CSX Howard Street Tunnel Project

Environmental Assessment

February 2021

Howard Street Tunnel Project
Environmental Assessment

Prepared by:
Federal Railroad Administration (FRA)

Pursuant to:

National Environmental Policy Act (42 U.S.C. § 4321 et seq.), and implementing regulations (40 CFR Parts 1500-1508), 23 CFR Part 771; 23 U.S.C. § 139; Section 4(f) of the United States Department of Transportation Act (49 U.S.C. § 303) and implementing regulations (23 CFR Part 774); National Historic Preservation Act (54 U.S.C. § 306101 et seq.) and implementing regulations (36 CFR Part 800); Clean Air Act as amended (42 U.S.C. § 7401 et seq.) and implementing regulations (40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 U.S.C. § 1531-1544) and implementing regulations (50 CFR Part 402); the Clean Water Act (33 U.S.C. § 1251-1387) and implementing regulations (33 CFR Parts 320 to 324 and 40 CFR Part 230); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. § 4601).

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ABSTRACT

The United States Department of Transportation's (USDOT) Federal Railroad Administration (FRA) in cooperation with the Maryland Department of Transportation (MDOT) and Maryland Port Administration (MPA) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts for the Howard Street Tunnel Project (Project), which would improve clearance at the Howard Street Tunnel (HST) in Baltimore City and 22 other obstruction locations along the existing CSX Transportation (CSX) Interstate 95 (I-95)Rail Corridor between Baltimore and Philadelphia (Figure 2-1). The Project consists of improvements that would remove all obstructions that restrict passage of modern double-stack intermodal trains along the corridor. Additionally, the Project will require the relocation of an interlocking site to facilitate the track lowering proposed at the Woodland Avenue site in Philadelphia, Pennsylvania.

In addition to clearing the corridor for double-stack rail passage, the Project will build additional, much needed resiliency into CSX's rail network. The Project will also enhance productivity at the Port of Baltimore and improve freight rail performance and capability in the mid-Atlantic corridor, as evidenced by the substantial public funding commitments from the federal government, Maryland and Pennsylvania. FRA is administering Fiscal Year 2019 funding for the Project under USDOT's Infrastructure for Rebuilding America (INFRA) grant program and is the lead federal agency under NEPA, MDOT MPA is the recipient of the INFRA grant funding, and CSX is the rail owner and operator and is conducting engineering design and acting in coordination with MDOT, MPA, and FRA.

The anticipated improvements, which consist of tunnel reconstruction, bridge replacement/modification and track lowering, will be constructed primarily within existing rail corridor rights-of-way. In addition, staging and storage activities are proposed at CSX's Bayview Rail Yard in Baltimore to support the Project. Work site access locations and staging areas are to be determined. The estimated timeframe for construction is approximately 36-48 months, once CSX obtains necessary permits and other approvals. The following list identifies the locations of the 23 obstruction clearances that are part of the Project.

Maryland

- HST – Tunnel Modification – Baltimore City, MD
- Mount Royal Avenue – Track Lowering – Baltimore City, MD
- MTA Bridge – Track Lowering – Baltimore City, MD
- North Avenue Bridge – Bridge Modification – Baltimore City, MD
- Sisson Street – Track Lowering – Baltimore City, MD
- Huntington Avenue – Track Lowering – Baltimore City, MD
- Charles Street – Track Lowering – Baltimore City, MD
- St. Paul/Calvert Street – Track Lowering – Baltimore City, MD
- Guilford Avenue – Bridge Replacement – Baltimore City, MD
- Barclay Street – Track Lowering – Baltimore City, MD
- Greenmount Avenue – Track Lowering – Baltimore City, MD
- Harford Road – Bridge Replacement – Baltimore City, MD

Delaware

- Lancaster Avenue – Track Lowering – Wilmington, New Castle County, DE
- 4th Street – Track Lowering – Wilmington, New Castle County, DE

Pennsylvania

- Chichester Avenue – Track Lowering – Boothwyn, Delaware County, PA
- Crum Lynne Road – Track Lowering – Ridley Park, Delaware County, PA
- Clifton Avenue – Track Lowering – Sharon Hill, Delaware County, PA
- Boone Tunnel – Tunnel Modification – Sharon Hill, Delaware County, PA
- 68th Street – Track Lowering – Philadelphia, PA
- 65th Street – Track Lowering – Philadelphia, PA
- Cemetery Avenue – Track Lowering – Philadelphia, PA
- 61st Street – Track Lowering – Philadelphia, PA
- Woodland Avenue – Track Lowering – Philadelphia, PA

The 125-year old HST is centrally positioned in Baltimore City on CSX's I-95 Rail Corridor, which runs from Florida to New England and connects all the major population centers on the East Coast. Additionally, the CSX I-95 Rail Corridor through Baltimore provides a critical connection from the Port of Baltimore's Seagirt Marine Terminal Intermodal Container Transfer Facility (ICTF) to consumer markets in the Midwest.

The HST and 22 other obstructions require various forms of improvement to gain clearance to enable the passage of double-stack trains (DSTs). Specifically, the Project involves a mixture of track-lowering, bridge replacement/modification, and potential tunnel enlargement techniques. The 1.7-mile HST consists of three main tunnel sections based on the original construction methods: a concrete box section; a cut-and-cover section; and a mined tunnel section. CSX's design approach will optimize the profile and alignment of the track in the HST to achieve the maximum horizontal and vertical clearances within the existing structure and will have a more limited impact to the surrounding community than more disruptive options previously considered.

With advances in engineering technology and the investment of Federal and state Ifunding, the Project is now financially feasible to complete. In addition to the $125 million INFRA grant, the Project has received funding from the State of Maryland, CSX, a PennDOT grant, and Federal Highway Administration (FHWA) Formula Funds, totaling $443.5 million.

This EA evaluates and assesses the environmental impacts of the proposed Project. This EA examines a Build Alternative and a No Build Alternative. FRA has selected the Build Alternative as the Preferred Alternative.

The EA is prepared pursuant to: NEPA (42 United States Code [U.S.C.] § 4321 et seq.), and implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), 23 CFR § 771; 23 U.S.C. § 139; Section 4(f) of the United States Department of Transportation Act (49 USC §303) and implementing

regulations (23 CFR Part 774); National Historic Preservation Act (54 USC §306101 et seq.) and implementing regulations (36 CFR Part 800); Clean Air Act as amended (42 USC §7401 et seq.) and implementing regulations (40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 USC §1531-1544) and implementing regulations (50 CFR Part 402); the Clean Water Act (33 USC §1251-1387) and implementing regulations (33 CFR Parts 320 to 324 and 40 CFR Part 230); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC §4601).

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

- Appendix A – Figures
  - Figure 1 – Project Overview Map
  - Figure 2 –
    - 2A Project Overview Map – Baltimore
    - 2B Project Overview Map – Wilmington
    - 2C Project Overview Map – Philadelphia
  - Figure 3 – Aerial Detail Maps
- Appendix B –Section 4(f) Evaluation
- Appendix C – Air Quality Report
- Appendix D – Wetland Delineation Report
- Appendix E – Noise and Vibration Report
- Appendix F – Socioeconomic Report
- Appendix G – Environmental Justice Report
- Appendix H – Section 106 Archaeological Report
- Appendix I –Section 106 Architectural Report
- Appendix J – Draft Memorandum of Agreement
- Appendix K – Agency Consultation

LIST OF ACRONYMS AND ABBREVIATIONS

Notation	Definition
µg/m^3	micrograms per cubic meter
AxPE	Area of Potential Effect
C-2	Secondary Business Commercial Center Zoning Designation
C-5	Heavy Commercial Zoning Designation
C-5 DC	Downtown Core Subdistrict
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHRIS	Cultural and Historical Resources Information System
CMX	Neighborhood Commercial Mixed Use
CO	carbon monoxide
COMAR	Code of Maryland Regulations
CRGIS	Cultural Resources Geographic Information System
DHCA	Delaware Historic and Cultural Affairs
DNREC	Department of Natural Resources and Environmental Control
DST	double-stack trains
EA	Environmental Assessment
EJ	Environmental Justice
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geographic information system
HST	Howard Street Tunnel
I-2	General Light Industrial (City of Baltimore)
ICMX	Industrial-Commercial Mixed Use
ICTF	Intermodal Container Transfer Facility
INFRA	Infrastructure for Rebuilding America
IPaC	Information for Planning and Consultation

Notation	Definition
LOD	Limit of Disturbance
M-1	General Industrial
MAROps	Mid-Atlantic Rail Operations
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MDOT	Maryland Department of Transportation
Medusa	Medusa Cultural Resource Information System
MF	migratory fishes
MHT	Maryland Historical Trust
MOA	Memorandum of Agreement
MPA	Maryland Port Administration
NAAQS	National Ambient Air Quality Standards
NEC	Northeast Corridor
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NRHP	National Register of Historic Places
NWPR	Navigable Waters Protection Rule
O	Open Space
O_3	ozone
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PAFBC	Pennsylvania Fish and Boat Commission
PAFO	Pennsylvania field office
Pb	lead
PCBs	polychlorinated biphenyl
PGC	Pennsylvania Game Commission
PHMC	Pennsylvania Historical and Museum Commission
PM	Particulate Matter
PNDI	Pennsylvania Natural Diversity Inventory
PNHP	Pennsylvania Natural Heritage Program
ppb	parts per billion
ppm	parts per million

Notation	Definition
Project	Howard Street Tunnel Project
R-3	One-Family Rowhouses
RM	Residential Multi-Family Attached
ROW	Right-of-way
SHPO	State Historic Preservation Office
SIP	state implementation plan
SO_2	sulfur dioxide
TES	tunnel enlargement system
TMDLs	Total Maximum Daily Loads
TOD-4	Transit-Oriented Development District
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
WOUS	Waters of the United States
WWF	warm water fishes

1.0 PURPOSE AND NEED

1.1 Introduction

The Howard Street Tunnel Project (Project) proposes improvements to address clearance restrictions along CSX's Interstate 95 (I-95) Rail Corridor between Baltimore, Maryland and Philadelphia, Pennsylvania. This is the last major intermodal rail-freight corridor on the CSX network unable to provide modern double-stack service due to various height-clearance obstructions located in Maryland, Delaware, and Pennsylvania as shown on Figure 2-1. The primary obstacle to double-stack service along this corridor has been the Howard Street Tunnel (HST), a 1.7-mile-long railroad passage under the heart of Baltimore that was originally constructed in 1895. With current vertical clearances less than the 21 feet necessary to achieve double-stack clearance, the HST and 22 other clearance locations currently restrict the ability to move railcars with double-stacked containers between Baltimore and Philadelphia, on the CSX I-95 Rail Corridor.

Recent State Freight Plans in Maryland[1], Delaware[2], and Pennsylvania[3] all point to increased freight tonnage of at least 58 percent between 2012 and 2040. Without comprehensive, cost-effective solutions across freight modes, the national transportation network is at risk of delays and inefficiencies that will impact mobility for both passengers and cargo. The HST Project is specifically designed to address these concerns.

The Project would remove the numerous clearance obstructions along CSX's I-95 Rail Corridor, thereby providing double-stack connectivity and adding efficiency and resiliency to an important corridor in CSX's intermodal rail network. The United States Department of Transportation (USDOT) Federal Railroad Administration (FRA), in cooperation with the Maryland Department of Transportation's (MDOT) Maryland Port Administration (MPA) is preparing this Environmental Assessment (EA) to evaluate and assess the potential environmental impacts of the Project.

1.2 Purpose and Need

The purpose of the HST Project is to complete clearance improvements to allow for double-stack train (DST) service on CSX's I-95 Rail Corridor between Baltimore and Philadelphia. The primary needs of the HST Project are described in the following sections, and include:

- Double-Stack Connectivity; and
- Freight Operation Efficiency and System Resiliency.

[1] Maryland Department of Transportation, *Maryland Strategic Goods Movement Plan*, 2017. https://www.mdot.maryland.gov/OPCP/Strategic_Goods_Movement_Plan_2017.pdf

[2] Whitman, Requardt & Associates, LLP, Delmarva Freight Plan Final Report, May 2015. https://deldot.gov/Publications/reports/freight_plan/pdfs/2015/Delmarva_Freight_Plan_Final_Report.pdf?cache=1588727368738

[3] Pennsylvania Department of Transportation, *Pennsylvania's Long Range Transportation & Comprehensive Freight Movement Plan*, 2016 https://www.penndot.gov/ProjectAndPrograms/Planning/Documents/PennDOT-CFMP%20-%20FINAL%20August%202016.pdf

The Project is needed to ensure this portion of CSX's I-95 Rail Corridor continues to serve as a critical link connecting the local, regional, and national transportation network. The sections below provide more information on the Need for the Project.

Double-Stack Connectivity

The CSX I-95 Corridor serves a critical role in moving rail freight in the Mid-Atlantic region and the United States. The CSX I-95 Corridor currently contains insufficient clearances to accommodate double-stack freight in multiple locations including the HST. Currently, this Corridor is a bottleneck to efficient freight movement, limiting the use of double stack train (DST) service between, Baltimore and Philadelphia, two critical cities in the Mid-Atlantic region. The bottleneck also prevents the optimization of land-freight transportation between the Port of Baltimore and other American ports and destinations throughout the eastern United States.

The double-stack limitation at the HST and related locations along the CSX I-95 Rail Corridor have been widely recognized for decades and have been the focus of multiple studies and United States congressional investigations targeted at reducing congestion on some of the country's most-heavily traveled highways. It was the principal focus of the I-95 Corridor Coalition's Mid-Atlantic Rail Operations (MAROps) studies in 2002[4] and 2009[5], which advocated for a series of investments to improve regional transportation systems in the I-95 Corridor including the removal of impediments to double-stack clearance. The two biggest impediments to double-stack connectivity identified in MAROps studies were the Virginia Avenue Tunnel in Washington, D.C., which was recently replaced, and the HST in Baltimore, Maryland.

CSX offers single-stack intermodal service on the freight corridor paralleling I-95 today and runs DSTs on some portions via more circuitous routes. Because of the clearance constraints at the HST and north to Philadelphia, CSX cannot supply the most competitive, direct double-stack service to connect the markets of the North, South, and Midwest United States. While previous CSX efforts have raised clearances at a number of locations south and west of Baltimore and north of Philadelphia, this Project is the last obstacle remaining to double-stack intermodal service along a key intermodal route for CSX as shown on Figure 2-1.

Freight Operation Efficiency and System Resiliency

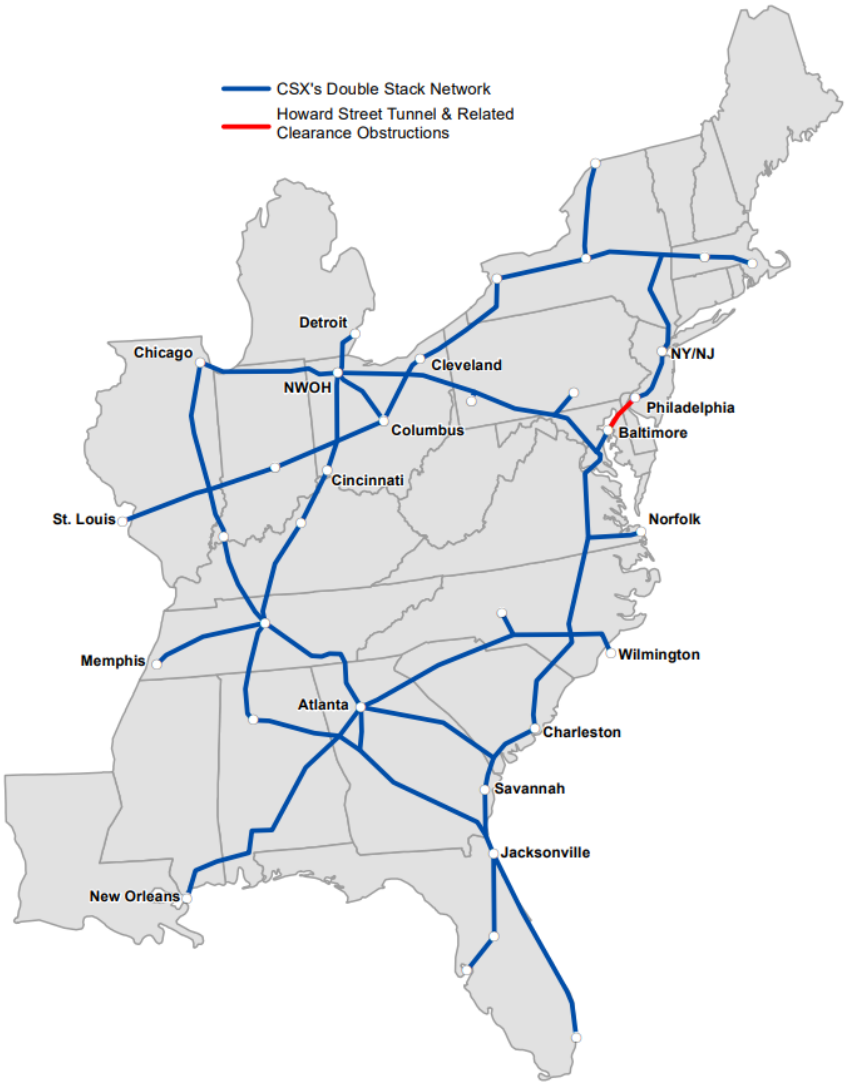
The lack of double-stack clearance on the CSX I-95 Corridor prevents CSX from running double-stack intermodal traffic through Baltimore on the most direct, lowest mileage rail route across its rail network (shown below). This constraint also prevents CSX from offering competitive double-stack service to current rail customers along this route. The lack of double-stack service along the CSX I-95 Corridor results in less

[4] Cambridge Systematics, Inc. and Parsons Brinckerhoff Quade and Douglas, Inc., *Mid-Atlantic Rail Operations* Study Summary *Report*, April 2002. https://www.mwcog.org/file.aspx?A=kmAUlyJEmp%2FrWjxW3t3LWepGIOFRuR8fiw4khaq9%2Fic%3D

[5] Cambridge Systematics, Inc. *Mid-Atlantic Rail Operations Phase II Study Final Report*, December 2009. https://i95coalition.org/wp-content/uploads/2015/02/MAROps_Phase_II_Final_Report.pdf?x70560

efficient and more costly freight movement as more trains are needed to move the same amount of goods. This increases the cost of existing rail service for origin and destination cities, impedes existing rail traffic moving on domestic coastal routes, creates inefficiencies at the Port of Baltimore, and increases truck traffic on I-95 by encouraging long-distance container moves to occur via truck as opposed to rail.

Figure 2-1: CSX Key Intermodal Network



The 2011 Baltimore's Railroad Network: Analysis and Recommendations report[6], published by FRA and MDOT, concluded that a double-stack-cleared route through Baltimore would "have beneficial multi-state

[6] U.S. Department of Transportation, Federal Railroad Administration (FRA), Maryland Department of Transportation (MDOT), *Baltimore's Railroad Network: Analysis and Recommendations*. 2011. https://railroads.dot.gov/elibrary/baltimores-railroad-network-analysis-and-recommendations

impacts by diverting traffic off the I-95 Corridor with the resultant reduction in energy use, air pollution, highway wear and tear and congestion." The 2017 Maryland Strategic Goods Movement Plan continued to highlight the need for double-stack capacity in the region, specifically calling for improvements to the HST[1]. Because DSTs can carry more containers than single-stack trains, completion of the HST Project would create additional freight capacity without increasing the frequency of train service.

Currently, containers moving in the CSX I-95 Corridor and west from the Port of Baltimore do not have a direct double-stack rail service option. Both CSX and Norfolk Southern offer double-stack services to many other cities in the corridor, but these routings are indirect and less competitive with trucking than a direct north-south double-stack rail service. Truck travel is a less efficient and more costly method of freight transport over long distances, which can cause issues such as greater traffic congestion, greater pavement damage, and increased emissions compared to rail transport. The lack of double-stack clearance along the CSX I-95 corridor prevents potential truck-to-rail diversion.

The CSX I-95 Rail Corridor through Baltimore City also provides a critical connection from the Port of Baltimore's Seagirt Marine Terminal Intermodal Container Transfer Facility (ICTF) to consumer markets. The lack of double-stack connectivity through the HST and CSX I-95 Corridor prevents the Port of Baltimore from capitalizing on its strategic geographic location as the furthest inland location of all the Mid-Atlantic ports. This affects the competitiveness of the Port of Baltimore compared to other nearby ports, which can offer ocean shippers the option of double-stack rail to reach critical inland markets.

Resiliency of a rail network is the ability to provide operational flexibility and reliability for train services during normal operations, as well as during periods of higher demand and/or unexpected operating conditions. The lack of a double-stack connection through the CSX I-95 Corridor reduces the overall resiliency of the regional and national freight network, leaving more circuitous routes for transporting double-stack freight. The lack of double-stack connection also reduces network redundancy and provides fewer opportunities for alternate routes to maintain operations in the case of high demand or unexpected conditions. The proposed improvements will improve the long-term reliability of the national multimodal freight network.

The CSX I-95 Corridor is a critical link in the regional multimodal freight network and, as such, the maintenance of freight traffic during construction will also be a key consideration. Major interruptions to freight mobility along the corridor could potentially result in costly and disruptive delays. Operational flexibility during construction is therefore an important component of the need for freight operation efficiency and system resiliency.

2.0 ALTERNATIVES

2.1 Introduction

This chapter reviews the alternatives development process, describes both the No Action Alternative and the Build Alternative, and identifies the Preferred Alternative. Two alternatives are considered in this EA: 1) the No Build Alternative; and 2) the Build Alternative. The proposed Build Alternative is the preferred alternative, as it satisfies the HST Project Purpose and Need. The No Build Alternative does not meet the Purpose and Need of the Project but is considered as a baseline for comparison to the Build Alternative.

Background and Previous Planning Studies

Height clearance restrictions preventing modern double-stack service on CSX's I-95 Rail Corridor have been widely recognized for decades and have been the focus of multiple studies and congressional investigations to improve rail operations and reduce congestion on some of the country's most heavily traveled highways. Several options have been considered to different extents for improving the corridor, as described below.

CSX's I-95 Rail Corridor was a principal focus of the I-95 Corridor Coalition's MAROps studies in 2002[7] and 2009[8]. These studies advocated for a series of investments that would improve capacity, remove impediments to double-stack service, and alleviate demand on the highway network. The two biggest impediments to double-stack service identified in the MAROps studies were the Virginia Avenue Tunnel in Washington D.C., which was replaced in [YEAR], and the HST in Baltimore. The general solution discussed in the 2002 MAROps study involved full reconstruction of the HST including the addition of a second track. The 2009 MAROps study indicated further studies by FRA and MDOT were being conducted that would provide detailed engineering analyses of various alignments and further detail on constructability and cost effectiveness for each alignment.

Following a 2001 train derailment in the HST, Congress mandated that FRA provide a comprehensive assessment of the region's complex rail system. In response to the Congressional mandate, FRA completed two studies, the 2005 *Baltimore's Railroad Network: Challenges and Alternatives*[9] and the follow-up study in 2011, *Baltimore's Railroad Network: Analysis and Recommendations*[10]. The objectives of these two reports were to assess problems in the freight and passenger rail infrastructure near Baltimore. They

[7] Cambridge Systematics, Inc. and Parsons Brinckerhoff Quade and Douglas, Inc., *Mid-Atlantic Rail Operations* Study Summary *Report*, April 2002 https://www.mwcog.org/file.aspx?A=kmAUlyJEmp%2FrWjxW3t3LWepGIOFRuR8fiw4khaq9%2Fic%3D.

[8] Cambridge Systematics, Inc. *Mid-Atlantic Rail Operations Phase II Study Final Report*, December 2009. https://i95coalition.org/wp-content/uploads/2015/02/MAROps_Phase_II_Final_Report.pdf?x70560.

[9] U.S. Department of Transportation, FRA, MDOT, *Report to Congress: Baltimore's Railroad Network: Challenges and Alternatives*. 2005. https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/16535/2005_REPORT%20TO%20CONGRESS%20-%20BALTIMORE%20S%20RAILROAD%20NETWORK.PDF.

[10] U.S. Department of Transportation, FRA, MDOT, *Baltimore's Railroad Network: Analysis and Recommendations*. 2011. https://railroads.dot.gov/elibrary/baltimores-railroad-network-analysis-and-recommendations.

included a benefits and cost analysis for options that would potentially reduce congestion and improve safety and efficiency.

Alternatives from Prior Studies Dismissed from Further Consideration

Consistent with the second MAROps study, the 2011 report, *Baltimore's Railroad Network: Analysis and Recommendations*, evaluated several options to re-route rail freight through or around Baltimore, including a land-based tunnel alternative and an underwater tunnel. The land-based option would have required double-tracking and clearance modifications to seven existing bridges, and construction of several new tunnels, including a "Great Circle Freight Tunnel," which would have routed freight around the HST within Baltimore.

The other option considered was an underwater tunnel beneath the Baltimore Harbor, involving dredging and deep excavations and the acquisition and construction of new rail ROW. These options would involve extensive construction resulting in significant and wide-ranging impacts to the community and environment at a cost of several billion dollars. While the 2011 FRA study evaluated the construction of a new freight tunnel, similar to the MAROps recommendation, the associated costs and the high level of disruption prevented these options from being advanced.

New alignment options, such as those considered in prior studies, were not advanced due to a variety of issues ranging from a high-level complexity associated with needing to obtain new property for use as rail right-of-way and easements, extensive disruption to communities and the environment; and excessive costs and other variables that could further complicate and/or increase costs and impacts.

Advancements in construction methodologies since the completion of the MAROps studies and the 2011 FRA study have made it possible to achieve double-stack clearance heights through the existing HST at a significantly reduced cost and with fewer impacts to the surrounding community and environment. Modifications to and continued use of the existing HST would provide a comprehensive, cost-effective solution, creating double-stack connectivity while improving freight operation efficiency, network reliability and resiliency. This new less impactful approach is discussed below as the Build Alternative.

An EIS[11] and Record of Decision[12] were completed in 2017 for a new passenger tunnel to replace Amtrak's B&P Tunnel. If built, the planned replacement passenger tunnel for the B&P Tunnel would have double-stack clearance. However, there is no practical way to route CSX traffic over the Amtrak Northeast Corridor (NEC) through Baltimore due to a lack of connectivity, differing geographic orientations of the rail lines, and other constraints along Amtrak's NEC through Baltimore such as the Union Tunnel. CSX freight lines do not currently connect with the NEC in a manner that would allow CSX trains to travel through the new

[11] U.S. Department of Transportation, Federal Railroad Administration (FRA), *Final Environmental Impact Statement for the B&P Tunnel Project*. 2017. http://www.bptunnel.com/environmental-studies/final-environmental-impact-statement.html

[12] U.S. Department of Transportation, Federal Railroad Administration (FRA), *Record of Decision for the B&P Tunnel Project*. 2017. http://www.bptunnel.com/content/dam/bptunnel/pdfs/ROD/BPT_Record-of-Decision_March2017_Signed.pdf

B&P tunnel without construction of additional connections as part of an entirely separate project. Accordingly, the B&P tunnel does not address the need for double stack clearance along CSX's I-95 Rail Corridor. Additionally, the B&P Tunnel Project focused on intercity passenger and commuter rail, with the purpose of alleviating congestion caused by multiple fright rail and passenger rail users. Utilizing the B&P Tunnel for double stack freight transport would counteract passenger rail improvements made as a result of the project.

2.2 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore and north along CSX's I-95 Rail Corridor. The existing single-stack capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network.

The No Build Alternative does not meet the Project's Purpose and Need for double-stack intermodal service along CSX's I-95 Rail Corridor. The No Build Alternative prevents CSX from running double-stack intermodal traffic through Baltimore on the current rail network and from offering competitive double-stack service to current rail customers along this route.

2.3 Build Alternative

In 2016, the MDOT and CSX conducted a feasibility study[13] that evaluated alternatives for achieving double-stack clearance within the existing tunnel rather than a wholesale replacement on a new alignment. The study concluded: (1) the existing HST has many years of useful life; (2) engineering advances make it possible for the tunnel to be double-stack cleared for a practicable cost with minimal impacts to the public; and (3) frequent flooding must be azddressed to improve the tunnel's reliability. Additionally, in 2015 CSX completed an investigation to identify the obstructions to double stack clearance north of Baltimore up to Philadelphia, and determined associated clearance and related projects would be more financially feasible and technically more easily achievable compared to any other options identified in previous studies involving a new alignment.

With advances in engineering technology and the investment of federal, state, and private funds, the Build Alternative is now financially feasible to complete with far fewer impacts than the options identified in previous studies (as described in Section 2.1). In addition to the INFRA grant, other funding is being provided by the State of Maryland, CSX, a Pennsylvania Department of Transportation grant, and Federal Highway Administration (FHWA) Formula Funds, totaling $443.5 million.

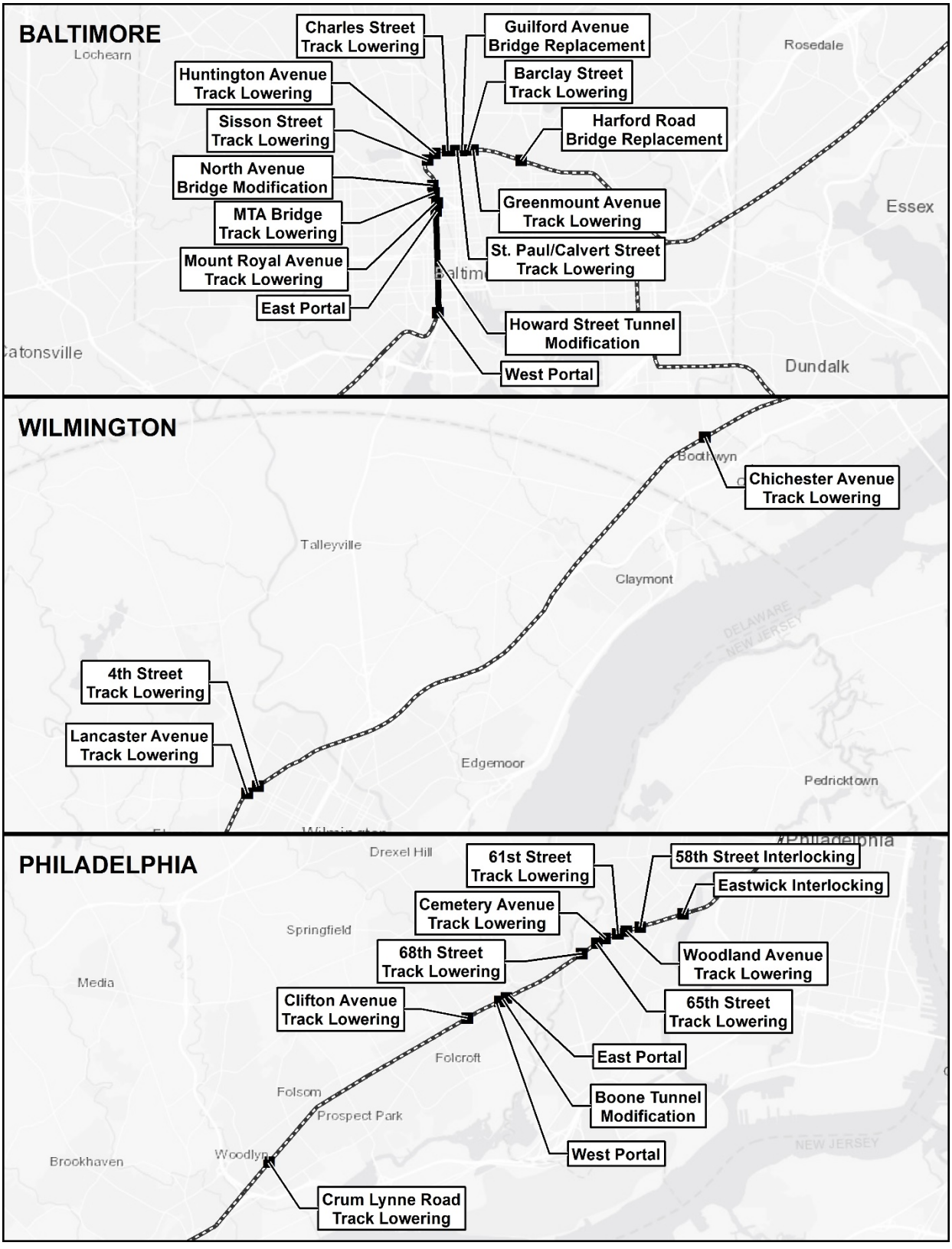
The Build Alternative consists of improvements that would remove all obstructions restricting passage of modern double-stack intermodal trains, allowing for a 21-foot clearance along the noted stretch of the rail corridor between Baltimore and Philadelphia (Figure 2-2). Additional Project overview maps are provided

[13] Clark Construction and Parsons, *Howard Street Tunnel Clearance Report*. 2016.

in Appendix A, Figures 1 and 2. Detailed aerial detail maps for each location are located in Appendix A, Figure 3.

In general, the physical obstructions consist of a bridge or tunnel along the corridor, for which a tailored approach to achieving clearance has been developed. At bridge obstructions, four conventional methods, or a combination thereof, were considered for increasing the vertical clearance: (1) lower tracks beneath the bridge; (2) modify the bridge; (3) raise the existing bridge; or (4) remove and replace the bridge. For tunnel obstructions, three conventional methods, or a combination thereof, will be used to increase vertical clearance: (1) lower tracks within the tunnel; (2) modify the arch and/or invert within the tunnel, or (3) open cutting and reconstructing the tunnel.

Figure 2-2: CSX Howard Street Tunnel Project Overview



The following methods will be used to address the existing obstructions along CSX's I-95 Rail Corridor, dependent upon location-specific conditions:

1. **Track Lowering** - Where no utilities or other obstacles are present for both tunnel and bridge locations.

2. **Bridge Modification** - Bridge (arch/invert) modification where an obstacle is present and track lowering is not feasible. Bridge modification will not require removal of the existing bridge structure.

3. **Bridge Replacement** – Removal and replacement of bridge structure where obstacle or utilities are present and track lowering, or bridge modification is not feasible.

4. **Track Lowering and Tunnel Arch and/or Invert Modification** - For tunnel locations where utilities or other obstacles are present.

The proposed Build Alternative consists of:

- 18 track lowering locations,
- 1 bridge modification without track lowering**,**
- 2 bridge replacements without track lowering,
- 2 tunnel locations with track lowering and arch and/or invert modification, and
- 1 relocation of an existing interlocking to facilitate the track lowering proposed at the Woodland Avenue site in Philadelphia.

In addition, staging and storage activities are proposed at CSX's Bayview Rail Yard in Baltimore to support the Project.

At the HST location, an alternate non-conventional option is also being considered. The non-conventional alternative involves the use of a tunnel enlargement system (TES) to gain clearance along 75 percent of the tunnel's approximate 8,700-foot length. The advantage of the TES over the conventional options previously described is that it would enable train traffic to flow through the work zone during active construction while resulting in a new tunnel structure along its length upon completion.

More information on the method options for the HST is provided in Section 2.4.4 below. This EA considers environmental impacts conservatively by assuming that the construction method with the most impact is selected (i.e., non-conventional option) for the HST.

During the construction of the Project, a number of state of good repair issues would simultaneously be addressed, such as track maintenance (i.e., replacing worn ties, rails, and ballast), improving drainage along the corridor, and updates to transportation infrastructure such as retaining walls, which further increase the overall efficiency, resiliency, and reliability of the rail corridor.

2.3.1 Track-Lowering Locations

There are 18 locations where track-lowering activities under existing bridges and tunnels along the CSX I-95 Rail Corridor are proposed to provide double-stack clearance, summarized below in Table 2-1.

Table 2-1. HST Project – Description of Track Lowering Locations

Name	Location in Appendix A	Project Activity Description
Mount Royal Avenue	Baltimore, MD Figure 2, Sheet 6	Track lowering and tunnel underpinning.
MTA Bridge	Baltimore, MD Figure 2, Sheet 7	Track lowering.
Sisson Street	Baltimore, MD Figure 2, Sheet 9	Track lowering and retaining wall work.
Huntington Avenue	Baltimore, MD Figure 2, Sheet 10	Track lowering and footer extension work north of Huntington Avenue.
Charles Street	Baltimore, MD Figure 2, Sheet 11	Track lowering and tunnel underpinning and footer extension; new retaining wall between Charles Street and St. Paul Street.
St. Paul/Calvert Street	Baltimore, MD Figure 2, Sheet 12	Track lowering and tunnel underpinning and footer extension work; new retaining wall between Charles Street and St. Paul Street.
Barclay Street	Baltimore, MD Figure 2, Sheet 14	Track lowering and bridge underpinning.
Greenmount Avenue	Baltimore, MD Figure 2, Sheet 15	Track lowering and bridge underpinning and footer extension.
Lancaster Avenue	Wilmington, DE Figure 2, Sheet 17	Track lowering and new retaining wall.
4th Street	Wilmington, DE Figure 2, Sheet 18	Track lowering.
Chichester Avenue	Boothwyn, PA Figure 2, Sheet 19	Track lowering.
Crum Lynne Road	Ridley Park, PA Figure 2, Sheet 20	Track lowering.
Clifton Avenue	Sharon Hill, PA Figure 2, Sheet 21	Track lowering.
68th Street	Philadelphia, PA Figure 2, Sheet 23	Track lowering.
65th Street	Philadelphia, PA Figure 2, Sheet 24	Track lowering.
Cemetery Avenue	Philadelphia, PA Figure 2, Sheet 25	Track lowering.

Name	Location in Appendix A	Project Activity Description
61st Street	Philadelphia, PA Figure 2, Sheet 26	Track lowering.
Woodland Avenue	Philadelphia, PA Figure 2, Sheet 27	Track lowering.

2.3.2 Bridge Modification

North Avenue

At North Avenue in Baltimore (Appendix A, Figure 2, Sheet 8), the existing CSX tracks are bounded below by the Amtrak B&P Tunnel and a 98-inch-diameter stone and brick culvert, and above by the North Avenue bridge, which carries vehicular traffic and four large municipal water lines (three 36-inch diameter and one 48-inch diameter). The tracks are essentially "sandwiched" between this other existing transportation infrastructure and cannot practically be lowered due to these engineering constraints without a multitude of impacts to the surrounding environment, utility systems, and the public. Lowering the track would require significant coordination with local authorities to re-route other public infrastructure. Therefore, clearance at this location will be gained by replacing a portion of the bridge arch structure with a single-span, shallow steel girder, with no resulting change to the North Avenue roadway profile.

2.3.3 Bridge Replacements

Guilford Avenue

The existing arch bridge at Guilford Avenue in Baltimore is proposed to be replaced with a single-span, shallow girder bridge (Appendix A, Figure 2, Sheet 13). The tracks at this location cannot practically be lowered due to the presence of two gravity sewer lines that are located directly beneath the track. These sewer lines are very shallow and lowering them would result in considerable impacts to adjacent residential properties for several blocks to maintain gravity flow within the lines. The stone walls associated with the current bridge structure will remain as retaining walls for the new structure.

Harford Road

At Harford Road (Appendix A, Figure 2, Sheet 16), track lowering is not feasible due to the presence of an existing 84-inch-diameter water line set in a concrete protection slab located directly below the railroad tracks. Relocation of this utility is not practically feasible and would result in significant impacts to the surrounding environment and the public. Therefore, the Build Alternative at this location will consist of replacing the existing arch structure of the bridge with a single-span, shallow girder structure. This work will include the removal and replacement of Harford Road across the bridge at a new finish elevation that is approximately three to five feet higher than its existing elevation.

2.3.4 Tunnel Modifications and Replacements

Howard Street Tunnel

The HST generally runs from Camden Station to Mount Royal Station in Baltimore and is approximately 8,700 feet in length (Appendix A, Figure 2, Sheets 1-5). It has a current height clearance of 19 feet, 6 inches and was constructed in three sections: 1) mined section; 2) cut-and-cover section, and 3) concrete box section.

Option One

Option one, or the conventional construction approach to achieving the necessary clearance under the Build Alternative, includes a combination of track lowering and modification to the tunnel arch and/or invert.

Throughout the box culvert section of the tunnel, which extends approximately 1,360 feet from just north of Martin Luther King Jr. Boulevard to just south of West Camden Street (see Appendix A, Figure 2, Sheet 1), there is sufficient ballast depth present to allow for clearance to be gained by track lowering alone. In the adjacent cut and cover section of the tunnel, extending approximately 1,140 feet from just south of West Camden Street to just north of West Lombard Street (see Appendix A, Figure 2, Sheets 1 and 2), there is insufficient space between the existing track and invert to achieve clearance via track lowering alone. In addition, arch modification in this section is not possible due the presence of fewer than 5 feet of cover between the tunnel's arch and the major roadway (i.e., Howard Street) and the MDOT Light Rail Line operation. Therefore, the clearance thorough this section of the tunnel under this conventional approach will consist of a combination of invert modification and track lowering.

The mined section of the tunnel extends for approximately 6,200 feet from just north of West Lombard Street to just north of Dolphin Street (see Appendix A, Figure 2, Sheets 2 and 5). Through the mined section, the conventional option will consist primarily of arch modification and track lowering, with some invert modifications also needed in a short transition zone coming out of the cut-and-cover section. This combination of methods is proposed for this section of the tunnel because there is insufficient depth beneath the tracks and the tunnel invert to achieve the necessary clearance height through track lowering alone, but there are no obstacles present that will restrict alteration of the tunnel's arch. Therefore, it is more cost effective and less disruptive to use a combination of notching the arch and lowering the track elevation to achieve the necessary clearance. Through the majority of this section, the new track structure will consist of steel ties, ballast, and ballast mat.

Option Two

Option two, the non-conventional construction approach, involves the use of a TES in the 6,200-foot mined section of the tunnel extending from just north of West Lombard Street to just north of Dolphin Street (see Appendix A, Figure 2, Sheets 2 and 5). The TES would involve a custom-built system that moves along the track, creating a protective barrier between train operations and the construction area outside the barrier.

The shield not only protects the train operations, but it provides a sufficient work area to allow the existing tunnel liner to be removed in pieces and replaced with pre-cast concrete sections. When construction is complete, a new tunnel structure would be in place with improved maintenance access.

There would not be sufficient clearance between the top of the tunnel and the overlying Howard Street along the cut-and-cover section of the tunnel; therefore, the use of the TES cannot extend through the tunnel's existing cut-and-cover section. In order to maintain the benefit of continued train traffic during construction offered by the TES, the clearance in the existing cut-and-cover section would be achieved by removing the top of this approximate 1,140 foot section of the tunnel and reconstructing it. For the box section of the HST using this non-conventional approach, the clearance methodology would remain the same and be achieved via track lowering only. A feasibility study evaluating the use of the TES at HST is currently in progress by CSX. A final decision on the construction approach for the HST is anticipated early 2021, prior to FRA's issuance of a NEPA decision document.

Boone Tunnel

The Boone Tunnel is located under US 13 (Chester Pike) in Sharon Hill, Pennsylvania and currently has a height clearance of 19 feet, 4 inches (Figure 2, Sheet 22).

Generally speaking, unlike the HST structure which includes an invert structure, the Boone Tunnel does not include an invert and is essentially a long arch structure supported by footings that are resting on bedrock. Modification of the Boone Tunnel's arch to gain clearance is not a feasible option given the very limited cover above it. Due to past track-lowering activities, the existing tunnel (arch) footings are very shallow, and further lowering alone to gain clearance would expose and/or compromise the integrity of the footings. Lastly, depth to bedrock in this area is very shallow relative to the existing track elevation and further track lowering will require the bedrock surface to be lowered. Therefore, the method for achieving clearance at the Boone Tunnel will be track lowering that will generally consist of underpinning of the existing arch structure, hammering and removal of the underlying rock, and replacement of the ballast and track structure.

2.3.5 Additional Project Components

Bayview Rail Yard

The Bayview Rail Yard in Baltimore is proposed for temporary staging and storage of construction materials and equipment. No improvements to the rail yard are proposed for the Project.

58th Street Interlocking Relocation

The relocation of an existing interlocking at Woodland Avenue and 58th Street (Appendix A, Figure 2, Sheet 28) is proposed to facilitate track-lowering activities planned at Woodland Avenue and better rail traffic flow during construction (Appendix A, Figure 2, Sheet 27). The interlocking will be moved from the

current location at 58th street approximately 0.2 miles east to the Eastwick location, between Lindbergh Avenue and the Schuylkill River crossing within the existing previously disturbed rail ROW in Philadelphia(Appendix A, Figure 2, Sheet 29).

3.0 AFFECTED ENVIRONMENT

The EA is prepared pursuant to: NEPA (42 U.S.C. § 4321 et seq.), and implementing regulations (40 CFR Parts 1500-1508), 23 CFR § 771; 23 U.S.C. § 139; Section 4(f) of the United States Department of Transportation Act (49 USC §303) and implementing regulations (23 CFR Part 774); National Historic Preservation Act (54 USC §306101 et seq.) and implementing regulations (36 CFR Part 800); Clean Air Act as amended (42 USC §7401 et seq.) and implementing regulations (40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 USC §1531-1544) and implementing regulations (50 CFR Part 402); the Clean Water Act (33 USC §1251-1387) and implementing regulations (33 CFR Parts 320 to 324 and 40 CFR Part 230); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC §4601).

Each resource with a potential to be affected, either temporarily during construction or permanently as a result of operation of the completed Project, is discussed in the sections below. This chapter describes the current environment for each resource potentially affected by the Project and presents the underlying laws/Executive Orders and methodologies for assessing Project impacts. Study Areas vary and were determined by resource. Discussion of potential impacts for each resource are included in Chapter 4.0, Environmental Consequences.

The following resources are not present within the Study Area or would not be impacted by construction or operation of the Project: solid waste disposal, ecological systems, flood hazards and floodplain management, coastal zone management, use of other natural resources, public health, and recreational opportunities. Therefore, these resources are not discussed further in this document.

The following resources were evaluated and will be discussed in this Environmental Assessment:

- Air Quality
- Water Quality
- Noise and Vibration
- Wetland Areas
- Floodplains
- Endangered Species or Wildlife
- Use of Energy Resources
- Aesthetic and Design Quality
- Land Use and Community Facilities
- Socioeconomic Environment
- Environmental Justice
- Hazardous Materials
- Cultural Resources

In addition to evaluating potential effects to the above resources, FRA evaluated the potential for the Project to impact properties protected under Section 4(f) of the United States Department of Transportation Act of 1966 as amended (49 U.S.C. 303(c) and 23 U.S.C. 138). FRA's Section 4(f) evaluation is included in

Appendix B. In summary, FRA determined that all impacts of the Project to Section 4(f) properties qualify as exceptions to Section 4(f) use under the Section 4(f) regulations at 23 CFR 774. Therefore, the Project would not result in any use of a 4(f) property and no further analysis under Section 4(f) is necessary.

3.1 Air Quality

The Clean Air Act (CAA) is the statute regulating air quality in the United States, which requires the United States Environmental Protection Agency (EPA) to set the National Ambient Air Quality Standards (NAAQS), designate areas that are not in attainment of the NAAQS, and subsequently approve state plans for achieving those standards. The CAA Amendments of 1990 and the Final Transportation Conformity Rule (40 Code CFR Parts 51 and 93) direct the EPA to implement environmental policies and regulations that ensure acceptable levels of air quality.[14] In addition to the CAA, other major regulations within the Project Area that apply to the potential air quality impacts of transportation projects include:

- The General Conformity Rule, 40 CFR part 93 subpart B;
- General Emissions Standards, Prohibitions, and Restrictions - Particulate Matter, Code of Maryland Regulations (COMAR) 26.11.06.03;
- Pennsylvania Air Pollution Control Act, 25 Pa. Code Article III. Air Resources; and
- Delaware Department of Natural Resources and Environmental Control (DNREC), Conformity of General Federal Actions to the State Implementation Plans, Title 7, Section 1100, Code 1135.

Pursuant to CAA requirements, the EPA establishes, enforces, and periodically reviews the NAAQS. The NAAQS are set to safeguard public health and environmental welfare against the detrimental impacts of outdoor air pollution and are defined as primary and/or secondary standards. Primary NAAQS are health-based standards geared toward protecting sensitive or at-risk portions of the population such as asthmatics, children, and the elderly. Secondary NAAQS are welfare oriented and are designed to prevent decreased visibility and damage to animals, vegetation, and physical structures. See Table 3-1, National Ambient Air Quality Standards below and Appendix C for additional information on standards.

[14] Historically, Greenhouse Gas (GHG) emissions have not been regulated under the CAA as air pollutants. However, after the United States Supreme Court clarified in 2007 that CO_2 is an "air pollutant" subject to regulation under the CAA, the EPA embarked on developing requirements and standards for GHG emissions from mobile and stationary sources. However, there are no current NAAQS or *de minimis* thresholds in place for GHG. See Appendix C for additional information.

Table 3-1. National Ambient Air Quality Standards (NAAQS)

Pollutant	Primary/Secondary	Averaging Time	Level
Carbon Monoxide (CO)[a]	Primary	8-hour	9 ppm
	Primary	1-hour	35 ppm
Lead (Pb)[b]	Primary and Secondary	Rolling 3-month average	0.15 µg/m^3
Nitrogen Dioxide (NO_2)[c]	Primary	1-hour	100 ppb
	Primary and Secondary	Annual	53 ppb[d]
Ozone (O_3)[e]	Primary and Secondary	8-hour	0.070 ppm[f]
$PM_{2.5}$[g]	Primary	Annual	12 µg/m^3
	Secondary	Annual	15 µg/m^3
	Primary and Secondary	24-hour	35 µg/m^3
PM_{10}[h]	Primary and Secondary	24-hour	150 µg/m^3
Sulfur Dioxide (SO_2)[i]	Primary	1-hour	75 ppb[j]
	Secondary	3-hour	0.5 ppm

Source: EPA, National Ambient Air Quality Standards (NAAQS), 2020, http://www.epa.gov/air/criteria.html.
Notes: ppb = parts per billion, ppm = parts per million, and µg/m^3 = micrograms per cubic meter of air.
[a] CO 1-hour and 8-hour standard not to be exceeded more than once per year.
[b] Lead rolling 3-month average standard not to be exceeded. Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m^3 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.
[c] NO_2 1-hour standard represents the 98th percentile of 1-hour daily maximum concentrations, averaged over three years.
[d] The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is presented for the purpose of clearer comparison to the 1-hour standard.
[e] Ozone 8-hour standard represents the annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years.
[f] Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
[g] $PM_{2.5}$ annual standards represent annual mean, averaged over three years. $PM_{2.5}$ 24-hour standard represents 98th percentile, averaged over three years.
[h] PM_{10} 24-hour standard not to be exceeded more than once per year on average over three years.
[i] SO_2 1-hour standard represents 99th percentile of 1-hour daily maximum concentrations, averaged over three years. SO_2 3-hour standard not to be exceeded more than once per year.
[j] The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)).

The CAA requires states to develop a general plan to attain and/or maintain the primary and secondary NAAQS in all areas of the country and to develop a specific plan to attain the standards for each area designated nonattainment for a NAAQS. The attainment classifications for each of the EPA-designated areas[15] in the Study Area[16] are:

- Baltimore City, Maryland—marginal non-attainment area for 8-hour ozone, maintenance area for $PM_{2.5}$, and partial maintenance area for CO;
- New Castle County, Delaware—marginal non-attainment area for 8-hour ozone and a maintenance area for $PM_{2.5}$;
- Delaware County, Pennsylvania—marginal non-attainment area for 8-hour ozone and a maintenance area for $PM_{2.5}$; and
- Philadelphia City/County, Pennsylvania—marginal non-attainment areas for 8-hour ozone and a maintenance area for $PM_{2.5}$.

The CAA requires that a state implementation plan (SIP) be prepared for each nonattainment area and a maintenance plan be prepared for each former nonattainment area that subsequently demonstrated compliance with the standards. A SIP is a compilation of a state's air quality control plans and rules that are approved by EPA. The CAA's General Conformity Rule prohibits federal agencies (such as FRA) from permitting or funding projects that do not conform to an applicable SIP. The Project is funded and would require approval by the FRA and is located in a nonattainment/maintenance area; therefore, the General Conformity requirements of the CAA are applicable.

For this analysis, the entire Project Area is in attainment for PM and Baltimore City is the only region that is in not in attainment for CO; therefore, only Baltimore City is evaluated for potential effects on local air quality from CO as a pollutant

Table 3-2 presents the background concentrations of pollutants for the Regional Study Area based on air quality monitoring from 2017 to 2019. The values describe the air quality status of a given location relative to the NAAQS. These values provide a way to designate and classify nonattainment areas and to assess progress toward meeting the NAAQS. The monitoring locations were selected for the most conservative representation of background levels for each of the NAAQS within the project corridor as a whole, or for regions of the Project Area where the NAAQS are in nonattainment.

[15] EPA, Green Book, https://www.epa.gov/green-book.

[16] The state of dispersion science and health effects of GHG emissions have not sufficiently advanced to accurately consider the microscale level of mobile sources. For this reason, this analysis does not determine a Local Study Area for GHG emissions for mobile sources and only considered them on a regional scale. GHG emissions from the Project would be due to fossil fuel combustion of vehicles, diesel trains, potential change in GHG emissions from implementation of the project is calculated for the same sources and categories as identified for the analysis of local operational emissions.

Table 3-2. Regional Background Air Quality Concentrations, 2017-2019

Pollutant	Units	Averaging Period	Background Concentration	Monitoring Location	NAAQS
CO	ppm	8-hour	2	Essex, MD	9
CO	ppm	1-hour	2.7	Essex, MD	35
Pb	μ/m^3	3-month	0.025	Wilmington, DE	0.15
NO_2	ppb	1-hour	47.8	Old Town, MD	100
NO_2	ppb	Annual	15.65	Old Town, MD	53
O_3	ppm	8-hour	**0.076 (exceeds NAAQS)**	Furley, MD	0.070
$PM_{2.5}$	μ/m^3	Annual	8.76	Old Town, MD	12
$PM_{2.5}$	μ/m^3	24-hour	19.66	Old Town, MD	35
PM_{10}	μ/m^3	24-hour	53	Old Town, MD	150
SO_2	ppb	1-hour	12.01	Essex, MD	75

Source: US Environmental Protection Agency. Air Quality System Data Mart [internet database] available via https://www.epa.gov/airdata. Accessed June 23, 2020.
Note: (ppm) – parts per million; (ppb) parts per billion; (μ/m^3) micrograms per meter cubed

3.2 Water Quality

The Project crosses or is directly adjacent to waters of Maryland, Delaware, and Pennsylvania. Waters of the United State(s) are protected from water pollution by the Federal Water Pollution Control Act (as amended by the Clean Water Act of 1972) and/or by state-specific water quality regulations as managed by the Maryland Department of the Environment (MDE), the Delaware DNREC, and the Pennsylvania Department of Environmental Protection. Any discharge of stormwater must comply with the states' National Pollutant Discharge Elimination System permit conditions for stormwater discharges from construction activities.

The Project is located within four major watersheds (Hydrologic Units Code 8) including the Gunpowder-Patapsco watershed (Maryland), the Brandywine-Christina watershed (Delaware), the Lower Delaware watershed (Pennsylvania), and the Schuylkill watershed (Pennsylvania).[17]

The Maryland Project Areas are located within the Jones Falls subwatershed of the Gunpowder-Patapsco watershed.[18]

[17] USDA/NRCS. (2013). Watershed Boundary Dataset. Retrieved April 7, 2017, from https://datagateway.nrcs.usda.gov/GDGOrder.aspx
[18] USGS. (2017, 05 17). Links to Data Products and Services. Retrieved 06 06, 2017, from Hydrography: https://nhd.usgs.gov/data.html

COMAR Section 26.08.02 Stream Designations for the Jones Falls watershed within the Project Area have been designated Use IV waterbody (Recreational Trout Waters).[19] The Jones Falls and the Patapsco River do not meet State water quality standards and have approved Total Maximum Daily Loads (TMDLs) for impairments due to chloride, sulfate, total suspended solids, temperature, and polychlorinated biphenyls (PCBs).[20] Jones Falls is listed as Use Class I for water contact recreation, and protection of nontidal warmwater aquatic life. The Patapsco River is listed as Use Class II and is part of the Chesapeake Bay in support of estuarine and marine aquatic life and shellfish harvesting.

The Delaware Project Areas are located in the Little Mill Creek subwatershed of the Brandywine-Christina watershed.[21] The Project Areas drain to Little Mill Creek, a direct tributary to the Christina River, which drains to the Delaware River.[22] The stream Silverbrook Run, which originates from a stormwater tunnel within the Lancaster Avenue right-of-way (ROW), is located within the Project Area limits and drains to Little Mill Creek[23] (see NWI mapping in Appendix D, Figure 4).

The Little Mill Creek and the Christina River do not meet state water quality standards and have approved TMDLs for impairments due to dieldrin, chlordane, heptachlor epoxide, PCBs, Dioxin and Furan toxic equivalents (known contaminants in PCBs), and DDT and metabolites.[24] Little Mill Creek and the Christina River also have fish consumption advisories for PCBs, dieldrin, and chlordane.[25] Per the Delaware Administrative Code, 7401 Surface Water Quality Standards, the Christina River is a source of drinking water and has a use designation of fish, aquatic life and wildlife, and cold water fish (limited). These waters support various communities of fish species.

The Pennsylvania Project Areas are located within several subwatersheds of the Lower Delaware and the Schuylkill watersheds. Subwaters include Oldmans Creek-Delaware River, Repaupo Creek-Delaware River, Crum Creek, Darby Creek, Cobbs Creek, and the City of Philadelphia-Schuylkill River.[6] Several of the direct tributaries to the Delaware River, the Delaware River, and the Schuylkill River are not meeting state water quality standards and have approved TMDLs for impairments due to PCBs and organics.[26,27]

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[19] MDE. (n.d.). *Maryland's Designated Uses for Surface Waters*. Retrieved from https://mde.maryland.gov/programs/Water/TMDL/WaterQualityStandards/Pages/wqs_designated_uses.aspx

[20] MDE. (2018). *Maryland's Final 2018 Intergrated Report of Surface Water Quality*. Retrieved from https://mde.maryland.gov/programs/Water/TMDL/Integrated303dReports/Pages/2018IR.aspx

[21] USDA/NRCS. (2013). *Watershed Boundary Dataset*. Retrieved April 7, 2017, from https://datagateway.nrcs.usda.gov/GDGOrder.aspx

[22] TRC. (2020). Stream and Wetland Delineation Report, CSX Howard Street Tunnel Project.

[23] FEMA. (2016). *FEMA Flood Map Service Center*. Retrieved 06 06, 2017, from http://msc.fema.gov/portal

[24] Delaware DNREC. (2018, March 1). *An Evaluation of Clean Water Act Section 303(d) Listings of Delaware Waters Affected by Fish Consumptions Advisories*. Retrieved from https://dnrec.alpha.delaware.gov/fish-wildlife/fishing/consumption-advisories/

[25] State of Delaware. (2018, December 12). *Title 7 Natural Resources and Environmental Control 7400 Watershed Assessment Section*. Retrieved from https://regulations.delaware.gov/AdminCode/title7/5000/7400/index.shtml#TopOfPage

[26] PADEP. (n.d.). *Category 5 Waters*. Retrieved from Integrated Report Mappin Application: https://padep-1.maps.arcgis.com/apps/View/index.html?appid=55147006a7f9463990fb5c89023a1b80

[27] PADEP. (n.d.). *Total Maximum Daily Loads and Alternative Restoration Strategies*. Retrieved from https://www.ahs.dep.pa.gov/TMDL/

Per the Pennsylvania Code, Chapter 93 Drainage Lists, the Schuylkill River is a source of drinking water and has an aquatic life use designation of warm water fishes (WWF) and migratory fishes (MF).[28] The Delaware River has a use designation of WWF (maintenance only) and MF (passage only). These waters support various communities of fish species but have fish consumption advisories due to PCBs.[29]

3.3 Noise and Vibration

Guidance has been developed by the Federal Transit Administration (FTA)[30] for conventional rail noise and vibration impact assessments, and FRA has developed complementary guidance[31] for high-speed rail. FTA transit noise and vibration impact assessment procedures (FTA Manual) are relied on by FRA in evaluating improvements to conventional passenger rail lines and stationary rail facilities and for assessments of horn noise. Because there is no federal guidance or method specifically for the evaluation of freight train traffic noise, a supplemental freight rail analysis guideline was developed for the Chicago Rail Efficiency And Transportation Efficiency[32] program using the FTA procedures with certain modifications to allow for the evaluation of freight traffic.

A noise and vibration assessment was conducted in order to assess potential noise and vibration impacts as a result of construction and operation of the Project. The assessment report, attached as Appendix E, presents an Operational Impact Assessment and a Construction Impact Assessment for both noise and vibration. Conventional and non-conventional construction approaches for the HST were evaluated, as well as the twenty-four (24) other Project Areas along the existing CSX I-95 Rail Corridor.

The Study Area includes lands on each side of the alignment for each of the twenty-five (25) Project Areas. The identification of the Study Areas was conducted using the Screening Procedure defined in the FTA Manual. The main land use surrounding every Project location is classified as Class 2 (i.e. Residential) as per the FTA Manual. In the FTA manual, the Residential Category also encompasses *"buildings where people normally sleep"*, including hotels. As per this definition, the HST Project Area is classified as residential for the purposes of the noise and vibration analysis. The surrounding land uses were identified based on geographic information system (GIS) data with information available from the tax or planning departments of the local region. Based on the results of the screening procedure a General Assessment was conducted to determine Direct Impacts[33] from the Project. The General Assessment is used to evaluate

[28] Commonwealth of Pennsylvania. (2020, March 28). *The Pennsylvania Chapter 93. Water Quality Standards*. Retrieved from https://www.pacodeandbulletin.gov/Display/pacode?file=/secure/pacode/data/025/chapter93/chap93toc.html

[29] PADEP. (2018). *2018 Pennsylvania Integrated Water Quality Monitoring and Assessment Report*. Retrieved from https://www.depgis.state.pa.us/2018_integrated_report/index.html#protectedUses

[30] U.S. Department of Transportation, Federal Transit Administration, "FTA Transit Noise and Vibration Impact Assessment Manual," 2018.

[31] U.S. Department of Transportation, Federal Railroad Administration, "FRA High-Speed Ground Transportation Noise and Vibration Impact Assessment," 2012.

[32] CREATE Noise and Vibration Assessment Methodology," Chicago Region Environmental and Transportation Efficiency, 2014.

[33] Direct Impacts" and "Operational Impacts" relate to the continued freight operation on the existing I-95 Rail Corridor upon completion of the proposed Project

potentially impacted areas identified in the Study Area by examining the location and estimated severity of noise and vibration Direct Impacts.

Construction related impacts were assessed using a Quantitative Assessment following the procedures in the FTA Manual. This assessment identified areas of potential concern where construction activities may have an impact.

3.4 Wetland Areas

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged and fill material into waters and wetlands of the United States. Activities within waters of each state are also regulated by each state's regulatory body. Two investigations for wetlands and waters have been completed for the Project: one in 2017 and one in 2020. Results of both investigations are included in the Wetland Delineation Report attached as Appendix D. A total of three streams were identified and delineated within the Project Area: two intermittent streams (S1 and S2), and one perennial stream (1-1). Table 3-3 below presents the delineated streams in the Project Area.

Table 3-3. Streams Delineated within the Project Area

Project Area	Waterway/ID	Flow Regime	Extends Offsite?	Length (feet)
Sisson Street[1]	S1	Intermittent	Yes	1085.7
Huntington Avenue[1]	S2	Intermittent	Yes	251.1
Lancaster Avenue[2]	Silverbrook Run/1-1	Perennial	Yes	22.6

[1]Aquatic Resource Delineation Report, Bayview South Track Lowering Project, Arcadis 2017.
[2]Surface Water Delineation and Assessment Report, TRC 2020.

Streams S1 and S2, located at the Sisson Street and Huntington Avenue Project Areas, were determined as jurisdictional resources per the 2017 report (Arcadis, 2017). The jurisdictional determination for these two intermittent streams were confirmed by the United States Army Corps of Engineers (USACE) in 2017 within the ROW of the Sisson Street and Huntington Avenue Project Areas[34] (Appendix D, Figure 6). S1 drains to Jones Falls, which flows through underground ducts before discharging into the Patapsco River at the Baltimore Inner Harbor. S2 drains to a stormwater feature and its downstream connectivity is unknown. Based on the Navigable Waters Protection Rule[35] (NWPR), effective June 22, 2020, these waters may no longer be defined as Waters of the United States (WOUS) because they are not naturally occurring surface water channels but rather a part of the railroad ditch system utilized to convey stormwater during rain events (NWPR Sec II-A).

[34] Arcadis. (2017). Aquatic Resource Delineation Report, Bayview South Track Lowering Project. Baltimore County, MD.

[35] USACE and EPA. *The Navigable Waters Protection Rule: Definition of "Waters of the United States."* April 21, 2020. https://www.govinfo.gov/content/pkg/FR-2020-04-21/pdf/2020-02500.pdf

Stream 1-1 is a perennial stream identified by as Silverbrook Run[36] and was delineated by TRC in 2020 (Appendix D, Figure 6). This stream originates north of the Lancaster Avenue Project Area where it is enclosed within the culvert. The enclosed portion of the stream flows under the railroad tracks to the south side of the tracks where it exits the culvert and flows into a maintained ditch. The stream then flows southerly for approximately 23 feet within the Lancaster Avenue Project Area. Stream 1-1 has an approximate drainage area of 0.76 square miles upstream of the Project Area, and continues offsite to Little Mill Creek, which is a direct tributary to the Christina River.

Additional coordination with USACE regarding the Project is necessary to determine the jurisdictional status of the intermittent streams/ditches based on the 2020 NWPR. This coordination will occur as part of the environmental permitting process prior to construction.

3.5 Floodplains

Executive Order 11988 "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 floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.[37]

Information concerning floodplains located within the Project Areas was obtained through a review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for Baltimore, Maryland; Wilmington, Delaware; and Philadelphia[38]. Portions of the Project Area in Maryland are adjacent to the 100-year floodplain of Jones Falls, but no work is proposed within the limits of the 100-year floodplain. The Lancaster Avenue Project Area in Wilmington goes through the 100-year floodplain of Silverbrook Run, a tributary to Little Mill Creek (see Appendix D, Figure 5**)**.

3.6 Endangered Species or Wildlife

Desktop analysis and consultation with federal and state agencies were conducted in order to determine potential suitable habitat and presence of threatened and endangered species and critical habitat within the Project Areas.

3.6.1 Federally Listed Species (United States Fish and Wildlife Service)

Threatened and endangered species are legally protected by the Federal Endangered Species Act of 1973, as amended. FRA initiated informal consultation with the United States Fish and Wildlife Services (USFWS) on May 7, 2020, via email.

[36] FEMA. *GIS Web Services for the FEMA National Flood Hazard Layer (NFHL).* Retrieved from Mapping Information Platform: https://hazards.fema.gov/gis/nfhl/rest/services/public/NFHLWMS/MapServer/WMSServer, December 10, 2019.

[37] FEMA. *Executive Order 11988: Floodplain Management.* https://www.fema.gov/executive-order-11988-floodplain-management, April 23, 2015.

[38] See note 19.

Chesapeake Bay Field Office (Maryland and Delaware Project Areas)

Desktop analysis via the USFWS Information for Planning and Consultation (IPaC) System lists one federally listed threatened animal species, the northern long-eared bat (*Myotis septentrionalis*) within the Project Areas in Baltimore, and Wilmington. Per the coordination letter dated June 16, 2020, the USFWS Chesapeake Bay Field Office identified no areas of concern for the 14 Project Areas in Baltimore and Wilmington (Appendix F**)**.

Northern long-eared bats (*Myotis septentrionalis*) are a member of the genus *Myotis*.[39] The bat resides in Maryland, Delaware, and Pennsylvania from about mid-April to mid-September, occupying a range that spans the entirety of each state. The species hibernate in caves, principally in man-made openings or natural cave systems, called hibernacula. The species is often observed in hibernacula within small cracks or crevices. Preliminary field assessments were conducted to identify potentially suitable habitat within the Project Area. Potential suitable habitat includes large contiguous forests with an abundance of trees that are dead or dying (snags) with sloughing bark, cracks, crevices, and/or hollows. No roosts were observed during preliminary field assessments, and stained ceilings and bat guano were not identified. USFWS concurred with the preliminary field assessment that no suitable habitat is present within the Project Areas. The Chesapeake Bay Field Office determined that no further coordination is required in regard to the northern long-eared bat.

PAFO (Pennsylvania Project Sites)

The desktop analysis via IPaC lists one federally listed endangered animal species, the Indiana bat (*Myotis sodalis*); and one federally listed threatened animal species, the northern long-eared bat within the eight Project Areas in Delaware County, Pennsylvania. The federally listed threatened bog turtle (*Clemmys muhlenbergii*), the federally listed endangered Atlantic sturgeon (*Acipenser oxyrinchus*), and the federally listed threatened sensitive joint-vetch (*Aeschynomene virginica*) were not identified during the IPaC review; however, sensitive joint-vetch has been documented as occurring within Delaware County, Pennsylvania per the Pennsylvania Natural Heritage Program (PNHP) website.

The USFWS Pennsylvania Field Office (PAFO) was contacted regarding information on the potential occurrence of federally listed species within the Project Areas. Both the northern long-eared bat and the Indiana bat were identified as being present or potentially present near the Project Area.

The Indiana bat (*Myotis sodalis*) is a member of the genus *Myotis*.[40] The bat resides in Maryland and Pennsylvania from about mid-April to mid-September. The species occupies a range that spans the western portion of Maryland and the entire southern portion of Pennsylvania. No record of this species has been

[39] USFWS. (2020). *Northern Long-Eared Bat Myotis septentrionalis*. Retrieved from U.S. Fish and Wildlife Service Midwest Region Endangered Species: https://www.fws.gov/Midwest/endangered/mammals/nleb/nlebFactSheet.html

[40] USFWS. (2019). *Indiana Bat (Myotis sodalis) Fact Sheet*. Retrieved from U.S. Fish and Wildlife Service Midwest Region Endangered Species: https://www.fws.gov/midwest/endangered/mammals/inba/inbafctsht.html

documented in Delaware. The species migrates to hibernate in caves, principally in mines or natural caves. Preliminary field assessments were conducted to identify potentially suitable habitat for the Indiana bat within the Project Area. Potential suitable habitat includes large contiguous forests with an abundance of trees that are dead or dying (snags) with sloughing bark, cracks, crevices, and/or hollows. No roosts were observed during preliminary field assessments, and stained ceilings and bat guano were not identified. USFWS determined that no further coordination is required in regard to the Indiana bat.

Bog turtles (*Clemmys muhlenbergii*) are one of North America's smallest turtle species. The species is a permanent resident in Maryland, Delaware, and Pennsylvania.[41] The preferred habitat of the bog turtle was not identified within the limits of the proposed project. The USFWS PAFO did not indicate the bog turtle as a species of interest in association with the proposed Project per its coordination letter dated June 16, 2020.

Atlantic sturgeon (*Acipenser oxyrinchus*) are an anadromous fish species that can inhabit marine, brackish and fresh waters. As adults, Atlantic sturgeon will migrate along the Atlantic coast. These fish will then begin to ascend the lower reaches of large rivers in the spring to begin their spawning runs. The preferred habitat of the Atlantic sturgeon was not identified within the limits of the proposed Project.

3.6.1.1 Federally Listed Plant Species

The desktop analysis via IPaC indicates that there are no known federally listed plants species within the Project Area. The federally listed threatened sensitive joint-vetch (*Aeschynomene virginica)* was not identified during the IPaC review; however, it has been documented as occurring within Delaware County, Pennsylvania, per the PNHP website. USFWS PAFO was contacted regarding information on the potential occurrence of federally listed species within the Project; the sensitive joint-vetch was not identified by this agency as potentially occurring in the Project Area.

Sensitive joint-vetch is an annual plant in the pea family (*Fabaceae*). This species can be found in the inter-tidal zone of coastal marshes. The species has historically been known to occur in Maryland, New Jersey, Delaware, Pennsylvania, Virginia, and North Carolina. It has been extirpated from Delaware and Pennsylvania. The current range is Maryland, New Jersey, Virginia, and North Carolina.

3.6.1.2 State-Listed Species

In Maryland, legal protection for state-listed threatened and endangered species are under the Nongame and Endangered Species Conservation Act of 1975. In Delaware, legal protection of threatened and endangered species are under Delaware regulation Title 7: 3000: 3900 Chapter 16. In Pennsylvania, legal protection for state-listed threatened and endangered species are under Title 34 Pa.C.S.A, Game, Chapter 21, Game or Wildlife Protection, Subchapter D, Protection of Game or Wildlife, as amended. It was determined no

[41] USFWS. (2020). *Bog Turtle (Clemmys {=Glyptemys muhlenbergii)*. Retrieved from U.S. Fish and Wildlife New York Field Office: https://www.fws.gov/northeast/nyfo/es/bogturtle.htm

impacts to state-listed threatened and endangered species are anticipated. No further coordination with state agencies is required for the Project.

Maryland

The Wildlife and Heritage Service, under the Maryland Department of Natural Resources (MDNR), has determined that there are no official state or federal records for listed plant or animal species for the 12 Project Areas within Baltimore City. Attached is the coordination letter from the MDNR, received on June 3, 2020 (see Appendix F).

Delaware

A review of the database from the Delaware DNREC indicated that there are currently no records of state-listed rare or federally listed plants, animals, or natural communities at the two Project Areas located in Wilmington, New Castle County, Delaware.[42] Neither Project Area has been surveyed for the presence of nesting migratory birds, which are protected by Title 7, Delaware Code, Chapter 7, Sections 734 and 735, as migratory nesting bird surveys are conducted typically immediately prior to construction, if construction is to occur within the breeding season. The animal species that the DNREC identified as potentially developing one or more nest locations were barn swallow (*Hirundo rustica*) and eastern phoebe (*Sayornis phoebe*).

The barn swallow (*Hirundo rustica*) is a small bird species that is a summer resident in every county in the State of Delaware and migrates south to Central and South America in the winter[43].

The eastern phoebe (*Sayornis phoebe*) is smaller bird species[44] and is a permanent resident in every county in the State of Delaware; however, this species will migrate south to Central America in the winter.

No state-listed plant species were identified by the DNREC occurring within the Project Area.

Pennsylvania

The PNHP provides information about state and federally listed animal and plant species found in Pennsylvania. Applicants are required to submit an environmental review request to receive a Pennsylvania Natural Diversity Inventory receipt (PNDI) to determine if any listed species are within the proposed Project Area(s). There are three state agencies which determine whether there are potential impacts and develops recommendations based on the PNDI and the information provided by the applicant, the Pennsylvania Department of Conservation and Natural Resources (PADCNR), the Pennsylvania Fish and Boat

[42] Coxe, R. (2012). Historical Analysis and Map of Vegetation Communities, Land Covers, and Habitats of Wilmington State Park New Castle County, Delaware. Wilmington: Delaware Division of Fish and Wildlife.

[43] University, C. (2019). *Barn Swallow Identification*. Retrieved from All about Birds: The Cornell Lab: https://www.allaboutbirds.org/guide/Barn_Swallow/id

[44] University, C. (2019). Eastern Phoebe Identification. Retrieved from All About Birds: The Cornell Lab: https://www.allaboutbirds.org/guide/Eastern_Phoebe/id

Commission (PAFBC), and the Pennsylvania Game Commission (PGC). An environmental review package was sent to each of these three agencies.

The PADCNR screened the Project for potential impacts to species and resources under the DCNR responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features. FRA received a letter response from the PADCNR on June 26, 2020 indicating no further coordination with the agency is needed for the Project. The PAFBC jurisdiction includes candidate, threatened or endangered species of fish, reptiles, and aquatic invertebrates. FRA received a letter response from the PAFBC on August 7, 2020 indicating no further coordination with the agency is required for the Project. The PGC screened the Project for potential impacts to species and resources under their responsibility which includes birds and mammals only. A letter received June 26, 2020 from the PGC indicates no further coordination with the agency is required for the Project. Response letters from all three agencies are located in Appendix F.

3.6.2 Use of Energy Resources

the CSX I-95 Corridor is the last major underdeveloped intermodal rail freight corridor in the United States due to height clearance restrictions preventing modern double-stack service on CSX. At present, each double-stacked intermodal unit requires an extra 149 miles of transport to reach destinations north and south of Baltimore as a result of the circuitous routes required to avoid HST. On average, each intermodal unit transported by truck rather than rail because of the HST and other CSX I-95 Rail Corridor clearance limitations travels an extra 963 miles by long-haul truck.[45] The current use of more circuitous routes and of long-haul trucking instead of double-stack rail requires a greater consumption of energy resources (fuel) throughout the Study Area and the greater I-95 Corridor than if double-stack rail were an option.[46]

3.6.3 Aesthetic and Design Quality

The Project Areas are located in downtown and suburban areas. These existing bridges and tunnels date back several decades and have become part of the viewshed as the surrounding communities have developed. However, the bridges and tunnel entrances are generally not fully visible to pedestrian or vehicle traffic, as the majority of the structures are below the grade of the roadway and/or obstructed by tree growth. As such, the design of the existing bridges and tunnel entrances are more utilitarian in nature. Consultation is currently being conducted with the three State Historic Preservation Offices (SHPOs) (Maryland, Delaware, and Pennsylvania) per Section 106 (see Section 3.2.13) regarding aesthetic and design issues associated with Section 106 properties.

[45] Sage Policy Group. February 2017. *The Economic Implications of Eliminating the Howard Street Tunnel Bottleneck.*

[46] As noted in Sage Policy Group (*ibid*), there is the potential for a shift from truck to rail transport as a result of the Project.

3.6.4 Land Use and Community Facilities

There are four master plans applicable to the Project Areas in Maryland.[47] These plans are *Live, Earn, Play, Learn* (adopted 2006, revised 2009),[48] *South Baltimore Gateway Master Plan* (2015),[49] and *Urban Renewal Plan: Charles/25th* (2002).[50] The Maryland Department of Planning Land Use/Land Cover Interactive Map includes data on the various land uses at the Project sites.[51] Land uses at the Project Areas include Institutional, Commercial, Other Developed Lands, Industrial, High Density Residential, and Commercial types. According to the Baltimore City Interactive Zoning Map: Existing Zoning Districts, the following zoning applies to the Project Areas within the City of Baltimore: Downtown Core Subdistrict (C-5 DC), Transit-Oriented Development District (TOD-4), and General Light Industrial (I-2).[52]

The *Wilmington 2028* (2019)[53] comprehensive plan is applicable to the Project Areas located in Delaware. The Delaware 2012 Land Use/Land Cover Map includes data on the various land uses at the Project sites.[54] Land uses at the Project Areas include Retail Sales/Wholesale/Professional Services, Mixed Rangeland, Other Urban or Built up Land, Mixed Urban or Built up Land, Utilities, and Recreational types. According to the State of Delaware Existing Zoning Districts map, the following zoning applies to the Project Areas within the City of Wilmington: Secondary Business Commercial Center (C-2), General Industrial (M-1), Heavy Commercial (C-5), One-Family Rowhouses (R-3),[55] and Open Space (O).[56]

There are five master plans applicable to the Project Areas in Delaware County, Pennsylvania.[57] These regional, county, and local plans are *Connections 2045 Plan for Greater Philadelphia* (2017);[58] *Delaware*

[47] Includes plans developed since 2000.

[48] Baltimore City Planning Department. 2009. *Live, Earn, Play, Learn: City of Baltimore Comprehensive Master Plan 2007-2012.* https://planning.baltimorecity.gov/planning-master-plan. Accessed July 3, 2020.

[49] Baltimore City Department of Planning Department. October 29, 2015. *South Baltimore Gateway Master Plan*. https://planning.baltimorecity.gov/planning-plans/neighborhood. Accessed July 3, 2020.

[50] Baltimore City Department of Planning Department. 2002. *Urban Renewal Plan: Charles/25th*. https://planning.baltimorecity.gov/planning-plans/neighborhood. Accessed July 3, 2020.

[51] Maryland Department of Planning. 2010. *Land Use/Land Cover Interactive Map*. https://mdpgis.mdp.state.md.us/landuse/imap/index.html. Accessed July 3, 2020.

[52] Department of Planning, City of Baltimore. 2017. Interactive Zoning Map: Baltimore City Existing Zoning Districts. https://planning.baltimorecity.gov/zoning-code-quick-guide. Accessed July 3, 2020.

[53] City of Wilmington, Delaware. December 2019. *Wilmington 2028*. https://www.wilmingtonde.gov/home/showdocument?id=8490. Accessed July 2, 2020.

[54] State of Delaware. 2019. *Delaware 2012 Land Use/Land Cover Map*. http://opendata.firstmap.delaware.gov/datasets/delaware-2012-land-use-land-cover. Accessed July 6, 2020.

[55] The parcel adjacent to the Lancaster Avenue site that is zoned R-3 Residential contains a cemetery.

[56] City of Wilmington, Delaware. December 2019. *Wilmington 2028*. https://www.wilmingtonde.gov/home/showdocument?id=8490. Accessed July 2, 2020.

[57] Includes plans developed since 2000.

[58] Delaware Valley Regional Planning Commission. 2017. *Connections 2045 A Plan for Greater Philadelphia*. https://www.dvrpc.org/Products/17039/. Accessed July 8, 2020.

County 2035 (2013);[59] *Aston, Lower Chichester, and Upper Chichester Multi - Municipal Comprehensive Plan* (2005);[60] *Four-Borough Comprehensive Plan* (includes Collingdale and Sharon Hill Boroughs, 2005);[61] and *Ridley-Eddystone Multi-Municipal Comprehensive Plan* (2011).[62] Land uses at the Project Areas in Delaware County include transportation, single-family residential, low-density multi-family residential, commercial, and recreational.

According to the Delaware County Municipal Zoning Application, the following zoning applies to the Project Areas within the County: Light Industrial (LI-A, Collingdale Borough), Residence Zone B (Collingdale Borough), Residential District (R-2, Sharon Hill Borough), Residential District (R-3, Darby Borough), Residential District B (Ridley Township), and Residential District C (Ridley Township).[63]

There are four master plans applicable to the Project Areas in Philadelphia: [64] *Philadelphia 2035: The Comprehensive Plan* (2011),[65] *Lower Southwest District Plan* (2011),[66] and *University Southwest District Plan* (2013).[67] The existing land use maps in the District Plans include data on the various land uses at the Project sites. Land uses at the Project Areas include Transportation, Park/Open Space, Residential Medium Density, Residential Low Density, Commercial Consumer, Industrial, and Vacant. According to the District Plans, the following zoning applies to the Project Areas within Philadelphia: Medium Industrial (I-2), Industrial-Commercial Mixed Use (ICMX), Neighborhood Commercial Mixed Use (CMX), and Residential Multi-Family Attached (RM).

Community resources in the Study Area[68] were evaluated using 2019 aerial photography, information (land use plans, comprehensive plans, zoning) from the municipalities crossed by the Project. Numerous federal, state, regional, and local community facilities are located within the Study Area. Notable community facilities include the REACH! Partnership School (Baltimore),[69] Mount Royal Station (Gallery, Historic Landmark in Baltimore), Pearlstone Park (Baltimore), Cathedral Cemetery (Wilmington), Woodlawn Park

[59] Delaware County Planning Department. 2013. *Delaware County 2035*. https://www.delcopa.gov/planning/pubs/delco2035/LandUseFrameworkPlan.pdf. Accessed July 7, 2020.

[60] Delaware County Planning Department. 2005. *Aston, Lower Chichester, and Upper Chichester Multi - Municipal Comprehensive Plan*. https://www.delcopa.gov/planning/demodata/upperchichestertownship.html. Accessed July 2, 2020

[61]. Delaware County Department of Planning. April 2005. *Four-Borough Comprehensive Plan*. https://www.delcopa.gov/planning/demodata/sharonhillborough.html. Accessed July 2, 2020.

[62] Delaware County Department of Planning. 2014. *Ridley-Eddystone Multi-Municipal Comprehensive Plan*. https://www.delcopa.gov/planning/demodata/ridleytownship.html. Accessed July 7, 2020.

[63] State of Delaware. 2019. *Delaware County Municipal Zoning Application*. https://dcpd.maps.arcgis.com/apps/webappviewer/index.html?id=a6467e1bc8f34d2faa3d7d2e4099097a. Accessed July 7, 2020.

[64] Includes plans developed since 2000.

[65] Philadelphia City Planning Commission. June 2011. *Philadelphia 2035: Citywide Vision* . https://www.phila2035.org/citywide-vision. Accessed July 7, 2020.

[66] Philadelphia City Planning Commission. June 2016. *Lower Southwest District Plan.* https://www.phila2035.org/lower-southwest. Accessed July 7, 2020.

[67] Philadelphia City Planning Commission. June 2013. *University Southwest District Plan* . https://www.phila2035.org/university-southwest. Accessed July 7, 2020.

[68] The Study Area for includes a 1,000-foot buffer around the Project sites, as construction will occur only within the CSX ROW.

[69] An easement will be required at The Reach! Partnership School.

(Wilmington), Collingdale Community Center Park (Collingdale), and McCreesh Recreation Center (Philadelphia).

Additionally, in Baltimore Maryland, the 26th Street Park is a small, planned public park south of 26th Street and west of Guilford Avenue to be managed by the Baltimore City Department of Transportation. Although the public park is not identified in the Remington Neighborhood Plan adopted by the Baltimore City Department of Planning, following the 2014 collapse of the retaining wall north of the CSX rail line and subsequent repairs in 2018, there has been community support for designating this area as a public park. At present, the area is a wide sidewalk bound to the north by 26th Street, the south by a concrete parapet wall topped by a metal fence, the east by Guilford Avenue, and the west by North Calvert Street.

3.6.5 Socioeconomic Environment

The Study Area for socioeconomics includes the states, counties, and municipalities in which the Project Areas are located. These areas include the following:

- States: Delaware, Maryland, and Pennsylvania;
- Counties: Baltimore City, Maryland[70]; New Castle County, Delaware; Delaware County, Pennsylvania; and Philadelphia County, Pennsylvania;[71] and
- Municipalities: Baltimore City, Maryland; City of Wilmington, Delaware; Collingdale Borough, Pennsylvania; Darby Borough, Pennsylvania; Ridley Township, Pennsylvania; Sharon Hill Borough, Pennsylvania; Upper Chichester Township, Pennsylvania; and Philadelphia City, Pennsylvania.

A Socioeconomic Report has been completed for the Project and is attached as Appendix G. The municipalities have a combined population totaling more than 2.3 million residents. The predominant racial groups in the Study Area's municipalities are black/African American and white, which together comprise between 83.5 percent and 98.1 percent of the populations. The majority of the residents in the Study Area are non-Hispanic in ethnicity (85.5 percent to 98.9 percent non-Hispanic by geographic area). Within the Study Area, age distributions and education attainment varied by municipality, with less variation between the states and counties.

Income, poverty, and housing were also examined. Both median household income and per capita income vary greatly across the geographies with the largest variation in incomes is seen amongst the municipalities. Poverty levels varied roughly in parallel to median income, with each of the large cities having more than 20 percent of the population below the poverty level.[72] A review of the municipalities in the Study Area

[70] Baltimore City, although a municipality, has been considered to be a county-equivalent since the adoption of the Maryland Constitution of 1851. Baltimore County surrounds, but does not include, Baltimore City. There are no Project sites in Baltimore County.

[71] The boundaries of Philadelphia County and Philadelphia City have been coextensive since 1854. Philadelphia County and Philadelphia City have a consolidated government administered by the City. Although Philadelphia County remains an entity of the Commonwealth of Pennsylvania, it has no government structure.

[72] Additional detail on poverty levels in the Study Area are provided in the attached Environmental Justice Technical Report (Attachment X), which shows the percentages of persons below the poverty level by Census tract.

found that each has sufficient vacant housing to accommodate future population growth and housing demands. The demographic, economic, and housing profile of the Study Area is presented in detail in the Socioeconomic Report.

The Project is located along the Boston-Atlanta transportation corridor. Baltimore serves as a critical transportation hub in this corridor, with the Port of Baltimore, the Baltimore-Washington International Thurgood Marshall Airport, two foreign trade zones,[73] rail connectivity, and access to interstates I-95, I-70, I-97, and I-83. The Port is the ninth largest in the United States in terms of value of trade flow at $58.4 billion. The inability of CSX to provide double-stack rail service through Baltimore is cited as a significant constraint to the Port's ability to lead economic activity in the region, as well as a hindrance to rail traffic along the Boston-Atlanta corridor. The lack of double-stack rail services places additional burdens on the interstates in the region, with I-95 particularly impacted.

Several state-level and one regional rail, freight, and infrastructure plans are relevant to the goals of the Project. The following plans identify the need for double-stack rail service and/or identify HST as a constraint on rail capacity: *Maryland Statewide Rail Plan* (2015),[74] *2017 Maryland Strategic Goods Movement Plan* (2017),[75] and *Maryland Statewide Freight Plan* (2009),[76], *Vision2025,*[77] *The Northeast Corridor Infrastructure Master Plan* (2010),[78] *Delaware Statewide Rail Plan* (2011),[79] and *Delaware Freight and Goods Movement Plan Technical Report* (2015).[80,81]

3.6.6 Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations," requires agencies to analyze the environmental effects of a project on minority and low-income communities and to avoid the disproportionate placement of high and adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations. An Environmental Justice (EJ) analysis has been completed for the Project, the report of which

[73] Foreign trade zones help eligible United States-based companies improve their competitive position by allowing them to defer, reduce, or eliminate customs duties on products admitted to the zone.

[74] Maryland Department of Transportation. 2015. *Maryland Statewide Rail Plan.* http://www.mdot.maryland.gov/newMDOT/Freight/index.html. Accessed July 3, 2020.

[75] Maryland Department of Transportation. 2017. *2017 Maryland Strategic Goods Movement Plan.* https://www.mdot.maryland.gov/OPCP/Strategic_Goods_Movement_Plan_2017.pdf. Accessed July 3, 2020.

[76] Maryland Department of Transportation. September 2009. *Maryland Statewide Freight Plan.* *https://www.mdot.maryland.gov/tso/pages/Index.aspx?PageId=166* . Accessed July 3, 2020.

[77] Maryland Port Administration. 2007. *Vision2025*. https://mpa.maryland.gov/Documents/VisionPlan2025.pdf. Accessed July 6, 2020.

[78] The NEC (Northeast Corridor) Master Plan Working Group. May 2010. *The Northeast Corridor Infrastructure Master Plan*. https://cms8.fra.dot.gov/elibrary/northeast-corridor-infrastructure-master-plan. Accessed July 3, 2020.

[79] Delaware Department of Transportation. 2011. *Delaware Statewide Rail Plan.* https://deldot.gov/Publications/. Accessed July 3, 2020.

[80] Delaware Department of Transportation. 2015. *Delaware Freight and Goods Movement Plan Technical Report*. https://deldot.gov/Publications/. Accessed July 2, 2020.

[81] Additional plans address rail in the region but are not directly applicable to the Project.

is attached as Appendix H. The EJ analysis was conducted in accordance with Executive Order 12898, and involved several steps: defining the study area, identifying minority and low-income populations, identifying any high and adverse human health or environmental impacts, and determining whether any high and adverse impacts would disproportionately affect minority or low-income populations.

The Study Area for the EJ Technical Report includes a 1,000-foot buffer around the Project Areas with construction occurring only within the CSX ROW and a 0.5-mile buffer around a limited number of sites that may have impacts that extend beyond the immediate CSX ROW. At each site, census data was evaluated for all tracts that overlap with the Study Area. Census tracts within the Study Area were examined to determine the presence of minority and low-income populations. A potential EJ area is one that has a minority (non-white and/or Hispanic) population that exceeds 50 percent and/or a low-income (below poverty level) population that exceeds 20 percent of the tract's total population.

Each of the Baltimore Project site Study Areas include census tracts that were identified as EJ areas. In Delaware, the Lancaster Avenue and 4th Street Study Areas are EJ areas. The Pennsylvania Project site Study Areas that include EJ areas are Clifton Avenue, Boone Tunnel, 68th Street, 65th Street, Cemetery Street, 61st Street, Woodland Avenue, 58th Street, and Eastwick Interlocking.

3.6.7 Hazardous Materials

Hazardous materials are substances in quantities or forms that may pose a reasonable risk to health, property, or the environment[82]. Hazardous waste, as defined by the United States Environmental Protection Agency (EPA), is any waste material – solid, liquid, or gaseous – that "because of its quantity, concentration, or physical, chemical or infectious characteristic may cause or significantly contribute to an increase in mortality, serious irreversible illness, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed." Hazardous wastes can be liquids, solids, gases, or sludges. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes. Based on current CSX records within the ROW, no known active hazardous waste sites or hazardous materials are present at the Project Areas.

3.6.8 Cultural Resources

Pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. 306108) and its implementing regulations (36 CFR Part 800), FRA is required to take into account the effects of the Project on historic properties. A historic property, as defined in the NHPA, is any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). Eligibility criteria for listing a property in the NRHP are found at 36 CFR Part 60. *National Register criteria for evaluation:* The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and

[82] NOAA. https://oceanservice.noaa.gov/facts/hazmat.html

objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

A. are associated with events that have made a significant contribution to the broad patterns of our history; or
B. are associated with the lives of persons significant in our past; or
C. embody the distinctive characteristics of 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
D. have yielded or may be likely to yield, information important in prehistory or history.

3.6.8.1 Section 106 Consultation

FRA has applied exemptions from Section 106 review for other project activities at locations in Maryland, Pennsylvania, and Delaware, under the activities-based approach of the *Program Comment to Exempt Consideration of Effects to Rail Properties Within Rail Rights-of-Way* issued by the Advisory Council on Historic Preservation on August 17, 2018 (83 FR 42920, August 24, 2018, and amended 84 FR 31075, June 28, 2019) (Program Comment). For the remainder of the Project Areas, FRA is consulting with the Maryland, Pennsylvania, and Delaware SHPOs, namely the Maryland Historical Trust (MHT), Pennsylvania Historical and Museum Commission (PHMC), and Delaware Historic and Cultural Affairs (DHCA), as well as additional consulting parties. FRA has coordinated Section 106 compliance for the Project with the NEPA process (36 CFR Part 800.8). Pursuant to 36 CFR Part 800.2(d) and as part of the EA public review and comment period, FRA is seeking and considering the views of the public regarding potential effects of the Project to historic properties and ways to resolve the adverse effect.

FRA initiated the Section 106 process for the Project with MHT, PHMC, DHCA, and other agencies by letter on April 24, 2020. A Section 106 kickoff meeting with MHT and PHMC staff was held virtually via Microsoft Teams on May 14, 2020, and included representatives from FRA, CSX, MDOT MPA, and RK&K. Discussions with SHPO staff included: project information, preliminary identification of historic properties, a description of the Section 106 methodology, and anticipated effects and potential for an agreement document to resolve adverse effects. FRA invited parties entitled to be consulting parties, including federally recognized Indian tribes and local governments, to participate in the Section 106 compliance process for the HST Project (36 CFR Part 800.2(c) and 800.3(f)). Five respondents agreed to participate as additional consulting parties: Delaware Nation; Delaware Tribe of Indians; Baltimore Heritage; Delaware County Planning Department, Heritage Commission; and Preservation Maryland. The Catawba Indian Nation responded to the invitation and expressed no immediate concerns with the Project but wished to be notified if Native American artifacts or human remains are recovered.

FRA continued consultation with consulting parties on November 6, 2020 by submitting the Project archaeological and historic architectural identification and effects technical reports for review and comment. Non-tribal additional consulting parties only received the historic architectural report in order to protect potentially sensitive information about archaeological resources. The Delaware Nation responded on December 7, 2020, indicating the location of the proposed project does not endanger cultural, or religious

sites of interest to the Tribe, and also noted the steps for any unanticipated discoveries during construction. PHMC concurred with the findings on December 7, 2020. The agency also noted its preference for the conventional construction method of track lowering within the Boone Tunnel. MHT responded on December 2, 2020 by concurring with the adverse effect finding but did not agree with FRA's findings of six of the historic architectural resources determined not to be eligible for the NRHP. These evaluation findings were revised in the historic architectural report to identify four additional historic properties (three of the originally identified resources were evaluated in the revision as part of one eligible historic district). MHT also noted edits needed for Maryland archaeological site records search results. DHCA responded to the report findings on January 6, 2021, stating no objection to the finding that the one architectural resource evaluated in Delaware is not eligible for NRHP listing. The agency concurred that there is little potential for intact archaeological resources and no further archaeological work is needed in Delaware, if construction, staging, stockpiling, and access to the project locations in the state will be confined to the existing railroad right-of-way. DHCA also provided additional comments on the reports, project information, the Area of Potential Effects (APE), and consulting parties, which were discussed in a follow-up call with DHCA, FRA, CSX, MDOT MPA, and RK&K on January 11, 2021. At the meeting, DHCA also asked about potential construction vibration effects to railroad ROW bridges at the track lowering locations.

Both reports were revised to reflect MHT and DHCA comments, and to document recent consultation and the conventional approach being selected for Boone Tunnel in Pennsylvania. The revised reports were resubmitted to MHT, PHMC, and the federally recognized Indian tribes on January 11, 2021, to the additional consulting parties on January 14, 2021, and to DHCA on February 10, 2021. MHT concurred with the identification and effects assessment findings on February 19, 2021, with FRA's revised evaluation findings. Copies of consultation letters are provided in Appendix F.

3.6.8.2 Area of Potential Effects

The APE is defined as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR Part 800.16). The APE was established based on the nature, size, and scale of the undertaking, and includes consideration for both direct and indirect effects. The archaeological APE is defined at the Project limit of disturbance (LOD) and encompasses thirteen discontiguous survey areas, four of which are located in Maryland, two in Delaware, and seven in Pennsylvania. The historic architectural APE encompasses eight discontiguous locations, five of which are located in Maryland, one in Delaware, and two in Pennsylvania. The historic architectural APE at the four tunnel or bridge modification/replacement locations in Baltimore (APE 1 to APE 4) is defined as a 100-foot buffer of the Project LOD to account for potential physical, as well as audible, visual, and atmospheric effects. Within those portions of the LOD contained completely underground within the Howard Street Tunnel and where no open-cut work will occur, the APE encompasses the tunnel itself, which is the LOD. A 100-foot buffer was employed within the open-cut section of the Howard Street Tunnel, where the worst-case scenario non-conventional construction would require work at the surface, and at both the southern and northern portals to allow for consideration of

potential audible, visual, and atmospheric effects. The one historic architectural APE in Pennsylvania is at a tunnel modification/replacement location in the city of Sharon Hill (APE 5). It is defined as a 200-foot buffer of the LOD to account for potential physical, as well as audible, visual, and atmospheric effects. The historic architectural APE at the three track-lowering locations (MTA Bridge in Baltimore; Lancaster Avenue in Wilmington ; and Cemetery Avenue in Philadelphia is defined as a 20-foot buffer of the existing right-of-way, which is the LOD, to account for potential construction vibration impacts identified in the noise and vibration assessment (Noise and Vibration Study, Appendix E).

3.6.8.3 Archaeology

An archaeological review was conducted to identify all archaeological sites, historic architectural resources, and previous cultural resources investigations from MHT's Medusa Cultural Resource Information System (Medusa), DHCA's Cultural and Historical Resources Information System (CHRIS), and the PHMC's Cultural Resources Geographic Information System (CRGIS) within and in close proximity to the archaeological APE.

No previously identified archaeological sites are located within the 13 survey areas that comprise the archaeological APE. All survey areas, with the exception of a portion of Survey Area 4, were determined to have low probability for containing significant pre-contact or historic archaeological resources. These areas were either significantly disturbed by the construction of the existing CSX rail line or modern (post-1950) urban development or were located in settings where the proposed activities have no or minimal potential to encounter significant archaeological resources. A portion of Survey Area 4 was determined to have moderate potential for significant pre-contact or historic archaeological resources. In this area, however, the proposed construction activities have no potential to affect any archaeological resources that may be present. No additional archaeological investigations are recommended for any of the 13 survey areas that comprise the archaeological APE. The Section 106 Archaeological Report is located in Appendix I), which provides further detail on archaeological resources identified within the archaeological APE.

3.6.8.4 Architecture

An architectural review was conducted of all previously identified historic architectural resources, and previous architectural investigations from Medusa, CHRIS, and CRGIS. A total of 53 architectural resources, both previously and newly identified, are located within the APE. Thirty previously identified resources and 21 newly identified, those built in 1971 or earlier (49 years or older), are located within the APE. Of these, 22 are historic properties within the historic architectural APE. This includes a National Historic Landmark (NHL), which is therefore also listed in the NHRP: Mount Royal Station (B-26). Sixteen previously identified resources are listed in or previously evaluated as being eligible for listing in the NRHP: Howard Street Tunnel & Power House (B-79), Baltimore and Ohio (B&O) Railroad Baltimore Belt Line (B-5287), Camden Station, (B-148), Wilkens-Robins Building (B-3598), Rombro Building (B-2371), Market Center/Retail Historic District (B-1262), Mount Vernon Local Historic District (B-1393), Bolton Hill Historic District (B-64), North Avenue Bridge (BC1208) (B-4521), Philadelphia, Wilmington &

Baltimore Railroad (B-5164), Baltimore and Ohio (B&O) Railroad Baltimore Belt Line Bridge over Jones Falls Valley (B-5288), Charles Village/Abell Historic District (B-3736), Guilford Avenue Bridge (BC8029) (B-4526), Harford Road Bridge (BC8026) (B-4523), Friends Burial Ground (B-5086), and Clifton Park (B-4608). One previously identified resource was reevaluated since it was last evaluated five or more years ago and found to still be eligible for listing in the NRHP: Boone Tunnel (106212). After further consultation with MHT, four newly identified resources are eligible for listing in the NRHP: Cannon Shoe Company (B-5332), Darley Park (B-5330), Clifton Park Junior High School (B-5329), and Lower Coldstream Homestead Montebello Historic District (B-5331). The Section 106 Architectural Report is located in Appendix J, which provides further detail on historic architectural resources identified within the historic architectural APE.

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter discusses the direct, indirect, and cumulative impacts from the No Build Alternative and from construction and operation of the Build Alternative for each resource described in Section 3.0, Affected Environment. This chapter also identifies proposed mitigation for the Project's environmental effects, where appropriate.

Sections 4.1 to 4.15 discuss direct impacts for each resource discussed in Chapter 3.0, Affected Environment for the No Build and Build Alternative as defined in Sections 2.2 and 2.3. Direct effects are those effects that are "caused by the action at the same time and place (40 CFR 1508.8a).[83] Section 4.15 discusses indirect and cumulative impacts for both alternatives. Table 4-1 summarizes the anticipated direct impacts to the affected environment for the Build Alternative.

Table 4-1. Anticipated Direct Impacts to Affected Environment Resources for the Build Alternative

Affected Environment Resources*	Anticipated Direct Impacts – Build Alternative
Air Quality	Minor and temporary impacts due to construction activities. Long-term net benefit due to decrease of vehicle emissions from freight volume transferring from highways to rail system.
Water Quality	None; minor and temporary impacts due to construction activities may occur.
Noise and Vibration	Operational: None Construction: Minor and temporary impacts due to construction activities may occur. Impacts are to be determined once means and methods of construction are final.
Wetland Areas	Potential temporary and minor impact to waterway during construction.
Floodplains	None
Endangered Species or Wildlife	None / "No Effect"
Use of Energy Resources	Minor impacts due to construction activities.
Aesthetic and Design Quality Impacts	Minor impacts due to structure modifications and replacements.
Land Use and Community Facilities	Potential temporary and minor impact to the proposed/future 26th Street Park at the Guilford Avenue Project Area.
Socioeconomic Environment	Short-term positive impacts to employment and income from construction activity. Fuel and cost savings related to freight shipping. Reduced truck vehicle miles traveled and reduced vehicle fatalities. Minor and temporary impacts due to traffic disruption associated with bridge replacement activities and potential HST non-conventional construction method.

[83] Council on Environmental Quality. 2005. Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. 40 CFR Parts 1500 - 1508. https://www.energy.gov/sites/prod/files/NEPA-40CFR1500_1508.pdf

Affected Environment Resources*	Anticipated Direct Impacts – Build Alternative
Environmental Justice	Short-term positive impacts to employment and income from construction activity. Temporary and minor impacts associated with traffic disruptions during construction.
Public Safety and Hazardous Materials	None anticipated.
Cultural Resources	No direct impacts are anticipated to archaeological resources. The Build Alternative would have a direct impact on eight architectural historic properties (south to north): Howard Street Tunnel & Power House (B-79), Baltimore and Ohio (B&O) Railroad Baltimore Belt Line (B-5287), Rombro Building (B-2371), Cannon Shoe Company (B-5332), North Avenue Bridge (BC1208) (B-4521), Guilford Avenue Bridge (BC8029) (B-4526), Harford Road Bridge (BC8026) (B-4523), and Boone Tunnel (106212).

* Study areas were developed independently for each evaluated environmental resource, as described in the relevant subsections in Section 3.0.

4.1 Air Quality

4.1.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network, resulting in no improvement to freight transport via the current inefficient truck corridor No construction activities are associated with the No Build Alternative; therefore, no temporary or permanent impacts to air quality would occur.

4.1.2 Build Alternative

The Build Alternative would have minor and temporary impacts on the local and regional environment caused by construction activities. The Project would result in temporary effects on air quality and greenhouse gas (GHG) emissions due to the various emission sources associated with construction. Pollutant emissions during construction would occur from emissions from on-site diesel equipment, increased truck traffic to and from the numerous construction sites, and fugitive dust as a result of vehicle travel on paved/unpaved roadways. A qualitative analysis is provided in the attached Air Quality Report (Appendix C).

The Build Alternative would generally result in a long-term net benefit to regional air quality by reducing emissions of criteria pollutants and air toxins. These long-term regional effects of the Build Alternative were evaluated based on the total direct and indirect emissions associated with the Project operation and are included in the attached Air Quality Report (Appendix C). The improvement of the regional air quality

would be a result of freight volume transferring from highways to the rail system and the subsequent decrease of vehicle emissions as the optimized travel mode of freight by train replaces on-road vehicles.

Transporting freight by railroad, especially in a double-stacked intermodal container configuration, produces significantly fewer emissions than if the same quantity of freight were moved by truck, and double-stacking reduces the number of trains (and locomotives) used to transport the expected growth in East Coast freight traffic. The existing rail operational condition will remain unchanged between the Build and No Build Alternatives and the proposed HST Project would not cause an increase in locomotive traffic. As such, the Build Alternative would not cause or contribute to any new violation of any NAAQS or increase the frequency or severity of any existing violation of any NAAQS in the region and does not require a General Conformity determination.

Compliance with all applicable laws and regulations would reduce the minor impacts of the pollutant emissions resulting from construction activity. To mitigate these emissions, construction activities will be performed in accordance with construction-level best management practices.

4.2 Water Quality

4.2.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. No construction activities are associated with the No Build Alternative; therefore, no temporary or permanent impact on water quality would occur.

4.2.2 Build Alternative

The Build Alternative is not expected to have an adverse effect on either water quality or on aquatic species or their habitat. The majority of work proposed with the Build Alternative will be within existing ROW. Minor earthwork outside the ROW is expected at the Harford Road site due to grading issues; however, no jurisdictional water resources were identified at that location. The Project has the potential to impact one stream, which was delineated within the ROW at the Lancaster Avenue Project Area in Wilmington.

CSX would obtain any applicable permits if impacts to the stream are proposed. Should any work be required within the stream, CSX will use avoidance, minimization, and mitigation measures to protect aquatic species and their associated habitats during construction.

The proposed Build Alternative is not expected to cause an increase in stormwater runoff, generate wastewater, or significantly alter surface or subsurface drainage to any waterbody. The earthwork associated with the Project is not anticipated to result in the degradation of water quality. Any temporary impacts will be minimized by the use of Erosion and Sediment Control measures as set forth in the National

Pollutant Discharge Elimination System permit for construction activities. Any temporary impacts on water quality are expected to cease after construction. Once areas disturbed by construction have become stabilized (using permanent erosion protection or by the establishment of vegetation), it is expected that the construction areas will no longer be a potential source of sedimentation.

Additionally, as part of the Build Alternative, drainage improvements are proposed at each of the Project Areas. The Project Areas will be graded to promote drainage and ensure adequate stormwater conveyance.

4.3 Noise and Vibration

4.3.1 No Build Alternative

Under the No-Build Scenario, freight operations are expected to continue with a planned annual growth of 3%. This continued growth will likely be handled through the addition of extra cars to regularly scheduled trains and will not significantly affect average operating speeds or the frequency of events per day. This increase in freight volume will likely result in marginal increases in noise levels along the Corridor, but no significant change in vibration levels.

4.3.2 Operation of Build Alternative

4.3.2.1 Noise

The Project will result in no changes in the operational conditions that may impact the noise source emission levels. As such, it is expected that the noise exposure level at the sensitive receptors will be the same as the existing conditions, except at the new Eastwick interlocking location, between Lindbergh Avenue and the Schuylkill River crossing in Philadelphia (Appendix A, Figure 2, Sheet 29). At this Project location changes in noise levels due to horizontal alignment modification, installation of new crossover and twinning of a section of track have been assessed. The operational noise impact criteria are defined as increases in cumulative noise levels between the existing and project conditions. For each of the five (5) receivers identified near the Eastwick site, the operational noise levels were calculated for the existing conditions and the Build Alternative. The assessment resulted in no predicted impacts for any of the identified receivers for the operation of the Build Alternative.

4.3.2.2 Vibration

The vibration impact assessment for the operation of the Project was conducted with the existing conditions taken into account. The operational vibration levels at sensitive receivers are expected to be equal to or lower than the existing levels due to the fact that the Project will only result in track lowering proposed at most locations. For the Eastwick interlocking location, between Lindbergh Avenue and the Schuylkill River crossing in Philadelphia the installation of new crossover may cause an increase of vibration levels. For each of the five (5) receivers identified near the Eastwick site, vibration levels were calculated for the

existing conditions and the Build Alternative. No impact was determined for the operation of the Project (Noise and Vibration Study, Appendix E).

4.3.3 Construction of Build Alternative

Based on the results of the Noise and Vibration study (Appendix E) and the current status of the Project design, a Noise and Vibration Control Strategy will be implemented once the means and methods of construction for the Project are finalized. The Noise and Vibration Control Strategy will provide for the further evaluation of potential risks and the development of mitigation strategies as necessary to maintain compliance with local ordinances and guidance established in the FTA Manual. A summary of anticipated potential environmental consequences related to noise and vibration for construction of the Project are summarized below.

4.3.3.1 Noise

The FTA Manual defines two options of assessment for a Construction Noise Assessment. The first option, a general assessment of construction noise, is appropriate for projects in an early assessment stage when the equipment roster and schedule are undefined and only a rough estimate of construction noise levels is practical. The second option is a detailed analysis which accounts for information from a more detailed schedule such as the percentage of time of usage for each piece of equipment. A general assessment of construction noise was conducted, as means and methods have not yet been finalized for the Project.

Following the general assessment methodology, the combined noise levels from the two noisiest classes of construction equipment that could be used over a one-hour period was evaluated for each type of anticipated construction work. The study included the evaluation of both day and nighttime work scenarios at all locations to ensure that the most impactful scenarios were evaluated. Findings from the construction noise assessment are summarized below. Additional details related to potential construction noise impacts may be found in Appendix E.

All Project Areas- Excluding Howard Street Tunnel

Potential construction noise impacts were identified to occur during a nighttime work scenario at multiple locations along the corridor at this time, nighttime construction is not anticipated for these locations. The assessment identified three sites (MTA Bridge, Guilford Avenue and Harford Road) that have potential impacts during daytime construction. Further detail on the analysis conducted may be found in Appendix E.

Howard Street Tunnel

A No Impact Determination was concluded, for both daytime and nighttime, from the noise analysis performed for the conventional construction approach for the HST. For the non-conventional construction

method, the noise assessment identified potential construction noise impacts at three receivers located along the cut and cover portion of the tunnel.

4.3.3.2 Vibration

The vibration assessment for potential construction impacts followed the methodology for conducting a Quantitative Construction Vibration Assessment described in the FTA Manual. This methodology provides a list of vibration source levels for various types of construction equipment at a reference distance of 25 feet. Calculations were completed for each Project site, utilizing worst case vibration source levels associated with potential equipment to be used for the Project. Findings from the construction vibration assessment are summarized below. Further details regarding potentially impacted building structures as a result of construction vibration may be found in Appendix E.

All Project Areas- Except for Howard Street Tunnel

Based on the construction vibration assessment, potential minor and temporary construction vibration impacts were identified at six Project Areas: the MTA Bridge, Guilford Avenue, Harford Road, Lancaster Avenue, Boone Tunnel, and Cemetery Avenue. One resource identified as a Section 106 historic property, the Cannon Shoe Company Building, located at 1303 W. Mount Royal Avenue, Baltimore, Maryland, may be potentially impacted. Further details on this Section 106 resource may be found in Section 4.13, Cultural Resources. Potentially impacted receivers for each site are identified in the noise and vibration assessment in Appendix E. Additionally, based on limits for impacts to bridges and/or overpass structures being higher than those limits identified for buildings, there is not a reasonable potential for exceeding the proposed limits at the bridges and/or overpasses along the Project.

Howard Street Tunnel

No Impact Determination was concluded from the vibration analysis performed for the conventional construction method for the HST.

The vibration assessment identified three buildings as having potential vibration impacts as a result of the cut and cover portion of the HST construction associated with the non-conventional approach. Of these, one is a Section 106 property and was identified as being potentially impacted as a result of HST construction vibration of the Project, the Rombro Building, located at 22-24 South Howard Street, Baltimore, Maryland. Further details on this Section 106 resource may be found in Section 4.13, Cultural Resources.

4.4 Wetland Areas

4.4.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-

capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in activities or construction within or adjacent to wetlands or streams, and therefore, would have no temporary or permanent impact on wetland or stream resources.

4.4.2 Build Alternative

The Build Alternative has the potential to impact one stream, which was delineated within the ROW at the Lancaster Avenue Project Area in Wilmington. As described above in Section 4.2, Water Quality, CSX would obtain the applicable permits if impacts to the stream are proposed. Should work be required within the stream, CSX will use avoidance, minimization, and mitigation measures as required by the permit to protect aquatic species and their associated habitats during construction. All required avoidance, minimization and mitigation measures will be identified by applicable permitting agencies during the permitting process. Any impacts to the waterway as a result of construction activities would be as a result of ground disturbance and would be minor and temporary.

4.5 Floodplains

4.5.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in temporary or permanent impacts to floodplains, as no activities or construction within floodplains would occur.

4.5.2 Build Alternative

Under the Build Alternative, there are no floodplain impacts. It is noted that at two locations, North Avenue in Maryland and Lancaster Avenue in Delaware, the existing ROW extends through or is adjacent to a 100-year floodplain (Appendix D, Figure 5). The North Avenue bridge modification activities and the Lancaster Avenue site track-lowering will not result in an expansion of the existing ROW and will not alter the existing floodplain conditions.

The proposed work at these locations will predominately occur within existing railroad ROW and is not expected to result in an impact to natural and beneficial floodplain values, flood attenuation and storage, water quality, groundwater recharge, biological productivity of fish and wildlife, and agricultural and forestry resources. No flood or floodplain impact affecting human safety, health, and welfare are anticipated as a result of the Build Alternative. During final design, CSX will review the limits of the proposed disturbance to confirm that there will be no impact to the 100-year floodplain. Should any temporary construction staging areas, access roads, or other temporary feature encroach upon the 100-year floodplain outside the existing ROW, CSX will coordinate with the local floodplain managers and/or FEMA as

necessary. Any dewatering or diversion of flows within track sections during construction will be done in accordance state and local requirements.

4.6 Endangered Species or Wildlife

4.6.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in construction activities or impacts; therefore, no temporary or permanent impacts to endangered species or wildlife would occur.

4.6.2 Build Alternative

The Build Alternative would not impact wildlife habitat beyond the existing conditions. Most of the work proposed will be within the railroad ROW, which contains poor habitat for wildlife species. Any suitable habitat for wildlife present beyond the existing ROW would not be affected by the Project.

Coordination with federal and state agencies was conducted to determine potential impacts to federally and state-listed rare, threatened, and endangered species and critical habitat. Two species, the Indiana bat and Northern long-eared bat were identified as potentially occurring in the Project Area. The FRA has determined the Project is "not likely to adversely affect" Northern long-eared bat and Indiana bat within the portion of the Project in Pennsylvania and will have "no effect" on Northern long-eared bat within the portion of the Project in Maryland and Delaware due to a lack of habitat and no tree clearing resulting from the Project. The USFWS Pennsylvania office concurred with this finding on June 16, 2020 and the USFWS Chesapeake Bay office concurred with this finding on May 15, 2020. Responses from federal and state agencies regarding endangered species is included in Appendix F.

4.7 Use of Energy Resources

4.7.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in construction activities or impacts; therefore, no temporary or permanent impacts to energy resources would occur.

4.7.2 Build Alternative

Energy consumption associated with construction of the Build Alternative would be associated with the use of petroleum and natural gas resources and use of manpower expenditures. These resources are generally non-renewable. Construction materials would consist largely of steel, concrete, ballast rock, and wood. These resources are generally readily available and not in short supply; therefore, impacts to energy resources as a result of the construction of Build Alternative would be considered minor.

The Project will allow each double-stacked intermodal unit to avoid an extra 149 miles of transport to reach destinations north and south of Baltimore, thereby reducing transport-related energy consumption (fuel). Additionally, each intermodal unit will be transported by rail through the HST and other Project Areas rather than by truck would save extra 963 miles of transportation.[84] Over the first 30 years of the Project, an anticipated 1.2 billion truck vehicle miles will be avoided, saving an estimated 137 million gallons of fuel.[85]

4.8 Aesthetic and Design Quality

4.8.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in construction activities or impacts; therefore, no temporary or permanent impacts to aesthetic design and quality would occur. CSX would continue to maintain the corridor in the same manner.

4.8.2 Build Alternative

Project structure and track modifications will be limited to the existing CSX rail ROW, which for the majority of the Project Areas are below grade, and not visible from neighboring areas. The proposed work associated with the Build Alternative will maintain viewsheds consistent with the current aesthetic. Therefore, impacts to aesthetic and design quality for the Build Alternative are anticipated to be minor. Aesthetic and design considerations associated with Section 106 properties, if any, would be addressed in the Section 106 Programmatic Agreement.

[84] Sage Policy Group. February 2017. *The Economic Implications of Eliminating the Howard Street Tunnel Bottleneck.*
[85] CSX and MDOT. 2019. Howard Street Tunnel Project: INFRA Grant Application.

4.9 Land Use and Community Facilities

4.9.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in construction activities or impacts; therefore, no direct temporary or permanent impacts to land use and community facilities would occur.

4.9.2 Build Alternative

A review of freight and comprehensive plans applicable to the locations of the various Project Areas was conducted.[86] The Build Alternative was found to be consistent with the goals of the various plans and that it would not interfere with the plans' objectives. The Build Alternative is compatible with the existing land uses and zoning because the Project is an improvement of an existing facility, the function of the railroad would remain the same, and the majority of railroad improvements are within the existing ROW. No major or permanent impacts to land uses or land use patterns would occur. Therefore, no adverse impacts to land uses are expected.

Minor changes to land use within the CSX ROW will occur at three Project Areas as summarized below.

- The Bayview Rail Yard in Baltimore is proposed for the staging and storage of Project materials; however, no improvements to the rail yard are proposed for the Project.
- The 58th Street interlocking site in Pennsylvania will be relocated to an area between Lindbergh Boulevard and the Schuylkill River within the existing rail corridor. No change to land use will occur.
- The property that the community supports for use as 26th Street Park in Baltimore will be required for the staging, stockpiling, and laydown of construction equipment during the replacement of the Guilford Avenue Bridge. MDOT MPA and CSX have coordinated with the Baltimore City Department of Transportation (BCDOT) regarding the timing for park development and temporary construction-period impacts to the property. No permanent impacts would occur at the site, and the temporary construction activities would not interfere with any potential future park improvements.

No permanent impacts would occur to community facilities as a result of the Build Alternative, which would be constructed within the railroad ROW. As part of the Harford Road bridge modification in Baltimore the existing road profile would be raised and access to the adjacent REACH! School property would be realigned. Access to the school would be retained throughout the Project's construction. Small temporary impacts would also occur at Baltimore's Pearlstone Park. No community facilities would be impacted by the Build Alternative in Wilmington or in Pennsylvania.

[86] See Section 3.2.09 for comprehensive plans applicable to the Project sites.

The Build Alternative will not permanently affect land use. The Project is compatible with local plans, land use, and zoning. There will be no major or permanent impacts to community facilities, including parks, as a result of the Build Alternative.

4.10 Socioeconomic Environment

4.10.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in any change to the existing environment; therefore, no temporary or permanent impacts to the socioeconomic environment would occur.

4.10.2 Build Alternative

4.10.2.1 Employment Impacts[87]

As noted in the Socioeconomic Technical Report (Appendix G), the economic impact of the proposed Howard Street Project was evaluated by the Sage Policy Group and reported in the INFRA Grant Application. During that evaluation, the scope of work included some activities that are no longer part of the Project; however, the impacts found are illustrative of those that will occur with the scope of the current Howard Street Project. Impacts during the design and construction phase were calculated to include:

- employment of 6,859 person-year jobs, including 4,376 direct and indirect person-year jobs related to construction (CSX and MDOT, March 2019) and
- more than $392 million in associated employee compensation (Sage Policy Group, 2017).

The economic activity generated by the Project could provide a short-term increase in incomes and a subsequent decline in poverty rates in the communities in which the Project is located as construction workers purchase from local businesses. Local tax revenues would also be expected to have a short-term increase from the economic activity generated by construction of the Project.

When construction is completed and the improved HST becomes operational, permanent economic impacts will occur within the Baltimore region. These impacts include an estimated 7,872 net new jobs in the transportation sector, which are linked to over 60,000 jobs that are supported among port users in the Baltimore region. The created and supported jobs translate into an expenditure of approximately $6,500 per

[87] Additional details on the economic impact of the Project and the methodology used can be found in the report *The Economic Implications of Removing the Howard Street Tunnel Bottleneck* (Sage Policy Group, 2017).

job.[88] This estimate does not include the construction jobs that would be supported during the capital expenditure phase.

4.10.2.2 Freight Transportation Impacts

The HST improvements will allow CSX to run double-stack intermodal traffic through Baltimore on the most direct, lowest mileage rail route between the Southeast, Northeast, and Midwest. With the completion of the Project, the entirety of CSX's primary intermodal network will be accessible to double-stack containers. It is estimated that over the first 30 years of the Project's operation, more than 2.5 million loaded units will be converted from long-haul trucking to rail. Each of the units would reduce long-haul truck travel by an average of 940 miles of long-haul truck travel. Key transportation impacts[89] during the Project's first 30 years are anticipated to include:

- Avoiding 1.2 billion truck vehicle miles traveled;
- Reducing fuel consumption by 137 million gallons of fuel;
- Eliminating an estimated 16 fatal crashes, 585 injury crashes, and 1,561 damage crashes; and
- Reducing costs to freight shippers and receivers.

4.10.2.3 Traffic and MTA Light Rail Impacts and Mitigation

CSX is evaluating options for completing the HST modifications. Under the traditional method of construction, no traffic disruptions would occur. If a tunnel enlargement system is used, however, a section of Howard Street would experience closures and Light Rail use would be disrupted.[90] In the event this non-conventional approach to gain clearance at HST is selected, the temporary closure of Howard Street would require rerouting of traffic. Subsequently, CSX will seek to minimize disruptions to the public and local businesses if Howard Street is closed to accommodate construction.

Phased maintenance of traffic would be required at the North Avenue and Harford Road Project Areas during construction. Traffic congestion resulting from phased maintenance of traffic would be affected by typical rush-hour traffic patterns. Construction activity at the sites would not disrupt access to homes, businesses, school, houses of worship, or medical facilities in the community. Recreational resources would not be adversely impacted by the construction. During the construction, access to homes and businesses will be maintained.

The replacement of the bridge will require full closure of Guilford Avenue during construction. Access to homes near Guilford Avenue will be unaffected by the bridge closure.

[88] *Ibid.*

[89] CSX and MDOT. 2019. Howard Street Tunnel Project: INFRA Grant Application.

[90] At this time, it is unknown if closures to the Light Rail and to Howard Street will be required. If such closures are required, the exact locations and operational impacts may vary from those described in this report. CSX will coordinate with all relevant stakeholders and provide public updates if closures are necessary.

4.10.2.4 Additional Considerations

The Build Alternative is not expected to disrupt the local housing markets during its construction or operation (Appendix G). Community cohesion is not anticipated to be negatively impacted by the Project. The proposed operations of the Project improvements will not geographically divide nor isolate the residents or businesses within the Study Area. There will be no ROW acquisition nor relocations of residential or commercial properties The Project's operation will not encroach upon residential property nor disrupt access to education and childcare facilities, community centers, or places of worship. The Build Alternative is not anticipated to have a substantial impact on public facilities in the Study Area.

4.11 Environmental Justice

4.11.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in any change to the existing environment; therefore, no temporary or permanent impacts to environmental justice would occur.

4.11.2 Build Alternative

As noted in the attached Environmental Justice Report (Appendix H), EJ areas surrounding the Project Areas experience high poverty rates. The Build Alternative will generate both jobs and local spending, which are expected to improve the economic condition of the EJ areas. The proposed track modifications and improvements would cause beneficial temporary impacts to employment and income during the construction period (see Appendix H).

The residents in the EJ areas would benefit from the job opportunities generated by the Project's construction and operation. The economic activity created by the Project is expected to provide a short-term increase in incomes in the local EJ communities and have a positive effect on poverty rates. Minority business owners in the EJ areas would benefit as the result of secondary economic activity generated as construction workers and local suppliers spend income and revenues at local business, which in turn, could hire additional workers.

Limited disruption to traffic and vehicle access would occur at Guilford Avenue, where there would be a detour, and Harford Road, where phased traffic will be utilized during construction.

Traffic and transportation disruptions for the HST during construction will depend upon the construction method selected. If the conventional method is chosen, no traffic or transportation impacts are anticipated. If the non-conventional method is chosen, as described in Section 2.1, portions of Howard Street would

require closures, with potential disruptions to light rail service between North Avenue and Conway Street. These disruptions would impact public transportation options during construction on which the residents in EJ areas likely depend.

If the temporary closure of the MDOT Light Rail line or rerouting of bus lines is required, additional time may be spent commuting during the limited period of disruption. CSX will use traffic management plans and strive to minimize traffic-related disruptions at HST. Overall, impacts to transportation that might affect EJ area residents are anticipated to be limited in both time and scope. Traffic disruption is not expected to occur at the remaining sites in Baltimore or at the sites in Delaware and Pennsylvania.

After the Project's completion, community cohesion in the EJ areas is not anticipated to be negatively impacted by the Project, as the proposed operations of the Project improvements will not geographically divide or isolate the residents or businesses within the Study Area. There will be no ROW acquisition or relocations of residential or commercial properties. The Project's operation will not encroach upon residential property or disrupt access to education and childcare facilities, community centers, or places of worship within the EJ areas surrounding the Project Areas (see Community Resources and Land Use Technical Report). The Project's construction will be limited to existing sites. Therefore, the Project is not anticipated to have a substantial impact on public facilities in the Study Area. As discussed in other sections of the EA, no major adverse impacts are anticipated to air quality, water quality, wetlands, floodplains, or other environmental resources.

Input from the public is an important consideration in the EJ process. Section 5.0, Public Coordination and Agency Consultation provides detail about the public outreach and coordination associated with the Build Alternative. No groups or individuals have been or will be excluded from participation in public involvement activities, denied the benefit of the project, or subjected to discrimination in any way on the basis of ethnicity, religion, race, age, color, age, sex, national origin, or religion.

Short-term impacts to EJ areas would include minor, temporary traffic disruptions and positive impacts on employment and income. The long-term impacts of the actions in the Build Alternative include benefits to employment and income and would be neither adverse nor disproportionate in relation to the overall social, economic, health, and environmental characteristics of minority and low-income populations in the Study Area.

4.12 Hazardous Materials

4.12.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in construction or

other activities; therefore, no temporary or permanent impacts to public safety or hazardous materials would occur.

4.12.2 Build Alternative

Based on current CSX records associated with the CSX ROW, it is not anticipated that the construction of the Build Alternative will encounter materials with levels of impacts exhibiting characteristics, which EPA would classify as hazardous waste. Prior to the commencement of work at any of the planned work areas, CSX will conduct a records search to identify any known contamination issues or past environmental incidents within the areas of construction disturbance.

Further, CSX will have an environmental screening process in place during construction for the management of any impacted materials that are unexpectedly encountered. For excess materials generated during construction (e.g., soils, construction demolition debris) of the Build Alternative, CSX will follow established protocols to comply with applicable state, local, and federal laws and regulations for waste handling, staging, characterization, and transportation for off-site disposal.

4.13 Cultural Resources

4.13.1 No Build Alternative

The No Build Alternative would involve no action to create a double-stack rail network to and from the Port of Baltimore through the HST and north along CSX's I-95 Rail Corridor. The existing single-stack-capable railway section would remain operational without improving the double-stack connectivity constraint in the national freight rail network. The No Build Alternative would not result in any change to the existing environment; therefore, no temporary or permanent impacts or adverse effects to cultural resources would occur.

4.13.2 Build Alternative

4.13.2.1 Archaeology

No previously identified archaeological sites are located within the 13 survey areas that comprise the archaeological APE. No additional archaeological investigations are recommended for any of the 13 survey areas that comprise the archaeological APE. The Section 106 Archaeological Report is attached as Appendix I and provides further detail on archaeological resources identified within the archaeological APE.

4.13.2.2 Historic Architecture

In total, 22 architectural historic properties were identified within the historic architectural APE (Table 4-2). Except for Boone Tunnel (106212) located in Pennsylvania, the identified historic properties are in Maryland. An effect to a historic property may occur when there is an alteration to the characteristics of a

historic property qualifying it for inclusion in or eligibility for the NRHP (36 CFR Part 800.16(i)). For those properties with an effect, the criteria of adverse effect from Section 106 of the NHPA were applied (36 CFR Part 800.5(a)(1)). An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualifies it for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Relevant examples of adverse effects (36 CFR Part 800.5(a)(2)) were applied to historic properties for the Build Alternative. The Section 106 Architectural Report is located in Appendix J, which provides further detail and mapping for architectural historic properties identified within the historic architectural APE. Project effects are summarized below (south to north):

Table 4-2. Architectural Historic Properties

Historic Property	Effect
Howard Street Tunnel & Power House (B-79)	Adverse Effect
Baltimore and Ohio (B&O) Railroad Baltimore Belt Line (B-5287)	Adverse Effect
Camden Station (B-148)	No Adverse Effect
Wilkens-Robins Building (B-3598)	No Adverse Effect
Rombro Building (B-2371)	Adverse Effect
Market Center/Retail Historic District (B-1262)	No Adverse Effect
Mount Vernon Local Historic District (B-1393)	No Adverse Effect
Mount Royal Station (B-26)	No Adverse Effect
Bolton Hill Historic District (B-64)	No Adverse Effect
Cannon Shoe Company (B-5332)	Adverse Effect
North Avenue Bridge (BC1208) (B-4521)	Adverse Effect
Philadelphia, Wilmington & Baltimore Railroad (B-5164)	No Adverse Effect
B&O Railroad Baltimore Belt Line Bridge over Jones Falls Valley (B-5288)	No Adverse Effect
Charles Village/Abell Historic District (B-3736)	No Adverse Effect
Guilford Avenue Bridge (BC8029) (B-4526)	Adverse Effect
Darley Park (B-5330)	No Adverse Effect
Harford Road Bridge (BC8026) (B-4523)	Adverse Effect
Clifton Park Junior High School (B-5329)	No Adverse Effect
Friends Burial Ground (B-5086)	No Adverse Effect
Lower Coldstream Homestead Montebello Historic District (B-5331)	No Adverse Effect
Clifton Park (B-4608)	No Adverse Effect
Boone Tunnel (106212)	Adverse Effect

FRA will continue to consult with MHT, PHMC and the additional Section 106 consulting parties, and involve the public as it seeks ways to avoid, minimize, or mitigate the adverse effects on historic properties (36 CFR Part 800.6(a)). A Memorandum of Agreement (MOA) was developed in consultation with MHT, PHMC, MDOT MPA, and consulting parties to document Project stipulations in order to resolve adverse effects to historic properties and conclude the Section 106 process. The draft MOA can be found in Appendix K.

4.14 Indirect and Cumulative Impacts of the Build Alternative

Indirect effects are those effects that are "caused by the action and are later in time and farther removed in distance, but 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" (40 CFR 1508.8b).

The Council on Environmental Quality (CEQ) oversees federal agency implementation of NEPA, principally through regulations it has issued interpreting NEPA's procedural requirements. A cumulative effect is defined by the CEQ as the "impact on the environment which results 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" (40 CFR 1508.7).

Indirect and cumulative impacts were considered for each resource and assessed based on the potential area of impact for each resource. Table 4-4 summarizes the indirect and cumulative impacts for each resource evaluated for the Project.

Table 4-4. Indirect and Cumulative Impacts to Affected Environment Resources for the No Build and Build Alternative

Affected Environment Resources*	Anticipated Indirect or Cumulative Impacts - No Build Alternative	Anticipated Indirect or Cumulative Impacts – Build Alternative
Air Quality	• No indirect impacts are anticipated. • Cumulative impacts may result in an increase of emissions of criteria pollutants and air toxins as a result of the predicted increase of truck traffic related to the transport of freight.	• No indirect impacts are anticipated. • Positive cumulative benefits to long-term net benefit to air quality by reducing emissions of criteria pollutants and air toxins by offsetting long-haul trucking of freight.
Water Quality	None	• No indirect impacts are anticipated. • Potential minor and temporary cumulative impacts may occur during construction.
Noise and Vibration	None	• Operational: None • Construction: Potential minor and temporary cumulative impacts may occur during construction.
Wetland Areas	None	None
Floodplains	None	None
Endangered Species or Wildlife	None	None
Use of Energy Resources	• No indirect impacts are anticipated. • Cumulative impacts may result in increased fuel usage due to the predicted increase of truck traffic related to transport of freight.	• No indirect impacts are anticipated. • Cumulative impacts to energy resources would result from the Build Alternative due to the use of construction materials. As these materials are not in short supply, cumulative impacts would be minor. • Long-term cumulative impacts to the use of energy resources are expected to be positive as double-stack rail offsets demand for long-haul trucking of freight fuel usage.

Affected Environment Resources*	Anticipated Indirect or Cumulative Impacts - No Build Alternative	Anticipated Indirect or Cumulative Impacts – Build Alternative
Aesthetic and Design Quality Impacts	None	• No indirect impacts are anticipated. • Cumulative impacts to aesthetic and design quality would result from the Build Alternative due to minor changes in design for bridge modifications and replacement, and the removal of one small building within the CSX ROW if the Boone Tunnel replacement construction method is chosen.
Land Use and Community Facilities	None	None
Socioeconomic Environment	None	• Positive indirect benefits are anticipated to socioeconomics to the Port of Baltimore. • Positive cumulative benefits to transportation and the economy related to previous actions associated with the National Gateway Initiative.
Environmental Justice	None	None
Public Safety and Hazardous Materials	None	None
Cultural Resources	None	None
4(f) Protected Properties	None	None

* Study areas were developed independently for each evaluated environmental resource, as described in the relevant subsections in Section 3.0.

5.0 PUBLIC AND AGENCY COORDINATION

5.1 Public and Agency Coordination

Public meetings and outreach efforts have been coordinated with local committees, community groups, elected officials and local government entities to provide details on the Project and to discuss impacts to the community.

The Project will be presented to the public via a PowerPoint presentation made available via a webpage hosted by MDOT MPA. The webpage will include general project information, mapping, and this EA for public review. Questions and comments from the public on the Project or EA may be provided by way of contact information provided on the webpage. A YouTube video presentation will be embedded within the HST page, summarizing the Project, the NEPA process, the EA findings, and provide a Project schedule.

The public will be informed of the release of the EA and webpage via a press release to media outlets, social media, and outreach to elected officials and community groups.

Meetings, including public coordination efforts conducted thus far for the Project are summarized below.

- September 25, 2019
  - **Agency/Community:** Delaware Department of Transportation
  - **Topics Covered:** Project overview, track lowering projects in Delaware.
- October 7, 2019
  - **Agency/Community:** Greater Baltimore Committee
  - **Topics Covered:** Project overview, business district impacts.
- December 19, 2019
  - **Agency/Community:** Charles Village Community Benefits District[91]
  - **Topics Covered:** Project overview, Guilford Road bridge replacements, coordination on HST project and the Benefits District's 26th Street Green park project.
- January 6, 2020
  - **Agency/Community:** Baltimore City Mayor's Office, Baltimore City Department of Public Works, Baltimore City Department of Transportation.
  - **Topics Covered:** Project overview, bridge replacements within Baltimore City, potential impacts to Howard Street from Tunnel Enlargement System.
- February 21, 2020
  - **Agency/Community:** Baltimore Port Alliance
  - **Topics Covered:** Project overview and Port of Baltimore benefits
- February 22, 2020
  - **Agency/Community:** Charles Village Community Benefits District
  - **Topics Covered:** Community beautification projects in coordination with the HST project (fence replacement, vegetation cutting, fence painting).

[91] Includes the following neighborhoods: The Abell Improvement Association; The Charles Village Civic Association; The Old Goucher Community Association; The Harwood Community Association. Waverly Main Street; The Old Goucher Business Alliance; The North Charles Village Business Association.

- February 28, 2020
  - **Agency/Community:** Maryland General Assembly, Baltimore City Delegation
  - **Topics Covered:** Project overview, Baltimore City Project Areas
- April 13, 2020
  - **Agency/Community:** Baltimore City Mayor's Office, Baltimore City Department of Public Works, Baltimore City Department of Transportation.
  - **Topics Covered:** Project overview, bridge replacements within Baltimore City, potential impacts to Howard Street from Tunnel Enlargement System.
- May 13, 2020
  - **Agency/Community:** Dredged Material Management Plan Citizens Advisory Committee and Harbor Team
  - **Topics Covered:** Project overview and Port of Baltimore benefits
- May 27, 2020
  - **Agency/Community:** Charles Village Civic Association.
  - **Topics Covered:** Project overview, Guilford Avenue bridge replacement and detour.
- June 27, 2020
  - **Agency/Community:** Charles Village Community Benefits District
  - **Topics Covered:** Community beautification projects in coordination with the HST project (fence replacement, vegetation cutting, fence painting).
- July 7, 2020
  - **Agency/Community:** Baltimore Department of Public Works
  - **Topics Covered:** In depth review of potential impacts to certain utilities along the Howard Street corridor with the potential use of the Tunnel Enlargement System
- July 13, 2020
  - **Agency/Community:** Baltimore City Mayor's Office, Baltimore City Department of Public Works, Baltimore City Department of Transportation.
  - **Topics Covered:** Project overview, bridge replacements within Baltimore City, potential impacts to Howard Street from Tunnel Enlargement System.
- July 16, 2020
  - **Agency/Community:** Maryland Transit Administration
  - **Topics Covered:** Review of potential impacts to the MTA light rail operations during the potential period of use of the Tunnel Enlargement System
- December 9, 2020
  - **Agency/Community:** Baltimore City DOT
  - **Topics Covered:** Project overview; impacts to 26th Street Green project (park).

5.2 Agency Consultation

Coordination for the Project has been initiated with several resource agencies. Section 106 consultation as described in Section 3.2.13 has occurred with the Maryland, Delaware, and Pennsylvania SHPOs. As summarized in Section 3.2.6, consultation for endangered species and wildlife has occurred with USFWS, MDNR, DNREC, PADCNR, PAFBC, and PAGC. Agency correspondence is included in Appendix F. The permits required for the Project will be identified as engineering progresses. All agency coordination required for federal, state and local permitting will be completed prior to construction.