes that the Tier II DEIS indicates that such research may already been conducted. ii. Contaminated Soil and Generated Waste - Any soil that is suspected of contamination or wastes that are generated during construction-related activities must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations. It is the generator's responsibility to determine if a solid waste meets the criteria of a hazardous waste and be properly managed. iii. Asbestos-Containing Material - It is the responsibility of the owner or operator of a demolition activity, prior to the commencement of the demolition, to thoroughly inspect the affected part of the facility where the operation will occur for the presence of asbestos, including Category I and Category II nonfriable asbestos containing material (ACM). Upon classification as friable or non-friable, all waste ACM shall be disposed of in accordance with the Virginia Solid Waste Management Regulations (9 VAC 20-80-640), and transported in accordance with the Virginia regulations governing Transportation of Hazardous Materials (9 VAC 20-110-10 et seq.). Contact the DEQ Waste Management Program for additional information, (804) 698-4021, and the Department of Labor and Industry, Ronald L. Graham at (804) 371-0444. iv. Lead-Based Paint - If applicable, the proposed project must comply with the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) regulations, and with the Virginia Lead-Based Paint Activities Rules and Regulations. For additional information regarding these requirements contact the Department of Professional and Occupational Regulation, David Dick at (804) 367-8588. For additional information and coordination, contact Kyle Winter (DEQ-PRO) at (804) 527-5052 or Aziz Farahmand (DEQ-BRRO) at (540) 562-6872.	

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10) **Herbicides and Pesticides**. DEQ recommends that the use of herbicides or pesticides for construction or landscape maintenance should be in accordance with the principles of integrated pest management. The least toxic pesticides that are effective in controlling the target species should be used. Contact the Department of Agriculture and Consumer Services at (804) 786-3501 for more information.	Comment noted.
11) Natural Heritage Resources. a. Evaluation. According to the Tier II DEIS (page 3-59), individual states may provide additional protections for rare plant and animal species, such as federal species of concern (FSC), which are not afforded federal protection under the Endangered Species Act. FSC species that are listed as endangered, threatened, or special concern (SC) on the Virginia Department of Conservation and Recreation Natural Heritage Program (NHP) list of Rare Plant and Animal Species are afforded protection under state laws (Endangered Plant and Insect Species Act of Virginia of 1979, the Virginia Wildlife Diversity and Fisheries Regulations). The document states that currently, these laws do not apply to state transportation projects. The U.S. Fish and Wildlife Service Virginia field office list 8 FSC species for the counties in the Virginia study area. Agency Jurisdiction. The mission of the Virginia Department of Conservation and Recreation is to conserve Virginia's natural and recreational resources. OCR supports a variety of environmental programs organized within seven divisions including the Division of Natural Heritage. The Natural Heritage Program's (OCR-ON H) mission is conserving Virginia's biodiversity through inventory, protection, and stewardship. The Virginia Natural Area Preserves Act, 10.1-209 through 217 of the Code of Virginia, was passed in 1989 and codified DCR's powers and duties related to statewide biological inventory: maintaining a statewide database for conservation planning and project review, land protection for the conservation of biodiversity, and the protection and ecological management of natural heritage resources (the habitats of rare, threatened, and endangered species, significant natural communities, geologic sites, and other natural features).	Comment noted.
b. Agency Findings. DCR-DNH searched its Biotics Data System for occurrences of natural heritage resources in the study area. The following resources were identified. i. Stream Conservation Units - According to the information currently in DCR-DNH files, the Nottoway River-Sturgeon Creek Stream Conservation Unit (SCU), the Stony Creek-Richardson Pond SCU and the Meherrin River-Shining Creek SCU are located within or immediately adjacent to the study area. SCUs identify stream reaches that contain aquatic natural heritage resources, including	See comment 12(b) with regards to field surveys and coordination.

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2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. a. Nottoway River-Sturgeon Creek SCU The Nottoway River-Sturgeon Creek SCU has been given a biodiversity ranking of B1, which represents a site of outstanding significance. Natural heritage resources associated with this site are: *Elliptio lanceoata* Yellow lance G2G3/S2S3/S0C/SC *Lampsilis cariosa* Yellow lampmussel G3G4/S2/NL/SC *Lampsilis radiate* Eastern lampmussel GS/S2S3/NL/SC *Fusconaia masoni* Atlantic pigtoe G2/S2/SOC/LT The Yellow lance occurs in mid-sized rivers and second and third order streams. To survive, it needs a silt-free, stable streambed and well-oxygenated water that is free of pollutants. This species has been the subject of taxonomic debate in recent years (NatureServe, 2009). Currently in Virginia, the Yellow lance is recognized from populations in the Chowan, James, York, and Rappahannock drainages. Its range also extends into Neuse-Tar river system in North Carolina. In recent years, significant population declines have been noted across its range (NatureServe, 2009). This species is currently classified as a species of concern by the U.S. Fish and Wildlife Service (USFWS) and a special concern species by the Virginia Department of Game and Inland Fisheries (DGIF). However, these designations have no official legal status. The Yellow lampmussel ranges from Nova Scotia to Georgia in Atlantic slope drainages (NatureServe, 2009). In Virginia, it is recorded from the Roanoke, Chowan, James, York, and Potomac drainages. It is found in larger streams and rivers where good currents exist over sand and gravel substrates and in small creeks and ponds (Johnson, 1970). The Eastern lampmussel is a freshwater mussel which inhabits river systems in areas with substrates composed of silt, sand, cobble, gravel and exposed bedrock (NatureServe,2009). This species has a wide range, from eastern Canada west to Ontario and Quebec and south to South Carolina (NatureServe, 2009). In Virginia, there are records from the Chowan and York River drainages. Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are	

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sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species. The Yellow lance may be particularly sensitive to chemical pollutants and exposure to fine sediments from erosion (NatureServe, 2009). The Atlantic pigtoe is a medium-sized freshwater mussel which ranges from the Ogeeshee drainage in Georgia north to Virginia (NatureServe, 2009). In Virginia, this species is known from the James, Chowan and Roanoke River basins (NatureServe, 2009). The Atlantic pigtoe prefers clear, swift waters with gravel or sand and gravel substrates. Many populations from the main stem of larger rivers have disappeared and the species is becoming limited to the headwater areas of drainages in which it occurs. This could have implications for populations being able to reestablish after a localized, catastrophic event and for genetic exchange. Threats to the Atlantic pigtoe include pollution, impoundments, clearcutting, and dredging (Gerberich, 1991). This species does not appear to be able to tolerate habitat changes and it appears to be very poor at recolonizing previously disturbed habitats (NatureServe, 2009). A recent study determined that the glochidia of the Atlantic pigtoe are extremely sensitive to pollution (Augspurger et al., 2003). This species is currently listed as threatened by DGIF and is also tracked as a species of concern by the USFWS. However, this designation has no official legal status.	
b. Stony Creek-Richardson Pond SCU The Stony Creek-Richardson Pond SCU has been given a biodiversity ranking of B2, which represents a site of very high significance. The natural heritage resource associated with this site is: *Percina Rex* Roanoke logperch G1G2/S1S2/LE/LE The Roanoke logperch is endemic to the Roanoke and Chowan River drainages in Virginia (Burkhead and Jenkins, 1991) and inhabits medium and large, warm and usually clear rivers with sandy to boulder spotted bottoms (NatureServe, 2009). The Roanoke logperch is threatened by channelization, siltation, impoundment, pollution, and de-watering activities (Burkhead & Jenkins, 1991). This species is currently classified as endangered by the USFWS and OGIF.	Comment noted. Consultation with USFWS has been undertaken to address potential impacts to the Roanoke logperch. Because logperch surveys are only valid for two years, logperch surveys will be conducted when the Project is approximately two years from construction.

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c. Meherrin River-Shining Creek SCU The Meherrin River-Shining Creek SCU has been given a biodiversity ranking of B5, which represents a site of general significance. The natural heritage resource associated with this site is: *Lampsilis cariosa* Yellow lampmussel G3G4/S2/NL/SC	Comment noted.
ii. Chowanoke Crayfish The Chowanoke crayfish (Orconectes virginiensis, G3/S2S3/NL/NL) has been historically documented in the SEHSR study area. Chowanoke crayfish inhabit medium-sized rivers and creeks that flow through woodlands mainly in the Chowan River and Roanoke River systems in Virginia and North Carolina (NatureServe, 2009). They also inhabit rivers with low gradients and a sand or sparse gravel substrate (NatureServe, 2009). Little is known about its life history, though species in the genus Orconectes are considered tertiary burrows, indicating that they typically do not burrow, but seek out cover from rocks in the river. Threats likely include urban development and water pollution as well as alterations to its river habitats, including channelization (NatureServe, 2009).	Comment noted.
iii. Michaux's Sumac Michaux's sumac (Rhus michauxii, G2/S1/LE/LT) has been documented in the study area (Section E). Michaux's sumac is a dioecious shrub that grows up to 0.4 meter in height (TNC et. aI., 1999). This plant occurs in sandy or rocky, open, hardwood dominated forests and savannas (Smith and Van Alstine, 1995), sometimes in association with circumneutral soils. It is dependent upon some form of disturbance to maintain its open habitat (TNC et aI., 1999). Periodic, naturally occurring fires provided such disturbance historically. However, today many of this plant's occurrences are in areas artificially disturbed such as highway, powerline and railroad rights-of-way, edges of cultivated fields, and other cleared lands. In Virginia, the only known population is located in the impact area on Fort Pickett where it is maintained by frequent fires. The major threats to Michaux's sumac include fire suppression and habitat degradation (TNC et. al., 1999). This species is currently classified as endangered by the USFWS and listed as threatened by the Virginia Department of Agriculture and Consumer Services (see section 8(c)).	Comment noted. The Richmond to Raleigh Project is continuing to coordinate with USFWS regarding the population of Michaux's sumac in Section D of the Project.
iv. Threatened and Endangered Species Waters The Nottoway River, Stony Creek 1 and Sappony Creek in Virginia have all been designated by DGIF as Threatened and Endangered Species Waters. The species associated with these waters are the Atlantic pigtoe, the Roanoke logperch and the Dwarf wedgemussel (Alasmidonta heterdon, G1G2/S1/LE/LE).	Comment noted.

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c. Summary Recommendation - Recommended inventories of the Yellow lance, Yellow lampmussel, Eastern mussel, Atlantic pigtoe, Chowanoke crayfish, the Dwarf wedgemussel and Roanoke logperch, Michaux's sumac may be coordinated with J. Christopher Ludwig, DCR-DNH Natural Heritage Inventory Manager, at chris.ludwig@dcr.virginia.gov or 804-371-6206. Coordination, due to the legal status of the Roanoke logperch and Dwarf wedgemussel, may be made with USFWS and Amy Ewing, DGIF at (804) 367-2211. Due to the legal status of Michaux's sumac, proponent agencies should coordinate with the USFWS and Keith Tignor, VDACS at (804) 786-3515.	See response to comment 12(b) with regards to field surveys and coordination.
12) State-listed Plant and Insect Species. a. The Endangered Plant and Insect Species Act of 1979, Chapter 39 §3. 1-1 020 through 1030 of the Code of Virginia, as amended, authorizes the Virginia Department of Agriculture and Consumer Services (VDACS) to conserve, protect, and manage endangered and threatened species of plants and insects. The VDACS Virginia Endangered Plant and Insect Species Program personnel cooperates with the U.S. Fish and Wildlife Service (USFWS), DCR-DNH and other agencies and organizations on the recovery, protection or conservation of listed threatened or endangered species and designated plant and insect species that are rare throughout their worldwide ranges. In those instances where recovery plans, developed by USFWS, are available, adherence to the order and tasks outlined in the plans are followed to the extent possible. Agency Findings. According to VDACS, the 2001 Tier I review for the Southeast High Speed Rail Project indicates the state-listed threatened New Jersey bulrush (Juncus caesariensis) occurs in close proximity to the proposed project area. Currently there are no known populations of this plant that would be adversely affected by this project. A population of the federal- and state-protected Michaux’s sumac (Rhux michauxii, FE/ST) occurs in close proximity to a proposed railroad alignment alternative in the vicinity of Rawlings, Virginia. There are four known populations of this imperiled plant species known in the Commonwealth. State Natural Area Preserves. OCR files do not indicate the presence of any State Natural Area Preserves under the agency's jurisdiction in the project vicinity.	Comment noted.

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b. Recommendations. DCR-DNH recommends that project proponents perform the following: • Conduct an inventory of the Yellow lance, Yellow lampmussel, Eastern mussel, Atlantic pigtoe, Chowanoke crayfish, the Dwarf wedgemussel and Roanoke logperch, due to the potential for the area to support populations of these resources. With the survey results DCR-DNH can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources. • Conduct a survey for Michaux's sumac by a certified surveyor before October 1, 2010. For any selected alternative, the railway should be kept as far away from the plant population as possible. Maintenance activities should be adapted to protect the rare plant population including targeted woody plant management by a qualified contractor/consultant. OCR does not support translocation of plants off-site. However, if plants will be taken by the project, OCR recommends the collection of seeds. • Implement and strictly adhere to applicable state and local erosion and sediment control/storm water management laws and regulations to minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities. • Coordinate with the USFWS and DGIF due to the legal status of the Roanoke logperch and Dwarf wedgemussel, to ensure compliance with protected species legislation. • Coordinate with the USFWS and VDACS due to the legal status of Michaux's sumac, to ensure compliance with protected species legislation. • Contact Rene Hypes at (804) 371-2708 for an update on natural heritage information if a significant amount of time passes before the proposed project is initiated since new and updated information is continually added to Biotics. • Conduct a survey of the study area, as recommended by VDACS, to determine the size and distribution of the Michaux's sumac population, and the potential effects of construction and rail line maintenance on the individual plants. DCR-DNH biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. A list of other individuals who are qualified to conduct inventories may be obtained from the USFWS.	The Project Team met with Steve Hardwick of VDEQ on April 19, 2011, to discuss alignment options in the vicinity of the existing Michaux's sumac population. All agencies agreed that Alternative VA4 was acceptable and this alternative is listed as the preferred alternative in the Tier II FEIS. Mussel and Roanoke logperch surveys were undertaken on the James River, Appomattox River, Sappony Creek, Nottoway River, Meherrin River, and the Tar River and Neuse River in North Carolina. All streams surveyed contained mussel fauna (18 species noted overall), but the listed mussels were not encountered. However, the Appomattox River and Nottoway River had excellent mussel habitat and the Meherrin River had rare species (Triangle floater, creeper, and Green floater). The presence of state listed/federal species of concern mussels in the Appomattox River, Nottoway River, and Meherrin River were considered as impacts to protected species to avoid future project delays. The Roanoke Logperch was observed in the Nottoway River and suitable habitat for the logperch was found in the Meherrin River. Consultation with USFWS was undertaken to address potential impacts to this species. Based on the information provided, the Chowanoke crayfish (*Orconectes virginiensis*, G3/S2S3/NL/NL) does not have federal protection and generally field surveys are only conducted for federally listed species. A pre-construction survey for protected species will be conducted at all locations where listed species were located during these efforts. Additionally, state wildlife agencies should be consulted on appropriate measures to protect mussel fauna before and during project construction.

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13) Wildlife Resources and Protected Species. a. According to the Tier II DEIS (page 4-61), nine federally protected species for counties in the study area. The Roanoke logperch is presumed to occur within the study corridor as it crosses over Nottoway River and Stony Creek. The DEIS concludes that construction should not impact Roanoke logperch populations in Nottoway River or Stony Creek if instream activities and sedimentation are appropriately minimized. Additional surveys for listed freshwater mussels will be scheduled prior to project construction for Sappony Creek, Nottoway River, Tar River, Neuse River, and Cedar Creek in order to determine potential project impacts to the dwarf wedgemussel, Tar River spinymussel, and James River spinymussel. According to the Tier II DEIS, FRA has determined that the VA2 alternative within Section D of the project would have no effect on the Michaux's sumac, based on Section 7 consultation with USFWS (page 4-63). A pair of bald eagles was observed on September 14, 2005, along the Appomattox River, just west of the City of Petersburg and two potential nests were found. However, because project alternatives will be located more than 1,000 feet from the nests, the Tier II DEIS concludes that the project will have no effect on the bald eagle.	Comment noted.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>b. Agency Jurisdiction. The Department of Game and Inland Fisheries (DGIF), as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects (Virginia Code Title 29.1). The DGIF is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 et seq.), and provides environmental analysis of projects or permit applications coordinated through DEQ and several other state and federal agencies. DGIF determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts.

Agency Findings. DGIF has identified the following species under its jurisdiction that are found within the study corridor.

• Kerr Reservoir and Gaston Lake support an important recreational fishery, including a reproducing population of striped bass.
• The Meherrin River is a Threatened and Endangered Species Water due to the Atlantic pigtoe (federal species of concern/state-listed threatened (FS/ST). The yellow lampmussel (FS/state special concern (SS)) and Roanoke bass (FS/SS) have also been documented there.
• Two eagle nests have been recorded in the vicinity of the Route 1 crossing of the Roanoke River at Gaston Lake.
• The Nottaway River is a Threatened and Endangered Species Water due to the presence of the Roanoke logperch (federally-listed endangered/state-listed endangered (FE/SE), dwarf wedgemussel (FE/SE), and Atlantic pigtoe (FS/ST). The Nottoway River is a Confirmed Anadromous Fish Use Area.
• Sturgeon Creek and Sappony Creek are Threatened and Endangered Species Waters due to the presence of the Atlantic pigtoe (FS/ST).
• Tea Branch is a Threatened and Endangered Species Water due to the presence of the whitemouth shiner (ST).
• Waqua Creek, Butterwood Creek, Stony Creek, and the James River are Confirmed Anadromous Fish Use Areas.
• The state-listed threatened loggerhead shrike has been documented in the vicinity of Petersburg.</td><td>The Project Team coordinated with Ernie Aschenbach of the Virginia Department of Game & Inland Fisheries on April 16, 2010, with regards to potential natural resource impacts associated with the SEHSR Corridor. Surveys were conducted for all species federally listed as threatened or endangered, as well as for Bald Eagle impacts (Under the Bald and Golden Eagle Protection Act). Also, see response to comment 12(b).</td></tr>
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c. Recommendations. DGIF requests detailed information regarding the proposed route, any new construction (e.g. new right-of-way and stations), and stream crossings. Upon review of the additional information, DGIF will provide comments regarding potential adverse impacts upon fish and wildlife resources and recommendations to mitigate for any impacts. Contact Amy Ewing, DGIF at (804) 367-2733, for additional information regarding these comments.	The Project Team has coordinated with Ernie Aschenbach of VDGIF on April 16, 2010, with regards to Clean Water Act Section 401/404 permitting for Virginia sections of the Richmond to Raleigh Project. At that time, information on potential impacts was shared with the agency and Virginia Joint Permit Application requirements were discussed. Coordination with DGIF will continue throughout the Tier II FEIS, ROD, and final design/permitting phase of the Project.
14) Forest Resources. a. According to the Tier II DEIS (page 4-59) terrestrial communities in the study corridor would be impacted permanently by project construction from clearing and paving and loss of the terrestrial community area. Destruction of natural communities within the study corridor would result in the loss of foraging and breeding habitats for the various animal species that utilize the area. Agency Jurisdiction. The mission of the Virginia Department of Forestry (VDOF) is to protect and develop healthy, sustainable forest resources for Virginians. VDOF was established in 1914 to prevent and suppress forest fires and reforest bare lands. Since the Department's inception, it has grown and evolved to encompass other protection and management duties including: protecting Virginia's forests from wildfire, protecting Virginia's waters, managing and conserving Virginia's forests, managing state-owned lands and nurseries, and managing regulated incentive programs for forest landowners. b. Agency Findings. VDOF finds that the proposed project will have a significant impact on the forest resources of the Commonwealth. The development of a mitigation plan for project impacts to forest resources may be coordinated with Todd Groh, DOF at (434) 220-9044 or todd.groh@dof.virginia.gov.	Comment noted. Also see response to comment 14 (c) below.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>c. Recommendations. VDOF recommends that the proposed clearing of nearly 1,163 acres of timberland in the four-county area for the railroad right-of-way corridor be mitigated. Potential opportunities for mitigation include but are not limited to:

• Planting open company lands within the Commonwealth of Virginia to create a forested stand.
• Working with the VDOF to develop a cost share program to assist private landowners within the four-county area or statewide to reforest harvested timberlands or plant open lands with pine or hardwood seedlings. This program would be funded by USDOT/Federal Railroad Administration for mitigation.
• Working with the VDOF or other Virginia conservation agency or group to create a forest land conservation fund that would be used for the purchase of conservation easements or property acquisitions of forested lands. These purchases could be within the four-county area or statewide and would ensure that the forested lands are managed and be retained as working forest lands.

Due to the great value of forests and forestland to the Commonwealth, VDOF recommends a mitigation ratio in excess of 1 to 1; more than one acre of land reforested or protected to every one acre cleared for the right-of-way. This would result in the conservation, reforestation or purchase of at least 1,163+ acres within the four-county area or statewide.

VDOF is available to meet representatives from the proponent agencies to discuss potential mitigation strategies for this project. For additional information and coordination, contact Todd Groh, VDOF at (434) 220-9044 or todd.groh@dof.virginia.gov.</td><td>Detailed mitigation methods will be determined during the permitting phase and will specified in construction documents based on final design and following consultation with the Virginia Department of Forestry and other regulatory and advisory agencies participating in the Virginia Joint Permit Application process.</td></tr>
<tr><td>15) Water Supply.
a. The DEIS (page 3-8) states that surface waters that could be especially sensitive to impacts by the proposed SEHSR project include those used for water supplies and include Ashton Creek, Timsbury Creek, Swift Creek, Lieutenant Run, Float Creek, Little Genito Creek, Parham Creek, Hewey Creek, Roanoke River, Smith Creek, Reedy Branch and Anderson Swamp Creek.

Agency Jurisdiction. The Virginia Department of Health (VDH), Office of Drinking Water (ODW) reviews projects for the potential to impact public drinking water sources (groundwater wells, springs and surface water intakes).</td><td>Comment noted. These public water supply streams have been identified in the Tier II DEIS in Table 3-3 and include any unnamed tributaries flowing into the listed waters. It is assumed that Float Creek listed in the comment is the “Flat Creek” listed in Table 3-3 of the Tier II DEIS.</td></tr>
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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>b. Agency Findings. VDH finds that there were no significant differences among the three alternatives related to public water sources. The following groundwater wells are within a 1,000 foot radius of the study corridor:
<u>Well Owner</u> <u>Milepost Marker (Approx.)</u>
Southside Elementary School S-32.5/S-33
Food Lion S-36.25
Dinwiddie Elementary School S-37
Hoagie Bob's S-38.5
Home Place Restaurant S-38.5
Town of McKinney-North Well S-47
Town of McKinney-South Well S-47
Town of McKinney-Well 01 S-48.5
Hillcrest Mobile Home Park S-77/S-78

No surface water intakes are located within a 5 mile radius of the study corridor. The study area does not fall within Zone 1 (up to 5 miles into the watershed» of any public surface water sources. Project falls within Zone 2 (greater than 5 miles into the watershed) of the following surface water intakes:

<u>River Basin</u> <u>Surface Water Intake Owner</u> <u>Water Source</u>
James Virginia-American Water Co Appomattox
Chowan Greensville County WSA- Jarratt Nottoway
Chowan Town of Lawrenceville Meherrin
Chowan Town of Lawrenceville Great Creek
Chowan City of Emporia Meherrin
Chowan City of Norfolk Nottoway
Roanoke City of Norfolk- Left VB Intake Lake Gaston
Roanoke City of Norfolk- Right VB Intake Lake Gaston</td><td>Section 3.15.1 of the Tier II FEIS has been amended to include the VDH groundwater well information provided in these comments. The surface water intakes described here have also been added to this discussion.

A new Section 4.15.1 (Groundwater Wells) has been added to the Tier II FEIS to address potential direct well impacts from the Preferred Alternative along with a discussion of potential impacts to public water supply intakes.</td></tr>
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Virginia Department of Environmental Quality – Multiple State and Local Agencies, Ellie Irons, Office of Environmental Impact Review</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>c. Recommendations. VDH recommends that Best Management Practices should be employed along the rail corridor, including erosion and sediment controls and Spill Prevention Controls and Countermeasures. Proponent agencies should notify groundwater well and surface water intake owners of the scope of this project and solicit their comments.

Requirement. Potential impacts to public water distribution systems must be verified with the local utility. Proponent agencies must contact the appropriate local utility where potential impacts may occur.

Conclusion. VDH concludes that there are potential impacts to public drinking water sources due to this project Contact Diedre Forsgren, VDH at (804) 864-7241 for additional information.</td><td>The Project designs are not anticipated to impact any public groundwater wells in Virginia; therefore, specific coordination with well owners was not initiated. (Coordination was undertaken with the manager of the Hillcrest Mobile Home Park in Brodnax, VA, but it was determined that potential impacts to one of their two wells could be mitigated by establishing another well within the property limits.)

The Richmond to Raleigh Project will employ best management practices in both Virginia and North Carolina to control erosion and sedimentation, and to prevent spills. Section 4.1.6 of the Tier II FEIS lists all mitigation and minimization techniques that will be followed to minimize water quality impacts from the Project.

Potential impacts to public water distribution systems will be verified during final design and local utilities will be contacted during the ROW phase of the Project, if necessary.

As noted above, a discussion of potential impacts to public water supplies has been added to the Tier II FEIS (Section 4.1.1.4).</td></tr>
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AG18 Virginia Department of Environmental Quality – Multiple State and Local Agencies, Ellie Irons, Office of Environmental Impact Review	
Comment	**Response**
16) Historic Structures and Archaeological Resources. a. According to the DEIS (page 4-132), the effects of the SEHSR project on archaeological resources will be determined after the selection of the preferred alternative per 36 CFR 800.4(b)(2). This regulation permits a phased process to conduct identification and evaluation efforts on projects where alternatives under consideration consist of corridors or large land areas. Both the Virginia Department of Historic Resources (DHR) and North Carolina State Historic Preservation Office (HPO) have agreed with this approach for the SEHSR project. The document (page 4-133) states that where the SEHSR project has been determined to have an adverse effect on historic resources, Section 106 of the National Historic Preservation Act of 1966 requires that efforts be undertaken to avoid, minimize, or mitigate the adverse effects. As part of this process, consultation has taken place and is ongoing with DHR and other "consulting parties," such as the National Park Service, local historic societies, and property owners. This consultation will result in Memorandums of Agreement (MOAs) for both Virginia and North Carolina, which outline the agreed-upon measures that the SEHSR project will take to avoid, minimize, or mitigate the adverse effects. Agency Jurisdiction. The Department of Historic Resources conducts reviews of projects to determine their effect on historic structures or cultural resources under its jurisdiction. DHR, as the designated State's Historic Preservation Office (SHPO), ensures that federal actions comply with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, and its implementing regulation at 36 CFR Part 800. The NHPA requires federal agencies to consider the effects of federal projects on properties that are listed or eligible for listing on the National Register of Historic Places. Section 106 also applies if there are any federal involvements, such as licenses, permits, approvals or funding.	Comment noted. The Richmond to Raleigh Project continues to coordinate with VDHR about potential impacts to historic resources.

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b. Agency Comments. According to DHR, the FRA and Virginia Department of Rail and Public Transportation (DRPT), through the North Carolina Department of Transportation, have been consulting with the DHR on this project since 2001 pursuant to Section 106 of the NHPA. The agencies are in the early stages of drafting a Memorandum of Agreement on "the undertaking which, when complete, will conclude the Section 106 process. DHR anticipates that such consultation will continue and DHR will make comments under the federal process. According to DHR, the FRA and DRPT are aware of DHR concerns and issues. Recommendation. In accordance with Section 106 of the National Historic Preservation Act, as amended, and its implementing regulation 36 CFR 800, FRA and DRPT must continue to coordinate with DHR on the development of an MOA addressing impacts to historic and archaeological resources. For additional information and coordination, contact Marc Holma, DHR at (804) 367-2323, ext. 114.	The Richmond to Raleigh Project will continue to coordinate with VDHR through the successful completion of the MOA.
17) Recreational Resources. a. According to the DEIS (page 5-4), the project would not use land from any recreation area or wildlife refuge. However, it would cross five publicly-owned trails in six locations, require a small amount of right-of-way from three public parks (two local and one national park), and come in close proximity to three public parks. Agency Jurisdiction. DCR's Division of Planning and Recreational Resources (DPRR) administers the Virginia Scenic Rivers, Virginia Byways, and state trails programs and is responsible for developing the Virginia Outdoors Plan (VOP), the state's comprehensive outdoor recreation and open space plan. The VOP recognizes the importance of scenery to Virginians.	Comment noted.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>b. Agency Findings. According to the Department of Conservation and Recreation Division of Planning and Recreation Resources (DPRR), none of the recreation facilities listed in the document are protected by the Land & Water Conservation Fund (Section 6(f) Land and Water Conservation Fund Act of 1965). Many battlefields are listed in the Section 4(f) (U.S. Department of Transportation Act of 1966) evaluation section of the document and project impacts are denoted as de minimis. However, if any of the battlefields were assisted with Land & Water Conservation Fund through the Federal American Battlefield Protection Program or some other means, there may be Section 6(f) impacts which would need to be addressed.

The project corridor crosses the proposed corridor of the statewide Beaches to Bluegrass trail. The Tobacco Heritage Trail (THT), a subsection of the Beaches to Bluegrass Trail, is currently under development in Brunswick and Mecklenburg counties. There are two alignments of the THT that cross the SEHSR corridor at Alberta and La Crosse, both of which should connect into the proposed alignment for the East Coast Greenway parallel to the SEHSR. The project corridor also crosses several scenic resources. The scenic resources this project crosses are:

Scenic River Crossings -
Historic Falls of the James
Appomattox River
Nottoway River [potential]
Meherrin River
Scenic Byway Crossings -
Route 903
Route 46-Christianna Highway</td><td>Comment noted.</td></tr>
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<tr><th colspan="2">AG18
Virginia Department of Environmental Quality – Multiple State and Local Agencies, Ellie Irons, Office of Environmental Impact Review</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>c. Recommendations. DCR-DPRR offers the following recommendations addressing potential project impacts to recreational resources -
• The proponent agencies should contact the National Park Service to determine if any 6(f) impacts may occur as a result of this project.
• The proponent agencies should coordinate with DCR-DPRR regarding Tobacco Heritage Trail crossings at Alberta and La Crosse.
• Crossings at scenic rivers and byways should take into account the scenic values of the areas and enhance the scenic qualities of the crossings. If possible, proponent agencies should provide water access at all crossings of scenic rivers.

The proponent agencies may contact Elizabeth S. Ries, National Park Service at (202) 354-2215 or Elizabeth Ries@contractor.nps.gov, to determine if any Section 6(f) impacts may occur as a result of this project. Coordination of this project with regard to Tobacco Heritage Trail crossings at Alberta and La Crosse may be accomplished by contacting Jennifer Wampler, DCR-DPRR at Jennifer.Wampler@dcr.virginia.gov. Any questions regarding scenic resources may be directed to Lynn Crump, DCR-DPRR at (804) Lynn.Crump@dcr.virginia.gov.</td><td>Section 6(f) properties described in the Tier II DEIS were identified through a search of the Land and Water Conservation Fund website of state grants. In response to this comment, the Project Team coordinated with Elizabeth Ries and Jack Howard of the National Park Service (NPS), who verified that there are no NPS Section 6(f) resources within the Project Study Area.

The Project Team is coordinating with both the Town of Alberta and the Town of La Crosse regarding the Richmond to Raleigh Project crossings of the Tobacco Heritage Trail as described in the Section 4(f) Evaluation for the Richmond to Raleigh Project. Coordination with the DCR-DPRR is also taking place as it relates to the development of the Greenway Corridor Plan, parallel to the Richmond to Raleigh Project.

As noted in the Tier II DEIS, the Richmond to Raleigh Project would cross the James River on a new bridge adjacent to the existing single track bridge. At the Appomattox River, a new parallel bridge is proposed for high speed passenger trains, located to the east of the existing single track bridge. The project alternatives propose to utilize the existing bridge piers and substructure of the bridges at the Nottaway and Meherrin Rivers. The superstructure (girders, decking and track) would be replaced at the Nottoway River, while the existing girders and decking would be retained at the Meherrin River. There is no conflict with the Wild and Scenic Rivers Act of 1968; however, coordination with the Virginia Scenic Rivers Board will be required to comply with the Virginia Scenic Rivers Act of 1970 for the new structures on the James and Appomattox Rivers. This coordination will take place during the final design stage of the Project. Regarding the request for water access, there are existing public access points at both the James River and Appomattox River. It is not possible to provide additional access points from the rail corridor because the corridor is not accessible to vehicles or pedestrians (unlike a highway project).</td></tr>
<tr><td>18) Aviation Impacts.
a. Agency Jurisdiction. The Virginia Department of Aviation's Airport Services Division provides airport sponsors and managers with technical assistance on a wide range of projects and issues, including the planning, design, construction and maintenance of airport facilities. The division manages funding programs for capital improvements, facilities and equipment, airport maintenance projects, and airport security; the General Aviation Voluntary Security Certification Program; the licensing program for public-use airports; and the registration program for private-use airports. This division conducts statewide aviation system planning and maintains the Virginia Air Transportation System Plan.

Agency Comments. According to the Department of Aviation (DoAv) the proposed project may be located within 20,000 linear feet of a public use airport or a portion of the route may penetrate an existing or proposed Part 77 surface or approach path as defined in Federal Aviation Administration (FAA) Advisory Circular 150/5300.</td><td>Chapters 3 and 4 of the Tier II FEIS have been updated to identify and address potential impacts to all applicable airport runways within 20,000 linear feet of the Preferred Alternative.</td></tr>
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b. Requirements. In accordance with Federal Aviation Regulations Part 77, the proponent agencies must submit Form 7460, Notice of Proposed Construction or Alteration, to the Federal Aviation Administration Eastern Region for its review for potential hazards to air navigation. Submittal of this form may be made to Chad Carper, FAA Eastern Region at (703) 661-1358. The review will ensure that the proposed rail line will not create a hazard to air navigation. For further information, contact S. Scott Denny, DoAv at (804) 236-3632.	Chapter 4 of the Tier II FEIS has been amended to address all requirements for Form 7460 to be submitted prior to project construction.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>19) Pollution Prevention.
Pollution Prevention. DEQ advocates that principles of pollution prevention be used in all construction projects as well as in facility operations. Effective siting, planning, and on-site Best Management Practices (BMPs) will help to ensure that environmental impacts are minimized. However, pollution prevention techniques also include decisions related to construction materials, design, and operational procedures that will facilitate the reduction of wastes at the source.

Recommendations. We have several pollution prevention recommendations that may be helpful in future construction projects and in the operation of rail line:

• Consider development of an effective Environmental Management System (EMS). An effective EMS ensures that operations are committed to minimizing environmental impacts, setting environmental goals, and achieving improvements in its environmental performance. DEQ offers EMS development assistance and it recognizes organizations with effective Environmental Management Systems through its Virginia Environmental Excellence Program.
• Consider environmental attributes when purchasing materials. For example, the extent of recycled material content, toxicity level, and amount of packaging should be considered and can be specified in purchasing contracts.
• Consider contractors' commitment to the environment (such as an EMS) when choosing contractors. Specifications regarding raw materials and construction practices can be included in contract documents and requests for proposals.
• Choose sustainable materials and practices for infrastructure construction and design. These could include asphalt and concrete containing recycled materials, and integrated pest management in landscaping, among other things.
• Integrate pollution prevention techniques into the facility maintenance and operation, to include the following: inventory control (record-keeping and centralized storage for hazardous materials), product substitution (use of nontoxic cleaners), and source reduction (fixing leaks, energy-efficient HVAC and equipment). Maintenance facilities should be designed with sufficient and suitable space to allow for effective inventory control and preventative maintenance.

DEQ's Office of Pollution Prevention provides information and technical assistance relating to pollution prevention techniques and EMS. For more information, contact DEQ's Office of Pollution Prevention, Sharon Baxter at (804) 698-4344.</td><td>Comments noted.</td></tr>
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Comment	**Response**
20) Local Comments. a. City of Richmond - Comments from the Richmond Department of Planning and Development Review, Land Use Administration Division and Department of Economic and Community Development are included below. Additional contact information for departments and divisions that will be involved in construction plan reviews and code enforcement is attached to this response.	Comment noted.
1) Department of Planning and Development Review, Land Use Administration Division According to the Department of Planning and Development Review, Land Use Administration Division, one of the vision statements for the implementation of the City of Richmond's Downtown Master Plan (page 4.61) is that Main Street Station should be restored as an inter-modal transportation center. The plan recognizes that, "Main Street Station remains underutilized" and "the City should take advantage of this great asset by restoring its role as the center of the community." The plan states that utilizing Main Street Station as an inter-modal transportation center, "would provide a tremendous benefit to Downtown." "Main Street Station", the plan continues, "is an excellent choice for such a transportation center, as the station is a grand entrance to the city, and its location provides direct access to the City Center and Downtown neighborhoods." Lastly, the plan states that, if it were to happen, "increased rail service could serve the station, making Main Street Station a local and regional transportation destination."	Comment noted.
The DEIS notes that a new bridge would have to be constructed over the James River heading into Main Street Station. The James is one of the seven "Foundations" of the Master Plan. One of the guidance items for this foundation is to "allow residents and visitors to fully enjoy this unique natural feature by creating a series of clear connections to the riverfront. Under this guidance item the plan (page 3.14) notes that "one obstacle to accessibility is the layering of infrastructure that lines the riverfront, including the canals that George Washington surveyed, the railroad lines built on top of the canal tow-paths, and the recently constructed floodwall."	The proposed new bridge over the James River leading into Main Street Station will be located immediately adjacent to the existing single track CSX S-line bridge in use today. Similar to the current rail bridge, the new one will span the existing canal walls and flood walls that parallel the riverfront. This existing railroad line/bridge is perpendicular to the river front and its proposed expansion through a new bridge will not worsen the existing obstacles to public riverfront accessibility, as access to the riverfront is entirely blocked in this location by the existing canal walls and floodwalls that currently line the river's edge.

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Comment	**Response**
The Land Use Administration Division supports of the use of Main Street Station as a hub in the proposed high-speed rail network. When an alternative is chosen and more information is provided regarding the impact of the alternative on Main Street Station and other affected properties, Land Use Administration will provide detailed comments. For questions regarding Land Use Administration Division comments, contact Lory Markham at (804) 646-6309, or Lory. Markham @Richmondgov.com.	Regarding the selection of a Preferred Alternative in the vicinity of Main Street Station, as indicated in the Tier II DEIS, all three alternatives in Section AA are on common alignment and maximize the use of existing rail ROW to build double track where only single track currently exists. To see any rail design changes associated with the Preferred Alternative in this location, along with any associated roadwork, refer to the Map Book Appendix of the Tier II FEIS. Although the Main Street Station site was evaluated in the Richmond to Raleigh Project Tier II DEIS and Tier II FEIS to the level to ensure that a station placed along the Project corridor in this general location would provide sufficient accessibility and maximize ridership for the larger transportation network, this study does not evaluate the specific impacts of any station improvements. Decisions regarding improvements planned for Main Street Station as well as the land around it are under the control of the City of Richmond. Assuming federal funding will be used for the construction of or improvement to the Main Street Station, compliance with NEPA will be required for its implementation, including an evaluation of direct, indirect, and cumulative impacts. All comments regarding Main Street Station collected in this Project have been noted by staff and will be provided to the City of Richmond, who may be required to perform separate NEPA environmental evaluations and will be responsible for making final decisions on Main Street Station improvements at a later date.
2) Department of Economic and Community Development The Richmond Department of Economic and Community Development applauds the Virginia Department of Rail and Public Transportation, North Carolina Department of Transportation and the Federal Railroad Administration for their dedicated efforts in developing the DEIS. Connecting multi-state urbanized areas with improved passenger rail service and eventual high speed passenger rail infrastructure will provide competitive travel alternatives, enhance the environment, attract jobs, promote tourism and bolster economic vitality. Passenger rail service provides safe and highly reliable transportation service between the downtown areas of multiple cities for all segments of the population. This type of transportation service is extremely desirable and in many cases rail travel is quicker, more convenient, reliable, comfortable and less expensive than air or automobile travel. A city connected by quality passenger rail service coupled with convenient public transportation services becomes a more attractive destination and the areas near downtown stations become prime locations for investment. Such stations invite transit oriented development and present the opportunity to improve the livability and sustainability of the communities that they serve. In this way passenger rail service fosters economic development for the city, state and nation. The DEIS details the improvements to the passenger rail corridor between Richmond	Support for the Project, including its funding, has been noted. See an expanded Chapter 1 of the Tier II FEIS for additional project Purpose and Need (including expanded cost/benefit) information.

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Virginia and Raleigh North Carolina. The document includes Richmond's downtown Main Street Station multimodal transportation center as the terminus and/or origination point for all passenger rail services. Main Street Station is also the designated Richmond train station in the Southeast High Speed Rail Corridor, Tier l EIS (2002 Record of Decision and Implementation Plan) and the draft Hampton Roads High Speed Passenger Rail Study, Tier I EIS. Currently the Main Street Station is served by only four trains a day along the Newport News to Boston corridor with Amtrak's northeast regional service. Main Street Station is positioned to serve as the hub for Virginia's passenger rail network with 32 trains per day from the north, south, east and west. The eight Southeast high speed trains are a component of the state rail network and vital to the connectivity within the Commonwealth. The City of Richmond strongly supports the planning and implementation of the studied Richmond to Raleigh high speed rail corridor as well as the overall Southeast high speed rail corridor linking Washington DC to urbanized areas and states to the south. The location of the Southeast high speed corridor directly connected to Amtrak's existing successful Northeast high speed rail corridor provides a tremendous opportunity and further enhances the rail infrastructure investment. Federal and state agencies along with high speed rail supporters should continue their efforts to make the implementation of the Southeast high speed rail corridor project a priority and a reality. For questions regarding the Department of Economic and Community Development comments, contact Viktoria Badger at 804-646-5871, or Viktoria.badger@ richmondgov.com.	
b. <u>Chesterfield County</u> - Chesterfield County has no comments on the DEIS.	Comment noted.
21) **Regional Comments** - Planning District Commissions. In accordance with the Code of Virginia, Section 15.2-4207, planning district commissions encourage and facilitate local government cooperation and state-local cooperation in addressing, on a regional basis, problems of greater than local significance. The cooperation resulting from this is intended to facilitate the recognition and analysis of regional opportunities and take account of regional influences in planning and implementing public policies and services. Planning district commissions promote the orderly and efficient development of the physical, social and economic elements of the districts by planning, and encouraging and assisting localities to plan, for the future.	Comment noted.

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Comment	**Response**
a. Crater Planning District Commission (CPDC) - The CPDC is supportive of efforts by North Carolina and Virginia to establish high speed passenger rail service within the federally designated Southeast High Speed Rail Corridor. Several local governments within the Tri-Cities are on record supporting the VA 1 alternative and opposing pursuing the further development of alternatives VA2 and VA3. The CPDC also supports VA1 and the conclusion reached in the DEIS regarding alternatives through Petersburg. VA 1 offers significant cost and impact advantages over both alternatives VA2 and VA3 in the Petersburg vicinity.	This statement appears to relate to alternatives that were considered, but dropped from further consideration. The VA1 alternative described here is the preferred alternative in the Tier II FEIS.
The CPDC and the Tri-Cities Area Metropolitan Planning Organization (MPO) are interested in further exploring the potential development of a new rail station that would offer better roadway access for future passenger service. The DEIS (page 2-49) indicates three potential station sites have been evaluated by study sponsors from an access perspective only. The draft document does not provide much detail or guidance on how this evaluation may be carried forward to the next step. The CPDC and the Tri-Cities MPO are interested in expanding this evaluation to include additional factors. The prospect of a new passenger rail station along the SEHSR corridor offering better service to area population is desired. A new station could be developed to better compliment the proposed Norfolk to Richmond conventional passenger service currently programmed by the Commonwealth Transportation Board and the potential development of a Richmond to Hampton Roads higher speed passenger service utilizing the Norfolk Southern rail corridor paralleling U.S. Route 460. It is most important that these potential future rail service development plans be effectively coordinated, especially with regard to potential future station location. For additional information contact Dennis K. Morris, CPDC at (804) 861-1666.	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations or design needs, because the development of stations is a unique undertaking at an individual location. As noted, generalized sites within the Petersburg area were evaluated, but only to the level to ensure that a station placed along the Project in this general location would provide sufficient accessibility to the larger transportation network. All public and agency comments received regarding specific station locations have been noted and will be provided to transportation planning organizations in each station location. Those governments at the individual station locations will perform separate environmental evaluations and make the final decision on the station location and design at a later date. The Tri-Cities Area Passenger Rail Station Study evaluated two potential future HSR stations: the existing station in Ettrick and a location in north Collier Yard near Halifax and Squirrel Level Roads in Petersburg. Both locations were found to be suitable for HSR with varying levels of improvement. An Environmental Assessment (EA) is currently underway to evaluate these as well as additional alternative station locations. The study is sponsored by Crater Planning District Commission (CPDC) and FRA is the Lead Federal Agency. Regarding the Hampton Roads HSR connection, it has been studied through a separate project, given its independent utility (as authorized by NEPA). The ROD for the Hampton Roads Tier I study was signed by FRA in December 2012. For more information on the "Richmond to Hampton Roads Tier I" study or plans for the next phase (Tier II EIS), as well as public involvement opportunities for that separate project, please go to http://www.drpt.virginia.gov/projects/hamptonpassenger.aspx. The two projects are being designed to ensure compatibility and connectivity in the Petersburg, VA, area. The FEIS for the Richmond to Raleigh Project has been updated to include additional information on the Richmond to Hampton Roads project, specifically addressing the compatibility of designs as the status of that separate study.
b. Richmond Regional Planning District Commission (RRPDC) - The RRPDC reviewed the DEIS and has no comments on the project as proposed. For additional information contact Jackie Stewart, RRPDC at (804) 323-2033.	Comment noted.

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Comment	**Response**
c. Southside Planning District Commission (SPDC) – The SPDC supports the project. For additional information contact Carol Corker, SPDC at (434) 447-7101.	Comment noted.

22) Attachment 1 - Enforceable Regulatory Programs comprising Virginia's Coastal Resources Management Program (VCP)

a. Fisheries Management - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC); Virginia Code 28.2-200 to 28.2-713 and the Department of Game and Inland Fisheries (DGIF); Virginia Code 29.1-100 to 29.1-570.

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, DGIF, and Virginia Department of Agriculture Consumer Services (VDACS) share enforcement responsibilities; Virginia Code. 3.1-249.59 to 3.1-249.62.

b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottom lands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Marine Resources Commission; Virginia Code. 28.2-1200 to 28.2-1213.

c. Wetlands Management - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.
1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code. 28.2-1301 through 28.2-1320.
2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands --both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act. Attachment 1 continued

d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission; Virginia Cod~ 28.2-1400 through 28.2-1420.

e. Non-point Source Pollution Control –
1) Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation; Virginia Code .10.1-560 et seg.).
2) Coastal Lands Management is a state-local cooperative program administered by the OCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater (see i) Virginia; Virginia Code § 10.1-2100 -10.1-2114 and 9 VAC10-20 et seq.

f. Point Source Pollution Control - The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code. 62.1-44.15. Point source pollution control is accomplished through the implementation of:
1) the' National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.

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2) The Virginia Water Protection Permit (VWPP) program administered by DEQ; Virginia Code §62.1-44. 15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Cod~ 32.1-164 through 32.1-165).

h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code. 10-1.1300 through §10.1-1320). '

i. Coastal Lands Management is a state-local cooperative program administered by the OCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act; Virginia Code § 10.1-2100 -10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative Code 9 VAC10-20 et seq.

23) Attachment 2 –

Advisory Policies for Geographic Areas of Particular Concern

a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:

i. Wetlands
ii. Aquatic Spawning, Nursery, and Feeding Grounds
iii. Coastal Primary Sand Dunes
iv. Barrier Islands
v. Significant Wildlife Habitat Areas
vi. Public Recreation Areas
vii. Sand and Gravel Resources
viii. Underwater Historic Sites.

b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:

i. Highly Erodible Areas
ii. Coastal High Hazard Areas, including flood plains.

c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:

i. Commercial Ports
ii. Commercial Fishing Piers

AG18 Virginia Department of Environmental Quality – Multiple State and Local Agencies, Ellie Irons, Office of Environmental Impact Review	
Comment	**Response**
iii. Community Waterfronts Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCRMP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCRMP recognizes two broad classes of priority uses for waterfront development APC: i. water access dependent activities; ii. activities significantly enhanced by the waterfront location and complementary to other existing and/or planned activities in a given waterfront area. **Advisory Policies for Shorefront Access Planning and Protection** a. Virginia Public Beaches - Approximately 25 miles of public beaches are located in the cities, counties, and towns of Virginia exclusive of public beaches on state and federal land. These public shoreline areas will be maintained to allow public access to recreational resources. b. Virginia Outdoors Plan - Planning for coastal access is provided by the Department of Conservation and Recreation in cooperation with other state and local government agencies. The Virginia Outdoors Plan (VOP), which is published by the Department, identifies recreational facilities in the Commonwealth that provide recreational access. The VOP also serves to identify future needs of the Commonwealth in relation to the provision of recreational opportunities and shoreline access. Prior to initiating any project, consideration should be given to the proximity of the project site to recreational resources identified in the VOP. c. Parks. Natural Areas and Wildlife Management Areas - Parks, Wildlife Management Areas, and Natural Areas are provided for the recreational pleasure of the citizens of the Commonwealth and the nation by local, state, and federal agencies. The recreational values of these areas should be protected and maintained. d. Waterfront Recreational Land Acquisition - It is the policy of the Commonwealth to protect areas, properties, lands, or any estate or interest therein, of scenic beauty, recreational utility, historical interest, or unusual features which may be acquired, preserved, and maintained for the citizens of the Commonwealth. e. Waterfront Recreational Facilities - This policy applies to the provision of boat ramps, public landings, and bridges which provide water access to the citizens of the Commonwealth. These facilities shall be designed, constructed, and maintained to provide points of water access when and where practicable. f. Waterfront Historic Properties - The Commonwealth has a long history of settlement and development, and much of that history has involved both shorelines and near-shore areas. The protection and preservation of historic shorefront properties is primarily the responsibility of the Department of Historic Resources. Buildings, structures, and sites of historical, architectural, and/or archaeological interest are significant resources for the citizens of the Commonwealth. It is the policy of the Commonwealth and the VCRMP to enhance the protection of buildings, structures, and sites of historical, architectural, and archaeological significance from damage or destruction when practicable.	

AG41 Virginia Department of Environmental Quality Office of Wetlands and Water Protection, Additional Comments - Steve Hardwick	
Comment	**Response**
DEQ has reviewed early coordination information provided by Michael Baker Engineering Inc., for the above-referenced project. The project as addressed in the Tier II Environmental Impact Statement (EIS) entails constructing a high speed rail (HSR) service from Richmond, Virginia to Raleigh. North Carolina. This letter provides water quality comments for the proposed alignments VA1, VA2, and VA3 within Sections AA through L which include approximately 97 miles of mainline track starting in Richmond and terminating at the Virginia/North Carolina state line	Comment noted.
1) Sections AA. BB. CC. a. C and F have the same proposed alignment between VA1, VA2, and VA3 with no difference in wetlands or stream impacts. For these sections the following general comments apply: Improvements should be designed to avoid and minimize impacts to surface waters to the greatest extent practicable. Where the project involves a bridge or culvert installation or replacement, the applicant should determine if natural stream channel design measures can be employed. Address the feasibility of installing: instream structures such as a crossvane or constructing bankfull benches or recreating pre-existing streambanks. The design should attempt to eliminate or reduce the amount of riprap to the greatest extent possible.	It will be determined during final design and permitting if natural stream channel design measures can be employed during bridge or culvert installation.
b. Restore temporary impact areas to their original contours and revegetate with the same or similar species. If necessary, consider using a work bridge rather than a causeway to reduce temporary impacts.	These steps will be taken during final design, permitting, and construction.
c. For any work that is performed instream such as the construction of a box culvert or new bridge piers, the applicant should utilize cofferdams to perform all work in the dry. Observe strict adherence to and monitoring of erosion and stormwater management practices to ensure that these practices are adequately preventing sediment and pollutant migration into adjacent surface waters.	Stream work will be performed in the dry as per standard permit conditions.
2) Sections DD, A, B, D, E, G, H, I, J, K and L. Sections DD, A, B, D, E, G, H, I, J, K and L propose different alignments between options VA1 VA2 and VA3. For these sections the above general comments apply in addition to the following comments: a. Section DD - VA3 is the least environmentally damaging alignment. There is only a nominal difference between stream and wetland impacts between the three alignments, However, VA3 has a Positive Operability/Constructability rating versus neutral for VA1 and negative for VA2, VA3 is also the least expensive of the three alignments.	Alternative VA3 is the preferred alternative in Section DD.

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b. Section A - VA2 is the least environmentally damaging alignment. VA2 has the least wetland and stream impacts and also the best Operability/Constructability rating.	Alternative VA2 is the preferred alternative in Section A.
c. Section B - VA2 is the least environmentally damaging alignment of the three proposed with 496 linear feet of stream impacts and 0.62 acres of wetlands impacts versus 940 linear feet of streams and 0.9 acres of wetlands impacts for Al and A3. However DEQ recognizes that VA2 results in a negative Operability/Constructability rating versus neutral ratings for VA1 and VA3 due to a 20 mile per hour reduction in the top speed allowed using VA2. Alignment VA1and/or VA3 are practicable provided that the appropriate mitigation is provided for the increased impacts.	Alternative VA1 is the preferred alternative in Section B. Alternative VA1 has greater impacts to water resources, forested uplands, and prime and other important farmland; two more residential relocations; and a larger total cost compared to Alternative VA2. However, Alternative VA2 has a much lower limiting speed and a negative rating for operability and constructability. In addition, Alternative VA2 has five more potential noise and vibration impacts (compared to Alternative VA1) and one business relocation (whereas Alternative VA1 has none). It should be noted that the difference in stream and wetland impacts between the alternatives has been significantly reduced from what was presented in the Tier II DEIS. In the Tier II DEIS, Alternative VA1 had approximately 450 additional feet of stream impacts and 0.35 acres of wetland impacts compared to Alternative VA2. Of these, more than 300 feet of stream impacts and 0.3 acres of wetland impacts associated with Alternative VA1 were attributed to the proposed new access road that intersects Carson Road. This road has been re-designed in such a way as to minimize or negate the stream and wetland impacts. Any remaining stream and wetland impacts will be fully mitigated, and the design work will include coordination with the USACE. The revised stream and wetland impacts for Alternative VA1 appear in the Tier II FEIS. With these reductions, the stream and wetland impacts for Alternative VA1 are comparable with Alternative VA2.
d. Section D – i. VA1/VA3 is the least environmentally damaging alignment. VA1/VA3 results in 2,050 linear feet of stream impacts and 0.99 acres of wetland impacts. VA2 would impact 2,575 linear feet of stream and 7.37 acres of wetlands impacts, an increase of 6.38 acres of wetlands and 525 linear feet of streams over VA1/VA3. In addition to the increased direct impact to wetlands and streams, VA2 would effectively bisect a large contiguous wetland complex and introduce rail traffic that would have an unknown negative secondary effect on the wild1ife functions and values of that forested wetland system. V2's recommending factors are the avoidance of a Section 106 Adverse Effect, the avoidance of a potential impact to a population of the federally threatened species Michaux's sumac and lower construction costs. ii. The adverse effect determination to the Section 106 resource associated with VA1/VA3 results from an anticipated degradation of the overall historic value of the entire property, but does not involve a direct impact to the historic home on the property. Based on the proposed distance of the VA1/VA3 alignment from the historic home, the project proponent should explore viable options that	Alternative VA4 is the preferred alternative in Section D. It was developed after the completion of the public comment period for the Tier II DEIS, through coordination and consultation with the US Army Corps of Engineers (USACE), Virginia Department of Historic Resources (VDHR), US Fish and Wildlife Service (USFWS), and the Virginia Division of Environmental Quality (VDEQ). Alternative VA4 does not require a Section 4(f) use of the Wynnhurst historic property, avoids impacts to the delineated population of the Michaux's Sumac, and minimizes wetland impacts (compared to Alternative VA2). This alternative was determined to be an acceptable preferred alternative by USACE, VDHR, USFWS, and VDEQ at an interagency meeting held on April 12, 2011.

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Virginia Department of Environmental Quality Office of Wetlands and Water Protection, Additional Comments - Steve Hardwick</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>would mitigate the adverse effect of the proximity of the railway to the historic home, including the establishment of a wooded buffer between the home and the railway.
iii. The currently proposed alignment for VA1/VA3 has not been shown to result in a complete impact to the Michaux's sumac population. However, there is concern that future maintenance of the VAIN A3 alignment, including the application of herbicides within the railway right of way, will impact the population. Consider the feasibility of establishing a no-spray zone through the use of signage, fencing or a combination of methods that would prevent impacts from herbicides. Also, the Department of Conservation and Recreation and the Fish and Wildlife Service have established that Michaux's sumac thrives in open areas and cannot persist in forested areas. The current Michaux's sumac population is located in the open areas along the original CSX S-line, which is maintained to prevent the establishment of shrubs or trees. The population thins as it moves deeper into the forested area. Should VA2 be chosen in part1 to avoid the sumac population the resulting lack of ongoing vegetation maintenance at the current sumac location would ultimately result in shrubs and eventually trees outcompeting the sumac and the probable loss of the population despite the avoidance of a direct impact.
iv. The ideal alignment in Section D would be a hybrid alignment that avoids the Section 106 resource and the Michaux’s sumac population while skirting the large forested wetland complex that results in 7.37 acres of impacts and unknown negative effects to that systems wildlife function and values. Preliminary discussions in the field seem to indicate that such an alignment may be feasible.</td><td></td></tr>
<tr><td>e. Section E - VA1/VA3 is the least environmentally damaging alignment as it results in 2.13 less acres of wetlands impacts than VA2. VA1/VA3 also maintains a positive Operability/Constructability rating versus a neutral rating for VA2</td><td>Alternative VA1 is the preferred alternative in Section E.</td></tr>
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Comment	**Response**
f. Section G - VA3 is the least environmentally damaging alignment VA3 results in a reduction of 0.28 acres wetland impacts and 414 linear feet in stream impacts over VA2 and 154 linear feet of stream impacts over VA1. VA1 and VA3 both have Section 106 adverse effect determination due to their passage through the property that includes the "Tourist House." The "Tourist House" is located immediately adjacent to a country road with and includes a multi-acre property that extends away from the road frontage in a rectangular wooded lot. The historic relevance of the this resource involves its relationship to the development of the American automobile and its function as a rest stop for early automobile tourists. Due to the fact that VA1/VA3 alignments pass a considerable distance from the "Tourist House" through a wooded lot that provides existing screening and considering that the house and its relationship to the roadway provides the primary historic relevance of this resource, VA3 is the recommended alignment. Furthermore, VA2, which is proposed solely to provide a total avoidance of the "Tourist House" results in a negative Operability/Constructability rating versus a positive rating for VA3.	Alternative VA3 is the preferred alternative in Section G.
g. Section H - VA1/VA3 is the least environmentally damaging alignment. VA1/VA3 results in a slight reduction to stream impacts versus VA2 and also has a positive Operability / Constructability rating versus neutral for VA2.	Alternative VA1 is the preferred alternative in Section H.
h. Section I - VA2 is the least environmentally damaging alignment. The three proposed alignments have identical, nominal stream impacts and no wetland impacts. However, VA2 results in a reduction of 4.57 acres of forested upland versus VA1/VA3.	Alternative VA1 is the preferred alternative in Section I. The statement from VDEQ appears to have mistaken Alternative VA1/VA3 with Alternative VA2; Alternative VA2 has greater impacts to forested uplands, not fewer.
i. Section J - VA2 is the least environmentally damaging alignment. VA2 results in a 1,363 linear foot reduction in stream impacts over VA1.VA3 and results in only 0.10 acre of wetland impacts. VA2 is also the only alignment that doesn't result in a Section 106 adverse effect.	Alternative VA2 is the preferred alternative in Section J.
j. Section K - VA1/VA3 is the least environmentally damaging alignment. VA1/VA3 results in 520 fewer linear feet of stream impacts and 0.56 acre fewer wetland impacts versus VA2. VA2 results in a Section 106 adverse effect and also carries a negative Operability/Constructability rating.	Alternative VA1 is the preferred alternative in Section K.

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k. Section L - VA2/NC2 is the least environmentally damaging alignment. VA2/NC2 results in 1,387 fewer linear feet of stream impacts and 0.56 acre fewer wetland impacts versus VA1/NC1 and VA3/NC3. However DEQ recognizes that VA2/NC2 results in a negative Operability/Constructability rating versus neutral for VA1/NC1 and VA3/NC3 due to a 10 mile per hour reduction in top speed allowed sing VA2. Alignment VA1/NC1 and/or VA3/NC3 are practicable provided that the appropriate mitigation is provided for increased impacts. This section has cumulative wetland and stream impacts that are partially located within North Carolina. Please note that the Virginia State Law requires that wetland and stream impacts occurring in Virginia must be mitigated in Virginia.	Alternative VA1/NC1 is the preferred alternative in Section L. Alternative VA1/NC1 is the Section 4(f) avoidance alternative in Section L. Alternative VA1/NC1 has greater stream and wetland impacts compared to VA2/NC2, but fewer impacts to prime and important farmlands, less residential relocations, fewer noise and vibration impacts, and a lower total cost. In addition, it has a neutral constructability and operability rating (compared to a negative rating for Alternative VA2/NC2) and has better support from the public. Seven public comments indicated a preference for Alternative VA1/NC1 compared to two for Alternative VA2/NC2. During project coordination, USACE expressed concerns regarding the greater stream and wetland impacts on Alternative VA1/NC1 (2,809 feet of stream impacts and 0.57 acres of wetland impacts compared to 1,422 feet of stream impacts and 0.01 acres of wetland impacts for Alternative VA2/NC2). In a letter to USACE dated January 6, 2011, the Project Team explained the differences between the alternatives. Based on the information in the letter, as well as previously submitted related information, USACE stated on January 13, 2011, that if the Project Team assessed that Alternative VA2/NC2 is "not practicable due to residential displacements, cost, and operability, then [USACE] can concur with your assessment based on the information submitted." Due to residential displacements, cost, and operability, as well as public sentiment, noise and vibration impacts, and impacts to prime and important farmlands, the Project Team finds that Alternative VA2/NC2 is not practicable. The impacts to streams and wetlands will be fully mitigated, and the design work will include coordination with USACE.

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)	
Comment	**Response**
The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review. If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.	Comment noted.

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)	
Comment	**Response**
1) DENR (NC Dept of Environment and Natural Resources) a. Melba McGee (DENR Project Review Coordinator) - There are a number of concerns that need to be addressed prior to finalizing project plans. We ask that the Department of Transportation work directly with our commenting agencies during the NEPA Merger Process. This will help avoid delays at the permit phase.	Given that Virginia does not have a Merger counterpart, FHWA, FRA, DRPT and DOT decided early in the process that a single, consistent process in both states should be used to obtain agency input on the Richmond to Raleigh Project. The Project Team coordinated with USACE and both state water quality agencies in selection of the LEDPA for each section of the Project. In North Carolina, the Project Team met with Rob Ridings of NCDWQ on April 27, 2010, to present alternatives and seek input on LEDPA. Subsequently, the Project Team has coordinated with Mr. Ridings when instances have occurred where Section 4(f) or other issues have led to selection of an alternative that does not minimize impacts to streams or wetlands.
b. Rob Ridings (Division of Water Quality) – This office has reviewed the referenced document dated received May 28, 2010. The Division of Water Quality (DWQ) is responsible for the issuance of the Section 401 Water Quality Certification for activities that impact Waters of the U.S., including wetlands. It is our understanding that the project as presented will result in impacts to numerous jurisdictional wetlands, streams, buffers and other surface waters. The DWQ offers the following comments based on review of the aforementioned document: i. Most of the streams in the project corridor are class Nutrient Sensitive Waters (NSW) of the State. DWQ is very concerned with sediment and erosion impacts that could result from this project. DWQ recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to class NSW streams and their tributaries. DWQ requests that design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of *NC DWQ Stormwater Best Management Practices.*	Project design plans will specify treatment of stormwater runoff through best management practices as detailed in the most recent version of the *NCDWQ Stormwater Best Management Practices*.
ii. Several streams in the project corridor are on the 303(d) list of impaired waters of the State. DWQ is very concerned with sediment and erosion impacts that could result from this project. DWQ recommends that the most protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to 303(d) listed waters. DWQ requests that design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NC DWQ Stormwater Best Management Practices.	The Project Team will investigate and implement appropriate stormwater BMPs as detailed in the most recent version of the *NCDWQ Stormwater Best Management Practices.*

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)		
Comment		**Response**
iii.	Much of this is within the Neuse and Tar-Pamlico River Basins. Riparian buffer impacts should be avoided and minimized to the greatest extent possible pursuant to ISA NCAC 2B.0233 and 15A NCAC 2B.0259. New development activities located in the protected 50-foot wide riparian areas within the basin shall be limited to "uses" identified within and constructed in accordance with 15A NCAC 2B.0233 and 15C NCAC 28.0259. Buffer mitigation may be required for buffer impacts resulting from activities classified as "allowable with mitigation" within the "Table of Uses" section of the Buffer Rules or require a variance under the Buffer Rules. A buffer mitigation plan, including use of the NC Ecosystem Enhancement Program, must be provided to DWQ prior to approval of the Water Quality Certification.	Riparian buffer impacts have been avoided and minimized to the greatest extent practicable pursuant to 15A NCAC 2B.0233 and 15A NCAC 2B.0259. Project activities located in the protected 50-foot wide riparian areas will be limited to "uses" identified within and constructed in accordance with 15A NCAC 2B.0233 and 15C NCAC 2B.0259. Buffer mitigation for buffer impacts resulting from activities classified as "allowable with mitigation" within the "Table of Uses" section of the Buffer Rules or required variance under the Buffer Rules will be provided through a buffer mitigation plan, including use of the North Carolina Ecosystem Enhancement Program, will be provided to DWQ prior to approval of the Water Quality Certification.
iv.	The environmental documents should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping. If mitigation is necessary as required by 15A NCAC 2H.0506(h), it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. Appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.	The FEIS provides information on proposed impacts to wetlands and streams with corresponding mapping. If mitigation is necessary as required by 15A NCAC 2H.0506(h), it will be provided through the North Carolina Ecosystem Enhancement Program, and will be provided to NCDWQ prior to approval of the 401 Water Quality Certification.
v.	Environmental assessment alternatives shall consider design criteria that reduce the impacts to streams and wetlands from storm water runoff. These alternatives shall include road designs that allow for treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ Stormwater Best Management Practices Manual, July 2007, such as grassed swales, buffer areas, preformed scour holes, retention basins, etc.	The Project Team will investigate and implement appropriate stormwater treatment measures as detailed in the most recent version of the *NCDWQ Stormwater Best Management Practices* in the final design phase, which may include grassed swale treatment, preformed scour holes, pipe end-treatments, and level spreaders to the extent practicable. The project will coordinate with regulatory agencies throughout the design process to ensure compliance with applicable environmental regulations.
vi.	After the selection of the preferred alternative and prior to an issuance of the 401 Water Quality Certification, the USDOT and NCDOT are respectfully reminded that they will need to demonstrate the avoidance and minimization of impacts to wetlands, buffers, and streams to the maximum extent practical. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(h)}, mitigation will be required for impacts of greater than 1 acre to wetlands. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as wetland mitigation.	Comments noted.

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	Comment	**Response**
vii.	In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(h)}, mitigation will be required for impacts of greater than 150 linear feet to any single jurisdictional stream. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as stream mitigation.	In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The North Carolina Ecosystem Enhancement Program may be available for use as stream mitigation.
viii.	Future documentation, including the 401 Water Quality Certification Application, shall continue to include an itemized listing of the proposed wetland, buffer, and stream impacts with corresponding mapping.	Proposed impacts to jurisdictional wetlands and streams for the Preferred Alternative, with corresponding mapping, are provided in the Tier II FEIS and will also be included in the 401 Water Quality Certification Application.
ix.	DWQ is very concerned with sediment and erosion impacts that could result from this project. NCDOT shall address these concerns by describing the potential impacts that may occur to the aquatic environments and any mitigating factors that would reduce the impacts.	Impacts to aquatic communities as a result of the proposed project are discussed in Section 4.10.1.2 in the Tier II DEIS and in this document. In addition, Section 4.10.1.3 in the Tier II DEIS and in this document include measures to optimize sediment and erosion control during construction to protect water quality for aquatic organisms.
x.	An analysis of cumulative and secondary impacts anticipated as a result of this project is required. The type and detail of analysis shall conform to the NC Division of Water Quality Policy on the assessment of secondary and cumulative impacts dated April 10, 2004.	Due to the Richmond to Raleigh Project spanning two states, FRA, DRPT and DOT decided early in the process that a single, consistent process in both states should be used to evaluate the environmental impacts of the proposed project. Therefore, state-specific guidance was not applied to the evaluation of secondary/cumulative impacts. In response to the concern about the level of analysis of these potential impacts, Sections 4.11 and 4.17 of the Tier II FEIS have been amended to include additional discussion of secondary/cumulative impacts, as well as potential mitigation.
xi.	NCDOT is respectfully reminded that all impacts, including but not limited to, bridging, fill, excavation and clearing, to jurisdictional wetlands, streams, and riparian buffers need to be included in the final impact calculations. These impacts, in addition to any construction impacts, temporary or otherwise, also need to be included as part of the 401 Water Quality Certification Application.	Impacts, are described in this document and will also be included as part of the 401 Water Quality Certification Application.
xii.	Where streams must be crossed, the DWQ prefers bridges be used in lieu of culverts. However, we realize that economic considerations often require the use of culverts. Please be advised that culverts should be countersunk to allow unimpeded passage by fish and other aquatic organisms. Moreover, in areas where high quality wetlands or streams are impacted, a bridge may prove preferable. When applicable, DOT should not install the bridge bents in the creek, to the maximum extent practicable.	Bridges have been included in the designs where practicable. However, a key difference should be noted regarding the design of bridges for passenger HSR projects compared to highway projects due to restrictions on grade (generally 1%). To raise the grade to carry rail up and over a bridge can result in impacts along the rail line for a long distance on the approach and departure from the bridge. Due to these impacts and associated costs, culverts are often a more practicable option. For new culverts constructed in streams, the inverts will be buried at least one foot below the bed of the stream for culverts greater than 48 inches in diameter. For culverts 48 inches in diameter or smaller, the inverts will be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert.

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xiii.	Sediment and erosion control measures should not be placed in wetlands, buffers or streams.	Sediment and erosion control measures will not be placed in wetlands or streams to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands or streams is unavoidable, they shall be removed and the natural grade restored once the Project is complete and fill slopes have been stabilized.
xiv.	Borrow/waste areas should avoid wetlands to the maximum extent practical. Impacts to wetlands in borrow/waste areas will need to be presented in the 401 Water Quality Certification and could precipitate compensatory mitigation.	Contract standard specifications prohibit a contractor from selecting borrow/waste sites that are in wetland areas. However, unanticipated unavoidable impacts to wetlands in borrow/waste areas will be included in the 401 Water Quality Certification application.
xv.	The 401 Water Quality Certification Application will need to specifically address the proposed methods for stormwater management. More specifically, storm water shall not be permitted to discharge directly into streams or surface waters.	The 401 Water Quality Certification Application will specify stormwater management methods. The Richmond to Raleigh Project will develop a stormwater management plan and use appropriate stormwater BMPs to control and/or treat stormwater runoff.
xvi.	Based on the information presented in the document, the magnitude of impacts to wetlands and streams may require an Individual Permit (lP) application to the Corps of Engineers and corresponding 401 Water Quality Certification. Please be advised that a 401 Water Quality Certification requires satisfactory protection of water quality to ensure that water quality standards are met and no wetland or stream uses are lost. Final permit authorization will require the submittal of a final application by the NCDOT and written concurrence from the NCDWQ. Please be aware that any approval will be contingent on appropriate avoidance and minimization of wetland and stream impacts to the maximum extent practical, the development of an acceptable stormwater management plan, and the inclusion of appropriate mitigation plans where appropriate.	It is understood that the magnitude of impacts to wetlands and streams will require an Individual Permit (lP) application to the Corps of Engineers and corresponding 401 Water Quality Certification. NCDOT has initiated preliminary pre-application coordination with NCDWQ in a meeting with Rob Ridings on April 23, 2010.
xvii.	Bridge supports (bents) should not be placed in the stream when possible.	The project will avoid installing bridge bents in streams to the maximum extent possible.
xviii.	Whenever possible, the DWQ prefers spanning structures. Spanning structures usually do not require work within the stream or grubbing of the streambanks and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allow for human and wildlife passage beneath the structure, do not block fish passage and do not block navigation by canoeists and boaters.	Comment noted.
xix.	Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of NCDWQ Stormwater Best Management Practices.	The Richmond to Raleigh Project will investigate and implement appropriate stormwater treatment measures as detailed in the most recent version of NCDWQ *Stormwater Best Management Practices* in the final design phase. The project will restrict the use of bridge deck drains on bridges, wherever practicable. Stormwater will be directed across the bridge and pre-treated through site-appropriate means, wherever practicable.

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xx.	If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.	These recommendations follow the NCDOT's standard design practices.
xxi.	If temporary access roads or detours are constructed, the site shall be graded to its preconstruction contours and elevations. Disturbed areas shall be seeded or mulched to stabilize the soil and appropriate native woody species shall be planted. When using temporary structures the area shall be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact allows the area to re-vegetate naturally and minimizes soil disturbance.	Where temporary access roads and detours are required, the Project will consider re-grading to preconstruction contours and elevations on a case-by-case basis and will do so where reasonable. Disturbed areas will be reseeded following construction. Where temporary bridge structures are required, the area will be cleared but not grubbed.
xxii.	Placement of culverts and other structures in waters, streams, and wetlands shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by DWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the NC DWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.	Comments noted. Placement of culverts and other structures in waters, streams, and wetlands will be countersunk as indicated above. The Project Team will continue to work with NCDWQ and USACE through the 401 Water Quality Certification process.
xxiii.	If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.	The Project Team will review drainage design with NCDWQ and USACE prior to applying for 401 Water Quality Certification.
xxiv.	If foundation test borings are necessary; it shall be noted in the document. Geotechnical work is approved under General 401 Certification Number 3687INationwide Permit No.6 for Survey Activities.	It is anticipated that foundation test borings will be necessary. During the final design stage of the Project, the Project will obtain any required permits pertaining to foundation test borings prior to beginning the construction phase of the Project.

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)		
	Comment	**Response**
xxv.	Sediment and erosion control measures sufficient to protect water resources must be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.	Sediment and erosion control measures sufficient to protect water resources will be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.
xxvi.	All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.	All current approved and appropriate BMPs will be followed.
xxvii.	While the use of National Wetland Inventory (NWI) maps, NC Coastal Region Evaluation of Wetland Significance (Ne-CREWS) maps and soil survey maps are useful tools, their inherent inaccuracies require that qualified personnel perform onsite wetland delineations prior to permit approval.	Wetlands in the Project Study Area were identified by qualified personnel performing onsite surveys and delineations.
xviii.	Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams. This equipment shall be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.	These recommendations follow the NCDOT's standard design practices.
xxix.	Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.	These recommendations follow the NCDOT's standard design practices.
xxx.	Riparian vegetation (native trees and shrubs) shall be preserved to the maximum extent possible. Riparian vegetation must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.	The project will include language in the construction contract to address minimizing the amount of vegetation that is removed and reestablishing the riparian vegetation to the amount practical within the Project limits.
xxxi.	Any anticipated bank stabilization associated with culvert installations or extensions should be addressed in the permit application. An adequate amount of bank stabilization should be applied for in the permit application, to prevent the need of future permit modifications.	Anticipated bank stabilization associated with culvert installations or extensions will be addressed in the permit application. An adequate amount of bank stabilization will be applied for in the permit application, to prevent the need of future permit modifications.

<table>
<tr><th colspan="2">AG 17 & AG42
NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>c. <u>Harry LeGrand (Natural Heritage Program)</u> – The Natural Heritage Program has a scattering of records of significant natural resources and conservation areas close to the very large project area. However, only the crossing of the Tar River appears likely to potentially impact such resources. In this stretch of the river, along the Vance/Franklin county line, are at least nine rare aquatic animal species:
• yellow lampmussel (Lampsilis cariosa), State Endangered and Federal Species of Concern
• Atlantic pigtoe (Fusconaia masoni), State Endangered and Federal Species of Concern
• yellow lance (Eliptio lanceolata), State Endangered and Federal Species of Concern
• triangle floater (Alasmidonta undulato), State Threatened
• creeper (Strophitus undulatus), State Threatened
• Carolina madtom (Noturus furiosus), State Threatened and Federal Species of Concern
• Roanoke bass (Ambloplites cavifrons), State Significantly Rare and Federal Species of Concern
• Neuse River waterdog (Necturus lewisi), State Special Concern
• North Carolina spiny crayfish (Orconectes carolinensis), State Special Concern
It is extremely important that proper sedimentation controls be in place during construction of the rail in the vicinity of the Tar River.</td><td>Sediment and erosion control measures sufficient to protect water resources will be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.</td></tr>
<tr><td>d. <u>Raleigh Regional Office</u> – After review of this project it has been determined that the ENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law -
i. Permit to construct and operate wastewater treatment facilities, sewer system extensions and sewer systems not discharging into state surface waters.</td><td>The project is not anticipated to construct or operate any wastewater treatment facilities or sewer systems.</td></tr>
<tr><td>ii. Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900.</td><td>Any open burning associated with the Project will be in compliance with all regulatory requirements, including 15 A NCAC 2D.1900.</td></tr>
<tr><td>e. <u>Jim McRight (Division of Environmental Health / Public Water Supply Section)</u> –
i. Water Supply source must be protected from potential contamination.</td><td>Section 4.1.1.4 of the Tier II FEIS discusses potential impacts to public water supplies. Section 4.1.6 of the Tier II FEIS lists all mitigation and minimization techniques that will be followed to minimize water quality impacts from the Project.</td></tr>
</table>

AG 17 & AG42 **NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)**	
Comment	**Response**
ii. Direct impacts on existing water systems is not mentioned. Are there expected impacts?	Section 4 .15 of the Tier II DEIS discusses the utility impacts of each project alternative, including water systems, and provides projected costs associated with these impacts. Also, Appendix N of the Tier II DEIS provides a breakdown of utility impacts by type and Project Section. Section 4.15 of the Tier II FEIS has been amended to summarize the projected utility costs associated with the Preferred Alternative. Coordination with local utility agencies will take place during final design to adequately mitigate, relocate, and/or replace affected systems. There will be no long-term impacts to utilities from the Project.
f. Travis W. Wilson (Habitat Conservation Program) – Staff biologists with the N. C. Wildlife Resources Commission have reviewed the subject DEIS and are familiar with habitat values in the project area. The purpose of this review was to assess project impacts to fish and wildlife resources in North Carolina. Our comments are provided in accordance with certain provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661•667d). i. The 2002 Tier I EIS identified a preferred corridor from Washington, DC to Charlotte, NC, the subject Draft Tier II EIS is intended to represent a detailed analysis of impacts as a result of constructing the section of the SEHSR from Petersburg, VA to Raleigh, NC. Although the preferred corridor minimizes impacts by predominately following existing rail corridors there are cumulative direct impacts ranging from 11,774 to 18,292 linear feet of stream, 22.79 to 33.54 acres of Tar-Pamlico and Neuse Riparian Buffer, and 1.65 to 5.31 acres of wetlands as well as hundreds of acres of forested uplands. These totals represent substantial impacts to natural resources. Alternatives presented in each designated section should be selected to avoid these impacts to the greatest extent practicable.	Alternatives presented in each of the 26 sections of the Project were selected to avoid these impacts to the greatest extent practicable. Where an alternative was selected with greater stream or wetland impacts, it was due to the need to avoid impacts to other resources (e.g., resources protected by Section 4(f) of the Department of Transportation Act) or because the difference in impacts was not substantial and another alternative better met the Purpose and Need for the Project (e.g., provided faster travel times).

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)	
Comment	**Response**
ii. Furthermore, linear transportation projects can act as a barrier to certain fish and wildlife species, further fragmenting habitat as well as increasing predation of these species. Acknowledgement of this impact is documented in the Draft Tier I EIS, as well as a commitment for considering larger hydraulic structures to accommodate wildlife movement. The Tier II EIS however, neglected to address the fragmentation effect of the project. Extensive use of existing rail corridors will greatly reduce the quantity of newly fragmented habitat. However, wider corridors, additional sidings, and increased rail activity will amplify the barrier effects of the existing corridor; therefore wildlife permeability should be addressed in the development and design of this project. Herpetofauna constitute the primary species that should be the focus of these efforts. Impacts to these species can be minimized by constructing longer bridges, larger culverts, and additional culverts at stream and wetland crossings, these structures should be designed to allow for "dry" passages through the riparian zone.	All stream and wetland crossings/culverts will consider high and low flow passage consistent with NCDWQ requirements. Where practicable, multiple culverts set at different elevations to address floodplain flow or high flow (in addition to low flow) will provide “dry” passage for herpetofauna through the riparian zone during normal flow conditions.
iii. We have reviewed the data provided in the DEIS. We look forward to continued coordination during the development of this segment and future components of the SEHSR in North Carolina. At this time we concur with the DEIS for this project.	Comment noted.
2) NC Department of Public Safety / Division of Emergency Management a. <u>John Gerber NC Floodplain Mapping Unit</u> – i. Each candidate alternative includes crossing a significant number of regulated special hazard flood areas. A floodplain development permit should be obtained from the local jurisdiction and include a no-rise/impact certification for each floodway and non-encroachment area crossing or a submittal for a CLOMR per 44 CFR Section 65.12. ii. If federal funding is used, E.O. 11988 applies.	 Section 4.1.3 of the Tier II FEIS has been expanded to discuss the requirement for floodplain development permits and the applicability of Executive Order 11988 (Floodplain Management).

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)	
Comment	**Response**
3) North Carolina Department of Agriculture and Consumer Services/Agricultural Services a. <u>Vernon Cox (Environmental Programs Specialist)</u> – i. The Environmental Scoping document indicates that this project has the potential to result in a significant loss of prime farm and forest land in North Carolina. Farm and forest lands are important for both economic and environmental reasons. Appropriately managed agricultural lands can provide groundwater recharge, wastewater filtration, flood prevention, and wildlife habitat protection. Agricultural land enhances the quality of life for citizens within a community by offering scenic landscapes, open space, and a variety of outdoor recreational activities. In addition, loss of productive farmland has the potential for irreversible damage to the agricultural sector of our economy. Agricultural production incomes from locally grown products have a considerable multiplier effect. It is estimated that for every 40 acres converted from agricultural production, one agribusiness job and its associated economic activity is lost indefinitely. Overall, farmland consumes fewer services relative to the taxes generated, compared 10 other types of development. Careful review of activities that result in loss of farm and forest land is warranted when consideration is given for the loss of environmental amenities, the loss of local tax revenue, the value of agricultural products no longer produced, and the decrease of agribusiness jobs associated with the loss of the land. When considering specific alternatives, every effort should be made to utilize the existing rail rights of way so as to prevent adverse impacts to prime farm and forestland. Where this is not possible, proposed alternatives should seek to minimize impacts to farm and forestland by minimizing division of land units and providing convenient travel corridors to allow for adequate mobility for agricultural operations.	Numerous alternative designs were evaluated for the Preferred Corridor in an effort to minimize all project impacts, including those to prime farm and forest land. The primary means of doing so was the substantial use of existing rail ROW. However, the Project's designs were sometimes constrained by the existing curvature in the rail ROW (which required new alignments that straightened the track for higher speeds) and/or the need to avoid developments, wetlands and riparian areas, or other resources, such as Section 4(f) uses. Efforts will be made to minimize impacts from the rail and road work during the final design stage of the Project when survey level data is available.

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)	
Comment	**Response**
4) North Carolina Department of Cultural Resources / State Historic Preservation Office (State Number 10-E-0000- 0417; ER 03-1507) a. Peter Sandbeck (for Renee Gledhill-Earley) – i. With regard to archaeological resources, the document correctly states that consideration of these resources is to be done under a phased approach. Phase I studies have been completed and more intensive studies are underway. Appropriate consultation has been undertaken with us and will continue as the project progresses.	Comment noted.
ii. We look forward to working with you and your consultants on the next phases of the project. In terms of historic properties located in North Carolina, we have checked our files against the information contained in the DEIS and believe that the document correctly identifies the historic properties that are within the undertaking's Area of Potential Effects as well as the effects of the three project alternatives on those resources. Given that some of the findings of No Adverse Effect are "conditional" and, in turn, the Section 4(f) findings dependent on a final effects determination, we look forward to further refinement of the project plans and issuance of the Final Environmental Impact Statement with its final Section 106 and 4(f) determinations for the undertaking.	Comment noted.
iii. In terms of historic properties located in North Carolina, we have checked our files against the information contained in the DEIS and believe that the document correctly identifies the historic properties that are within the undertaking's Area of Potential Effects as well as the effects of the three project alternatives on those resources. Given that some of the findings of No Adverse Effect are "conditional" and, in turn the Section 4(f) findings dependent on a final effects determination, we look forward to further refinement of the project plans and issuance of the Final Environmental Impact Statement with its final Section 106 and 4(f) determinations for the undertaking.	Comment noted.

AG 17 & AG42 NC State Environmental Review Clearinghouse (Combined 8/24/10 and 9/15/10 Letters, Chrys Baggett) and DENR/DWQ (Rob Ridings, Transportation Permitting Unit)	
Comment	**Response**
iv. In light of the Adverse Effects resulting from the selection of any of the three alternatives in North Carolina, we understand that consultation under Section 106 is needed to develop a Programmatic Agreement for the undertaking. We will be pleased to enter into formal consultation with the consulting and interested parties, as identified in the DEIS or as they self-identify and ask to enter into the consultation, to address the effects of the undertaking and explore ways to avoid, minimize or mitigate adverse effects upon the historic properties. The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.	Comment noted.

AG23 NC Department of Cultural Resources, State Historic Preservation Office, Peter Sandbeck (Renee Gledhill-Early, point of contact,; Tracking Number ER 03-1507	
Comment	**Response**
1) With regard to archaeological resources, the document correctly states that consideration of these resources is to be done under a phased approach. Phase I studies have been completed and more intensive studies are underway. Appropriate consultation has been undertaken with us and will continue as the project progresses. We look forward to working with you and your consultants on the next phases of the project.	Comment noted.
2) In terms of historic properties located in North Carolina, we have checked our files against the information contained in the DEIS and believe that the document correctly identifies the historic properties that are within the undertaking's Area of Potential Effects as well as the effects of the three project alternatives on those resources. Given that some of the findings of No Adverse Effect are "conditional" and, in turn, the Section 4(f) findings dependent on a final effects determination, we look forward to further refinement of the project plans and issuance of the Final Environmental Impact Statement with its final Section 106 and 4(f) determinations for the undertaking.	Comment noted.
3) In light of the Adverse Effects resulting from the selection of any of the three alternatives in North Carolina, we understand that consultation under Section 106 is needed to develop a Programmatic Agreement for the undertaking. We	The Project Team appreciates the NC-HPO's involvement in the Project and looks forward to working with them towards completion of a MOA for the Adverse Effect of the Project.

AG23 NC Department of Cultural Resources, State Historic Preservation Office, Peter Sandbeck (Renee Gledhill-Early, point of contact,; Tracking Number ER 03-1507	
Comment	**Response**
will be pleased to enter into formal consultation with the consulting and interested parties, as identified in the DEIS or as they self-identify and ask to enter into the consultation, to address the effects of the undertaking and explore ways to avoid, minimize or mitigate adverse effects upon the historic properties.	
4) The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.	Comment noted.

AG32 Virginia Department of Transportation Richmond District - Samuel Hayes	
Comment	**Response**
1) Sheet #5 (VA1, VA2, VA3) I spoke with Chesterfield County (Barb Smith) and I agree with her that there are concerns with the proposed Centralia Road grade separation. I think we need to look at that further to ensure we have the best possible solution. I have studied it some more, but I admit I am currently at a loss for a better solution. However, I am certainly willing to sit down with both you guys and Chesterfield to try and come up with something different.	Comment noted. The Project Team has continued to work with Chesterfield County and VDOT to improve upon the proposed Centralia Road grade separation design.
2) Sheet #7 (VA1, VA2, VA3) I also spoke with Chesterfield (Barb Smith) about the proposed road connecting Pine Forest Drive to Woods Edge Road along the east side of the "A" line. I agree with Chesterfield's recommendation to eliminate this proposed road. I further suggest that the proposed Pine Forest Drive grade separation be shifted slightly southward in order to maintain traffic on Pine Forest Drive during construction of the bridge.	These changes have been accommodated in the Tier II FEIS designs.
3) Sheet #12 (VA1, VA2, VA3) Recommend shifting the Squirrel Level Road grade separation slightly to the east in order to maintain traffic during construction. This same comment applies to all other locations where we are replacing a grade crossing with a grade separation in the same general vicinity as the existing crossing.	Detour routes throughout the Project Study Area have been analyzed for the Tier II FEIS. Coordination with VDOT regarding roadway design changes is ongoing.
4) Sheet #13 (VA, VA2, VA3) Recommend converting the service road into the Shell property from state maintained to a privately maintained entrance. This is based on input from the Shell family (who owns the land) before and after the public hearing.	This change has been accommodated in the Tier II FEIS designs.
5) Sheet #15 (VA1, VA3) How do we address MOT during construction for Carson Road? Should we show a larger temporary easement in order to maintain traffic during construction? This same comment applies to all other grade separation locations where we have a new railroad alignment crossing an existing highway.	Additional coordination with VDOT was undertaken, and is reflected in the designs. Detour routes, including maintenance of traffic, throughout the Project Study Area have been analyzed for the Tier II FEIS and described in Chapter 2.
6) Sheet #17 (VA1, VA2, VA3) Recommend the use of roundabouts at both proposed four way intersections on either side of the proposed Glebe Road grade separation. Roundabouts would be better solutions given the unbalanced flow of traffic at each of these intersections.	Through additional coordination with VDOT the Project Team determined that roundabouts would be needed in these locations.
7) Sheet #21 (VA2) Recommend that Lovely Zion Road tee into Rawlings Road as opposed to the "old" Rawlings Road. Have the "old" Rawlings Road tee into Lovely Zion Road.	The designs for the preferred alternative VA4 in Section D do not impact Lovely Zion Road, or change the existing intersection with the "old" Rawlings Road alignment. Therefore, the requested changes fall outside the scope of the Project.
8) Sheet #22 (VA1, VA2, VA3) Recommend showing a cul-de-sac on both ends of Zero Road.	As a result of additional coordination, the designs for the preferred alternative VA4 in Section D include tee-turns for Zero Road on both sides of the railroad. Tee-turns provide adequate movement for service vehicles with a smaller footprint compared to cul-de-sacs.

AG32 Virginia Department of Transportation Richmond District - Samuel Hayes	
Comment	**Response**
9) Sheet #28 (VA2) Recommend a four way intersection for the two roads shown connecting to Tanner Town Road.	In Section H VA1 is the recommended preferred alternative, which accommodates this request.
10) One other item that I noticed in my review (not sure why I didn't say something before) is that the CSX right of way that has been sold off (all in Dinwiddie, I believe) was shown as existing right of way (purple) on the maps. Shouldn't these be shown as private property?	Former railroad property that has been sold to private individuals is now indicated as such in the Tier II FEIS mapping,

Local Governments and Planning Organizations

AG1 City of Richmond Traffic Engineering, Travis Bridewell	
Comment	**Response**
These are our comments from a traffic operations standpoint for Roll 1 and 2 of 58. These comments are based on the concept plans only thereby as construction plans are underway we will have more detailed comments. 1) Provide adequate cul-de-sacs on public roads where closures are planned	The following changes have been made to the designs and are shown in the Map Book Appendix of the Tier II FEIS. Please note that to minimize impacts, T-turns rather than cul-de-sacs have been included in the designs. 1) 1st Street at Maury Street: a T-turn has been added. 2) Commerce Road: a T-turn has been added on the west side of railroad; pavement will be removed from existing alignment on the east side of the railroad, and driveway access worked out during final design. 3) Meridian Avenue: a T-turn has not been added to the designs at this location due to the property impacts that would result. Note that this is in keeping with the existing context of the surrounding neighborhood where many of the streets terminate without cul-de-sacs or T-turns. 4) Dale Avenue: T-turns have been added on both sides of the railroad.
2) Review each entrance in the areas where proposed grade separation roadways are planned for adequate tie-ins and grades to existing land usages	Access will be evaluated during the ROW process, and designs for driveways will be developed during the final design stage of the Project.
3) Bells Road – there might be some tie-in issues with the new roadway and commercial entrances	Access will be evaluated during the ROW process, and designs for driveways will be developed during the final design stage of the Project.

<table>
<tr><th colspan="2">AG1
City of Richmond Traffic Engineering, Travis Bridewell</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>4) Ruffin Road – check the circulation in the apartment parking lot on the NW side of the RR given a closure on Ruffin Road</td><td>The project will commit to ensure that adequate access is provided to the apartment complex on the NW side of railroad and Ruffin Road. Current designs provide access along the western edge of the complex via an extension of Lynhaven Avenue. In addition, during final design, when survey level data is available, it may prove possible that access to Ruffin Road can be maintained. However, it cannot be stated with certainty at this time.</td></tr>
<tr><td>5) Commerce Road – The current widening project for Commerce Road (UPC #15958) includes improving the existing RR crossing 623545B. It does not include a grade separation as planned under the SEHSR.</td><td>The project designs have been coordinated with the City of Richmond regarding the typical section and design speed provided by the City for this location. The City is proposing to widen Commerce Road to a three-lane roadway with a flush median to the south and across the existing CSX tracks, and a raised median to the north, with a design speed of 45 mph. The Richmond to Raleigh Project designs for Commerce Road propose to grade separate the crossing of the CSX rail corridor with a bridge, and will include a slight realignment of Commerce Road to the south of its current location. In order to minimize impacts to businesses, the proposed bridge and approaches meet the road classification standards for local roads rather than arterial roads, thus requiring a design speed of 35 mph. This realigned portion of Commerce Road, including the bridge and approaches, will be posted with a warning sign with the maximum safe speed to compensate for the lower design speed on this portion of Commerce Road.</td></tr>
<tr><td>6) Deepwater Terminal Road – I feel this road will be more utilized in the future and a better alignment should be considered for the right angle curve just east of the RR.</td><td>The designs for the road realignment and intersection with Goodes Street represent an improvement to the existing conditions, and will accommodate turning movements of large commercial vehicles (i.e., will adequately accommodate trucks with a 50-foot wheel base (WB-50).</td></tr>
<tr><td>7) The planned closure located just south of the I-95 ramps at Maury concerns me as to how the traffic will access the site east of the RR</td><td>In response to this comment, the design team evaluated access for two locations near the I-95 ramps:
1) Tank farm east of the railroad/south side of Maury Street - The designs have been modified for the Tier II FEIS to include a service road off of Maury Street to provide access to the property. A map of the design changes can be seen in the Map Book Appendix of the Tier II FEIS.
2) Williams Bridge Company – Designs for driveways throughout the Project will be developed during the final design stage of the Project. In this case, however, coordination has taken place with the property owner as part of Section 106 coordination regarding access. Preliminary designs have been developed to the point where it has been determined that a driveway connection to Deepwater Terminal Road can be developed in final design that will allow ingress/egress of the long tractor trailers (in excess of WB-50) used by the business.</td></tr>
</table>

AG1 City of Richmond Traffic Engineering, Travis Bridewell	
Comment	**Response**
8) Maury St – there will be tie-in and grade issues to access some of the land uses in this area. Area streets should be considered for improving such as Everett St given the future grade issue at 1st St.	The designs have been modified for the Tier II FEIS to show a road closure for 1st Street at the edge of the proposed Maury Street ROW, as well as an extension of 3rd St. to give access to the tank farm. In addition, the intersection at 4th St and Maury St. would be modified to a roundabout to improve mobility through the area. Given the grid work nature of the surrounding streets, it is anticipated that traffic will be adequately handled by the surrounding streets; therefore, improvements to Everett Street are not included as they would be considered outside the scope of the Project. A map of the design changes can be seen in the Map Book Appendix of the Tier II FEIS.

<table>
<tr><th colspan="2">AG3, AG27 & AG40
Chesterfield County, VA, Consolidated Comments (including Anne Wright (Utilities), Rachael Lumpkin (Utilities), Stuart Connock (Parks/Design/Construction), James (Robby) Dawson (Fire/EMS), Will Davis (Economic Dev), Barb Smith (Transportation) & Chesterfield County Commissioners (County Resolution 8-25-10))
Also includes additional requests/comments from County based on on-going coordination with the Project Team.</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>1) Location: Between S-6 and S-7, Property Number: 10355(?)

Chesterfield County's Falling Creek Wastewater Treatment Plant is served by several 18 wheel-tractor trailer trucks and chemical tankers a day. Allowances must be made for "18-wheeler" type trucks to access the Plant, which would involve both road and bridge design as well as access throughout the period of construction. While not sure of the maximum loads these vehicles carry, the plant indicates that some carriers routinely deliver payloads of 80,000 pounds. Our concerns are as follows:

a. We are unsure of the ultimate width of the road/overpass but assume at least a double lane.
b. Elevation and grade of both approaches need to consider both the size and weight of large vehicles.
c. Turning radius of the trucks - While only upon rare occasions during normal plant operations, would two trucks likely be on the overpass at the same time, we suggest this be looked at closely to ensure there is sufficient width with consideration given to .....
d. Seasonally we have trucks that are "less than successful" when leaving the plant and crossing back over the existing private crossing towards Station Road. Due to sleet, ice, and snow issues, we routinely have drivers that need to get a good running start" to make it up our existing exit back onto Station Road even with scraping by the plant's bobcat and a good sprinkling of sand. Show that tractor-trailers can be accommodated with the reconstruction of Station Road. Also - show access for HKK Brisbane Properties (including grade).
e. We are assuming that the portion of the road currently considered private along the east side of the crossing (including the crossing itself) will ultimately be maintained by the state. We also assume that it will be highly unlikely that priority to maintaining this crossing will be afforded us by the state so we will be somewhat on our own during bad weather.
f. We are curious to know whether jersey-walls and/or guard rails will be provided in the event of an incident.
g. In summary, elevation and grade of both approaches need to be considered, with particular concerns of the forward momentum of heavily loaded trucks attempting to negotiate a turn in excess of 90 degrees on a potentially icy surface.</td><td>The road and bridge designs at both Station Road (which provides access to the Falling Creek wastewater treatment plant) and Pine Forest Drive (which provides access to the Timsbury Creek pump station) meet ASHTO and VDOT standards, which consider both width and grade. The volume and type of use (including payload of trucks serving the plant and pump station) will be taken into account during final design, as well as during development of construction detours. Barrier rail is included as part of standard bridge design, and guard rails will be provided along the approaches according to VDOT standards during the final design stage of the Project. The road has been designed as a public road, to be maintained by VDOT. Once the Project has been constructed and the road has been taken into the VDOT system of roads, the standard VDOT process for prioritizing maintenance of roads during inclement weather will be followed. This process allows for input from the County with regard to local priorities for essential operations.

HKK Brisbane Properties, Falling Creek Warehouse Associates, and Ryder Truck Rental will all retain access via the existing alignment of Station Road.</td></tr>
</table>

AG3, AG27 & AG40 Chesterfield County, VA, Consolidated Comments (including Anne Wright (Utilities), Rachael Lumpkin (Utilities), Stuart Connock (Parks/Design/Construction), James (Robby) Dawson (Fire/EMS), Will Davis (Economic Dev), Barb Smith (Transportation) & Chesterfield County Commissioners (County Resolution 8-25-10)) Also includes additional requests/comments from County based on on-going coordination with the Project Team.	
Comment	**Response**
2) Allowances must be made for "18-wheeler" type trucks to access the Timsbury Creek Wastewater Pump Station. This would involve both road and bridge design as well as access throughout the period of construction.	
3) While we are not in a position to speak for our neighbor, Token Tower, LLC, (10360) we do note and are not clear on how they will access their facilities since the toe of the incline appears to go all the way to the creek. In addition, Token Tower, LLC uses guyed towers; it appears that these guy wires may need to be relocated and/or consideration given to the overhead clearance above the new overpass since these guys extend out well from the base of the towers. We are also unsure if the purpose of the third short leg "T" immediately east of the overpass. Is this for vehicles to "pull over" or for a barricade in the event a truck exiting from the plant is "unsuccessful" in negotiating the turn onto the overpass in a timely fashion?	The short "T" was added to the designs to allow public vehicles to turn around. Access to the Token Tower, LLC property will be handled during the ROW stage of the Project. Construction issues related to the guy wires for the towers located on the property owned by Token Tower, LLC, will be handled during the final design stage of the Project.
4) Recordation of a trail/pedestrian easement and ingress/egress easement is needed underneath current and proposed tracks at Falling Creek Ironworks Park between GPINS 7926850003 and 793680882.	The Richmond to Raleigh Project rail designs are located within the existing CSX railroad corridor where it crosses through Falling Creek Ironworks Park. The Richmond to Raleigh Project alternatives would cross Falling Creek on the existing structure and would not require any new ROW. The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the Falling Creek Ironworks Park. The Richmond to Raleigh Project should not alter the character, setting, or use of the trail. Therefore, the Richmond to Raleigh Project would have no effect on this resource and would not constitute a Section 4(f) use of the resource.
5) The county is currently in negotiations to acquire the eastern portion of GPIN 7916855178 to be used as a park. The proposed roadway/ROW in this area will impact access and development of this site, please consider alternatives such as using existing Station Rd.	The design for the grade separation of Station Road has been altered to avoid impacts to the proposed "Resource Protection Area" for the park as shown on the rendered site plan provided by the County in June 2012.
6) Recordation of a trail/pedestrian easement is needed on the north side of Kingsland Creek, between GPINs 7916749474 and 7916749730. This will accommodate the planned development of the James River Greenway trail system.	The Richmond to Raleigh Project would add an additional railroad track within the existing CSX railroad corridor in the location where the proposed trail would cross. Chesterfield County has not yet obtained a legal crossing of the active railroad corridor in this area. Therefore, the proposed changes associated with the Richmond to Raleigh Project would not create a barrier to the development of the trail (because that barrier already exists). The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the trail. The addition of the Richmond to Raleigh Project track should not alter the character, setting, or use of the trail. Therefore, the Richmond to Raleigh Project would have no effect on this resource and would not constitute a Section 4(f) use of the resource.

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Comment	**Response**
7) Recordation of a trail/pedestrian easement is needed where Chester Linear Park intersects with the existing railroad ROW. This will accommodate the planned development of the James River Greenway trail system. Location: between GPINS 7876560516 and 7886585164.	The Richmond to Raleigh Project would add an additional railroad track within the existing CSX railroad corridor in the location where the planned expansion of Chester Linear Park would cross. Chesterfield County has not yet obtained a legal crossing of the active railroad corridor in this area. Therefore, the proposed changes associated with the Richmond to Raleigh Project would not create a barrier to the expansion of Chester Linear Park (because that barrier already exists). The existing rail lines in this area have daily freight and passenger rail traffic that can be heard and seen from the proposed location of the expanded Chester Linear Park. The addition of the Richmond to Raleigh Project track should not alter the character, setting, or use of the trail. Therefore, the Richmond to Raleigh Project would have no effect on this resource and would not constitute a Section 4(f) use of the resource.
8) Proposed ROW will result in loss of parkland at Kiwanis Park, GPINS 7916530773 and 7906549007, which will affect the scope and development of the future park facilities.	This issue was addressed in the Tier II DEIS. As stated in the Section 4(f) Evaluation, the Richmond to Raleigh Project would require ROW from the parcel along Curtis Street and Richmond Street planned for the Chester Kiwanis Historical Park. However, Chesterfield County made the acceptance of the donated land conditional upon reserving the necessary ROW for the Richmond to Raleigh Project (100 feet from the centerlines of both Curtis Street and Richmond Street) for non-park uses. Therefore, the Richmond to Raleigh Project would have no effect on this resource and would not constitute a Section 4(f) use of the resource.
9) Recordation of a trail/pedestrian easement is needed just north of and parallel to the Appomattox River. This will accommodate the planned development of the VSU/Ettrick Riverside Trail.	This issue was addressed in Chapter 5 of the Tier II DEIS, which stated that the Richmond to Raleigh Project would construct a new rail bridge over the Appomattox River, immediately adjacent to the existing rail bridge near Virginia State University. The bridge would be located just to the east of the existing bridge and would require a small amount of ROW under the span of the bridge to allow for access and maintenance. In addition, it may be necessary to provide Virginia State University with an access drive under the bridge. Included in the ROW needed for the Richmond to Raleigh Project is approximately 0.8 acres of the planned Appomattox Riverfront Trail. The existing rail bridge has daily freight and passenger rail traffic that can be heard from the surrounding area; therefore, the new bridge should not alter the character, setting, or use of the planned trail. The Chesterfield County Department of Parks and Recreation, as the official with jurisdiction over the planned Appomattox Riverfront Trail, in a correspondence dated January 5, 2010, concurred that the Project would not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f), with the stipulation that the Richmond to Raleigh Project not impede access for pedestrians and bicyclists to traverse the full length of the trail without interruption at the railroad bridge. Therefore, FRA has made a *de minimis* determination for this resource.

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Comment	**Response**
10) Please consider adding hardpoints and constructing a pedestrian foot bridge suspended from the railroad trestle at the Appomattox River crossing.	There is no existing pedestrian crossing of the Appomattox River in this location. It has been the standard practice of the Project to provide or replace existing, legal pedestrian crossings where impacted. The request is, therefore, outside the scope of this Project.
11) Chippenham Parkway Comments – a. Staff Comment – There is a crossing that currently exists north of Chippenham Parkway that accesses a tank farm owned by Motiva Enterprises. This seems to be the only access to the tank farm from the public road, and appears to be scheduled for elimination. How will that tank farm be accessed if this crossing is closed? Show access for Motiva Enterprises (including grade). b. Staff Comment - Show access for Motiva Enterprises, HKK Brisbane Properties, Falling Creek Warehouse Associates and Ryder Truck Rental (including grade).	Access to the Motiva Property will be further evaluated during the final design stage of the Project. If it is determined at that time that access cannot be provided, then the property will be purchased. HKK Brisbane Properties, Falling Creek Warehouse Associates, and Ryder Truck Rental will all retain access via the existing alignment of Station Road. In addition, the HKK and Falling Creek Warehouse properties will be provided access to their loading docks under the proposed bridge for the Station Road realignment.
12) Do we know the timing of the closure of the existing crossings at Kingsland Road, Centralia Road, Woods Edge Road, and Pine Forest Drive? Our Fire Dept Planning unit will need to re-evaluate our fire station districts prior to that work beginning.	The timing of the construction of the Project has not been established as a funding source is not yet in place. The Project Team will coordinate with the County to ensure that emergency services are aware of any road closures.
13) Pine Forest Drive Comments – a. Staff Comment - We still have no information on how access to the trailer park at the end of will be maintained during construction. b. Commissioner Comments - The extensions of Pine Forest Drive must be eliminated.	The extension of Walthall Industrial Parkway has been removed from the designs. The grade separation of Pine Forest Drive remains because of the need to provide access to residences and VDOT. During construction, the existing crossing will be used to access to the mobile home park (since proposed Pine Forest Drive will be realigned).
14) Are there currently any plans for access to the rail line for emergency purposes? How will emergency response units be able to access these areas?	Emergency response procedures are determined by the owner of the railroad corridor. In Chesterfield County, CSX will maintain ownership of the Richmond to Raleigh Project corridor. CSX provides emergency responder training and education information on their website (http://www.csx.com/index.cfm/community/community-safety-programs/emergency-responder-training-and-education/).

AG3, AG27 & AG40 **Chesterfield County, VA, Consolidated Comments (including Anne Wright (Utilities), Rachael Lumpkin (Utilities), Stuart Connock (Parks/Design/Construction), James (Robby) Dawson (Fire/EMS), Will Davis (Economic Dev), Barb Smith (Transportation) & Chesterfield County Commissioners (County Resolution 8-25-10))** **Also includes additional requests/comments from County based on on-going coordination with the Project Team.**	
Comment	**Response**
15) Hampton Roads Comments – a. Staff Comments - On a non-critical note, are there any plans to have a branch of this rail services that goes to Hampton Roads, and if so, where will it intersect this line? b. Commissioner Comments - SEHSR must accommodate the proposed Petersburg to South Hampton Roads rail service.	The extension of the SEHSR Corridor to Hampton Roads is coordinated with the Raleigh-to-Richmond designs. A turn-out for Hampton Roads service was shown on the Tier II DEIS designs, just south of Petersburg, which was constructed by DRPT under a separate project in 2012. The segment of the corridor between Richmond Main Street Station and the NS connection to Hampton Roads south of Petersburg, VA includes the construction of a new HSR track adjacent to the active CSX tracks to provide additional capacity to support the introduction of the four round-trip (8 total) SEHSR Corridor trains for the Richmond to Raleigh Project only. Where this segment of the corridor is also planned to support the six additional round-trip (12 additional) SEHSR Corridor trains for the Richmond to Hampton Roads Project, any additional track capacity required to support that service will be considered in a future Richmond to Hampton Roads Tier II EIS document.
16) To properly assess the overall economic impact of the project, additional information will be needed beyond the proposed right of way alignment.	The Project Team has continued to coordinate with Chesterfield County to provide additional information, where available. Detailed information about ROW and relocations will not be available until the final design stage of the Project.
17) There are concerns about industrially zoned property that may be negatively impacted by the proposal.	The Project Team will continue to coordinate with Chesterfield County to address access and other concerns related to potential development sites. However, detailed information about ROW and relocations will not be available until the final design stage of the Project.
18) Woods Edge Road Comments – a. The closing of the crossing at Woods Edge Road would negatively impact access to some industrial property. b. No traffic analysis was provided for the proposed Woods Edge Road closure c. Do not close Woods Edge Road crossing; provide a grade-separated crossing d. Widen Woods Edge between Route 1 and existing four-lane section e. Construct turn lanes and signalize Jefferson Davis Highway/Pine Forest Drive f. Provide second access for Millside subdivision.	A Woods Edge Road grade separation has been added to the designs. Widening of Woods Edge Road is outside the scope of the Richmond to Raleigh Project. The Project designs have been developed to be consistent with the long range transportation plans, and through our on-going, and extensive, coordination with the local municipalities. The designs are such that they will not preclude future widening, when needed (e.g., we are providing sufficient vertical clearance or horizontal clearance for future road widening). The design concept has been revised and the Project does not alter volumes on Pine Forest Drive. Therefore, neither turn lanes nor signalization will be provided as part of the Project designs. The design for the grade separation of Pine Forest Drive provides a single access to the Millside subdivision to replace the closure at Landsmill Drive. Any additional access would have additional property impacts and is outside the scope of the Richmond to Raleigh Project.

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<tr><th>Comment</th><th>Response</th></tr>
<tr><td>19) Provide a list of all commercial and residential displacements</td><td>Detailed information about ROW and relocations will not be available until the final design stage of the Project. The designs included in the Tier II FEIS provide sufficient information to identify potential displacements. During final design, efforts will be made to minimize needed ROW and reduce the number of displacements.</td></tr>
<tr><td>20) No such city limits: Bensley, Bellwood, Chester, Ettrick</td><td>Comment noted. Maps in the Tier II FEIS are corrected.</td></tr>
<tr><td>21) Provide sufficient design details to demonstrate that:
a. Bridges and underpasses will accommodate future road widening
b. Bike and pedestrian accommodations are included.
Specifically, provide pedestrian access at future Chester Linear Park, West Street, Ettrick Station to Ettrick Park.
c. Landscaping and screening will be provided especially in residential areas
d. Tractor-trailers will be able to safely access water treatment facilities</td><td>The Project designs have been developed to be consistent with the long range transportation plans and through on-going, extensive coordination with local municipalities. The designs are such that they will not preclude future widening when needed (e.g., the designs provide sufficient vertical clearance or horizontal clearance for future road widening).

New bridges will have sufficient width so as not to create a hazard for pedestrian/cyclist movement. Where sidewalks currently exist, they will be provided. At other locations, accommodations will be evaluated during final design based on the current VDOT pedestrian and complete streets policies.

A pedestrian accommodation at West Street has been added to the designs. Pedestrian access at future Chester Linear Park and Ettrick Park have not been provided in the Project designs because the County has not obtained a legal access across the CSX rail corridor in these locations. Therefore, the proposed changes associated with the Richmond to Raleigh Project would not create a barrier to pedestrian activity (because that barrier already exists).

Along the rail alignment, landscaping will be consistent with what currently exists. Along the road work, landscaping will be addressed during final design. Details for landscaping in historic districts may be specified under the Section 106 MOA (with input from property owners and historic societies).

The design for the realignment of Station Road accommodates a standard WB-50, which will allow tractor-trailers to safely access water treatment facilities.</td></tr>
<tr><td>22) Show locations of security fencing.</td><td>Locations of security fencing will be determined during the final design stage of the Project in coordination with the County and CSX.</td></tr>
<tr><td>23) Provide adequate traffic analyses to ensure the proposals will accommodate anticipated traffic</td><td>Traffic studies for Chesterfield County have been completed to ensure that the Project designs address future traffic needs.</td></tr>
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Comment	**Response**
24) Conduct noise studies for new road alignments and widening along with specific plans for abatement	The FEIS assesses all proposed new grade separations along the Project for potential noise impacts and evaluates mitigation using standard FHWA and VDOT practices. In discussions with FHWA, it was determined that noise studies did not need to be completed for other aspects of the proposed road work as they did not meet the threshold for analysis (i.e., Type I improvements). It should be noted that the entire project is not a FHWA Type I project because it is an FRA undertaking subject to FRA noise regulations. FHWA recommended using their Type I improvement description to identify the road components of the Project that should be evaluated for noise impacts and mitigation. The individual sections of road work would not be undertaken as a single project as they have no connection to one another without the rail improvements.
25) Construct turn lanes and signalize major intersections (as noted below).	See responses below for location-specific information.
26) Provide a financing plan to show how and when necessary road improvements will be accomplished by this project.	It is intended for the roadway and rail aspects of the Project to be funded together.
27) Provide specific plans showing how access will be provided to and from developed and undeveloped properties impacted by grade-separations, new road alignments and crossing closures. Access to properties must be considered at this stage in order to establish the right-of-way footprint and determine the impact to properties. Access issues especially critical at grade separations where the road elevation will limit available locations for access and could impact development potential of the property.	This level of detail will be provided during the final design stage of the Project (post-FEIS). However, all affected property owners will be "made whole" through either provision of access or purchase of "land locked" properties. It should be noted that impacts to private crossings of the rail corridor will only be mitigated where the current access is legal. It should be noted that multiple outcomes are possible for the same piece of property based on its current use and the desires of the property owner. It is not possible or advantageous to develop specific plans prior to negotiating ROW. We will continue to discuss the process with property owners and answer their questions at the upcoming Project Update Meetings.
28) Incorporate county tunnel safety guidelines (attached) at all underpasses.	County tunnel safety guidelines will be utilized during the final design of underpasses.
29) Show siding locations and confirm that impacts at sidings have been addressed. Due to noise and property impacts, siding locations need to be determined and accounted for with this document.	Future potential HSR passing and industrial freight siding locations will be determined during the final design stage of the Project in coordination with the County, CSX, and the property owner to be served by the siding. All planned passing sidings and existing industrial spurs are shown in the plans and impacts were considered along with main lines.
30) Kingsland Rd / Chester Rd Comments – a. Realign Chester Road at Perrymont Road so Chester Road is a through road to Jefferson Davis Highway and Perrymont Avenue is a stop condition. b. Construct turn lanes and signalize Norcliff Avenue/Jefferson Davis Highway. c. Allow Kingsland Road Extended to be the through street with stop conditions for Perrymont Avenue. d. Provide a cul-de-sac for Kingsland Road near existing crossing proposed to be closed.	a. The realignment of Chester Road at Perrymont Road was evaluated. However, the requested change was determined to have the following issues: a) The realigned Chester Road would cross the planned Kingsland Creek trail (potential Section 4(f) issue); b) The realigned Chester Road would require a new bridge across Kingsland Creek and take out the existing bridge on Perrymont Road that was recently improved by VDOT (resulting in greater cost); and c) The realigned Chester Road would have a greater impact to a tributary to Kingsland Creek. For these reasons, the design change was not accommodated.

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<tr><td>e. Provide turn lanes at Dorsey Road/Kingsland Road intersection.
f. Provide turn lanes and signalization at Chester Road/Normandale Avenue intersection.
g. Provide turn lanes and signalization at the "Thurston to Chester connector"/Chester Road intersection.
h. Construct the Kingsland Extended and the "Thurston to Chester connector" bridges to accommodate four lanes.
i. Maximize distance between new "Thurston-to-Chester connector" road and Route 288 (i.e., don't line up with Park Road if spacing from Route 288 can be improved).
j. Construct Chester Road as a 4-lane road.
k. Improve Dorsey Road between Brinkley Road and Thurston Road</td><td>b. The traffic analysis completed for Norcliff Avenue/Jefferson Davis Highway shows that this intersection would function at an acceptable level of service if signalized. If warranted at the time of construction, a signal will be considered. The analysis shows that adding an eastbound left-turn lane appears to fit within the existing asphalt; therefore, no additional impacts were accounted for in the Project designs because the turn lane can be handled with paint striping.
c. The Project traffic analysis suggests the Kingsland Road Extended/ Perrymont Avenue intersection works with either stop condition.
d. A “T”-turnaround has been provided Kingsland Road near the existing crossing proposed to be closed.
e. The traffic modeling does not show that turn lanes at the Dorsey Road/Kingsland Road intersection are needed; therefore, they have not been included.
f. The Richmond to Raleigh Project is expected to have minimal effect on traffic at the Chester Road/Normandale Avenue intersection; therefore, no improvements have been provided.
g. Turn lanes have been provided on the connector at the “Thurston to Chester connector”/Chester Road intersection. If warranted at the time of project construction, a signal will be evaluated at that time.
h. The Kingsland Road Extended and the "Thurston to Chester connector" bridges are proposed to be built as two-lane roadways, as that matches their existing condition. The proposed designs do not preclude widening these bridges by an additional lane on the north and/or south side, or adding a new, separate bridge parallel to the proposed Richmond to Raleigh Project bridge in order to accommodate future widening.
i. The request to maximize the distance between the new “Thurston-to-Chester connector” road and Route 288 was considered, but was not pursued further due to resulting impacts to existing, developed properties. This issue was discussed with County staff during meetings subsequent to the Tier II DEIS public hearings.
j. The Richmond to Raleigh Project does not create the need for Chester Road to be constructed as a four-lane road.
k. The Richmond to Raleigh Project does not create the need for the requested improvement of Dorsey Road between Brinkley Road and Thurston Road.</td></tr>
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Comment	**Response**
31) Old Lane Comments – a. Staff Comments - Improve alignment of Old Lane at Hopkins Road between Old Lane and Jaymont Drive. Alternate suggestion: Do not close the Old Lane crossing, realign Old Lane with Hamlin Creek Parkway, grade separate with an underpass, construct turn lanes and signalize Old Lane at Chester Road. b. County Commissioner Comments - Relocate the Old Lane crossing and provide a grade separation to align Hamlin Creek Parkway. If this cannot be accomplished, provide additional road improvements to accommodate the increased traffic using Hopkins Road and Centralia Road.	The Richmond to Raleigh Project does not create the need for the requested improvement of Old Lane at Hopkins Road between Old Lane and Jaymont Drive. A similar concept to the alternate suggestion was considered and determined not feasible due to multiple design constraints. A grade separation in the vicinity of Old Lane could not be provided due to several design constraints, most notably the location of the rail interlocking that trains use to switch between the CSX A-line and S-line. Traffic accommodations have been designed at the Hopkins Road-Centralia Road intersection.
32) Centralia Road Comments – a. Request details and renderings for the proposed Centralia Road Loop b. Construct turn lanes and signalize Centralia Road/Hopkins Road c. Construct turn lanes and signalize Centralia Road/Chester Road d. Show how Centralia Station (future subdivision adjacent to the west of the tracks) access Centralia Road e. Construct the Centralia Road bridge to accommodate four lanes for Centralia Road and Chester Road in the future f. Show right-of-way limits for Centralia Road loop bridge g. Construct loop as four-lane road h. Extend four-lane typical for Chester Road, 1000' south of Centralia Road/Chester Road intersection, then transition to two lanes i. Confirm that the road north of Centralia Road and west of the railroad will be state maintained j. Include grade separation for future E-W roadway, south of Great Branch Drive. This roadway is included on the county thoroughfare plan and construction of the road is a condition of zoning for the property commonly referred to as "Branners Station." k. Provide the lane configuration for the new Chester/Centralia intersection and under the bridge.	a. Renderings for a portion of the Centralia Road designs were completed as part of the Section 106 (National Historic Preservation Act) coordination with property owners along Centralia Road, and were included in an appendix for the Tier II DEIS. The Project Team provided Chesterfield County with Synchro (traffic) model outputs to assist the County in evaluating the proposed Centralia Road designs. b. The intersection of Centralia Road and Hopkins Road was analyzed under signal control for the design year. The decision to signalize this intersection will be finalized during the final phase of the Project. This intersection will be evaluated for turn lanes; however, their provision is limited by impacts to historic resources. c. The new intersection of Centralia and Chester Road was analyzed under signal control for the design year and turn lanes are provided. The intersection will require signalization after construction unless one of the southbound left-turn lanes is stripped out to provide only one southbound left-turn lane initially. This will be evaluated before construction. The Richmond to Raleigh Project does not intend to remove the signal at the existing Centralia/Chester Rd intersection. d. Access to Centralia Station will be evaluated during final design based on existing conditions at that time. e. The proposed bridge design for Centralia Road accommodates the projected traffic on the road (three lanes). However, the vertical clearance and other design elements do not prohibit future bridge widening. The designs will accommodate future widening of Chester Road to five lanes beneath the bridge. f. ROW limits for the Centralia Road loop bridge appeared on the Tier II DEIS public hearing maps; however, the property under the bridge to be acquired was not highlighted. This correction has been made for future public hearing maps. g. The Richmond to Raleigh Project does not create the need for Centralia Road to be widened to four lanes. h. The request to extend a four-lane typical section for Chester Road cannot be

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Comment	**Response**
	accommodated. While Chester Road currently transitions to a two-lane facility south of the existing Chester Road and Centralia Road intersection, the traffic analyses indicate that the new intersection of Centralia Road and Chester Road will perform at a better level of service than the No Build Chester Road and Centralia Road (i.e., future condition without the Richmond to Raleigh Project). Also, the Richmond to Raleigh Project does not create the need for a four-lane Chester Road. i. According to VDOT, the road north of Centralia Road and west of the railroad will be state maintained. j. The Richmond to Raleigh Project does not change the existing condition south of Great Branch Drive (i.e., there is no existing, legal crossing of the CSX ROW); therefore, the request cannot be accommodated. k. The Project Team provided the lane configuration for the new Chester Road/Centralia Road intersection and under the bridge to Chesterfield County.
33) Lengthen RR bridge/overpass over Jefferson Davis Highway (Route 1)	The Project designs do not alter the existing structure over Route 1.
34) Marina Drive crossing must be provided a grade separation and not be closed as currently proposed.	Marina Drive, which currently passes under the existing Falling Creek railroad bridge, was not proposed to be altered by the Richmond to Raleigh Project. Thus, Marina Drive is not affected, and will remain open.
35) Branders Bridge and Dupuy Road comments – a. Construct Branders Bridge Road bridge to accommodate four lanes in the future b. Confirm that the new road west of Weldon Street will be state maintained c. Construct the Dupuy Road bridge to accommodate four lanes in the future d. Show driveway access and grades to realigned Branders Bridge and Dupuy Roads	The Richmond to Raleigh Project does not increase traffic volumes along Branders Bridge Road; therefore, a two-lane bridge is provided in the Project designs. However, the design will not preclude the provision of a future four-lane bridge. According to VDOT, the new road west of Weldon Street will be state maintained. The Richmond to Raleigh Project does not increase traffic volumes along Dupuy Road; therefore, a two-lane bridge is provided in the Project designs. However, the design will not preclude the provision of a future four-lane bridge. Driveway connections will be provided during final design based on the existing conditions at the time of construction.
36) The extension of Walthall Industrial Parkway must be eliminated.	The extension of Walthall Industrial Parkway has been removed from the designs.

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Comment	**Response**
37) As Ettrick Station is the default station location in the Tri-Cities area, study and implement necessary infrastructure improvements to support its use. Passenger rail service at the Ettrick Station must continue regardless of high speed rail service.	The Richmond to Raleigh Project EIS does not recommend station locations. The Tri-Cities Area Passenger Rail Station Study evaluated two potential future HSR stations: the existing station in Ettrick and a location in north Collier Yard near Halifax and Squirrel Level Roads in Petersburg. Both locations were found to be suitable for HSR with varying levels of improvement. An Environmental Assessment (EA) is currently underway to evaluate these as well as additional alternative station locations. The study is sponsored by Crater Planning District Commission (CPDC) and FRA is the Lead Federal Agency.
38) Funds used for SEHSR should not be diverted from highway improvements.	Funds for the development of high-speed intercity rail, or the SEHSR Corridor, are not diverted from highway improvements. Federal funding for high-speed or intercity passenger rail comes from FRA and not FHWA, with the exception of eligible roadway safety improvements.
39) Impact of the changes to the proposed at-grade crossings must be eliminated.	Grade separations, pedestrian-only crossings, and traffic accommodations have been provided along the Project corridor to mitigate for the changes to existing at-grade crossings. These provisions have been developed in coordination with local governments throughout the Project Study Area.
40) The following water and sewer lines may be impacted by the project - a. MAP 005- There is a thirty (30) inch sewer trunk line extending along Grindall Creek (Stream SO15) which may be impacted by any stream or right-of-way adjustments on the west side of the existing railroad right-of-way (6102-7B-I). b. MAP 006 - The existing thirty (30) inch sewer trunk line along Grindall Creek extends into the existing railroad right-of-way under the "Dupont" bridge at the end of Cogbill Road (6102-7B-I). c. An existing thirty (30) inch sewer trunk line extends across the existing portion of the railroad right-of-way that is designated as the old "Richmond and Petersburg Electric Railway. This sewer line extends from the southern boundary of the Dupont property parallel to the existing railroad right-of-way to the northern boundary of West Pocahontas Pkwy. (6102-7B-I and S88-145D). d. A privately owned and maintained eight (8) inch sewer line serving "Air Liquide Industrial US, LP" extends across the existing railroad right-of-way and connects to the county sewer system in the right-of-way of West Pocahontas Pkwy. (S74-4ICD). e. The proposed Station Road Bridge and road re-alignment will impact the existing forty-eight (48) inch sewer trunk line that carries	The Project Team appreciates the information provided on potential utility impacts. This information will be shared with utility coordinators and project designers during the final design stage of the Project.

AG3, AG27 & AG40 Chesterfield County, VA, Consolidated Comments (including Anne Wright (Utilities), Rachael Lumpkin (Utilities), Stuart Connock (Parks/Design/Construction), James (Robby) Dawson (Fire/EMS), Will Davis (Economic Dev), Barb Smith (Transportation) & Chesterfield County Commissioners (County Resolution 8-25-10)) Also includes additional requests/comments from County based on on-going coordination with the Project Team.	
Comment	**Response**
wastewater to the Falling Creek Wastewater Treatment Plant (6102-3). f. Two (2) eight (8) inch sewer collector lines extend across Station road west of the existing railroad right-of-way to serve adjacent business (S70-20D, S76-68D). g. There is an existing twelve (12) inch water line extending along the north side of Station Road which crosses the existing railroad right-of-way, and extends as an eight (8) inch north along the access road to serve the Falling Creek Wastewater Treatment Plant. This line will be impacted by the proposed Station Road re-alignment and bridge (W70-16CD, W71-37D, W73-75D, and W74-7C). h. Additional railroad right-of-way on the east side, south of Falling Creek, will impact the existing twenty (20) inch sewer trunk line extending along the east boundary of the existing railroad right-of-way (6102-1). i. MAP 007- Additional railroad right-of-way on the west side of the existing railroad right-of-way from Marina Drive to south of Sherbourne Road will impact the existing twenty-one (21) inch sewer trunk line crossing of the railroad adjacent to Marina Drive (S64-17D). j. An existing twelve (12) inch waterline extends along Marina Drive and passes under the existing railroad bridge across Falling Creek. This line will be impacted by the additional railroad right-of-way (AC379). k. Additional railroad right-of-way on the east side of the existing railroad right-of-way south of Falling Creek and opposite Sherbourne Road will impact the existing twenty (20) inch sewer trunk line (6102-1) and the existing eighteen (18) inch sewer line crossing from Alfalfa Lane (6102-1). l. Approximately seven hundred fifty (750) feet of existing eighteen (18) inch sewer trunk line extends into the existing railroad right-of-way along the western boundary adjacent to Merriewood Ridge Road. An existing eight (8) inch sewer collector line extends from this trunk line to Merriewood Ridge Road (6102-1). m. An existing eight (8) inch waterline extends across the existing railroad right-of-way at Merriewood Ridge Road (A363).	

AG3, AG27 & AG40 **Chesterfield County, VA, Consolidated Comments (including Anne Wright (Utilities), Rachael Lumpkin (Utilities), Stuart Connock (Parks/Design/Construction), James (Robby) Dawson (Fire/EMS), Will Davis (Economic Dev), Barb Smith (Transportation) & Chesterfield County Commissioners (County Resolution 8-25-10))** **Also includes additional requests/comments from County based on on-going coordination with the Project Team.**	
Comment	**Response**
n. Approximately seven hundred (700) feet of existing eighteen (18) inch sewer trunk line extends into the western side of the existing railroad right-of-way in the vicinity of Gwynn Avenue (6102-1). o. A twelve (12) inch waterline extends across the existing railroad right-of-way approximately two-hundred (200) feet south of Gayland Avenue (W81-67B). p. MAP 008- Additional railroad right-of-way on the west side of the existing railroad right-of-way from south of the Jefferson Davis Highway overpass to Gettings Lane will impact the existing ten (10) inch sewer line (6511-19C) and possibly the existing sixteen (16) inch water line crossing of the railroad south of Jefferson Davis Highway (W96-173CD Phase 3). q. Additional railroad right-of-way on the east side at the Jefferson Davis Highway crossing may impact the existing water line crossing (W96-173 CD Phase 3). r. A sixteen (16) inch waterline extends across the existing railroad right-of-way approximately two hundred fifty (250) feet south of the Jefferson Davis Highway crossing (W96-173CDPH3). s. A thirty-three (33) inch sewer trunk line extends along Kingsland Creek (Stream S035) and crosses the existing railroad right-of-way approximately eight hundred (800) feet north of Kingsland Road (7032-18). t. KINGSLAND ROAD- The proposed re-alignment of Kingsland road with the proposed bridge across both the railroad right-of-way and Chester Road, and the new road connection with Perrymont Road at Norcliff Road will impact the existing Pressure Reducing Valve (PRV) at Kingsland Road and Dorsey Road (5907-8). A twelve (12) inch sewer trunk line extends along a tributary of Kingsland Creek (stream S038) and will be impacted by the relocated Kingsland Road (S74-42C). An eight (8) inch sewer collector line adjacent to Ferncliff Street may also be impacted by the road relocation (S90-538D). Existing eight (8) inch water lines extend along Perrymont Road and Norcliff Road and will have to be evaluated for impact (PB 53/54, W74-85C). u. A twelve (12) inch waterline extends along the north side of Kingsland Road and crosses the existing railroad right-of-way. This	

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line may be impacted by the proposed abandonment of the existing Kingsland Road grade crossing (5907-8). v. CHESTER ROAD (NORTH OF KINGSLAND ROAD)- A twelve (12) inch waterline extends along the northwest side of Chester Road from the existing Kingsland Road crossing to Perrymont Road. This water line as well as the existing eight (8) inch water line along the west side of Perrymont Road will be impacted by the Chester Road improvements (5907-8, PB 53/54). w. MAP 009- The relocation of Chester Road with the expanded right-of-way will impact the existing twelve (12) inch water line along Chester Road from Kingsdale Road to the point north of Park Road where the realignment of Chester Road ends (00-0368 and 564). The proposed extension of Park Road to Thurston Road and the proposed bridge, will impact the existing twelve (12) inch line in Chester Road and the existing eight (8) inch water line in Park Road (U89-614D and W86-61C). x. The additional railroad right-of-way on the west side of the Route 288 overpass will impact an existing forty-eight (48) inch sewer force main that extends along the north side of Proctors creek (Stream S040) and crosses the existing railroad right-of-way (S87-76R). An existing thirty 30) inch sewer trunk line extends along Proctors Creek (stream S040), crosses Route 288 adjacent to the existing railroad right-of-way, and then crosses the existing railroad right of- way to the south side of Route 288. This trunk line will be impacted by the additional railroad right-of-way (7032-14, S86-18C). y. A twelve (12) inch sewer trunk line extends across the existing railroad right-of-way adjacent to the north side of Route 288 to serve the parcels north of Route 288 and east of the railroad. This line could be impacted by any widening of the railroad right-of-way in this area (S87-76R). z. MAP 010- The additional railroad right-of-way on the east side of the existing railroad right-of-way between Route 288 and a point approximately 700 feet north of Centralia Road will potentially impact an existing eight (8) inch water line (W89-5120, UOI-I040) and an existing eight (8) inch sewer collector line (U89-3150, U02-750) that extends through the properties east of the railroad right-of-way.	

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Impact will be dependent upon the amount of additional right-of-way acquired. aa. The relocation of Centralia Road and proposed bridge across both the railroad right-of-way and Chester Road will impact the existing sixteen (16) inch water line in Centralia Road (W77-77C), the existing eight (8) inch sewer collector line along the south side of Centralia Road, and an existing eight (8) inch collector line that extends south from Centralia Road along the eastern boundary of the existing railroad right-of-way (U05-2060, U93-147C, UOI-1870). bb. The proposed bridge and additional right-of-way will impact an existing sixteen (16) inch water line along the west side of Chester Road (U93-1470) and the thirty (30) inch Hamlin Creek Sewer Trunk Line that extends along the east side of Chester Road (7032-15). The new Centralia Road loop and connection with Chester Road will impact the thirty (30) inch Hamlin Creek Sewer Trunk Line (7032-15) and the existing eight (8) inch water line along Chester Road (U93-147C). cc. MAP 011 AND 012- The thirty (30) inch Hamlin Creek Sewer Trunk Line (7032-15) crosses the existing railroad right-of-way north of stream S041 and will impacted by the new rail line. dd. The thirty (30) inch Hamlin Creek Sewer Trunk Line extends along the western boundary of the railroad right-of-way from stream S041 to West Hundred Road (7032-15 and 6102-41). Any change in the existing railroad right-of-way along this section will impact that sewer trunk line. ee. Additional right-of-way on the east side of the existing railroad right-of-way at Chester Station Drive will impact the existing eight (8) inch sewer line crossing from Coastline Circle (S78-71D). ff. A portion of the eighteen (18) inch sewer trunk line (7032-15) extends into the existing railroad right-of-way for approximately 240 feet at a point opposite Chester Village Circle. An eight (8) inch sewer collector line extends from Chester Village Circle and ties-into the eighteen (18) inch line in the existing railroad right-of-way (U02-192D). gg. Additional railroad right-of-way on the east side of the existing railroad right-of-way, starting at a point approximately 1,000 feet	

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north of West Hundred Road and continuing to a point approximately 500 feet north of Curtis Street, will impact the existing sixteen (16) inch water line crossing approximately 700 feet north of West Hundred Road (W98-190CO), and an eight (8) inch sewer line crossing of the railroad right-of-way approximately 1,300 feet north of West Hundred Road (S63-18C, 6102-41, and S89-917R). The existing twelve (12) inch water line crossing at Dodomeade Street (C346A) will be impacted as will the existing ten (10) inch sewer line crossing at Railroad Street (7032-27). hh. CURTIS STREET CROSSING- A bridge is proposed to carry the railroad over Curtis Street and the existing road will tunnel under the tracks. The existing water lines in Curtis Street (Sixteen (16) inch - W86-IB and six (6) inch - A-3 and 292) and sewer lines (eight (8) inch - 7032-27 A) will be impacted as well as the existing water (six (6) inch - 292) and sewer lines (ten (10) inch - 7032-27) along a portion of Richmond Street. ii. MAP 013- Additional railroad right-of-way starts at Curtis Street and continues south to Ashton Creek. This will impact the existing thirty (30) inch Ashton Creek trunk line (6511-9A). jj. Between milepost A-14.5 and milepost A-15 two (2) eight (8) inch sewer collector lines extend across the existing railroad right-of-way. One is adjacent to Stockleigh Drive (S97-249CD) and serves Stockleigh Subdivision. The other, adjacent to Oxley Court serves Oxley Subdivision (S97-249CD). kk. MAP 014- Additional railroad right-of-way on the east side of the existing railroad right-of-way, opposite Stockleigh Drive, will impact an existing eight (8) inch sewer line (S97-249CD). The existing sewer collector lines that serve both Stockleigh and Oxley subdivisions extend into existing railroad property on the north side of the existing right-of-way. This section of sewer line is approximately 1,050 feet in length and is located south of milepost A-14.5 (S97-249CD). ll. MAP 015- Additional railroad right-of-way on the east side of the existing railroad right-of-way approximately 1500 feet southeast of Bankwood Court, will impact the existing fifteen (15) inch sewer trunk line crossing (S83-92CD). mm. Additional railroad right-of-way on the east side of the existing	

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Comment	**Response**
railroad right-of-way from approximately 400 feet north of Jefferson Davis Highway to approximately 250 feet south of Ruffin Mill Road will impact water project W96-175R (a twenty-four (24) inch line) sewer project S77-89CD (an eight (8) inch line), S73-24T (a fifteen (15) inch line) and U96-33C (a twelve (12) inch line). nn. Existing water and sewer lines cross the existing railroad right-of-way at Jefferson Davis Highway. An eight (8) inch sewer collector line crosses on the northwest side of Jefferson Davis Highway (S77-89CD) along with an existing eight (8) inch water line (PB 53/54). On the southeast side of Jefferson Davis Highway, an existing twenty-four (24) inch water line crosses the railroad right-of-way (W96-175R). oo. MAP 016- Additional right-of-way is being added to the east side of the existing railroad right-of-way starting approximately 800 feet north of Woods Edge Road, north of milepost A-17, and continuing to a point approximately 800 feet south of Woods Edge Road. This will impact project S73-30T (a fourteen (14) inch sewer force main) and project 04-0180 (a sixteen (16) inch sewer force main) that will be constructed prior to the high speed rail project. pp. WOODS EDGE ROAD- The May 4, 2010 revisions delete the proposed relocation of Woods Edge Road and bridge, and now propose closing that railroad crossing. There is an existing thirty (30) inch water line (W97-119C) and an existing sixteen (16) inch water line (AC353 and U96-33C) that extend along the south side of Woods Edge Road that will be impacted by the crossing closure and additional railroad right-of-way. qq. WALTHALL INDUSTRIAL PKWY- The May 4, 2010 revisions propose realigning and extending Walthall Industrial Parkway to connect to a proposed extension of Pine Forest Drive. An existing twelve (12) inch water line (U99-195D) and an existing twelve (12) inch sewer collector line extends along the existing portion of Walthall Industrial Parkway and will be impacted by the road extension. rr. The existing thirty (30) inch Timsberry Creek Sewer Trunk Line extends along Timsberry Creek (Stream S063) and crosses the existing railroad right-of-way approximately 1,700 feet north of	

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Comment	**Response**
milepost A-18 (S73-31T). ss. MAP 017-Additional right-of-way is being added to the east side of the railroad right-of-way from a point approximately 2,300 feet north of Pine Forest Drive and continuing south to Swift Creek. This will impact the existing six (6) inch water line at the Pine Forest Drive crossing (W83-53D) and the existing (8) inch water line (W96-167R), an existing (8) inch sewer line (S74-38T) that crosses the existing railroad right-of-way at the end of Aldridge Avenue and project 04-0180 (a sixteen (16) inch sewer force main) that will be constructed prior to the high speed rail project. tt. PINE FOREST DRIVE- The May4, 2010 revisions propose a road realignment of Pine Forest Drive with a bridge over the railroad right-of-way. Pine Forest Drive will also be extended to the east to connect with the Walthall Industrial Parkway extension. The proposed Pine Forest Drive extension will impact the existing thirty-three (33) inch Timsberry Creek Sewer Trunk Line and fourteen (14) inch sewer force main, approximately 1,950 feet east of the railroad right-of-way near stream S063 (S73-30T). A privately owned and maintained eight (8) inch sewer collector line serving 2103 Pine Forest drive, near the southern right-of-way line for the proposed Pine Forest Drive extension, may be impacted by the road improvements (S81-72D). uu. MAP 019 - The new bridge proposed at Branders Bridge Road with the additional road right-of-way and the New Pine Grove Avenue will impact the existing thirty (30) inch Appomattox River Water Authority (A.R.W.A.) transmission line and the County's existing sixteen (16) inch waterline along Brander's Bridge Road (W73-32CD). vv. The existing thirty (30) inch A.R.W.A water transmission line enters the west side of the existing railroad right-of-way at a point approximately 450 feet north of River Road and continues north within the existing railroad right-of-way to a point approximately 650 feet south of Branders Bridge Road. This water transmission line re-enters the railroad right-of-way on the north side of Branders Bridge Road and continues with the right-of-way to the Colonial Heights/Chesterfield county line. Proposed railroad improvements may impact this water line.	

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ww. The new bridge and road realignment of DuPuy Road will impact the thirty (30) inch-AR.W.A. transmission line and an existing eight (8) inch water line (C483 and 555) and existing eight (8) inch sewer lines along DuPuy Road (S74-8C and S65-21D). Additional right-of-way and road improvements may impact existing water and sewer lines in Piedmont Avenue (six (6) inch water line - project: C483 and an eight (8) inch sewer collector line project: S75-58C) and in Roosevelt Avenue (six (6) inch water line - project 514A and an eight (8) inch sewer collector line - project S84-109C). xx. MAP 020- Additional railroad right-of-way is proposed for the east side of !he existing railroad right-of-way. from a point approximately 1,100 feet south of Branders Bridge Road and continuing to the County line. This will impact an existing eight (8) inch sewer line crossing approximately 550 feet south of DuPuy Road (S74-8C). Existing water lines are at River Road/Chesterfield Avenue (twelve (12) inch line - W79-\06C, eight (8) inch line - U88-ICD, twelve (12) inch line - W89-79B, and the existing County meter station off the AR.W.A.line). yy. An existing twelve (12) inch sewer line crossing approximately 1700 feet south of River Road will be impacted (S72-58CD).	

AG4 & AG30 City of Henderson, NC, James D. O'Geary, Mayor Letter & Council Resolution	
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The City of Henderson is highly supportive of this project; however, several concerns merit attention as the Project's Plan is fine tuned. The Henderson City Council has unanimously approved Resolution 10—74 concerning the fine tuning it thinks is necessary and appropriate in order to make the high speed rail project work well as it traverses Henderson. The current and proposed railroad tracks bisect the city of Henderson. The Resolution articulates points of support and/or concern as follows: 1) Full support for the Southeast High Speed Rail Project. From RESOLUTION 10-74 – *WHEREAS, the Henderson City Council (Council) identified eight Key Strategic Objectives (KSO) at its 2010 Strategic Planning Retreat; and* *WHEREAS, one of the Key Strategic Objectives is addressed by this Resolution as follows: KSO 3: Enhanced Economic Development: To create new jobs and investment, expand the tax base and increase the per capita income. Action Plan 3-3: High Speed Rail: Locate the High Speed Rail Passenger Station in Downtown; and* *WHEREAS, the City of Henderson (City) is highly supportive of the Southeast High Speed Rail Project (HSRP) and believes its implementation will help revive the local economy as did the construction of I-85 did in the 1960's and 1970's,*	As discussed in an amended/expanded Purpose and Need section of the Tier II FEIS (Chapter 1), there have been several detailed cost/benefit analyses prepared for the SEHSR Corridor, including one for the entire national HSR system (which the SEHSR Corridor is only one segment) prepared in 1997, as well as a detailed feasibility study specifically for the Washington, DC, to Charlotte SEHSR corridor completed in 1999, as well as other studies that demonstrate the benefits of the Richmond to Raleigh Project. These studies have repeatedly concluded that there will be substantial long term economic benefits from development of the Project, including: creation of jobs in railroad construction and operation; induced development of office, retail, hotel and higher density housing near planned rail stations; increased manufacturing jobs in the rail passenger transportation industry, including car, equipment and part manufacturers; increased tourism; reduction in use of carbon fuel; reduced need to widen highways; and, many other benefits, as noted in Chapter 1 of the Tier II FEIS.
2) Strongly urge the location of a passenger rail station with daily service in downtown Henderson. From RESOLUTION 10-74 – *WHEREAS, Henderson is the largest regional population and commercial retail center in North Central North Carolina along the proposed HSRP route, and is one of two rural stops planned on the HSRP between Petersburg, Virginia and Raleigh, North Carolina, with the other rural stop being La Crosse, Virginia; and* *WHEREAS, the location of a passenger rail station in downtown Henderson would be a significant boost to the redevelopment of the local economic base that has been devastated by the loss of the traditional economic stalwarts of textiles and tobacco in the early part of the decade as well as the lingering negative effects of the current Recession; and*	As stated in the Section 2.2 of the Tier II DEIS, evaluation and ridership-revenue modeling support one daily round-trip train stop in Henderson, NC. The DEIS also noted that the development of stations is a unique undertaking at an individual location and station sites were evaluated only to the level to ensure that a station placed along the Project corridor in a general location would provide sufficient accessibility to the larger transportation network.
3) The impacts of the new High Speed Rail Project will serve to divide the city into two halves as a result of the fencing and closure of 12 of the current 17 rail crossing locations. Thus, the proper planning and design of the new rail crossings is of upmost concern to us. From RESOLUTION 10-74 – *WHEREAS, the proposed high speed rail line will run along the same right-of-way that currently provides for the current north/south rail line as it traverses Henderson, and said rail line DIVIDES AND BISECTS the city, thus providing*	Through additional coordination with the City of Henderson following the Tier II DEIS and in response to these comments, several revisions to roadwork within the City were developed. The revised roadwork has been reviewed by the City Council, and two resolutions in full support of the revised roadwork were passed by the City of Henderson City Council. The resolutions reflect that there are no outstanding issues that need to be resolved related to the proposed roadwork related to the Project in the City of Henderson. Refer to Appendix A in the Tier II FEIS for a copy of City of Henderson Resolution 11-84 and Resolution 12-42. Maps of the revised roadwork can be viewed in the Map Book Appendix of the Tier II FEIS.

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for unique challenges and opportunities to address cross-city transportation connectors in a way that meets the current and future needs of the City and its residents, businesses and visitors. *NOW, THEREFORE BE IT RESOLVED BY THE HENDERSON CITY COUNCIL that it does hereby:* *AFFIRMS that Henderson is a city with a population of approximately 16,000 and the railroad right-of-way DIVIDES AND BISECTS the city in half. Cross-city connectors that are functional and effective for traffic flow and delivery of public safety services is critical for the public health, safety and welfare and is also critically vital to the City's future economic growth and development. The proposed reconfigurations of the local and State streets and roads to accommodate the HSRP crossings are not well designed and do not think about current and/or future needs of the City's transportation network in a logical and systematic manner.* *4) This is particularly true given the fact that 12 of the existing 17 crossings within the City and its Extraterritorial Jurisdiction are slated to be closed. (See Attachment No. 5). Thus, leaving the City with only 5 existing crossings.* *a. The addition of the Alexander Ave/Dabney Dr./Raleigh Rd. intersection would bring the crossing number to 6.* *The addition of the requested Chavasse Ave. underpass would bring the total crossings to 7.* 5) Full support for a pedestrian crossing in the vicinity of Peachtree Street. 6) Request and full support for the inclusion of bike lanes and sidewalks on both sides of any new bridges, underpasses and reconfigurations of local streets designed to accommodate the new rail crossings. *7)* Major concerns and objections to the planned crossings and the local street and road reconfigurations planned to accommodate the crossings. From RESOLUTION 10-74 – *WHEREAS, the Council has MAJOR CONCERNS ABOUT AND OBJECTIONS to the proposed reconfiguration of local streets and State roads designed to support the planned bridge crossings of the HSRP at –* *a. Main St. and North Garnett St.* *Main Street Crossing: The City Council appreciates the plan aligning with the Thoroughfare Plan; however, the proposed termination of direct north/south traffic flow along the N. Chestnut St.—Rt. 1, N. Garnett St. corridor is neither satisfactory nor acceptable. This corridor carries a significant amount of traffic that bypasses the core downtown area as well as provides a direct access for police, fire and other public safety delivery services that provide service to the Northern sector of the city. The City Council STRONGLY OBJECTS to the*	

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proposed design and respectfully requests that the proposed realignment of local and State streets be redesigned to maintain and provide for the north-south N. Chestnut St.—Rt. 1, N. Garnett St. Corridor traffic flow. (See Attachment No. 1 for current HSRP design); *b. Andrews Ave. at N. Garnett St.* *Andrews Avenue Crossing: This avenue is a main connector between I-85 and US Rt. 1 Bypass and has four lanes from I-85 to N. Chestnut Street and three and four lanes from Booth Avenue to Rt. 1 Bypass. The City Council STRONGLY OBJECTS to the construction of a two lane bridge crossing and it respectfully requests that the bridge be widened to provide for future traffic needs and to meet the needs of the bridge crossing as articulated in the City's Thoroughfare Plan—or 4 lanes. Further, the reconfiguration of local streets with this construction does not provide for convenient access from N. Garnett Street in downtown onto Andrews Avenue. The City Council respectfully requests that on/off ramps be provided from the new Andrews Avenue Bridge Crossing to N. Garnett Street. Further, it is requested that Williams Street not be closed at Andrews Avenue on the East side of the rail road right-of-way. (See Attachment No. 2 for current HSRP design);* *c. Chavasse Ave.* *Chavasse Avenue Crossing: The current plan is to permanently close the Chavasse Avenue crossing. The City Council STRONGLY OBJECTS to the permanent closure of the Chavasse Avenue Crossing. While a bridge would not be appropriate due to the historic eligible nature of the residential neighborhood on the East side of the railroad right-of-way, the City Council respectfully requests and proposes that an underpass be provided for Chavasse Avenue in a manner similar to the underpass provided at Charles Street in downtown. This crossing is seen as being critically necessary for the effective delivery of fire services from the Dabney Drive Fire Station into East Henderson as well as the effective access for police personnel. This crossing is extremely important given the fact that the current plans would otherwise leave approximately a 1 mile gap between crossings in a heavily traveled part of the city and where four other downtown crossings are planned to be eliminated. Thus, the only crossings for this heavily populated area of the city without the Chavasse Ave. crossing would be Charles St. Underpass at the northern edge of the Business District and Dabney Dr./Alexander Ave. crossing which is almost at the end of the city limits. (See Attachment No. 3 for current HSRP design); and* *WHEREAS, Mr. Robert Southerland, a private citizen and resident of Gholson Avenue located on the East side of the railroad right-of-way in the vicinity of Chavasse Avenue, addressed the City Council at its 26 July 2010 regular*	

AG4 & AG30 City of Henderson, NC, James D. O'Geary, Mayor Letter & Council Resolution	
Comment	**Response**
meeting and expressed strong support for keeping the Chavasse Avenue railroad crossing open via construction of an underpass similar to the one currently in use at Charles Street in downtown, and no other citizens came forward to speak for or against the Chavasse Avenue crossing proposal being considered by the City Council; *d. Dabney Dr. Extension—Alexander St. Extension at US1 Raleigh Rd.* *Dabney Drive Extension—Alexander Avenue Extension: The proposed relocation of Dabney Drive to connect with the Alexander Avenue Extension is almost out of the city limits; therefore, It is critical that the connection provide for the direct access onto Nicholas Street in order to provide for direct emergency services access from the Dabney Drive Fire Station and police cruisers onto Williams Street and the East Henderson area. The City Council STRONGLY OBJECTS to any design that does not provide for at-grade or on/off ramp connections from the proposed overpass improvements of Alexander Avenue onto Nicholas Street. The City Council respectfully requests that direct access from the rail crossing improvement onto Nicholas Street be designed and constructed as part of this project. (See Attachment No. 4 for current HSRP design);* *e. J. P. Taylor Rd. at US-1 Raleigh Rd.* *J. P. Taylor Road Crossing: The proposed rail crossing at this intersection does not provide for direct access onto US-1 Business/Raleigh Road. This is a critical crossing providing general traffic and public safety service delivery to Southeast Henderson. The City Council STRONGLY OBJECTS to the proposed design because it does not provide for direct access from the J. P. Taylor rail crossing improvement onto US-1 Raleigh Road. It is critical that on/off ramps be provided to connect Raleigh Road with J. P. Taylor Road in order to maintain a high level of public safety service delivery services, particularly fire and police services into the area East of the rail road tracks. The City Council respectfully requests that on/off ramps be provided so as to connect US1 Raleigh Road with the J. P. Taylor rail crossing improvements. Additionally, Belmont Dr. should be widened and improved from the intersection of J. P. Taylor Rd. Extension to Raleigh Road in order to adequately handle the increased traffic load being placed on this small, rural road. (See Attachment No. 6 for current HSRP design);* *f. The lack of a connection between Nicholas St. and J. P. Taylor Rd.* *Nicholas St. not Connecting with J. P. Taylor Road: The proposed road configuration does not provide for a physical connection between Nicholas St. and the J. P. Taylor Rd. This is unacceptable as it completely eliminates any direct public safety access to the neighborhoods and businesses to the East of the Railroad track. The City Council STRONGLY OBJECTS to the termination*	

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<tr><th colspan="2">AG4 & AG30
City of Henderson, NC, James D. O'Geary, Mayor Letter & Council Resolution</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>of Nicholas St. prior to its intersection with J. P. Taylor Road and it requests that it be extended from its planned termination point to J. P. Taylor Rd. in order to ensure that the area can and will receive adequate and appropriate public safety services. (See Attachment No. 7 for current HSRP design).
8) From RESOLUTION 10-74 –
EXPRESSES Strong concern for and objection to the fencing off of the railroad right-of-way and exceeding the current use of said right-of-way for the Southeast High Speed Rail project in a manner that would cause serious, negative impacts on the North/South corridor along Williams Street and the businesses that abut said right-of-way, especially within the downtown area.
9) Any major improvement to a transportation network requires change on the part of those affected. The City Council and I understand this and realize that we must plan well and implement change in a manner that mitigates negative impacts and provides such change in as seamless a manner as possible. This is the spirit in which my comments are made this evening. The City Council and I request that you give full consideration to the requests made this evening regarding our concerns and work with us to improve the rail crossings and local street reconfigurations to accommodate them.</td><td></td></tr>
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<tr><th colspan="2">AG7/31
Town of Youngsville, NC, Public Hearing Comments; Brenda Robbins (former Town Administrator)</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>1) We are pleased with the proposed connector route from Fleming Road to the intersection of Hwy 96/US1-A North. However we do feel that if the connector route was from North Cross Street to Hwy 96/US1-A North it would make a tremendous difference in our downtown area. In order for Hwy 96 traffic to get through Town they will have to make a right turn onto East Main Street and then a left onto North Nassau Street/Fleming Road. With Hwy 96 being Main Street we have a tremendous amount of tractor trailer traffic coming through Youngsville. Hwy 96 is a connector route for Interstate 95 to Interstate 85. Gas tankers are loaded in Selma and any that are going north come through Youngsville. We were told that because of the historical district the traffic could not be rerouted on North Cross Street, but that it would have to be detoured on Nassau Street/Fleming Road therefore requiring 2 unnecessary turns. We feel that we would have no other choice but to cul-de-sac South Nassau Street because it cannot withstand the tractor trailer traffic or just the volume of traffic. South Nassau Street is a residential neighborhood with quite a few children, the</td><td>In response to comments from individuals and from local officials, the roadwork for Youngsville, NC, that was proposed in the Tier II DEIS has been redesigned. See Chapter 2 of the Tier II FEIS. The new designs utilize Cross Street as a connection to NC 96 (rather than Nassau Street) during the construction of the Main Street bridge over the railroad.

Construction of the Highway NC 96 bypass is outside the scope of this Project. However, in order to maintain the flow of traffic during construction of the bridge over the railroad at Main Street, Highway NC 96 will be realigned north of town within the alignment of the Town of Wake Forest's proposed Highway NC 96 bypass, to intersect with an extension of Cross Street. The Richmond to Raleigh Project design will allow the bypass to be completed in the future as planned.</td></tr>
</table>

AG7/31 Town of Youngsville, NC, Public Hearing Comments; Brenda Robbins (former Town Administrator)		
	Comment	**Response**
	homes are close to the street and our water and sewer lines are close to or either in the street. There is a 12" water line on South Nassau Street from East Main Street to East Persimmon Street that serves the Youngsville/Wake Forest Mobile Home Park as well as the Commerce Center South Industrial Park that houses Harborlite and K-Flex. Fleming Road cannot withstand the traffic due to the road condition as well as numerous curves. This road has several subdivisions on it and it is a residential neighborhood as well. We don't think it is fair for the residents of Fleming Road to have to worry about the volume of traffic during construction as well as the possibility of having their property split in half. We understand and appreciate the fact that our NCDOT Rail Division has designed the high speed rail with no at grade crossings, but tractor trailer/vehicle wrecks can be just as deadly. We must take in the fact that there are school buses traveling that road and picking up and letting children off. As far as the rail alignment, we feel the best solution in order to have the least impact on our residents as well as our industrial neighbors would be to go with Section S NC1, NC3 (Map# 51 Sheet 1 of 2). With the economy being in the state that it is in we need all of our industrial companies to be able to continue operating so that they will be in a position to pay their taxes. We feel that the connector route (roadway) should be from N Cross St to 96/US1A N not from Fleming Rd. With Hwy 96 having tremendous amount of traffic we know that Fleming Rd cannot handle it. That road is hilly and curvy. Best suggestion - build 96 by pass.	
2)	We were told that the North Cross Street connector was not an option because of our historic district. We do not have a historic district. Several years ago our Youngsville Area Business Association Downtown Revitalization Committee worked on trying to get either a historical district or a historical designation. Neither one happened. The committee did not have the resources to spend to make the designation happen. We don't understand how something that has not been approved can be shown on a map and used as an excuse for something not to happen. During construction of the high speed rail on Main Street, traffic has got to be detoured. The ideal plan would be for our bypass to be built. It has been approved since 1991 (revised in 2003) and has been presented to the DOT Board numerous times. If that is not a possibility then the extension from Fleming Road to Hwy 96/US1-A North would work however we feel very strongly about an extension being built from North Cross Street to Hwy 96/US1-	The request to use Cross Street was accommodated in coordination with the North Carolina State Historic Preservation Office. Although Youngsville does not have a historic district listed in the National Register of Historic Places (NRHP), surveys conducted as part of the Richmond to Raleigh Project's compliance with Section 106 of the National Historic Preservation Act, identified a historic district that is eligible for the NRHP. Both Section 106 and Section 4(f) of the Department of Transportation Act of 1966 provide the same protection to resources eligible for the NRHP as those listed in it.

AG7/31 Town of Youngsville, NC, Public Hearing Comments; Brenda Robbins (former Town Administrator)	
Comment	**Response**
A. This would make traffic flow so much easier from the intersection of East Main Street and North Cross Street because large trucks would be able to keep straight at the stoplight. The plans would have to be changed but we feel that it would work a lot better for everyone.	
3) Also we have asked for and have been told that it would not be a problem to have pedestrian crossings at Persimmon Street as well as Franklin Street. The one for Franklin Street is shown on the maps on the SEHSR website the one for Persimmon Street needs to be added. Not having the Persimmon Street pedestrian crossing would cut off all the foot traffic from the south side of Town including walkers, joggers and school kids. We are losing a vehicle crossing at East Pine Street as well as West Winston Street therefore making the pedestrian crossings a necessity. We need a pedestrian crossing on the Southside of Main St. There is a lot of traffic on that side of Town needing access to Youngsville Elementary School and a convenience store.	A pedestrian crossing could not be accommodated at Persimmon Street because the properties on the north side of the street (on the east side of the railroad tracks) are part of the eligible Youngsville Historic District (see above). A pedestrian crossing at Pine Street has been added to the Project designs to provide the requested connectivity.
4) North of our corporate limits (but within our ETJ) at Bert Winston and Northbrook Dr. we would encourage you to use Section S NC1, NC3 (map 51 sheet 1 of 2) instead of NC2. NC1 and NC3 would disturb a lot less property owners, industrial and residential.	Alternative NC1 is the preferred alternative in Section S.

AG8/9/45/49 Town of Wake Forest, NC, Vivian A. Jones, Mayor; and Ann Ayers Comments and Email	
Comment	**Response**
1) As stated in a Resolution signed on the July 21, 2009, the Board of Commissioners of Wake Forest fully support and desire the development of higher speed rail service along the Federally-Designated Southeast High Speed Rail Corridor network and supports the undertaking of planning, land acquisition and construction required to bring about implementation of these service improvements.	Comment noted.
2) While we support the overall goals of the SEHSR project, we are deeply concerned about the unintended impacts this important project could have on existing at-grade crossings, public safety access, and the built environment (business and residential property).	Comment noted. The Richmond to Raleigh Project has continued dialogue with the Town of Wake Forest to discuss these concerns and methods to minimize impacts.
3) Upon review of the three alternatives under consideration for providing High-Speed Rail service through Wake Forest's jurisdiction, we offer the following recommendations:	Elm Avenue- In response to these comments on the Tier II DEIS as well as comments from the public, a new rail underpass was designed for Elm Avenue. There are numerous design constraints in this

AG8/9/45/49 Town of Wake Forest, NC, Vivian A. Jones, Mayor; and Ann Ayers Comments and Email	
Comment	**Response**
a. Provide additional grade-separated crossings at Elm Avenue, Northside Loop, and Height Lane/Unicon Drive. i. Please consider at grade crossing at Elm Street in Wake Forest. The federal rail administration, I understand, has established guidelines for at grade crossings on high speed rail lines. The crossing at Elm St is a major entrance to our downtown. We need either an at grade crossing or a bridge. DO NOT CLOSE THIS CROSSING, PLEASE! Wake Forest supports this project with several crossing closures. However, the Elm Avenue crossing is not one of those. The interconnected street grid predates most of the buildings in the historic district. Wake Forest wants an at grade crossing with a folder quad or similar gate system to prevent pedestrians, biking and other drivers from crossing when a train is present. Keep Elm Ave open.	location including the terrain, the Wake Forest Historic District, dense development, and driveway encroachment on the rail ROW. Coordination with the Town and with the North Carolina State Historic Preservation Office (NC-HPO) occurred as the new bridge design was developed. The public was provided an opportunity to view and comment on the underpass at a public update meeting (PUM) on May 15, 2012. Strong opposition to the underpass was voiced at the PUM, particularly from the businesses and residences impacted by the new design. A meeting with the Town and with a representative from the North Carolina Historic Preservation Office was held on Monday, June 18, 2012, to discuss the responses, and the Town stated that the impacts of a grade separation at this location were too severe. At the meeting it was decided that a minimal footprint pedestrian bridge (i.e. steps but not ramps) over the railroad would be a better fit at this location. The pedestrian bridge would minimize impacts to adjacent businesses, yet it would still allow students from Wake Forest Elementary School to cross the tracks. Northside Loop- The mapping for the Richmond to Raleigh Project includes a label noting the location of the planned road. Construction of a grade separation for this planned road is outside the scope of the Project; however, the Richmond to Raleigh Project does not preclude the Town from building the road in the future. Height Lane/Unicon Drive- There is no existing connection between these two roads, and providing a new connection is outside the scope of this Project.
b. Support the proposed grade-separated crossings at Cedar Avenue (pedestrian only), Dunn Avenue, Ligon Mill Road and Rogers Road;	Comment noted.
c. Please consider modifying the alignment at Ligon Mill Road to preserve historic property. Specifically, David Cooke property (9737 Ligon Mill Road), preferred alignment drawings have been provided to N C Rail Division. i. I hope that you can work with David and Pinky Cooke to provide for the needs of the road, rail and preservation of an important historic home site. If it is possible to construct a temporary road to accommodate traffic while placing the crossing into a location that does not impact the historic fabric of the home place, the property owners have indicated a willingness to work with SEHSR. Mayor Jones and I recall discussions from previous SEHSR meetings where the location of the Ligon Mill Road bridge came up. It is our recollection that the bridge shift has been proposed to allow traffic to continue to use the existing	The Project Team is aware of the concerns about impacts to the Hartsfield House at 9737 Ligon Mill Road in Wake Forest, NC, as well as questions about whether it was incorrectly assessed as not being eligible for the National Register of Historic Places (NRHP). Both the property owners and Capital Area Preservation have stated they will provide additional materials to the North Carolina State Historic Preservation Office (NC-HPO) and NCDOT in support of the property's eligibility. NC-HPO and NCDOT have reviewed the original Section 106 eligibility survey for the Hartsfield House and do not recommend altering its NRHP eligibility determination based on the information it contains. Additional materials have not been received at press; once received, NC-HPO and NCDOT will review it and reevaluate the eligibility. It should be noted that a Certificate of Appropriateness from the Wake Forest Historic Preservation Commission will be required to address impacts to the property under North Carolina statutes based on its designation as a local landmark.

AG8/9/45/49 Town of Wake Forest, NC, Vivian A. Jones, Mayor; and Ann Ayers Comments and Email		
	Comment	**Response**
	Ligon Mill Road while the bridge is being constructed. However, doing this shifts the new Ligon Mill Road onto property in an area that is entwined with the historic character of the Hartsfield House in Wake Forest, near old Forestville. The Hartsfield House, a two story Federal-style building, was built in ca. 1803 as dated on one of the double-shouldered chimneys. (The Historical Architecture of Wake County North Carolina by Kelly A. Lally, pg. 249 [WA1487] S.R. 2044). In the path of the new alignment, there are three old white oaks remaining from a grove (a fourth was lost in Hurricane Fran) and a garden, originally planted by the Hartsfield family, likely over 125 years ago, where daffodils and hyacinth still come up in the spring. The current owners, Pinky and David Cooke provided the attached pictures. For scale, Mrs. Cooke is standing in front of one of the trees in the last photo. I hope that you will contact David and Pinky Cooke at your earliest convenience to explore temporary solutions that result in a more satisfactory alternative.	Alternative design concepts, both provided by the Cookes and developed internally by the Project design team, have attempted to minimize impacts to the property, in particular to avoid the white oak trees. However, such designs present safety issues with the curve of Ligon Mill Road and/or sight distance in the vicinity of the proposed bridge over the railroad tracks. Tire tracks along Ligon Mill Road near the property provide evidence of the existing sharp curve along Ligon Mill Road. It should be noted that the current designs are based on preliminary designs that are intended to be very conservative (showing the greatest possible impacts). As detailed surveys are completed during the final design stage of the Project, it may be possible to further refine and reduce the estimated impacts to the Hartsfield House property.
d.	Support the realignment of East Holding Avenue; and	Comment noted.
e.	Support the Southeast High Speed Rail Trail Project by using the Smith Creek Corridor as the preferred route through Wake Forest, east side of the rail.	Attempts will be made to accommodate this request during development of the Greenway Corridor Plan. However, it should be noted that design constraints (e.g., required crossings of the existing rail corridor, property impacts, etc.) may effect which side of the rail corridor is recommended for the greenway.
f.	Provide pedestrian accommodations at all grade-separated crossings.	All of the new bridges will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses. At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and VDOT pedestrian policies. In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists.
4)	Buffer vibration.	Vibration mitigation will be provided in accordance with the guidelines set forth in the FRA's *High Speed Ground Transportation Noise and Vibration Impact Assessment* manual (USDOT, 2012).
5)	Incorporate art in stations. This is a multigenerational project and should be a source of great pride and not just utilitarian. Therefore, incorporate public art into structure design and construct the high speed rail trail concurrently where possible as is the case in Wake Forest.	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations or station amenities because the development of stations is a unique undertaking at an individual location. Recommendations regarding station architecture or design should be provided to the governments at the individual station locations developing the stations.

AG8/9/45/49 Town of Wake Forest, NC, Vivian A. Jones, Mayor; and Ann Ayers Comments and Email	
Comment	**Response**
6) Fund rail trail concurrently.	The concept of a greenway located parallel to the Richmond to Raleigh Project from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC) was introduced in the Richmond to Raleigh Project DEIS. The rationale for its inclusion was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Richmond to Raleigh Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Richmond to Raleigh Project, the process of developing the environmental documentation for greenway has changed since publication of the Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than being included in the Tier II FEIS for the Richmond to Raleigh Project, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within the Richmond to Raleigh Project FEIS, but rather in a separate Greenway Corridor Plan. This document is currently under development, with completion anticipated at the time of the ROD for the SEHSR Corridor. The Project website will provide additional details on this separate plan and opportunities for its public review and comment.

AG2 Town of Wake Forest, NC, Planning Services, Ann M. Ayers	
Comment	**Response**
1) I hope that you can work with David and Pinky Cooke to provide for the needs of the road, rail and preservation of an important historic home site. If it is possible to construct a temporary road to accommodate traffic while placing the crossing into a location that does not impact the historic fabric of the home place, the property owners have indicated a willingness to work with SEHSR. The Hartsfield House, a two story Federal-style building, was built in ca. 1803 as dated on one of the double-shouldered chimneys. (The Historical Architecture of Wake County North Carolina by Kelly A. Lally, pg. 249 [WA1487] S.R. 2044). In the path of the new alignment, there are three old white oaks remaining from a grove (a fourth was lost in Hurricane Fran) and a garden, originally planted by the Hartsfield family, likely over 125 years ago, where daffodils and hyacinth still come up in the spring. The current owners, Pinky and David Cooke provided the attached pictures. For scale, Mrs. Cooke is standing in front of one of the trees in the last photo. I hope that you will contact David and Pinky Cooke at your earliest convenience to explore temporary solutions that result in a more satisfactory alternative.	The Project Team is aware of the concerns about impacts to the Hartsfield House at 9737 Ligon Mill Road in Wake Forest, NC, as well as questions about whether it was incorrectly assessed as not being eligible for the National Register of Historic Places (NRHP). Both the property owners and Capital Area Preservation have stated they will provide additional materials to the North Carolina State Historic Preservation Office (NC-HPO) and NCDOT in support of the property's eligibility. NC-HPO and NCDOT have reviewed the original Section 106 eligibility survey for the Hartsfield House and do not recommend altering its NRHP eligibility determination based on the information it contains. Additional materials have not been received at press; once received, NC-HPO and NCDOT will review it and reevaluate the eligibility. It should be noted that a Certificate of Appropriateness from the Wake Forest Historic Preservation Commission will be required to address impacts to the property under North Carolina statutes based on its designation as a local landmark. Alternative design concepts, both provided by the Cookes and developed internally by the Project design team, have attempted to minimize impacts to the property, in particular to avoid the white oak trees. However, such designs present safety issues with the curve of Ligon Mill Road and/or sight distance in the vicinity of the proposed bridge over the railroad tracks. Tire tracks along Ligon Mill Road near the property provide evidence of the existing sharp curve along Ligon Mill Road. It should be noted that the current designs are based on preliminary designs that are intended to be very conservative (showing the greatest possible impacts). As detailed surveys are completed during the final design stage of the Project, it may be possible to further refine and reduce the estimated impacts to the Hartsfield House property.

AG15 Town of Kittrell, NC, Jack Ball, Town Councilor,	
Comment	**Response**
1) We voted on August 2nd a new version of the Rail Design. We filled out a form on that day and was supposed to be submitted to Kerr-Tar by August 16: The Town of Kittrell would like to make sure that proposed plan Y220RJ is being used for the future planning of the High Speed Rail System. Please make sure that proposed plan Y220RK is NOT USED.	As requested by the Town of Kittrell, the road designs shown in the Tier II FEIS reflect the change from Y220RK to Y220RJ. To see the design change, refer to the Map Book Appendix for the Tier II FEIS.

AG20 Town of McKenney, VA, Charles T. Mansfield, Mayor	
Comment	**Response**
Some of the concerns to the Town of McKenney include the following: 1) Well No.1. This is the primary source of water for the town. It was drilled in 1939 on railroad property and had been considered an Artesian well. We request the proposed route of the high speed rail be kept as far as possible from that well to insure its continued productivity. Access Road to Well and Sewage Treatment Facility. We recommend the proposed access road to Well No 1 and the Sewage Treatment Facility follow Community Street then along the railroad behind Sunnyside Elementary School. That should have the least amount of impact on the historically designated property at the Zehmer farm.	The railroad alignment has been redesigned to include a slight eastward shift away from the NRHP boundary for the Zehmer Farm/Honeymoon Hill Farm historic resource (the boundary listed in the NRHP in 2009 encompasses an area much larger than the area determined to be eligible for the NRHP as part of the Richmond to Raleigh Project surveys in 2005). This shift also takes the alignment further away from the Town of McKenney's artesian well. The alignment for the public access road to the well and sewage treatment facility has also been redesigned. The revised impacts associated with these design changes are shown in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
2) Effect of Vibration. We are concerned about the negative effects of vibration on the infrastructure of the water and sewer system.	Refer to Chapter 4 of the Tier II FEIS for information regarding analysis of vibration impacts along the alignment of the preferred alternative.
3) Relocation of Sewer Lines. There is a major sewer line which crosses the proposed railroad route at St. Route 40. It is likely the sewer lines will have to be relocated to be accessible after the construction of the proposed bridge. Likewise, a sewage pumping station will be required to move the sewage either over the tracks on the proposed bridge or under the railroad. The operation of another sewage pumping station would place an additional burden upon the town. Relocation of Water Lines. In a similar manner, the several water lines which presently pass below the railroad right-of-way will have to be relocated, especially in the area of the Rt. 40 bridge.	Comments noted. Assessment of impacts and relocation plans for sewer and water lines, as well as all other utilities, will be considered during the final design stage of the Project.
4) Pedestrian Traffic on Route 40 Bridge. A significant amount of foot traffic presently uses St. Route 40. We ask that sidewalks be included on the proposed bridge to accommodate pedestrians.	The Project bridge design for this location provides sidewalks to replace the existing sidewalks along Doyle Boulevard/VA Route 40.
5) Proposed station or siding. We request the plans include a siding or station in McKenney to accommodate future industrial development.	Project designs include a rail passing siding that ties into the alignment of the main rail line just north of Doyle Boulevard/VA Route 40.
6) Increased traffic on Rives Avenue. It is likely traffic will increase on Rives Avenue during construction and afterwards. That is a narrow road with poor drainage. We recommend that road be improved by widening and adding curbs and gutters.	Rives Avenue is planned to be used as part of the proposed temporary detour during construction of the Doyle Avenue/Route 40 bridge. Prior to construction an analysis will be undertaken to determine the level of improvements necessary to safely accommodate temporary detour traffic. The improvements will be made according to VDOT standards of practice.

AG20 Town of McKenney, VA, Charles T. Mansfield, Mayor	
Comment	**Response**
7) Commercial Access to Railroad Avenue. Under the present proposal, Railroad Avenue will become a dead end where it presently intersects with St. Rt. 40. The hardware store and other commercial enterprises require access to tractor trailer deliveries. We ask that that road be improved to allow continued access to these vehicles.	The Project designs accommodate rear delivery access along Railroad Street for tractor trailers with a 50-foot wheel base (WB50) through a backing movement. Other alternatives for this location were evaluated but found not practicable due to the degree of impacts to the businesses on 1st Street that the access is intended to serve.
8) We hope these concerns can be addressed to prevent additional expense to the town citizens.	Chapter 1 of the Tier II FEIS contains an expanded discussion of funding needed to develop and operate the Richmond to Raleigh Project. At this time, it is anticipated that NCDOT and DRPT will pursue Federal funding, along with state and public-private partnerships, to construct the Project. It is not possible to know if the future use of Federal funds would equate to increased Federal taxes for citizens. It is anticipated, however, that local governments will not be expected to fund project construction. Chapter 1 of the Tier II FEIS contains updated ridership and revenue information which supports prior studies that projects that the Richmond to Raleigh Project will not only be self-supporting, it will generate net revenue annually. And, given the eventual owner of the rail corridor will be responsible for all costs of operating and maintaining the facility, localities and citizens would not be forced with any increased costs. In summary, local governments will not face additional expenses for any aspect of the facility. And, although it will require an upfront Federal investment to be constructed, the Richmond to Raleigh Project will not require tax or other Federal subsidies or increased costs to citizens for annual operations.

AG22 Port of Richmond Commission - John G. Hekman, Chairman	
Comment	**Response**
1) Succinctly stated, the Port objects to the currently-proposed SEHSR design which would apparently eliminate the fixed, at-grade ("rigid"), rail crossing (sometimes referred to as a "diamond") of the CSX “S” line by Norfolk Southern at "Rockets", just south of the James River in South Richmond, between the existing flood wall and Maury Street. While we certainly understand the desirability of simplifying and eliminating lightly-used infrastructure, abandonment of this particular element, absent a more satisfactory alternative than is currently depicted on the SEHSR plans, could serve to seriously compromise, or even preclude, our plans for enhancing rail access to the Port, as well as to the rail-served industrial area along the City of Richmond's Deepwater Terminal Railroad. Alternatives which require permissive and non-competitive "switching" on or via CSX rail by NS are not viable business solutions.	The FEIS designs have been revised to show that the at-grade “Rockets” diamond will be retained under the Richmond to Raleigh Project.
2) As to our second objective, we wish to advise that enhanced rail access plans previously discussed with Kevin Page of your staff remain very much a part of the Port's planning program. But for funding issues which arose at the Port over the past two years, we would have more actively pursued preliminary design of the Port's proposed direct rail connection with Norfolk Southern, which connection currently depends upon our ability to reach and utilize the line of NS railroad mentioned in the preceding paragraph. Mr. Page can explain prior consideration of this as a potential Rail Enhancement Fund project.	The Virginia DRPT notes that enhanced rail access plans remain part of the Port’s planning program. Furthermore, DRPT is committed to continued coordination with the Port of Richmond in long-range planning efforts.
3) One of the options currently being considered by the Port could involve some form of joint and collaborative operational arrangement with the Virginia Port Authority. If such were to materialize, this could make it even more feasible to revive and progress the NS connection project at an earlier date than had otherwise been thought likely. A direct NS connection would be of great strategic transportation value to the Port, and potentially to VPA. If constructed, it would provide the only clear route for movement of double-stack rail containers to and from the Port area. We believe that the Port of Richmond has the potential to function as yet another Virginia "inland port", providing multi-modal (water, highway and rail) cargo services in the central Virginia region.	Comment noted.
4) In addition, and at your convenience, we would appreciate having the opportunity to further acquaint you with the unique attributes of our Richmond intermodal complex.	As noted above, DRPT is committed to continued coordination with the Port of Richmond in long-range planning efforts.

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<tr><th colspan="2">AG25
Triangle Transit Authority, David King (Jonathan Parker Point of Contact)</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>1) As you know, Triangle Transit prepared an Environmental Impact Statement for a Regional Rail System for the Triangle and the Federal Transit Administration issued the Record of Decision in 2003. The DEIS included an alternative alignment developed by NCDOT and the FEIS incorporated NCDOT's requirements for future rail expansion (SEHSR) throughout the entire project corridor. The environmental clearance for this corridor included a segment from downtown Raleigh to Durant Road in Raleigh, coincident with the Raleigh to Richmond SEHSR corridor of interest. While Triangle Transit is currently evaluating potential options for future rail service with our regional partners through a transitional and alternatives analysis process, we request that the SEHSR project be designed in such a way that the implementation of regional rail service as originally envisioned on separate tracks within the CSX S-Line railroad corridor is not precluded. This includes designing new roadway and rail bridges to allow lateral separation for future tracks to be constructed adjacent to the proposed SEHSR/freight tracks.

Triangle Transit owns a corridor parallel to the east side of the CSX S-Line railroad corridor from the Boylan Wye in Downtown Raleigh to Old Wake Forest Road in North Raleigh which was purchased as a part of the previously proposed Regional Rail project. Although plans are currently being reconsidered for this corridor, potential impacts to the use of this right-of-way should be avoided to allow for future transit use.</td><td>The Richmond to Raleigh Project and the NCDOT Rail Division have coordinated with and will continue to work collaboratively with Triangle Transit (TT) on the plans for development of a Regional Rail System for the Triangle area. In keeping with this coordination, the Richmond to Raleigh Project has taken the TT plans into consideration, and the Project designs do not preclude implementation of TT as originally envisioned on separate tracks within the CSX S-line corridor. New roadway and rail bridges allow lateral separation for future tracks adjacent to the proposed SEHSR Corridor tracks.</td></tr>
<tr><td>2) For informational purposes, please show the Triangle Transit-owned right-of-way within the CSX S-Line railroad corridor on future hearing maps and plan sheets. To that end, we also request that cross sections be made available for the portion of the SEHSR project proposed along the S-Line corridor and adjacent to the TTA-owned right of way.</td><td>For the sake of simplicity, TT ROW continues to be included in the overall rail ROW symbology on the maps, rather than shown as separate ROW within the CSX S-line corridor. Cross sections for areas along the S-line which are adjacent to TT ROW will be provided during the final design stage of the Project when survey level data is available.</td></tr>
<tr><td>3) The Capital Area Metropolitan Planning Organization has included a recommendation for possible shared-track commuter rail service from Wake Forest to Raleigh in its 2035 Long Range Transportation Plan. More recently, Triangle Transit has been asked to evaluate the suitability of this corridor for future commuter rail service, and would, at the appropriate time, like to begin a conversation with NCDOT Rail Division and CSX about the potential for implementing such a project.</td><td>As stated above, the NCDOT Rail Division will continue to coordinate with TT on the plans for development of a Regional Rail System for the Triangle area.</td></tr>
<tr><td>4) Section U - Plan Sheet 55: We request that the approach slopes for the proposed Durant Road Bridge be limited through the use of retaining walls or steeper slopes in order to facilitate access to the proposed Durant Road station which was included in the original regional rail project.</td><td>Project designs do not preclude implementation of TT designs. All road-over-rail bridge concepts in the Project (including the proposed Durant Road bridge) will allow TT to modify the end bent slope to fit TT rail underneath the end span of the Richmond to Raleigh Project bridge.

Rail-over-road bridges in the Project also do not preclude construction of parallel, separate TT rail over road bridges.</td></tr>
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AG25 Triangle Transit Authority, David King (Jonathan Parker Point of Contact)	
Comment	**Response**
5) Section V - Plan Sheet 57, comment 1: Please consider constructing a new roadway grade separation connecting Pacific Drive to Atlantic Avenue, east of the railroad corridor. The City of Raleigh has already constructed a segment of Pacific Drive between the east side of the rail corridor and Atlantic Avenue. Rather than expending unrecoverable funds on detour routes for construction of the grade separations at Millbrook and New Hope Church Roads, this would provide a permanent safer crossing for vehicles and pedestrians during the construction of both projects. In addition to facilitating construction of the grade separations the Pacific Avenue grade crossing would greatly enhance connectivity in an area that may see an increase in transit oriented development (TOD) and pedestrian activity with the introduction of future regional rail service in the corridor. Please see Figure 1.	The Richmond to Raleigh Project does not necessitate inclusion of a bridge for a proposed connection to Pacific Drive. However, as part of the collaborative planning process, this TT request has been discussed with the City of Raleigh. The Richmond to Raleigh Project plans have been amended such that they show a general location on the maps with the notation "future bridge constructed by others." The construction of a City of Raleigh-funded bridge in this location can be coordinated with the construction plans for the Richmond to Raleigh Project.
6) Section V - Plan Sheet 57, comment 2: Please consider connecting the proposed realignment of Saint Alban's Drive to connect directly to Craftsman Drive at New Hope Church Road. This would consolidate intersections along New Hope Road and move the proposed realignment of Saint Albans Drive further away from the railroad right-of-way, allowing for improved access to the proposed New Hope Church Road transit station, and potential for transit-oriented development adjacent to the station site. Please see Figure 2.	The changes brought by the Richmond to Raleigh Project do not warrant a realignment of Saint Albans to connect with Craftsman Drive. Note, however, that the Project designs for this location do contain revisions to what was shown in the Tier II DEIS, and have been developed in coordination with the City of Raleigh. The designs can be seen in the Map Book Appendix of the Tier II FEIS.
7) Section V - Plan Sheet 57, comment 3: Please consider ways in which the Highwoods Blvd. and Wolfpack Lane street connection could be retained. As you may be aware, a transit station was identified in the Final EIS for the Regional Rail Project. Should this street connection be permanently severed through a crossing closure, a station in this location would be rendered infeasible due to a lack of a street connection to Atlantic Avenue as well as the Highwoods office complex. We would like to identify ways in which this street connection could be retained, including looking at additional grade separation options in the vicinity.	In response to comments on the Tier II DEIS from the public and from the City of Raleigh, two alternative designs were developed for the Wolfpack Lane crossing, one of which included a vehicular bridge (accommodating pedestrians and bicycles) over the railroad. These alternatives were presented for comment at a public update meeting on May 15, 2012. The public voiced strong support for the addition of a bridge over the railroad at Wolfpack Lane (presented at the meeting as Alternative 57A) and those designs have been added to the Project designs for the Tier II FEIS. The designs can be seen in the Map Book Appendix of the Tier II FEIS.

AG25 Triangle Transit Authority, David King (Jonathan Parker Point of Contact)	
Comment	**Response**
8) Section V - Plan Sheet 58, comment 1: Regarding proposed street crossing closures at Harrington and West Streets (NC 1 & 2) or Jones Street (NC 3), we would like clarification of the policy that dictates 100% grade separation of the SEHSR Raleigh to Richmond corridor. The northwest area of downtown Raleigh is perhaps unlike any other on the Tier II EIS, in terms of its strategic importance for long term economic development and as a viable pedestrian-friendly area, including a potential transit station as proposed in the Regional Rail Project. If these crossing closures must be maintained, mitigation measures should include pedestrian/bicycle connections that maintain the grid street urban fabric of the area.	Between Richmond, VA, and Raleigh, NC, the Richmond to Raleigh Project has been designed to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. The recommended preferred alternative in Section V is Alternative NC5, which was developed in response to comments received from the public and local officials. Development of the new alternative is discussed in Chapter 2 of the Tier II FEIS and information about the reduced impacts is found in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS. With the NC5 alternative, the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area is preserved except for the crossings at Hargett Street, which would be closed, and Jones Street, which would be closed to vehicular traffic and a pedestrian bridge would be constructed.
9) Section V - Plan Sheet 58, comment 2: Please explain the proposed right-of-way impacts shown at the Dillon Supply parcels in downtown Raleigh in the area north and south of Hargett Street in downtown Raleigh.	In this location, the proposed rail ROW is expanded on both sides of the existing rail ROW to accommodate a station platform. As shown in the maps in the Map Book Appendix of the Tier II FEIS, the ROW lines encompass a portion of the existing structures on the referenced parcels. Property impacts are determined during final design when survey level data is available.
10) Section V - Plan Sheet 58, comment 3: Triangle Transit strongly supports the proposed elimination and realignment/consolidation of the Norfolk Southern (NS) tracks to Fuquay-Varina within the Boylan Wye area from the western to the eastern side of the junction area. We are now advancing corridor studies that include potential light rail transit alignment options in the Boylan Wye area. Among these alternatives is an alignment proposal coincident with the NS tracks on the western side of the Wye. In addition to being a critical component of the SEHSR project, the proposed relocation of these freight tracks has tremendous benefits to the advancement of a future transit project. Chief among these is the removal of a potential fixed guideway transit conflict at the Boylan Street Bridge and the NS tracks. We will continue to support this important relocation for both high speed rail and future fixed guideway transit purposes, and appreciate the chance to work together in this effort.	As noted above, the recommended preferred alternative in Section V is Alternative NC5. NC5 does not change the route NS trains would take from the Glenwood Yard to Fuquay-Varina (i.e., the track horizontal alignment is essentially the same between Morgan Street and Boylan Avenue).
11) Section V - Plan Sheet 58, comment 4: Due the geometric and operational advantages presented by locating the proposed SEHSR tracks along the NS railroad corridor west of Capital Boulevard and away from the right-of-way owned by Triangle Transit within the constrained CSX corridor, Triangle Transit supports the selection of the NC 3 alternative. While the NC 3 option has technical advantages over the others for a future regional rail operation in this vicinity, Triangle Transit will work collaboratively with NCDOT Rail Division, the City of Raleigh and our other regional partners to ensure that we can implement a regional rail solution north of downtown Raleigh regardless of the ultimate alignment selection for the SEHSR project.	Alternative NC5 allows lateral separation for future TT tracks adjacent to the proposed SEHSR Corridor tracks.

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City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>A. The Raleigh City Council held a public hearing on August 31, 2010 for the purpose of seeking public comment regarding the project. After deliberating on the project and its potential impacts at our meeting on September 7, 2010, the City Council adopted the following recommendations for your consideration:

1) Study the hybrid alternatives to NC1/NC2 and NC3 south of Wake Forest Road that have been independently developed, and identify their probable impacts and costs. If alternative designs deemed viable and feasible, NCDOT should seek additional public input from the community. The Council requests the opportunity to hold a public hearing and comment on that option.
2) Consider the recommendations developed by City staff and by the Raleigh Passenger Rail Task Force regarding the project, copies of which are attached. (Pertinent elements are included as follows):
……..
a. THEREFORE, BE IT RESOLVED, that the Passenger Rail Task Force recommends that the alternate alignment called NC3 in the SEHSR Tier II Draft EIS which parallels the NS Railway between Edgeton (Wake Forest Road) and Jones Street on the west side of Capital Boulevard is the preferred track alignment because:

i. NC3, unlike NC1/NC2, leaves open the at-grade highway-rail crossings at West Street and Harrington Street, which is consistent with the 2030 Comp Plan’s requirements for connectivity and is essential for north-south connectivity along West and Harrington in downtown Raleigh;
ii. NC3, unlike NC1/NC2, does not call for a 1300’ elevated highway-like bridge high above Jones Street, the ends of which would connect only Boylan Avenue and Dawson Streets with no access to Glenwood, West Street, or Harrington; would cut Harrington; would be a considerable eyesore looming over Glenwood South; and which bridge would result in negative impacts upon the businesses on both sides of Jones Street around the railroad crossing;
iii. NC3 allows a center platform at Union Depot to serve HSR trains, which will result in safer train access and more efficient connections between trains, whereas NC1/NC2 would require two less safe and far less convenient side platforms;</td><td>The recommended preferred alternative through Raleigh, NC (Section V) is Alternative NC5, which was developed in response to these comments as well as comments received from the public. Development of the new alternative is discussed in Chapter 2 of the Tier II FEIS and information about the reduced impacts is found in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS. With the NC5 alternative, the existing road network in the Five Points, Roanoke Park, Fairview Road, and the Norfolk Southern rail yard areas will remain unchanged and the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area is preserved except for the crossing at Hargett Street, which would be closed, and the crossing at Jones Street, which would be closed to vehicular traffic, but where pedestrian access would be maintained through construction of a pedestrian bridge over the railroad.

Alternative NC5 would accommodate construction of a center platform in the vicinity of the two block area between Hillsborough Street and Hargett Street, which is consistent with the City’s current plans for a new multi-modal Union Station in this vicinity.

With regard to potential conflicts with freight operations, Alternative NC5 does not impede freight operations. CSX freight operations are accommodated with the track alignment, and the route NS trains would take from the Glenwood Yard south to Fuquay-Varina remains unchanged from the current configuration (i.e., the track horizontal alignment is essentially the same between Morgan Street and Boylan Avenue).</td></tr>
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AG28/29 City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)	
Comment	**Response**
iv. NC3 is cited in the Draft EIS as a positive impact for constructability and operation, whereas NC1/NC2 are cited as a negative impact for constructability and operation due to freight operations conflicts at the at-grade rail crossing (called a diamond in rail parlance) at Edgeton (NC3 avoids crossing the diamond—and thus avoids the freight operations conflict—by veering southwest to parallel the NS tracks on the west side of Capital Boulevard); v. NC3 is cited in the Draft EIS as a positive impact for constructability and operation, whereas NC1/NC2 are cited as a negative impact for constructability and operation due to freight operations conflicts due to passenger trains having to move through a crossover track from the east track to the west track between Jones Street and the Boylan wye (NC3 avoids the freight operations conflict because the HSR tracks are already on the west side of parallel tracks between Jones Street and the Boylan wye where they turn due west through NCSU); b. BE IT FURTHER RESOLVED, that the Passenger Rail Task Force recommends the NC3 alignment be selected for SEHSR conditioned upon: i. Wherever a closure of an existing street is proposed, an acceptable replacement is provided; (From the PRTF Summary of Decision and Recommendation document): • In other words, we recommend 1:1 connectivity exchanges for closing Fairview and Jones, for example, perhaps bridging Washington Street as a swap for closing Fairview, and perhaps bridging Edenton Street in exchange for closing Jones Street. • We recommend that these mitigation exchanges be deemed acceptable by the City of Raleigh, not just to the SEHSR project team and FRA. • If, however, the 1:1 replacement is not feasible at Jones, then we recommend pedestrian access in the area as a minimum.	
ii. Wherever designs for new public infrastructure improvements are established, they are conducted according to the highest standard of design excellence; (From the PRTF Summary of Decision and Recommendation document): • The PRTF contends that any barriers at rail lines, such as those closing crossings at Fairview and Jones, should be designed to be visually pleasant and transparent, so as to see the trains as they pass by. We recommend against any barriers that could serve to isolate the community. Similarly, the PRTF asks that designs for a Jones Street pedestrian bridge should be pleasing, attractive, and ADA (Americans with Disabilities Act) compliant.	Fencing locations and types, as well as proposed landscaping, will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities. The Section 106 MOA for the Project (see Section 4.12 of the Tier II FEIS) will address mitigation of visual impacts on historic resources as appropriate, including the proposed pedestrian bridge at Jones Street.

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City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)</th></tr>
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<tr><td>• The PRTF believes that large bridges and long walls foster negative patterns on livability and commerce. All designs for such features should preserve and highlight the area's best qualities as public art and use as guidelines the GSA Design Excellence Program.</td><td></td></tr>
<tr><td>iii. Wherever noise and vibration impacts are felt, there are appropriate abatements and mitigations installed;</td><td>Noise and vibration mitigation will be addressed during final design using the FRA's High-Speed Ground Transportation Noise and Vibration Impact Assessment (October 2005) procedures.</td></tr>
<tr><td>iv. Wherever adopted plans and policies are found to be inconsistent, that those inaccuracies and inconsistencies are corrected; (From the PRTF Summary of Decision and Recommendation document):
a. Staff informed the PRTF that none of the three alternatives (NC1, NC2, or NC3) is consistent with the current Transportation Plan and 2030 Comp Plan. Jones Street, for instance, is designated as a Green Street in the Plan. The old Comp Plan has not changed in terms of the grid system, yet the DEIS offers no mitigation for street closures (it left out consideration for local streets).
b. Street closures without mitigation would be in conflict with the Plan (Jones, West, Harrington, Fairview).
c. The Bike Plan is in conflict with all three options (all relatively equal in terms of conflict). However, the Bike Plan did not exist before 2009 and could not have been considered in the DEIS.
d. Technically there are no conflicts with the Thoroughfare Plan or the Transit Plan.
e. In some ways the SEHSR project Team set up this conflict by ignoring the city's need for connectivity. However, our test is one of consistency, not absolute compatibility, with the Plan. This implies judging the DEIS against the city's ability to flex its Comp Plan to be consistent with overall future goals and objectives.</td><td>The Project Team has coordinated extensively with the City to ensure consistency with local plans while meeting the Purpose and Need for the Project. The preferred alternative (NC5) was developed to address several of these connectivity issues, as well as to respond to the significant input from the Raleigh public.

With regard to the specific items listed here:

a. A pedestrian bridge has been provided at Jones Street.
b. Fairview Road, Harrington Street, and West Street would not be closed with NC5.
c. Several conflicts with the Raleigh Bicycle Plan have been mitigated subsequent to publication of the Tier II DEIS. The preferred alternative would provide a pedestrian/bicycle crossing at Jones Street; would not close Fairview Street; and would grade separate Wolfpack Lane. In addition, a meeting between the Richmond to Raleigh Project and City of Raleigh Transportation staff was held on February 22, 2011, to discuss bike lanes and other accommodations for pedestrians and cyclists. More details on the design changes resulting from that meeting are described in response C below.
d. The closure of Hargett Street was determined in coordination with the City. A grade separation was determined to have too great impacts to justify the benefits of maintaining the connection, especially given other east-west travel options.</td></tr>
<tr><td>v. Wherever historic resources are impacted, mitigations are provided to ensure the integrity of that resource;</td><td>A Section 106 MOA will be developed to outline mitigation to address adverse effects to historic resources listed in or eligible for the National Register of Historic Places.</td></tr>
<tr><td>vi. Wherever future planning and development options are impacted, that adjustments are made to the project to ensure that those are not lost;</td><td>The Richmond to Raleigh Project has coordinated with the City of Raleigh to identify and address any such issues. The City has not made the Project Team aware of any such issues that exist with the NC5 alternative.</td></tr>
<tr><td>vii. Where private property is impacted, that best available proposals are provided to ensure that the integrity of existing property that is to remain is maintained, and where it is relocated, that the integrity of those businesses and proximity to their</td><td>The project will follow standard NCDOT procedures for ROW acquisition, which were discussed in Section 4.11.6 of the Tier II DEIS and in Section 4.11.6 of the Tier II FEIS. Further questions should be addressed to the NCDOT Right-of-Way and Relocation Agents at the following</td></tr>
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AG28/29 City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)	
Comment	**Response**
clients and customers is preserved. The PRTF will submit an accompanying letter with detail and elaboration on the points in this resolution.	(http://www.ncdot.org/projects/roadbuilt/default.html).
c. PRTF MINORITY RECOMMENDATIONS & COMPLEMENTARY STATEMENTS. i. Gerry Cohen - After reviewing all three options, I selected the NC1 option. I believe strongly in the SEHSR project and its transportation benefits to Raleigh as an intermediate point on the (Boston to NYC to Washington to) Richmond to Charlotte corridor are very high.	Comment noted. As discussed in an amended/expanded Purpose and Need section of the Tier II FEIS (Chapter 1), there will be substantial long term economic benefits from development of the Project.
In my opinion the NC3 option chosen by the majority is beneficial and acceptable, but not my first choice. Here are my points in favor of NC1 over NC3 and NC2: a. The necessity for closing all crossings in the vicinity of the new Union Station intermodal facility has not been shown. The FRA will allow at-grade crossings with sufficient protection and gating, and the running speeds [approximately 45 MPH per NCDOT-Rail] as far north as West and Harrington do not necessitate all crossings being closed, to the detriment of interconnectivity in the Glenwood South area.	The recommended preferred alternative through Raleigh, NC (Section V), is Alternative NC5, which was developed in response to these comments as well as comments received from the public. Development of the new alternative is discussed in Chapter 2 of the Tier II FEIS and information about the reduced impacts is found in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS. With the NC5 alternative, the existing road network in the Five-Points, Roanoke Park, Fairview Road and the Norfolk Southern rail yard area will remain unchanged and the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area and Glenwood South is preserved except for the crossing at Hargett Street, which would be closed, and the crossing at Jones Street, which would be closed to vehicular traffic, but where pedestrian access would be maintained through construction of a pedestrian bridge over the railroad. The overarching philosophy of the design of the Richmond to Raleigh Project is to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. Chapter 1 of the Tier II FEIS provides a description of reasons for closing at-grade crossings: absolute collision avoidance; elimination of railroad/roadway traffic issues; elimination of possible system failure; elimination of horn noise; elimination of easy trespasser access; improved long term cost of maintenance; allows for future speed increases.
b. With the proposed Triangle Transit rail line already being in the NC1 and NC2 corridor north of Union Station, on balance also adding the SEHSR track(s) on this alignment is less disruptive than disturbing the NS freight operations at its freight yard and the additional relocation of businesses and residences.	Under Alternative NC5, the route NS trains would take from the Glenwood Yard south to Fuquay-Varina remains unchanged from the current configuration (i.e., the track horizontal alignment is essentially the same between Morgan Street and Boylan Avenue).
c. I would, however, under NC1, close either West or Harrington Streets to reduce the number of at-grade crossings. Jones Street should also remain open. It should be noted that FRA guidelines might be best attained by making these two crossings (Jones and Harrington or West) each one-way for motorized vehicles.	Refer to response provided above regarding Alternative NC5 impacts to streets in downtown Raleigh.

AG28/29 City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)	
Comment	**Response**
d. I favor NC1 over NC2 as removing the NS connector track through the Boylan Wye and routing this traffic a short distance on the CSX line. This will allow removing a rail diamond with its conflicting rail traffic through the Boylan wye, as well as opening up redevelopment options in the vicinity of the Boylan wye. I do note the same benefits in this area will be obtained with the NC3 alignment.	As stated above, Alternative NC5 does not impede freight operations. CSX freight operations are accommodated with the track alignment, and the route NS trains would take from the Glenwood Yard south to Fuquay remains unchanged from the current configuration (i.e., the track horizontal alignment is essentially the same between Morgan Street and Boylan Avenue).
ii. SAF FAHIM (Complementary Statement to Majority View) a. The options presented by NCDOT to date reflect an approach of “least overall harm” to the environment. Alternatively, there are other engineering and urban options that could consider enhancing the environment; one of them is a trench in which to bury the rails beneath ground level for option NC3. Putting the NC3 rail alignment in a trench will eliminate street closures, reduce potential of noise and vibration, and link Glenwood South to the east side of the town. This will have the added benefit of creating a beautiful gateway to the city.	The concept of trenching through downtown Raleigh was considered, but found not practicable due to an overall increase in impacts.
b. The high speed train brings an additional dimension connecting the city to the Northeast Corridor and offers potential opportunity for creating a powerful economic zone with Virginia.	Comment noted. As discussed in an amended/expanded Purpose and Need section of the Tier II FEIS (Chapter 1), there will be substantial long term economic benefits from development of the Project.
c. Such novel approaches are needed to secure a national and international future for the city. Raleigh aspires to be a city of a national and international stature. Its 2030 Comprehensive Plan establishes this aspiration by providing density and better connectivity to the city fabric in the hope to invigorate urban and economic development. Without a rail trench, the initial rail lines entering the city from the north divided the urban fabric into east and west districts separating the city into urban strips and land fragments. While the 2030 plan called for connectivity and requested the NCDOT for options that correspond with the city planning, the options proposed in the DEIS yielded little to help the city.	As stated above, the concept of trenching through downtown Raleigh was considered, but found not practicable due to overall increase in impacts. The NC5 alternative was developed in coordination with the City and best maintains and/or improves the existing connectivity through the rail corridor.
d. In fact the options proposed once evaluated, yielded negative impact which prompted the task force to consider an amended resolution to help mitigate the impact of the rail. A suggestion that seemed to meet all the criteria was to place the rail lines proposed for alternate NC3 in a trench; however, the task force decided that making such a recommendation was not within scope of the DEIS document.	Comment noted.

AG28/29 City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)	
Comment	**Response**
iii. Betsy Kane - I have concerns about the SEHSR project's impacts on Raleigh: a. The Draft Environmental Impact Statement (DEIS) for the SEHSR project is deficient and inaccurate in certain respects. I know a little bit about EISs from working on them at NCDOT and from reviewing many NCDOT and consultant products, as well as formal legal training including coursework specifically on NEPA, the federal law that requires environmental impact documentation. The official materials handed out at the NCDOT-provided SEHSR Public Hearing on Monday night, including an apparent excerpt from the DEIS, show the following: 1. The Purpose and Need statement for the project is vague and ambiguous (pp. 5-6 of the handout). Bullets 2 and 3 (of 4 purpose statements) are so vague as to be almost meaningless and therefore fail to operate as a sound basis for project metrics and decision-making, including, particularly, the purported decision that all at-grade crossings will be closed. The need statements do not support some of the draft conclusions in favor of the project.	The Purpose and Need for the Project was determined for the overall SEHSR Corridor project (from Washington, DC to Charlotte, NC) in the Tier I Draft and FEISs and ROD document approved in October 2002 by the FRA and the Federal Highway Administration (FHWA). A tiered process was selected for the Project because of the geographic scale of the Project and because of the numerous alternative study areas and existing rail rights-of-way. The SEHSR Corridor Tier I EIS defined the Project's Purpose and Need, examined corridor alternatives for the rail project and identified a 6-mile wide preferred corridor centered on existing rail rights-of-way. The concept of tiering is defined in the NEPA regulations issued by the Council on Environmental Quality (CEQ) (see Sections 1502.20 and 1508.38.), and is further explained in FHWA and FTA's joint regulations for implementing NEPA and Section 4(f) (see 23 C.F.R. Part 771 and 23 C.F.R. Part 774). Because the Tier I document established the Purpose and Need of the Project, additional or detailed discussion of the issue was not warranted in the Tier II DEIS. However, to better address the numerous public comments and questions on the Tier II DEIS related to this topic, Chapters 1 of the Tier II FEIS has been amended and expanded to provide additional details of the previously-decided Purpose and Need elements.
For example, bullet 5 discusses air quality and emissions reductions in particular counties along the corridor, which emissions are overwhelmingly the product of local traffic and not of long-distance motor trips. The project with crossing closures as proposed would increase air-quality related emissions by increasing local congestion and travel lengths because of impeded connectivity, while removing long-distance trips but not local ones.	In an urban area such as Raleigh, the existing road network should allow for vehicles to alter their routes so as not to travel a great distance to reach a grade separated crossing of the rail corridor. Although vehicles would have to travel a slightly longer distance to reach those locations, the grade separations would remove the need for vehicles to idle while trains pass. The removal of idling is anticipated to offset emissions associated with additional travel time, especially given the potential number of trains in the corridor in the future (e.g., freight, SEHSR, light rail). The additional distance vehicles will need to travel to the nearest bridge or underpass is typically less than one mile. The anticipated CO emissions associated with the additional distance are likely to be offset by the removal of the vehicle idling that currently occurs while trains pass at-grade crossings. As an example, a vehicle idling for one minute as a train crosses an at-grade crossing would produce approximately 70 grams of CO (based on USEPA's CAL3QHC idle emission factors). Were the same car to travel two miles out of its way to use a grade-separated crossing (one mile in each direction), it would generate approximately 16 grams of CO (based on USEPA's MOBILE factors for vehicles traveling on urban local roads). Although many factors can affect vehicle emissions of CO, the benefit of removing vehicle idling should offset any increase in CO emissions due to additional vehicle miles traveled.

AG28/29 **City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)**	
Comment	**Response**
2. The DEIS is inaccurate in at least the following respects: (1) It states that the project is consistent with adopted bike/ped and other modal plans (p. 10 of the handout). This is incorrect; Chairman Steve Waters of the Bike/Ped Advisory Commission has already pointed out some inconsistencies of proposed road closures with the Raleigh Bike/Ped plan. (2) It states that the project is consistent with the Comp Plan. This is incorrect; some of the inconsistencies are detailed in Ken Bowers' memo "HSR Alternatives and the Comprehensive Plan" dated July 9, 2010, and addressed to the Passenger Rail Task Force.	Chapters 3 and 4 of the Tier II FEIS have been amended to correct and update those sections dealing with consistency of the Project with existing land use and transportation plans in the Project Study Area.
3. The DEIS is deficient in at least the following respects: (1) It states (p. 10) that the project is compatible with highway plans, but contains no mention of city streets plans. As is not uncommon in NCDOT project environmental documents, highway planning appears to have been given paramount or exclusive consideration (p. 9) to the neglect of urban streets and complete streets.	Chapters 3 and 4 of the Tier II FEIS have been amended to correct and update those sections dealing with consistency of the Project with existing land use and transportation plans in the Project Study Areas.
4. (2) The statement of effect on emissions and air quality fails to account for where the overwhelming majority of emissions are produced (local travel and congestion), which will be worsened by closing at-grade crossings and maintaining crossings reducing connectivity to one-mile intervals.	As stated above, the removal of idling while trains pass at-grade crossings is anticipated to offset emissions associated with additional travel time, especially given the potential number of trains in the corridor in the future (e.g., freight, SEHSR, light rail).
5. It has been stated to us on numerous occasions, including in the materials handed out at the SEHSR public hearing, and in the oral presentation by Mr. Ed Lewis at the hearing, that "the project would create a fully grade-separated railroad (no at-grade crossings)." I do not accept this apparent "determination." It is a public decision, first of all. Therefore, the decision must be taken in accordance with public accountability and process of law. However, in contrast to this principle, at present: • It is not clear who, specifically, decided this. • It is not clear by what authority it was decided. • The factors that went into the purported decision have not been conveyed (to my knowledge) in writing. • It was not made due to any mandate or requirement of federal or state law.	Chapter 2 of the Tier II DEIS contains a discussion about the overarching philosophy of design for the Richmond to Raleigh Project to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. Chapter 1 of the Tier II FEIS provides an expanded description of reasons for closing at-grade crossings: absolute collision avoidance; elimination of railroad/roadway traffic issues; elimination of possible system failure; elimination of horn noise; elimination of easy trespasser access; improved long term cost of maintenance; and allowance for future speed increases.

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Comment	Response
b. I have read the FRA guidelines for safe crossing of HSR corridors thoroughly, and in nowhere is the closing of at-grade crossings required. Nor does "sealed corridor" mean all at-grade crossings are eliminated. "Sealed corridor" allows for many other safety measures besides closing of crossings (including 4-quadrant gates, one-way pairs, medians, barriers and other measures). By the conspicuous absence of the above elements, it may be surmised that this purported decision is at least in part, a bureaucratic and unaccountable one, to be regarded as inherently suspect because autocratic, and therefore not to be taken as an assumption by anyone concerned, including our Task Force, without a close investigation of its legitimacy. This project is a publicly-funded project and under our system of governance, the decisions that are made around it are to be in accordance with law and accountable to the public in the communities through which it passes. In accordance with law means that the decision is not to be autocratically made by agency personnel. In accordance with law mean that whereas the mandates of state and federal law will be obeyed, those decisions that are not compelled by state and federal law or regulation are flexible, and will be made in consultation with the public and in accordance with its best interests overall. The closing of city streets is a concern of utmost importance to Raleigh and other communities through which the SEHSR will pass. The well-being of businesses and the vibrancy of urban settings depends heavily, even primarily, upon access, as we know from the Fayetteville Street experience.	Please refer to Chapter 1 of the Tier II FEIS for an expanded description of reasons for closing at-grade crossings.
c. The most important factor in walkability is intersection density (street connectivity), more important than population density, job density, distance to stores, distance to a transit stop. Intersection density also has large effects on transit use and the amount of driving (Cervero and Ewing, Travel and the Built Environment, June 2010). It is impossible that we should accept as a baseline project assumption that Raleigh's greatest urban revitalization successes, such as Glenwood South, shall be severed and divided due to road closings which are not necessary, not mandated, and to which safe	As described above, the recommended preferred alternative through Raleigh (Section V) is Alternative NC5, which was developed in response to these comments as well as comments received from the public. Under NC5 the existing road network in the Five-Points, Roanoke Park, Fairview Road and the Norfolk Southern rail yard area will remain unchanged and the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area is preserved except for: the crossing at Hargett Street, which would be closed; and the crossing at Jones Street which would be closed to vehicular traffic, but where pedestrian access across the railroad would be maintained through construction of a pedestrian bridge over the railroad.

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City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)</th></tr>
<tr><th>Comment</th><th>Response</th></tr>
<tr><td>alternatives exist.

In Raleigh we've long congratulated ourselves on our escape from the fate of most other large cities in NC, and nationally, to have been divided and sundered by downtown freeways in the 50s-60s-70s, and sometimes the decades beyond (Durham was still fighting one off as of 2008).

Whether due to good fortune or foresight, the avoidance of that fate has been a significant factor in the success and health of our downtown core and neighborhoods. It would be unfortunate (and ironic in the dramatic sense) if rail infrastructure improvements were allowed to sunder critical core-city connections decades later.

The delivery of this decision that all crossings "will be closed" from "on high" from an agency and in a fashion, as far as I can tell, arbitrary and not accountable to the public, is entirely consistent with the long history of abuses by transportation bureaucracies towards local communities. The very law requiring public input, and incorporating our deliberations as the PRTF, was enacted to prevent these abuses and failures of accountability. This law is NEPA. NEPA's bedrock principle is public accountability of the impact on the built and natural environments on project decisions that involve federal funding.</td><td></td></tr>
<tr><td>d. DOWNTOWN LIVING ALLIANCE:
1. The DLA requests that rather than simply mitigating negative impacts as proposed in the NCDOT options, that tunneling the Norfolk Southern tracks along Glenwood South be considered. This would permit Jones Street to stay open, and allow the city the opportunity to reap substantial economic benefits from the associated redevelopment opportunities that would effectively triple the commercial and residential activity of Glenwood South.

The fact that the tunneling of tracks has not been studied to-date as part of the SEHSR project is indeed unfortunate, and the DLA recognizes the benefit of having this option properly considered at this stage in the project, and has therefore prepared the attached addendum.</td><td>Note that although the Downtown Alliance is not part of the City government, these comments were included with the City of Raleigh Passenger Rail Task Force comments.

The concept of trenching through downtown Raleigh was considered, but found not practicable due to overall increase in impacts.</td></tr>
<tr><td>2. The decisions made on the high speed rail pathways will have long term consequences, and we remain fully supportive of the high speed rail initiative. However, we believe that the city’s goals of urban development and excellence need to be fully integrated with the rail project to yield an overall positive result</td><td>Through ongoing coordination with the City and resulting project redesigns since the Tier II DEIS, the Richmond to Raleigh Project in downtown Raleigh is more fully integrated with the City’s goals, as evidenced through current City support for the NC5 alternative.</td></tr>
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and sustainable economic development.	
3. Pedestrian access at Jones or very close-by is critical. That area is extremely popular on weekend evenings given the mid-street location in Glenwood South and the variety of restaurants and clubs nearby.	A pedestrian bridge is provided at Jones Street the preferred alternative in downtown Raleigh.
3) Replace Fire Station No. 22 on Durant Road, as it appears that the impacts to the property associated with the Durant Road bridge over the rail corridor will render it unusable as an emergency response facility. a. (From City Transportation Division Comments) - In constructing the proposed Durant Road overpass, the change in grades will directly impact the operation of the Fire Station No. 22. The proposed change in grades associated with the station driveway will render the facility unusable as a fire station. It is unclear if architectural modifications can be made to offset these impacts. Staff recommends that NCDOT explore potential relocation of this fire station to an equivalent site in the immediate vicinity of this station.	In response to these comments and those received from the public, a revised bridge and road alignment has been designed for this location and is shown in the Map Book Appendix of the Tier II FEIS. The road alignment and bridge over the railroad will be shifted to the north, away from the residential and commercial development on the south side of Durant Road. This northward shift will take the road alignment through City of Raleigh property where Raleigh Fire Station No. 22 is located, requiring the fire station to be relocated.
4) Minimize and mitigate any impacts to the Windsor Forest neighborhood on Durant Road, which is also potentially impacted by the aforementioned Durant Road bridge.	See response above.
5) Include pedestrian overpasses at Jones Street in all alternatives. As outlined in the City staff memorandum, an overpass at Jones Street and an overpass from the Powerhouse Square parking deck to Glenwood Avenue will help offset the loss of pedestrian connectivity resulting from the proposed Jones Street closure.	A pedestrian bridge is provided at Jones Street under Alternative NC5, the preferred alternative in downtown Raleigh.

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6) Replace the Hargett Street overpass with a pedestrian bridge in all alternatives. Any pedestrian bridge construction should be coordinated with the City's planning for Union Station. a. (From the Transportation Services Division's Recommendations) - Swap the West Street Extension for the Hargett Street Bridge. The proposed Hargett Street bridge is problematic for several reasons. In addition to the physical impacts of closing Harrington Street and the visual impacts of spanning West Street, this bridge would sever the proposed Union Station plan into two separate blocks and is not recommended. In lieu of this bridge, staff recommends that NCDOT investigate including the proposed West Street Extension as part of the project. The West Street Extension was examined as part of the Union Station study and would maintain connectivity to the Boylan Heights neighborhood to offset the loss of Hargett Street. The Passenger Rail Task Force is in the process of evaluating this proposal and will offer recommendations to the City Council in the coming months. b. (From separate communications from Eric Lamb) - We have been developing a concept for extending West Street southward, and we would like to see this incorporated into the SEHSR project in exchange for doing away with the proposed Hargett Street Bridge. Furthermore, the Hargett Street pedestrian bridge referenced in the Mayor's letter will require extensive coordination with the City's proposed Union Station concept.	The Richmond to Raleigh Project has coordinated with the City in regard to the City's plans for a station in this location, and will continue to do so. Under Alternative NC5, the Hargett Street crossing is closed. The Richmond to Raleigh Project plans do not prevent the City from providing pedestrian access across the railroad in the vicinity of Hargett Street to the planned station in the future. The City's West Street Extension project is outside the scope of the Richmond to Raleigh Project.
7) Do not impact the residential properties on S. Saunders Street near Rosengarten. If a crossing of the NC Railroad corridor is to occur in this area, alternative alignments should be considered; a pedestrian crossing may be sufficient. a. (From separate communications from Eric Lamb) - There is a little bit of confusion regarding item #7 in the Mayor's transmittal letter of the City's comments. Your project does not currently entail any impacts to the S. Saunders Street properties referenced in this comment. The intent behind the comment was to avoid impacts associated with the proposed West Street Extension.	The residential properties on South Saunders Street are outside the Project Study Area.
8) Coordinate directly with Triangle Transit on your project for all alternatives, especially in the area adjacent to Seaboard Station in the NC1/NC2 alternative.	The Richmond to Raleigh Project and the NCDOT Rail Division have coordinated with and will continue to work collaboratively with Triangle Transit (TT) on the plans for development of a Regional Rail System for the Triangle area. In keeping with this coordination, the Richmond to Raleigh Project has taken the TT plans into consideration, and the Project designs do not preclude implementation of Triangle Transit as originally envisioned on separate tracks within the CSX S-line corridor.

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9) Relocate the Norfolk-Southern Rail Yard to a location outside the City as part of NC3. While it is not currently in the scope of your project, the relocation of the yard will allow for the avoidance of any impacts to the historic Roanoke Park neighborhood.	This request is outside the scope of this Project.
10) Utilize retaining walls wherever possible to minimize impacts to residential and commercial property.	Retaining walls have been incorporated into the designs for Alternative NC5 as appropriate.
11) Where retaining walls or noise walls are used, use brick materials where these surfaces will be visible from the community and from passenger trains.	As discussed in Section 1.4.1.7 of the Tier II FEIS, fencing locations and types will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities.
12) If access to Fairview Road is closed in NC3 as proposed, consider mitigating this impact with a new pedestrian crossing over Capital Boulevard connecting the Five Points/Roanoke Park neighborhoods with the Mordecai neighborhood.	Fairview Road remains open under Alternative NC5, the preferred alternative in Raleigh (Section V).
13) Evaluate the feasibility of a separate viaduct alternative down the center of Capital Boulevard south of Wake Forest Road. Please also consider the comments on urban design regarding the project that are included in the attached letter from City Councilor Thomas Crowder (Applicable excerpt included as follows): "I request the Council propose this partnership fund, carefully study and seriously consider extending the downtown road grid network north along the Capital Boulevard Valley to the intersection of US #1 and Wake Forest Road, aligning the SEHSR Corridor from this intersection south to West Street via an elevated viaduct shared with Triangle Transit lines over a rehabilitated and potentially realigned Pigeon House Branch watercourse integrated into a heavily landscaped urban greenway and a stormwater control system below it, creating the multi-modal transportation infrastructure needed for an urban scale mixed-use, mixed-income expansion of downtown. With great vision and leadership the opportunity exist to reclaim the most polluted and impaired watercourse in the City of Raleigh, turning it into a major amenity, while also creating a true alternate SEHSR route down though the valley, which will protect not just one, or two, but ALL three northern downtown historic neighborhoods, simultaneously creating a multimodal transportation network for downtown growth coming with the creation of a	As noted earlier the recommended preferred alternative through Raleigh, NC (Section V), is Alternative NC5, which was developed in response to comments from the City of Raleigh, as well as comments received from the public. Alternative NC5 crosses Capital Boulevard, Pigeon House Branch, and West Street on a bridge (i.e., Pigeon House Branch is not impacted by the Richmond to Raleigh Project). Alternative NC5 shows a reduction in property impacts and historic resources compared to the other alternatives evaluated (NC1, NC2, and NC3). Coordination will continue with TT and the City of Raleigh throughout the remainder of the Project.

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high-speed rail and Triangle Transit hubs at the future Union Station."	
14) Conduct advance right-of-way acquisition wherever possible. Unfortunately the duration of the project planning and construction could leave many property owners in limbo, therefore early acquisition would help to reduce the burden to the community.	North Carolina and Virginia will seek ROW and construction funding as quickly as possible to minimize the amount of time properties could be in this situation. The ROW acquisition phase for this Project cannot begin until the FRA issues a ROD, at which point, the established ROW acquisition process in each state will be followed. In the state of Virginia, the Virginia Department of Transportation (VDOT) will likely oversee the ROW acquisition on behalf of the Department of Rail and Transportation (DRPT). In North Carolina, the NCDOT will oversee ROW acquisition for the Project. It should be noted that "hardship" policies for early ROW acquisition cannot apply to the Richmond to Raleigh Project until funding is established, which is contingent on the Project receiving a ROD. Chapter 1 of the Tier II FEIS contains an updated project history, summary of project steps, discussion of future project steps and a new project schedule, including anticipated date of the final NEPA step (approval of the ROD), next steps on funding, and when property acquisition and project construction are anticipated to occur.
15) Clarify any potential the property impacts in the Bickett Boulevard area in Roanoke Park. Please utilize up-to-date mapping and property owner information as the project moves forward.	This area would not be affected by the preferred alternative in Raleigh (NC5).
16) (From separate communications from Eric Lamb) - One item that escaped mention during the process is the proposed Ruritania Street Extension near I-540. This is a proposed collector street that connects under the rail corridor in the vicinity of a planned TTA rail station. We originally planned to coordinate it with TTA's project, but it may be better to evaluate construction of the grade separation as part of your scope of work.	The Richmond to Raleigh Project will continue to coordinate with the City regarding the planned extension of Ruritania Street.
17) Additional comments from City Councilor Thomas Crowder (in separate letter attached to City of Raleigh Recommendations package): a. I implore the Council to request the following mitigation measures be implemented where our existing neighborhoods and businesses abut the SEHSR sealed corridor. 1. Construct brick masonry sound walls with drought resistant landscaping enhancements located on the property owner side of the walls adjacent any residential property.	Noise and vibration mitigation will be addressed during final design using the FRA's *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (October 2005) procedures.
2. Install brick clad retaining walls and drought resistant landscaping enhancements located on the property owner's side instead of slope easements and takings of any businesses, or residential properties where remotely feasible.	As discussed in Section 1.4 of the Tier II FEIS, fencing locations and types as well as proposed landscaping, will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities.

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3. Install the most state-of-the-art rail bed and track designs, engine mufflers and other technological advancements to reduce train noise and vibration, regardless of existing conditions.	Noise and vibration mitigation will be addressed during final design using the FRA's *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (October 2005) procedures.
4. Ensure that any raised viaduct and bridge structures are architectural visual enhancements to our city and allow urban greenways in the r/o/w below the viaducts.	The Richmond to Raleigh Project is working with the Raleigh Historic Development Commission as part of the Section 106 MOA for the Project. City greenways are addressed in the Final Section 4(f) Evaluation for the Project (Chapter 5 of the Tier II FEIS).
5. That no road closures take place along Phase I, or Phase II without 1:1 replacements. The exception being Jones Street, where a pedestrian connection and urban park should be designed with public input.	This request was accommodated with the exception of Hargett Street. The closure of Hargett Street was determined in coordination with the City. A grade separation was determined to have too great impacts to justify the benefits of maintaining the connection, especially given other east-west travel options.
6. That where at all remotely possible, all grade separations be located under the existing rail lines in lieu of bridge interchanges in order to avoid stymieing economic development, or redevelopment and insuring multimodal interconnectivity along the corridor and future light rail stations.	The decision to design a bridge versus an underpass is site specific, and dependent upon many factors including existing grade, density of nearby development, natural resources, cultural resources, and the surrounding street network. In each location, the goal is to minimize impacts to the surrounding area.
7. That the Raleigh Appearance Commission work with the Passenger Rail Task Force and City Planning Staff to review and report to Council on the status of these request in the subsequent review phases of this process.	Comment noted.
18) Transportation Services Division's Endorsement of NC3 – This recommendation is consistent with the recent recommendations of the Passenger Rail Task Force and is accompanied with similar requests for mitigation. It is recognized that recommending this alternative may be more controversial due to the higher construction costs, street closures, and associated property impacts, however this alternative appears to offer significant long-term advantages to the City:	The recommended preferred alternative through Raleigh, NC (Section V) is Alternative NC5, which was developed in response to comments from the City as well as comments received from the public. Development of the new alternative is discussed in Chapter 2 of the Tier II FEIS and information about the reduced impacts is found in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS. With the NC5 alternative, the existing road network in the Five-Points, Roanoke Park, Fairview Road and the Norfolk Southern rail yard area will remain unchanged and the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area is preserved except for: the crossing at Hargett Street, which would be closed; and the crossing at Jones Street which would be closed to vehicular traffic, but where pedestrian access across the railroad would be maintained through construction of a pedestrian bridge over the railroad.
a. The construction of the proposed viaduct is a good long-term solution for the community with respect to replacing the existing trestles adjacent to Glenwood South. It also offers the potential removal of berms associated with the current trestles, which may provide options for use of the land beneath the viaduct. The viaduct construction also eliminates the historic vertical clearance issues at Peace Street.	Alternative NC5 does not affect the existing NS track or trestles in this location.

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b. The NC3 alternative is better-suited to a downtown station with respect to the use of a single center platform location. The outside platforms in the NC1/NC2 alternatives are necessary due to the curvature of the track and the alignment of the tangent section required for a train platform as the corridor approaches the proposed Union Station. A single center platform is operationally superior compared to separate outside platforms.	Alternative NC5 would accommodate construction of a center platform in the vicinity of the two block area between Hillsborough Street and Hargett Street, which is consistent with the City's current plans for a new multi-modal Union Station in this vicinity.
c. While NC3 will likely include property impacts to low-density industrial uses along West Street north of Peace Street, such impacts may not be inconsistent with long-term redevelopment options for City's West Street property holdings. These impacts could allow for the possible reconstruction and realignment of West Street closer to the railroad corridor to allow for better aggregation of parcels in this area.	Between the City Sanitation Yard and Peace Street, the preferred alternative NC5 impacts the same businesses on West Street that NC3 impacts.
d. New track construction associated with NC3 would move existing rail service further away from homes in the Brooklyn-Glenwood neighborhood. By comparison, NC1/NC2 would build new tracks closer to existing homes within the Mordecai neighborhood.	Comment noted.
e. NC3 creates fewer long-term impacts for Triangle Transit's planned rail line. The addition of passenger rail lines on the east side of existing freight rails could create additional impacts for the Triangle Transit rail plan beyond those originally anticipated.	The Richmond to Raleigh Project and the NCDOT Rail Division have coordinated with and will continue to work collaboratively with TT on the plans for development of a Regional Rail System for the Triangle area. In keeping with this coordination, the Richmond to Raleigh Project has taken the TT plans into consideration, and the Project designs do not preclude implementation of Triangle Transit as originally envisioned on separate tracks within the CSX S-line corridor.
f. Although NC3 would close Jones Street, this closure has fewer impacts overall than the closures and mitigations proposed with NC1/NC2. These closures will have a greater barrier effect on this portion of downtown and could be more harmful with respect to economic impacts in this area.	As noted above, under the NC5 alternative, the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area is preserved except for the crossing at Hargett Street, which would be closed, and the crossing at Jones Street, which would be closed to vehicular traffic, but where pedestrian access would be maintained through construction of a pedestrian bridge over the railroad.

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Comment	**Response**
g. With respect to the impacts of closing Jones Street, the street grid can absorb the impacts associated with cars and bicycles via either Edenton Street or via West Street and North Street. Given the direct impacts to pedestrian circulation, staff recommends three specific mitigations to offset the impact of the street closure: 1. Construction of a pedestrian overpass/overlook plaza at Jones Street; 2. Construction of a second pedestrian overpass spanning from the Powerhouse Square parking deck to Glenwood Avenue south of Jones Street; and, 3. Construct additional streetscape improvements along West Street and North Street from Jones Street to Glenwood Avenue.	See above response. In addition, note that the Project will include streetscape improvements near the proposed Jones Street pedestrian bridge (along West Street and North Street) and that coordination for the proposed Jones Street pedestrian bridge will take place as part of the development of the Section 106 MOA.
h. With respect to closing Fairview Road, staff does not propose any mitigation at this time. This street is frequently closed due to the operations of the NS rail yard. Alternatives to the Fairview Road closure may be considered with the City's current Capital Boulevard Corridor Study.	Refer to response above. Fairview Road would not be closed under the NC5 alternative.
B. Transportation Services Division's Recommendations that were not included in the Raleigh City Council Recommendations: 1) Construct the Pacific Drive Extension - Due to right-of-way constraints, NCDOT will likely propose temporary closures of New Hope Church Road and Millbrook Road during construction of the street overpasses, which could have significant impacts on traffic operations in this area. As a means of offsetting the impacts associated with these closures, staff recommends the construction of the proposed Pacific Drive Extension from Old Wake Forest Road to Atlantic Avenue as a possible mitigation alternative. This street is a proposed minor thoroughfare in the City's 2030 Comprehensive Plan, and its construction would help alleviate traffic impacts during construction.	The Richmond to Raleigh Project does not necessitate inclusion of a bridge for a proposed connection to Pacific Drive. However, the Richmond to Raleigh Project plans have been amended such that they show a general location on the maps with the notation "future bridge constructed by others." The construction of a City of Raleigh- funded bridge in this location can be coordinated with the construction plans for the Richmond to Raleigh Project.
1) Construct a Wolfpack Lane Overpass - NCDOT's efforts to mitigate the Wolfpack Lane closure have been related to attempting to establish a full-movement interchange at the intersection of Atlantic Avenue and Highwoods Boulevard. Instead staff recommends bridging Wolfpack Lane over Atlantic Avenue and connecting to Beechleaf Court. This connection would maintain connectivity for the area with respect to cars, bicycles and pedestrians without substantial physical impacts to the community.	In response to comments on the Tier II DEIS from the public and from the City of Raleigh, two alternative designs were developed for the Wolfpack Lane crossing, one of which included a vehicular bridge (accommodating pedestrians and bicycles) over the railroad. These alternatives were presented for comment at a public update meeting on May 15, 2012. The public voiced strong support for the addition of a bridge over the railroad at Wolfpack Lane (presented at the meeting as Alternative 57A) and those designs have been added to the Project designs for the Tier II FEIS. The designs can be seen in the Map Book Appendix of the Tier II FEIS.

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C. Transportation Services Division's Technical Comments and Corrections on the FEIS: 1) Cross-sections for each street proposed for grade- separation are not included in the report. Based on the City's adopted Comprehensive Plan and City standards, the following cross-sections should be included in the design of each crossing: a. Durant Road: five-lane section, with bike lanes and sidewalks on both sides b. Gresham's Lake Road: five-lane section, with bike lanes and sidewalks on both sides c. Millbrook Road: five-lane section, with bike lanes and sidewalks on both sides d. New Hope Church Road: five-lane section, with bike lanes and sidewalks on both sides e. Whitaker Mill Road: three-lane section, with bike lanes and sidewalks on both sides	A meeting between the Richmond to Raleigh Project and City of Raleigh Transportation staff was held on February 22, 2011, to discuss these specific requests. The following responses reflect the design decisions that were agreed upon at that meeting. a. Durant Road bridge: the 60 feet of pavement included in the Project designs can accommodate the City's future plans for Durant Road by reducing the lane widths and reducing the center turn lane to a narrower painted island; b. Gresham's Lake Road bridge: the Richmond to Raleigh Project bridge will be constructed asymmetrically, with sidewalk and curb and gutter on one side, which will allow the City to later build a second bridge to carry an additional two lanes of traffic without the need to replace what was constructed by the Richmond to Raleigh Project; coordination will take place during final design; c. Millbrook Road underpass: the Project designs which included five lanes and sidewalks have been modified to also include five feet of bike lanes in the vicinity of the underpass; d. New Hope Church Road: the Project designs, which included 5 lanes and sidewalks, have been modified to also include five feet of bike lanes in each direction in the vicinity of the bridge; e. Whitaker Mill Road: The width of the Project designs which include four lanes with curb and gutter can accommodate three lanes and bike lanes. The Richmond to Raleigh Project typical section will be adjusted accordingly in final design.
2) The report fails to document the impacts to residential property at the intersection of Georgetown Road and Wake Forest Road under NC3. In looking at the public hearing maps, the construction of NC3 appears to take one residence and impact a second adjacent residence.	The DEIS public hearing map had an error in that a road closure symbol should have been shown at Georgetown Road. However, the property impacts were accounted for, and were included in the impacts shown in the Tier II DEIS (Table ES 23). Note that Georgetown Road is unaffected by the preferred alternative (NC5).
3) The closures of Georgetown Road and Patton Road associated with NC3 near Wake Forest Road would create cul-de-sacs that exceed the City's standards for dead-end streets. Mitigation by extending New Road to Wake Forest Road should be considered to meet City standards.	Refer to response above.
4) The report does not account for multiple City-owned 4(f) resources, including: a. Neuse River Greenway (currently under construction) b. Simms Branch Greenway (proposed) c. Marsh Creek Greenway (proposed) d. Camp Durant Park	The first three resources have been added to the Section 4(f) Evaluation. Camp Durant Park is outside the Project Study Area.

AG28/29 City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)	
Comment	**Response**
5) The Marsh Creek Greenway corridor crosses the proposed rail line approximately 500' north of Millbrook Road. The City currently has greenway easement on either side of the existing rail corridor. In order to provide for the future trail connection, one of two options are available: a. reconstruct the existing culvert under the existing rail line to accommodate pedestrians (minimum 10' wide X 10' high); or, b. provide a 10' multi-purpose path adjacent to the west side of the rail line from the stream corridor to Millbrook Road and then continue with a multipurpose path along the north side of Millbrook from the west side of the rail line to the intersection of Millbrook and Atlantic Avenue. c. In the future, either of these alternatives will allow the City to extend the greenway trail north and south along Marsh Creek.	This request cannot be accommodated because the Richmond to Raleigh Project does not change the existing condition at this location. The Richmond to Raleigh Project would cross the proposed location of the Marsh Creek Greenway within the existing, active railroad corridor. The City of Raleigh has not obtained a legal crossing of the corridor at this location. Therefore, the proposed changes associated with the Richmond to Raleigh Project would not create a barrier to the development of the Marsh Creek Greenway (because that barrier already exists). The City could route the greenway south to Millbrook Road to cross the rail corridor. Millbrook Road would be grade-separated (road under rail) with the Richmond to Raleigh Project, and the underpass would accommodate bikes and pedestrians.
6) The Simms Branch Greenway corridor crosses the rail corridor between Gresham's Lake Road and Durant Road. The City has existing greenway property on either side of the rail corridor and constructed trail near each side of the corridor. The EIS does not include any accommodations to connect this greenway trail. Two options are possible: a. reconstruct the existing culvert to provide a pedestrian connection under the rail line (minimum 10' wide X 10' high); or, b. construct a 10' multi-purpose path along the west side of the rail line from Simms Branch south to Gresham Lake Road. Then continue a 10' multi-use path along the north side of the proposed Gresham Lake Road Bridge.	This request cannot be accommodated because the Richmond to Raleigh Project does not change the existing condition at this location. The Richmond to Raleigh Project would cross the proposed location of the Simms Branch Greenway within the existing, active railroad corridor. The City of Raleigh has not obtained a legal crossing of the corridor at this location. Therefore, the proposed changes associated with the Richmond to Raleigh Project would not create a barrier to the development of the Simms Branch Greenway (because that barrier already exists). The City could route the greenway south to Gresham Lake Road or north to Durant Road to cross the rail corridor. Gresham Lake Road and Durant Road would both be grade-separated (road over rail) with the Richmond to Raleigh Project, and the bridges would accommodate bikes and pedestrians.
7) The word "Capitol" is used throughout the document and should be replaced with "Capital except where referring specifically to the State Capitol building in downtown Raleigh.	Comments noted and corrected in FEIS.
8) There is no mention of closures of the private crossings associated with the Mallinckrodt pharmaceutical plant. Discussion of impacts and mitigation need to be provided within the study.	The Richmond to Raleigh Project team has initiated dialog with Mallinckrodt/Covidien and will continue to work with them throughout the NEPA and final design process to ensure their concerns are addressed to the fullest extent possible.
9) On page 3-52, the second paragraph should also reference a heavy residential development concentration in the vicinity of I-440 and Atlantic Avenue.	The residential development referenced is outside the study corridor; therefore, no change has been made in the Tier II FEIS.
10) The statement regarding transit page 3-82 is not accurate with respect to transit planning. Transit operations are provided by the City of Raleigh, NCSU, and Triangle Transit with respect to bus operations.	Comment noted and corrected in the Tier II FEIS.

AG28/29 City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)	
Comment	**Response**
11) On page 3-172, references to public transit in Raleigh need to include Triangle Transit and NCSU's Wolfline as other providers. Please also note that the CAT R-Line currently operates within one block of the existing Amtrak station.	Comment noted and corrected in the Tier II FEIS.
12) Section 3.11.3.2.2.4 on Page 3-85 references the Glenwood South Small Area Plan and a proposed Pedestrian Business Overlay District. This zoning overlay is in place and should be represented as existing. References to a proposed intermodal center in this section should be revised to reflect the City's Union Station study.	Section 3.11.3.3.2.8 of the Tier II FEIS has been updated to state that the Pedestrian Business Overlay District is in place. The intermodal center reference has been updated to reflect the Union Station Study.
13) Please note that the Raleigh Charter High School referenced on page 3-93 has applied to relocate to a site outside of the proposed rail corridor.	Chapter 3 of the Tier II FEIS notes that Raleigh Charter High School is now located on Glenwood Avenue, outside the Project Study Area.
14) Figure 3-14 on page 3-147 fails to show the Durant Nature Park or the Neuse River Greenway.	These resources have been added to the Project mapping.
15) On page 3-164, the description of the intersection of New Hope Church Road and St. Albans Drive needs to mention that not currently a full-movement intersection. The channelization and movement restrictions can be removed once adjacent railroad overpass is constructed.	Section 4.11.2.2.18 of the Tier II FEIS discusses how the Project will interact with existing transportation facilities in the City of Raleigh.
16) In section 4.11.2.2.18, a statement on page 4-84 incorrectly states that the Morgan Street bridge will be maintained in all three alignments. In all public hearing maps associated with the project, the bridge is replaced in all three alternatives. Explanations regarding the need to replace this bridge should be included in the report.	The narrative in Section 4.11.2.2.18 of the Tier II DEIS was in error. The costs of a bridge replacement for NC1, NC2, and NC3 were included in the impacts shown in the Tier II DEIS (Table ES 23). Note that the preferred alternative NC5 retains the existing Morgan Street bridge.
17) Section 4.11.3.3 "Police/Fire/EMS" does not include any references to Fire Station No. 22 on Durant Road as a directly impacted location. Relocation of the station may result in changes in the station's service area. 18) EIS relocation reports in Appendix C do not identify impacts to the City fire station property on Durant Road (RFD Station #22). Due to the level of adverse impacts associated with the site's existing access, this impact should be considered a complete taking and a relocation of the station should be proposed prior to the construction of the Durant Road overpass.	The designs shown in the Tier II DEIS were developed to allow continued operation of Fire Station No. 22. However, in response to comments from the City and from the public, a revised bridge and road alignment has been designed for this location and is shown in the Map Book Appendix of the Tier II FEIS. The road alignment and bridge over the railroad will be shifted to the north, away from the residential and commercial development on the south side of Durant Road. This northward shift will take the road alignment through the Fire Station No. 22 property, requiring the fire station to be relocated. This new alignment was developed in coordination with the City of Raleigh Transportation Department. The need for relocation is discussed in Section 4.11.3.of the Tier II FEIS.

AG28/29 City of Raleigh, NC, Comments and Recommendations (Pertinent comments from – City Council Recommendations, Passenger Rail Task Force Resolution, Passenger Rail Task Force Letter of Elaboration and Detail, Passenger Rail Task Force Minority Recommendations & Complementary Statements, and Transportation Services Division Technical Comments.)	
Comment	**Response**
19) Table 4-32 on page 4-117 incorrectly states that the plan is compatible with the Raleigh Bike/Ped Plan. The adopted Bicycle Plan proposes improvements to Fairview Road and to Wolfpack Lane that would be affected by the proposed closures. The adopted Livable Streets Plan also does not contemplate the closure of Jones Street and emphasizes its importance as a pedestrian connection. While the DEIS is technically compatible with the adopted CAMPO Thoroughfare Plan, it is not compatible with the local street network in the adopted 2030 Comprehensive Plan with respect to closures of Jones Street, Fairview Street, and Wolfpack Lane.	The preferred alternative would provide a pedestrian/bicycle crossing at Jones Street; would not close Fairview Street; and would grade separate Wolfpack Lane. Therefore, the preferred alternative is compatible with the Raleigh Bike/Ped Plan in these locations.
20) Right-of-way impacts identified in Appendix C are not detailed enough to recognize exactly which properties are being impacted and needs to be more specific. It is also unclear as to how each property is being impacted, i.e., right-of-way only, easement acquisition, direct structural impact, etc.	The public hearing maps show the data available during the preliminary engineering stage of the Project. More detailed determinations regarding ROW impacts will be made during final designs when more survey-level data are available.
21) Appendix F regarding street impacts needs to be modified to include traffic volumes for each street closure. Impacts to Georgetown Road and Patton Road need to be included within this Appendix.	Traffic volumes for non-City roads were provided to the Richmond to Raleigh Project by NCDOT and VDOT, and were used to develop adequate road designs. Contact NCDOT Division 5 for the most up to date traffic volumes for state owned roads within the City of Raleigh.

AG37/38/50 Town of Franklinton, NC - Official Comments (Elic A. Senter, Mayor) and Board of Commissioners Resolution	
Comment	**Response**
1) Board of Commissioners Adopted Resolution; Effects of High Speed Rail on the Town of Franklinton, North Carolina a. WHEREAS, the Town of Franklinton is a community created by and long supported by the existence of a major rail line traveling a north-south route through the central portion of Town paralleling Main Street, the historical United States Highway l; and b. WHEREAS, this rail line stopped being used over 20 years ago for passenger rail, and today is only lightly used for commercial freight rail; and c. WHEREAS, there is currently a proposal from the Federal Rail Administration	Comment noted.

AG37/38/50 Town of Franklinton, NC - Official Comments (Elic A. Senter, Mayor) and Board of Commissioners Resolution	
Comment	**Response**
and the Departments of Transportation in North Carolina and Virginia to construct a corridor for high speed rail along the CSX/Seaboard rail line, passing through the Town of Franklinton; and d. WHEREAS, all of the proposed routes for the Southeast High Speed Rail corridor call for the closure of at-grade rail crossings at East Mason and East College Streets and a realignment of Hawkins Street to a new crossing and realignment at Cedar Creek Road which will impact several homes, as well as a widening and realignment at East Green Street which will likely stem the loss of several commercial properties along the widened route of East Green Street; and e. WHEREAS, the closure of the crossings at East Mason Street and East College Street will create a great deal of undue burden on business owners, residents, property owners, emergency services professionals and volunteers, and taxpayers; and f. WHEREAS, the Board of Commissioners of the Town of Franklinton believes that such results will not only prove detrimental to the health of our community, but to the wellbeing of our citizens and business owners, but also will prove to become an unnecessary fiscal burden on our citizens and taxpayers from which no benefit will arise for them; g. NOW, THERBFORE BE IT RESOLVED that the Board of Commissioners of the Town of Franklinton hereby states its official opposition to these closures, and any routes for any rail project that will cause such closures and burdens on the citizens of our community.	

AG37/38/50 Town of Franklinton, NC - Official Comments (Elic A. Senter, Mayor) and Board of Commissioners Resolution	
Comment	**Response**
h. BE IT FURTHER RESOLVED that the Board of Commissioners of the Town of Franklinton seeks the support of our state and federal elected representatives to support our community in seeking alternative solutions to resolving these challenges, and expresses its appreciation for those who have already put forth such efforts, including staff of the North Carolina Department of Transportation	The Richmond to Raleigh Project has met with Town of Franklinton officials several times since the publication of the Tier II DEIS to try to resolve these issues (September 7, 2010; January 20, 2011; December 19, 2011; and July 11, 2012). Several design concepts that would maintain a vehicular crossing of Mason Street were developed at the request of the Town and the Capital Area Metropolitan Planning Organization (CAMPO). All of these concepts were determined to have an adverse effect on the eligible Franklinton Historic District. The FRA determined it would be difficult to justify these concepts given their impacts to the district, the traffic volumes on Mason Street, and the ability to provide a pedestrian crossing at Mason Street. The Federal Advisory Council on Historic Preservation and North Carolina State Historic Preservation Office agreed that the mitigation of the closure of Mason Street provided by these designs did not justify the negative impacts they would have on the historic district. It should be noted that in addition to these meetings, two meetings were held with the Town of Franklinton during development of the Tier II DEIS (June 26, 2003, and May 9, 2008). These meetings led to the inclusion of pedestrian crossings at several locations within the Town (Mason Street, College Street, and Hawkins Street).
2) High Speed Rail Official Comments, Elic Senter (Mayor) a. The Board of Commissioners has great concern about the proposed path of the Southeast High Speed Rail. While we are greatly interested in progress in transportation modalities, we are also challenged by the fact that this proposal will essentially slice our community in half, thus effectively rendering a new pair of Towns - East Franklinton and West Franklinton. The proposed rail crossing closures will have a dramatic and immediate impact on our ability to serve our citizens, unite our community, and grow as a Town.	Comment noted. Section 4.11 of the Tier II FEIS includes an analysis of the impact of crossing closures on communities. Although four existing at-grade crossings would be closed within the Town of Franklinton, two new grade separations would be provided, just north and just south of Town limits, and the existing grade separated crossing at Green Street would be maintained. In addition, two pedestrian crossings would be provided within Town limits, and a third would be provided just south of Town limits. It is anticipated that these accommodations will mitigate for the closures of the existing at-grade crossings.
b. Franklinton was founded originally as Franklin Depot. Our roots can be traced directly to the path that railroads took throughout our state. Our community would never have come into existence were it not for a simple rail stop about 45 minutes from the center of government in our state. Over time, however, as railroads began to see less and less use, the now-Town of Franklinton began to adjust, and our citizens became quite literally a car-driven society, as did the majority of Americans. Eventually, passenger rail stopped rolling through Franklinton, and our historic depot was almost lost. Recognizing the place railroads have in our history (and our future), a great effort was made to save the depot, while at the same time acknowledging that the use of passenger rail simply was not the transportation of choice of most of the citizens of our region.	Comment noted.

AG37/38/50 Town of Franklinton, NC - Official Comments (Elic A. Senter, Mayor) and Board of Commissioners Resolution	
Comment	**Response**
c. Franklinton today is no longer a bustling town filled with shops and boutiques. It's also no longer a community based in textile work. A town that once had three textile mills now has none. We are, however, home to one of the largest biotechnology companies in the world, and their American headquarters are literally a mile outside of our corporate limits. Moving raw products into Novozymes' facility on NC Highway 56, and finished products out, is crucial not only to their business, but to the livelihood of their employees. Based upon the planned route, the closure of the crossing at Mason Street will shift a great deal of traffic to the intersection of Main Street and Green Street (NC Highway 56). Not only will this impact travel times, but it may also have a direct impact on the routes that some of the trucks traveling to Novozymes (as well as other areas of eastern Franklin County) can take.	The importance of maintaining an adequate road network to support the Novozymes facility has been discussed during the coordination between the Town of Franklinton and the Richmond to Raleigh Project, and is noted here. Impacts to traffic at the intersection of Main Street and Green Street (NC56) from the Richmond to Raleigh Project were discussed in Chapter 4 of the Tier II DEIS on page 4-184. All alternatives were common throughout downtown Franklinton. The anticipated level of service (LOS) in the design year 2030 under the Richmond to Raleigh Project was compared to the anticipated LOS in the year 2030 without the Project (i.e., "No Build"). The projections showed that traffic would be approaching an unstable flow in the design year under a No Build scenario, and a reduced LOS for some movements under the Richmond to Raleigh Project. Since publication of the Tier II DEIS, additional traffic counts and analysis were taken within the Town of Franklinton. The 2012 analysis took into account the move of Franklinton High School from the downtown area to a location east of downtown on Cedar Creek Road and also accounts for a planned middle school to be located at the old high school site. This analysis projects that year 2030 traffic will operate under LOS B (reasonably free flowing) under AM peak and PM peak for both the No Build and the Richmond to Raleigh Project. Refer to Section 4.14.2 of the Tier II FEIS for additional discussion regarding impacts to traffic.
d. In addition, this proposed route will directly impact businesses in our historic downtown business district in three distinct ways. First, several of them will actually lose their physical place of business, given the course that any of the three proposals will take. Buildings will be lost or cut off from traffic flow, impacting how these businesses are able to operate, and in some cases, if they are able to continue to operate. Compensating someone for a building does not necessarily mean that you are compensating the business owner for a replacement location.	NCDOT ROW procedures provide for relocation assistance as needed. It appears from the vacant storefronts within the downtown area that there are suitable locations for businesses to relocate within the community.
e. Second, by removing the traffic flow from Mason Street through downtown Franklinton, there will be a major impact on traffic flow through our downtown business district. This will not only have an adverse impact on our business owners, but on our own efforts to breathe life back into that historic district. The Town of Franklinton has been working for over four years through its Uptown Revitalization Committee to draw businesses and citizens to the downtown district. Cutting off a major secondary artery of travel will further reduce traffic flow - why stop if you don't need to? Thus, our downtown business owners will feel a further economic impact.	Existing traffic on Mason Street is approximately 25% of the amount of traffic on Green Street. Counts taken in 2005 estimated traffic on Mason Street is approximately 2,200 vehicles per day and counts taken in 2003 estimated traffic on NC 56/Green Street is approximately 8,200 vehicles per day. The majority commercial businesses along Mason Street are located on the west side of the railroad corridor near the intersection with Main Street. Access to these businesses would be accessed in the same way as currently exists from the west side of Franklinton. From the east side of the rail corridor, vehicles would only need to travel one block north from Green Street (which would remain grade separated from the railroad). Additionally, a pedestrian crossing at Mason Street would allow pedestrian activity to continue east-west across the railroad corridor on Mason Street.

AG37/38/50 Town of Franklinton, NC - Official Comments (Elic A. Senter, Mayor) and Board of Commissioners Resolution	
Comment	**Response**
f. Third, once that major artery is cut off, we anticipate a significant drop in property values in our downtown business district. One may question how we surmise such, but the answer is simple. If there isn't a traffic flow as there has been for the past 75 or so years, what is the value of those properties to anyone interested in operating a business?	Comment noted. Based on the information presented above, it is not believed the Richmond to Raleigh Project will result in economic impacts to the Town of Franklinton. As discussed during a coordination meeting with the Town on December 19, 2012, there are potential benefits to both the property owners and the Town of Franklinton that could result from the district being listed in the National Register of Historic Places (NRHP), which could be coordinated by the Richmond to Raleigh Project as mitigation under Section 106 of the National Historic Preservation Act (NHPA). These benefits include Federal and state investment tax credit and Federal preservation grants for planning and rehabilitation, as well as being a consideration within applications for Community Development Block Grants (CDBG). Town representatives were encouraged to find out more about these opportunities from the State Historic Preservation Office.
g. Much has been made of 'historic' Franklinton by the maps created surrounding this project. As you have read, we often refer to parts of our area as historic. However, the Town of Franklinton does not have a designated historic district. A few attempts at such have been made over the last several decades; however, it has yet to be followed through. There are several historic places/structures in our community, including the Vann House, the Goswick House, the Franklinton/Sterling Cotton Mill, the A. O. Dunston House, and the Franklinton Depot. However, there is not a historic district - therefore, transportation decisions should not, in our opinion, be based upon the classification of such.	Although Franklinton does not have a historic district listed in the NRHP, surveys conducted as part of the Richmond to Raleigh Project's compliance with Section 106 of the NHPA, identified a historic district that is eligible for the NRHP. Both Section 106 and Section 4(f) of the Department of Transportation Act of 1966 provide the same protection to resources eligible for the NRHP as those listed in it.
h. Another challenge we face if each of these closures is to become reality is the complete seclusion of our historically African-American neighborhood in the Albion Academy area of Franklinton. By closing the crossing at College Street, and rerouting the closing at Hawkins Street, not only will this route increase travel times for those living in the area, thus lowering their property values and creating inconvenience, but it will also impact travel times for emergency services vehicles. The majority of those residents living on East College, Hawkins, Church, Dunston, Savage, and South Chavis Streets are African American, and have historically been disproportionally disadvantaged with regards to housing, property values, and other social equality issues.	Travel times are not expected to increase substantially under the Richmond to Raleigh Project design, which consolidates traffic from closed at-grade crossings at College Street and Hawkins Street with grade-separated crossings at nearby locations. The underpass at Green Street is located approximately 0.15 miles to the north of College Street, and approximately 0.29 miles north of Hawkins Street; the new bridge over the railroad at Cedar Creek Road is approximately 0.5 miles south of College Street, and approximately 0.22 miles south of Hawkins Street. In addition, pedestrian underpasses are proposed at both Hawkins Street and College Street.

AG37/38/50 Town of Franklinton, NC - Official Comments (Elic A. Senter, Mayor) and Board of Commissioners Resolution	
Comment	**Response**
i. Why should those residents, or any of the other residents of the eastern side of our Town (or the western side, for that matter) bear the brunt of the cost of constructing substations for our emergency services personnel when those neighborhoods affected can just as easily be unaffected by not closing the crossings? Having to construct such substations is almost a foregone conclusion for the Franklinton Fire Department, Franklinton Rescue & EMS, and the Franklinton Police Department, because their response times will be so adversely affected by the proposed closures. Such expenses to both volunteer organizations and those supported by tax dollars are burdensome on our citizens and an unnecessary distraction for those volunteers and professionals who staff these organizations.	As discussed in Section 4.11.3.3 of the Tier II DEIS, a service area analysis was completed in GIS to determine the effect that changes in access would have on emergency services in Franklinton. Figure 4-7 illustrates that there is very little difference in the five-minute emergency response area between the Build and No-Build scenario. In all Build scenarios (including the preferred alternative NC1 in Section S where Franklinton is located), the total area covered is 97 percent of the No Build coverage area.
j. We urge those making decisions regarding the route for the Southeast High Speed Rail corridor to consider these issues facing our community. We are not opposed to progress. We are opposed to "progress" that runs roughshod over our community and its citizens.	The Project Team we will continue to work with the Town of Franklinton to try to mitigate impacts to connectivity. However, the safety of the citizens of Franklinton is paramount, and grade separated crossings of the rail corridor provide the safest possible design. See Chapter 1 of the Tier II FEIS for more information regarding the philosophy of the Project to grade separate or close and consolidate all existing at-grade crossings.

AG48 Vance County Planning, NC - Jordan McMillen	
Comment	**Response**
1) Concerning the alternative, NC-3 appears to be much cleaner and will have less impact on Town of Middleburg. With the existing line running through the middle of town and along an existing roadway, traffic patterns would change significantly if NC-3 were not utilized. Although there is more impact to environmental issues with NC-3, this alternative would be favored in this area due to the other changes that NC-1 and NC-2 would have on the area.	The recommended preferred alternative in Section O (which includes Middleburg) is Alternative NC3, which is the Section 4(f) avoidance alternative in this section. This alternative also minimizes wetland, noise, and vibration impacts, and has the fewest residential relocations. It does have greater stream and riparian buffer impacts, but those impacts will be fully mitigated, and the design work will include coordination with the US Army Corps of Engineers. Alternative NC3 also had greater public support. Seven people indicated a preference for Alternative NC3, three people preferred Alternative NC1, and one person preferred Alternative NC2.
2) Additionally, a property owner contacted the county regarding your maps having the wrong ownership information for a particular parcel (Parcel located at intersection of Brookston Road and US-1-158 to right and left side of Brookston Road - Parcel # 0612 02002). I assume this was taken directly from county GIS data and tax records and as we have had some changes including to this property that I am referencing, I would encourage the state to obtain parcel data on a regular basis throughout the process. I have assured the property owner that before any property is taken, if it is to be taken, the correct property owners will be verified.	The Richmond to Raleigh Project will attempt to ensure the best available data is used for future mailings to property owners.

AG34 Camden County, VA - Randell K. Woodruff, County Manager	
Comment	**Response**
We support the Richmond to Raleigh segment of the SEHSR corridor. In addition, we support the need for the improvement of transportation infrastructure in Southeast Virginia through the development of a high speed rail system. Improvements in transportation in Southeast Virginia have a direct influence on commerce and development in North Carolina's Northeast Region. We feel a high speed rail line to and from Norfolk, VA, connecting in Petersburg, VA, would be an integral part of the SEHSR corridor. Addressing the operational impacts, along this leg of the SEHSR corridor, should be an important part of the overall plan. With a population of 1.7 million in the Virginia Beach/Norfolk/Newport News VA-NC, MSA region, along with the population of the contiguous Northeast North Carolina region and the 7+ million visitors to the Outer Banks of North Carolina annually, we believe you have potential ridership that would have a major impact to the SEHSR corridor. As plans move ahead for the SEHSR corridor, future consideration should also be given to an option for train sets that may be required in the Raleigh-Norfolk-Richmond rail line system' that will provide through service for passengers traveling between Southeast Virginia (Hampton Roads) and the Piedmont region of North Carolina and also between Hampton Roads and Central Virginia. The first train to ever run to and from Hampton Roads followed the track between Piedmont North Carolina and Portsmouth, in Hampton Roads, (through Weldon, NC) in 1834. Reasons for this route back in those days for such an initiative remain valid today in many ways and should not be overlooked.	The Hampton Roads HSR connection has been studied through a separate project, given its independent utility (as authorized by NEPA). The ROD for the Hampton Roads Tier I study was signed by FRA for review in December 2012. For more information on the "Richmond to Hampton Roads Tier I" study or plans for the next phase (Tier II EIS), as well as public involvement opportunities for that separate project, please go to http://www.rich2hrrail.info/. The two projects are being designed to ensure compatibility and connectivity in the Petersburg, VA, area. The Richmond to Raleigh Project FEIS has been updated to include additional information on the Richmond to Hampton Roads project, specifically addressing the compatibility of designs as well as an update on the status of that separate study.

AG39 Town of Windsor, VA - James L. Hoggard, Mayor	
Comment	**Response**
We support the Richmond to Raleigh segment of the SEHSR corridor. In addition, we support the need for the improvement of transportation infrastructure in Southeast Virginia through the development of a high speed rail system. Improvements in transportation in Southeast Virginia have a direct influence on commerce and development in North Carolina's Northeast Region. We feel a high speed rail line to and from Norfolk, VA, connecting in Petersburg, VA, would be an integral part of the SEHSR corridor. Addressing the operational impacts, along this leg of the SEHSR corridor, should be an important part of the overall plan. With a population of 1.7 million in the Virginia Beach/Norfolk/Newport News VA-NC, MSA region, along with the population of the contiguous Northeast North Carolina region and the 7+ million visitors to the Outer Banks of North Carolina annually, we believe you have potential ridership that would have a major impact to the SEHSR corridor. As plans move ahead for the SEHSR corridor, future consideration should also be given to an option for train sets that may be required in the Raleigh-Norfolk-Richmond rail line system that will provide through service for passengers travelling between Southeast Virginia and the Piedmont region of North Carolina and also between Hampton Roads and Central Virginia. The first train to ever run to and from Hampton Roads followed the track between Piedmont North Carolina and Portsmouth, in Hampton Roads, (through Weldon, NC) in 1834. Reasons for This route back in those days for such an initiative remain valid today in many ways and should not be overlooked. Thanks you for your dedicated work on this project that is critical to the growth and prosperity of our region.	The Hampton Roads HSR connection has been studied through a separate project, given its independent utility (as authorized by NEPA). The ROD for the Hampton Roads Tier I study was signed by FRA for review in December 2012. For more information on the "Richmond to Hampton Roads Tier I" study or plans for the next phase (Tier II EIS), as well as public involvement opportunities for that separate project, please go to http://www.rich2hrrail.info/. The two projects are being designed to ensure compatibility and connectivity in the Petersburg, VA, area. The Richmond to Raleigh Project FEIS has been updated to include additional information on the Richmond to Hampton Roads project, specifically addressing the compatibility of designs as well as an update on the status of that separate study.

AG16 Hampton Roads Transportation Planning Organization (HRTPO), VA, Dwight L. Farmer	
Comment	**Response**
1) General Comments - • The document should incorporate all known cost figures into the entire document. • For clarity, please label the portion of any table which continues to the page after the page at which the table began as "Continued", e.g. "Table ES-21, Continued" on page ES-34.	• Costs have been updated in the Tier II FEIS and provided where feasible. • Suggestion noted.

AG16 Hampton Roads Transportation Planning Organization (HRTPO), VA, Dwight L. Farmer	
Comment	**Response**
2) Exec Study (ES), pg. 2 (Study Corridor): "There are three alternatives in each section .... In many areas, the alternatives are concurrent II" HRTPO Staff Comment: By areas you mean sections? It appears that were three alternatives are "concurrent", there is only one alternative. If that is the case, then there are NOT "three alternatives in each section". Please revise the report and tables to show the actual number of alternatives for each section.	Within each section of the Project there are areas where all alternatives are on common alignment (and in all cases, this is true at the beginning and end of the section). In several sections, all alternatives are on common alignment for the entire section. In some cases, two of the three alternatives are on common alignment for the entire section. This is noted in each section heading in Table ES-X.
3) ES-3 (Figure ES-l): HRTPO Staff Comment: Please explain what *"Not Carried Forward"* means.	As referenced in the graphic, Section 2.2.2 of the Tier II DEIS explains the meaning of "Not Carried Forward." In addition to the alternatives evaluated in the Tier II DEIS, three other alternative alignments were considered but subsequently excluded from further consideration.
4) ES-S (Rail Alignments): *"The maximum authorized speed (MAS) is established as 110 miles per hour (mph) using fossil fueled locomotion."* HRTPO Staff Comment: Is the maximum authorized speed set in stone? Will there be future considerations for 150+ mph rail service along the alignment?	Maximum authorized speed (MAS) is based on authorization from the owner of the rail corridor and FRA safety regulations. Designs been Richmond, VA, and Raleigh, NC, have been developed such that the bridge clearances would allow for future electrification (and higher speeds). Conversion to electricity would require additional environmental evaluation at the appropriate time.
5) ES-S (Rail Alignments): "2) Centralia to Collier, VA (approximately 18 miles) – new track, 30 feet to the east of the existing main line track, MAS 90 mph with full grade separation." HRSTPO Staff Comment: Why grade separated and separate track for 90 mph rail service? Congested corridor? If investing in a separate infrastructure that will be grade separated, why is the MAS so low?	The overarching philosophy of the design of the Richmond to Raleigh Project is to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. Chapter 1 of the Tier II FEIS provides a description of reasons for closing at-grade crossings: absolute collision avoidance; elimination of railroad/roadway traffic issues; elimination of possible system failure; elimination of horn noise; elimination of easy trespasser access; improved long term cost of maintenance; allows for future speed increases. With the exception of a rail bridge over Capital Boulevard in downtown Raleigh, rail improvements throughout the entire corridor have been designed so that both passenger and freight trains can use them. MAS is based on authorization from the owner of the rail corridor and FRA safety regulations.
6) ES-S (Rail Alignments): "3) Collier to Raleigh, NC (approximately 133 miles) – new single track, with 5 mile long sidings every 10 miles (approximate), MAS 110 mph, with full grade separation (Note: Speeds above 90 mph are subject to CSX approval)". HRTPO Staff Comment: Why, if new single track, is MAS capped at 110 mph and requires CSX approval? Will they be using this new track?	MAS is based on authorization from the owner of the rail corridor and FRA safety regulations. With the exception of a rail bridge over Capital Boulevard in downtown Raleigh, NC, rail improvements throughout the entire corridor have been designed so that both passenger and freight trains can use them.

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7) ES-S (Rail Alignments): *"Within each of the 26 sections, the three project alternatives are labeled 1, 2, or 3."* HRTPO Staff Comment: Please explain here to the reader that-given the common end points of the alternatives for each section-the selection of an alternative for one section does not impact the selection of an alternative for another section. Please explain that, for example, there is no relationship or similarity between alternative "VA1" on one section and alternative " VA1" on another section, that each VA1 is simply the first alternative for that section. Please explain that selecting, for example, VA1 is not a presented option for the Virginia portion of corridor, that, instead, selecting VA1 is a presented option for section AA, for example.	Refer to page ES-2 in the Tier II DEIS for an explanation of the framework of alternatives and sections that was established to enable selection of a "best-fit" preferred alternative for the corridor.
8) ES-6 (Service): "Proposed service consists of four round trips per day between Washington, DC, and Charlotte, NC, and four additional round trips between Raleigh, NC, and Charlotte, NC." HRTPO Staff Comment: Is the document referring to initial service in this statement?	Yes, for the purposes of evaluating environmental impacts, this assumption refers to initial service. Refer to Chapter 1 of the Tier II FEIS for information on an updated study evaluating Ridership and Revenue projections. Also note that the number of available "slots" for through trains is affected by "choke points" within the entire corridor. Designs in this document provide fixes to "choke points" between Richmond, VA, and Raleigh, NC; separate environmental studies are planned and/or are underway to address design issues in other sections of the SEHSR Corridor.
9) ES-6 (Service): *"The conventional service would allow additional stops in the smaller towns along the corridor."* HRTPO Staff Comment: What is defined as conventional passenger rail service in the context of this project?	Conventional services means the equipment would be of the same type (diesel powered locomotives), operating on shared track. The difference between high speed and conventional passenger would be in the frequency of stops at smaller stations, which affects the overall trip time from beginning to end.
10) ES-6 (Summary of Impacts for Alternative Alignments) HRTPO Staff Comment: Explain in this section that no totals by alternative 1, 2, and 3 are shown on the following tables because a different alternative may be chosen for each section, i.e. VA1 may be chosen for section AA and VA2 may be chosen for section BB.	Refer to pages ES-2 in the Tier II DEIS for an explanation of the framework of alternatives and sections that was established to enable selection of a "best-fit" preferred alternative for the corridor.
11) ES-7 thru ES-10 (Tables ES-1 thru ES-7) HRTPO Staff Comment: Please remove the min/max subtotals from these tables because their existence implies to the reader that the same alternative (e.g., VA1) must be chosen for the handful of sections under which subtotals are provided. Because 1) the reader naturally will, as stated above, be inclined to think that there are only a few overall alternatives for this study, and 2) these are the first tables encountered by the reader of the executive summary, it is particularly important that these subtotals be removed. In addition, because an alternative must be chosen for each section, these max/min subtotals have little or no use for the reader.	The min/max values used to describe potential impacts were specifically provided to show the range of potential impacts for a given resource. For the Tier II FEIS, totals are only for preferred alternative.

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12) ES-12 (Highway Vehicle Operations): *" ... the microscale analysis for co showed little or no change in those concentrations for the worst-case intersections."* HRTPO Staff Comment: Since the project reduces VMT, why does the DEIS examine CO concentrations from highway/highway intersections? Also, please fully label the intersections in Table ES-12 (i.e. is "New Hope Church" actually a street, e.g. "New Hope Church Road"?).	A microscale analysis was conducted to determine if changes in traffic caused by diversions associated with closing at-grade crossings had the potential to impact air quality, as discussed in Section 4.6.3 of the Tier II DEIS. The specific intersections chosen were the two intersections with the worst-case predicted levels of service. Road names in the Tier II FEIS mapping have been reviewed.
13) ES-27 (Table ES-18) HRTPO Staff Comment: Over what time period are the shown dollar impacts realized?	Based on the report, which was developed for the Tier I DEIS for North Carolina only and updated to 2005, the estimations of economic and fiscal impacts were annual effects for the design year (20 years after construction).
14) ES-36 (Historical Resources) HRTPO Staff Comment: Are there any battlefields in North Carolina?	Coordination for the Richmond to Raleigh Project under Section 106 of the National Historic Preservation Act did not identify any Civil War battlefields within the Richmond to Raleigh Project corridor in North Carolina. There are battlefields located within the state, but they are outside of the Richmond to Raleigh Project corridor.
15) ES-37 (Rail) HRTPO Staff Comment: Please identify the impact which each alternative on section CC (Petersburg area) would have on 1) the cost of the Norfolk-to-Petersburg improvements and 2) the Norfolk-to-Richmond travel time of the rail improvements recently selected by the CTB from the Tier I DEIS for the Richmond Hampton Roads Passenger Rail Project.	All alternatives are on common alignment in Section CC.
16) ES-37 (Stations) HRTPO Staff Comment: Please identify the impact which each of the three "potential station locations" in Petersburg would have on 1) the cost of the Norfolk-to-Petersburg improvements and 2) the Norfolk-to-Richmond travel time of the rail improvements.	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations or design needs because the development of stations is a unique undertaking at an individual location. As noted, generalized sites were evaluated, but only to the level to ensure that a station placed along the Project corridor in this general location would provide sufficient accessibility to the larger transportation network. All public and agency comments received regarding specific station locations have been noted and will be provided to transportation planning organizations in each station location. Those governments at the individual station locations will perform separate environmental evaluations and make the final decision on the station location and design at a later date. As noted in revised Section 4.17 in the Tier II FEIS, locating the HSR stations in developing urban and suburban areas that serve as population centers, rather than undeveloped, sparsely populated rural areas, is likely to avoid and minimize many potential direct and indirect environmental impacts from the Project.

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17) ES-38 (Parks. Recreation Areas. Wildlife Refuges) HRTPO Staff Comment: Instead of "no Section 4(f) use" did you mean "no Section 4(f) impact"?	The terminology used is correct. Section 4(f) of the Department of Transportation Act of 1966 protects publicly owned parks, recreation areas, and wildlife/waterfowl refuges, as well as historic sites listed or eligible for listing in the National Register of Historic Places. These lands can only be used for a Federally-funded transportation project if there is no other feasible and prudent alternative, and the Project incorporates all possible planning to minimize harm. A "use" is occurs when land is permanently incorporated into a transportation facility through partial or full acquisition. A "temporary use" may also occur when there is temporary occupancy of land that is adverse in terms of the preservationist purpose of Section 4(f). Last, there may be a "constructive use" when there is no permanent incorporation of land, but the proximity of a transportation facility results in impacts so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Examples of constructive use include substantial increases in noise levels at an outdoor amphitheater, impairment to aesthetics, and restrictions on access to a resource.
18) ES-39 (Table ES-23) HRTPO Staff Comment: Please provide a written introduction prior to this table and a written recap following this table. In the recap, please explain to the reader that no simple total page for Table ES-23 is shown because a different alternative may be chosen for each section. In order, however, that the reader may get an idea of the magnitude of the overall impact and cost of this project, please add a one-page "average total" table (i.e. Table ES-24) showing the sum (over 26 sections) of the average values (over the 3 alternatives for each section) by Topic. (Note that Limiting Speed and Operability /Constructability would be omitted from, or shown as "n.a." in, this table because they are not additive.).	Page ES-2 in the Tier II DEIS provides an explanation of the framework of alternatives and sections that was established to enable selection of a "best-fit" preferred alternative for the corridor. Chapter 4 of the Tier II FEIS provides information on impacts for the preferred alternatives by project section and the resulting total impacts for the corridor.
19) (Chapter 1, page 10), 1-10 (Need for the Proposed Project): "Population and economic growth rates in Virginia and North Carolina have been higher than national averages over the past several decades and are projected to remain high over the next few decades." HRTPO Staff Comment: From what cited report does this assertion come from?	Population growth rates are based on US Census Data. In terms of economic growth, a review of disposable income by state for the years 1960 to 2010 found that Virginia ranked 8th of the 50 states with an annual growth rate of 7.99%. North Carolina ranked 10th of 50 states with an annual growth rate for that period of 7.92%. (See http://www.bizjournals.com/bizjournals/on-numbers/scott-thomas/2011/05/nevada-is-income-winner-for-half-century.html?ana=e_pft)
20) 2-44 (Section 2.2.2.3.1): Conformity with Local Plans/Local Support. HRTPO Staff Comment: Is there any consideration of the alternatives for the Richmond/Hampton Roads project? And if these are the alternatives considered but dropped, why were they brought up again as local alternatives for the Richmond/Hampton Roads project in that Tier I DEIS, which is dated after the Record of Decision for the Tier I DEIS for the SEHSR?	The Richmond to Raleigh Project has been coordinated with the Hampton Roads high speed to ensure compatibility and connectivity in Petersburg. The Richmond to Hampton Roads project is not evaluating use of a downtown Petersburg station.
21) 2-44 (Section 2.2.2.3.5): Engineering Issues and Cost. HRTPO Staff Comment: Why wasn't some of this discussion not mentioned in the Richmond/Hampton Roads Tier I DEIS? If it impacts the SEHSR, it definitely would impact the Richmond/Hampton Roads project, per various citations in the Richmond/Hampton Roads Passenger Rail Project Tier I DEIS.	This question does not relate to the Richmond to Raleigh Project DEIS and should be directed to the Richmond to Hampton Roads project (http://www.rich2hrrail.info/).

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22) 2-49 (Section 2.2.4.2): "The potential Washington Street location is on the west side of Petersburg, VA, near the intersection of the CSX A-line, S-line, and the NS N-line. There is no current railroad station at this location." HRTPO Staff Comment: Any mention of the Petersburg multimodal center planned near this location? Discussion later talks about the Raleigh multimodal center being planned. Petersburg multi-modal transit center is mentioned later in the document, but this is a consistency issue within this part of the document.	The Petersburg multi-modal transit center is not located near the railroad, and is thus not discussed in Section 2.2.4.2 of the Tier II DEIS, which provides a general discussion of potential HSR station locations. Section 3.14.4 of the Tier II FEIS provides a discussion of stations in terms of accessibility to the larger transportation network. The Petersburg multimodal center is referenced in this section of the document with regard connectivity between the transit center and potential HSR stations.
23) 2-56 (Section 2.4): "The SEHSR Greenway Concept has potential to be an important feature of the state-wide trail networks that are being developed by the states of Virginia and North Carolina in conjunction with local governments." HRTPO Staff Comment: Is there a Hampton Roads spur to the Greenway concept?	The concept of a greenway located parallel to the Richmond to Raleigh Project from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC) was introduced in the Richmond to Raleigh Tier II DEIS. The rationale for its inclusion was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Richmond to Raleigh Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Richmond to Raleigh Project, the process of developing the environmental documentation for greenway has changed since publication of the Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than being included in the Tier II FEIS for the Richmond to Raleigh Project, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within the Richmond to Raleigh Project FEIS, but rather in a separate Greenway Corridor Plan. This document is currently under development, with completion anticipated at the time of the ROD for the SEHSR Corridor. The Project website will provide additional details on this separate plan and opportunities for its public review and comment. Any questions about a potential Hampton Roads Greenway does not relate to the Richmond to Raleigh Project DEIS and should be directed to the Richmond to Hampton Roads Rail project (as applicable) or to the local park planning agencies and organizations in the noted area.
24) 3-6 (Section 3.1.1.1.2) Chowan River Basin. HRTPO Staff Comment: The City of Norfolk's public water supply system withdraws water from the Blackwater and Nottoway Rivers. The intakes are outside of the study area but they are located downstream of the project. Such considerations should be reflected in the document.	The Project Study Area was defined based on the local geographic project termini, the Project Purpose and Need, and the expected limits of potential impacts. Federal and state resource agencies have agreed upon this Study Area based on the potential effects of the Project. While there are drinking water intakes located downstream of the Project in both Virginia and North Carolina, resource agencies have agreed that impacts to these resources from this Project are unlikely.

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25) 3-64 (Section 3.11.1.1): *“The local study area with the highest proportion of minority residents is Petersburg, VA, where slightly more than 82% of the population is non-white or mixed race.”* HRTPO Staff Comment: Define the various study areas, if not already done, to have the spatial area defined.	The DEIS defined the Project Study Area as block groups within or adjacent to the rail study corridor. The local Study Area is the Project study within a county (or, in Virginia, a city) that was used for the purposes of presenting the data. This definition has been added to Section 4.11 of the Tier II FEIS.
26) 3-165 (Rail) HRTPO Staff Comment: Any mention of the Strategic Rail Corridor Network (STRACNET) designations along the corridor? Impacts to STRACNET in the associated impact section (4.14)?	The Project designs primarily include a 15 foot track-center where two or more tracks will be installed, and up to 30-feet along the CSX A-Line between Centralia, VA and Collier, VA. Additionally, the Project designs will include a vertical clearance of 24 feet 3 inches to accommodate future electrification. These clearances are compatible with requirements on the designated STRACNET corridor. Where applicable, undergrade bridges and track structures will be designed to accommodate the required load classification on the designated STRACNET corridor.
27) 3-174 (Safety & Security): *"From Norlina, NC, where the CSX S-line becomes an active freight railroad to the Boylan Wye in Raleigh (including the active NS-line in downtown Raleigh) common safety measures are in place at all active grade crossings."* HRTPO Staff Comment: Please explain whether or not the "safety measures remaining in place" are adequate, and, if not adequate, how the DEIS treats them (i.e. is the cost of making them adequate included in the cost of each alternative at each section?).	The overarching philosophy of design for the Richmond to Raleigh Project is to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. Table ES-23 of the Tier II DEIS includes the cost of new bridges and underpasses for each of the alternatives, by project section.
28) 4-115 (Section 4.11.4.3): Compatibility with Future Land Use and Long-Range Transportation Plans. HRTPO Staff Comment: This section is not consistent with Section 3.11.4, where there is a discussion of local plans. Section 4.11.4.3 makes mention of the various local plans in support of the SEHSR, yet 3.11.4 states that these localities rarely mention SEHSR. This is inconsistent information.	Sections 3.11.3 (Existing Land Use and Transportation) and 4.11.4.3 (Compatibility with Future Land Use and Long-Range Transportation Plans) of the Tier II FEIS have been updated to reflect recent plan amendments, as well as clarified or corrected (if the Tier II DEIS was in error) as to the compatibility between these plans and the proposed SEHSR Corridor.
29) 4-117 (Section 4.11.4.4): "In addition, city, county, PDC, MPO, and RPO transportation plans within the project study area all address the issues of highway planning, with most regional plans addressing high speed rail." HRTPO Staff Comment: This statement is contradictory to sections 3.11.3 and 3.11.4. The aforementioned sections mention how SEHSR is rarely mentioned in the various planning levels along the corridor, yet this section states most if not all localities have mentioned SEHSR and are compatible with regional plans. Denote a definition as to what constitutes a compatible planning document for the SEHSR.	As stated above, corrections and clarifications have been made to these sections.

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30) 4-124 (Section 4.11.5.2 Community-Level Impacts): *"In Alberta and La Crosse, VA, and Norlina, NC, low-income populations will equally share with wealthier populations the potentially disruptive and intrusive effects of a newly active rail within their community. This includes access restrictions to and from either side of the rail, and exposure to noise and visual intrusions."* HRTPO Staff Comment: This statement does not account for greater opportunities that persons with higher incomes may have in relation to relocation possibilities. Persons with higher income/education generally have access to more opportunities and can relocate easier than someone with less income/education.	Section 4.11 of the Tier II FEIS contains additional information on the availability of housing based on price range and addresses the potential need for housing of last resort.
31) 4-125 (Section 4.11.5.2.1 Richmond. VA): *"The VA1, VA2, and VA3 project alternatives all share a common alignment on the active rail line in Richmond, VA. Richmond currently has a large minority population and the highest concentration of low-income population in the study area. With the rail service to be provided in Richmond and the availability of bus transit in the City that will be focused on a transfer center at Main Street Station, this population has a high likelihood of being able to take advantage of the high speed rail service in the corridor."* HRTPO Staff Comment: This is a big assumption, and is dependent on employment opportunities OOBS); jobs during "office hours (9 a.m. - 5 p.m.) vs. second- and third-shift jobs; connectivity to other modes; and the cost to travel on the proposed rail line, among other factors.	It is anticipated that HSR would be used for intercity travel (e.g., personal trips) rather than daily commutes. The discussion in this section is not intended to imply that high speed passenger service would be widely used for commuters.
32) 4-125 (Section 4.11.5.2.1 Richmond. VA): *"Along Ruffin Road, one of the residential units at the Lafayette Gardens apartment community and several adjacent homes may be displaced as a result of ROW acquisition for the railroad bridge construction at this intersection. These displaces are likely low-income and minority."* HRTPO Staff Comment: Consider examining the effects on "community cohesion" attributable to the proposed displacements in this and all low-income areas along the corridor. Interdependence among neighbors is generally greater in low-income communities, where families and neighbors often rely on each other for day care, rides to work, rides to the grocery store, hospital, church and other activity centers.	Comment noted. Where possible, pedestrian accommodations have been provided along the Project corridor to maintain access for communities on both sides of the railroad tracks.
33) 4-168 (Tables 4-40 and 4-41) HRTPO Staff Comment: Consider showing delay in seconds after each LOS for all approaches. This value will provide greater detail, particularly for approaches with severe congestion (LOS F). This comment applies to ALL remaining tables in this section.	Suggestion noted.
34) 4-189 (Figure 4.10) HRTPO Staff Comment: Figure 4-10 should indicate Richmond - Hampton Roads rail lines (from Newport News and Norfolk).	This figure is intended only to convey the current ownership, operating speeds, and proposed number of tracks/sidings on the rail corridor proposed to be improved as part of this FEIS. It does not show any rail lines outside the Project Study Area.

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35) 4-199 (Safety and Security) HRTPO Staff Comment: No mention of STRACNET and its impacts along the corridor in this section of the document.	The Project designs primarily include a 15 foot track-center where two or more tracks will be installed, and up to 30-feet along the CSX A-Line between Centralia, VA and Collier, VA. Additionally, the Project designs will include a vertical clearance of 24 feet 3 inches to accommodate future electrification. These clearances are compatible with requirements on the designated STRACNET corridor. Where applicable, undergrade bridges and track structures will be designed to accommodate the required load classification on the designated STRACNET corridor.
36) 4-202 (Section 4.17.3): *"As reported in the SEHSR Tier I EIS, implementation of any SEHSR project alternative is not expected to substantially alter development patterns in the project study area except in the vicinity of the rail stations in Richmond (Main Street Station) and the yet-to-be determined locations of Petersburg, VA, La Crosse, VA, Henderson, NC, and Raleigh, NC."* HRTPO Staff Comment: This is an assumption that needs to be supported. There is the distinct possibility of the rural communities developing that do not have station options now, but would vie for one in the future, marketing for satellite living from one of the metro areas.	Additional HSR station locations are not supported by the ridership-revenue studies for the SEHSR Corridor as conducted for the Richmond to Raleigh Project. While it is possible that the Richmond to Raleigh Project asset could be used for regional rail in the future, it is not considered a reasonably foreseeable result of the immediate development of the SEHSR Corridor.
37) 4-204(Section 4.17.4.1): Richmond/Hampton Roads Passenger Rail Project. HRTPO Staff Comment: This section should reflect the reality of the February 2010 CTB approved 'preferred alternative', calling for enhanced intercity passenger rail service on the CSX route, and higher-Speed rail on the Norfolk Southern route. Furthermore, the CTB approved $93 million in funding for reintroducing conventional passenger rail service from Richmond to Norfolk via Petersburg in June 2010.	The FEIS has been updated to reflect the current status of the Richmond to Hampton Roads project.
38) 4-205(Section 4.17.4.4): *"The CSX's National Gateway Project is a multi-state project extending from North Carolina to Ohio and includes a spur that connects to the Ports of Hampton Roads."* HRTPO Staff Comment: The Ports of Hampton Roads should be noted as the Port of Virginia.	Comment noted.
39) 6-4 (Section 6.3.1) Virginia Local Agencies. HRTPO Staff Comment: Add Hampton Roads Planning District Commission and Hampton Roads Transportation Planning Organization as Section 6.3.1.17 & Section 6.3.1.18. This is due to our vested interest in the SEHSR project going forward, and its impacts to the design and planning assumptions of the Richmond/Hampton Roads Passenger Rail Project.	Comment noted. These entities will be added to the Tier II FEIS distribution list (Chapter 6).

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40) 6-8 (Section 6.4) Document Distribution Location List. HRTPO Staff Comment: Add Hampton Roads Transportation Planning Organization to the document distribution list for it is being made available to the public. Hampton Roads Transportation Planning Organization Camelia Ravanbakht, Deputy Executive Director 723 Woodlake Drive Chesapeake, Virginia 23320 757 420 8300	Comment noted. HRTPO will be added to the list of locations where the Tier II FEIS can be viewed (Chapter 6).
41) Chapter 7, HRTPO Staff General Section Comments: • MPOs are the federally-mandated transportation policy-making, planning, and programming organizations for metropolitan areas. As such, MPOs should participate in a project like this one as formal cooperating agencies instead of only being allowed to comment during public comment periods. • In addition, given the potential impact of the SEHSR project on Hampton Roads, especially when the proposed passenger rail improvements to Hampton Roads are taken into consideration, at least one public meeting on the SEHSR DEIS should have been held in the Hampton Roads area. It is strongly recommended that future public meetings on this project include a location in Hampton Roads.	Comments noted.

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42) 7 -5 (Tier II Public Involvement). HRTPO Staff Comment: With the high proportion of minorities, as indicated by Table 3-19, the project team should clearly document any information sessions, community events, or meetings with residents of minority communities or with community leaders that represent minority persons. As well, although percentages are not as high, documentation of outreach activities with traditionally underserved communities such as, low-income, elderly and persons with disabilities, would be instrumental to demonstrate reasonable efforts to reach out to these community members.	The environmental justice section of the Tier II DEIS (Section 4.11.5) concluded that no disproportionately high and adverse effects on low-income and minority populations are anticipated within the overall Richmond to Raleigh Project corridor, and there is a reasonable expectation that minority and low-income populations would share in the benefit of the proposed rail improvements. The EJ Section was updated for the TIER II FEIS, please refer to Section 4.11.5. Outreach activities were not specifically targeted to environmental justice (EJ) communities. However, public outreach was conducted with the intent to involve all potentially affected individuals along the Project corridor. Meetings and hearings were well advertised and coordinated with local jurisdictions and news media. Individual mailings were also sent to all property owners within the Project corridor beforehand. The Project Team also held numerous meetings with local officials (including both elected officials and municipal and county staff) throughout the Project corridor (described in Chapter 7 of the Tier II DEIS). The intent of these meetings was to ensure all local concerns were addressed in the designs. Although outreach was not specifically targeted to EJ communities, all communities along the Project corridor, both EJ and non-EJ, were well-represented at the eight public hearings held in July 2010. Attendance at the meetings ranged from 183 to 373 individuals, and all areas with significant residential relocations or changes in the existing road network had representation. These hearings provided the opportunity for citizens to provide their comments on the Project. As a result of the comments, numerous design requests have been accommodated, including the provision of additional pedestrian crossings of the rail corridor.
43) 7-6 (Section 7.2.6) Small Group Informational Meetings HRTPO Staff Comment: There does not appear to be documentation of outreach activities to specifically communicate with and/or involve residents within communities with high percentages of minorities, although Table 4-33 documents several of communities having more than 50% minority. If outreach activities specifically aim to involve minority populations, please provide documentation.	As stated above, outreach activities were not specifically targeted to environmental justice communities, but rather to all potentially affected individuals throughout the Project corridor.
44) (Section 9.1) Index. HRTPO Staff Comment: Add an index to some related key words to the Richmond/Hampton Roads Passenger Rail Project and other associated spur projects of the SEHSR. The SEHSR project serves as a main document cited in various other Environmental Impact Statements, and it assists the public and researchers to denote how the SEHSR mentioned these projects within its own Environmental Impact Statement.	The Richmond to Hampton Roads project has been added to the Index (Chapter 10) of the Tier II FEIS.
45) 9-13: (Acronyms). HRTPO Staff Comment: Add "HRTPO Hampton Roads Transportation Planning Organization"	Comment noted. The organization will be noted in Chapters 6 (Distribution of the Tier II FEIS) and 8 (Response to Comments) of the Tier II FEIS; however, in these sections acronyms typically are not used.

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Comment	**Response**
SECTION: APPENDIX B. HRTPO Staff General Section Comments: • Although there is extensive documentation of outreach activities to inform and engage the public through various means, there does not appear to be documentation of outreach activities to specifically communicate with and/or involve residents within communities with high percentages of minorities, although Table 4-33 documents several of communities having more than 50% minority. If this did take place, please provide documentation. • If public involvement included information sessions, community events, or meetings with residents of minority or low-income communities or with community leaders that can represent traditionally underserved communities such as minority, low-income, elderly or persons with disabilities, this should be clearly documented.	Comment noted. See responses to identical statements above.

AG16 Hampton Roads Transportation Planning Organization (HRTPO), VA, Dwight L. Farmer	
Comment	**Response**
HRTPO Staff Questions about Public Meetings: • How were the small-group meetings and additional public meetings advertised? • How far in advance of the meetings were they advertised? • What media sources did the project team use? • Were efforts made to reach traditionally underserved persons?	A June 13, 2003, bi-state press release announced the beginning of the Petersburg, VA to Raleigh, NC Tier II study, as well as dates and locations for nine public meetings along the corridor. The first meeting in North Carolina was held June 24, 2003; the first meeting in Virginia was held July 10, 2003. In early June 2003, a newsletter was mailed to everyone on the Project mailing list. The newsletter provided a status update, as well as dates and locations for nine public meetings along the corridor. The mailing list was created through a sign-up link on the Project website, and through signup at public meetings and hearings for the Tier I study. The project website www.sehsr.org also provided information about the meeting locations. Ads were placed with local newspapers including: Richmond Times-Dispatch (Richmond, VA), Progress-Index (Petersburg, VA), Dinwiddie Monitor (Dinwiddie County, VA), Brunswick Times Gazette (Brunswick County, VA), South Hill Enterprise (South Hill, VA), Franklin Times (Franklinton, NC), News and Observer (Raleigh, NC), Henderson Dispatch (Henderson, NC), The Carolinian, (Raleigh, NC), The Cary News (Cary, NC), The Independent Weekly (Triangle Area, NC), Que Pasa (Raleigh, NC) . Additional public meetings were held in Petersburg, VA, and Richmond, VA, on March 14, 2006, and March 16, 2006, when the Project was extended northward and Richmond, VA, designated as the northern terminus. These later meetings were announced through a project newsletter mailed March 1, 2006, and on the Project website, and through ads in the Richmond Times Dispatch (Richmond, VA) and the Progress Index (Petersburg, VA). As stated previously, although outreach was not specifically targeted to traditionally underserved communities, attendance at the eight public hearings held in July 2010 indicated that outreach was successful to all communities along the Project corridor.

8.2 Public Comments and Responses

This section presents the comments on the DEIS submitted by the public, interest groups, and businesses. As noted above, due to the large number of comments, the comments were summarized for presentation in the Tier II FEIS. Each individual comment received was assigned one or more summary comment codes. Responses are provided for each summary comment, and are organized by major topic (Table 8.1). Refer to Appendix O to look up the summary comment codes by commenter name (where it was provided).

Table 8-1
Major Topics for Summary Comments

Code	Topic
A	Built Environment (e.g., Homes, Towns, Businesses)
B	Crossing Closures and/or Traffic
C	Natural Resources (e.g., Streams, Wetlands, Air Quality)
D	Historic Resources (e.g., Historic Districts, Historic Homes, Battlefields)
E	Construction Costs and/or Economic Benefits of the Project
F	Train Speed, Equipment, Operations, or Fares
G	Ridership
H	Safety
I	Project Schedule and/or Funding
J	Preference for an Alternative
K	Other (Including Comments Related to Potential Station Locations)
L	Project Designs
M	Comments Handled Separately

Code A – Comments Related to the Built Environment (e.g., Homes, Towns, Businesses)

Summary Comment ID	Summary Comment	Response
A_SC1	Concerns about vibration during construction and subsequent train operations.	As per Section 4.7.1.3 in the Tier II FEIS, once the final design of the Project has been established, a more detailed vibration analysis would be required to determine the soil characteristics and the efficiency at which the vibration propagates through the ground at various locations along the alignment, the most appropriate method of vibration mitigation, and the specific locations where mitigation would be required.
A_SC2	Concerns about train noise and the need for noise barriers.	As per Section 4.7.2.1 of the Tier II FEIS, once the final design of the Project has been established, a more detailed noise analysis will be performed according to the procedures outlined in FRA's High-Speed Ground Transportation Noise and Vibration Assessment (USDOT, 2012). This analysis will be completed by DRPT and NCDOT prior to the construction of the Project. It will also reassess the potential impact of new intermodal and freight train service between Petersburg, VA, and Raleigh, NC. Several types of measures will be explored to mitigate noise impacts, including wheel treatments, rail treatments, vehicle treatments, building insulation, and noise barriers.
A_SC3	Concerns about urban business and residential relocations in existing active rail corridors.	As per Section 4.11.2.1.2 of the Tier II DEIS, because the Richmond to Raleigh Project maximizes the use of existing rail corridors, neighborhood disruptions and relocations have been minimized to the greatest extent practicable. Relocation assistance policies were discussed in Section 4.11.6 of the Tier II DEIS and the Tier II FEIS.
A_SC4	Concerns over potential changes in the viewshed (i.e., visual impacts).	The DEIS addressed potential impacts to the visual environment in Section 4.9. The visual analysis examined the potential changes related to the implementation of the Richmond to Raleigh Project into the existing viewshed of the Richmond to Raleigh Project study corridor. The FRA's Procedures for Considering Environmental Impacts (FRA, 1999) states that an EIS should identify any significant changes likely to occur in the natural landscape and in the developed environment. Specific visual impacts for Virginia communities were discussed in Section 4.9.1 of the Tier II DEIS, and those for North Carolina were discussed in Section 4.9.2. Visual impacts were summarized in Table 4.23. The Section 106 MOA for the Project (see Section 4.12 of the Tier II FEIS) will address mitigation of visual impacts as they relate to resources protected by the National Historic Preservation Act.
A_SC5	Concerns about potential property impacts (disruptions and relocations).	Because the Richmond to Raleigh Project maximizes the use of existing rail corridors, neighborhood disruptions and relocations have been minimized to the greatest extent practicable. Current designs are preliminary and are intended to be very conservative (showing the greatest possible impacts). As more detailed surveys are developed for the preferred alternative, it is hoped that it will be possible to refine and reduce the estimated property impacts and relocations required to construct the proposed Richmond to Raleigh Project. Compensation for property impacts in Virginia was discussed in Section 4.11.6.1 of the Tier II DEIS and the North Carolina process for property impacts was discussed in Section 4.11.6.2 of the Tier II DEIS.
A_SC6	Concerns that the project will reduce the values of adjacent properties (those properties to remain adjacent/near the future rail line). Statements speculating that properties adjacent to proposed stations will gain in value.	The project does not anticipate a loss in adjacent property values, as explained throughout the Tier II FEIS. Virginia and NCDOT Relocation policies indicate that compensation is only provided for acquisition of real property, not for any perceived depreciation in value. As discussed in the expanded Purpose and Need section of the Tier II FEIS (Chapter 1), there is predicted to be substantial long term economic benefits from development of the HSR project, including (but not limited to) induced demand for office, retail, hotel and higher density housing near proposed train stations. As the demand for redevelopment/infill opportunities increase surrounding station locations, surrounding property values could increase over the long term. Further questions should be addressed to the NCDOT or VDOT Right-of-Way and Relocation Agents at the following - in North Carolina (http://www.ncdot.org/projects/roadbuilt/default.html) and in Virginia (http://www.virginiadot.org/business/row-default.asp).

Summary Comment ID	Summary Comment	Response
A_SC7	Concerns about division of neighborhoods in Sections R and S (Franklinton area); opposition to Alternative NC2 in Section S due to impacts to community.	In Section R, the rail designs for the preferred alternative (Alternative NC1) have been shifted to avoid impacts to the new subdivision off Montgomery Road. The preferred alternative for Section S (Alternative NC1) was selected based on strong public support (267 for Alternative NC1 compared to 3 for Alternative NC2). Also, based on coordination with the Town of Franklinton and public comments, the proposed improvements to Tanyard Street shown in the Tier II DEIS have been removed from the Project designs (i.e., no changes proposed for existing Tanyard Street). Instead, the proposed north-south connection between East Green Street and East College Street has been moved to an alignment near the eastern boundary of the Sterling Mill historic resource. The Project Team will continue to work with the Town of Franklinton regarding closures, bridges, and pedestrian connectivity within the town. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
A_SC8	Concerns about division of neighborhoods and other impacts from Alternative NC3 in Section V (Five Points area).	Alternative NC5 was developed in response to strong public opposition to Alternative NC3, and in response to the City of Raleigh's opposition to the disruption of traffic and pedestrian patterns in the area around Jones Street and Glenwood South presented by Alternatives NC1 and NC2. An iterative series of designs were submitted by citizens during the public comment period (dubbed NC4, and "Hybrid" alternatives by members of the public). These designs were given careful consideration, but found to be infeasible due to greater impacts. However, consideration of these proposals led to the development of Alternative NC5. Alternative NC5 also provides the benefit of avoiding both the CSX Capital Yard and the NS Glenwood Yard, which minimizes/reduces any potential conflicts between freight and passenger traffic in downtown Raleigh and is the preferred alternative for this Section. The route also avoids impacts to Fairview Road, Five Points, and Roanoke Park.
A_SC9	Concerns about community connectivity and pedestrian routes; would like to see pedestrian tunnels and/or other pedestrian accommodations.	Due to the fact that the Project returns rail to communities developed along rail corridors, it will have an effect on community connectivity. Steps have been taken throughout the Project to minimize negative effects. All of the new bridges will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses.* At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and Virginia pedestrian policies. In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists. In addition, throughout the corridor 2 existing pedestrian-only underpasses have been maintained and 12 new pedestrian-only bridges or underpasses are proposed for construction. The locations of these pedestrian crossings were determined in coordination with local government representatives and in response to comments from the public on the Tier II DEIS. Additional requests for pedestrian accommodations will be considered as they are received and added to the final designs where appropriate. * Section 4.16 of the Tier II DEIS mistakenly stated that all bridge designs would include sidewalks to facilitate pedestrian access. While pedestrians will be able to cross at all bridges, the inclusion of sidewalks will depend on the current NCDOT and Virginia pedestrian policy at the time the Richmond to Raleigh Project is constructed.
A_SC10	Concerns about emergency vehicle response times (general).	The inconvenience posed by consolidation of crossings is balanced by the benefit of having nearby grade-separated crossings that allow continued, unimpeded access to and from both sides of the rail line. Emergency responders can experience several minutes of delay while stopped at at-grade crossings to allow a train to pass through. A stopped train can cause further delays as it must accelerate very slowly near crossings to avoid occupying a crossing before gates come down. Section 4.11.3.3 of the Tier II DEIS provided a discussion of the effect that closing existing at-grade railroad crossings and consolidating access would have on police, fire and emergency services along the corridor. Chapter 4 of the Tier II FEIS contains additional discussion on this topic.

Summary Comment ID	Summary Comment	Response
A_SC11	Concerns about impacts to communities on the south side of Durant Road in Raleigh, NC (Section U).	In response to comments received from the public and local officials, a revised bridge and road alignment has been designed for this location. The revised designs were shown at a Public Update Meeting on May, 15, 2012, in Raleigh, NC and are shown in the Map Book Appendix of the Tier II FEIS. The road alignment and bridge over the railroad will be shifted to the north, away from the residential and commercial development on the south side of Durant Road. This northward shift will take the road alignment through City of Raleigh property where Raleigh Fire Station No. 22 is located, requiring the fire station to be relocated. This design has been coordinated with the City of Raleigh. The design calls for maintaining traffic on the existing Durant Road during construction of the bridge over the railroad.
A_SC12	Concerns about EMS response times in Franklinton, NC (Section S).	EMS response times for the Franklinton Fire Department were modeled in the Tier II DEIS (Section 4.3.11.3.3.5). The Town of Franklinton in Franklin County, NC, straddles the active CSX S-line about 30 miles northeast of Raleigh. The Franklinton Fire Department facility is very near and to the west of the existing rail ROW. The Project designs would affect several crossings that are proposed for consolidation, and approximately three roads that would be realigned. Changes in access could affect response time and coverage to the east of the corridor. However, there is very little change in the five-minute response area between the No Build and Build (with SEHSR) scenario. With the Richmond to Raleigh Project, the total area covered is 97 percent of the No Build coverage area; thus, there is very little difference between the EMS service area for Franklinton with or without the Project.
A_SC13	Concerns about potential impacts to Durant Nature Park in Raleigh, NC (Section U).	The Richmond to Raleigh Project rail alignment stays within the existing rail ROW in the vicinity of the Durant Nature Park. The northern entrance to the park is approximately one half mile west of the railroad on Durant Road; the southern entrance is approximately on quarter mile west of the railroad off Spottswood Street. No land would be required from the park and the Project would have no effect on access to the park or the use of its facilities.
A_SC14	Comments or concerns about consistency of SESHR with existing local land use, transportation, or comprehensive plans.	The project has coordinated with local municipalities to ensure that the Richmond to Raleigh Project is compatible to the extent possible with local transportation and long-range community goals. Information on the compatibility of the Project with state and local plans was included in Sections 4.11.4.1 to 4.11.4.4 of the Tier II DEIS. A summary of coordination with Federal, state, and local agencies was provided in Appendix A of the Tier II DEIS and Appendix A of the Tier II FEIS.
A_SC15	Concerns about benefits of SEHSR for municipalities without service stops.	The overall economic benefits of the Richmond to Raleigh Project were summarized in Section 4.11.1 of the Tier II DEIS. They include economic impacts/benefits during construction (jobs for individuals to upgrade the railroad road bed, install signal and safety devices, build frontage/service roads, improve grade separated crossings, and build bridges to replace grade crossings). It is anticipated that the impact of the construction would have additional positive impacts to area manufacturing, as well as restaurants, hotels, and other service industries. While operations benefits for communities with stations are obvious, the installation of high-speed compatible track will enable communities without stops to have benefits of potential freight access, including enhanced incentives for new industry locations. Some communities could also see the addition of local or regional passenger service in the future, once the overall system and capacity are in place. The SEHSR Corridor Tier I EIS estimated that in North Carolina alone, the SEHSR Corridor program would bring $700 million in new state and local tax revenues, $10.5 billion in employee wages over 20 years, over 31,400 new one-year construction jobs, more than 800 permanent new railroad operation positions, and nearly 19,000 permanent fulltime jobs from businesses which choose to locate or expand in North Carolina because of the SEHSR Corridor service. It can be reasonably assumed that similarly positive benefits would accrue in Virginia.
A_SC16	Concerns about potential increases in noise from freight trains idling in downtown Raleigh, NC.	The preferred alternative in Section V is Alternative NC5. With the separation of freight and passenger routes north of Jones St. under Alternative NC5, and the additional capacity created through the Project, it is anticipated that there will not be a substantial change in freight idling times in downtown Raleigh resulting from the Project.

Summary Comment ID	Summary Comment	Response
A_SC17	Concerns about emergency evacuations from Raleigh in the event of a nuclear disaster, hurricane or other major disaster.	In the event of a nuclear or natural disaster, SEHSR Corridor service could be temporarily suspended if appropriate, in accordance with disaster plans that will be part of the operations plan for the service provider. Freight railroad companies and passenger train operators have established plans that dictate actions that are taken in response to disasters or other emergencies. In the past, there have been instances where rail travel after disasters has provided one of the only links into an affected area.
A_SC18	Stated preference for VA2 for Section D (north of Alberta, VA) due to impacts of other alternatives, including impacts to farm land, timber land, and a Virginia Century Farm.	Alternative VA4 is the preferred alternative for Section D. It was developed after the public comment period for the Tier II DEIS, through coordination and consultation with Federal and state natural resource and historic preservation agencies. During discussions with these agencies, it was determined that none of the existing alternatives would satisfy the conflicting concerns of the agencies (endangered species and historic resources on Alternatives VA1/VA3 and wetland impacts on Alternative VA2). Alternative VA4 reduces impacts to wetlands (compared to Alternative VA2), while avoiding a Section 4(f) use of the Wynnhurst historic resource and impacts to a population of Federally listed Michaux's Sumac (*Rhus michauxii*).
A_SC19	Concerns about impacts to Rawlings Quarry (Lake Rawlings) near Alberta, VA (Section D).	The preferred alternative in this section is Alternative VA4. The VA4 Alternative stays within the existing railroad ROW in the vicinity of Rawlings Quarry, then shifts to the west (away from the quarry) to straighten a curve in the existing ROW south of the quarry. No impacts to the private quarry are anticipated.
A_SC20	Resident states that CSX abandoned the right of way (between Collier Yard south of Petersburg, VA, and north of Norlina, NC) and it should devolve to the existing landowners along the corridor.	Although CSX has removed the tracks in the area referenced in the comment, CSX retains exclusive ownership, with exceptions, of the S-line (i.e., fee simple) and leases a portion of the corridor for operation of an underground fiber optic cable. The exceptions are located along the Burgess Connector south of Collier Yard, where portions of the ROW have been sold to individual property owners for driveway access, and in Southside Virginia, where sections of the ROW have been sold to adjacent landowners, such as the 1.3 mile long section owned by Reedy Creek Farm Associates, at the Nottoway River in Dinwiddie County. Specific questions regarding ownership of the corridor will be addressed during the ROW acquisition phase of the Project.
A_SC21	Concerns about environmental justice.	The FEIS has been updated to include additional information on potential environmental justice impacts. Section 4.11.5.1 discusses corridor-wide impacts, and Section 4.11.5.2 discusses Community-level impacts.
A_SC22	Questions about why stream, wetland, and/or historic resource surveys were conducted in Mecklenburg County, VA, after the public hearings for the DEIS.	Based on comments received for the Tier II DEIS, potential design modifications were evaluated to determine if certain project impacts could be minimized or avoided. In areas where these evaluations extended beyond the previously determined Project Study Area, resource surveys were conducted to determine if these areas contained protected resources.
A_SC23	Concerns about a potential Jones Street Bridge and impacts to Hargett Street in downtown Raleigh, NC (Section V).	The preferred alternative for Section V (NC5) would close Jones Street and provide a pedestrian-only bridge that should minimize impacts to area businesses. Hargett Street would be closed under this alternative.
A_SC24	Concerns about noise and vibration associated with idling trains (in areas without stations).	The proposed Richmond to Raleigh Project would include increased sidings to allow freight and passenger trains to pass each other while minimizing idling and stopping; sidings will allow trains to pass each other without stopping.
A_SC25	Concerns about property specific impacts to Traylor Farms in Norlina, NC (Section M).	Several modifications were made to the proposed roadwork for the area around the Ridgeway community in response to comments on the Tier II DEIS. The Preferred Alternative has no direct impacts to the Traylor Farm property (see Appendix R, maps 101 and 102).

Summary Comment ID	Summary Comment	Response
A_SC26	Request to move intersection of Glebe Road and Hamilton Arms Road in DeWitt, VA, to minimize specific impacts to a parcel (Section C).	The alignment of Glebe Rd/Hamilton Arms Rd is constrained by the Bowen House, a property eligible for the National Register of Historic Places. Impacts to the septic system on this property will be evaluated during final design and appropriate mitigation/compensation will be determined.
A_SC27	Question regarding access to US1 in Middleburg, NC (Section O).	In Middleburg, access from US-1 across the existing CSX ROW is unaffected by Alternative NC3, the preferred alternative in Section O.
A_SC28	Concerns about impacts to Franklin Farm parcel in Henderson, NC (Section O).	The recommended, preferred alternative for this section is NC3, which would minimize impacts to Franklin Farm.
A_SC29	Noted the proposed SEHSR project does not provide stops in certain areas.	Some communities could also see the addition of local or regional passenger service in the future, once the overall system and capacity are in place. The location of stops along the corridor would be determined by the operating railroad, in coordination by the governments at the potential station locations, based upon the ridership demands.
A_SC30	Questions about construction, maintenance, and ownership of access roads and driveways to private parcels whose previous access to their property would be closed/rerouted by proposed designs.	Owners of parcels with current, legal access to existing roads will have access to their parcels maintained (or will be compensated if it is not possible to maintain the access); driveway access to these parcels will be determined during final design when survey level data is available. Questions related to ownership of land within the existing rail corridor and/or easements across railroad rights of way can be directed to the freight railroads - CSX: (904) 359-3200 or Norfolk Southern: (404) 962-5742.
A_SC31	Questions about who owns existing railroad ROW; statements by private property owners claimed ownership of land the public hearing maps identified as railroad ROW.	Mapping used in this study was based on county tax parcel data, as well as railroad valuation maps. In most cases along this particular rail corridor, CSX maintains exclusive ownership of the railroad ROW (in fee simple). However, there are some instances where portions of the former railroad ROW have been sold to other entities. More detailed survey will be conducted during the ROW acquisition stage of the Project to verify ownership.
A_SC32	Questions regarding who will own purchased ROW and whether rail lines will have track rights.	It is considered most likely that ROW purchased for the Project will be owned by the states or other public entity, and will be determined when funding for the Project is secured. Throughout the entire project corridor, the railroad has been designed for mixed use (i.e., passenger and freight).
A_SC33	Concerns about train whistle/horn noise.	For general safety, trains are required to sound horns as they approach an at-grade crossing. The separation of road and rail developed for the SESHR project means that trains will not be required to whistle at crossings.
A_SC34	Assertion that regional mobility should be the primary goal of the project and that impacts are secondary in importance.	Comment noted.
A_SC35	Assertion that the impacts of the project outweigh the benefits.	Comment noted.
A_SC36	Concerns about division of neighborhoods in La Crosse, VA (Section I).	The designs presented in the Tier II DEIS are the result of an iterative design process developed through significant coordination with the Town of La Crosse, with a goal of preserving connectivity across the railroad. The Richmond to Raleigh Project plans shown in the Tier II DEIS provide for a bridge and an underpass half a mile apart within the town limits (the town limits are less than one mile across), as well as a pedestrian/bicycle underpass in the center of town for the Tobacco Heritage Trail.
A_SC37	Statements about impacts to specific properties with no questions.	Comment investigated and noted.
A_SC38	General comment on impacts with no question.	Comment noted.

Summary Comment ID	Summary Comment	Response
A_SC39	Questions asking for clarification of impacts to a specific parcel.	Information was provided by the Project team directly to the commenter.
A_SC40	Property specific question on impacts to Heartsfield House c. 1803 property and other properties along Ligon Mill Road in Wake Forest, NC (Section U).	Numerous alternative designs have been evaluated in the vicinity of the Heartsfield House in an effort to reduce property impacts; however, the designs are constrained by the curvature of Ligon Mill Road, as well as dense residential development on the east side of the railroad. The alternative designs were found not to be practicable; however, efforts will be made to minimize impacts from the roadwork during the final design stage of the Project when survey level data is available. The proposed new access road (northward extension of Steeple Run Drive) east of the railroad between Seawell Drive and Ligon Mill Road shown in the Tier II DEIS was designed to provide access east of the railroad in conjunction with the proposed closing of Seawell Drive and nearby driveways. In response to requests from property owners, the road has been redesigned. The road alignment was shifted westward, closer to the railroad to minimize property impacts and minimize impacts to a family cemetery. Adjustments to property access at the northern end will be handled during the ROW phase of the Project. The revised impacts associated with these design changes are discussed in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
A_SC41	Request for pedestrian crossing to allow access to Ettrick Community Recreational Park (Section CC).	Due to the fact that there is no location near the park where public ROW exists on both sides of the railroad (which would allow public access), it was not possible to design a public pedestrian crossing in this area.
A_SC42	Property specific question on impacts to parcel off Defense Road (Section CC).	The Richmond to Raleigh Project would require ROW along Defense Road in order to add a second railroad bridge over Defense Road (directly adjacent to the existing railroad bridge).
A_SC43	Property specific question on impacts to family cemetery off Keelers Mill Road in DeWitt, VA (Section C).	The road designs in this area were revised to avoid impacts to the cemetery. Refer to Section 2.2.9 for additional discussion, and Appendix R for a map of the revised designs.
A_SC44	Requests use of rail line for areas not served by SEHSR stations.	It is anticipated that the Richmond to Raleigh Project corridor accommodate additional regional or commuter service in the corridor. However, such development is not part of the undertaking described in this FEIS.
A_SC45	Requests for number of relocations near Kittrell, NC (Section Q).	Relocations are included in the Executive Summary and Chapter 4 of the Tier II DEIS (Page ES-30 and 4-130) and the Tier II FEIS in the corresponding sections.
A_SC46	Concerns about a specific parcel between Alberta, VA, and La Crosse, VA, in Section G that would be impacted by Alternative VA3.	The preferred alternative for Section G is VA3, which would impact the parcel in question. The selection of VA3 was based on the balancing of conflicting impacts (historic resources and streams) among the four project alternatives in this section. All alternatives would have similar impacts to private properties. VA3 was selected in coordination with state and Federal natural and historic resource agencies who noted that although it would impact the Tourist Guest House historic resource, mitigation could be used to minimize the impacts. Compared to the three other alternatives, Alternative VA3 avoids impacts to two other historic resources (Orgain House and Oak Shades) and minimizes impacts to streams.
A_SC47	Concerns about impacts associated with the proposed closure of Wolfpack Lane in Raleigh, NC (Section V).	In response to comments on the Tier II DEIS from local officials and the public, a bridge over the railroad was designed for Wolfpack Lane. The design was coordinated with City of Raleigh staff, and the public was invited to comment on the alternative at an update meeting on May 15, 2012. The design, which accommodates vehicular, pedestrian and bicycle traffic was favorably received, and has been added to the Tier II FEIS. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.

Summary Comment ID	Summary Comment	Response
A_SC48	Concerns about impacts to Porto Fino subdivision in Wake Forest, NC (Section U).	Numerous alternative designs have been evaluated in the vicinity of the Porto Fino subdivision in an effort to reduce property impacts, but the designs are constrained by the curvature of Ligon Mill Road, as well as dense residential development on the east side of the railroad. Alternative designs were found not to be practicable; however, efforts will be made to minimize impacts from the roadwork during the final design stage of the Project when survey level data is available.
A_SC49	Concerns about community impacts to if the Marina Drive crossing in Richmond, VA is closed (Section AA).	Marina Drive currently passes under the existing Falling Creek railroad bridge. There are no proposed changes to this bridge under the Richmond to Raleigh Project. Thus, Marina Drive would not be impacted by the Project.
A_SC50	Concerns about rerouting of Centralia Road and Chester Road in Chester, VA (Section BB).	Numerous alternative designs have been evaluated at this location in an effort to reduce property impacts, but the designs are constrained by nearby development and the close proximity of three historic properties (Centralia Post Office, Ragland House, and Circle Oaks) that are afforded protections under Section 106 of the National Historic Preservation Act of 1966 and Section 4(f) of the Department of Transportation Act of 1966. The designs for this location are the result of an iterative design process developed through extensive coordination with Chesterfield County.
A_SC51	Concerns about closing Elm Avenue in Wake Forest, NC (Section U).	In response to comments received from the public and local officials regarding the closure of Elm Avenue proposed in the Tier II DEIS, a road underpass was subsequently designed that would allow Elm Avenue to remain open. This design was presented at a Project Update Meeting on May 15, 2012. The response from both the public and Town of Wake Forest officials was that the impacts resulting from the design were too severe. These impacts included the relocation of businesses on Elm Avenue and impacts to several properties along White Street, including the Chamber of Commerce. Based on further coordination with the Town of Wake Forest, it was determined the most appropriate design for Elm Avenue would be to close the crossing to vehicular traffic, but provide for non-vehicular accessibility with a pedestrian bridge. The pedestrian bridge would not result in the same degree of property impacts as the vehicular underpass; however, it would similarly preclude vehicular access to Railroad Street (which is located within the existing, active CSX railroad ROW). In order to provide a means of entry to the properties along Railroad Street, the new access road shown at the Public Update Meeting is needed. This access road would result in the potential relocation of one business, as well as property impacts to the rear of the Railroad Street properties. Several alternative designs for this access road were reviewed in coordination with the North Carolina Historic Preservation Office and the design presented in the Tier II FEIS was determined to minimize impacts to the Wake Forest Historic District. It may be possible to avoid relocation of the business during final design (when more accurate survey level data is available); however, it is not known at this time.
A_SC52	Concerns or questions about receiving adequate/fair value for full or partial acquisition or condemnation or imminent domain of properties for the project. Suggestions regarding land to be used by the project (e.g., recommendations of parcel splits, sites available for acquisition, offers of land for sale).	The processes that Virginia and North Carolina have established for ROW Acquisition are described in Section 4.11 of the Tier II FEIS. Wherever possible, NCDOT and Virginia try to find an agreeable price for both the state and the property owner. When such a price cannot be reached, the legal system is used to ensure a fair market price for the property owner. Property owners are encouraged to obtain their own property appraisal for use in negotiating fair market value on their property with ROW agents. Property acquisition policies can be found under Right-of-Way at: http://www.virginiadot.org/business/resources/property_owners2006.pdf (for VA) and http://www.ncdot.gov/projects/roadbuilt/ (for NC). In all cases the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) will be applied as directed by Federal law. It is not the policy of Virginia or NCDOT to provide compensation for homes and businesses if no acquisition of property takes place.

Summary Comment ID	Summary Comment	Response
A_SC53	Question about possible legal action related to fiber optic cable being installed by telecommunication facilities without the consent of property owners.	Although CSX has removed the tracks in the area referenced in the comment, CSX retains exclusive ownership, with exceptions, of the S-line (i.e., fee simple) and leases the corridor for operation of an underground fiber optic cable. The exceptions are located along the Burgess Connector south of Collier Yard, where portions of the ROW have been sold to individual property owners for driveway access, and in Southside Virginia, where sections of the ROW have been sold to adjacent landowners, such as the 1.3 mile long section owned by Reedy Creek Farm Associates, at the Nottoway River in Dinwiddie County. Fiber optic cable was not installed as part of the Richmond to Raleigh Project.
A_SC54	Assertion that in North Carolina the railroad needs to show proof of ownership of property after being abandoned more than the 7 years or it would revert to adjacent private land owners. Request for information about House Bill 116.	NC Statute 1-44.1 currently reads, "any railroad which has removed its tracks from a ROW and has not replaced them in whole or in part within a period of seven (7) years after such removal and which has not made any railroad use of any part of such ROW after such removal of tracks for a period of seven (7) years after such removal, shall be presumed to have abandoned the railroad ROW." This presumption applies only to rights of way held as easements (i.e., not as fee simple ownership) per *McLaurin v. Winston-Salem Southbound Railway Co.* (1988). Although CSX has removed the tracks along portions of the Project corridor, they retain exclusive ownership, with a few exceptions, of the S-line (i.e., fee simple) and lease the corridor for operation of an underground fiber optic cable. The exceptions are located along the Burgess Connector south of Collier Yard, where portions of the ROW have been sold to individual property owners for driveway access, and in Southside Virginia, where sections of the ROW have been sold to adjacent landowners, such as the 1.3 mile long section owned by Reedy Creek Associates, at the Nottoway River in Dinwiddie County. NC House Bill 116 (Railroad Corridor Management) did not apply to rights of way owned in fee simple. It proposed replacing the 7 year abandonment provision with the following - "A railroad shall not be found to have abandoned a ROW or any parcel of land in which it holds an easement interest unless the railroad first records a certificate of abandonment in the office of the register of deeds for the county where the ROW is located. Upon the filing of the certificate of abandonment, the ROW or parcel of land is deemed abandoned." This Bill passed the House, but not the Senate; therefore, it was not ratified into law. It was last referred to judiciary committee in May 2009. All questions related to property ownership will be handled during the ROW acquisition phase of the Richmond to Raleigh Project. Questions related to ownership of land within the existing rail corridor and/or easements across railroad rights of way can be directed to the freight railroads - CSX: (904) 359-3200 or Norfolk Southern: (404) 962-5742.
A_SC56	Concerns about impacts of Alternative NC1/NC3 in Norlina, NC (Section M) and a stated preference for Alternative NC2.	In the Norlina area (Section M), the preferred alternative is NC1. Refer to Chapter 2 of the Tier II FEIS for an explanation of decision regarding the preferred alternative.
A_SC57	Question regarding when offers would be made on impacted properties and whether advanced acquisition is possible.	ROW negotiations on impacted properties cannot begin until after the ROD has been signed and funding for ROW purchase is available. Although both Virginia and NCDOT have advanced acquisition policies, these policies cannot be utilized without a source of funding and at this time none exists.
A_SC58	Concerns about potential impacts associated with Alternative NC2 along Fleming Drive in Youngsville, NC (Section T).	The preferred alternative in this section is Alternative NC1. Refer to Chapter 2 of the Tier II FEIS for an explanation of decision regarding the preferred alternative. Note that in response to comments from the public and from the Town of Youngsville that the designs for Flemming Road have been modified. The revised impacts associated with these design changes are discussed in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.

Summary Comment ID	Summary Comment	Response
A_SC59	Concerns that the proposed project would make it impossible for home and business owners to sell or refinance homes in the area if they are proposed to be impacted by the project.	North Carolina and Virginia will seek ROW and construction funding based on state rail priorities. The ROW acquisition phase for this Project cannot begin until the FRA issues a ROD, at which point the established ROW acquisition process in each state will be followed. No construction funding has been identified for this Project at the state or Federal level at this time. ROW acquisition is based on the fair market value of the property, which considers all improvements at their current value. North Carolina and Virginia encourage owners and real estate professionals to adhere to all laws and rules in their state regarding disclosure of information to prospective buyers. They are encouraged to check those laws and rules by contacting their appropriate state real estate licensing agency or county tax office when they list their home for sale. It should be noted that "hardship" ROW acquisition typically cannot apply to the Richmond to Raleigh Project until funding is established, which is contingent on the completion of the environmental review process.
A_SC60	Concerns about existing problem with all-terrain vehicles (ATV) and other trespassers on railroad ROW and adjacent private property where tracks have been removed.	It is anticipated that the re-introduction of train operations within the section of the corridor referenced by the commenter will help reduce problems with trespassing on private property.
A_SC61	Concerns about potential impacts to farmland currently set aside under USDA or county farmland protection programs.	During final design, efforts will be made to minimize the impacts to private property to the extent possible. If it is necessary for the Richmond to Raleigh Project to acquire land protected under Federal or state farmland protection programs, the Project will coordinate with the applicable agencies and follow all Federal and state regulations, including implementation of mitigation strategies as required.
A_SC62	Concerns about impacts to The Factory baseball fields in Wake Forest, NC (Section U).	Refer to Chapter 2 of the Tier II FEIS for an explanation of the decision regarding the preferred alternative, which is based primarily on the need to balance the degree of impacts to the ball fields and a nearby private school. The preferred alternative in Section U is NC1, which minimizes impacts to the referenced ball fields.
A_SC63	Concerns about impacts of Alternative NC2 near Norlina, NC, in Section M.	In the Norlina area (Section M), the preferred alternative is NC1.
A_SC64	General comment in support of the project.	Comment noted.
A_SC65	Concerns about the effect of Alternative NC3 to businesses using Norfolk Southern's service on their operations in downtown Raleigh, NC (Section V).	After the public hearings in 2010, a new alternative (NC5) was developed to address the various concerns expressed by the public and Norfolk Southern for downtown Raleigh. This alternative is not anticipated to affect Norfolk Southern's ability to serve its Raleigh customers.
A_SC66	Concerns about traffic and safety with proposed new access between US-1 Business and Bobbitt Road in Kittrell, NC (Section Q).	The proposed new intersection across from Wildlife Lane is approximately 1,500 feet south of the existing intersection of US-1 Business and Peter Gill Road. The new intersection is safer than the existing one because it has better spacing between intersections and turn lanes have been provided.
A_SC67	Concerns from Reedy Creek Farm Associates, LLC, regarding impacts to property immediately north of the Nottoway River near McKenney, VA (Section C). Requests clarification if it is possible to bypass the property and, if not, to have advance acquisition of the property.	Due to the need to use the existing railroad alignment over the Nottoway River (i.e., it is a design control point), it is not prudent to bypass the Reedy Creek Farm property. Any bypass of the property would cause impacts to the natural and human environment for a significant distance both north and south of the river. Although both VDOT and NCDOT have advanced acquisition policies, these policies cannot be utilized without a source of funding. Offers will be made on impacted properties after the ROD has been signed and funding for ROW purchase is available.

Summary Comment ID	Summary Comment	Response
A_SC68	The DEIS analysis of land use impacts should be expanded and the total acres of farm land taken should be provided. Encourage further efforts to reduce or mitigate land use impacts (beyond using existing ROW).	The total amount of acres projected to be impacted (additional ROW to be acquired), by alternative, is included in Chapter 4 of the Tier II FEIS. Where a preferred alternative has greater ROW impacts than another alternative, it has the positive benefit of providing faster speeds, which better meets the Purpose and Need for the Project, or it minimizes impacts to other resources (e.g., streams, wetlands, historic sites). In both the Tier II DEIS and FEIS, some land use impacts are calculated by acreages (prime and important farmland, forested uplands, wetlands), while other land use impacts (e.g., residential, business, parks) are captured by the number of relocations or sites impacted. With regard to impacts to farmland, Section 4.3 of the Tier II FEIS provides an analysis of impacts to Prime and Important Farmlands as (well as farmlands of statewide and local importance) in accordance with the requirements of the Farmland Protection Policy Act (FPPA) of 1981 (7 U.S.C. 1202(a)). All efforts will be made to minimize land use impacts, where practicable, during the final design process when more detailed survey information is available.

Code B – Comments Related to Crossing Closures and/or Traffic

Summary Comment ID	Summary Comment	Response
B_SC1	Concern about the effect that crossing closures will have on connectivity and pedestrian access across the railroad and/or that the SEHSR project should mitigate for the impact that railroad crossing closures have on pedestrian activity in the project corridor.	The Project designs include more than 80 new roadway bridges or underpasses crossing the railroad corridor throughout the length of the Project. As discussed in Section 4.11.2.2. of the Tier II DEIS, the locations of these bridges/underpasses were determined in coordination with local government representatives, who provided input on local conditions, including pedestrian activity. All of the new bridges will have sufficient width so as not to create a hazard for pedestrian movement. In locations where existing pedestrian accommodations (e.g., sidewalks) currently exist, these accommodations will be provided on the bridges/underpasses.* At other locations, pedestrian accommodations on the bridges/underpasses will be evaluated during final design based on the current NCDOT and Virginia pedestrian policies. In general, these policies consider the provision of pedestrian accommodations in more populous locations where pedestrian activity currently exists. The SESHR designs also include 12 new pedestrian-only crossings of the rail corridor within municipalities to provide increased pedestrian access. The locations of these pedestrian crossings were determined in coordination with local government representatives and in response to comments from the public on the Tier II DEIS. Additional requests for pedestrian accommodations will be considered as they are received and added to the final designs where appropriate. * Section 4.16 of the Tier II DEIS mistakenly stated that all bridge designs would include sidewalks to facilitate pedestrian access. While pedestrians will be able to cross at all bridges, the inclusion of sidewalks will depend on the current NCDOT and Virginia pedestrian policy at the time the Richmond to Raleigh Project is constructed.
B_SC2	Question regarding why the SEHSR corridor has been designed to be completely grade-separated rather than retaining some existing at-grade crossings using improved signal systems with longer crossing gates.	The overarching philosophy of the design of the Richmond to Raleigh Project, is to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. At-grade crossings inherently have risk of train-automobile collisions. A collision at a crossing on a higher speed track is a significant event often causing a death in the vehicle and in the case of larger, heavier trucks, the possible derailment of the train and associated injuries. Chapter 2 of the Tier II DEIS provides a description of reasons for closing at-grade crossings: absolute collision avoidance; elimination of railroad/roadway traffic issues; elimination of possible system failure; elimination of horn noise; elimination of easy trespasser access; improved long term cost of maintenance; allows for future speed increases. For these reasons, at-grade crossings fail to meet one of the purposes of the Richmond to Raleigh Project, which is to increase the safety and operability of the transportation system within the travel corridor.
B_SC3	Concern expressed about impacts to traffic and safety resulting from proposed closure of existing at-grade crossings at College Street and Hawkins Street in Franklinton, NC (Section S).	Section 4.14.2.8.2 of the Tier II DEIS provided information on traffic analysis for this area resulting from the proposed roadwork designs. The analysis showed that all intersection movements will operate with a stable flow under the proposed project. In response to public comments, there have been some modifications to proposed roadwork in Franklinton; however, those changes are not anticipated to have a substantial impact on traffic along Hawkins or College Streets. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS. Note that in addition to the improvement of an existing underpass at Green Street (one block north of College Street), and the new bridge over the railroad at Cedar Creek Road to the south, pedestrian-only underpasses are proposed for College Street, Hawkins Street, and Mason Street.

Summary Comment ID	Summary Comment	Response
B_SC4	Concerned about the effect that the SEHSR designs will have on emergency response times in Franklinton, NC (Section S).	EMS response times for the Franklinton Fire Department were modeled in the Tier II DEIS (Section 4.3.11.3.3.5). The Town of Franklinton in Franklin County, NC, straddles the active CSX S-line about 30 miles northeast of Raleigh. The Franklinton Fire Department facility is very near and to the west of the existing rail ROW. The Project designs would affect several crossings that are proposed for consolidation, and approximately three roads that would be realigned. Changes in access could affect response time and coverage to the east of the corridor. However, there is very little change in the five-minute response area between the No Build and Build (with SEHSR) scenario. With the Richmond to Raleigh Project, the total area covered is 97 percent of the No Build coverage area; thus, there is very little difference between the EMS service area for Franklinton with or without the Project.
B_SC5	Concern expressed that adding rerouted traffic to Green Street in Franklinton, NC, will present a danger to residents (Section S).	The designs for Green Street meet the American Association of State Highway and Transportation Officials (AASHTO) Federally adopted design standards. The existing underpass at Green Street is proposed to be re-built with greater horizontal clearance, creating safer access across the railroad for motorists, pedestrians and bicyclists. The proposed designs for Green Street in the downtown area call for the construction of curb and gutter, providing improved safety for pedestrians and bicyclists.
B_SC6	Expression of opposition to the closure of the Wolfpack Lane at-grade crossing in Raleigh, NC, and/or a request for a pedestrian/bicycle overpass or another transportation connection in this vicinity (Section V).	In response to comments on the Tier II DEIS from local officials and the public, a bridge over the railroad was designed for Wolfpack Lane. The design was coordinated with City of Raleigh staff, and the public was invited to comment on the alternative at an update meeting on May 15, 2012. The design which accommodates vehicular, pedestrian and bicycle traffic was favorably received, and has been added to the Tier II FEIS. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC7	General concern about impacts to police/fire/emergency service providers; concern that proposed closure of at-grade crossings will result in slower response times for emergency services. General concern about inconvenience of having to travel additional distance because of inability to cross the tracks at grade.	The inconvenience posed by consolidation of crossings is balanced by the benefit of having nearby grade-separated crossings that allow continued, unimpeded access to and from both sides of the rail line. Emergency responders can experience several minutes of delay while stopped at at-grade crossings to allow a train to pass through. A stopped train can cause further delays as it must accelerate very slowly near crossings to avoid occupying a crossing before gates come down. Section 4.11.3.3 of the Tier II DEIS provided a discussion of the effect that closing existing at-grade railroad crossings and consolidating access would have on police, fire and emergency services along the corridor. Chapter 4 of the Tier II FEIS provides information about changes in impacts resulting from modifications to roadwork that were made for the Tier II FEIS.
B_SC9	Expression of opposition to the proposed closure of the Old Lane at-grade crossing in Chester, VA, and/or concerned about ease of entry onto Chester Road from Hopkins Road (Section BB).	The Richmond, VA, to Raleigh, NC, Richmond to Raleigh Project has been designed to consolidate and grade separate (through bridges or underpasses) all railroad-roadway crossings. A grade separation in the vicinity of Old Lane could not be provided due to several design constraints, most notably the location of the rail interlocking that trains use to switch between the CSX A-line and S-line; therefore, the Project proposes to close the existing at-grade crossing. Additional traffic analysis for this area was conducted following the Tier II DEIS, which indicated a need for additional traffic accommodations such as turn lanes for the Hopkins Road and Centralia Road intersection. The road work designs have been revised to include these accommodations. These design revision were shown at a Public Update Meeting on February, 26, 2013, 2012 in Chesterfield, VA. Refer to Chapter 4 of the Tier II FEIS for information about impacts, including a discussion about the traffic analysis. Maps can be found in the Map Book Appendix of the Tier II FEIS.

Summary Comment ID	Summary Comment	Response
B_SC10	Expression of concern about impacts to local traffic in the downtown Raleigh, NC, area near Five Points, Roanoke Park, Fairview Road, and the Norfolk Southern rail yard under Alternative NC3 (Section V).	The preferred alternative in this section (Section V) is Alternative NC5, which was developed in response to comments received from the public and from local officials. Under NC5, the existing road network in the Five Points, Roanoke Park, Fairview Road and the NS Yard area will remain unchanged. The new alternative is discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC11	Concern expressed about an increase in traffic on Fleming Road/Nassau Street in Youngsville, NC, resulting from the DEIS designs utilizing Nassau Street as a detour for Highway NC-96 Hwy during construction of Main Street bridge over the railroad (Section T).	In response to comments from individuals and from local officials, the roadwork for Youngsville, NC, that was proposed in the Tier II DEIS has been redesigned. The new designs utilize Cross Street as a connection to Highway NC-96 rather than Nassau Street, during the construction of the Main Street bridge over the railroad. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS. Based on these new designs, and the fact that Cross Street will be signed as a detour route for NC-96, no substantial increase in traffic on Nassau Street or Fleming Road northward is anticipated to occur as a result of the Richmond to Raleigh Project.
B_SC12	Concern about traffic delays during construction, including questions regarding how traffic will be maintained on-site throughout construction.	In some locations, traffic will be maintained on-site during a staged construction process. In some locations an off-site detour will be used. Refer to Chapter 4 of the Tier II FEIS for information regarding planned detours and maintenance of traffic for specific locations during construction of the Project.
B_SC13	General concern about impacts to traffic in Chesterfield County, VA, including questions about whether or not traffic analysis was conducted for this area (Sections AA, BB, CC).	Chapter 3 of the Tier II DEIS contains information about existing traffic in the Chesterfield area and Chapter 4 of the Tier II DEIS provides an overview of the traffic analysis that was conducted for the area. In response to comments from individuals and from local officials, changes were made to some of the roadwork that was shown in the Tier II DEIS for Chesterfield County, and additional traffic studies were conducted. The revised designs were developed in coordination with the County. The results of the additional traffic analysis are contained in Chapter 4 of the Tier II FEIS.
B_SC14	Statement of opinion regarding crossing closures and grade-separated crossings (bridges and underpasses), and/or support for closing crossings.	Comment noted.
B_SC15	Concern about the effect that the SEHSR designs will have on emergency response times in Youngsville, NC (Section T).	Section 4.11.3.3 of the Tier II DEIS provided a discussion of the effect that closing existing at-grade railroad crossings and consolidating access would have on police, fire and emergency services. A service area analysis was conducted for seven facilities along the corridor that are representative of worst-case changes; Youngsville was one of the seven analyzed. The analysis showed that there is no negative impact to the EMS service response area for the Youngsville EMS Rescue Station in Franklin County under the Project designs and there are actual improvements in response coverage area.
B_SC16	Concern about the effect that the SEHSR designs will have on emergency response times in Henderson, NC (Section P).	Section 4.11.3.3 of the Tier II DEIS provides a discussion of the effect that closing existing at-grade railroad crossings and consolidating access would have on police, fire and emergency services. A service area analysis was conducted for seven facilities along the corridor that are representative of worst-case changes; Vance County Ambulance and Fire Service in Henderson was one of the seven analyzed. The analysis showed that with the Project designs, the total area covered in a 5 minute response time is 93 percent of the No Build Coverage area, thus there is very little change in the five-minute response area between a No Build and the designs for the Richmond to Raleigh Project Build scenario shown in the Tier II DEIS. In response to comments following publication of the Tier II DEIS, modifications were made to some of the proposed roadwork designs in Henderson. Another service area analysis was conducted to account for the revisions to the roadwork. The analysis revealed no substantial difference in a 5 minute response time coverage area under the proposed designs. Chapter 4 of the Tier II FEIS contains additional discussion on this topic.

Summary Comment ID	Summary Comment	Response
B_SC17	Concern about slowed emergency response times to property located between Henderson, NC, and Kittrell, NC, resulting from the closure of the private rail crossing near rail milepost S-119.5 (Section Q).	The nearest proposed grade separated crossing is located approximately 1/2 mile south of the existing private crossing that is proposed to be closed. No substantial increase in emergency response time is anticipated.
B_SC18	Concern about emergency access to a property that is separated from US-1 by the existing railroad corridor in Middleburg, NC (Section O).	The preferred alternative in this area (Section O) is Alternative NC3. In Middleburg, NC, Alternative NC3 is on new alignment east of town. Access from US-1 across the existing CSX ROW is unaffected by the recommended Alternative NC3 designs. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC19	Request to maintain access across the railroad at Elm Avenue in downtown Wake Forest, NC, for the sake of local businesses and/or emergency responders who are located on the east side of the railroad (Section U).	In response to comments received from the public and local officials regarding the closure of Elm Avenue proposed in the Tier II DEIS, a road underpass was subsequently designed that would allow Elm Avenue to remain open. This design was presented at a Project Update Meeting on May 15, 2012. The response from both the public and Town of Wake Forest officials was that the impacts resulting from the design were too severe. These impacts included the relocation of businesses on Elm Avenue and impacts to several properties along White Street, including the Chamber of Commerce. Based on further coordination with the Town of Wake Forest and correspondence dated June 26, 2012, it was determined the most appropriate design for Elm Avenue would be to close the crossing to vehicular traffic, but provide for non-vehicular accessibility with a staircase-only pedestrian bridge to minimize impacts. The pedestrian bridge would not result in the same degree of property impacts as the vehicular underpass; however, it would similarly preclude vehicular access to Railroad Street (which is located within the existing, active CSX railroad ROW). In order to provide a means of entry to the properties along Railroad Street, the new access road shown at the Project Update Meeting is needed. This access road would result in the potential relocation of one business, as well as property impacts to the rear of the Railroad Street properties. Several alternative designs for this access road were reviewed in coordination with the North Carolina State Historic Preservation Office and the design presented in the Tier II FEIS was determined to minimize impacts to the Wake Forest Historic District.
B_SC20	General question regarding where fencing will be used, and how it will be used in conjunction with bridges and overpasses, and/or concern that fencing will inhibit pedestrian movement across the railroad.	It is important to note that it is unsafe for pedestrians to cross the railroad (either existing or proposed with this Project) in locations that are not legal crossings; note that it is also considered trespassing. However, the ability of pedestrians to move safely across the HSR corridor is an important design criterion of the Richmond to Raleigh Project. In developed areas along the corridor, fencing may be used to direct pedestrians to bridges/underpasses that have been designed to accommodate pedestrian access. Specific locations for fencing will be determined later during final design in coordination with the owner of the railroad, the operator of the railroad, and local governments. Refer to Chapter 4 of the Tier II FEIS for additional information.
B_SC21	Question regarding whether or not the SEHSR designs provide a pedestrian bridge near the Ettrick Community Recreational Park in Ettrick, VA, to accommodate the residents of the College Park subdivision who currently use a shortcut across the tracks (near the existing train station). Request that if a pedestrian bridge is included at this location, that it also span Laurel Road (Section CC).	A pedestrian crossing was studied for the area between Dupuy Road north of the park, and Chesterfield Avenue/River Road to the south, where no legal crossing currently exists. Due to the fact that there is no location near the park where public ROW exists on both sides of the railroad (which would allow public access), it was not possible to design a public pedestrian crossing in this area. This project calls for the existing Chesterfield Avenue/River Road bridge (with existing sidewalks) located approximately 0.18 miles to the south to be retained, and for a bridge to be built approximately 0.5 miles to the north at Dupuy Road with sufficient width so as not to create a hazard for pedestrian movement. Specific pedestrian accommodations on bridges/underpasses will be evaluated during final design based on the current VDOT pedestrian policies.

Summary Comment ID	Summary Comment	Response
B_SC22	Request that a crossing at Chavasse Avenue in Henderson, NC, be maintained (Section P).	The project has been designed to be completely grade-separated. Multiple designs for were considered for this location; however, due to constructability issues related to existing grades, it was not possible to provide a bridge or underpass at Chavasse Avenue while maintaining the existing side street intersections. Cutting off these side streets would alter the road network in the town to such a degree as to render the option imprudent. However, to facilitate continuation of east/west connectivity in this area, a new bridge over the railroad is proposed approximately 0.35 miles south for an extension of Alexander Avenue. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC23	Concern expressed about impacts to Williams Street in Henderson, NC, and/or a request to maintain this street as a north/south corridor through town on the east side of the railroad tracks (Section P).	In response to comments from the public and from officials with the City of Henderson, NC, several revisions have been made to the proposed roadwork designs that were shown in the Tier II DEIS. The new designs retain the Williams Street/ Nicholas Street corridor from Lowery Street on the northern end, through an intersection with a re-aligned JP Taylor Road at the southern end of the city. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC25	Expression of opposition to the potential loss of east/west pedestrian and vehicular connectivity at Mason Street in downtown Franklinton, NC, that would result from the proposed crossing closure (Section S).	The DEIS proposed a pedestrian bridge at Mason Street to maintain pedestrian connectivity at Mason Street. Many design concepts were developed for a vehicular bridge or underpass at Mason Street both before the publication of the Tier II DEIS and afterwards. Designs in this location are constrained by the Franklinton Historic District (eligible for the National Register of Historic Places), existing development, and the surrounding topography. Refer to 4.12 of the Tier II DEIS for more information about the protections provided to eligible resources by Section 106 of the National Historic Preservation Act of 1966. In consideration of current and projected traffic volumes, and the location of grade separated crossings approximately 0.7-mile north of Mason Street (proposed) and 0.15-mile south of Mason Street (existing at NC 56/Green Street), it was determined that the impacts associated with a vehicular bridge or underpass at Mason Street were unacceptable from a Section 106 perspective, provided that intersection improvements at Main Street and Green Street could accommodate the increased traffic and that a newly developed pedestrian underpass design be included in the Project designs. A subsequent analysis verified that intersection improvements can accommodate the traffic. Designs for a pedestrian underpass at Mason Street incorporating both ramps and steps have been included in the Tier II FEIS. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC26	Concern about the impact to school bus routes in Franklinton, NC (Section S).	Although school bus routes were not specifically analyzed, Section 4.14.2.8.2 of the Tier II DEIS provided information on the traffic in this area resulting from the proposed roadwork designs. The analysis shows that in Franklinton, all intersection movements will operate with a stable flow under the proposed project. In response to public comments, there have been some modifications to proposed roadwork in Franklinton. The changes were included in new traffic analysis conducted for the Tier II FEIS. The results show that the changes were not found to have a substantial impact on traffic flow through the town. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC27	Request for an additional pedestrian crossing within the Town of Youngsville, NC (Section T).	In coordination with local officials, an additional pedestrian crossing has been added to the designs in Youngsville, NC. A Pine Street pedestrian bridge over the railroad has been included in the Tier II FEIS. The new design is discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. A map can be found in the Map Book Appendix of the Tier II FEIS.

Summary Comment ID	Summary Comment	Response
B_SC30	Question regarding the placement of the proposed underpass in La Crosse, VA, along with concern that it will be difficult for the fire department on the east side of the railroad to respond to calls on the west side (Section I).	Emergency response times are not expected to be substantially altered in La Crosse, VA. Refer to the Tier II DEIS Section 4.11.3.3 for additional discussion regarding analysis of emergency response times. This information was updated in Section 4.11.5.2.5 of the Tier II FEIS.
B_SC31	Question regarding the placement of the proposed underpass in La Crosse, VA, along with concern that it will difficult for citizens to move from one side of town to the other (Section I).	In the Town of La Crosse, there are several design constraints that limit the locations where a bridge or underpass can be located within the town limits while preserving the downtown core. These constraints include the grade of the surrounding area in relation to the grade of the railroad; historic resource boundaries; compact development; allowance for a future station platform; and the orientation of Main Street, which crosses the railroad at a severe (skewed) angle. The designs presented in the Tier II DEIS were the result of an iterative design process developed through significant coordination with the Town of La Crosse, with a goal of preserving connectivity across the railroad. The Richmond to Raleigh Project plans shown in the Tier II DEIS provided for a bridge and an underpass half a mile apart within the town limits (the town limits are less than one mile across), as well as a pedestrian/bicycle underpass in the center of town for the Tobacco Heritage Trail. Based on ongoing discussions with the Town, the Project Team attempted to provide an additional pedestrian bridge in the center of Town; however, the impacts to adjacent properties were deemed too great.
B_SC32	Concern about impacts in downtown Raleigh, NC, associated with alternatives NC1, NC2 and NC3, including potential effect that crossing closures will have on vehicular and pedestrian access across the railroad; the impact on emergency services; and/or visual impacts of a vehicular bridge on Jones Street (Section V).	The preferred alternative in Section V is Alternative NC5, which was developed in response to comments received from the public and from local officials. Alternative NC5 preserves the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area except for the Jones Street crossing, where a pedestrian bridge would be constructed, and the Hargett Street crossing, which would be closed. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC33	Concern that fencing will prevent pedestrian access across the railroad in Norlina, NC (Section M).	In downtown Norlina, the existing US-158 underpass includes a partial shoulder section. It is proposed that this Project would rebuild the facility with curb and gutter and widened sufficiently to avoid creating a hazard for pedestrian movement. Specific pedestrian accommodations for the underpass will be evaluated during final design based on the current NCDOT pedestrian policies.
B_SC34	Request for the NCDOT to immediately close the Beachtree Trail at-grade crossing of the railroad corridor just south of Kittrell, NC, as presented in the DEIS (Section Q).	Although the Richmond to Raleigh Project would not close this crossing until sometime in the future, the NCDOT Rail Division has a process regarding requests for crossing closures. A request can be made to the NCDOT Rail Division either internally (from within NCDOT), from the railroad, municipality or private citizens. Once a request is received and assigned, an NCDOT Rail Division engineer will run a preliminary review to make sure the crossing meets criteria for closure. After that a field investigation with the Division office and railroad is held. If the outcome of that investigation is a recommendation for closure, a public workshop is held. After the public comment period a Transportation Review Committee (TRC) meeting is held and the subsequent recommendation is taken to the NCDOT Board of Transportation (BOT). After BOT approval, the NCDOT Rail Division would enter into an agreement with the railroad to close the crossing, and identify funding if available. Once funding is secured the NCDOT Rail Division would prepare the appropriate level of environmental documentation, develop the design, and then set up construction funds to move forward with the closure and any identified mitigation projects. Contact the NCDOT Rail Division Engineering and Safety Branch, 1553 Mail Service Center, Raleigh, NC 27699-1553 to submit a formal request for closure of the Beachtree Trail crossing.

Summary Comment ID	Summary Comment	Response
B_SC35	Expression of concern that the closing of at-grade crossings will result in an increase in fuel use and an increase in the production of pollutants and greenhouse gasses.	The consolidation of rail crossings throughout the Richmond to Raleigh Project corridor will necessitate that some automobiles travel an additional distance to reach a grade-separated crossing. However, some automobiles actually could travel less, depending upon the origin and destination of the trip. Any additional distance vehicles will need to travel to the nearest bridge or underpass is typically less than one mile. The anticipated CO emissions associated with an additional distance are likely to be offset by the removal of the vehicle idling that currently occurs while trains pass at-grade crossings. As an example, a vehicle idling for one minute as a train crosses an at-grade crossing would produce approximately 70 grams of CO (based on USEPA's CAL3QHC idle emission factors). Were the same car to travel two miles out of its way to use a grade-separated crossing (one mile in each direction – a conservative example), it would generate approximately 16 grams of CO (based on USEPA's MOBILE factors for vehicles traveling on urban local roads). Although many factors can affect vehicle emissions of CO, the benefit of removing vehicle idling should offset any increase in CO emissions due to additional vehicle miles traveled.
B_SC36	Concern about the effect that the SEHSR designs will have on emergency response times in the area north of Highway 288 in Chesterfield County, VA (Section AA).	The Chesterfield County Fire Station 17, located at the intersection of Chester Road and Park Road, will be provided improved (direct) access across the railroad through construction of the proposed Park Road Extension and bridge, which should improve emergency response. A map of the design is shown in the Map Book Appendix of the Tier II FEIS.
B_SC37	Request to retain the existing at-grade crossing at Centralia Road in Chester, VA (Section BB).	No at-grade crossings will be retained under this Project. The overarching philosophy of the design of the Richmond to Raleigh Project is to consolidate and grade separate all railroad-roadway crossings for the primary purpose of ensuring both rail and roadway safety. Chapter 2 of the Tier II DEIS provides a description of reasons for closing at-grade crossings: absolute collision avoidance; elimination of railroad/roadway traffic issues; elimination of possible system failure; elimination of horn noise; elimination of easy trespasser access; improved long term cost of maintenance; allows for future speed increases.
B_SC38	Request that Brookston Road in Henderson, NC, be left open for traffic to accommodate existing use as a cut through road for residents of the county (Section O).	Brookston Road is proposed to remain open, and has been designed to cross over the railroad on a bridge.
B_SC39	Concern about the effect that the SEHSR designs will have on emergency response times in Ridgeway, NC (Section N).	The DEIS designs included a grade separation at Ridgeway Warrenton Road, approximately three quarters of a mile to the north of the Ridgeway Volunteer Fire Department (VFD), in keeping with the County thoroughfare plan. Following the Tier II DEIS, coordination with Warren County Fire and EMS representatives led to development of a new design for a bridge over the railroad located closer to the Ridgway VFD, to replace the design at Ridgway Warrenton Road. The Warren County thoroughfare plan was modified, with planned routing that include a grade separation in the new location. Chapter 4 of the Tier II FEIS contains a discussion of the GIS analysis of the 5-minute response time coverage under the new design. The results indicate some difference between the overall EMS service area for the Ridgeway Volunteer Fire Department under the Preferred Alternative compared to a No Build scenario. However, the difference is less substantial than the difference for the designs in the Tier II DEIS.

Summary Comment ID	Summary Comment	Response
B_SC40	Concern expressed that NCDOT and/or DRPT have plans to close all or a number of at-grade crossings in advance of project approval or funding.	NCDOT and DRPT do not plan to close crossings proposed by this Project in advance of project approval or funding. However, both NCDOT and DRPT have existing policies that provide a process (outside of and unrelated to the Richmond to Raleigh Project) for evaluation of crossings when requests are made for closure based on safety and traffic conditions. Requests for individual rail crossing closures within the Richmond to Raleigh Project study corridor may be evaluated prior to project construction under the existing policies. Separate from this Project, in 2010 NCDOT completed a Traffic Separation Study for Henderson, NC where there is existing freight railroad service. The study evaluated existing at-grade crossings and was conducted in coordination with the City. The recommendations included safety improvements as well as several crossing closures that are also proposed to be closed under the Richmond to Raleigh Project. As of fall 2012 the Project is on hold pending funding availability. Implementation of the recommendations contained in the Henderson TSS will include additional coordination with the City, and will follow NCDOT policy for public involvement and notification.
B_SC42	Request to retain a crossing at Woods Edge Road in Chesterfield County, VA (Section BB).	In response to numerous comments received from the public and local officials indicating a strong desire to maintain connectivity across the railroad, and additional analysis of traffic data, a bridge over the railroad will be provided at Woods Edge Road. The proposed bridge at Pine Forest Drive to the south will also be retained; however, the proposed extension of Walthall Industrial Parkway has been removed from the designs. The revised impacts associated with these design changes are discussed in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
B_SC43	Concern that providing only one road crossing of the rail corridor in Norlina (US-401/158) is not enough to support the traffic and/or that another crossing is needed at Division Street. Recommendation to connect Warren Plains or Yancey Road to Hyco Street.	As stated in Section 4.14.4.2 of the Tier II DEIS, traffic currently using the Division Street crossing has multiple facilities in the grid network to access US-401/158 and reach its intended destination. The traffic analysis assumed that the closure of the east leg of the intersection of Liberty Street and US-401/158 would route traffic to Elm Street or Division Street and back to Main Street. The closure of the east and west legs of the intersection of Hyco Street and US-401/158 is anticipated to route traffic back to US-1 to reach its desired destination. With the closure of the crossing at Division Street and the additional changes to the above intersections, the intersection of Main Street and US-401/158 was analyzed to estimate the effects of the proposed traffic rerouting and design in the 2030 design year. With the Richmond to Raleigh Project, there is anticipated to be a marked improvement in the level of service (LOS) for the northbound and southbound approaches, which carry the greatest volume through the intersection. Eastbound and westbound approaches would experience an increase in delay (i.e., the time it takes a driver to complete his/her movement through the intersection), which results in a reduced LOS. However, it is important to note that the number of cars waiting in line at these approaches is predicted to be small (i.e., one or two cars).

Code C – Comments Related to Natural Resources (e.g., Streams, Wetlands, Air Quality)

Summary Comment ID	Summary Comment	Response
C_SC1	Concerns about wildlife encroachment on the rail corridor.	The area immediately adjacent to the rail line will be cleared and maintained. This should serve to reduce the occurrence of wildlife foraging within the rail corridor.

Summary Comment ID	Summary Comment	Response
C_SC2	Concerns about airborne asbestos caused by vibration in Raleigh, NC (Section V).	As stated in Section 3.7.1 of the Tier II DEIS, the maximum vibration from HSR would be approximately 85 vibration decibels (VdB) at a distance of 50 feet. According to FRA (1988), the vibration amount required to cause minor cosmetic damage to fragile buildings is 100 VdB. The preferred alternative in Raleigh (NC5), is generally located away from older residential areas, minimizing the potential for the SEHSR Corridor passenger trains to cause cosmetic damage. In most cases, existing freight trains will be closer to residential areas than the proposed SEHSR Corridor tracks. According to USEPA Guidance for Controlling Asbestos-Containing Materials in Buildings (USEPA, 1985), for a site to have the potential to release asbestos, the asbestos must be exposed, accessible, and near movement corridors or subject to vibration. It is unlikely that the preferred alternative would increase asbestos releases in downtown Raleigh.
C_SC3	Concerns about diesel emissions.	Emissions from the proposed diesel trains have been included in the air quality analysis for the Project (see DEIS Section 4.6.1). The predicted annual emissions are well below the *de minimis* levels established in 40 CFR 51.853 and no further action or mitigation is required
C_SC4	Concerns about wildlife habitat impacts	Impacts to natural terrestrial communities have been minimized to the extent possible through the selection of alternatives that include the lowest acreages of mixed forested habitats for each section of the Project (see Section 4.10 of the Tier II FEIS).
C_SC5	Concerned about potential wetland impacts.	Measures will be taken to avoid and minimize wetland impacts to the extent practicable as outlined in Section 4.1 of the Tier II FEIS. Impacts to jurisdictional wetlands and perennial streambed or important intermittent streambed that result from activities authorized under an individual permit from the USACE require compensatory mitigation. Mitigation requirements for Virginia and North Carolina are discussed in the Tier II FEIS in Section 4.1.6.
C_SC6	Concerns about wildlife impacts of Alternative NC2 in Section S (Franklinton/Youngsville areas).	For Section S, Alternative NC1 was selected to minimize impacts to natural resources and farmland.
C_SC7	Concerns about potential impacts to the artesian drinking water well in the Town of McKenney, VA (Section C).	As a result of requests from the property owner and other Town residents, the Project designs have been modified to move further away from well.
C_SC8	Assertion that the proposed SESHR service would have positive effects on the environment by removing vehicles from the road.	Comment noted.
C_SC9	Concerns about stormwater impacts to water quality.	The addition of new paved surfaces and railroad tracks has the potential to affect water quality. The proposed designs would implement, to the extent practicable, procedures to limit stormwater impacts to water quality, including avoidance of direct surface water impacts; avoidance of stormwater discharges into public water supplies; and other stormwater best management practices (Tier II DEIS Section 4.1.1.3 and Tier II FEIS Section 4.1.1.3).
C_SC10	Concerned about impacts to Neuse River Basin water quality.	Streamside riparian zones within the Neuse River Basin in North Carolina are protected under provisions of the Neuse River Basin Riparian Buffer Rules administered by the North Carolina Division of Water Quality (NCDWQ). The rules protect two riparian zones: Zone 1 extends 30 feet from stream bank and Zone 2 extends from 30 to 50 feet from the stream bank (Tier II DEIS Section 4.1.1.2 and Tier II FEIS Section 4.1.1.2). Where these rules apply, mitigation will be required for impacts to riparian buffers at each stream crossing. Mitigation requirements will be coordinated directly with NCDWQ.
C_SC11	Concerned about overall impacts to natural resources.	The Richmond to Raleigh Project will make all efforts to avoid and minimize impacts to natural resources to the extent possible through the final design process and coordination with Federal and state natural resource agencies.

Summary Comment ID	Summary Comment	Response
C_SC12	Statement that the corridor should provide access to natural resources (i.e., wildlife can cross).	Comment noted.
C_SC13	Concerns that the NC2 alternative in Section S would have greater negative air quality impacts to area (Franklinton/Youngsville) residents.	For Section S, Alternative NC1 is the preferred alternative. It should be noted that emissions from the proposed diesel trains have been included in the air quality modeling for the Project (DEIS section 4.6.1). The predicted annual emissions for the entire project (all alternatives) are well below the *de minimis* levels established in 40 CFR 51.853.
C_SC14	Concerns about stream impacts.	Measures will be taken to avoid and minimize stream impacts to the extent practicable as outlined in Section 4.1 of the Tier II FEIS. Impacts to jurisdictional wetlands and perennial streambed or important intermittent streambed that result from activities authorized under an individual permit from the USACE require compensatory mitigation. Mitigation requirements for Virginia and North Carolina are discussed in the Tier II FEIS in Section 4.1.6.
C_SC15	Concerns about wetland impacts in the area of Chester, VA, in Section BB.	In the Tier II DEIS, it was estimated that there would be 4.88 acres of wetlands impacted in Section BB. Measures will be taken to avoid and minimize wetland impacts to the extent practicable as outlined in Section 4.1 of the Tier II FEIS. Impacts to jurisdictional wetlands and perennial streambed or important intermittent streambed that result from activities authorized under an individual permit from the USACE require compensatory mitigation. Mitigation requirements for Virginia and North Carolina are discussed in the Tier II FEIS in Section 4.1.6.
C_SC16	Concerns about stream and natural spring impacts and flooding between Green Street and Bullock Street in Franklinton, NC, if Tanyard Street is extended (Section S).	In response to comments received from the public, the proposed improvements to Tanyard Street shown in the Tier II DEIS have been removed from the Project designs (i.e., no changes proposed for existing Tanyard Street). Instead, the proposed north-south connection between East Green Street and East College Street has been moved to an alignment near the eastern boundary of the Sterling Mill historic resource. This design includes removal of pavement at the west end of Bullock Street. The revised impacts associated with these design changes are shown in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
C_SC17	Assertion that estimated stream impacts for Alternatives NC1/NC3 and Alternative NC2 in the area near Bert Winston Rd in Youngsville, NC, are incorrect; proposed corrected impacts provided (Section S).	The stream impact numbers presented in the Tier II DEIS were correct based on coordination with the US Army Corps of Engineers (USACE), who reviewed and approved the stream and wetland delineations for the Tier II DEIS (USACE Action ID 200421016). The jurisdictional determination from the USACE is included in Appendix A of the Tier II DEIS. Updated stream impacts are shown in Section 4.11.1.1 of the Tier II FEIS.
C_SC18	Concerned about potential impacts to four trees in excess of 240 years old on the Cooke Property, which would be impacted by the proposed Ligon Mill Road railroad bridge in Wake Forest, NC (Section U).	Numerous alternative designs have been evaluated at this location in an effort to reduce property impacts on both sides of the railroad and road. However, the designs are constrained by the curvature of the road and development on both sides of the railroad. During final design, attempts will be made to avoid and minimize impacts to the extent practicable.
C_SC19	Assertion that SEHSR could have a positive impact on local air quality.	As stated in Section 4.6.1 of the Tier II DEIS, "From an air quality perspective, the additional intermodal and freight trains would likely result in a regional efficiency improvement as a result of freight providers switching from long haul trucking to intermodal and freight rail. Quantification of the reductions and re-routing of truck hauling was determined to be outside the scope of this Project. The intermodal and freight trains are not considered to be induced by the Project, but rather represent an improved and more efficient transfer from other fuel-consumption sources."
C_SC20	Statement about the importance of maintaining natural habitat and open spaces.	Comment noted.

Summary Comment ID	Summary Comment	Response
C_SC21	Concerns about environmental impacts associated with Alternative NC3 in Raleigh, NC (Section V).	The preferred alternative for Section V is NC5, which would have fewer linear feet of stream impacts (compared with NC3) and would place the proposed railway further from several residential areas compared to the other alternatives through downtown Raleigh.
C_SC22	Concerns that SEHSR trains would increase idling of freight trains in downtown Raleigh, NC (Section V).	None of the alternatives through downtown Raleigh would cause substantial increases in idling for freight operations.
C_SC23	Concerns about heat pollution in downtown Raleigh, NC (Section V).	Heat pollution is not anticipated to be an impact associated with the Richmond to Raleigh Project.
C_SC24	Concerns about the proposed designs resulting in an increase in flooding.	Potential impacts to floodplains and floodways were evaluated in Section 4.1.3 of the Tier II DEIS. Floodplain crossings will be re-examined once the final designs have been completed, when detailed survey-level data is available. Mitigation includes designing proposed floodplain crossings to minimize or eliminate an increase in the base flood elevation. Mitigation measures include right angle crossings and typical section reductions. The Richmond to Raleigh Project will coordinate with FEMA and local authorities in the final design to ensure compliance with applicable floodplain management ordinances. Also, the agency review and permitting process will require that the designs meet Federal and state floodplain development guidelines.
C_SC25	Concern that the project's reliance on fossil (diesel) fuels is not energy efficient or sustainable.	The ROD for the SEHSR Corridor Tier I EIS established that the SEHSR Corridor would be developed to use fossil fuel powered trains. Refer to Chapter 2 of the SEHSR Corridor Tier I DEIS for background on the basis for the decision. Note that the designs for the R covered by this Tier II document will accommodate future electrification; however, electrification is not covered under this environmental document process.
C_SC26	Request that more analysis should be completed regarding the potential benefits of this project to air quality, greenhouse gas emissions, and energy use.	The relevant Federal guidelines for assessing air quality impacts, greenhouse gas emissions, and energy consumption were used in preparing the Tier II FEIS. Benefits to air quality and energy consumption are a small piece of the overall decision process regarding the implementation of HSR service, and efforts to quantity the benefits would be questionable due to the number of assumptions (e.g., modal split, origin and destination of travelers, load factor of the trains, and other modal options if train were not taken). An expanded discussion of greenhouse gas emissions can be found in Section 4.6 of the Tier II FEIS.
C_SC27	Statement that if the SEHSR project crosses Lake Gaston at the location of the existing railroad easement, Dominion Power would not need to file with the Federal Energy Regulatory Commission (FERC). If it does not, a formal FERC filing must be initiated.	The Project designs cross Lake Gaston on the existing railroad corridor.
C_SC28	Request for additional data and analysis of air quality impacts, including steps to reduce adverse air quality impacts (cleaner engines, electrification, requirements on contractors, etc.).	All relevant Federal guidelines for assessing air quality impacts have been followed. Mitigation of "adverse air quality impacts" is not required because the air quality analysis did not identify violation of air quality thresholds. Electrification of the system is beyond the scope of this Project.

Summary Comment ID	Summary Comment	Response
C_SC29	Preference for restoration, enhancement, and creation as opposed to "less desirable" in-lieu fees and mitigation banks; once alignments are selected, FEIS should indicate specific mitigation to be used and seek to locate it within same watershed.	Specific mitigation cannot be described in the Tier II FEIS as it will be determined in coordination with the US Army Corps of Engineers and state water quality agencies during the permitting stage of the Project. However, the Tier II FEIS documents the availability of existing mitigation assets and the potential for permittee-responsible mitigation in Section 4.1.
C_SC30	Request that the FEIS should specifically set out the methods to be used to ensure enforcement of erosion and sediment control measures. In Virginia, the FEIS should state how the SEHSR will avoid falling into the "repair" and "rebuilding" categories which provide for exceptions to the rules.	The requirements for sediment and erosion control, National Pollutant Discharge Elimination System (NPDES) and state stormwater permits should provide adequate protection from erosion and sedimentation. Each of those permits requires oversight by a state agency whose responsibility is to ensure the enforcement of the required measures. In the absence of construction funding, it is not possible to identify what agency or organization will be constructing the Project. Therefore, it is not appropriate to specify specific measures that be undertaken to ensure enforcement of sediment and erosion control measures during project construction. While the regulatory exception cited may apply to the Richmond to Raleigh Project's repair or rebuilding of railroad infrastructure, the bulk of the Richmond to Raleigh Project's land-disturbing activities would be associated with roadway changes due to the relocation and/or consolidation of rail crossings. In Virginia, roadway changes and improvements associated with the Project would fall under the jurisdiction of VDOT and would not be exempt from the aforementioned land-disturbing activity requirements set forth in the E&S Control laws and regulations. VDOT would still be required to construct all roadway improvements in accordance with the strict provisions of the VDEQ's Virginia E&S Control Handbook and VDOT's Annual Erosion and Sediment Control and Stormwater Management Standards and Specifications, as approved by VDCR.

Code D – Comments Related to Historic Resources (e.g., Historic Districts, Historic Homes, Battlefields)

Summary Comment ID	Summary Comment	Response
D_SC1	Question of whether the project properly complied with Section 106 of the National Historic Preservation Act, which requires federal agencies to take into account the effects of their undertakings on historic resources that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the NRHP.	Yes. The Richmond to Raleigh Project EIS identifies all historic resources within its area of potential effects that are included in or eligible for the NRHP, and assesses the effects of the Project on these resources. Coordination with the Virginia Department of Historic Resources, North Carolina State Historic Preservation Office (NC-HPO), and Federal Advisory Council on Historic Preservation has been ongoing throughout the Project. A Section 106 MOA is being developed with these agencies and other consulting parties to minimize and mitigate for unavoidable impacts to historic resources.

Summary Comment ID	Summary Comment	Response
D_SC2	Assertion that the following properties should be recognized as historic, but were not identified as such in the DEIS: (1) Bishop property (old Burgess A train station) in Dinwiddie County, VA; (2) Harry Blacknall house/Old Dutch Inn (southeast corner of US-1 & Kittrell College Rd) in Kittrell, VA; (3) Heartsfield House on Ligon Mill Rd in Wake Forest, NC; (4) City Road United Methodist Church (903 N Garnett Street) in Henderson, NC; (5) family cemetery at 15920 Keelers Mill Road in Dewitt, VA; (6) Weldon family home site on Weldon Road north of Norlina, NC; (7) Homes located south of Ruffin Road directly east of the Davee Gardens Historic District. Request to verify whether they are eligible for the NRHP and afforded Section 106 protections.	These seven properties have been verified as not meeting the criteria for the National Register of Historic Places (NRHP). Those wanting specific documentation regarding the evaluation of their property can contact the Project Team via the Project's toll-free hotline: (877) 749-7245. It should be noted that cemeteries are not ordinarily considered eligible for inclusion in the NRHP unless they are contributing elements of eligible properties or meet special conditions which are referred to as "Criteria Considerations," such as a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life.
D_SC3	Expressions of concern about impacts to the c. 1803 Hartsfield House at 9737 Ligon Mill Road in Wake Forest, NC, and questions about whether it was incorrectly assessed as not being eligible for the NRHP. Statement that Capital Area Preservation will submit additional materials to NC-HPO and NCDOT in support of the property's eligibility.	NC-HPO and NCDOT reviewed the original Section 106 eligibility (Phase II) survey for the Hartsfield House and do not recommend altering its NRHP eligibility determination based on the information it contains. Additional materials described in Capital Area Preservation's letter have not been received. NC-HPO and NCDOT await the additional information and will review it upon submittal. A Certificate of Appropriateness will be required to address impacts to the property under North Carolina statutes based on its designation as a local landmark.

Summary Comment ID	Summary Comment	Response
D_SC4	Request to avoid or minimize impacts to historic resources, in particular noise and vibration and visual intrusions (e.g., fences).	All efforts will be made to avoid and minimize impacts to historic resources along the Project. The Section 106 MOA will outline agreed-upon measures that will be taken to avoid, minimize, or mitigate the adverse effects of the Project on historic resources. The MOA will likely include specifications for fencing, bridges, and other visual intrusions. Noise and vibration mitigation will be assessed for all impacted areas along the Project per the FRA's noise and vibration guidelines.
D_SC5	Assertion that the NC3 alternative in downtown Raleigh, NC, would impact the Glenwood-Brooklyn and/or Roanoke Park historic districts (part of the Five Points neighborhood), including vibration damage to its historic terra cotta sewer pipes and historic plaster walls, noise impacts, traffic impacts, and relocation of local businesses.	The preferred alternative in Section V is Alternative NC5, which was developed in response to comments received from the public and local officials. The NC5 alternative addresses these concerns expressed by the citizens of the Five Points neighborhood. Alternative NC5 was presented at a Public Update Meeting on September 27, 2011 in Raleigh, NC. Development of the new alternative is discussed in Chapter 2 of the Tier II FEIS and information about the reduced impacts is found in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
D_SC6	Assertion that the alternative through downtown Petersburg, VA, which was considered but not carried forward, would have enhanced the Petersburg historic district.	An alternative that would serve old Union Station in downtown Petersburg, VA, was explored in early planning efforts by FRA. It was excluded from further consideration because of lack of conformity with local plans, impacts to historic resources, residential and business relocations, travel time, and engineering issues/cost. See Section 2.2.2.3 of the Tier II DEIS for more information.
D_SC7	Question of whether the project properly complied with Section 4(f) of the Department of Transportation Act of 1966, which protects publicly owned parks, recreation areas, and wildlife/waterfowl refuges, as well as historic sites listed or eligible for listing in the NRHP.	Yes. The Richmond to Raleigh Project Section has fully complied with Section 4(f). For more information, see the final Section 4(f) evaluation (Chapter 5 of the Tier II FEIS).
D_SC8	Request to not impact the historic Butterworth family home (located at the terminus of Glebe Road on Route 1) in DeWitt, VA.	This property is referred to as the Bowen House in the Tier II DEIS and is eligible for the NRHP. The Richmond to Raleigh Project alternatives would add a set of tracks within the existing rail corridor on the west side of US-1. The rail corridor is approximately 75 feet west of the western boundary of this resource and over 150 feet from the main house. However, the road system in this area would also be modified by rerouting the corridor to the south of the Bowen House and bridging Glebe Road over the rail lines. This new bridge would be just southwest of the Bowen House boundaries. It is possible that the new structure would be visible from the main house. However, any modifications to the viewshed would be tempered by a vegetative screen, distance, and the US-1 corridor. Therefore, it was recommended that the Richmond to Raleigh Project alternatives would have no adverse effect on this resource under Section 106 of the National Historic Preservation Act of 1966 (NHPA). The Virginia Department of Historic Resources (VDHR) concurred with this recommendation in a letter dated November 23, 2009.
D_SC9	Question of who will maintain the bridges in historic areas (such as along Centralia Road in Chesterfield County, VA) when they have graffiti, litter, etc.	Maintenance of the bridges built as part of the Project would be by the owner of the road network. In Virginia, that is either VDOT (as in the case of Centralia Road) or the municipal government. In North Carolina, that is typically NCDOT, although there are also local roads maintained by city governments (such as in downtown Raleigh).

Summary Comment ID	Summary Comment	Response
D_SC10	Question of whether the project has studied how other countries have handled impacts to historic sites and other human and natural resources.	The Richmond to Raleigh Project has followed all applicable regulations set forth by the United States government, the Commonwealth of Virginia, and the State of North Carolina. Regulations and mitigation required in other countries were not considered as part of the Project.
D_SC11	Request to identify that the Massenburg property at 9985 Seawell Drive in Wake Forest, NC, is listed on the National Register of Historic Places. Also note that the grade crossing of the CSX railroad at the property is a private road predating the railroad at the property is a private road predating the railroad line (prior to the 1840s).	The Richmond to Raleigh Project mapping now includes the Massenburg property, which is known as Oakforest in the NRHP. It should be noted, however, that the private road to the house was not included within the boundary listed in the NRHP. Only the listed property is afforded protections under Section 106 of the NHPA.
D_SC12	Request to not impact the three historic properties on Thurston Road in Chesterfield County, VA.	The historic resource surveys for the Richmond to Raleigh Project identified only one property along Thurston Road within the Project Study Area as eligible for the NRHP (House at 3619 Thurston Road). The Richmond to Raleigh Project plans call for rerouting an extension of Park Road to the southwest of the house. Although the Project would take a small amount of ROW from the southwest corner of the parcel, the roadwork would not be visible from the main house or any contributing outbuildings. In a letter dated November 23, 2009, VDHR concurred with the recommendation that the Richmond to Raleigh Project would have "no adverse effect" on this resource.
D_SC13	Question of how the project will impact the property between Defense Road and Kutchen Road in Petersburg, VA, that was a Civil War battlefield.	A portion of this property was determine eligible for the NRHP and is referred to as the Dimmock Line Earthworks. The Richmond to Raleigh Project would require ROW along Defense Road from the Dimmock Line Earthworks in order to add a second railroad bridge over Defense Road (directly adjacent to the existing railroad bridge). Construction of the bridge and associated improvements to Defense Road would necessitate large disturbances to a portion of the earthworks. The Project Team is coordinating with the Virginia Department of Historic Resources and the National Park Service Petersburg National Battlefield to determine ways to minimize the impacts of the Project on the resources in the vicinity of Defense Road and establish mitigation for unavoidable impacts.
D_SC14	Statement that the DEIS identified a property as historic, but it is not listed on the National Register.	Section 106 of the National Historic Preservation Act of 1966 (NHPA) protects all resources that are included in or eligible for the National Register of Historic Places (NRHP). Properties not listed in the NRHP, but assessed to be eligible for it, are afforded the same protections as those listed in it.
D_SC15	Request to minimize impacts to the National Register-listed Honeymoon Hill Farm (referred to in the DEIS as Zehmer Farm).	Based on coordination with the property owner and VDHR, the Richmond to Raleigh Project rail and road designs adjacent to this property have been revised to minimize impacts.
D_SC16	Assertion that the following historic structures in Franklinton, NC (Section S), would be negatively impacted by the SEHSR project: the historic First Baptist Church, Sterling Mill (listed on the National Register), and the Franklinton Depot (listed on the National Register).	In coordination with NC-HPO, the Richmond to Raleigh Project was determined to have "no effect" or "no adverse effect" on the First Baptist Church, Sterling Mill, and Franklinton Depot under Section 106 of the NHPA. The project would not impact the structure of any of these historic resources. A small amount of ROW would be needed from the Sterling Mill and Franklinton Depot properties; none would be required from the First Baptist Church.

Summary Comment ID	Summary Comment	Response
D_SC17	Concern regarding the closure of the at-grade crossings at Elm Avenue and East Holding Avenue on the Wake Forest Historic District (Section U). Question whether the concrete CSX railroad overpass at Roosevelt Avenue (mistakenly identified in comment as West Avenue) would have to be replaced and, if so, whether its demolition would be an adverse effect on the district.	Coordination with NC-HPO determined that the at-grade crossing closures within the Wake Forest Historic District would have "no adverse effect" under Section 106 of the NHPA. However, in response to numerous requests from the public and local officials to maintain access across the railroad at Elm Avenue, a road underpass was evaluated for Elm Avenue, and was presented to the public at an update meeting on May 15, 2012, in Raleigh, NC. Based on comments at the public meeting regarding the impacts of the underpass, as well as input from the Town, it was not carried forward into the Tier II FEIS. Rather, a pedestrian-only bridge has been added in this location to improve pedestrian connectivity. Regarding the existing railroad overpass at Roosevelt Avenue, the Project designs intend to retain it provided that it is verified to be structurally sound.

Code E – Comments Related to Construction Costs and/or Economic Benefits of the Project

Summary Comment ID	Summary Comment	Response
E_SC1	Comments and questions on how the SEHSR will compete for profitability compared with other modes of transportation. Comments on the motivation to use HSR when other transportation options, especially cars, are perceived as cheaper, faster, more reliable, etc.	As discussed in detail in the amended Chapter 1 of the Tier II FEIS, the proposed HSR will be cheaper than flying and faster and more reliable than driving. This amended section also shows results of a recent ridership/revenue study, including how many riders are attracted from other transportation modes, as well as additional modal comparison data that supports the need for the SEHSR for the entire Washington, DC, to Charlotte, NC, corridor. The American transportation system is a mixture of both private and public investment in infrastructure (roadways, railways, airports, waterways) and operations (vehicles, aircraft, vessels, etc.) that provide modal alternatives and options for the future. All modes of transportation are subsidized (i.e., use tax funds) to some degree, and none are expected to be entirely profitable.
E_SC2	Comments that there are not enough benefits of the project compared to costs and impacts; that the project is not economically justified.	As discussed in an amended/expanded Chapter 1 of the Tier II FEIS, there have been several detailed cost/benefit analyses prepared for the SEHSR Corridor, including one for the entire national HSR system (which the SEHSR Corridor is only one segment) prepared in 1997, as well as a detailed feasibility study specifically for the Washington, DC, to Charlotte, NC, SEHSR corridor completed in 1999 (http://www.sehsr.org/reports/feasibility/default.htm). Other studies demonstrate the benefits of the Project (http://www.sehsr.org/reports.html). These studies have repeatedly concluded that the tangible and intangible benefits of the Project (to rail users as well as the public at large) exceed its costs, including projected revenues greater than annual operating costs and substantial positive economic, environmental, and fiscal impacts.
E_SC3	Questions and comments on the perceived greater value of pursuing less costly and incremental railroad improvement projects instead of this project.	The purpose of this Project is to create a new high speed passenger rail facility as part of a national HSR network, as defined in the SEHSR Corridor Tier I EIS (http://www.sehsr.org/reports.html), as well as Section 1.3 of the Tier II DEIS (http://www.sehsr.org/deis/sehsr_deis_download_files.html). The amended/expanded Chapter 1 of the Tier II FEIS expands on the Project's purpose, including a summary of Federal policies and programs that have been creating an intermodal transportation network since 1965. The Project's purpose does not include addressing other railroad improvement needs that are outside of those needed for the Project. As summarized in Sections 1.3.1 and 1.3.2 of the Tier II DEIS, both Virginia and North Carolina have been implementing ongoing railroad improvements for decades that address various railroad operation and safety needs, including reducing congestion for existing passenger and freight operations. To review or comment on ongoing railroad programs and projects, please visit the applicable web sites - NCDOT Rail Division (http://www.bytrain.org/) and Virginia DRPT (http://www.drpt.virginia.gov/default.aspx). In addition, it should be noted that the improvements presented in this Tier II FEIS could be built incrementally based on the availability of project funding.
E_SC4	Questions and comments on the high speed rail jobs created by the project or others along the rail line. Questions and comments on who is going to have preference for those jobs. Comments recommending preference be given to those affected by the project	As discussed in an amended/expanded Purpose and Need section of the Tier II FEIS (Chapter 1), the detailed cost/benefit analyses prepared in 1997 for the entire national HSR system (which the SEHSR Corridor is only one segment) identified the substantial long term economic benefits from development of the Project, including: creation of jobs in railroad construction and operation; induced development of office, retail, hotel and higher density housing near planned rail stations; and, increased manufacturing jobs in the rail passenger transportation industry, including car, equipment and part manufacturers. Many of these jobs will likely be in the vicinity of the rail alignment. Most of these jobs will be created by the private sector. There is no plan for the government to require private companies or any public agency to set specific contracting or hiring requirements or preferences for these spin-off jobs. Where public funds may be used for construction of the Project, however, all applicable hiring laws and policies will apply. Existing Federal hiring regulations stipulate that hiring of illegal workers and conflicts of interests by contractors are illegal.

Summary Comment ID	Summary Comment	Response
E_SC5	Comments or questions related to the cost of the project being too expensive and how much money the United States has or should spend on this project. Comments included suggesting funding the project is wasteful, putting too great a burden on taxpayers,	As discussed in an amended/expanded FEIS Chapter 1, there have been several detailed cost/benefit analyses prepared for the Richmond to Raleigh Project. These studies have repeatedly concluded that the tangible and intangible benefits of the Project (to rail users as well as the public at large) exceed its costs, including projected revenues greater than annual operating costs and substantial positive economic and fiscal impacts. An expanded Chapter 1 of the Tier II FEIS also indicates that Congressional interest and funding for developing HSR in the US dates back to at least 1965. The Washington, DC to Charlotte, NC corridor is one of five key corridors in the overall national system, and is one of the fastest growing corridors in the nation, with ridership doubling in the last year.
E_SC6	Comments or questions about the harm the project would inflict on the economy, including statements that it would not create jobs, not bring in revenue, would increase costs to localities, etc.	As discussed in an amended/expanded Purpose and Need section of the Tier II FEIS (Chapter 1), there have been several detailed cost/benefit analyses prepared for the SEHSR Corridor, including one for the entire national HSR system (of which the SEHSR Corridor is only one segment) prepared in 1997, as well as a detailed feasibility study specifically for the Washington, DC to Charlotte, NC SEHSR Corridor completed in 1999, as well as other studies that demonstrate the benefits of the Richmond to Raleigh Project. These studies have repeatedly concluded that there will be substantial long term economic benefits from development of the Project, including: creation of jobs in railroad construction and operation; induced development of office, retail, hotel and higher density housing near planned rail stations; increased manufacturing jobs in the rail passenger transportation industry, including car, equipment and part manufacturers; increased tourism; reduction in use of carbon fuel; reduced need to widen highways; and, many other benefits, as noted in Chapter 1 of the Tier II FEIS. Maintenance or other responsibilities for localities would be established through agreements between the operation of the system and local governments that specify payments or other terms.
E_SC7	Comments in support of the project, claiming it will benefit the economy, create new jobs, have less environmental impact, create positive net benefits (compared to costs and impacts) and overall benefit the communities, including helping the economies along the rail line, throughout NC and VA, as well as nationally.	As discussed in an amended/expanded Purpose and Need section of the Tier II FEIS (Chapter 1), there have been several detailed cost/benefit analyses prepared for the SEHSR Corridor, including one prepared in 1997 for the entire national HSR system (of which the SEHSR Corridor is only one segment), a detailed feasibility study specifically for the Charlotte, NC to Washington, DC SEHSR corridor completed in 1999, as well as other studies that demonstrate the benefits of the Richmond to Raleigh Project. These studies have repeatedly concluded that there will be substantial long term economic benefits from development of the Project, including: creation of jobs in railroad construction and operation; induced development of office, retail, hotel and higher density housing near planned rail stations; increased manufacturing jobs in the rail passenger transportation industry, including car, equipment and part manufacturers; increased tourism; reduction in use of carbon fuel; reduced need to widen highways; and, many other benefits, as noted in Chapter 1 of the Tier II FEIS.
E_SC8	Comments from companies or individuals interested in getting work from the project during its construction or operations, and/or requesting to be contacted when work begins.	Comment noted. Please keep up with the Project's progress at http://www.sehsr.org.

Summary Comment ID	Summary Comment	Response
E_SC9	Assertions that other transportation projects should be funded first, before the SEHSR, given they are perceived to be more important and of a higher priority.	As discussed in an amended/expanded Purpose and Need section of the Tier II FEIS (Chapter 1), there have been several detailed cost/benefit analyses prepared for the SEHSR Corridor, including one for the entire national HSR system (which the SEHSR Corridor is only one segment) prepared in 1997, as well as a detailed feasibility study specifically for the Charlotte, NC to Washington, DC SEHSR corridor completed in 1999, as well as other studies that demonstrate the benefits of the Richmond to Raleigh Project. These studies have repeatedly concluded that there will be substantial long term economic benefits from development of the Project, including: creation of jobs in railroad construction and operation; induced development of office, retail, hotel and higher density housing near planned rail stations; and, increased manufacturing jobs in the rail passenger transportation industry, including car, equipment and part manufacturers; increased tourism; reduction in use of carbon fuel; reduced need to widen highways; and many other benefits, as noted in Chapter 1 of the Tier II FEIS. Given these substantial public benefits, Congress has repeatedly funded the national HSR program, including the SEHSR Corridor. The purpose of this EIS is to evaluate and mitigate the impacts of this Federally-listed priority project; it is not to evaluate the various components and priorities of the entire Federal transportation budget. To provide input on those decisions, please contact your US Senator and Representatives.

Code F – Comments Related to Train Speed, Equipment, Operations, or Fares

Summary Comment ID	Summary Comment	Response
F_SC1	Statement of opinion regarding the importance of train speed/ trip time/schedule (e.g., faster is better; convenient schedules will enhance ridership).	Comment noted.
F_SC2	Request to have high-level platforms at stations to facilitate quick and easy passenger boarding and transport of bicycles; also a request for policies and procedures that allow for easy transport of bicycles (i.e., not the current policies on some Amtrak trains which require bicycles to be dismantled, boxed, and checked as baggage).	The level of platforms is determined, in part, from compliance guidelines established to implement the Americans with Disabilities Act (ADA) of 1990 and regulated under ADA Accessibility Guidelines published n the Federal Register on July 23, 2004 (amended August 5, 2005). To comply with ADA requirements, FRA requires level boarding at 48” above top-of-rail (ATR) for east coast services. Where passenger service is operated on shared freight corridor, an exception to this requirement with 8” ATR platform height is commonly applied. The Project will consider level boarding where feasible and compatible with the proposed service at that location.
F_SC3	Request for specific train amenities/upgraded equipment/specific operations to enhance ridership.	Equipment and operational specifications will be developed at a later date, once funding for construction of the Project has been secured.
F_SC4	Request for state of the art construction of the railroad.	The Project designs call for new ballast (the rock surface underneath the railroad ties), concrete ties, and welded steel rails.

Summary Comment ID	Summary Comment	Response
F_SC5	Comment related to selection of train technology (diesel/hydrogen cell traction /electric as well as monorail), and/or comments/questions related to the compatibility of the train technology proposed for this project segment and the segments proposed for Richmond/Raleigh, Petersburg/Hampton Roads, Richmond/DC, as well as existing HSR trains in the Northeast Corridor and local/commuter trains that may be used on the system.	The ROD for the SEHSR Corridor Tier I EIS established that the SEHSR Corridor would be developed to use fossil fuel powered trains. Refer to Chapter 2 of the SEHSR Corridor Tier I DEIS for background on the basis for the decision. Note that the designs for the Richmond, VA, to Raleigh, NC covered by this Tier II document will accommodate future electrification. The purpose of the Project is to eventually connect this Project with high speed linkages north of Richmond, VA, to Washington, DC, and beyond to the Northeast Corridor, as well as Hampton Roads (via Petersburg). The train technology proposed with this Project and all proposed connected corridors are being designed with these underlying assumptions for system compatibility in mind.
F_SC6	Comment related to the importance of improved reliability (e.g., frustrations posed by delays associated with freight dispatching and congestion at choke points), and/or statement of preference for dedicated tracks to achieve better performance.	The ROD for the SEHSR Corridor Tier I EIS established that the SEHSR Corridor would be developed using an incremental approach to HSR using existing (freight) railroad rights of way to the greatest extent possible. This approach provides the least overall environmental impacts and highest commercial feasibility. The designs add capacity in the areas between Petersburg, VA, and Richmond, VA where there is existing rail, to minimize conflicts between freight operations and passenger service. Between Petersburg, VA, and Raleigh, NC the designs call for construction of new or rebuilt single track with passing sidings five miles long, every ten miles, which will allow freight and passenger to pass without stopping.
F_SC8	Question regarding why the system has not been designed to achieve higher speeds similar to the systems that are used in Europe and Asia.	The ROD for the SEHSR Corridor Tier I EIS established that the SEHSR Corridor would be developed using an incremental approach and would utilize fossil fuel powered trains. Refer to Chapter 2 of the SEHSR Corridor Tier I DEIS for background information on the basis for the decision. A finding discussed in the SEHSR Corridor Tier I EIS noted that with fossil fuel engines, speed increases above the 110 mph did not generate significant improvements in ridership and revenues, but they did significantly increase costs because of more stringent regulations. It should be noted, however, the bridges and underpasses have been designed to allow for electrification in the future.
F_SC9	Question regarding the funding source for the project (i.e., public vs. private).	Refer to Chapter 1 of the Tier II FEIS for an expanded discussion of the necessary involvement of Federal funds in development of the SEHSR Corridor. It is anticipated that North Carolina and Virginia will pursue Federal funding through the Passenger Rail Investment and Improvement Act (PRIIA), reauthorization of Federal transportation programs and other Federal funding sources (which was anticipated by the Federal government as needed as part of the overall Federal HSR investment). Public-private partnership funding opportunities may also be sought along with Federal and state funding. Decisions regarding future funding of the SEHSR Corridor will be made at the completion of the environmental review process. The Project is not anticipated to be funded by local governments. Maintenance or other responsibilities for localities would be established through agreements between the operation of the system and local governments that specify payments or other terms.

Summary Comment ID	Summary Comment	Response
F_SC10	Question regarding whether there is a limit on the number of high speed passenger trains, freight trains, and conventional passenger trains that can use the corridor.	The Richmond to Raleigh Project contemplates eight additional intermodal freight trains along with two to four additional conventional freight or passenger trains. Construction of the Richmond to Raleigh Project could also allow for conventional passenger service (i.e., local service with more stops in smaller towns) in the future, as demand for service grows. The daily number of trains that could operate within the proposed SEHSR Corridor is constrained by the number of available "slots" in the dispatch schedule. The number of slots is affected by "choke points" within the active freight corridors north of Petersburg and south of Raleigh. This project provides additional rail capacity between Richmond, VA and Raleigh, NC; however, such points in other locations throughout the corridor will impact the number of available slots for trains operating on the new corridor. Separate environmental studies are planned and/or are underway to address design issues in other sections of the corridor. For the purposes of this environmental document, proposed service within the Richmond, VA, to Raleigh, NC, portion of the SEHSR Corridor consists of four new high speed passenger round trips per day (eight trains).
F_SC11	Statement of opinion that higher speeds are not necessary, and/or do not justify the potential impacts and amount of work or cost needed to achieve higher speeds.	Comment noted.
F_SC12	Question regarding fares and/or statement of opinion that fares need to be structured to be competitive with other modes of transportation.	Refer to Chapter 1 of the Tier II FEIS for discussion regarding the ridership and revenue forecasts updated in 2012. The updated forecast includes information regarding projected fares.
F_SC14	Question regarding proposed speeds throughout the corridor.	The Maximum authorized speed (the maximum allowable speed a train may operate based on authorization from the owner of the rail corridor and FRA safety regulations) is anticipated to be: 79 mph from Richmond, VA, to Centralia, VA; 90 mph from Centralia, VA, to Collier, VA (south of Petersburg); and 110 mph from Collier, VA, to Raleigh, NC. Refer to Chapter 1 of the Tier II FEIS for additional discussion related to anticipated speeds.
F_SC15	Concern about stopped and idling trains within passing sidings in Section S.	Between Petersburg, VA, and Raleigh, NC, the Project designs call for construction of new or rebuilt single track with passing sidings five miles long, approximately every ten miles, which will allow freight and passenger to pass without stopping.
F_SC16	Question regarding whether intermodal freight trains are anticipated to be stopping in Raleigh, NC, or just passing through; concern expressed about impacts associated with potential intermodal loading/offloading operations in Raleigh (Section V).	The Richmond to Raleigh Project EIS document assumes eight additional intermodal trains along with two additional conventional freight trains to account for impacts related to a potential increase in freight traffic. Currently, there is no intermodal freight service through Raleigh, and no known plans for introduction of the service. However, operation of intermodal trains is controlled by the freight railroad companies and is driven by market demand.

Summary Comment ID	Summary Comment	Response
F_SC17	Statement of preference to use or modify tracks currently used by Amtrak, or to develop the project on new alignment rather than following the alignment studied in DEIS.	The SEHSR Corridor Tier I EIS concluded that of the nine existing railway options considered, Alternative A (NCRR & S-line), modified with passenger connectivity to Winston-Salem (Alternative B), was the combination of alternatives that best met the Project's Purpose and Need while minimizing environmental impacts. It is, therefore, not the purpose of this Tier II project to revisit the use of other existing rail lines. Also, based on the findings of feasibility studies prior to the Tier I document, NCDOT, DRPT, FRA, and FHWA, focused on an "incremental" development approach to HSR to formulate and analyze the SEHSR Corridor from the beginning. The decision to utilize existing rail infrastructure, an established transportation corridor and railroad ROW (with only small areas requiring new infrastructure to reach desired project speeds and crossing grade closures), allowed a significant reduction in the initial capital investment required by the system. This "incremental" approach also reduces the potential environmental impacts by avoiding the creation of a new, approximately 500-mile long facility on new alignment, thereby avoiding significant impacts to existing urban and natural areas over a much larger project area. These factors would also allow the Project to be built much faster and would also ensure it met the fundamental project goal of connecting the downtowns of major cities along its route. It was therefore an assumption in the SEHSR Corridor Tier I EIS and this Tier II study that rail transportation service for this Project would be provided on the NCRR and S-lines, with standard gauge railroad tracks that are capable of also supporting North American standard heavy-haul freight trains as well as high speed passenger trains. Sharing trackage with conventional rail will also provide substantial benefits to freight service. Also, the design will allow for higher speeds in the future with changes in technology, equipment, and design assumptions (e.g. electrification, tilt technology).
F_SC18	Statement of opinion that it is important that fares be affordable.	Refer to Chapter 1 of the Tier II FEIS for discussion regarding the ridership and revenue forecasts updated in 2012. The updated forecast includes information regarding projected fares.
F_SC19	Statement of opinion (general).	Comment noted.

Code G – Comments Related to Ridership

Summary Comment ID	Summary Comment	Response
G_SC1	Comments supporting the project, including indicating they or others would ride/use it.	Comment noted. The following were reasons expressed in support of the Project, which are consistent with the Purpose and Need defined for the Project: 1) Connecting east coast cities with HSR will expand the public's travel opportunities, providing an opportunity that equals Eisenhower's building of the interstate highway system. This is the step needed to take us into the next 30 years. 2) The average plane is delayed over 56 and a half minutes for every airport along the SEHSR Corridor, and over the next 20 years our population is expected to grow 26 percent. 3) We are going to be unable to pave our way out of congestion. 4) Personal willingness to use train.
G_SC2	Comment that ridership information could not be found in the DEIS and/or the issue did not appear to have been fully assessed.	Ridership has been assessed in the SEHSR Corridor Tier I EIS (Chapter 1) and Tier II DEIS (Chapter 2). These documents are available on the Project website - http://www.sehsr.org/reports.html. Ridership has also been reassessed recently for the Project (see Chapter 1 of this FEIS).

Summary Comment ID	Summary Comment	Response
G_SC3	Questions/comments on the need and/or demand for high speed rail.	Chapter 1 of the Tier II FEIS has been expanded to further define the Project's Purpose and Need, established in numerous previous studies.
G_SC4	Questions/comments on adequate amounts of ridership to support the facility.	Ridership has been assessed in the SEHSR Corridor Tier I EIS (Chapter 1) and Tier II DEIS (Chapter 2) documents available on the Project website - http://www.sehsr.org/reports.html. Chapter 1 of the Tier II FEIS also contains updated ridership estimates and assumptions, specifically about the proposed users of the facility and how reliable projections have been developed.
G_SC5	Questions/comments on users of the existing Amtrak rail system.	Ridership was assessed in the SEHSR Corridor Tier I EIS (Chapter 1) and Tier II DEIS (Chapter 2) documents available on the Project website - http://www.sehsr.org/reports.html. Existing Amtrak ridership as well as ridership estimates and assumptions for future riders on the SEHSR Corridor facility have been updated and expanded in Chapter 1 of the Tier II FEIS.
G_SC6	Questions/comments on riders of SEHSR trains regarding where they live, where they travel, the purpose of their travel, and when they travel. Questions regarding whether they will really use it, given our low population densities, people's natural inclination to drive their own vehicles, and the limitations in other public transportation needed to support the system.	Ridership was assessed in the SEHSR Corridor Tier I EIS (Chapter 1) and Tier II DEIS (Chapter 2) documents available on the Project website - http://www.sehsr.org/reports.html. Chapter 1 of the Tier II FEIS contains updated ridership estimates and assumptions, specifically about the proposed users of the facility. It also details how the projections were developed and verified, and discusses any improvements needed to the public transportation systems to support the planned HSR system. Chapter 3 of the Tier II FEIS has been amended to provide additional discussion of existing public transportation systems and all proposed improvements to the overall public transportation system that will allow system wide connectivity with the SEHSR Corridor system.
G_SC7	Questions/comments on how the facility will compete for ridership and profitability compared with other modes of transportation, especially in the long term. Questions regarding whether the number of riders justify the cost. Assertion that people will not use HSR as long as other transportation options are faster, more reliable, cheaper, etc.	Chapter 1 of the Tier II FEIS expands on the Tier II DEIS and demonstrates how the proposed HSR will be time competitive and cheaper than flying for trips within a 550 mile distance, and faster and more reliable than driving. This section also contains additional modal comparison data (cost, speed, travel time, reliability) that supports the need for and projects the use of the SEHSR for the entire Washington, DC, to Charlotte, NC, corridor.
G_SC8	Questions/comments on specific detailed ridership projections at all the proposed stations. Clarify existing Amtrak versus future ridership projections at each station.	Section 2 of the Tier II DEIS, including Table 2-1, contains ridership estimates that include ridership figures for existing Amtrak and future HSR passenger trains. Chapter 1 of the Tier II FEIS contains updated ridership estimates and additional on-off ridership projections at each proposed station for the selected alternative.
G_SC9	Comments or questions about portions of the project corridor having very low population densities, which would not provide enough ridership to support the facility (i.e., people do not live close enough or in dense enough locations to the proposed station to justify their use of the facility).	Updated ridership and revenue projections for the Richmond to Raleigh Project were developed based on the Preferred Alternative. The results of this analysis are discussed in Chapter 1, Section 1.5 of the Tier II FEIS. The report is included in Appendix C. The updated modelling results agreed with earlier assessments that the proposed Project revenue would exceed anticipated operation and maintenance expenses.

Summary Comment ID	Summary Comment	Response
G_SC10	Questions/comments on how the SEHSR will reduce traffic and congestion on local roads and major routes through the area.	The purpose of the Project is not to reduce traffic or relieve congestion on local roads or on all regional highways, nor is it to supply local public transit options to relieve local commuter congestion or to directly serve employment centers or airports, though there may be ancillary benefits. Those goals are met through the coordinated activities of various other separate regional transportation planning programs and agencies along the corridor, including regional transit authorities and metropolitan planning associations, who will coordinate with the SEHSR Corridor. However, the SEHSR Corridor is intended to be the main north/south spine to which many local commuter options are connected. As further discussed in the amended Chapter 1 of the Tier II FEIS, the purpose of the Project is to provide multimodal options to better serve regional, long-distance and interstate leisure and business travelers between major metropolitan areas traveling north and south along the I-85 & I-95 travel corridor on the east coast (in North Carolina and Virginia and beyond). The Richmond to Raleigh Project would offer a competitive intercity transportation mode which would divert over a million travelers annually from air and auto travel within the Washington, DC, to Charlotte, NC, travel corridor.
G_SC11	Questions/comments on the proposed technology, rate of speed, rate of return on investment, resulting number of riders and/or future expansion capabilities of the system.	Prior to the SEHSR Corridor Tier I EIS, the USDOT, along with North Carolina and other states who would benefit from the SEHSR Corridor, determined that an "incremental approach" would be used for the Project. This included the improvement of existing railroad ROW for the Project (rather than developing a new railroad facility on new alignment), in order to minimize impacts to the human and natural environment, as well as substantially reduce project cost. These factors would allow the Project to be built much faster and would also ensure it met the fundamental project goal of connecting the downtowns of major cities along its route. It was therefore an assumption in the SEHSR Corridor Tier I EIS and this Tier II study that rail transportation service for this Project would be provided on standard gauge railroad tracks capable of also supporting North American standard heavy-haul freight trains as well as high speed passenger trains. Sharing trackage with conventional rail will provide substantial benefits to freight service, but will place certain technological requirements and operational limitations on the high-speed train sets and other technology choices. One of these limitations will be operational, with a maximum speed of 110 mph in the corridor, with an average speed of 85 to 90 mph. The proposed project designs do allow for higher speeds in the future with changes in technology, equipment, and design assumptions (e.g., electrification, tilt technology). However, in more urban areas and near stations high speeds will not be possible. Therefore, with this incremental approach as the underlying basis for the Project, the speed of the facility was not a variable that could be modified to maximize ridership. However, the number and frequency of station stops along the route were evaluated and modified to maximize ridership and therefore profitability under the initial proposed technology, equipment and design assumptions.

Summary Comment ID	Summary Comment	Response
G_SC12	Questions/comments on the need/demand for a route between Charlotte and Richmond, and Raleigh to Richmond. Question of who is going to use those routes.	Richmond is not the northern terminus of the SEHSR Corridor. The Richmond to Raleigh Project is only one segment of the overall SEHSR Corridor, which will extend HSR service south from the Northeast Corridor (NEC) and provide service between Boston, MA, New York, NY, and Washington, DC, southward from Washington, DC, to Charlotte, NC, and (in the future) to Atlanta, GA. Because of the length of the overall SEHSR Corridor (over 450 miles), a tiered approach was adopted for the required environmental studies. Refer to Chapter 1 of the Tier II DEIS for a description of this approach. The Tier II EIS includes detailed environmental analysis for the portion of the preferred corridor between the logical termini of Richmond, VA, and Raleigh, NC. These termini were selected because of the type of improvements proposed (i.e., introducing passenger rail service to a significant section of this corridor where it does not currently exist.) Other environmental documentation will be prepared separately for implementation of the remainder of the corridor as appropriate to those improvements. Project segments are needed together to serve regional, long-distance and interstate leisure and business travelers between major metropolitan areas traveling north and south along the I-85 & I-95 travel corridor on the east coast (in North Carolina and Virginia and beyond). As noted in the SEHSR Corridor Tier I EIS, the entire SEHSR Corridor will help balance the overall transportation system by offering a competitive intercity transportation mode which would divert over a million travelers annually from air and auto travel from Washington, DC, to Charlotte, NC. The amended Chapter 1 of this FEIS provides additional ridership information on the Raleigh to Richmond segment of the SEHSR Corridor, given the planned SEHSR Corridor linkages from Raleigh to Charlotte and Richmond to Washington, DC, and beyond to points northeast.
G_SC13	Questions/comments on how the train schedules (frequency of trains) were set to maximize ridership.	The expanded FEIS Chapter 1 discusses how ridership was estimated as well as the anticipated train frequency.
G_SC14	Questions/comments on using existing rail lines versus building a new system on a totally new alignment (bypassing towns).	The SEHSR Corridor Tier I EIS concluded that of the nine existing railway options considered, Alternative A (NCRR & S-line), modified with passenger connectivity to Winston-Salem (Alternative B), was the combination of alternatives that best met the Project's Purpose and Need while minimizing environmental impacts. It is not the purpose of this Tier II project to revisit the use of other existing rail lines, and a new system on totally new alignment is not proposed. Based on the findings of feasibility studies prior to the Tier I document, NCDOT, DRPT, FRA, and FHWA, focused on an "incremental" development approach to HSR to formulate and analyze the SEHSR Corridor from the beginning. That decision to utilize existing rail infrastructure, an established transportation corridor and existing railroad ROW (with only small areas requiring new infrastructure to reach desired project speeds and crossing grade closures), allowed a significant reduction in the initial capital investment required by the system. This "incremental" approach also reduces the potential environmental impacts by avoiding the creation of a new 450 mile long facility on new alignment, thereby avoiding significant impacts to existing urban and natural areas over a much larger project area. These factors would also allow the Project to be built much faster and would also ensure it met the fundamental project goal of connecting the downtowns of major cities along its route. It was, therefore, an assumption in the SEHSR Corridor Tier I EIS and this Tier II study that rail transportation service for this Project would be provided on the NCRR and S-lines, with standard gauge railroad tracks that are capable of also supporting North American standard heavy-haul freight trains as well as high speed passenger trains. Sharing trackage with conventional rail will also provide substantial benefits to freight service. Also, the design will allow for higher speeds in the future with changes in technology, equipment, and design assumptions (e.g., electrification, tilt technology).
G_SC15	Questions/comments regarding the inclusion of the Petersburg to Hampton Roads HSR segment, and its effect on ridership.	The updated ridership and revenue estimates provided in Chapter 1 of the Tier II FEIS include the Hampton Roads project segment linkage.

Code H – Comments Related to Safety

Summary Comment ID	Summary Comment	Response
H_SC1	Questions and comments on the location of fencing and landscaping in the project corridor. Questions about whether the high speed rail corridor will be completely sealed/impenetrable from any unauthorized access.	The Richmond to Raleigh Project corridor will not be completely sealed from any unauthorized access. It is important to note that it is unsafe to cross the railroad (either existing or proposed with this Project) in locations that are not legal crossings; this is also considered trespassing. In developed areas along the corridor, fencing may be used to direct pedestrians to bridges/underpasses that have been designed to accommodate pedestrian access. Fencing locations and types will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities. Along the rail alignment, landscaping will be consistent with what currently exists. Along road work, landscaping will be addressed during final design using VDOT or NCDOT standards/procedures. Details for landscaping in historic districts may be specified under the Section 106 MOA (with input from property owners and other consulting parties).
H_SC2	Comments stating that to ensure safety from the high speed rail, fencing or walls should be placed along the rail line where the following uses are present - residential homes or neighborhoods, pedestrians, bicyclists, parks, schools, libraries, other uses that attract children, or where pets or wildlife may be inclined to cross.	The Richmond to Raleigh Project corridor will not be completely sealed from any unauthorized access. It is important to note that it is unsafe to cross the railroad (either existing or proposed with this Project) in locations that are not legal crossings; this is also considered trespassing. However, the ability of pedestrians to move safely across the HSR corridor is an important design criterion of the Richmond to Raleigh Project. In developed areas along the corridor, fencing may be used to direct pedestrians to bridges/underpasses that have been designed to accommodate pedestrian access. Fencing locations and types will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities.
H_SC3	Questions regarding the type of fencing materials to be used and the height of the fencing. Comments included concerns that the fencing will be very tall (e.g., 20-foot) or made of chain link or concertina wire.	As discussed in Section 4.16 of the Tier II FEIS, fencing locations and types will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities.
H_SC4	Questions about the speed of each train as it passes through each town, including those without a stop.	The description of the Preferred Alternative in Chapter 2 includes information on the maximum authorized speed of the train by project section. In areas without a stop, it can be assumed that the train will travel at speeds up to the maximum authorized speed for the section in which the area is located. In areas with a stop, it can be assumed that the train will begin slowing down at least one to two miles in advance of the station.
H_SC5	Questions about the protections that will be put into place to avoid accidents, including derailments.	As discussed in Section 4.16 of the Tier II FEIS, numerous safety measures are required in the design and operation of the proposed HSR according to FRA regulations and design standards. The most effective method of avoiding crashes and derailments is full grade separation of the facility, which this Project proposes. Other safety measures address issues such as degree of curvature, minimum ROW widths, and maximum grades.
H_SC6	Comments regarding the overall assurance of safety of high speed trains, including factors such as speed, weight, and turns.	As discussed in Section 4.16 of the Tier II FEIS, numerous safety measures are required in the design and operation of the proposed HSR according to Federal regulations as well as FRA design standards.

Summary Comment ID	Summary Comment	Response
H_SC7	Comments regarding the history of numerous grade crossing collisions along the project route and/or support for the project achieving 100% grade separation.	As discussed in Section 4.16 of the Tier II FEIS, the safest design for HSR is full grade separation, which this Project proposes.
H_SC8	Comments on the relative safety of high speed rail trains versus other forms of transportation or statements that HSR is more dangerous or have more accidents than aircraft.	Section 1.6 of the Tier II FEIS has been updated to include statistics on the relative safety of HSR versus other modes of transportation, including flying. As noted, fatality statistics show rail and flying have nearly identical safety records, which are substantially better than any other mode of transportation.
H_SC9	Questions on the appropriate size of "safety buffer zones" for conventional versus high speed trains to keep residents and the environment safe.	As discussed in Section 4.16 of the Tier II FEIS, numerous safety measures are required in the design and operation of the proposed HSR according to FRA regulations and design standards. The most effective method of avoiding crashes and derailments is full grade separation of the facility, which this Project proposes. Other safety measures address issues such as degree of curvature, minimum ROW widths, and maximum grades.
H_SC10	Questions and comments on how terrorist attacks on the system will be prevented, including the kinds of security measures/monitoring systems/safety techniques proposed to be used.	As discussed in Sections 3.19 and 4.16 of the Tier II DEIS, the entire corridor will be accessible from many miles of arterial and secondary roadways where security measures will not be practicable. However, the FRA has prescribed track safety standards and regulations with which each railroad must comply. The regulations include track inspections at specified minimum frequencies based on several criteria that include Class of track and whether passenger trains are carried. All Federal safety and security regulations current at the time of completion of construction and implementation of passenger service will be followed. Section 4.16 of the Tier II FEIS also describes how fencing locations and types will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities. This may include urban locations where fencing is determined to be appropriate for pedestrian safety and preventing unauthorized access.
H_SC11	Questions and comments on how it will be ensured that no illegal immigrants work on this railway (in order to ensure national security).	Current US Federal employment law mandates that employers only hire legal citizens and documented workers.
H_SC12	Comments on the current "poor maintenance" of the existing rail lines, which pose a current safety hazard. Questions on how this new system would improve long-term maintenance.	Any existing lines will be improved as needed and in many locations new lines will be created, as described in Chapters 1 and 2 of the Tier II DEIS and FEIS. All of the rail improvements must meet current Federal HSR design, operations, and maintenance requirements and standards as discussed in Section 4.16 of the Tier II FEIS, which will improve the lines for shared freight systems as well. Another benefit of the lines being improved for high speed travel is that they are straighter (less curved), which results in less long-term maintenance requirements (because of less wear and tear).
H_SC13	Comments that the existing conventional train corridor is a current safety issue and should be removed entirely.	FRA has prescribed track safety standards and regulations with which each railroad must comply. The regulations include track inspections at specified minimum frequencies based on several criteria that include Class of track and whether passenger trains are carried. As owner of the existing railroad in the corridor between Richmond, VA and Raleigh, NC, CSX is required to meet all current Federal safety regulations. Likewise, all of the proposed rail improvements must meet current federal HSR design, operations, and maintenance requirements and standards as discussed in Section 4.16 of the Tier II FEIS, which will improve the rail for shared freight systems as well. Revised Chapter 1 of the Tier II FEIS discusses the reasons for the current corridor location being located between cities.

Summary Comment ID	Summary Comment	Response
H_SC14	Comments and questions requesting that the project consider methods of improving safety other than closing crossings, especially in areas that are pedestrian-oriented.	Revised Section 4.16 of the Tier II FEIS discusses the proposed full grade separation design as well as the proposed pedestrian over/under-passes. Fencing locations and types will be determined during final design based on coordination between the owner of the rail corridor, the operator of the railroad, and adjacent communities. Together, these project elements will protect surrounding communities to the greatest extent practicable while also minimizing the rail line's intrusion into the community.
H_SC15	Comments that the high speed rail will turn existing thriving neighborhoods and downtowns into unsafe areas to live.	It is the experience of NCDOT and DRPT that an inactive rail line near a neighborhood is more detrimental than an active, well maintained one. Revised Section 4.16 of the Tier II FEIS discusses the proposed full grade separation design as well as the proposed pedestrian over/under-passes.
H_SC16	Comments on the safety of specific proposed road or rail design elements.	All specific location design comments and concerns are addressed in individual responses to specific design requests/clarifications.
H_SC17	Suggestions that a new system on a completely new alignment, bypassing towns, should be considered to avoid the potential for accidents affecting downtowns and urbanized areas.	Based on the findings of earlier feasibility studies, NCDOT, DRPT, FRA, and FHWA focused on an "incremental" development approach to HSR to formulate and analyze the SEHSR Corridor in the Tier I EIS. This approach maximizes the use of existing infrastructure so that the initial capital investment required by the system is reduced, the Project may be built faster, and the Project would meet the fundamental goal of connecting the downtowns of major cities along its route. Bypassing cities would have required the creation of an entirely new 450 mile long facility with all new infrastructure on new alignment, thereby creating much greater impacts to existing urban and undeveloped/natural areas over a much larger impact area. A bypass option would also have been substantially more expensive, the time to construction would have been even greater, and the goal of connecting downtowns, the heart and soul of any city or town, would not have been fulfilled. For these reasons, it was determined that the Richmond to Raleigh Project would utilize the existing rail infrastructure, and be located within an established transportation corridor and railroad ROW.

Code I – Comments Related to Project Schedule and/or Funding

Summary Comment ID	Summary Comment	Response
I_SC1	Comments and questions on the source of funds to be used for the construction of the project including the use of public versus private funds.	At this time, it is anticipated that North Carolina and Virginia will pursue Federal funding through the Passenger Rail Investment and Improvement Act (PRIIA), reauthorization of Federal transportation programs and other Federal funding sources (which was anticipated by the Federal government as needed as part of the overall Federal HSR investment). Public-private partnership funding opportunities may also be sought along with Federal and state funding. Chapter 1 of the Tier II FEIS contains an expanded discussion of the necessary involvement of Federal funds in development of the SEHSR Corridor. As was done in the 1950s when the Federal government created the Interstate Highway System, the nationwide HSR system will use a variety of Federal funding options over many years to invest the billions of dollars needed for such a large new national transportation network. In authorizing this network, the Federal government recognized the substantial economic and environmental benefits such an investment will provide to all elements of the country for decades to come. As was the case for interstate highways, the initial cost to construct such a massive new public transportation system could not be fully funded by private sources or alone by individual end users (see Chapter 1 of the Tier II FEIS for more information). Thus, the estimated $2.1 billion in construction costs for the Raleigh to Richmond portion of the Project were never intended to be fully financed by the system's ridership; however, most long-term operational costs are estimated to be covered through ridership fees (see I_SC2). Decisions regarding future funding of the Richmond to Raleigh Project will be made at the completion of the environmental review process. The Project is not anticipated to be funded by local governments.
I_SC2	Comments and questions on the need for public subsidies for the project for operations and maintenance. Comments and questions on whether the project will "pay for itself."	As noted in Section 2.2.5.1 of the Tier II DEIS, earlier studies showed the Washington, DC, to Charlotte, NC, portion of the SEHSR Corridor is projected to net $21.6 million more per year in 2025 than it will cost to operate the facility. Chapter 1 of the Tier II FEIS provides an update of projected ridership/costs/revenue for the Richmond to Raleigh portion of the SEHSR Corridor. As discussed in Chapter 1, Section 1.5 of the Tier II FEIS and included as Appendix C. The facility has been studied repeatedly since 1997 with the conclusion that proposed revenues will exceed operations and maintenance expenses.

Summary Comment ID	Summary Comment	Response
I_SC3	Comments and questions on whether high speed rail is economically viable, including comments that if the system was viable, there would be no need for massive subsidies for its construction and operation, or if it is was potentially profitable, someone in the private industry would have built it already.	The transportation system is a mixture of both private and public investment in infrastructure (roadways, railways, airports, waterways) and operations (vehicles, aircraft, vessels, etc.) that provide modal alternatives and options for the future. As was done in the 1950s when the Federal government created and paid for the Interstate Highway System, the national high speed passenger rail system (of which the SEHSR Corridor is currently one of five high priority projects moving forward) was initially conceived in the 1960s and has received billions of dollars in Federal funds nationally for implementation since the early 1990s. In authorizing this network, the Federal government has consistently recognized the substantial economic and environmental benefits such a large new national transportation network will provide to the country for decades to come. (See Chapter of the Tier II FEIS for expanded discussion of project cost/benefits.) As is the case for modern toll roadways, such a massive new public transportation system could not be initially funded by private sources or by individual end users (see I_SC11). Thus, the estimated $2.1 billion in construction costs for the Raleigh to Richmond portion of SEHSR Corridor (as provided in the Tier II DEIS, with updated costs provided in the Tier II FEIS) were never intended to be financed by the system's ridership, but by the Federal government as part of the overall national high speed system investment. Because the Project involves improving rail lines that will continue to be shared with freight rail companies, that public investment will also benefit freight companies as well as the passengers who ride on the SEHSR Corridor. As noted in Section 2.2.3 of the Tier II DEIS, stations are proposed at reasonable stops along the route to maximize service to surrounding populations. The forecasts for the HSR between Charlotte and New York estimate total ridership (including both long distance and southeast trains) of approximately 1.3 million passengers annually by 2025, resulting in annual ticket revenues of $103.5 million. As noted in Section 2.2.5.1 of the Tier II DEIS, the Washington, DC, to Charlotte, NC portion of the HSR alone is projected to bring in $21.6 million more per year in 2025 than it will cost to operate the facility. These independent studies consistently indicate that the facility would not only be self-supporting, it would generate net revenue annually. Therefore, although it would require an upfront Federal investment to be constructed, it is not expected to require tax or other Federal subsidies for annual operations and would provide substantial economic and environmental benefits. (See Chapter 1, Section 1.5 and Appendix C of the Tier II FEIS for an expanded discussion of the Project Purpose and Need as well as several previous cost/benefit studies that have repeatedly confirmed the economic viability of the system. Updated ridership and revenue information is also presented here.)
I_SC4	Comments and questions about funneling all trains through Richmond's Main Street Station, including the opinion that to do so will create a bottleneck for train passage, will be excessively expensive, and will harm the viability of the entire SEHSR network.	The SEHSR Tier I EIS evaluated a corridor swath through Richmond without specifically designating stations. Subsequent studies focused on HSR from the Richmond area north will address issues associated with routing trains by Main Street Station.
I_SC5	Comments regarding the availability of enough federal funding to pay for the project. Also, statement that it is highly unlikely that substantial federal funding will be available in the future in light of foreseeable fiscal realities.	As discussed in detail in Chapter 1 of the Tier II FEIS, this Project is an integral portion of the overall SEHSR Corridor system, which in turn is part of a larger nationwide HSR network established through the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. The Federal government established the SEHSR Corridor as a priority through several previous studies, including the Tier I DEIS for the SEHSR Corridor (see http://www.sehsr.org/reports/DEISes.pdf). The FRA, as well as the states of Virginia and North Carolina, continue to identify this Project as a priority, and as such are moving forward to complete the required NEPA and environmental permitting approvals, and have committed to continue pursuing funding for its construction. Completion of the environmental planning process is essential to obtaining Federal funding.

Summary Comment ID	Summary Comment	Response
I_SC6	Comments about on how the project is very much needed and is supported, with a desire to fund it and build it as soon as possible. Assertion that waiting any longer will only cost the project more. Reasons stated in support include: to boost economic de	Support for the Project, including its funding, has been noted. See an expanded Chapter 1 of the Tier II FEIS for additional project Purpose and Need (including cost/benefit) information.
I_SC7	Questions and comments on Norfolk Southern's decision in Raleigh, NC, to not move their train yard and whether it would affect funding or federal approval of Alternative NC3 and/or put the entire SEHSR project at risk (Section V).	In Section V (Raleigh), the preferred alternative (NC5) avoids both the Norfolk Southern rail yard and the CSX rail yard (Seaboard). Norfolk Southern's decision to keep their rail yard in Raleigh does not put the Richmond to Raleigh Project at risk.
I_SC8	Questions and comments on when it will be known which specific houses/businesses will be acquired for the project and when acquisitions will happen. Questions on the specific steps for the project to move forward and the project schedule, including when and how final decisions will be made.	Chapter 1 of the Tier II FEIS contains an updated project history, summary of project steps, discussion of future project steps and a new project schedule, including anticipated date of the final NEPA step (approval of the ROD), and next steps on funding, which is a precursor to property acquisition and project construction.
I_SC9	Comments and questions on the uncertainty of the project and the extended timeframe before many final decisions will be made. Comments that this situation could potentially put properties "under a cloud," or "on hold," or "essentially unmarketable, unsellable or severely reduced in value" for years. Related questions about what property owners should do if they are to be impacted and plan to sell, or want to make improvements, and what are the public disclosure requirements in each state.	North Carolina and Virginia will seek ROW and construction funding based on state rail priorities. The ROW acquisition phase for this Project cannot begin until the FRA issues a ROD, at which point, the established ROW acquisition process in each state will be followed. No construction funding has been identified for this Project at the state or Federal level at this time. ROW acquisition is based on the fair market value of the property, which considers all improvements at their current value. North Carolina and Virginia do not have a position on the issue of disclosure other than to encourage owners and real estate professionals to adhere to all laws and rules in their state regarding disclosure of information to prospective buyers. They are encouraged to check those laws and rules by contacting their appropriate state real estate licensing agency or county tax office when they list their home for sale. It should be noted that "hardship" ROW acquisition typically cannot apply to the Richmond to Raleigh Project until funding is established, which is contingent on the completion of the environmental review process.
I_SC10	Comments and questions on how the project will efficiently spend the public's money.	FRA, NCDOT, and DRPT require efficient project management and have strict project auditing and oversight requirements.

Summary Comment ID	Summary Comment	Response
I_SC11	Statements that the project should only be built by the private sector, given the assumption that the private sector would make it a success, unlike federal projects.	High speed passenger rail outside the NEC is inherently a public-private partnership because of the shared infrastructure with freight rail. Although public-private partnerships can play a critical role in final delivery of HSR service, no HSR system in the world has succeeded without significant up-front public investment and involvement. This is because private investment is not possible in the early stages of most large-scale infrastructure and public works projects (as is also the case for highways constructed as toll roads) due to the sheer size of initial investment required to design and construct the system. Other obstacles to privatization that would need to be overcome include substantial risks involved in such highly complex and multi-jurisdictional projects, the amount of time for projects to become operational, and potential uncertainty on when the projects, once they are up and running, will produce a strong enough return on investment. As discussed in a revised Chapter 1 of the Tier II FEIS, it is anticipated that North Carolina and Virginia will pursue construction funding through various Federal sources, including the Passenger Rail Investment and Improvement Act (PRIIA), reauthorization of Federal transportation programs and other Federal funding sources (which was anticipated by the Federal government as needed as part of the overall Federal HSR investment). State and public-private partnership (P3) funding opportunities may also be sought along with Federal funding. Such a P3 initiative to create private investment opportunities is being pursued in California (see http://www.cahighspeedrail.ca.gov/). See Chapter 1 of the Tier II FEIS for more information on the Project's costs and benefits that support the public need for the Project.
I_SC12	Comment that the project is going to be another federal financial failure, worsen national debt, and burden taxpayers, similar to other federal initiatives such as the US Postal Service, Social Security, and Amtrak.	Chapter 1 of the Tier II FEIS contains an expanded discussion of the necessary involvement of Federal funds in development of the SEHSR Corridor. As was done in the 1950s when the Federal government created the Interstate Highway System, the nationwide HSR system will use a variety of Federal funding options over many years to invest the billions of dollars needed for such a large new national transportation network. In authorizing this network, the Federal government recognized the substantial economic and environmental benefits such an investment will provide to all elements of the country for decades to come. As was the case for interstate highways, the initial cost to construct such a massive new public transportation system could not be fully funded by private sources or alone by individual end users (see Chapter 1 of the Tier II FEIS for more information). Thus, the estimated $2.1 billion in construction costs for the Raleigh to Richmond portion of SEHSR Corridor were never intended to be fully financed by the system's ridership. However, as noted in Section 2.2.5.1 of the Tier II DEIS, the Washington, DC, to Charlotte, NC, portion of the SEHSR Corridor is projected to bring in $21.6 million more per year in 2025 than it will cost to operate the facility (see Section 1.5 of the Tier II FEIS for updated ridership/costs/revenue). As discussed in Chapter 1 of the Tier II FEIS, the facility has been studied repeatedly since 1997 with the conclusion that it would not only be self-supporting, but it would generate substantial net revenue annually. The project would require an upfront Federal investment to be constructed, and public-private funding opportunities may also be sought. However, it is not expected to require tax or other Federal subsidies for annual operations. In addition, Between the substantial socio-economic benefits of the system and the net annual operating surpluses for the system operators (which reduces any need for future public funding), the Raleigh to Richmond portion of the SEHSR Corridor is predicted to be a financial success for Virginia and North Carolina.

Summary Comment ID	Summary Comment	Response
I_SC13	Comments and questions on the multiuse greenway/trail associated with the SEHSR, including statements that the trail should be guaranteed with the project and acquisition of the trail corridor should be part of the SEHSR and paid in full with federal money.	The concept of a greenway located parallel to the Richmond to Raleigh Project from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC) was introduced in the Richmond to Raleigh Project DEIS. The rationale for its inclusion was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Richmond to Raleigh Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Richmond to Raleigh Project, the process of developing the environmental documentation for greenway has changed since publication of the Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than being included in the Tier II FEIS for the Richmond to Raleigh Project, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within the Richmond to Raleigh Project FEIS, but rather in a separate Greenway Corridor Plan. This document is currently under development, with completion anticipated at the time of the ROD for the Richmond to Raleigh Project. The Project website will provide additional details on this separate plan and opportunities for its public review and comment.
I_SC14	Comments and questions on why the project has been evaluated in a "piecemeal" fashion, has had so many "endless studies," "red tape," and "analysis paralysis," and/or has wasted a lot of time and money.	As indicated in the SEHSR Corridor Tier I EIS and Tier II DEIS documents, the Project is Federally funded and, therefore, subject to the environmental studies and public involvement requirements of the National Environmental Policy Act (NEPA). Due to the size and complexity of the Project's potential impacts, a full evaluation of the Project has taken over 20 years to go from corridor concept to Tier I and Tier II studies with preliminary design (i.e., 1992 to 2012). Given that the average timeframe for smaller Federal Highway Administration (FHWA) road projects to complete only the Tier II-level NEPA process is 5.5 years, with 13% of projects taking more than 10 years to complete (based on an FHWA study), the Richmond to Raleigh Project has not taken an unusually long time. For an expanded project history that describes the various steps taken in the life of the Project and the value/purpose/requirement for each, see Chapter 1 of the Tier II FEIS.
I_SC15	Comments and questions on why the project is being "rushed through," with not enough "conservative, diligent research," and/or the need for "better evaluation of impacts." Comment that this will result in careless and reckless impacts to the environment and communities.	As discussed in the expanded Chapter 1 of the Tier II FEIS, the Congressional interest in national high speed ground transportation dates back to 1965, with numerous detailed studies for the Washington, DC, to Charlotte, NC, corridor dating back to as early as 1981, with a major Federal economic study of the entire national HSR system in 1997, a feasibility study specifically for the SEHSR (Washington, DC, to Charlotte, NC, corridor) in 1999, the SEHSR Corridor Tier I EIS prepared in 2003, and the Tier II DEIS for the current project in 2010. These studies have been, and continue to be, methodical and deliberate, with a continued focus on avoiding, minimizing and mitigating human and environmental impacts; ensuring the greatest possible economic benefits; and ensuring the tangible and intangible benefits of the Project exceed its costs. This is demonstrated in this FEIS document, which contains refined environmental analysis and engineering designs for the Preferred Alternative, which avoids human and natural resources as much as practical while still allowing high operability.
I_SC16	Comments and questions on how the project should be funded, including using a gas tax increase.	Appropriate project funding sources will be evaluated once the NEPA process is complete.

Summary Comment ID	Summary Comment	Response
I_SC17	Comments and questions on whether or not a particular locality's taxes will go up if the train does not stop (at a station) in a particular locality.	The states of Virginia and North Carolina have committed to continue pursuing funding for the Project's construction. At this time, it is anticipated that Federal funding will continue to be pursued through the Passenger Rail Investment and Improvement Act (PRIIA), reauthorization of Federal transportation programs and other Federal funding sources (which was anticipated by the Federal government as needed as part of the overall Federal HSR investment). State and public-private partnership funding opportunities may also be sought along with Federal funding. Specific decisions regarding future funding of the SEHSR Corridor will be made at the completion of the environmental review process. At this point it is not possible to speculate what revenue sources the Federal and state governments will use to fund construction of the Project; however, it is not anticipated that funding will come from localities.

Code J – Comments Related to Preference for an Alternative

Summary Comment ID	Summary Comment	Response
J_SC1	Expression of preference for a particular alternative.	Preference noted. Refer to Chapter 2 of the Tier II FEIS for an explanation of the decision regarding the preferred alternative for each section of the Project.

Code K – Other Comments (Including Comments Related to Potential Station Locations)

Summary Comment ID	Summary Comment	Response
K_SC1	Questions on how the station locations were selected, and/or why specific locations were not considered for station stops, and/or comments on the number of stations/stops in specific locations.	Section 2.2.3 of the Tier II DEIS details the needs for placing stops/stations between Richmond, VA, and Raleigh, NC. Other linkages planned for the SEHSR Corridor will eventually connect to Washington, DC, to the north and Charlotte, NC, to the south, as well as Hampton Road, VA. This study only evaluates station locations for the Richmond to Raleigh segment of the overall SEHSR Corridor. Each of the stations must be placed at reasonable intervals while still serving the population centers along the route. The DEIS recommended that stations be located in three cities that currently have stations - Richmond, VA, Petersburg, VA, and Raleigh, NC. Two new stations were recommended for La Crosse/South Hill (VA) and Henderson (NC). These locations were recommended based on operational model ridership and revenue forecasting, station platform engineering design needs, feedback from the public, and the size of accessible populations along the route (see pages 2-45 to 2-48 of the Tier II DEIS for more detailed information). Improvements made to the rail infrastructure through the Richmond to Raleigh Project could create opportunities for the development of conventional rail service to exist along with high speed service throughout the Project corridor, or to connect to other rail lines extending outside the corridor. Conventional trains could operate at the same (or lower) speeds as the SEHSR Corridor, but stop more often at additional locations. Additionally, Virginia and North Carolina have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states. The proposed SEHSR Corridor service would serve as the spine to these added routes, allowing conventional rail service passengers to connect to the proposed SEHSR Corridor service and other points in the Northeast, Southeast, and beyond. Note that although this environmental document has assessed operational data and ridership projections to identify suitable station stops, the planning, improvements, construction and maintenance/operations needed for each station is a local responsibility.
K_SC2	Comments in support of the use of Main Street Station (MSS) in Richmond, VA, as part of the SEHSR project (Section AA).	The SEHSR Corridor Tier I EIS evaluated the corridor through Richmond without specifically designating stations. Subsequent studies focused on HSR from the Richmond area north will address issues associated with routing trains by Main Street Station.
K_SC3	Suggestion for a specific station location or other comments about the proposed station in the Petersburg, VA area (Section CC).	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations because the development of stations is a unique undertaking at an individual location. However, generalized sites within the Petersburg area were evaluated, but only to the level to ensure that a station placed along the Project corridor in this general location would provide sufficient accessibility to the larger transportation network. All specific ideas for station locations will be noted and provided to transportation planning organizations in the Petersburg area, who will perform separate environmental evaluation and make the final decision on the station location and design at a later date. It should be noted that Chapter 1 of the Tier II FEIS contains an expanded discussion of likely station design guidelines and the types of information and detailed studies that the station NEPA studies would likely need to contain.
K_SC4	Suggestion for a specific station location or other comments about the proposed station in in Raleigh, NC (Section V).	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations because the development of stations is a unique undertaking at an individual location. NCDOT and the City of Raleigh have completed a separate environmental evaluation and are currently constructing a new Raleigh Union Station. This project includes improvements to the CSX-S-Line and the NCRR H-Line at Boylan Junction (see Chapter 1, Section 1.1.3.2).
K_SC5	Suggestion for a specific station location or other comments about the proposed station in La Crosse, VA (Section I).	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of specific station locations. All specific ideas for station locations will be noted and provided to the Town of La Crosse, who will perform a separate environmental evaluation and make the final decision on its location and design at a later date. It should be noted that Chapter 1 of the Tier II FEIS contains an expanded discussion of station design guidelines and the types of information and detailed studies that the station NEPA studies would likely need to contain.

Summary Comment ID	Summary Comment	Response
K_SC6	Suggestion for a specific station location or other comments about the proposed station in Henderson, NC (Section P).	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations because the development of stations is a unique undertaking at an individual location. All specific ideas for station locations will be noted and provided to the Town of Henderson, who will perform a separate environmental evaluation and make the final decision on its location and design at a later date. It should be noted that Chapter 1 of the Tier II FEIS contains an expanded discussion of station design guidelines and the types of information and detailed studies that the station NEPA studies would likely need to contain.
K_SC7	Comments stating that Richmond's Main Street Station (MSS) is "impractical," "outdated," a "bottle-neck," "too congested," and a "bad idea." Assertion that funneling trains through MSS would be prohibitively expensive, degrade speeds, and affect trip times and reliability. Also suggestions that the Broad Street Station (also known as Union Station) is a better choice (Section AA).	The Tier 1 study evaluated the corridor through Richmond without specifically designating stations. Subsequent studies focused on HSR from the Richmond area north will address issues associated with routing trains by Main Street Station.
K_SC8	Comments and questions on amenities needed for each of the rail stations to ensure high ridership, including suggestions for appropriate access, parking, security, and passenger amenities.	As detailed in Section 2.2.4 of the Tier II DEIS, the rail alignments have been designed to accommodate a platform at all the locations identified to have a station/stop. Detailed designs for the Project's proposed stations will be developed by other entities (e.g., the municipalities or the entity who eventually operates the service) and evaluated through separate NEPA processes. All applicable design requirements (other than the Americans with Disabilities Act), including parking, security, station design and passenger amenities, would be controlled by the local government where the station is located, in conjunction with the applicable state rail agency and the rail operator, who may have their own design guidelines. It should be noted that Chapter 1 of the Tier II FEIS contains an expanded discussion of likely station design guidelines and the types of information and detailed studies that the station NEPA studies would likely need to contain.
K_SC9	Suggestion that only bare minimums are required for rail stations, specifically reduced size structures, unmanned services, basic designs and limited amenities are needed to save costs and conserve space.	As detailed in Section 2.2.4 of the Tier II DEIS, the rail alignments have been designed to accommodate a platform at all the locations identified to have a station/stop. Detailed designs for the Project's proposed stations will be developed by other entities (e.g., the municipalities or the entity who eventually operates the service) and evaluated through separate NEPA processes. All applicable design requirements (other than the Americans with Disabilities Act), including parking, security, station design and passenger amenities, would be controlled by the local government where the station is located, in conjunction with the applicable state rail agency and the rail operator, who may have their own design guidelines. It should be noted that Chapter 1 of the Tier II FEIS contains an expanded discussion of likely station design guidelines and the types of information and detailed studies that the station NEPA studies would likely need to contain.
K_SC10	Comments and questions about specific land use/growth/redevelopment and transportation needs in a community (outside of the project study area).	It is advisable that all respondents with non-project related comments and suggestions regarding land use or transportation in their communities take their concerns to their local government planning department staff. Section 3.11.3 of the Tier II DEIS specifies which agencies are responsible for land use planning, regulating development and transportation planning in the two-state project areas.

Summary Comment ID	Summary Comment	Response
K_SC11	Comments and questions about existing freight traffic sharing trackage with the proposed SEHSR. Comments expressing desire to re-route freight away from the proposed SEHSR route.	As discussed in Section 1.3 of the Tier II DEIS, the FRA has been implementing proposed HSR routes nationally since 1991. Figure 1-2 of the Tier II DEIS provides a map of the Designated High Speed Rail Corridors as well as other existing or proposed passenger rail routes across the nation. Early in the planning process NCDOT, DRPT, and FRA determined, through a series of feasibility studies and modeling, that the SEHSR Corridor should be analyzed and implemented using an incremental approach. This approach minimizes impacts to both the human and natural environments by using existing rail infrastructure and rail ROW as much as possible. Use of existing infrastructure also reduces the initial capital investment required by the system. FRA will continue to make operational decisions on the best possible routes for passenger trains on both HSR and conventional railways based on a variety of factors, including existing freight traffic.
K_SC12	Comments or questions about suggested areas the SEHSR should extend to and connect with, including airports, entertainment areas, employment centers, even if those are located outside of the project corridor.	It has long been recognized that, for complete transit system functionality, there are a variety of important local origins and destinations located outside of the Richmond to Raleigh Project corridor in each metropolitan region that need to be served by other transportation projects (e.g., regional rail, local light rail) with linkages to the SEHSR Corridor (e.g., RDU airport). For example, the proposed Triangle Regional Transit Program project will address many of the local connectivity needs in the Research Triangle Park area of North Carolina. Virginia and North Carolina have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states. The proposed SEHSR Corridor service would serve as the spine to these added routes, allowing conventional rail service passengers to connect to the proposed SEHSR Corridor service and other points in the Northeast, Southeast, and beyond. Towns that are not designated to receive a HSR stop initially could benefit by access to passenger rail service at defined stations along the SEHSR Corridor, with the future potential for conventional passenger rail service based upon demand. However, those conventional needs extend beyond the scope of the Richmond to Raleigh Project and, therefore, will need to be addressed by separate public transit projects developed through the coordinated activities of various other regional and local transportation planning agencies located along the corridor (see G_SC10). As discussed in Chapter 1 of the Tier II DEIS for this Project, the Richmond, VA, to Raleigh, NC, portion of the SEHSR Corridor will enhance the connectivity between major cities through greatly enhanced speed, reliability, and reductions in travel time. The project's purpose is to better serve regional (not local), long-distance and interstate leisure and business travelers between major metropolitan areas traveling north and south along the I-85 and I-95 travel corridor on the East Coast (in Virginia and North Carolina, as well as north to Washington, DC, and the Northeast, and south to South Carolina, the Gulf Coast, and Florida). The project will use existing north-south freight and passenger rail lines and corridors to regionally connect the city centers in these metropolitan areas, providing an alternative that will divert long-distance intercity trips from air and highway users.

Summary Comment ID	Summary Comment	Response
K_SC13	Comments in support of the project, including comments supporting current travel by train either in this corridor or along lines that connect to this corridor. Statements affirming that the new SEHSR service would be used in the future including the following: 1) Support for the project, given that it will improve regional and intercity connectivity and overall mobility; 2) It is critical that high speed rail links major cities in the east. Consistent and reliable high speed rail service will expand the worlds of older people and others less willing to drive/fly to DC, NYC, and Boston. 2) The Richmond-Raleigh high speed rail corridor is the missing link in the SEHSR, and needs to be free of at-grade crossings for safety, operational and competitive federal funding reasons, as well as include bridges where feasible to enhance connections within communities. 3) Connections between city centers is crucial to the economies of the localities along the facility. 4) The facility will create an even larger economic region. 5) Connections to other regional transportation and transit systems and modes are essential as well as SEHSR (see K_SC12 and K_SC15 for additional information).	Comment noted.

Summary Comment ID	Summary Comment	Response
K_SC14	Comments and questions on how the area around train stations should be developed, including suggestions as to their function and use, including items such as destinations for shopping, entertainment, and culture.	The DEIS (Section 2.2.4) does not evaluate the environmental impacts of stations or recommend specific station locations because the development of stations is a unique undertaking at an individual location and will be addressed in separate NEPA studies. Chapter 1 of the Tier II FEIS does contain an expanded discussion of likely station design guidelines and the types of information and detailed studies that the future station NEPA studies would likely need to contain. As described in the revised Section 4.17.3 of the Tier II FEIS, a likely local effect of the SEHSR Corridor is to encourage development of higher density land uses around the planned stations, which may limit the growth of urban sprawl. Such improvements are assumed in the various economic benefit studies summarized in the updated Chapter 1 of the Tier II FEIS. Section 3.11.3 of the Tier II DEIS specifies which agencies are responsible for land use planning, regulating development and transportation planning in the potential station locations. It is advisable that all respondents with non-project related comments and suggestions regarding land use or transportation in their communities take their concerns to their local government planning department staff.
K_SC15	Comments and questions on needs for multimodal transit connectivity to the SEHSR, including transfer points, public transportation, and other local and regional transit systems and how they will connect/work with the proposed system.	As described in Chapters 1, 3 and 4 of the Tier II FEIS, the intent of the SEHSR Corridor is to be connected to other forms of transit, which would enhance regional connectivity. For example, the SEHSR Corridor is being planned for connectivity with other rail transit in the major metropolitan areas along the Project corridor (e.g., Triangle Regional Transit Program). In addition, Virginia and North Carolina have both evaluated the feasibility of adding conventional passenger train service to eastern and western portions of the states. The proposed SEHSR Corridor service would serve as the spine to these added routes, allowing conventional rail service passengers to connect to the proposed SEHSR Corridor service and other points in the Northeast, Southeast, and beyond. The Richmond, VA, to Raleigh, NC, portion of the SEHSR Corridor enhances the connectivity through greatly enhanced speed, reliability, and reductions in travel time. Section 3.11.3 of the Tier II DEIS discussed the associated local and regional transit services planned to connect to the SEHSR Corridor, as well as which agencies are responsible for planning the transportation needs in the two-state project area. As discussed in the revised Section 3.11.3.1 of the Tier II FEIS, at all proposed SEHSR Corridor stations/stops there is currently at least one public bus transit service agency that either currently provides, or is anticipated to be expanded to provide, bus or van services for SEHSR Corridor riders at the planned station locations. This includes the following bus transit agencies/systems (listed by proposed SEHSR Corridor station location) - Richmond, VA (Greater Richmond Transit Company (GRTC)); Petersburg, VA (Petersburg Area Transit); La Crosse, VA (Lake Area Bus/Halifax Area Rural Transit (LAB/HART)); Henderson, NC (Kerr Area Rural Transportation System (KARTS)); and Raleigh, NC (Capital Area Transit (CAT) & Triangle Transit (TT)) Additionally, rail transit plans for the Richmond region include several commuter rail and light rail lines providing service to Main Street Station, as well as a proposed commuter rail line that could potentially share the same ROW as the SEHSR Corridor between Main Street Station and Petersburg, VA. Rail transit plans for the Raleigh region involve a light rail line that could potentially share the same general corridor as the SEHSR Corridor from north Raleigh to downtown Raleigh. It is advisable that all persons with comments or suggestions regarding public transit needs in their communities (which are outside the scope of this Project) take their concerns directly to their local transit or transportation planning agencies.
K_SC16	Comments requesting that the SEHSR should extend to the Hampton Roads area of Virginia and be a part of this EIS, or requesting this study better reference/incorporate that project linkage.	The Hampton Roads HSR connection has been studied through a separate project, given its independent utility (as authorized by NEPA). The FEIS for the Hampton Roads study was submitted to FRA in July 2012. For more information on the "Richmond to Hampton Roads Tier I" study or plans for the next phase (Tier II EIS), as well as public involvement opportunities for that separate project, please go to http://www.rich2hrrail.info/. The two projects are being designed to ensure compatibility and connectivity in the Petersburg, VA/Tri-Cities area. The Richmond to Raleigh Project FEIS has been updated to include additional information on the Richmond to Hampton Roads project, specifically addressing the compatibility of designs as well as cross-references to the results of that separate study.

Summary Comment ID	Summary Comment	Response
K_SC17	Questions/comments on how the SEHSR project will benefit or harm the communities along the inactive CSX corridor, or other active rail corridors, in terms of freight usage.	The Richmond to Raleigh Project will replace the missing tracks and allow passing sidings along the inactive CSX corridor from the Norlina, NC, area to Collier Yard, south of Petersburg, VA. The project will also add passing sidings along the currently active rail corridors. Together, these improvements will provide an opportunity and capacity for new freight usage, which would be a benefit to industries in those counties that use (or could use) freight as a means of transporting or receiving goods.
K_SC18	Comments about existing passenger rail travel along the corridor being slow and of poor quality due to shared trackage and poor track and train maintenance by freight companies.	The Richmond to Raleigh Project will address these existing problems in the active corridor by providing passing sidings and straightened alignments to improve passenger train travel times as well as prevent blockages or conflicts with freight trains. The Richmond to Raleigh Project will also construct new or improved rail lines and provide increased maintenance along the entire corridor to dramatically improve the quality of the corridor and decrease the chance for breakdowns or delays. Also, it is possible that the VA-NC SEHSR Compact would own the rail corridor from south of Petersburg, VA, to Raleigh, NC (CSX S-Line), which would give passenger trains preference over freight trains.
K_SC19	Comments/questions regarding stopping, idling, and/or starting freight trains along the multiple planned passing sidings, including the perception that such a situation would create more impacts than a traveling freight train.	The passing sidings provided along the Richmond to Raleigh Project corridor are to allow one moving train to pass another moving train (i.e., neither train stops). Idling of either freight or passenger trains is not anticipated along the passing sidings.
K_SC20	Comments or questions about the effect of Alternative NC3 on Norfolk Southern's operations in downtown Raleigh, NC (Section V).	The preferred alternative in Section V is Alternative NC5. With the separation of freight and passenger routes north of Jones St. under Alternative NC5, and the additional capacity created through the Project, it is anticipated that there will not be a substantial change in freight idling times in downtown Raleigh resulting from the Project.
K_SC21	Comments on intermodal freight trains, specifically about whether they will they be stopping or just passing through Raleigh, NC. If they would stop in Raleigh, questions about what their impacts would be.	The Richmond to Raleigh Project EIS document assumes eight additional intermodal trains along with two additional conventional freight trains to account for impacts related to a potential increase in freight traffic. Currently, there is no intermodal freight service through Raleigh, and no known plans for introduction of the service. However, operation of intermodal trains is controlled by the freight railroad companies and is driven by market demand.
K_SC22	Comments that requested the need for all greenways to be jointly planned and linked regionally.	There are several non-profit groups that are planning longer, multi-county or even multi-state greenway systems in the Project Study Area, such as the North Carolina Mountains to the Sea Trail (see http://www.ncmst.org/) and the East Coast Greenway (see http://www.greenway.org/), which is being developed from Maine to Florida, with which the proposed greenway adjacent to the Richmond to Raleigh Project may be incorporated. It is standard for greenway and park planning to attempt to provide inter-connectivity between separate trail and greenway systems to improve regional mobility and reduce automobile dependence and also to capitalize on other existing trails to provide linkages for their systems to avoid costly duplications. Greenway and bicycle path planning are traditionally accomplished by cities and counties along the Project alignment as well as by regional planning and transportation agencies, according to policies generated by the local government(s) with jurisdiction in the area.

Summary Comment ID	Summary Comment	Response
K_SC23	Comments, questions, suggestions or request for details on the proposed multiuse greenway trail system. Also, comments supporting the parallel greenway system as part of the SEHSR project.	The concept of a greenway located parallel to the Richmond to Raleigh Project from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC) was introduced in the Richmond to Raleigh Project DEIS. The rationale for its inclusion was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Richmond to Raleigh Project because FRA (the source of Federal funding for HSR projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Richmond to Raleigh Project, the process of developing the environmental documentation for greenway has changed since publication of the Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than being included in the Tier II FEIS for the Richmond to Raleigh Project, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within the Richmond to Raleigh Project FEIS, but rather in a separate Greenway Corridor Plan. This document is currently under development, with completion anticipated at the time of the ROD for the Richmond to Raleigh Project. The Project website will provide additional details on this separate plan and opportunities for its public review and comment.
K_SC24	Statements that there have not been sufficient opportunities for public, local government, or other agency involvement in this project. Statement that public involvement should have been coordinated between this project and the Richmond to Hampton Roads project. Statement that there needs to be additional opportunities for public input going forward.	The SEHSR Corridor project was divided into two tiers of studies that have spanned a decade, providing numerous opportunities for public and agency involvement. The SEHSR Corridor Tier I EIS included extensive public, local government (including elected officials) and agency involvement between 1999 and 2000. Specific agency/local government outreach included: informal communications; formal joint bi-state scoping meeting; informal briefings and small group meetings; written data and input requests; the formation of an Advisory Committee; and use of the same communication tools made available in the public involvement process (newsletters, web site, toll free project line and access to the public workshops and officials workshops). Specific public involvement outreach included: a public opinion survey; public workshops; community outreach tools/techniques; media outreach; community outreach research; and public feedback on public involvement activities. As discussed in Chapter 7 of the Tier II DEIS, the Tier II study also included public, official and agency involvement opportunities between 2003 and 2009. Specific outreach included: an agency scoping meeting; two advisory committee meetings (with participation by representatives of all the affected localities along the Project); agency-specific coordination activities (i.e., meetings with specific agencies as needed); four project newsletters; a continually updated project website; development of periodic press releases; a toll-free project hotline; 18 informational workshops along the Project corridor; a project brochure; and additional coordination with specific property owners affected by the Project (e.g. Section 106 historic resources). The DEIS met the NEPA requirements for a minimum of 45 days of public review time. Eight public hearings for the Tier II DEIS were held along the Project corridor (Richmond, VA; Petersburg, VA; McKenney, VA; Alberta, VA; Norlina, NC; Henderson, NC; Franklinton, NC; and Raleigh, NC). In addition, in 2011 and 2012, public update meetings were held in several sections of the Project to present new alternatives (near Alberta, VA, and in downtown Raleigh, NC) and show other design changes based on comments on the Tier II DEIS (North Raleigh, and Wake Forest, NC, Henderson, NC and Chesterfield County, VA). There will also be design public hearings held after completion of the Record of Decision (ROD). Regarding coordinating the public involvement of the Richmond to Hampton Roads project and this one, the same team at DRPT is involved in both studies, and daily coordination has taken place throughout the planning process. Representatives of this Project attended the public hearings in January 2010 for the Richmond to Hampton Roads project to answer questions about the compatibility of the two projects. Additionally, DRPT representatives attended a town hall style meeting in Norfolk, VA, in October 2010 to answer public questions about the Richmond to Raleigh Project.

Summary Comment ID	Summary Comment	Response
K_SC25	There has been insufficient outreach to low income and protected populations (including Limited English proficiency (LEP)) in affected project areas.	The environmental justice section of the Tier II DEIS (section 4.11.5) concluded that no disproportionately high and adverse effects on low-income and minority populations are anticipated within the overall SEHSR Corridor, and there is a reasonable expectation that minority and low-income populations would share in the benefit of the proposed rail improvements. Although not targeted specifically to EJ communities, substantial outreach was conducted to all populations along the entire project corridor (see K_SC24). In the only county reaching the Project LEP threshold (5% of/1,000 persons within the Study Area in a county speaking English less than "very well"), LEP assistance was provided (see K_SC26).
K_SC26	Comments/questions regarding sufficient outreach provided to Limited English Proficiency (LEP) populations.	Wake County, NC, which includes the City of Raleigh and Town of Wake Forest, was the only county in the Project Study Area to meet the Project threshold that would require need for LEP assistance (5% of - or 1,000 persons within - the Project Study Area within in a county). Therefore, a Spanish translator was provided at the July 2010 public hearing, September 2011 public update meeting, and May 2012 public update meeting held in Wake County. In addition, Spanish translations of all the handouts and display boards were available at the hearing and meetings and all hearing/meeting notification letters sent to property owners were mailed with both English and Spanish versions. For Spanish speakers throughout the entire Project Study Area, there was a link on the Project's DEIS web page that took the reader to info in Spanish about the Project and the toll free project hotline provided an option to hear the outgoing message in Spanish.
K_SC27	Comments/questions regarding consistency or perceived conflicts between the Triangle Transit (TT) proposed regional light rail designs in Wake and Durham Counties and the SEHSR project (Section V).	NCDOT, TT, and the City of Raleigh have been closely coordinating the two separate projects. All potential conflicts between the preferred NC5 alternative in Section V and the revised TT designs (published in July 2011) have been addressed by either TT or the SEHSR Corridor making minor design modifications.
K_SC28	Questions on existing and/or future daily limits on the number of passenger and freight trains in the project corridor.	The Richmond to Raleigh Project contemplates eight additional intermodal freight trains along with two to four additional conventional freight or passenger trains. Construction of the Richmond to Raleigh Project could also allow for conventional passenger service (i.e., local service with more stops in smaller towns) in the future, as demand for service grows. The daily number of trains that could operate within the proposed SEHSR Corridor other is constrained by the number of available “slots” in the dispatch schedule. The number of slots is affected by “choke points” within the active freight corridors north of Petersburg and south of Raleigh. This project provides additional rail capacity between Richmond, VA and Raleigh, NC; however, such points in other locations throughout the corridor will impact the number of available slots for trains operating on the new corridor. Separate environmental studies are planned and/or are underway to address design issues in other sections of the corridor. For the purposes of this environmental document, proposed service within the Richmond, VA, to Raleigh, NC, portion of the SEHSR Corridor consists of four new high speed passenger round trips per day (eight trains).
K_SC29	Comments on the need to study ridership and revenue for the high speed rail line to Hampton Roads in conjunction with this project, to adequately show the benefits of both projects or to compete for federal funding.	Chapter 1 of the Tier II FEIS contains results of the new ridership/revenue study, which assumes all proposed linkages within the Richmond to Raleigh Project are completed, including Hampton Roads and Richmond, VA, to Washington, DC, and the Northeast Corridor.

Summary Comment ID	Summary Comment	Response
K_SC30	Comments against the parallel greenway trail system. Objections to the greenway as part of the SEHSR project due to concerns such as noise, trash, and invasion of privacy.	In December 2006, Virginia's Department of Conservation and Recreation (DCR), and representatives of Dinwiddie, Brunswick, and Mecklenburg counties voiced their support for a multiuse Greenway Concept associated with the SEHSR corridor and its inclusion in the SEHSR Tier II DEIS. The North Carolina Department of Environment and Natural Resources (DENR) also voiced its support for an extension of the Greenway Concept south into North Carolina and terminating at the Neuse River, north of Raleigh, NC Based on the above input, the concept of a greenway located parallel to the Richmond to Raleigh Project from Dinwiddie, VA, to the Neuse River (just north of Raleigh, NC) was introduced in the Richmond to Raleigh Project DEIS. The rationale for its inclusion was to allow the necessary environmental documentation for the greenway to be prepared so that local municipalities could more quickly pursue the construction of the greenway in their jurisdictions. The construction of the greenway was never intended to be funded as part of the Richmond to Raleigh Project because FRA (the source of Federal funding for high speed rail projects) does not have a mechanism to provide funding for greenways. Although the parallel greenway is still being studied along with the Richmond to Raleigh Project, the process of developing the environmental documentation for greenway has changed since publication of the Tier II DEIS. FRA, FHWA, and the states of Virginia and North Carolina have jointly determined that the greenway project is more suitable for a pre-NEPA Greenway Corridor Plan, rather than being included in the Tier II FEIS for the Richmond to Raleigh Project, as previously considered. This is primarily to give the local jurisdictions who will ultimately construct the greenway greater flexibility to pursue various funding types over time rather than limiting them to a particular funding agency's NEPA requirements. The details for the greenway will, therefore, not be contained within the Richmond to Raleigh Project FEIS, but rather in a separate Greenway Corridor Plan. This plan will be similar to a Tier I (corridor) NEPA document but without needing a Federal agency signature. It will focus on project feasibility as well as purpose and need, will serve as the basis for future NEPA documents for individual greenway segments, and will document the type and amount of natural and human environmental impacts. It will address public concerns over the public use on the greenway, including but not limited to noise, trash, and invasion of privacy and trespassing. It will also better serve the state park agencies and local governments in both states, in terms of providing flexibility to pursue various funding types over time. The Project website will provide additional details on this separate plan and opportunities for public review and comment.
K_SC31	Comments objecting to the project in its entirety. Questions about why the public cannot choose NO to ALL project alternatives, thereby choosing NO to the entire project.	This Tier II study is the second phase of the Project. In 2001, a Tier I EIS was prepared for the SEHSR Corridor that focused on the evaluation of nine different Study Area Alternatives compared to a No Build Alternative. The No Build Alternative included existing and committed improvements to highway, air travel, intercity bus, passenger rail (Amtrak and VRE), public transit, and freight services, without any new high speed rail passenger service. (The study referred to this No Build Alternative as the "No Project" option.) The SEHSR Corridor Tier I FEIS (June 2002) and Tier I ROD approved by NCDOT, DRPT, FRA and FHWA (October 2002) selected one of the Build Alternatives, rather than the No Build Alternative, to be carried forward into the current Tier II process. Reasons for this selection included: providing the traveling public – particularly special populations such as the elderly and the disabled – with improved transportation choices; Helping ease existing and future congestion (air, highway, passenger rail) within the corridor; Improving safety and energy effectiveness within the transportation network; Reducing the overall air quality related emissions per passenger mile traveled within the corridor; and, Improving overall transportation system efficiency within the corridor, with a minimum of environmental impact. The No Build Alternative would not provide these benefits; therefore, it was discarded from further study. This Tier II study builds upon the results of the Tier I study in further evaluating the preferred Build corridor only.

Summary Comment ID	Summary Comment	Response
K_SC32	Comments that the project information, surveys, reports, and/or studies are confusing and the commenter could not understand the provided information.	Comment noted. Please contact the appropriate project contact in your state at the following phone number for assistance : NC - Marc Hamel, SEHSR Tier II EIS Project Manager, NCDOT Rail Division, 919-707-4705 VA - Emily Stock, Manager of Rail Planning, Virginia DRPT, 804-786-1052
K_SC33	Comment on an area located outside of the project area or on a project element not under debate (e.g., elements determined during the Tier I process).	This Tier II EIS covers the SEHSR Corridor between Richmond, VA, and Raleigh, NC, as shown on Figure ES-1 in the Tier II DEIS. Comments provided on areas located outside of this defined project corridor are noted, but are not pertinent to the current project and are, therefore, not specifically answered. Also, comments provided on subjects already decided in the Tier I process (e.g., related to use of diesel engines) or even prior to the SEHSR Corridor Tier I EIS (e.g., using the "Incremental Approach" to improve existing rail lines) are noted but not specifically answered. (For additional details on these decisions, please refer to these documents on the Richmond to Raleigh Project website: www.sehsr.org)
K_SC34	Questions about how the rail and roadway alignments were evaluated and selected to ensure a fair and balanced approach.	The purpose of NEPA is to objectively evaluate and report on the Project's Purpose and Need and impacts to facilitate fair and balanced decision-making. The details presented in the Tier II FEIS, including how the preferred alternative for each Project section was selected, demonstrates how the proposed alternatives in the Tier II DEIS were evaluated and amended based on equal consideration of impacts to the human and natural environment, costs, and operability/constructability, along with public and agency comments.
K_SC35	Request to extend public comment period to allow the City of Raleigh to hold a public hearing and comment on alternatives in downtown Raleigh, NC.	Request accommodated.
K_SC36	Statement that the FEIS should expand upon the purpose and need for the project to include "promotion of compact development" and "reduction of greenhouse emissions."	The Purpose and Need for the Richmond to Raleigh Project was established in the SEHSR Corridor Tier I ROD (October 2002). Although new items will not be added to the Purpose and Need, Chapter 1 of the Tier II FEIS provides additional information about the benefits described in the Tier I document.
K_SC37	Comment that changes to land use around stations should be evaluated in the FEIS rather than postponed to later date; if not planned properly now, the project could encourage more sprawl. Statement that the project should provide funding preference to station locations where local plans and ordinances encourage transit, bicycle, and pedestrian connectivity to stations, and that stations should be in city centers where possible.	As described in Section 4.17.3 of the Tier II DEIS, a likely local effect of the Richmond to Raleigh Project is to encourage development of higher density land uses around the planned stations which may limit the growth of urban sprawl. Such improvements are assumed in the various economic benefit studies summarized in the updated Chapter 1 of the Tier II FEIS. Addressing potential land use impacts due to station location can only be provided in general terms, given that the development of future stations is not a part of this Project. The development of the stations, as well as the land around them, is under the control of the local government at that location. Section 3.11.3 of the Tier II DEIS specifies which agencies are responsible for land use planning, regulating development and transportation planning in the two-state project area. Assuming Federal funding will be used for the construction of or improvement to any station, compliance with NEPA will be required, including an evaluation of direct, indirect, and cumulative impacts to land use. State environmental impact analyses may also be required if state funding is used. It should be noted that Chapter 1, Section 4.14.4 (Stations) and Section 4.17.3 (Local Effects/Indirect and Cumulative Effects) of the Tier II FEIS contain expanded discussions related to stations, including likely station design guidelines, the types of information and detailed studies that the station NEPA studies would likely need to contain, as well as FRA's "Station Area Planning Guidelines for High-Speed and Intercity Passenger Rail, (FRA, June 2011)."

Summary Comment ID	Summary Comment	Response
K_SC38	Comment that the project should do more to direct and encourage redevelopment and investment near stations, including mitigation steps to reduce suburban sprawl. Statement that the project should coordinate with local agencies to promote higher density, mixed use, and pedestrian-oriented development at stations, and provide incentives, technical assistance, and best practice examples to help facilitate them.	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Sections 6001, 6002, 3005, and 3006 link transportation planning and programming with NEPA such that issues of sprawl can be addressed. SAFETEA-LU applies to metropolitan and statewide planning. It directs agencies to "consult, as appropriate, with State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation." This Tier II EIS is but one step in the planning process. Consultation with Federal, state, and local agencies, public officials, and citizens has occurred throughout the Tier II process and will continue after the Tier II FEIS and ROD are complete. Subsequent stages of planning (by the appropriate entities undertaking the station development) will provide opportunities for finite, implementable controls, incentives, and restrictions to direct development in a desirable manner, as dictated by laws, regulations, resource agency, interested parties, and citizen input. It should be noted that Chapter 1, Section 4.14.4 (Stations) and Section 4.17.3 (Local Effects/Indirect and Cumulative Effects) of the Tier II FEIS contain expanded discussions related to stations, including likely station design guidelines, the types of information and detailed studies that the station NEPA studies would likely need to contain, as well as FRA's "Station Area Planning Guidelines for High-Speed and Intercity Passenger Rail."
K_SC39	Comment that in terms of multimodal connectivity, the DEIS overwhelmingly focuses on roads. Request that the SEHSR project should provide backbone for larger network of transportation options and the FEIS should be expanded to recognize importance of connections to transit, bicycling, and pedestrian linkages. Comment that improved connections to other modes should be mitigation for traffic and air quality impacts. Statement that stations should be multi-modal and well connected to transit and non-motorized options.	Section 3.11.3 of the Tier II DEIS discussed the associated local and regional transit services planned to connect to the SEHSR Corridor, as well as which agencies are responsible for planning the transportation needs in the two-state project area. Section 4.14.4 in the Tier II DEIS addressed connectivity to the existing public transportation services for each of the potential station locations. An expanded discussion for the Tier II FEIS (Section 4.14) lists all public bus transit service agency that either currently provides, or is anticipated to be expanded to provide, bus or van services for SEHSR Corridor riders at the planned station locations. The expanded text also includes consideration of non-motorized (bicycle and pedestrian) access.
K_SC40	Statement that the FEIS should better document community support for high speed rail in corridor; use Community Facilitated Strategy (CFS) to improve the public outreach and input process into the planning process.	The FEIS provides greater detail on community outreach and public support/opposition to the Project. Chapter 7 of the Tier II FEIS has been expanded to include documentation of outreach efforts. Much of what is recommended as CFS by the commenter was implemented as part of the Project's standard outreach effort in both states, and many design changes were provided in response to citizen input, such as additional pedestrian crossings where at-grade crossings are relocated.

<u>Code L – Comments Related to the Project Designs</u>

Summary Comment ID	Summary Comment	Response
L_SC1	Concern about impacts to surrounding neighborhoods from the bridge design at Durant Road in Raleigh, NC (Section U).	In response to comments received from the public and local officials, a revised bridge and road alignment has been designed for this location. The revised designs were shown at a Public Update Meeting on May, 15, 2012, in Raleigh, NC and are shown in the Map Book Appendix of the Tier II FEIS. The road alignment and bridge over the railroad will be shifted to the north, away from the residential and commercial development on the south side of Durant Road. This northward shift will take the road alignment through City of Raleigh property where Raleigh Fire Station No. 22 is located, requiring the fire station to be relocated; the design has been coordinated with the City of Raleigh.
L_SC2	Request for construction of Highway NC-96 bypass on the north side of the Town of Wake Forest, NC (Sections S and T).	Construction of the Highway NC-96 bypass is outside the scope of this Project. However, in order to maintain the flow of traffic during construction of the bridge over the railroad at Main Street, Highway NC-96 will be realigned north of town within the alignment of the Town of Wake Forest's proposed Highway NC-96 bypass, to intersect with an extension of Cross Street. The Richmond to Raleigh Project design will allow the bypass to be completed in the future as planned. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC3	Concern about impacts to downtown Raleigh, NC, including a request for consideration of an alternative design through the downtown area (Section V).	The preferred alternative in Section V is Alternative NC5, which was developed in response to comments received from the public and local officials. Alternative NC5 was presented at a Public Update Meeting on September 27, 2011 in Raleigh, NC. Development of the new alternative is discussed in Chapter 2 of the Tier II FEIS and information about the reduced impacts is found in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS. With the NC5 alternative, the existing road network in the Five Points, Roanoke Park, Fairview Road and the Norfolk Southern rail yard area will remain unchanged and the existing vehicular and pedestrian access across the Richmond to Raleigh Project rail alignment through the downtown area is preserved except for the crossings at Hargett Street, which would be closed, and Jones Street, which would be closed to vehicular traffic and a pedestrian bridge would be constructed.
L_SC4	Questions about the SEHSR corridor including selection of the corridor; and/or proposal that the rail alignment bypass downtown areas; and/or serve airports instead of/in addition to downtowns; and/or that the rail alignment should bypass small towns that do not have a proposed station.	The preferred corridor between Washington, DC, and Charlotte, NC, was determined by the SEHSR Corridor Tier I FEIS (SEHSR Tier I FEIS) and confirmed by the 2002 ROD by the FRA. The Tier I FEIS established that the SEHSR Corridor would be developed and implemented using an "incremental approach" previously assessed in feasibility studies. This approach minimizes impacts to both the human and natural environments by using existing rail infrastructure and rail ROW as much as possible. Use of existing infrastructure also reduces the initial capital investment required by the system. Towns throughout the corridor developed around the railroads; therefore, bypassing the downtown areas would result in an increase in both cost and impacts. It would also reduce the ability of the Project to address regional transportation needs. Towns that are not designated to receive a HSR stop initially could benefit by access to passenger rail service at defined stations along the SEHSR Corridor, with the future potential for conventional passenger rail service based upon demand. Connectivity to airports will be addressed through coordination with local transportation planning organizations.
L_SC6	Request for a design change in Wake Forest, NC, to the proposed new access road (northward extension of Steeple Run Drive) east of the railroad between Seawell Drive and Ligon Mill Road (Section U).	The road shown in the Tier II DEIS was designed to provide access east of the railroad in conjunction with the proposed closing of Seawell Drive and nearby driveways. In response to requests from property owners, the road has been redesigned. The road alignment was shifted westward, closer to the railroad to minimize property impacts and minimize impacts to a family cemetery. Adjustments to property access at the northern end will be handled during the ROW phase of the Project. The revised impacts associated with these design changes are discussed in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC7	Statement of opinion regarding designs.	Comment noted.

Summary Comment ID	Summary Comment	Response
L_SC8	Concern that designs do not allow for future electrification of the railroad.	The ROD for the SEHSR Corridor Tier I EIS established that the SEHSR Corridor would be developed using an incremental approach and would utilize fossil fuel powered trains. Refer to Chapter 2 of the SEHSR Corridor Tier I DEIS for background information on the basis for the decision. A finding discussed in the SEHSR Corridor Tier I EIS noted that with fossil fuel engines, speed increases above the 110 mph did not generate significant improvements in ridership and revenues, but they did significantly increase costs because of more stringent regulations. It should be noted, however, the bridges and underpasses have been designed to allow for electrification in the future. Conversion to electricity and higher speeds would require additional environmental evaluation at the appropriate time and cooperation with host freight railroads.
L_SC9	Concern that designs will result in problems related to stormwater drainage.	Drainage issues associated with the designs will be dealt with during the final design stage of the Project when detailed survey level data is available. The agency review and permitting process will require that the designs meet current Federal and state floodplain development guidelines.
L_SC10	Questions regarding map terms used, e.g., "What are right of way lines?" and "What are controlled access lines?"	On the public hearing maps, proposed ROW lines are used to show boundaries of publicly owned ROW for roads and highways. Proposed controlled access lines are used to show the boundaries of rail and some highway rights of way where access across or through is limited and controlled by the owner of the railroad or highway. Control of access lines are not an indication of proposed fencing locations. Specific locations for fencing will be determined later during final design in coordination with the owner of the railroad, the operator of the railroad, and local governments.
L_SC11	Request for a bridge over the railroad at Woods Edge Road and/or elimination of a bridge at Pine Forest Drive, south of Chester, VA (Section BB).	In response to numerous comments received from the public and local officials indicating a strong desire to maintain connectivity across the railroad, along with additional analysis of traffic data, the Project designs have been modified to include a bridge over the railroad at Woods Edge Road. The proposed bridge at Pine Forest Drive to the south will be retained; however, the extension of Walthall Industrial Parkway south from Woods Edge Road to an extension of Pine Forest Drive has been removed from the designs. The revised impacts associated with these design changes are discussed in Chapter 4 of the Tier II FEIS, and maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC12	Question about proposed rail improvements such as Maximum Authorized Speed, number of tracks, passing sidings, and new construction of rail in a particular location along the corridor.	Refer to Chapter 1 of the Tier II FEIS for details about the general approach of the Project (speed, tracks, sidings, etc.). Refer to Chapter 2 for a description of the location of the Preferred Alternative by section.
L_SC13	Question regarding whether the residents of Meridian Avenue in Richmond, VA, will be able to enter and exit from Bells Road (Section AA).	Residents living on Meridian Avenue will not be able to enter or exit from Bells Road. The designs call for Meridian Avenue to be closed at Bells Road because of the necessary increase in elevation (i.e., grade) for the proposed Bells Road bridge over the railroad. Access to Meridian Avenue will be provided through an extension to Lynhaven Avenue from the Meridian Avenue cul de sac. A map of the designs can be found in the Map Book Appendix of the Tier II FEIS.
L_SC14	Concern about detours and maintenance of traffic during construction of project.	Refer to Chapter 4 of the Tier II FEIS for information regarding planned detours and maintenance of traffic during construction of the Project.

Summary Comment ID	Summary Comment	Response
L_SC15	Request for a design revision to reduce impacts to a farm on St. Tammany Road, located in a voluntary agricultural district in Warren County, NC. Request that an alternative design be developed that would consist of a single road across the property, with a possible culvert crossing for farming access (Section M).	Several modifications were made to the proposed roadwork for the area around the Ridgeway community in response to comments on the Tier II DEIS. The Preferred Alternative has no direct impacts to the referenced property located in the voluntary agricultural district (see Appendix R, maps 101 and 102).
L_SC16	Concerned about ROW impacts to property from road or rail designs, and/or a request for a design revision.	The road and rail alignments have been designed to allow for the maximum footprint anticipated. The designs impacting the properties in question were reviewed. Although design changes were not practicable for the Tier II FEIS (due to the level of information available for the designs), efforts will be made to minimize impacts from roadwork or rail designs during the final design stage of the Project when survey level data is available. The processes that Virginia and North Carolina have established for ROW Acquisition are described in Section 4.11.6 of the Tier II DEIS and the TIER II FEIS.
L_SC17	Question about the need for the proposed southward extension of Tanyard Street between East Green Street and East College Street in Franklinton, NC, and concern that the design will result in an increase in flooding that already occurs in that location (Section S).	In response to comments received from the public, the proposed improvements to Tanyard Street shown in the Tier II DEIS have been removed from the Project designs (i.e., no changes proposed for existing Tanyard Street). Instead, the proposed north-south connection between East Green Street and East College Street has been moved to an alignment near the eastern boundary of the Sterling Mill historic resource. This design includes removal of pavement/road closure at the west end of Bullock Street. The revised impacts associated with these design changes are shown in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC18	Request that Marina Drive, south of Chippenham Parkway, in Chesterfield County, VA, remain open (Section AA).	Marina Drive currently passes under the existing Falling Creek railroad bridge. There are no proposed changes to this bridge under the Richmond to Raleigh Project. Thus, Marina Drive would not be impacted by the Project.
L_SC19	Request to shift the proposed realignment of Wilson Road in Mecklenburg County, VA, closer to the edge of a property lines to minimize the size of remnants (Section H).	This proposed shift in alignment was evaluated, but the stream along the parcel boundaries prevents the design from being shifted as requested.
L_SC21	Concerns about impacts to the Franklin family farm north of Henderson in Section O and statement of preference for the "easternmost alternative," which has the least impact to the farm.	The preferred alternative in Section O is Alternative NC3, which follows the easternmost alignment. The revised impacts associated with these design changes are shown in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC22	Request for a pedestrian crossing at Doyle Boulevard in McKenney, VA (Section C).	The proposed Doyle Boulevard bridge over the railroad can accommodate sidewalks.

Summary Comment ID	Summary Comment	Response
L_SC23	Request for the railroad to follow existing rail right of way through McKenney, VA, to avoid the Zehmer Farm/Honeymoon Hill historic resource and also move further away from the McKenney artesian well. Also, request to shift associated roadwork to minimize impacts to the Zehmer Farm (Section C).	The railroad alignment has been redesigned to include a slight eastward shift away from NRHP boundary for the Zehmer Farm/Honeymoon Hill Farm historic resource (the boundary listed in the NRHP in 2009 encompasses an area much larger than the area determined to be eligible for the NRHP as part of the Richmond to Raleigh Project surveys in 2005). This shift also takes the alignment further away from the Town of McKenney's artesian well. The revised impacts associated with these design changes are shown in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC24	Request for shift in proposed realignment of Keelers Mill Road in Dewitt, VA, in order to avoid a family cemetery (Section C).	The road designs in this area were revised to avoid impacts to the cemetery. Refer to Section 2.2.9 of the Tier II FEIS for additional discussion, and Appendix R for a map of the revised designs.
L_SC25	Question regarding whether or not the project will follow the existing railroad right of way in Brunswick County, VA, near Route 726 (Section E).	The preferred alternative in Brunswick County in Section E is Alternative VA 1. Near Route 726, the VA1 alignment shifts westward, away from the existing rail ROW to straighten a curve. Maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC26	Request for a design revision in Vance County, NC, that would avoid impacts to the Brookston Baptist Church off Brookston Road, which would allow vehicular access to the rear of the church, and avoid disturbing the church cemetery (Section O).	The preferred alternative in this section is Alternative NC3; however, all the alternatives are on common alignment near the Brookston Baptist Church. The Brookston Baptist Church is just north of the Greystone Quarry and the designs in this location are severely constrained by the quarry; therefore, the design request cannot be accommodated as described in the comment. During the final design stage of the Project (when detailed survey data are available), efforts will be made to minimize impacts to the church and cemetery.
L_SC27	General concern about impacts to Chestnut Street in Henderson, NC, and a request to maintain this street as a north/south corridor through the city on the west side of the railroad tracks (Section P).	In response to comments from the public and from officials with the City of Henderson, NC, several revisions have been made to the proposed roadwork designs that were shown in the Tier II DEIS. Section 2.2.11.1 of the Tier II FEIS contains information about the proposed changes that affect the downtown area (including Chestnut Street), and the impacts are discussed in Chapter 4. A proposed roundabout intersection at Garnett Street/Beckford Drive/ Main Street/ Chestnut Street will allow Garnett Street and Chestnut Street to function as a north/south corridor on the west side of the railroad tracks. Maps of the designs can be found in the Map Book Appendix of the Tier II FEIS.
L_SC28	Concern that the change in access to Community National Bank in Henderson, NC, resulting from realignment of Dabney Drive Extension will negatively impact the business operations of the bank. Request that existing alignment of Dabney Drive Extension remain open to maintain existing driveways/access or that new access acceptable to property owner be incorporated into the designs (Section P).	Due to traffic and safety concerns, the existing Dabney Drive Extension intersection with Raleigh Road cannot be retained. However, the location of driveway access to this property will be determined during the final design stage of this Project in coordination with the property owner.

Summary Comment ID	Summary Comment	Response
L_SC29	Concern about the impacts of Alternative NC2 in Section S, where both Alternative NC1 and NC2 straighten a big curve in the existing rail alignment.	Alternative NC1 is the preferred alternative in Section S.
L_SC30	Concern that Forestville Road in Wake Forest, NC, does not show up as being closed on the SEHSR hearing maps for Section U. Request that the closure be shown on all future maps.	The hearing maps do not include a symbol for "Existing Crossing To Be Closed" at Forestville Road because this crossing was previously closed by NCDOT as part of a separate project.
L_SC32	Question regarding why Main Street Station (MSS) in Richmond, VA, was selected as a termini for the project, and/or why Broad Street Station was not considered.	Main Street Station was identified as the northern terminus of the study because of its location along the Tier I-identified preferred route through the City of Richmond, and because it is a functioning passenger rail station in the center of the city. Broad Street station was not considered because of its location off of the mainline, and because it houses the Science Museum of Virginia.
L_SC33	Concern regarding family property in Ridgeway, NC, and whether the grade separation of Ridgeway Warrenton Road could be designed as an underpass instead of an overpass (Section M).	The Project team reviewed the possibility of converting the grade separation to an underpass. However, the Project was re-designed and the grade separation was moved. Based on the re-design, no additional design modifications are needed in this area.
L_SC34	Request for a design change near First Street in DeWitt, VA, to minimize property impacts (Section C). Concern that construction of the Hamilton Arms Road (Route 650) bridge over the railroad will impact an existing septic system, and concern that the property will not support relocation of a drainage field elsewhere on the property.	The designs impacting this property were reviewed; however, the road alignment in this location is constrained by the nearby Bowen House historic property and a shift in alignment is not practicable for the Tier II FEIS based on the level of information available for the designs. Efforts will be made to minimize impacts during the final design stage of the Project when survey level data is available. If the septic field is impacted, the impact and ability/inability to relocate a septic field within the boundaries of an impacted parcel would be considered during negotiations that are part of the ROW acquisition process.
L_SC35	Request for an underpass of the railroad on Old Lane in Chester, VA, rather than closing the crossing (Section AA). Comment that this would improve traffic flow from Hopkins Road to Chester Road and reduce congestion on Centralia Road, which is already substantial (Section AA).	The Richmond, VA, to Raleigh, NC, Project has been designed to consolidate and grade separate (through bridges or underpasses) all railroad-roadway crossings. A grade separation in the vicinity of Old Lane could not be provided due to several design constraints, most notably the location of the rail interlocking that trains use to switch between the CSX A-line and S-line. However, additional traffic analysis for this area was conducted following the Tier II DEIS which indicated a need for additional traffic accommodations such as turn lanes for the Hopkins Road and Centralia Road intersection, which provides access to Chester Road. The road work designs have been revised to include these accommodations. These design revision were shown at a Public Update Meeting on February, 26, 2013 in Chesterfield, VA. Refer to Chapter 4 of the Tier II FEIS for information about impacts, including a discussion about the traffic analysis. Maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC36	Request to use the old train trestles located north of West Hundred Road in Chester, VA, to build a pedestrian and bicycle pathway over the railroad (Section BB).	The trestles referenced are within former rail ROW that abuts but does not cross the Richmond to Raleigh Project corridor; the ROW is owned by Chesterfield County. The County's Thoroughfare Plan shows use of the ROW for a County road in the future. The Richmond to Raleigh Project would not prevent the County from building a bridge over the corridor in this location in the future.

Summary Comment ID	Summary Comment	Response
L_SC37	Request for a design change for Glebe Road in DeWitt, VA, due to a concern that the DEIS designs create a dangerous and awkward new traffic pattern that is not supported by the existing traffic patterns (in which little traffic passes via Shippings Road and onto Glebe Road). Request to tie Glebe Road into the intersection of Hamilton Arms and Route 1 to provide a more similar traffic pattern and safer travel (Section C).	The suggestion of realigning Glebe Road to connect with Hamilton Arms at Route 1 was evaluated, but not found to be practicable due to greater property impacts. The designs developed for the Tier II DEIS and shown in the Tier II FEIS meet the American Association of State Highway and Transportation Officials (AASHTO) Federally adopted design standards.
L_SC38	Request for a design change in Wake Forest, NC, for Ligon Mill Road and the proposed bridge over the railroad; request that the road be shifted to the north in order to avoid impacts to the Cooke property located on the south side of Ligon Mill Road, just west of the railroad (Section U).	Numerous alternative designs have been evaluated at this location in an effort to reduce property impacts, but the designs are constrained by the curvature of Ligon Mill Road, as well as dense residential development on the east side of the railroad. The alternative designs were found not to be practicable; however, efforts will be made to minimize impacts from the roadwork during the final design stage of the Project when survey level data is available.
L_SC39	Request for a design change in Wake Forest, NC, to reduce property impacts from the designs shown in the DEIS that provide access from Ligon Mill Road into the Smith Creek neighborhood (Section U).	The proposed bridge over the railroad for Ligon Mill Road requires a change to the existing westernmost entrance to the Smith Creek neighborhood. In response to public comments an alternative to the design shown in the Tier II DEIS was developed. The public was invited to comment on the revised designs at a Public Update Meeting on May 15, 2012 in Raleigh, NC. The revised impacts associated with these design changes are shown in Chapter 4 of the Tier II FEIS and maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC40	Request to include a vehicle and/or pedestrian crossing at Elm Avenue in Wake Forest, NC (Section U).	In response to comments received from the public and local officials regarding the closure of Elm Avenue proposed in the Tier II DEIS, a road underpass was subsequently designed that would allow Elm Avenue to remain open. This design was presented at a Project Update Meeting on May 15, 2012. The response from both the public and Town of Wake Forest officials was that the impacts resulting from the design were too severe. These impacts included the relocation of businesses on Elm Avenue and impacts to several properties along White Street, including the Chamber of Commerce. Based on further coordination with the Town of Wake Forest, it was determined the most appropriate design for Elm Avenue would be to close the crossing to vehicular traffic, but provide for non-vehicular accessibility with a pedestrian bridge. The pedestrian bridge (designed to greenway standards) would not result in the same degree of property impacts as the vehicular underpass; however, it would similarly preclude vehicular access to Railroad Street (which is located within the existing, active CSX railroad ROW). In order to provide a means of entry to the properties along Railroad Street, the new access road shown at the Project Update Meeting is needed. This access road would result in the potential relocation of one business, as well as property impacts to the rear of the Railroad Street properties. Several alternative designs for this access road were reviewed in coordination with the North Carolina Historic Preservation Office and the design presented in the Tier II FEIS was determined to minimize impacts to the Wake Forest Historic District.

Summary Comment ID	Summary Comment	Response
L_SC41	Comment that the primary route of SEHSR should not be through Richmond MSS because of several reasons, including: the route between MSS and Centralia will remain speed-restricted, has clearance issues, presents freight train conflicts, and has dangerous grade crossings; people will not use MSS; and the "A" line has better capacity and operating characteristics.	The SEHSR Corridor Tier 1 study evaluated the corridor through Richmond without specifically designating stations. Subsequent studies focused on HSR from the Richmond area north will address issues associated with routing trains by Main Street Station.
L_SC42	General question regarding how the SEHSR trains will connect with the Northeast Corridor (NEC).	The SEHSR Corridor will connect with the Northeast Corridor (NEC) in Washington, DC, allowing HSR travel northward to New York, Boston, and beyond. The union of these two high speed corridors would create the greatest trip lengths within the Amtrak system, and thus the greatest potential revenues. The updated ridership/revenue report discussed in Chapter 4 of the Tier II FEIS contains forecasts for trips between Charlotte, NC, and the NEC. The current SEHSR Corridor plans would allow a passenger to connect between the SEHSR Corridor and NEC with a single seat ticket for the entire trip.
L_SC43	Request to shift a proposed new service road to the edge of a farm located on the north of Wise Five Forks Road (rather than the middle of the property) in order to utilize an existing path in the area (Section L).	The road alignment has been shifted closer to the referenced path. A map of the design change can be seen in the Map Book Appendix of the Tier II FEIS.
L_SC44	Request related to property access, access to existing roads, or across the existing railroad corridor.	Owners of parcels with current, legal access to existing roads will have access to their parcels maintained (or will be compensated if it is not possible to maintain the access); driveway access to these parcels will be determined during final design when survey level data is available. Questions related to ownership of land within the existing rail corridor and/or easements across railroad rights of way can be directed to the freight railroads - CSX: (904) 359-3200 or Norfolk Southern: (404) 962-5742.
L_SC45	Request for a design change in Raleigh, NC (Section V) to include a grade separation (bridge or underpass) of Wolfpack Lane.	In response to comments on the Tier II DEIS from local officials and the public, a bridge over the railroad was designed for Wolfpack Lane. The design was coordinated with City of Raleigh staff, and the public was invited to comment on the alternative at an update meeting on May 15, 2012. The design, which accommodates vehicular, pedestrian and bicycle traffic was favorably received, and has been added to the Tier II FEIS. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC46	Request from the Mallinckrodt/Covidien business in Raleigh, NC, for the SEHSR designs to accommodate issues specific to their plant operations, including emergency response, use of existing railroad spur, hazardous materials, and access across the railroad corridor (Section U).	The Project Team has initiated dialog with Mallinckrodt/Covidien and will continue to work with them through the final design process to ensure their concerns are addressed to the fullest extent possible.
L_SC47	Design request addressed by municipal or county government in separate correspondence.	Responses to requests from government staff were evaluated and changes were made, where possible, as described in Chapter 2.

Summary Comment ID	Summary Comment	Response
L_SC48	Request to use North Cross Street in Youngsville, NC, as a connector to Fleming Road rather than Naussau Street (Section T).	In response to comments from individuals and from local officials, the roadwork for Youngsville, NC, that was proposed in the Tier II DEIS has been redesigned. The new designs utilize Cross Street as a connection to HWY NC-96 (rather than Nassau Street) during the construction of the Main Street bridge over the railroad. The new designs are discussed in Chapter 2 of the Tier II FEIS and the impacts are discussed in Chapter 4. Maps can be found in the Map Book Appendix of the Tier II FEIS.
L_SC49	Request that bridge sections spanning the Roanoke River and Lake Gaston be constructed in such a manner as to protect the ecosystem of the shores, bottoms, and surfaces of the river and lake. Recommendation that all construction of the span use the cantilever architecture.	The Project designs plan to use the existing railroad bridge piers across the Roanoke River and Lake Gaston provided they are determined to be structurally sound.

Code M – Comments Handled Separately

Summary Comment ID	Summary Comment	Response
M_SC1	Requested project information.	Requested information sent to commenter.
M_SC2	General project or process question(s).	Questions answered individually via phone, email or mail
M_SC3	Specific property impact questions.	Individual responses made via phone, email or mail.
M_SC4	Requested to be added to project mailing list.	Added to mailing / interested parties list
M_SC5	Notification that comments will be submitted separately.	Comment noted. Referenced comments responded to separately.
M_SC6	Submittal of information, including notification of perceived errors or inaccuracies.	Information received and filed.
M_SC7	Indication that commenter was not included on listing of property owners who received letters regarding the project.	Confirmed that owners name and correct address were included on the Project mailing list.

9 LIST OF PREPARERS

Name	Qualifications	Primary Responsibilities
Federal Railroad Administration		
David Valenstein	Program Manager / Environmental Programs	FRA oversight, project guidance
John Winkle	Transportation Industry Analyst / Environmental Protection Specialist	FRA oversight, project guidance
William R. Fashouer	Assistant Chief Counsel for General Law	FRA oversight, project guidance
Daniel Orlaskey	Attorney Advisor	FRA oversight, project guidance
Randy Brown	Southeast High Speed Rail Project Manager	FRA oversight, project guidance
North Carolina Department of Transportation – Rail Division		
Sandra Stepney, P.E., CPM	Manager of Planning and Development, 22 years of experience	Program direction, project oversight
Shirley Williams	Manager of Planning and Development Branch,12 years of experience at NCDOT	Program direction, project oversight
Jason Orthner, P.E.	Manager of Design & Construction Branch, 19 years of experience	Railway design and optimization, engineering review
Marc Hamel	Rail Project Development Manager, 28 years of experience at NCDOT	Overall Project Manager, public involvement, agency coordination, document review
James Bridges, P.E., CPM	Senior Rail Project Development Engineer, 25 years of experience	Project management, public involvement, agency coordination, document review
Virginia Department of Rail and Public Transportation		
Kevin Page	Chief of Infrastructure Initiatives and Strategic Partnerships, 28 years of experience	Program direction, project oversight
Emily Stock	Manager of Rail Planning, 18 years of experience	Project management, public involvement, agency coordination, document review
Michael Baker International		
Charles L. Flowe, P.E.	NC Office Manager, 38 years of experience	Principal-In-Charge

Name	Qualifications	Primary Responsibilities
Ken Mobley	Public Involvement Manager, over 20 years of experience	Project oversight
Ken Gilland, P.G.	Environmental Scientist, 24 years of experience	Technical lead, public involvement, coordination, prepared drafts for FEIS sections, finalized document
Richard Darling	Environmental Manager, 28 years of experience	Stream and wetland assessments, agency coordination, prepared drafts for FEIS sections
Chris Roessler	Environmental Specialist, 18 years of experience	Prepared drafts for FEIS sections
Michelle Suverkrubbe, A.I.C.P.	Planning Project Manager, 28 years of experience	Prepared drafts for FEIS sections
Susan Manes	Planning Project Manager, 27 years of experience	Prepared drafts for FEIS sections
Andrew Kuchta	Air and Noise Analyst, 32 years of experience	Air quality, and noise and vibration assessments
Emaly Simone	Environmental Scientist, 15 years of experience	Prepared drafts for FEIS sections
Scudder Wag, A.I.C.P.	Planning Project Manager, 10 years of experience	GIS analysis and mapping, greenway analysis
Jacob Thornton	GIS Associate, 10 years of experience	GIS analysis and mapping
Dwayne Huneycutt	Environmental Associate, 13 years of experience	Stream and wetland assessments
Ed Smail	Environmental Specialist, 9 years of experience	Stream and wetland assessments
Kimberly Blake	GIS Associate, 15 years of experience	GIS analysis of census data
Three Oaks Engineering		
Craig Young, P.E.	Senior Transportation Planning Engineer, 19 years of experience	Project management, public involvement, sub-consultant coordination, agency coordination, prepared drafts for FEIS sections
Suzanne Unger Young, P.E.	Senior Environmental Engineer, 19 years of experience	Project management, 4(f) development, public involvement, agency coordination, prepared drafts for FEIS sections
Diana Young-Paiva	Senior Transportation Planner, 20 years of experience	Public involvement, agency coordination, prepared drafts for FEIS sections
Cary Rowells	GIS Analyst, 25 years of experience	Maps, GIS analysis of soils, stream and wetland impact determinations

Name	Qualifications	Primary Responsibilities
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Glenda Gibson, P.E.	Principal, Transportation Engineer and Project Manager, 27 years of experience	Rail and Roadway Design Principal in Charge
Mike Pekarek, P.E.	Railway and Roadway Design Manager, 18 years of experience	Rail and Roadway Design Project Manager
Marc Freeman, P.E., A.I.C.P.	Traffic Project Manager, 20 years of experience	Traffic analyses
Nathan Philips, P.E.	Traffic Project Manager, 20 years of experience	Traffic analysis
Dovetail Cultural Resource Group		
Kerri Barile, Ph.D.	Principal Investigator, 22 years of experience	Cultural resource investigations
Michael Carmody, M.A.	Principal Investigator, 20 years of experience	Cultural resource investigations
Heather Dollins Staton, M.A.	Architectural Historian, 7 years of experience	Cultural resource investigations
Kerry Gonzalez, M.A.	Project Archaeologist and Lab Manager, 13 years of experience	Cultural resource investigations
Emily Calhoun, M.S.	Project Archaeologist and Report Manager, 9 years of experience	Cultural resource investigations
Marco Gonzalez	Archaeologist and GIS Specialist, 13 years of experience	Cultural resource investigations
The Catena Group, Inc.		
Tim Savidge	Biologist, over 22 years of experience	Surveys for federally listed mussel species
Tom Dickenson	Biologist, over 12 years of experience	Surveys for federally listed mussel species
Chris Sheats	Biologist, over 9 years of experience	Surveys for federally listed mussel species
Jonathan Hartsell	Biologist, over 7 years of experience	Surveys for federally listed mussel species
Ivy Kimbrough	Biologist, over 3 years of experience	Surveys for federally listed mussel species

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10.2 ACRONYMS

AADT	Annual Average Daily Traffic
ACL	Atlantic Coast Line
ADA	Americans with Disabilities Act
ARRA	American Recovery and Reinvestment Act of 2009
BMP	Best Management Practices
CAMPO	Capital Area Metropolitan Planning Organization
CAT	Capital Area Transit System
CBD	Central Business District

CBPA	Chesapeake Bay Preservation Act
CEQ	Council on Environmental Quality
CFS	High Speed Ground Transportation Commercial Feasibility Study of 1997
CLOMR	Conditional Letter of Map Revision
COG	Council of Governments
CSX	CSX Transportation (Railroad Company)
CTP	Comprehensive Transportation Plan
CU	Cataloging Unit
CWA	Clean Water Act
dB	Decibel
dBa	A-weighted decibel scale
dBb	B-weighted decibel scale
DPU	City of Richmond Department of Public Utilities
DRPT	Virginia Department of Rail and Public Transportation
E	Endangered
EA	Environmental Assessment
ECG	East Coast Greenway
EDR	Environmental Data Resources
EIS	Environmental impact statement
EMS	Emergency Medical Service
ERNS	Emergency Response Notification System
ESA	Endangered Species Act
ESC	Erosion and Sediment Control
ESRI	Environmental Science Research Institute
FAA	Federal Aviation Administration
FEC	First Energy Corporation
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, & Rodenticide Act
FINDS	Facility Index System/Facility Identification Initiative Program Summary Report
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
FRA	Federal Railroad Administration
FSC	Federal Species of Concern
FTA	Federal Transit Administration
FUDS	Formerly Used Defense Sites
GIS	Geographic Information System
GPS	Global Positioning Satellites
GRTC	Greater Richmond Transit Company
h	Hourly equivalent sound level Leq
HC	Hydrocarbon

HIST - FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
HMIRS	Hazardous Materials Information Reporting System
HRTPO	Hampton Roads Transportation Planning Org
HSDS	Hazardous Substance Disposal Site
HSGT	High Speed Ground Transportation
HSR	High speed rail
HSRSP	High-Speed Rail Strategic Plan
HU	Hydrologic Unit
ICIS	Integrated Compliance Information System
IP	Individual Permits
ISTEA	Intermodal Surface Transportation Efficiency Act
JPA	Joint Permit Application
KARTS	Kerr Area Rural Transportation System
KTRPO	Kerr-Tar Regional Planning Organization
Ldn	Day-night sound level
LOMR	Letter of Map Revision
LUST	Leaking Underground Storage Tank
LWB	Local Wetlands Boards
LWCF	Land and Water Conservation Fund Act
MAS	Maximum Authorized Speed
MBTA	Migratory Bird Treaty Act
Mg/m^3	Milligrams per meter cubed
MINES	Mines Master Index File
MLTS	Material Licensing Tracking System
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
MRDS	Mineral Resources Data System
MSA	Metropolitan Statistical Area
MSAT	Mobile Source Air Toxic
NAAQS	National Ambient Air Quality Standards
NASCAR	National Association for Stock Car Auto Racing
NC	North Carolina
NCDEMLR	North Carolina Division of Energy, Mineral, and Land Resources
NCDENR	North Carolina Department of Environment and Natural Resources
NCDOT	North Carolina Department of Transportation
NCDWQ	North Carolina Division of Water Quality
NCDWR	North Carolina Division of Water Resources
NCEEP	North Carolina Ecosystem Enhancement Program
NCNHP	North Carolina Natural Heritage Program
NCRR	North Carolina Railroad

NEC	Northeast Corridor
NECIP	Northeast Corridor Improvement Project
NEPA	National Environmental Policy Act
NL	Not Listed
NOA	Notice of Availability
NOAA Fisheries	US National Oceanic and Atmospheric Administration National Marine Fisheries Service
NOI	Notice of Intent
NOX	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NRTR	Natural Resource Technical Report
NS	Norfolk Southern Railroad
NSW	Nutrient Sensitive Waters
NWI	National Wetland Inventory
O_3	Ozone
ORVs	Outstandingly Remarkable Values
PADS	PCB Activity Database
PAT	Petersburg Area Transit
PCB	Polychlorinated Biphenyls
PDC	Planning District Commission
PE	Proposed Endangered
PEM	Palustrine Emergent
PFO	Palustrine Forested
PM	Particulate Matter
PM_{10}	Particulate Matter Less Than 10 µm in Diameter
$PM_{2.5}$	Particulate Matter Less Than 2.5 µm in Diameter
ppm	Parts Per Million
PSCNC	Public Service Company of North Carolina
PSS	Palustrine Scrub-Shrub
PT	Proposed Threatened
PUB	Palustrine Unconsolidated Bottom
R2HR	Richmond/Hampton Roads Passenger Rail Project
RAMPO	Richmond Area Metropolitan Planning Organization
RAPS	Richmond Area to Potomac River Project
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
REEF	Recreation, Economic Development, Education, and Family
RMS	Root Mean Square

ROW	Rights of way
RPA	Resource Protection Area
RPO	Rural Planning organization
RRPDC	Richmond Regional Planning District Commission
RRRT	Roanoke River Rails-to-Trails, Inc.
RRT	Regional Response Team
RUS	Raleigh Union Station
SAL	Seaboard Air Line
SC	Special Concern
SEHSR	Southeast High Speed Rail
SIP	State Implementation Plan
SO_X	Sulfur Oxides
SR	A Significantly Rare Species
SR-T	A Significantly Rare Species throughout Its Range
SSURGO	Soil Survey Geographic Database
STIP	State Transportation Improvement Program
SWM	Stormwater Management
SWPPP	Storm Water Pollution Prevention Plan
T	Threatened
TEA-21	Transportation Efficiency Act for the 21st Century
THT	Tobacco Heritage Trail
TIP	Transportation Improvement Plan
TMDL	Total Maximum Daily Load
TRIS	Toxic Release Inventory System
TSCA	Toxic Substances Control Act
TT	Triangle Transit
Ug/m^3	Micrograms per cubic meter
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDA	US Department of Agriculture
USDOI	US Department of the Interior
USDOT	US Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
USM	Unified Stream Methodology
VA	Virginia
VADCR	Virginia Department of Conservation and Recreation
VAQRTF	Virginia Aquatic Resources Trust Fund
VARTF	Virginia Aquatic Resources Trust Fund
VdB	Decibel measure for vibration
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality

VDOT	Virginia Department of Transportation
VLR	Virginia Landmarks Registry
VMRC	Virginia Marine Resources Commission
VSMP	Virginia Stormwater Management Program
VSTP	Virginia 2035 Surface Transportation Plan
VWPP	Virginia Water Protection Permit
WQS	Water Quality Standards

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