Wilmington Rail Realignment

Corridor Screening Report

Prepared For:

Federal Railroad Administration and the City of Wilmington

Prepared By:

AECOM

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1 INTRODUCTION

The City of Wilmington ("City"), in coordination with the Federal Railroad Administration (FRA) (Lead Federal Agency) is undertaking a study to evaluate realigning an existing CSX Transportation (CSXT) freight rail line that traverses through City limits as well as unincorporated areas of Brunswick and New Hanover counties. The study, referred to as the Wilmington Rail Realignment (Project), proposes a route to bypass the existing freight rail route between Navassa (Davis Yard) and the Port of Wilmington. The result would create a new freight rail alignment that would improve freight rail operations, public mobility, and public safety in the region.

1.1 SUMMARY OF DRAFT PURPOSE AND NEED FOR THE PROJECT

The primary purpose of the Project is to improve safety, regional transportation mobility, and freight rail operations, while also improving the resiliency, reliability, and operational fluidity of the sole freight rail route connecting southeastern North Carolina with the Port of Wilmington. The Project will address three main needs including the need for enhanced efficiency of freight movement, improved safety, and improved regional mobility and reliability.

Of concern are the numerous at-grade crossings through the city that pose a risk to public safety due to the potential for traffic conflicts and transport of hazardous materials, increased traffic delays and travel times, and increased auto emissions due to longer idling, all of which contribute to reduced quality of life for the 118,000 residents in the City of Wilmington as well as the commuters living outside of the City. To access the Port of Wilmington, freight trains must currently travel over seven miles through the City of Wilmington, crossing 30 public and 2 private at-grade crossings. Due to combined effects of rapid population growth and rapidly increasing freight volumes at the Port of Wilmington, the impacts are expected to worsen at an accelerated rate in the coming decades.

On a weekly basis, at least 26 train movements are made on the existing CSXT route referred to as the "Beltline" (see Figure 2). This Project proposes a more direct bypass route from the Port of Wilmington to Davis Yard which would relocate freight traffic transported between the Port and Davis Yard from the Beltline to the new bypass route. Some of the smaller, less frequent local trains may continue to operate over the northern half of the Beltline to provide access to existing customers for a period of time; however, the project will endeavor to relocate all freight rail traffic currently operating over the Beltline to the new bypass route.

1.2 PURPOSE OF SCREENING REPORT

This Screening Report analyzes the corridor routes studied in the 2017 *Wilmington Rail Realignment and Right of Way Use Alternatives Feasibility Study* (Feasibility Study), as well as

identifies new or modified corridors developed based on the draft Purpose and Need which includes engineering feasibility and environmental considerations. The result will be a set of alternatives that will be carried forward for more detailed study in the Alternatives Analysis and will provide the reasonable range of alternatives for analysis of impacts for the FRA environmental review process as required by the National Environmental Policy Act (NEPA).

The screening for the Project will be conducted in two phases, Step One: Initial Screening; and Step Two: Secondary Screening. During Step One, the project team will qualitatively review the corridors recommended from the Feasibility Study against a set of criteria to determine which corridors should advance for more detailed evaluation as part of the Screening Process (Section 2.1). It will also identify possible modifications for those corridors that advance. Step Two will provide an additional level of screening by dividing the remaining corridors into Sections and Options and identifying where corridors can be modified (Section 2.2). Dividing corridors into Sections and Options will allow for a more detailed analysis and flexibility to refine the alignment and reduce impacts. The result of Step Two will be the identification of a set of Sections and Options to be carried forward for more detailed analysis as part of the Alternatives Analysis.

1.3 PLANNING PROCESS

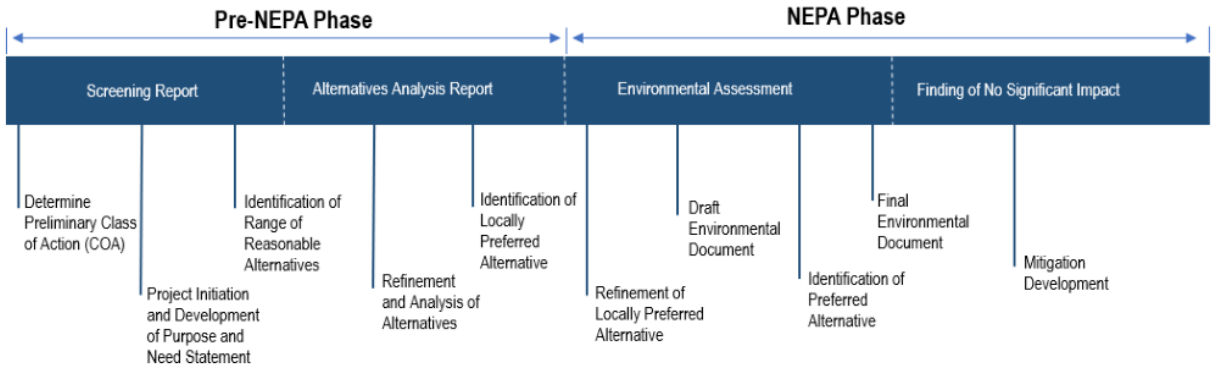
In 2019, the Federal Railroad Administration (FRA) awarded the City of Wilmington a grant through the Consolidated Rail Infrastructure and Safety Improvements (CRISI) program to support the preparation of design and environmental review for the Project. As part of the grant, the City is required to undertake the NEPA process. FRA separates project development into two phases: Pre-NEPA and NEPA. The goal of pre-NEPA planning is to identify a locally preferred alternative based on local planning and goals to assist the NEPA analysis and comply with One Federal Decision goals, pursuant to Executive Order 13807. Pre-NEPA planning develops a preliminary Purpose and Need and analyzes a preliminary reasonable range of alternatives based on their ability to fulfill the objectives of the project in addition to a high-level analysis of environmental impacts. This analysis will be described in the Alternatives Analysis report. After pre-NEPA planning is completed, the remaining preliminary alternatives will go through the NEPA process for detailed environmental analysis.

The Project itself will be developed in three phases: Screening Analysis, Alternatives Analysis, and compliance with the National Environmental Policy Act (NEPA). This Screening Report documents the first phase which will identify feasible corridors that could be considered for the Project based on their ability to meet the stated Purpose and Need for the Project and a review of potential environmental impacts. A No-Build scenario will be introduced during this first phase and will be carried forward as a baseline point of comparison for the Locally Preferred Alternative during the NEPA process. The No-Build scenario follows the existing alignment but assumes the implementation of any programmed fiscally constrained projects within the Project Study Area that are associated with the existing rail line. Section 2.2.2 describes the programmed fiscally constrained projects assumed in the No-Build scenario.

The second phase involves a more detailed Alternatives Analysis with the goal of developing alternatives from the remaining corridor options and further refining, evaluating, and eliminating these alternatives to identify a Locally Preferred Alternative for consideration in the NEPA process.

The third phase will include preliminary engineering and an environmental review in accordance with NEPA of the Locally Preferred Alternative identified at the conclusion of the Alternatives Analysis in the second phase. An Environmental Assessment (EA) will be prepared after completion of the Alternatives Analysis to determine whether the Project has the potential to cause significant environmental effects. If the FRA determines the Preferred Alternative will not have significant environmental impacts, the agency will issue a Finding of No Significant Impact (FONSI) and identify the Selected Alternative that will be carried forward for final design and construction. A FONSI is a document that presents FRA's decision and defines the reasons why the agency has concluded that there are no significant environmental impacts projected to occur upon completion of the Project. Exhibit 1 provides a visual summary of the planning process.

Exhibit 1: Planning Process



1.4 AGENCY PARTICIPATION

1.4.1 LEAD AGENCY

The FRA is the lead agency responsible for administering federal rail line assistance programs and consolidating government support of rail transportation activities. As the lead federal agency, FRA is responsible for NEPA compliance. FRA also has primary responsibility for developing and enforcing rail line safety regulations and would enforce certain regulations that apply to the Project.

1.4.2 COOPERATING AGENCIES

Cooperating agencies with jurisdiction over various human, cultural, and natural resources potentially affected by the Project include:

- United States Army Corps of Engineers

- United States Coast Guard
- United States Environmental Protection Agency
- United States Fish and Wildlife Service
- National Marine Fisheries Service
- Surface Transportation Board
- North Carolina Historic Preservation Office
- North Carolina Department of Transportation

1.4.3 CONSULTATION AND OUTREACH

Notification of the start of study was distributed on August 14, 2020 to environmental and regulatory resource agencies as well as various stakeholders, interest groups and the general public via a press release by the City of Wilmington. This letter requested input, comments, and potential concerns on the Project.

A Public Involvement Plan (PIP) (appended by reference) has been developed to serve as a guide under applicable federal and state regulations for conducting and documenting agency coordination and public outreach efforts in support of the proposed project. It outlines, then describes in detail, the key goals of the plan, methods to achieve the stated goals, appropriate steps for the successful implementation of the PIP, and overall schedule of planned activities. The City of Wilmington will coordinate with agency representatives from various federal and state regulatory agencies during the planning process to maintain compatibility between the Project and resource protection regulations. The PIP identifies the various agencies and stakeholders as well as the various methods of outreach.

While agency and public participation will be integral throughout the project duration, it is anticipated during the pre-NEPA phase that public and agency participation will occur during project scoping and development of alternatives. Outreach during the NEPA phase would occur during refinement of the Preferred Alternative and development of the environmental document.

A meeting with representatives of the lead and cooperating agencies was held on November 12, 2020 to introduce the project, identify the preliminary purpose and need of the project, discuss the screening process of corridors, and receive feedback on the Project.

1.5 PUBLIC PARTICIPATION

A virtual open house was available to the public from November 16, 2020 to December 15, 2020. Preliminary project information and materials were available for viewing during this time.

Approximately 56 public comments were received during the public forum. Topics of the comments received include opposition to corridors presented, safety concerns, traffic concerns, physical, human, cultural, and natural resource impacts, bicycle and pedestrian accommodations, and Environmental Justice considerations.

1.6 REGULATORY REQUIREMENTS

The Project is subject to the requirements of the Council on Environmental Quality (CEQ) Guidelines, which provide direction regarding implementation of the procedural provision of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. § 4321 et seq. and 40 C.F.R. Parts 1500 -1508). FRA officially started the NEPA analysis for this project prior to the effective date of the updates to the CEQ NEPA regulations on September 14, 2020. Thus, the NEPA process will follow the CEQ NEPA regulations prior to their 2020 update.

FEDERAL RAILROAD ADMINISTRATION ENVIRONMENTAL PROCEDURES

Per the requirements of NEPA, FRA is committed to the examination and avoidance of potential impacts to the social and natural environment when considering approval of proposed rail projects. The FRA's NEPA regulations for implementing NEPA are contained in 23 CFR Parts 771 and 774.

The U.S. Department of Transportation (DOT) published a Notice of Proposed Rulemaking to update DOT's NEPA Order on November 23, 2020. The NEPA analysis for this project was started prior to the publication of a Final Rule for rulemaking and would not follow the new DOT NEPA Order, if or when it is finalized.

CLEAN WATER ACT

The Clean Water Act of 1977 (33 U.S.C. § 1251) establishes the basic structure for regulating discharges of pollutants into the Waters of the United States (as defined in 33 CFR Park 328.3) and regulating quality standards for surface waters. The US Army Corps of Engineers (USACE) is responsible for permitting discharges of dredged or fill material into Waters of the US under Section 404 of the Clean Water Act (33 USC 1344), while NC Division of Water Resources issues a Water Quality Certification under Section 401 and NCGS Chapter 143 Article 21, Part 1).

RIVERS AND HARBORS ACT

The US Coast Guard (USCG) administers Section 9 of the Rivers and Harbors Appropriation Act of 1899 and the General Bridge Act of 1946, which regulate construction of new bridges or causeways or reconstruction/modification of existing bridges or causeways over navigable waters. The Cape Fear River and Northeast Cape Fear River are navigable waterways. USACE also has authority under Section 10 of the Rivers and Harbors Act. Section 10 of the Rivers and Harbors requires authorization from the USACE for the construction of any structure in or over any navigable water of the United States.

NATIONAL HISTORIC PRESERVATION ACT (NHPA)

National Historic Preservation Act (NHPA) preserves historical and archaeological sites in the U.S. Section 106 of the NHPA requires agencies using Federal funds to identify historic properties and consider the effects of their projects on those historic properties. Under Section 4(f) found at 23

CFR Part 774, agencies of the US DOT must avoid use of historic sites. Final Section 106 Program Comment for Rail Rights-of-Way (published in the Federal Register on August 24, 2018) excludes from the Section 106 consultation process routine activities affecting active transportation rights-of-way.

Section 110 also provides particular protection for National Historic Landmarks. Section 110 indicates that, "Prior to the approval of any Federal undertaking which may directly and adversely affect any National Historic Landmark, the head of the responsible Federal agency shall, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark, and shall afford the ACHP a reasonable opportunity to comment on the undertaking."

TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Title VI of the Civil Rights Act of 1964, together with related statues and regulations, provide that "no person shall on the grounds of race, color, and national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal funds. The entire institution, whether educational, private, or governmental must comply with Title VI and related Federal civil rights laws, not just the program or activity receiving federal funds." Executive orders regarding environmental justice and outreach to persons with limited English proficiency are also regulated under Title VI of the Civil Rights Act.

EXECUTIVE ORDER 12898

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 1994, states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Traditionally underserved groups such as low-income and minority populations must be identified and given increased opportunity for involvement in order to ensure effective participation.

ENDANGERED SPECIES ACT

Species with the federal status of endangered (E), threatened (T) are protected under provisions of the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et. seq.). Any action likely to adversely affect a species classified as federally protected will be subject to review by the US Fish and Wildlife Service (USFWS).

SECTION 6(F) OF THE LAND AND WATER CONSERVATION FUND

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 (16 U.S.C. 4601-4 et seq.) applies to projects that may impact parks that have been developed or improved using LWCF grant funds. Such resources cannot be acquired unless no other reasonable and feasible alternative exists and requires coordination with the National Park Service (NPS).

US DEPARTMENT OF TRANSPORTATION ACT OF 1966, SECTION 4(F)

Section 4(f) (23 CFR Part 774) applies only to federally funded or federally permitted transportation projects and the project's impacts on historic sites ("historic" sites are defined as those on or eligible for the National Register of Historic Places/NRHP) or publicly-owned parks, recreation areas, and wildlife and waterfowl refuges.

COASTAL AREA MANAGEMENT ACT

North Carolina's Coastal Area Management Act of 1974 (NCGS 113A-100 et seq.) (CAMA) applies to 20 coastal counties and is regulated by the NC Division of Coastal Management (DCM). Brunswick and New Hanover Counties are coastal counties. The establishment of Areas of Environmental Concern (AEC) is authorized under CAMA and can include such areas as coastal wetlands; estuarine waters; Outstanding Resource Waters (ORWs); and Primary Nursery Areas (PNAs), among others. Once an area has been designated as an AEC, impacts to AECs will be considered when making development permitting decisions, and PNAs and ORWs that are designated as AECs require public notice and comment opportunities before making a permitting decision.

FLOODPLAIN MANAGEMENT

Protection of floodways and floodplains is required under EO 11988, Floodplain Management; and USDOT Order 550.2, Floodplain Management and Protection. The intent of these regulations is to avoid or minimize encroachments within the 100-year (base) floodplains or regulatory floodway, where practicable, and to avoid supporting land use development that is incompatible with floodplain values.

1.7 PROJECT CONTEXT

The Project is located primarily within the City of Wilmington but also extends into Brunswick County and New Hanover County. The existing CSXT rail line, commonly referred to as the "Beltline" is active track through the City of Wilmington. The Beltline section forms a "V" from the Hilton Bridge on the Cape Fear River, to Kerr Avenue (SR 1175) to the east, and back west to the Port of Wilmington. The Port, located south of downtown Wilmington on the eastern bank of the Cape Fear River, is the main producer of rail traffic in the area.

1.7.1 PROJECT STUDY AREA

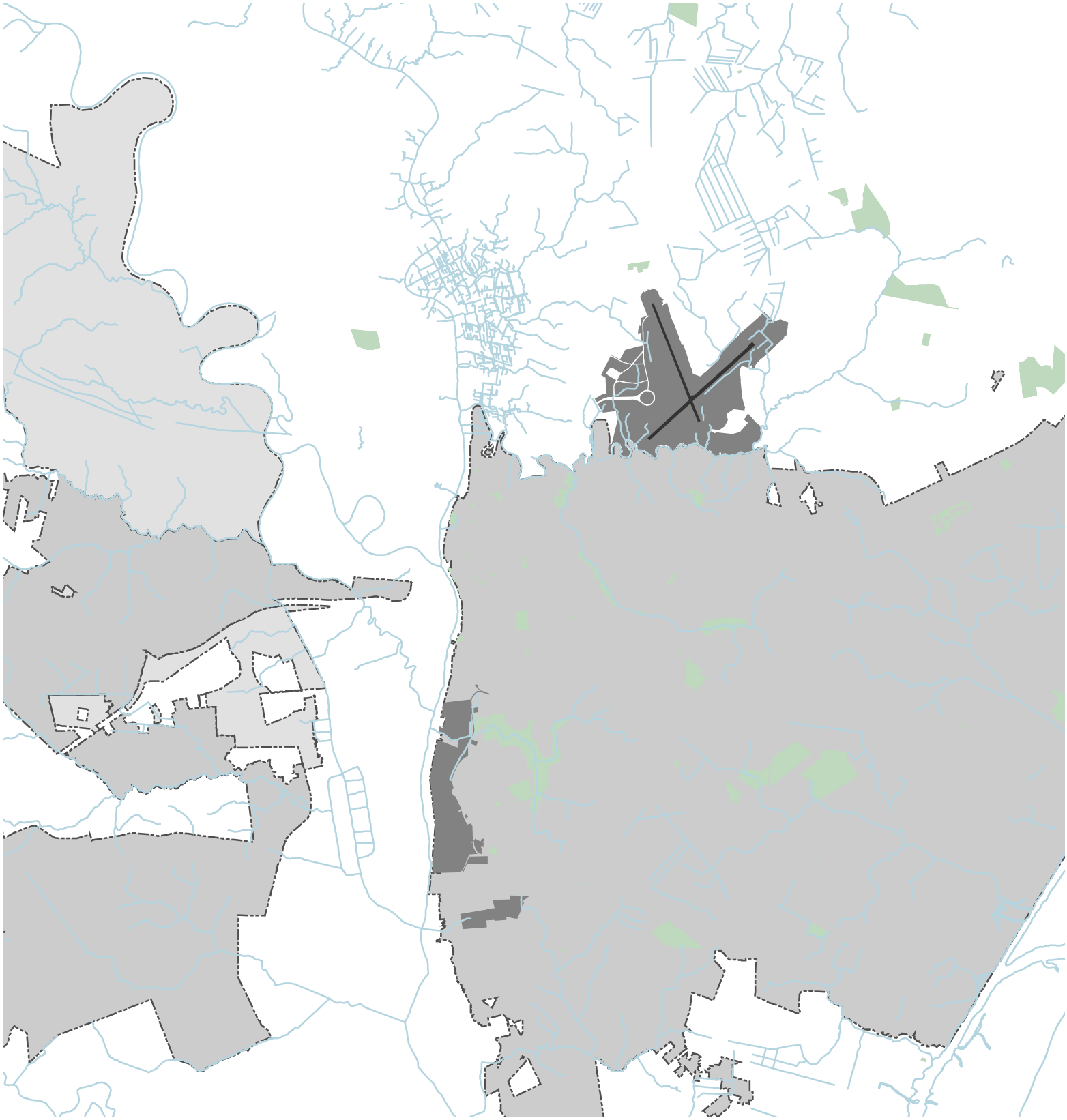
The Project Study Area encompasses approximately a one-mile area centered on the existing CSXT rail line from east of Navassa to the Port of Wilmington through downtown Wilmington and along the proposed new location corridors west of the Cape Fear River (Figure 1).

1.7.2 PROJECT SETTING

Brunswick County and New Hanover County are situated in the coastal plain of North Carolina. The coastal plain physiographic province is characterized by flat land to gently rolling plains and

swampy tidewater along the Atlantic coast. The Cape Fear River borders Brunswick and New Hanover counties.

Within the Project Study Area, the built environment includes infrastructure that encompasses regional and local community resources, such as businesses, residential development, transportation networks, services and utilities, parks and recreational resources, cultural and religious resources, and other community gathering places.

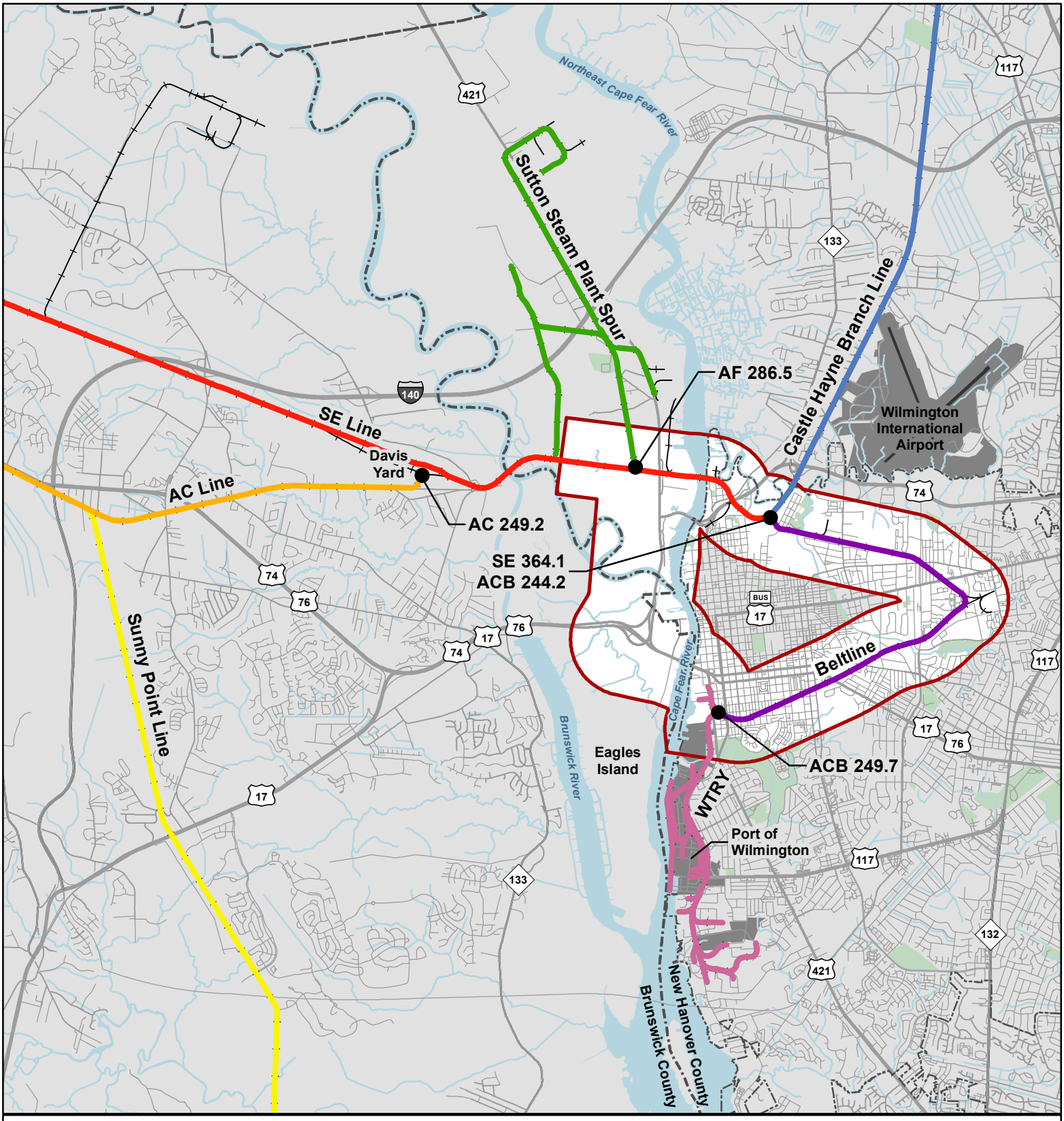


1.7.3 EXISTING FREIGHT SERVICE

There is an active freight line that runs through Wilmington. Freight service is provided by CSXT, a Class 1 railroad, in corridors that are wholly held by the private railroad. There is no current passenger rail service to Wilmington. As shown in Figure 2, freight rail service to the Project Study Area begins at Davis Yard off Cedar Hill Road between Navassa and Leland in Brunswick County on the west side of the Cape Fear River. Davis Yard acts as the serving yard (hub) for CSXT's switching operations in southeastern North Carolina. The CSXT SE Line currently runs eastward from Davis Yard towards Wilmington crossing both the Cape Fear River and the Northeast Cape Fear River (each with a moveable bascule bridge span) before entering Wilmington and New Hanover County on the north side of the City, north of the Isabel Holmes Bridge, as the CSXT ACB line. Once it enters Wilmington, the line branches north as the Castle Hayne Branch line.

The CSXT ACB rail line continues and forms a "V" through the City of Wilmington to Kerr Avenue (SR 1175) to the east, and back west to the Port of Wilmington, known as the "Beltline". Right-of-way widths of 125 feet to 130 feet dominate the corridor, though it is as narrow as 40-feet for a short segment. The current track speed is 10 mph which is determined by CSX operating rules. Contributing factors used to determine track speed in the area include the presence of movable bridges, curvature at the "V", general track conditions, proximity to yard limits, lack of track signalization and other general operational and safety considerations.

The North Carolina State Ports Authority (NCSPA) owns 18 track miles of terminal railroad which connects to the Beltline between Third and Fourth Streets. NCSPA trackage includes direct connections west and south of the Third Street railroad highway crossing to industries and sites in the immediate area. The NCSPA rail property is operated and maintained by the Wilmington Terminal Railway (WTRY), a subsidiary of Genesee and Wyoming Corporation, under a lease agreement. WTRY provides rail service to Port facilities, Port tenants, and other industries located on privately held properties accessible to the NCSPA's trackage.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- Study Area
- County Boundary
- Park
- Railroad
- SE Line
- Malmo Spur - AC Line
- Sunny Point Line
- Sutton Steam Plant Spur
- Castle Hayne Branch Line
- Wilmington Beltline
- NCSPA Track - WTRY

Figure 2
Rail Lines

Date: December 2020

0 0.5 1 2
Miles

1 inch = 8,000 feet

1.7.4 INTERMODAL RELATIONSHIPS

The City of Wilmington is supported by a multimodal transportation network making it accessible to residents, business travelers, and tourists. This network includes major streets and highways, local streets, freight rail lines, river traffic, airline travel, public transit, bikeways, trails and greenways, and sidewalks (Figure 3).

The CSXT Beltline forms a "V" through the urbanized area of Wilmington with 30 public and 2 private at-grade rail crossings within the Project Study Area.

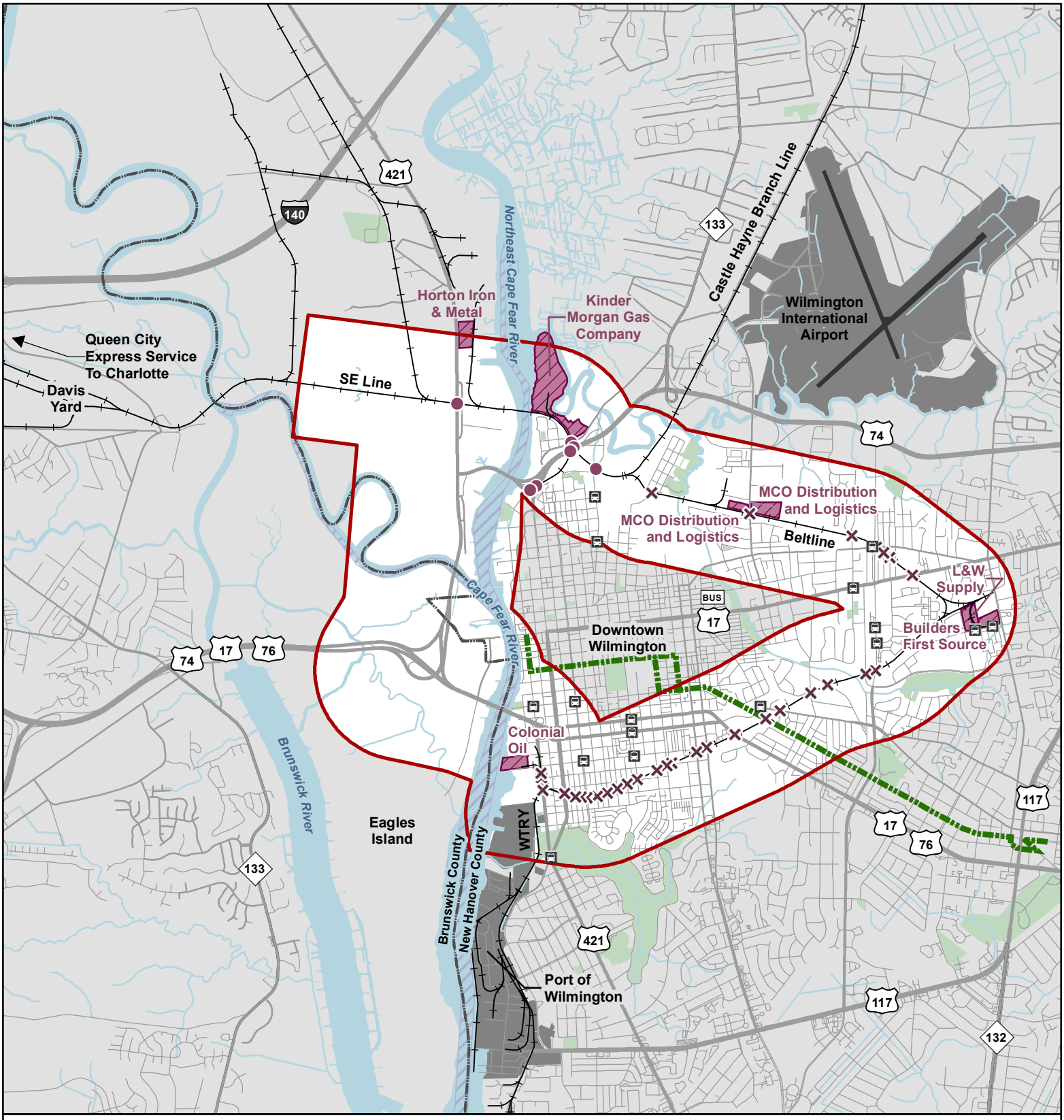
In addition, the CSXT Beltline contains five (5) grade-separated crossings within the Project Study Area.

One of the at-grade railroad crossings is of the River to the Sea Bikeway (WMPO Bicycle Route 1), an 11-mile, on- and off-road bicycle route that follows the Historic Beach Car Line which carried vacationers from downtown Wilmington to Wrightsville Beach by trolley. The bikeway is comprised of neighborhood residential streets, off-road multi-use paths, and a few busy arterial roadways.

The Cape Fear Public Transportation Authority, operating as Wave Transit, serves the City and the surrounding areas. Currently, 16 fixed routes serve the City and the surrounding areas, including northern Brunswick County, Leland, Navassa, and southern New Hanover County beaches, as well as connecting service to Pender County. The existing CSXT rail line interacts with at least eight of these routes. Transit services could be delayed at grade crossings with train movements or when incidents occur.

1.8 PREVIOUS STUDIES

The *Wilmington Rail Realignment and Right of Way Use Alternatives Feasibility Study* (Feasibility Study) was finalized in June 2017 to investigate the feasibility of rerouting the existing CSXT Beltline. The study investigated the proposed development of a new, more direct freight rail route between Navassa and the Port of Wilmington, the rerouting freight rail traffic from the existing corridor to the new corridor, and the repurposing of the existing rail right-of-way and improvements to provide some form of alternate public transportation such as pedestrian / bike paths, heritage trolleys or light transit.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: Connect NCDOT GIS Resources

Legend

- Study Area
- County Boundary
- Park
- Maintained Navigation Channel
- Rail Customer
- Railroad
- River to Sea Trail
- Bus Stops Clip
- Grade-Seperated Crossing
- At Grade Crossing

Figure 3
Existing Transportation Network

Date: December 2020

0 0.25 0.5 1
Miles

1 inch = 5,000 feet

Also, in 2017, the City of Wilmington, CSXT, Wilmington Urban Area MPO, and NCDOT Rail Division completed a traffic separation study of 26 existing at-grade roadway-railroad crossings along a 6-mile section of the Beltline. The *Wilmington Traffic Separation Study* (2017) evaluated short-, medium-, and long-term improvements to at-grade rail crossings. A related study, *Landside Rail Improvements Service to the Port and Moving Trains Safely Through the Community"* (Wilmington Rail Improvements, 2017) evaluated the Port's forecasted demand and existing rail infrastructure, including track capacity and condition of the Beltline, as well as on the Port property, and concluded that the existing rail infrastructure was inadequate to handle anticipated traffic volumes. The report further notes substantial cost savings for shippers if freight is shifted from highway truck to intermodal rail for transport between Charlotte and Wilmington.

2 CORRIDOR DEVELOPMENT PROCESS

Screening for the Project will be conducted in two steps. Step One will be a qualitative initial screening of the corridors recommended for further study in the 2017 Feasibility Study.

Step Two will provide a more rigorous screening evaluation by dividing the remaining corridors into Sections, identifying where corridors can be modified, and developing Options for each Section. Dividing each Section into smaller Options will allow for a more detailed analysis. The result of Step Two will be the identification of a set of Sections and Options to be carried forward for more detailed analysis as part of the Alternatives Analysis, that can be then combined into end to end corridors.

2.1 STEP ONE – INITIAL SCREENING

This initial screening reviewed the 2017 Feasibility Study Corridors against a set of criteria to determine if any of these should advance for more detailed evaluation.

The 2017 Feasibility Study recommended three corridors, as described below:

- 1) Corridor A – The corridor furthest West.
- 2) Corridor B – Central corridor that uses the most of the former railway embankment.
- 3) Corridor C – This corridor closely follows the US17/74 highway corridor.

As shown in Figure 4, from south to north, all three corridors would begin with a connection to the existing Wilmington Terminal Railroad, Inc (WTRY) in Wilmington, just north of the Port of Wilmington. The corridors then leave the existing track and follow along a new alignment west side of Front Street until Wright Street before transitioning to the west to cross the Cape Fear River south of the existing Cape Fear Memorial Bridge carrying US 17/76/421. After crossing the

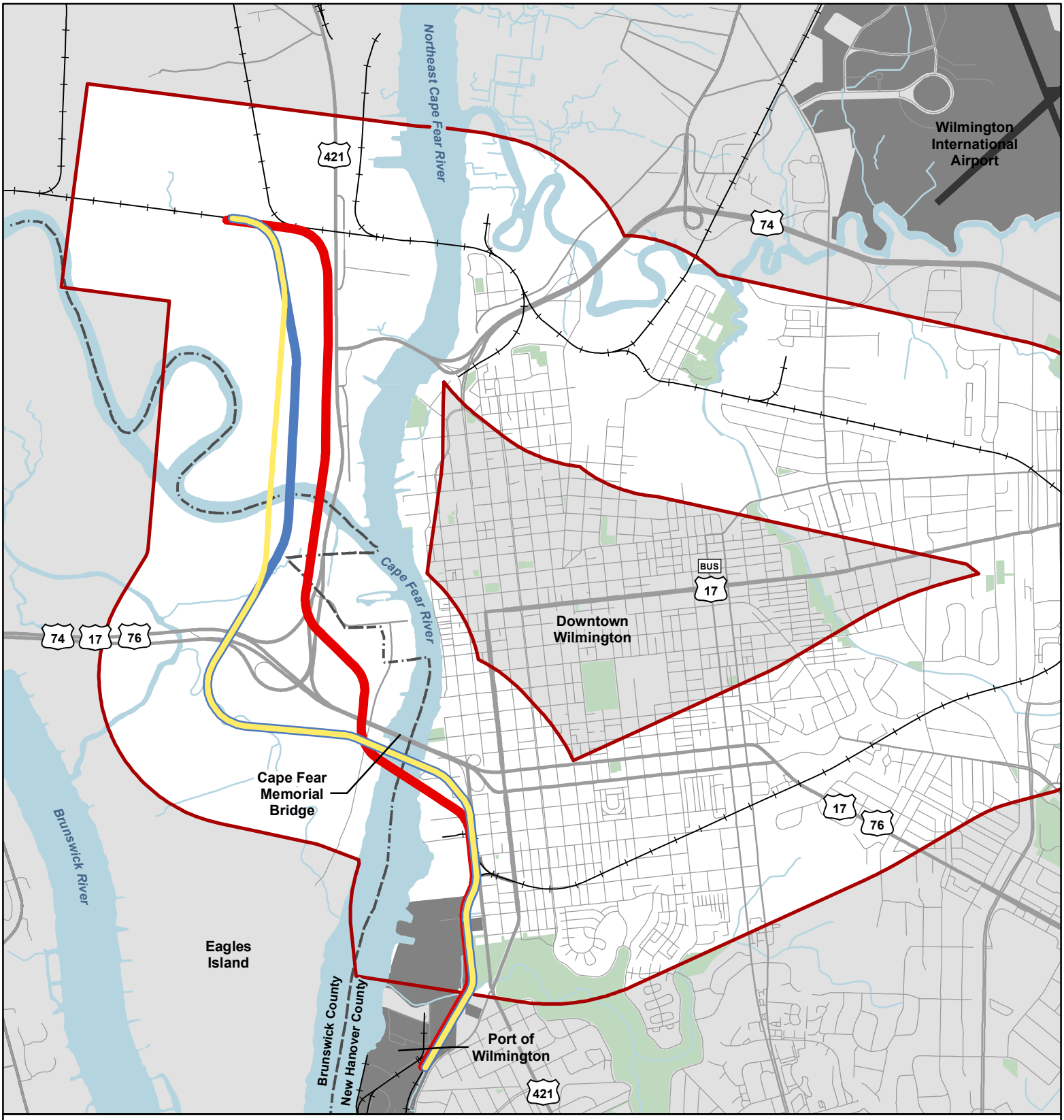
Cape Fear River, Corridors A and B traverse Eagles Island south of the US 17/74/421 interchange, then cross US 17/74/421 west of the interchange. Corridor A follows a straight path before connecting back with the existing CSXT railroad, while Corridor B shifts slightly to the east before connecting back with the existing railroad. After crossing the Cape Fear River, Corridor C crosses US 17/74/421 between the interchange and Battleship Road and crosses again north of the interchange. Corridor C then follows the US 17/74/421 highway corridor north before connecting back with the existing CSXT railroad.

A No-Build scenario is being considered for comparison. The No-Build scenario does not include any new improvements to the existing Wilmington Beltline as part of this project but includes all other fiscally constrained transportation projects within the Project Study Area, as listed below.

- Rehabilitation of the Navassa and Hilton railroad bridges
- Wilmington Beltline Improvements (NCDOT State Transportation Improvement Program (STIP) Project P-5740): improves 23 at-grade crossings and closes 3 at-grade crossings
- Track speed improvements (up to 25 mph)
- Front Street Widening Project
- Fiscally constrained projects listed in NCDOT STIP

The initial screening criteria include the following:

- Ability to Meet Draft Purpose and Need of Project
- Consistency with Planned Transportation Projects
- Operational Considerations
- Historic Property Considerations



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- County Boundary
- Park
- WRR Project Study Area
- Railroad
- Corridor A
- Corridor B
- Corridor C

Figure 4
2017 Feasibility Study Corridors

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 3,000 feet

2.1.1 CONSIDERATIONS OF THE DRAFT PURPOSE AND NEED

Any improvement considered should improve safety and regional transportation mobility, while also improving the resiliency, reliability, and operational fluidity of the sole freight rail route connecting southeastern North Carolina with the Port of Wilmington.

Key considerations are:

- Enhanced safety – Decreases freight movement through the City resulting in decreased transport of hazardous materials, potential derailments, and potential freight rail/vehicle incidents at grade crossings.
- Efficient freight movement – Provides a more direct route between the Port of Wilmington and Davis Yard.
- Improves regional mobility – Reduces the number of freight train movements through the City resulting in less vehicular delays at grade crossings.

ABILITY OF CORRIDORS A, B, AND C TO MEET CRITERION

All three build corridors (Feasibility Study Corridors A, B, and C) meet the purpose and need of the project, as they all improve efficiency of freight movement, enhance safety, and improve regional mobility. Including the construction of a bypass to the Beltline that allows for the frictionless growth in CSXT freight trains both in quantity and in length. The more direct route for CSXT between the Port of Wilmington and Davis Yard results in time savings for freight trains and increased throughput capacity for rail freight. CSXT would have a shorter, newly constructed track requiring less short-term maintenance than current track and less crossings to maintain.

The No-Build scenario would not meet the purpose and need of the project as it does not improve train movements or regional mobility. Additionally, it does not fully enhance safety for citizens living adjacent the Beltline or those that travel within or through the Project Study Area. The challenges that the City faces with rapid population growth and increasing traffic congestion combined with increases in freight movement through the Port of Wilmington are straining the existing transportation network. To access the Port of Wilmington, freight trains must currently travel over seven miles through the City, crossing 30 public and 2 private at-grade crossings. Without any improvements to the existing transportation network, the ability to efficiently distribute goods and services from the Port of Wilmington would be diminished. Under a No-Build scenario, the number of freight trains moving through the City remains the same. Therefore, the potential risks associated with the transport of hazardous material, derailment, and conflicts at grade crossings also remains the same. Therefore, it does not fully enhance safety of citizens living adjacent to the Beltline or traveling within or through the Project Study Area.

2.1.2 CONSISTENCY WITH PLANNED TRANSPORTATION PROJECTS

The Project should be consistent with surrounding modes of transportation to not preclude the construction of several planned fiscally constrained projects within the Project Study Area. These projects include P-5740 Wilmington Beltline Improvements, which includes the closure of three at-grade crossings and improvements to 23 additional at-grade crossings, is scheduled for construction in FY 2022. U-4434 (Independence Boulevard Extension), which includes a new location roadway from Randall Parkway to Martin Luther King Jr. Parkway and crosses the existing rail line twice, is scheduled for construction in 2028. U-5734 (South Front Street) improvements includes the widening of South Front Street from the existing Cape Fear Memorial Bridge to Burnett Boulevard, and is scheduled for construction in 2031. Also, of note is a major infrastructure project to replace the Cape Fear Memorial Bridge, as it is proposed to include a multimodal rail component along with an expanded highway crossing of the Cape Fear River. The Cape Fear Memorial Bridge Replacement project is not fiscally constrained in the NCDOT 2020-2029 STIP but is reasonably foreseeable.

NCDOT Feasibility Studies Unit completed an express design and environmental screening for replacing the Cape Fear Memorial Bridge, which carries US 17/76/421 over the Cape Fear River between New Hanover and Brunswick Counties north of downtown Wilmington. The existing bridge is a 4-lane steel center-span vertical lift bridge. The proposed replacement bridge would consist of a new 6-lane median divided facility with a separated multi-use path. Options were considered for different vertical clearance (65 feet or 135 feet) and fixed or moveable center span. As not to preclude a rail crossing of the river, one option included a separate single-track rail bridge on the south side of the vehicular bridge sharing a single substructure but with independent, moveable center lift spans. If the Cape Fear Memorial Bridge Replacement project eventually recommends including rail as a multimodal component, then the Wilmington Rail Realignment study should be able to connect to the bridge at the east and west approaches. This would combine these two crossings as a consolidated facility, which would reduce the overall environmental footprint of the projects, as well as minimize visual impacts, navigational impacts, and streamline permitting.

Additionally, the South Front Street Widening project (NCDOT STIP U-5734) proposes to widen US 421/Front Street from the Cape Fear Memorial Bridge to US 421/Carolina Beach Road and shift the current alignment of South Front Street, which reduces the amount of track over the roadway, but preserves a public at-grade crossing over an expanded roadway. While not used as a screening factor, the planning outcomes of this project are being considered as it includes widening the roadway within the Project Study Area near the wye connecting the Wilmington Beltline and the WTRY line at the Port.

The Wilmington Beltline Improvements project includes the removal of three at-grade crossings as well as improvements to 23 other crossings on the Beltline. The project also includes tie and rail rehabilitation, curvature adjustments and other line of road improvements. These improvements could support an increase in freight train speed to 25 mph. The upgrade in speed is subject to CSXT's operational needs and is not assumed to be implemented under the project.

ABILITY OF CORRIDORS A, B, AND C TO MEET CRITERION

The location of the Cape Fear River crossings proposed in the 2017 Feasibility Study are not compatible with Alternative 4 of the Cape Fear Memorial Bridge Replacement project which includes an independent rail superstructure adjacent to the bridge replacement, on a shared substructure. However, the Cape Fear crossings of the corridors presented in the 2017 Feasibility Study can be modified to accommodate the bridge replacement project, as described in Step Two of the screening process.

2.1.3 OPERATIONAL CONSIDERATIONS

Operational performance was taken into consideration when screening the Feasibility Study corridors, including the ability to preserve the potential for a direct movement to the Port from the Wallace to Castle Hayne CSXT SE Line. The CSXT SE line connection to Castle Hayne is important as it would allow trains to make a direct move to and from the Port of Wilmington. The ability to perform a direct movement via the proposed bypass, would require a northern arc/wye between the bypass and the CSXT SE line west of the northeast channel of the Cape Fear River, then diverting northward back across the river toward the CSXT SE line. Without the connection, trains operating over the CSXT SE line in both directions would need to operate into Davis Yard and run their locomotives around the train or attach new power. This move would take at least an hour (likely more) in each direction and would also consume yard capacity. While the CSXT SE line is currently abandoned north of Castle Hayne for 27-miles to Wallace, this section of the corridor is owned by NCDOT and has been largely protected. If restored, the SE line would provide a more direct connection to origins and destinations such as the soon to be completed CCX intermodal facility in Rocky Mount, locations in Virginia and throughout the Northeast. A study conducted by NCDOT in 2014 estimated that the reactivation of the SE line between Wallace and Castle Hayne would provide mileage savings for trains operating to or from these origins/destinations would realize mileage savings ranging from 67 to over 160 miles (NCDOT 2014).

Another operational consideration was the number of major highway crossings for each corridor. Major highway crossings are not desirable as they increase the overall project footprint and

ground disturbance and potentially has higher impacts to surrounding land use and environmental resources as well as increased construction cost.

ABILITY OF CORRIDORS A, B, AND C TO MEET CRITERION

Corridors A and B have only one grade separated crossing of the US 17/74/421 interchange, which is more desirable than two grade separated crossings as with Corridor C in terms of cost, operational efficiency, and impact. In addition, Corridor C does not include a direct connection to the CSXT SE Line north to Castle Hayne due to its location adjacent to US 17 and inability to construct a northern connection from the bypass to the CSXT SE line. The CSXT SE line connection is important as it allows trains that may operate over the route to make a direct move to and from the Port of Wilmington. Corridor C does not meet the criterion for operational considerations.

2.1.4 HISTORIC PROPERTY CONSIDERATIONS

Potential impacts to historical resources and national landmarks is another criterion identified for consideration of the 2017 Feasibility Study corridors. The USS North Carolina, a World War II era battleship listed on the National Register of Historic Places (NRHP) and designated as a National Historic Landmark (NHL), is located along the western bank of the Cape Fear River north of the Cape Fear River Memorial Bridge. Potential physical, visual, and auditory impacts to the battleship should be taken into consideration.

ABILITY OF CORRIDORS A, B, AND C TO MEET CRITERION

Due to the NHL designation of the USS North Carolina Battleship, avoiding potential impacts to this resource is a key consideration. Given the proximity of Corridor C to the USS North Carolina Battleship, visual and auditory effects to the resource could occur. Therefore, Corridor C does not meet this criterion. Corridors A and B are further west from the resource on the other side of the US 17/74/421 interchange; therefore, it is not likely that these corridors would cause substantial visual or auditory impacts.

2.1.5 RESULTS OF STEP ONE – INITIAL SCREENING

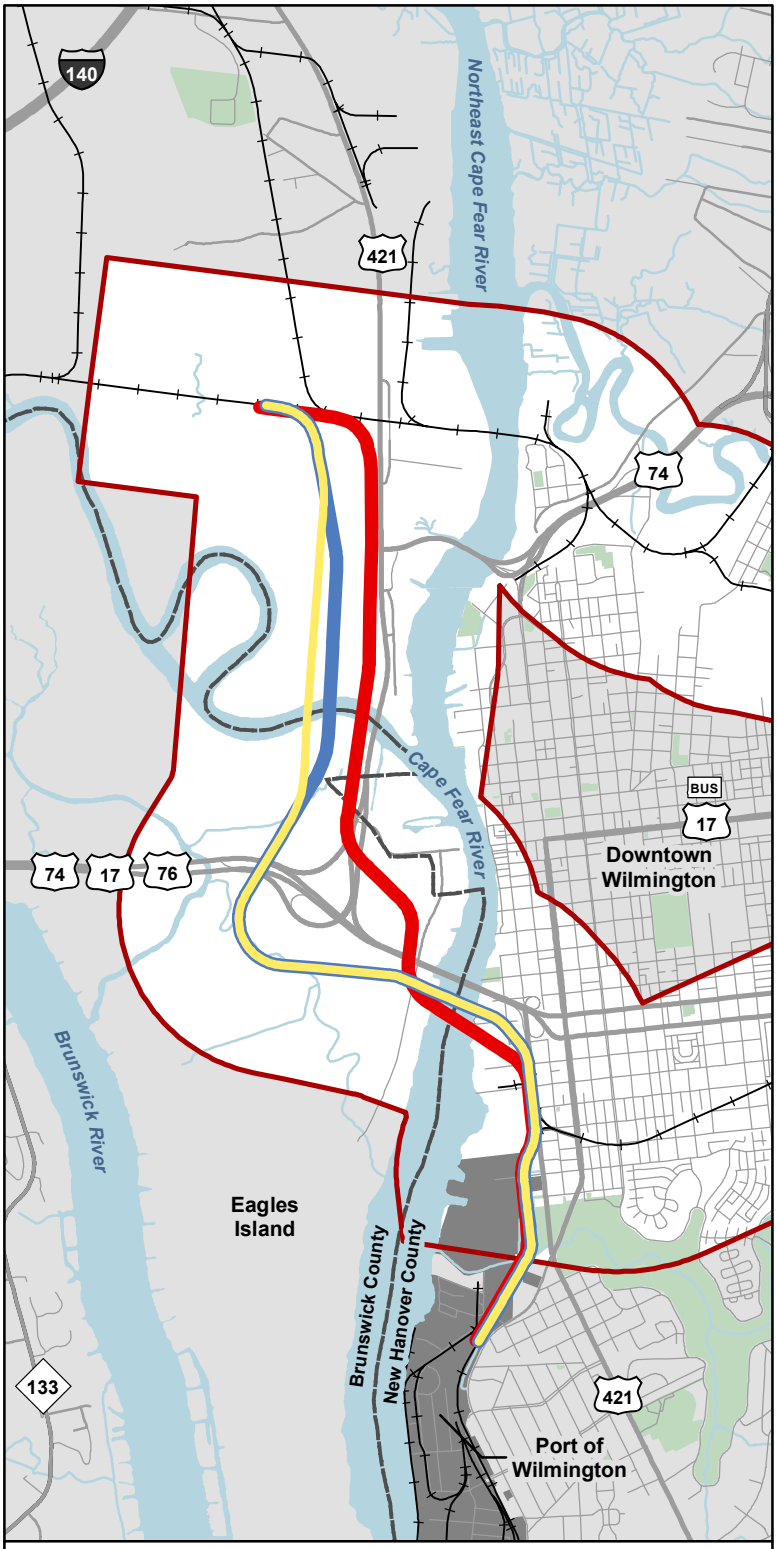
The screening criteria used in the initial screening and the outcomes for each corridor are summarized in Table 1.

Table 1: Initial Screening

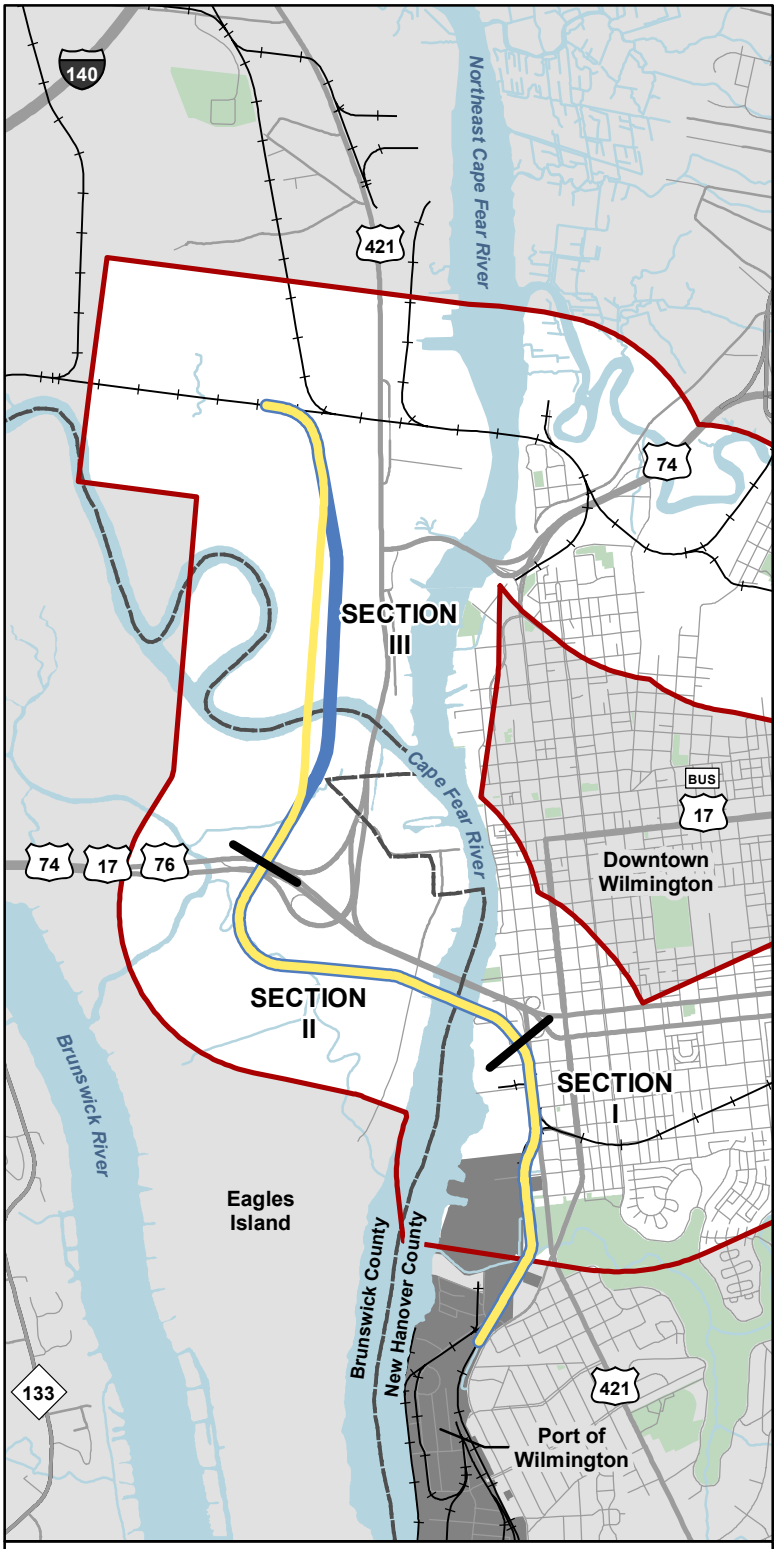
Criterion	Metric	Outcomes			
		No Build	Corridor A	Corridor B	Corridor C
Meets Purpose & Need					
Efficient Freight Movement	Does the corridor improve efficiency of freight movement in the region?	No	Yes	Yes	Yes
Enhance Safety	Does the corridor reduce freight movement through the city?	No	Yes	Yes	Yes
Improves Regional Mobility	Does the corridor reduce freight movement through the city and provide a more direct route from the Port of Wilmington to points north?	No	Yes	Yes	Yes
Consistency with Planned Transportation Projects					
Compatibility with future Cape Fear Memorial Bridge Alt 4 rail alignment?	Is the corridor consistent with the recommendations of the study?	Yes	No	No	No
Operational Considerations					
Highway crossing(s)	Does the corridor have more than one crossing of the US 17/74/421 interchange?	N/A	No	No	Yes
Connectivity to CSXT SE Line	Does the corridor allow a direct movement to the CSXT SE Line north to Castle Hayne?	Yes	Yes	Yes	No
Historic Property Considerations					
National Historic Landmark Considerations?	Is the corridor in close proximity to the USS North Carolina?	N/A	No	No	Yes
Advance to Step Two – Secondary Screening		**Yes**	**Yes**	**Yes**	**No**

Based on the results of the Initial Screening, Corridor C is recommended to be removed from further evaluation due to the lack of its ability to provide a direct movement to the CSXT SE Line north to Castle Hayne, inconsistency with local plans including the proposed replacement of the Cape Fear Memorial Bridge, the number of highway crossings, and the proximity to the USS North Carolina Battleship.

Corridors A and B will advance to the Secondary Screening; however, modifications are recommended where necessary in order to provide a range of possibilities that fit within the various geometric and environmental constraints within the Project Study Area. The No-Build scenario will also advance to the Secondary Screening in order to provide a baseline comparison of the corridors. Additionally, an Upgrade Existing Corridor will be introduced and evaluated during the Secondary Screening phase. The Corridor Development Process is shown on Figure 5.



2017 Feasibility Study Corridors



Remaining Feasibility Study Corridors
After Initial Screening and Sections

CITY OF WILMINGTON
NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- Study Area
- County Boundary
- Park
- Railroad
- Corridor A
- Corridor B
- Corridor C

Figure 5
Corridor Development

Date: December 2020

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

2.2 STEP TWO – SECONDARY SCREENING

The purpose of this step is to review the corridors that advanced from the Initial Screening in Step One (Corridors A and B) and modify them where necessary. They will then be evaluated based on more rigorous evaluation criteria.

The project team considered other ways to improve the rail by including the Upgrade Existing Corridor as an additional means for comparison.

The result of the Secondary Screening will include three Sections. Within each of these Sections, a set of Options will be developed to be carried forward for more detailed analysis as part of the Alternatives Analysis Phase. During the Alternatives Analysis Phase, Options from each Section will be combined to form end to end corridors within which more refined alternatives can be developed.

Additionally, a new location corridor crossing the Cape Fear River approximately 3,500 feet south of the Cape Fear Memorial Bridge was studied at a conceptual level in order to reduce potential impacts to the Wilmington Historic District. It was determined crossing the Cape Fear River at this location would result in impractical grades for the region due to the necessary clearances needed over Battleship Road on Eagles Island. Steeper track grades require additional locomotive power resulting in additional operating costs. Additionally, soil conditions along Eagles Island are assumed to be poor quality due to the history of the US Army Corps of Engineers using the land for the placement of dredged materials, thus prohibitively increasing the project costs. A connection to shippers located north of the Port of Wilmington, within the Wilmington Historic District, would still need to be constructed in order to provide a connection to the Port. A detailed description of the engineering constraints has been appended to this report. A crossing any further south was determined to be infeasible due to potential interferences with the Port of Wilmington turning basin within the Cape Fear River. A crossing south of the Port of Wilmington was also determined to be infeasible due to bridge height requirements that would be needed in order to continue to provide access to ships calling to the Port.

2.2.1 CORRIDOR MODIFICATIONS

After the Initial Screening, the remaining Feasibility Study Corridors A and B were divided further into three Sections from south to north in order to better understand the range of possibilities for each corridor. Section I includes Options in Wilmington along Front Street that tie to the Port facilities. Section II includes Options that cross the Cape Fear River and traverse Eagles Island south of the existing US 17/74/421 interchange. Section III includes Options after crossing US 17/74/421 that continue north to the existing railyard. By breaking the corridors into Sections and Options,

this results in various modified route combinations, as described in the following section and shown on Figure 5.

SECTION I – FRONT STREET AND NCSPA PORT OF WILMINGTON AREA

Section I advances the alignments of Feasibility Study Corridors A and B (Options a and b) for further evaluation from the Port to the east bank of the Cape Fear River. Corridors A and B are respectively referred to as Options a and b, with no modifications from their previous descriptions.

Section I – Option a includes the original alignment from Feasibility Study Corridor A with no modifications. From south to north, Section I – Option a ties into the existing WTRY line then follows along the west side of Front Street until Wright Street.

Section I – Option b includes a modification from Feasibility Study Corridors A and B. From south to north, Section I – Option b ties into the existing WTRY line then follows along the west side of Front Street until Wright Street, slightly east of Section I - Option a.

SECTION II – CROSSING OF CAPE FEAR RIVER AND AREA SOUTH OF US 17/74/421 INTERCHANGE

Section II includes the common river crossing alignment of the remaining Feasibility Study Corridors A and B that were advanced from the initial screening as well as a modified Option to reduce impacts. Two Options will be included in this Section as described below.

Section II – Option a includes the common portion of the original Feasibility Study Corridors A and B south of the US 17/74/421 interchange without any modifications. Section II – Option a ties into either Option in Section I and crosses the Cape Fear River south of the Cape Fear Memorial Bridge slightly skewed. This Option then travels on Eagles Island south of the US 17/74/421 interchange over Alligator Creek before turning north to cross the highway.

Section II – Option b includes a modification of the Feasibility Study Corridors A and B in order to better align the Option with Cape Fear Memorial Bridge Replacement Feasibility Study (Alternative 4) and to reduce impacts to Alligator Creek. This option of the Cape Fear Memorial Bridge Replacement Feasibility Study includes an adjacent, independent rail superstructure on a shared substructure with the roadway bridge replacement. Section II – Option b ties into either Option in Section I and parallels the Cape Fear Memorial Bridge to the south then travels on Eagles Island north of Alligator Creek before turning north to cross US 17/74/421 to the west of the interchange.

SECTION III – US 17/74/76 TO EXISTING CSXT SE LINE

Section III includes the alignments of the remaining Corridors A and B that were advanced from the initial screening as well as a modified Option. Three Options will be included in this Section as described below.

Section III – Option a begins at the CSXT SE Line west of US 17 and includes the portion of the original Feasibility Study Corridor A west of US 17/74 with no modifications. Section III – Option a ties to either Option in Section II and travels north, west of US 74/421 before connecting to the existing CSXT SE Line west of US 17.

Section III – Option b begins at the CSXT SE Line west of US 17 and includes the portion of the original Feasibility Study Corridor B west of US 17/74 with no modifications. Section III – Option b ties to either Option in Section II and travels north, west of US 17/74 utilizing some of the former railway embankment and crosses the existing utility easement twice.

Section III – Option c is a modified corridor and begins at the CSXT SE Line west of US 17. Section III – Option c ties to either Option in Section II and travels north, west of US 17/74 utilizing some of the former railway embankment and travels north farthest to the east, parallel to US 74/421 before turning west to tie back into the existing CSXT SE Line west of US 17.

Each Section and the associated Options are shown on Figure 6.

2.2.2 NO-BUILD SCENARIO

The No-Build scenario follows the existing alignment but assumes the implementation of any programmed fiscally constrained projects within the Project Study Area that are associated with the existing rail line. These projects include P-5740 Wilmington Beltline Improvements, which includes the closure of three at-grade crossings and improvements to 23 additional at-grade crossings, is scheduled for construction in FY 2022. Additionally, P-5740 proposes to upgrade the Beltline to FRA Class II specifications, potentially allowing for an increase in freight speed to 25 mph. U-4434 (Independence Boulevard Extension), which includes a new location roadway from Randall Parkway to Martin Luther King Jr. Parkway and crosses the existing rail line twice, is scheduled for construction in 2028. U-5734 (South Front Street) improvements includes the widening of South Front Street from the existing Cape Fear Memorial Bridge to Burnett Boulevard, and is scheduled for construction in 2031. The No-Build Scenario also includes the Cape Fear Memorial Bridge Replacement project which is not fiscally constrained in the NCDOT 2020-2029

STIP but is reasonably foreseeable. The No-Build scenario can be analyzed through the more rigorous Step Two criteria as a whole.

2.2.3 UPGRADE EXISTING CORRIDOR

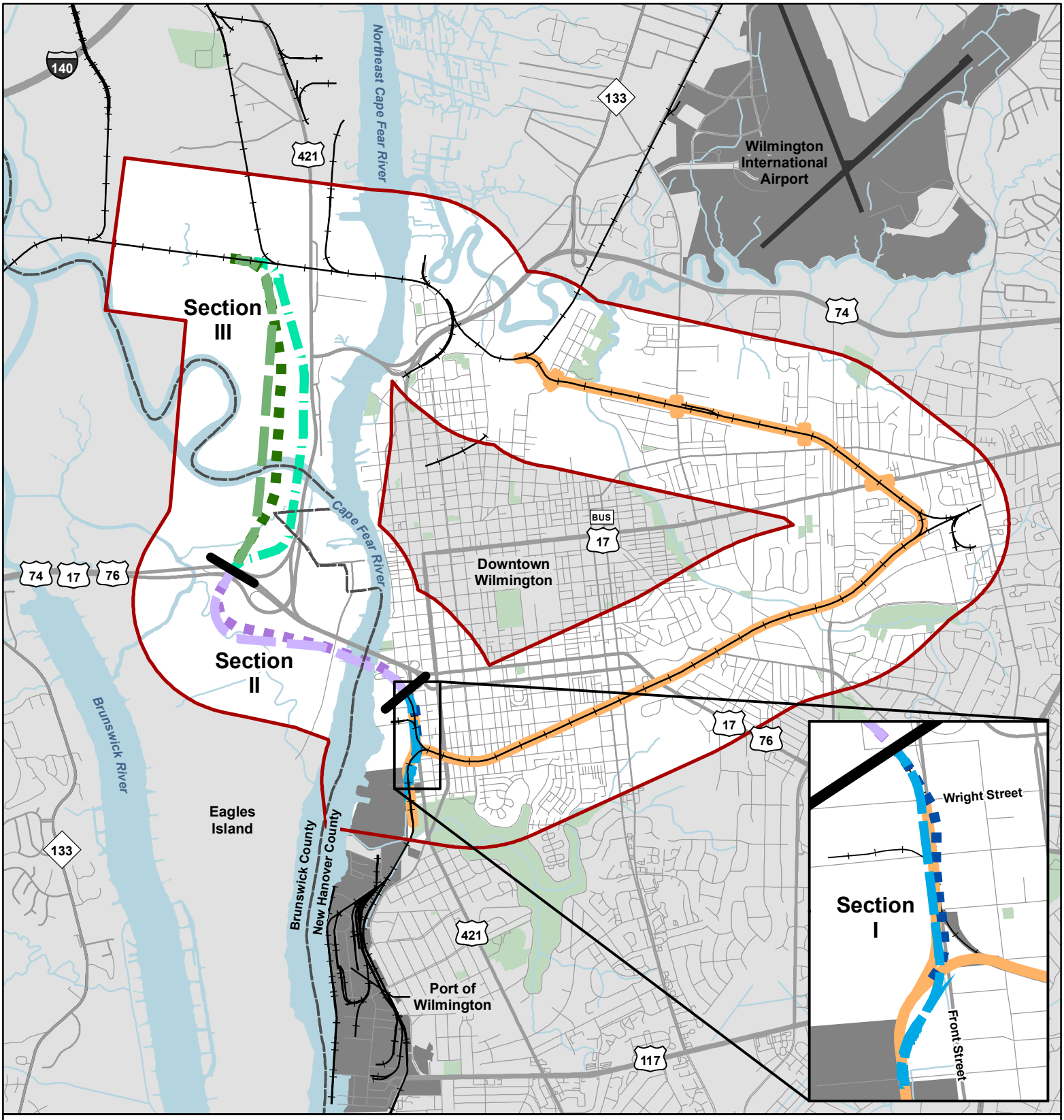
The Upgrade Existing Corridor is being considered during the Secondary Screening as an additional means for comparison. This corridor would follow the same alignment as the No-Build scenario from Davis Yard to the Port of Wilmington (Figure 6), but would include upgraded features to the extent practicable to meet the stated Purpose and Need. Upgraded features would include the conversion of at-grade crossings to grade-separated crossings in order to address automobile traffic congestion and remove/reduce safety conflicts. The Upgrade Existing Corridor would make use of the existing alignment without requiring a new location alignment to accommodate the railroad track.

The Upgrade Existing Corridor would include two methods for achieving feasible grade separations: 1) constructing the railroad track over the roadway and 2) elevating the roadway over the track. The corridor would begin at the Port of Wilmington on an embankment with around 2,500 feet of approach fill and continue elevated until Mercer Avenue. No crossings could be accommodated at the approach; therefore, an additional section of track would be constructed to the west of Front Street to serve the existing industries along Front Street. Elevating the rail would require construction of a parallel elevated track to maintain traffic on the existing or detour line, adding to direct physical resource impacts, visual impacts, and cost. Elevating the rail would eliminate the following at-grade crossings: South 4th Street, South 5th Street, South 7th Street, South 8th Street, South 10th Street, South 12th Street, South 13th Street, Marstellar Street, South 16th Street, South 17th Street, Oleander Drive, and Wrightsville Avenue. As a part of NCDOT STIP Project P-5740 Hooper Street, South 6th Street, and South 9th Street are proposed to be closed.

East of Mercer Avenue, the existing track would need to remain at-grade since the Independence Boulevard Extension project, STIP U-4434, proposes a new roadway that would be elevated above the existing tracks at two locations. Due to the vicinity of STIP U-4434 to the Project, the following at-grade crossings would be closed: Colonial Drive, Forest Hills Drive, Mercer Avenue, Covil Avenue, Princess Place Drive, and Henry Street. The at-grade crossing at Clay Street is proposed to be closed as a part of STIP P-5740. The Upgrade Existing Corridor would also include four additional grade separations at Market Street, North 30th Street, North 23rd Street, and King Street. At these crossings, the roadway is proposed to be elevated over the track. The physical impacts of each grade separation include right of way acquisition along the roadway and access modifications that would extend for approximately 500 to 700 feet each side of the railroad crossing. Constructability of the bridge and approaches would be needed for some of the grade

separations in order to maintain traffic on the existing roadway. This would require on-site detours and retained fill, adding to the overall impact and cost of this corridor.

In summary the concept of upgrading the Beltline includes an elevated track from the southern point of the initial Port of Wilmington siding to the proposed Independence Blvd. grade separation, a total distance of approximately 3 miles. Market Street, North 30th Street, North 23rd Street and King Street would be grade separating by taking roadway over the existing track. In addition, five at-grade crossing would be closed.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- Study Area
- County Boundary
- Park
- Railroad
- Upgrade Existing
- Section I Option a
- Section I Option b
- Section II Option a
- Section II Option b
- Section III Option a
- Section III Option b
- Section III Option c

Figure 6
Corridor Segments

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

3 EXISTING CONDITIONS AND PRELIMINARY IMPACTS

This screening report is part of the pre-NEPA phase; therefore, the existing conditions and environmental impacts are based on a screening of readily available GIS data. A more detailed impacts analysis will be performed using more refined designs and field verified data once corridors have been identified to be studied in the Alternatives Analysis phase of the Project.

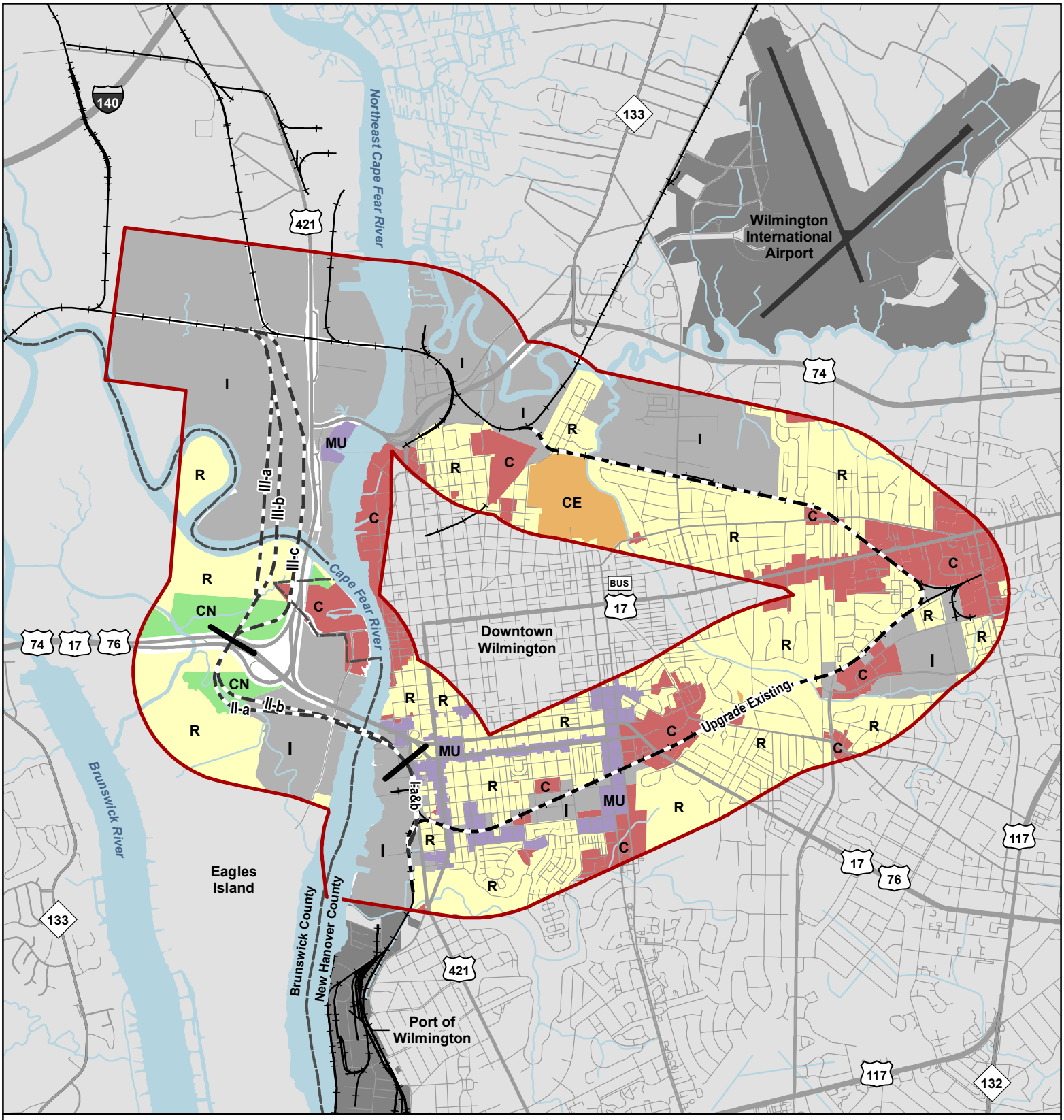
Sections 3.1 through 3.6 describe the built and natural environmental resources that have been identified within the Project Study Area and discuss existing conditions as well as potential impacts. Readily available information in the form of mapping, data, and plans from secondary sources (federal, state, local) provide the basis for this analysis. To identify potential impacts, resource data was overlain with corridor mapping to calculate impacts using GIS. For each resource in this section, potential impacts associated with each Option are presented based on a 200-foot buffer centered on each Option. Section 3.7 summarizes the findings of potential impacts and results and next steps are described in sections 3.8 and 3.9 to conclude this report.

3.1 LAND USE

3.1.1 DESCRIPTION OF EXISTING ENVIRONMENT

Land use is defined as the way people use and develop land, including uses such as agricultural, residential, and industrial. Many municipalities develop zoning ordinance and planning documents to control the direction of development and to keep similar land uses together. Land use in the incorporated areas of New Hanover County is governed by the City of Wilmington Planning, Development and Transportation Department and in the incorporated areas of Brunswick County, by the Town of Leland. Land use in the unincorporated areas of New Hanover and Brunswick counties is governed by the New Hanover County Planning and Land Use Department and Brunswick County Planning Department.

In Brunswick County, the Project passes through areas zoned as industrial, conservation, commercial, and residential. In New Hanover County, zoning along the existing line is primarily residential with areas of industrial and commercial land use. Mixed use land uses are more prevalent closer to downtown Wilmington (Figure 7).



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- Study Area
- County Boundary
- Railroad
- Screening Study Options
- Residential Zoning (R)
- Mixed Use Zoning (MU)
- Commercial Zoning (C)
- Industrial Zoning (I)
- Conservation Zoning (CN)
- Cemetery Zoning (CE)

Figure 7
Generalized Zoning

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

Source: City of Wilmington Zoning, New Hanover County Zoning, and Brunswick County Zoning Data

3.1.2 POTENTIAL ENVIRONMENTAL IMPACTS

Zoning was used to determine that the potential consistency of the rail improvement within the study area Project corridor would not likely result in substantial changes to land use in New Hanover County. In Brunswick County, land zoned as conservation areas may be impacted. Table 2 provides the acreage of each zoning type located within each Option.

Table 2: Generalized Zoning Area Impacts (acres)

Section / Subcorridor		Residential	Mixed Use	Commercial	Industrial	Conservation	Cemetery District
No Build		0	0	0	0	0	0
Upgrade Existing		57.5	8.0	34.3	77.8	0.0	2.3
Section I	Option a	0.4	0.2	0.0	13.1	0.0	0.0
	Option b	0.3	1.1	0.0	8.2	0.0	0.0
Section II	Option a	3.2	0.2	0.0	22.1	8.1	0.0
	Option b	3.1	0.3	0.0	22.2	6.5	0.0
Section III	Option a	8.6	0.0	0.0	30.3	5.7	0.0
	Option b	9.8	0.0	0.1	29.8	5.8	0.0
	Option c	3.8	0.0	1.6	29.5	8.4	0.0

Source: New Hanover County, City of Wilmington, and Brunswick County (2020)

3.2 HUMAN ENVIRONMENT AND SOCIOECONOMICS

3.2.1 DESCRIPTION OF EXISTING ENVIRONMENT

POPULATION CHARACTERISTICS

Community-based demographic data were gathered from the 2010 US Census and the 2014-2018 ACS 5-year estimates (US Census Bureau, 2020). Census data were gathered for Census Block Groups that are located within the Project Study Area. The Block Groups are referred to as the demographic study area (DSA) (Figure 8). Block groups within the DSA include the following:

- Census Tract 101, Block Group 1
- Census Tract 101, Block Group 2
- Census Tract 101, Block Group 3
- Census Tract 102, Block Group 1
- Census Tract 102, Block Group 2
- Census Tract 102, Block Group 3
- Census Tract 103, Block Group 1
- Census Tract 103, Block Group 2
- Census Tract 103, Block Group 3

- Census Tract 103, Block Group 4
- Census Tract 104, Block Group 1
- Census Tract 104, Block Group 2
- Census Tract 104, Block Group 3
- Census Tract 105.01, Block Group 1
- Census Tract 105.02, Block Group 1
- Census Tract 106, Block Group 1
- Census Tract 109, Block Group 1
- Census Tract 109, Block Group 2
- Census Tract 110, Block Group 1
- Census Tract 110, Block Group 2
- Census Tract 111, Block Group 1
- Census Tract 111, Block Group 2
- Census Tract 112, Block Group 1
- Census Tract 112, Block Group 2
- Census Tract 112, Block Group 3
- Census Tract 113, Block Group 1
- Census Tract 113, Block Group 2
- Census Tract 114, Block Group 1
- Census Tract 114, Block Group 2

Block Groups that contain small portions of the Project Study Area or areas that are not occupied with residential areas were excluded from the DSA and include the following:

- Census Tract 105.02, Block Group 2
- Census Tract 105.02, Block Group 3
- Census Tract 107, Block Group, 1
- Census Tract 115, Block Group 2
- Census Tract 115, Block Group 4
- Census Tract 116.05, Block Group 2
- Census Tract 201.04, Block Group 2
- Census Tract 202.02, Block Group

According to the US Census Bureau, between 2000 and 2010 the population of Brunswick and New Hanover counties experienced population growth of 46.9 and 26.4 percent, respectively (US Census Bureau, 2016). Based on projections made by the North Carolina Office of State Budget and Management (NC OSBM), the upward trend of growth is expected to continue through 2039

for both counties (Table 3). The projected population growth in the two counties, coupled with physical indicators of recent growth observed within the Project Study Area, indicate notable growth and development in the vicinity of the Project.

Table 3: Population Trends and Forecasts

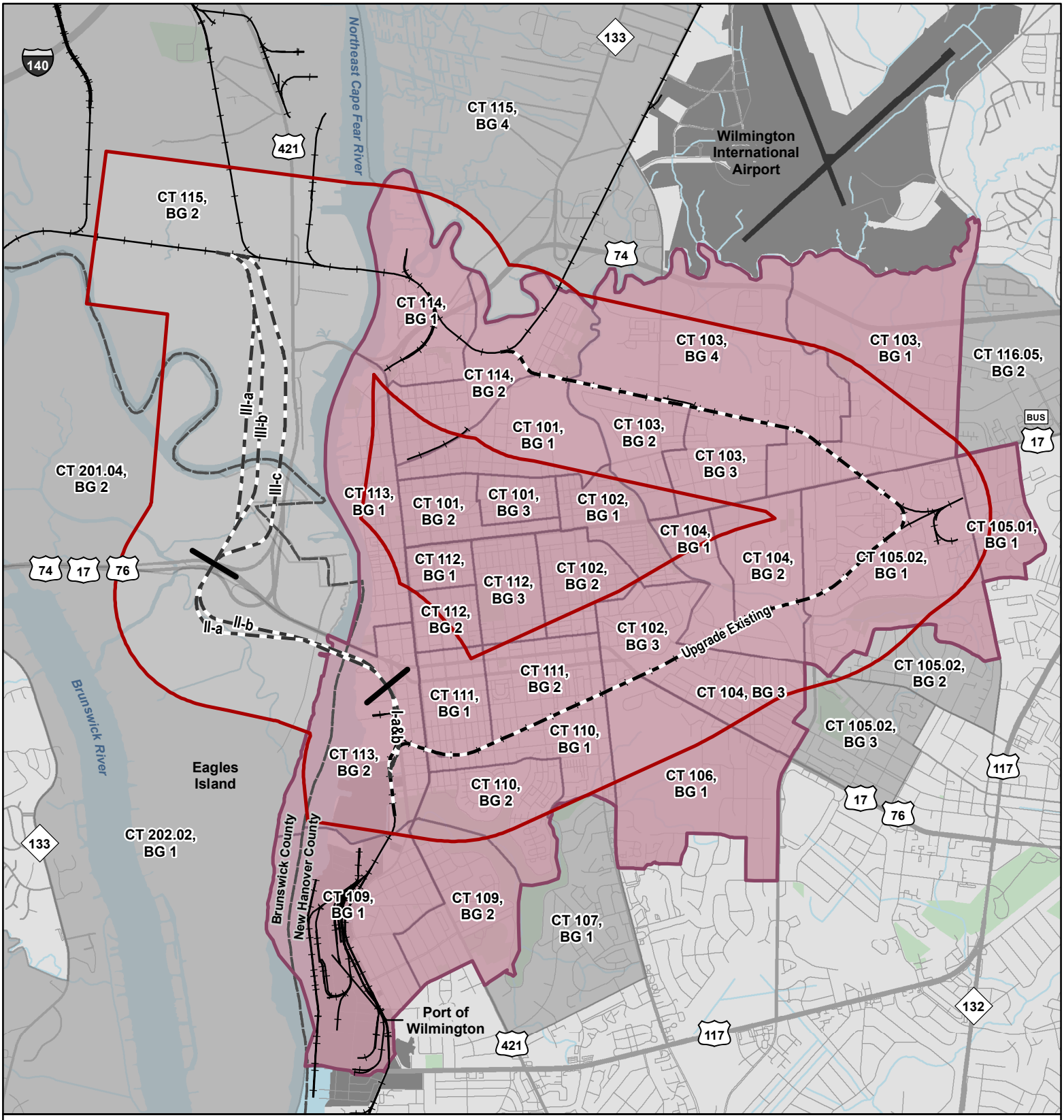
Area	Population				Growth (2000 to 2039)		
	2000	2010	2020	2039	Difference (2000 to 2039)	Percent Change	Annualized Growth
Brunswick County	73,143	107,431	146,135	210,202	137,059	187.4%	4.8%
New Hanover County	160,307	202,667	239,272	309,830	149,523	93.3%	2.4%
North Carolina	8,049,313	9,535,483	10,630,691	12,919,921	4,870,608	60.5%	1.6%

Source: NC OSBM (2019).

In addition to population growth, the transportation network within the City of Wilmington is also experiencing the influx of commuters living outside of New Hanover County. According to 2014-2018 ACS data, approximately 35,000 citizens reside within the DSA and 118,000 within the City of Wilmington. Approximately 21,000 workers are commuting to New Hanover County from Brunswick and Pender counties and approximately 5,000 workers are commuting outside of New Hanover County to Brunswick and Pender counties.

COMMUNITY RESOURCES

Several community resources are found throughout the Project Study Area in New Hanover County. No documented resources are located in Brunswick County. Documented community resources within the Project Study Area include parks (25), boat access areas (1), beach access sites (2), historic resources listed on the NRHP (10), places of worship (62), cemeteries (14), emergency medical services (EMS) (1), fire stations (1), police stations (4), schools (11), colleges (1), community centers (2), and childcare facilities (12). These resources are shown on Figure 9.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- Study Area
- County Boundary
- Park
- Demographic Study Area
- DSA Block Groups
- Excluded Block Groups
- Railroad
- Screening Study Options

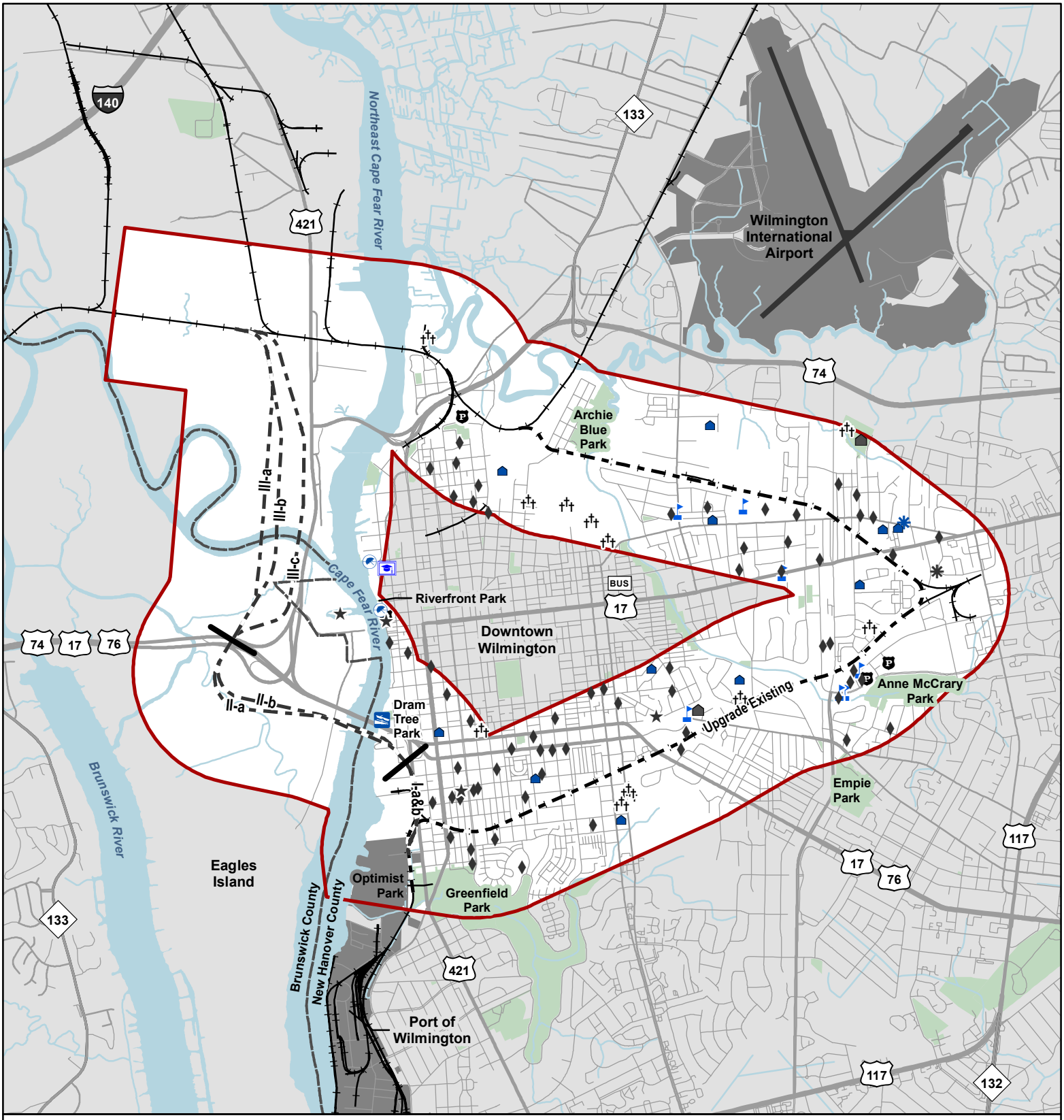
Figure 8
Demographic Study Area

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

Source: U.S. Census Bureau - 2018 Census Block Groups



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: NC OneMap Data & Google Maps

Legend

- Study Area
- County Boundary
- Park
- Railroad
- Screening Study Options
- College/University
- Community Center
- NR Historic Resource
- Boat Access
- Beach Access Site
- Place of Worship
- Fire Stations
- Cemetery
- Law Enforcement Location
- School
- EMS
- Childcare Facility

Figure 9
Community Resources

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs that, "each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations." Disproportionately high and adverse effects on minority and low-income populations are defined as adverse effects that are:

- Predominately borne by a minority population and/or low-income population or
- Will be suffered by a minority population and/or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that will be suffered by the non-minority population and/or non-low-income population.

Based on demographic data available from the 2014-2018 ACS and guidance from the Council on Environmental Quality (CEQ), thresholds were used to determine the presence of Environmental Justice communities at the Block Group level. The thresholds are determined based on the percentage of minority and low-income, or below-poverty, populations living in the county. The standard of practice used for minority populations is 10 percentage points above the county average, or 50 percent, whichever is less. For this Project, the minority threshold in New Hanover County was determined to be 32.9 percent. For low-income populations the standard of practice is 5 percentage points above the county average, or 25 percent, whichever is less. For this project, the low-income threshold in New Hanover County was determined to be 22.3 percent.

There are populations within the Project Study Area that meet the threshold of low-income and/or minority populations and are therefore considered Environmental Justice populations. According to 2014-2018 ACS data, block groups where the threshold is exceeded for both minority and low-income are located along the existing and proposed railroad corridors. The Block Groups with minority and/or low-income populations exceeding county thresholds are shown on Figure 10 and summarized in Table 4.

Table 4: Block Groups with Minority and/or Low-Income Populations Exceeding County Thresholds

Block Group	Minority Population (Threshold 39%)	Below Poverty Level (Threshold 22.3%)
CT 101, BG 1	80.5%	54.5%
CT 101, BG 3	64.0%	38.8%
CT 102, BG 1	19.7%	22.8%
CT 102, BG 2	66.0%	16.7%
CT 102, BG 3	58.5%	38.7%
CT 103, BG 1	57.7%	33.8%
CT 103, BG 3	15.6%	37.4%
CT 103, BG 4	91.5%	51.1%
CT 105.01, BG 1	43.3%	57.9%
CT 105.02, BG 1	35.5%	38.9%
CT 109, BG 1	33.6%	8.9%
CT 110, BG 1	81.3%	81.3%
CT 110, BG 2	30.2%	28.0%
CT 111, BG 1	74.8%	11.9%
CT 111, BG 2	94.0%	67.0%
CT 112, BG 2	48.8%	42.7%
CT 112, BG 3	76.0%	43.4%
CT 113, BG 2	42.1%	40.6%
CT 114, BG 1	95.7%	46.7%
CT 114, BG 2	70.9%	29.9%

Source: US Census Bureau, 2020

CT = Census Tract; BG = Block Group

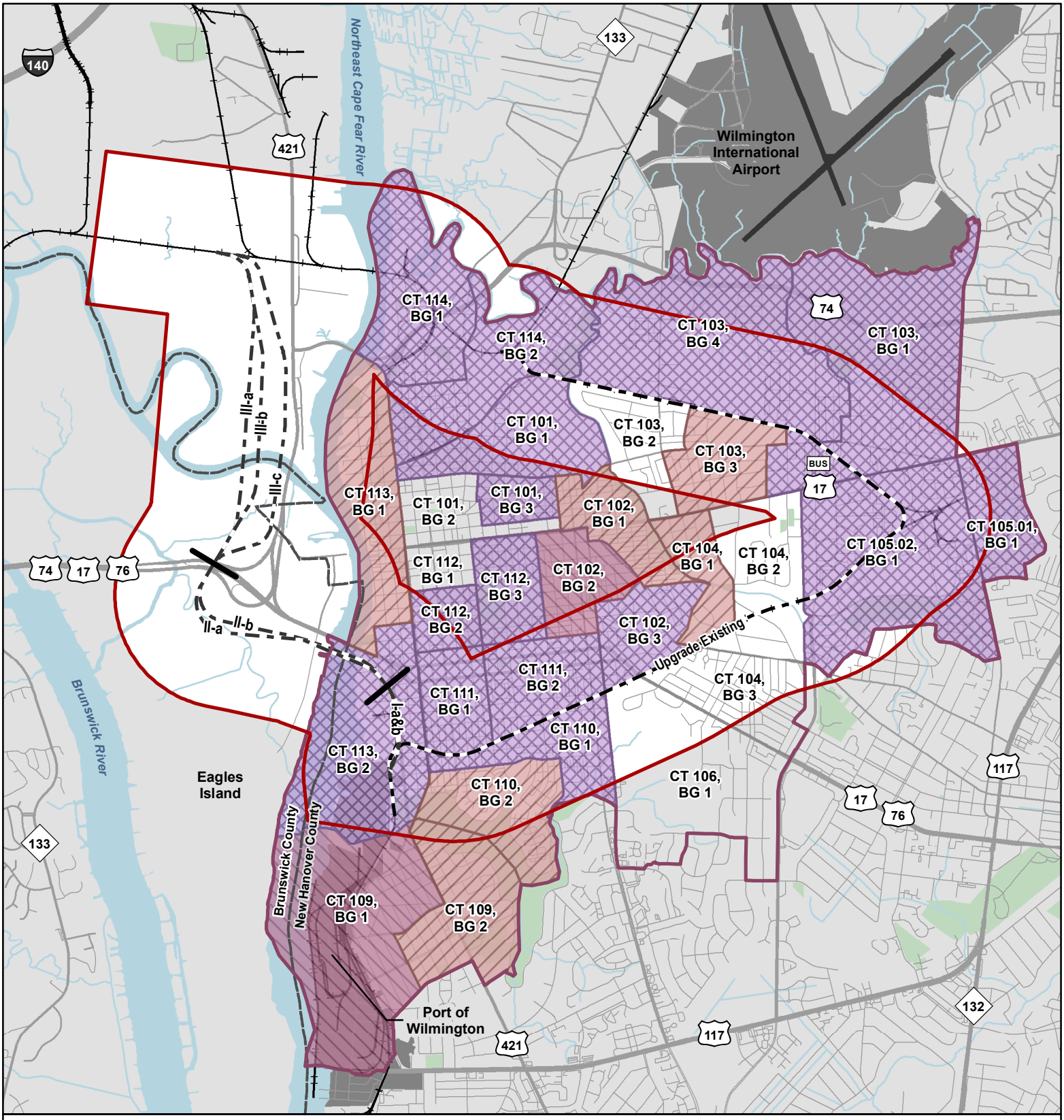
3.2.2 POTENTIAL ENVIRONMENTAL IMPACTS

The Upgrade Existing Corridor is anticipated to impact schools (1), places of worship (6), cemeteries (3), police stations (1), and historic resources listed on the NRHP (3) (Impacts to NRHP resources and districts is discussed further in Section 3.4) by potentially requiring relocation or acquisition of right of way. Elevating the rail in the southern portion of the Project Study Area for the Upgrade Existing Corridor would require construction of a parallel elevated track to maintain traffic on the existing or detour line. The structures and retained fill could be perceived as a wall that changes access and impacts community cohesion in an area with populations that meet the threshold for Environmental Justice populations. The potential risk for and impacts of a train derailment on elevated fill or structure is much greater than the comparative at-grade condition. Additionally, the four grade-separations required at Market Street, North 30th Street, North 23rd Street, and King Street would require substantial right of way acquisition along the roadway and access modifications, all of which are in areas including populations that meet or exceed the threshold for Environmental Justice.

It is anticipated the corridors proposed to reroute the rail traffic could result in an overall net benefit to the community, as it will remove rail traffic from going through the City and enhance community connectivity and mobility. Additionally, the new location corridors would remove the transport of potentially hazardous materials through the City and residential communities, thus improving safety.

At this screening stage in the planning process, it is anticipated the Upgrade Existing Corridor could result in negative impacts to Environmental Justice populations due to the potential for relocation or acquisition of right of way, impacts to community cohesion, and changes in access.

Additional design refinements of the corridors moved forward as a part of the Alternatives Analysis may reduce impacts and an assessment of the positive and negative impacts to the community and any special populations that may meet the threshold of Environmental Justice, will be completed pursuant to the NEPA process. This assessment will include recommendations to avoid and/or minimize impacts to these resources, as appropriate, and assess potential disproportionate and adverse effects.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- Study
- Demographic Study
- County Boundary
- Park
- Railroad
- Screening Study Options
- Block Group Where Minority Population Percentage Exceeds Threshold
- Block Group Where Poverty Rate Exceeds Threshold
- Block Group Where Threshold is Exceeded for Both Minority and Poverty

Figure 10
Minority and Low-Income Populations Exceeding County Threshold

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

Source: U.S. Census Bureau - 2018 Census Block Groups & American Community Survey 5-year Estimates (2014-2018)

3.3 HAZARDOUS MATERIALS SITES

3.3.1 DESCRIPTION OF AFFECTED ENVIRONMENT

Hazardous materials sites are regulated by the Resource Conservation Recovery Act (RCRA) (42 U.S.C. § 6901 et seq) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601 et seq.). Hazardous materials are generally defined as material or a combination of materials that present a potential hazard to human health or the environment.

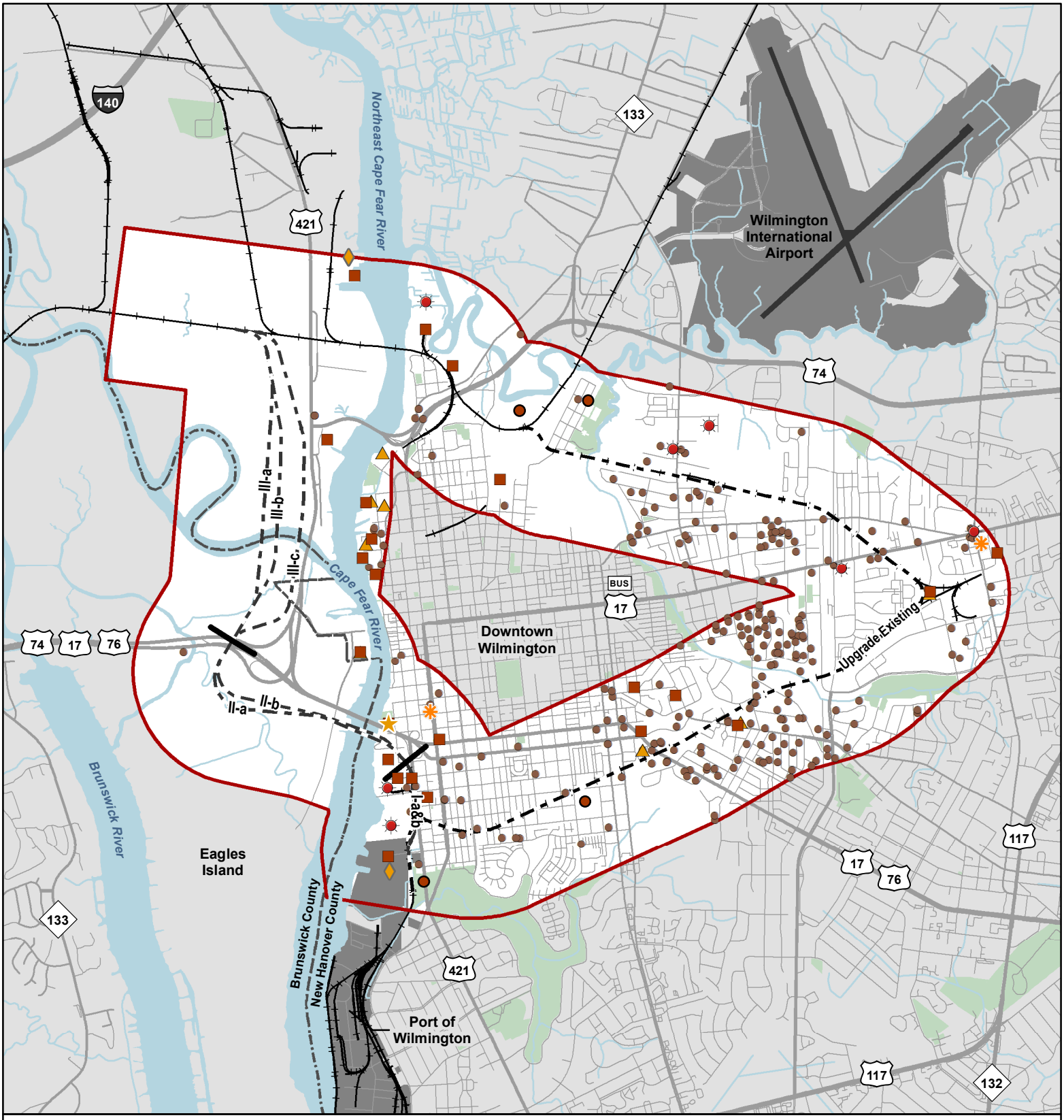
Based on a review of the North Carolina Department of Environmental Quality (NCDEQ) Waste Management GIS database, several potentially hazardous materials sites are located within the Project Study Area (Figure 11). These sites include underground storage tank (UST) reported incident sites, pre-regulatory landfills, manufactured gas plants, dry-cleaning sites, federal remediation branch (FRB) sites, hazardous waste sites, inactive hazardous sites, and brownfield sites.

3.3.2 POTENTIAL ENVIRONMENTAL IMPACTS

Table 5 summarizes the number of hazardous materials sites located within each Option. A Phase I Site Assessment will be conducted during the Alternatives Analysis phase of the Project following further design refinements.

Table 5: Hazardous Materials Sites (Number)

Section / Option		Hazardous Waste Sites	Brownfield Locations	Inactive Hazardous Sites	Pre-Regulatory Landfills	UST Incidents	FRB Sites
No Build		0	0	0	0	0	0
Upgrade Existing		1	1	3	2	29	1
Section I	Option a	1	0	2	0	3	1
	Option b	1	0	1	0	3	0
Section II	Option a	0	0	1	0	0	0
	Option b	0	0	1	0	0	0
Section III	Option a	0	0	0	0	0	0
	Option b	0	0	0	0	0	0
	Option c	0	0	0	0	0	0



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: NCDEQ Data

Legend

- Study Area
- County Boundary
- Park
- Railroad
- Screening Study Options
- Pre-Regulatory Landfill Site
- Manufactured Gas Plant
- Drycleaning Site
- Federal Remediation Branch Site
- Inactive Hazardous Site
- Brownfield Site
- Hazardous Waste Site
- Underground Storage Tank Incident

Figure 11
Hazardous Materials Sites

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

3.4 CULTURAL RESOURCES

The Project is subject to compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR 800), which requires federal agencies to take into account the effects of their undertaking on properties listed on or eligible for listing on the NRHP (including archaeological sites) and afford the Advisory Council on Historic Preservation an opportunity to comment on the effects of the undertaking.

Section 110(f) of the NHPA requires that federal agencies considering undertakings that may directly and adversely affect National Historic Landmarks (NHLs), "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark, and shall afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking" [Section 110(a)(2)(B) and Section 110(f)].

3.4.1 DESCRIPTION OF EXISTING ENVIRONMENT

The project is subject to compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended, in which it is stated:

> The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking. (16 U.S.C. 470f)
>
> Section 110(f) of the NHPA requires that Federal agencies exercise a higher standard of care when considering undertakings that may directly and adversely affect National Historic Landmarks (NHLs). The law requires that agencies, "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark." In those cases when an agency's undertaking directly and adversely affects an NHL, or when Federal permits, licenses, grants, and other programs and projects under its jurisdiction or carried out by a state or local government pursuant to a Federal delegation or approval so affect an NHL, the agency should

consider all prudent and feasible alternatives to avoid an "adverse effect" on the NHL. [Sec. 110(a)(2)(B) and Sec. 110(f)].

HISTORIC ARCHITECTURAL RESOURCES

Based on a review of the North Carolina State Historic Preservation Office (NC SHPO) GIS Web Service, several National Register and Determined Eligible resources are located within the Project Study Area, as well as one National Historic Landmark (Figure 12). Table 6 identifies these resources and their status.

Table 6: Historic Architectural Resources

Resource Name	Status
Wilmington Historic District	National Register
Carolina Heights Historic District	National Register
Carolina Place Historic District	National Register
Brookwood Historic District	National Register
Westbrook-Ardmore Historic District	National Register
Lake Forest Defense Housing	Determined Eligible
USS North Carolina Battleship Memorial State Historic Site	National Historic Landmark
Spray Steamer	Determined Eligible
Federal Building and Courthouse	National Register
James Walker Nursing School Quarters	National Register
Delgado School	National Register
William Hooper School	National Register

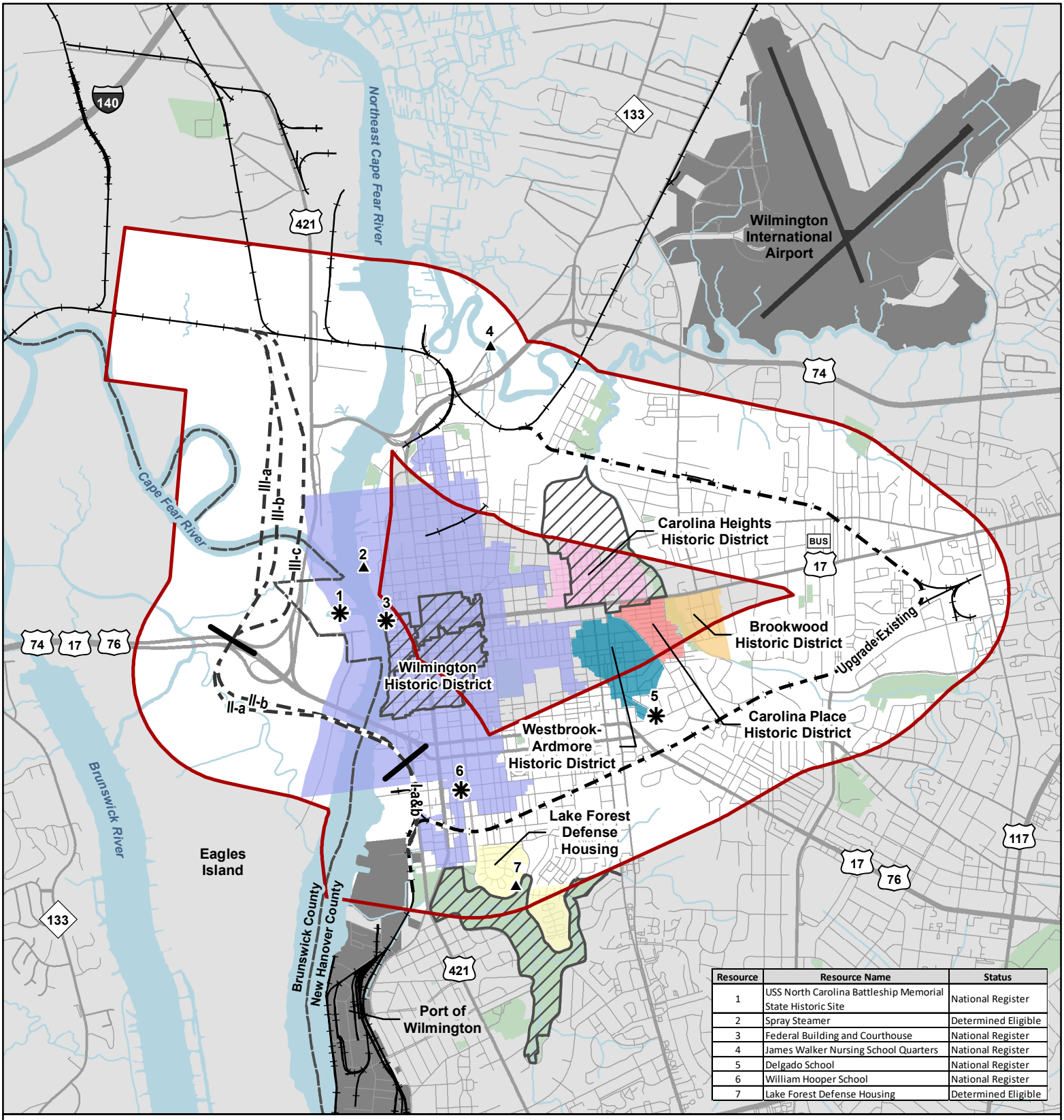
North Carolina State Historic Preservation Office (SHPO) GIS Web Service

ARCHAEOLOGICAL RESOURCES

Known archaeological sites were obtained from the North Carolina Office of State Archaeology on August 20, 2020. Data show 55 previously recorded archaeological sites were found to be located within the Project Study Area. None were considered to be eligible for the NRHP (NC OSA, 2020).

3.4.2 POTENTIAL ENVIRONMENTAL IMPACTS

Adverse effects are defined in 36 C.F.R 800 (Section 106) as occurring when a proposed action may alter, directly or indirectly, any of the characteristics of a historic property that qualify the historic property for inclusion in the NRHP in a manner that would diminish its integrity. Adverse effects can include destruction or alteration of the property; isolation of the property from its surrounding environment; and introduction of visual, audible, or atmospheric elements that are out of character with the property (36 CFR 800.5).



Resource	Resource Name	Status
1	USS North Carolina Battleship Memorial State Historic Site	National Register
2	Spray Steamer	Determined Eligible
3	Federal Building and Courthouse	National Register
4	James Walker Nursing School Quarters	National Register
5	Delgado School	National Register
6	William Hooper School	National Register
7	Lake Forest Defense Housing	Determined Eligible

CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: NCHPO Data

Legend

- Study Area
- County Boundary
- Park
- Railroad
- Screening Study Options
- National Register (NR) Resource
- NR-Determined Eligible (DOE) Resource
- Local District
- Lake Forest Defense Housing (DOE)
- Brookwood Historic District (NR)
- Carolina Heights Historic District (NR)
- Carolina Place Historic District (NR)
- Westbrook- Ardmore Historic District (NR)
- Wilmington Historic District (NR)

Figure 12
Historic Architectural Resources

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

All Options (a and b) in Sections I and II, Option c in Section III, and the Upgrade Existing corridor would have impacts to the Wilmington Historic District. The City will coordinate with the NC SHPO to determine potential effects to each resource.

Of the 55 previously recorded archaeological sites found within the Project Study Area, two sites lie within the areas of Upgrade Existing (NH105 and NH595), one site in Section I (0040-44CFR), and two sites within Section III (NH595 and NH593). No sites were found to be located within Section II. None of the resources are eligible for the NRHP.

3.5 NATURAL RESOURCES

Section 404 of the Clean Water Act requires regulation of discharges of dredged or fill materials into "Waters of the United States." USEPA is the principal administrative agency of the CWA; however, USACE is responsible for implementation, permitting, and enforcement of the CWA. Surface waters (lakes, rivers, and streams) and wetlands are subject to jurisdictional consideration under Section 404 of the Clean Water Act. Section 401 of the Clean Water Act grants authority to individual states for regulation of discharges into "Waters of the United States."

A Natural Resources Existing Conditions Memorandum (WSP 2020) was completed for the Project using GIS data and other online resources to document existing environmental conditions in the Project Study Area. Fieldwork will be conducted during the Alternatives Analysis phase of the Project following further design refinements.

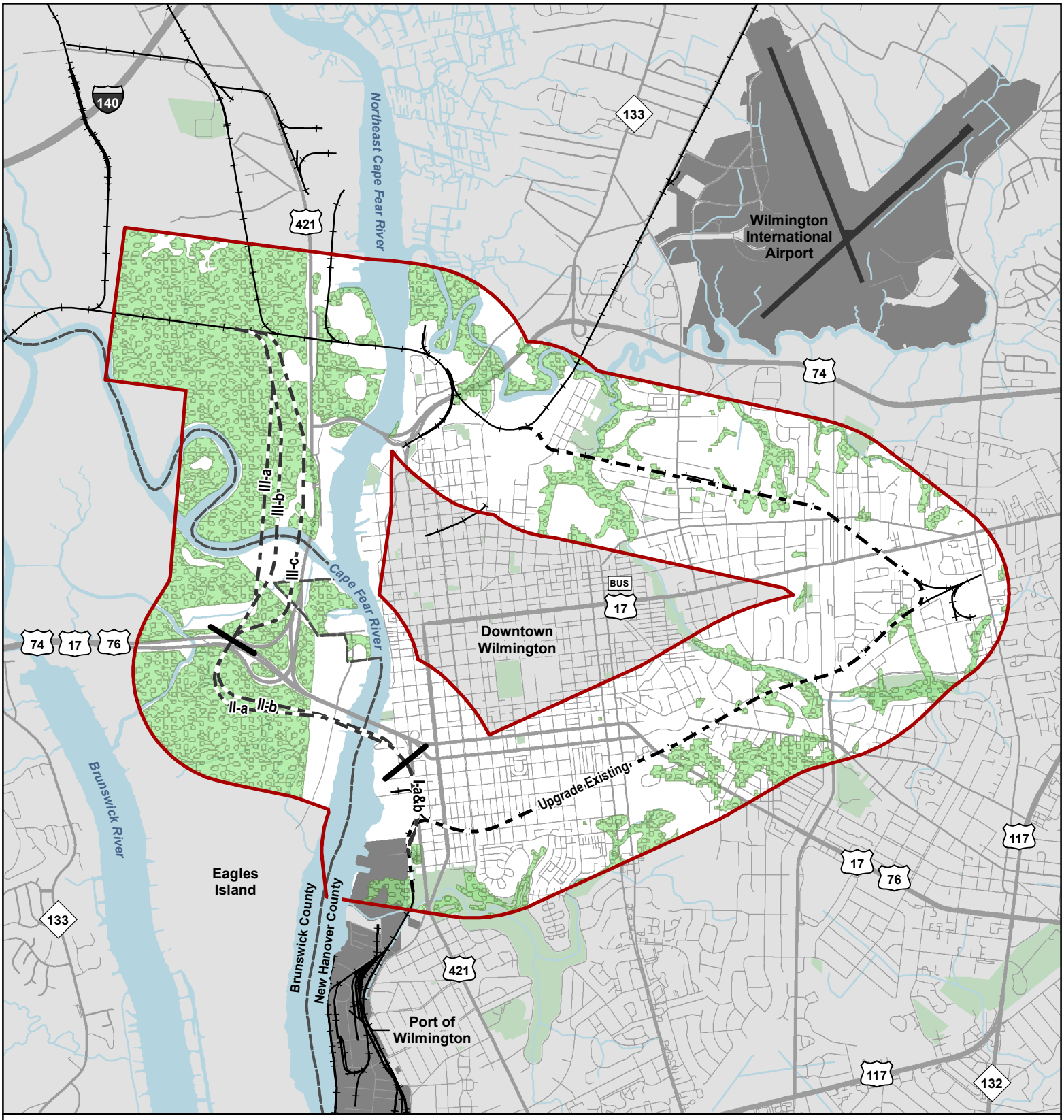
3.5.1 DESCRIPTION OF EXISTING ENVIRONMENT

WATER RESOURCES

Water resources in the Project Study Area are part of the Northeast Cape Fear River basin (US Geological Survey [USGS] Hydrologic Unit 03030007) and the Lower Cape Fear River basin (USGS Hydrologic Unit 03030005).

JURISDICTIONAL FEATURES

The NCDEQ Division of Coastal Management (DCM) identifies several wetland types present within the Project Study Area as described in Table 7. DCM wetlands are shown on Figure 13.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: NCDEQ Wetland Data

Legend

- Study Area
- County Boundary
- Park
- NCDEQ Wetlands
- Railroad
- Screening Study Options

Figure 13
Jurisdictional Features Wetlands

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

Table 7: DCM Wetlands occurring in the Project Study Area

Wetland Type	Area in Acres
Bottomland Hardwood	32.6
Cleared Bottomland Hardwood	4.7
Cleared Depressional Swamp Forest	2.3
Cleared Estuarine Shrub/Scrub	0.8
Cleared Headwater Swamp	9.7
Cleared Pine Flat	0.6
Cutover Bottomland Hardwood	25.3
Cutover Depressional Swamp Forest	8.5
Cutover Estuarine Shrub/Scrub	1.7
Cutover Headwater Swamp	20.2
Cutover Pine Flat	0.4
Depressional Swamp Forest	48.0
Drained Bottomland Hardwood	9.4
Drained Riverine Swamp Forest	93.6
Estuarine Shrub/Scrub	17.7
Freshwater Marsh	960.4
Headwater Swamp	9.2
Human Impacted	108.6
Managed Pineland	239.0
Pine Flat	2.2
Riverine Swamp Forest	771.5
Salt/Brackish Marsh	0.1
Total	**2,367**

The NCDEQ surface water classification data from 2016 included 10 named streams in the study area (Table 8). Additionally, the National Hydrography Dataset (NHD) shows flowlines which mostly consists of unnamed upper tributaries of the named streams.

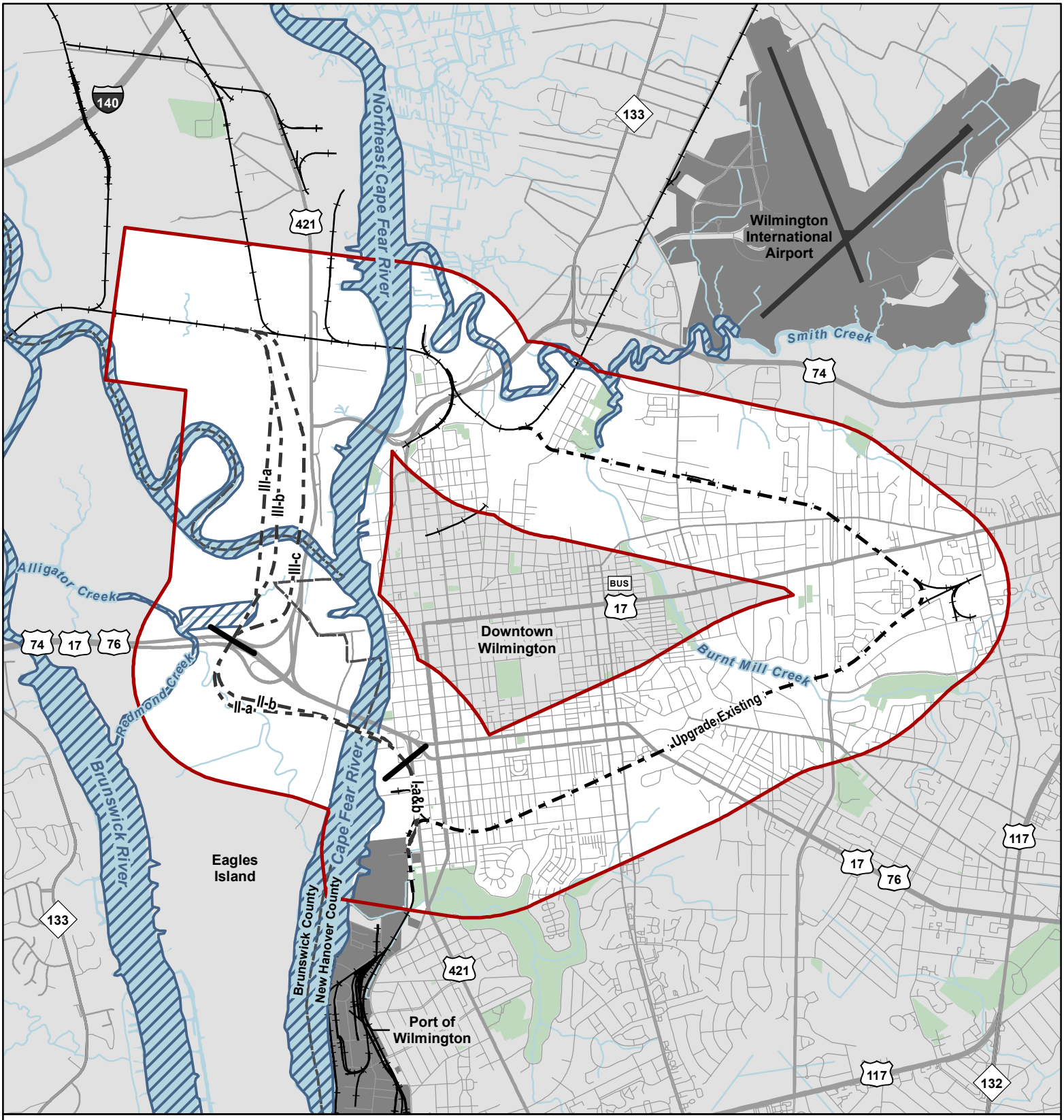
There are approximately 90,748 linear feet of NCDEQ mapped streams in the Project Study Area and approximately 118,773 linear feet of NHD flowlines in the Project Study Area (Figure 14). No designated Outstanding Resource Water (ORW), High Quality Waters (HQW), or water supply watersheds (WS-I or WS-II are located in or within 1.0 mile downstream of the Project Study Area. The North Carolina 2018 Final 303(d) list of impaired waters identifies a portion of the Cape Fear River in the Project Study Area as an impaired water due to dissolved oxygen and pH and Burton Mill Creek for benthos and chlorophyll.

Table 8: Streams in the Project Study Area

8-Digit Hydrologic Unit	Stream Name	DWR Index Number	Best Usage Classification1
03030007 Northeast Cape Fear River	Smith Creek	18-74-63	C;Sw
	Burnt Mill Creek	18-74-63-2	C;Sw
	Mineral Springs Branch	18-74-63-2-1	C;Sw
	Northeast Cape Fear River	18-74-(61)	SC;Sw
03030005 Lower Cape Fear River	Greenfield Creek	18-76	SC;Sw
	Jumping Run Branch	18-76-1-3	C;Sw
	Squash Branch	18-76-1-4	C;Sw
	Cape Fear River	18-(71)	SC
	Alligator Creek	18-75	SC;Sw
	Redmond Creek	18-77-2	SC;Sw

[1] C: Aquatic Life, Secondary Recreation, Fresh Water; Sw: Swamp Waters; SC: Aquatic Life, Secondary Recreation, Salt Water

The North Carolina 2018 Final 303(d) list of impaired waters identifies Greenfield Lake in the Project Study Area as an impaired water due to chlorophyll.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: NCDEQ & USGS Data

Legend

- Study Area
- County Boundary
- Park
- NCDEQ Major Hydrology
- NHD Water Area
- NHD Flowline
- Railroad
- Screening Study Options

Figure 14
Jurisdictional Features Streams

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

PROTECTED SPECIES

Federally listed endangered and threatened species are legally protected under the provisions of Section 7 of the Endangered Species Act (ESA) of 1973, as amended. As a result, any action that is likely to adversely affect a federally protected species is subject to review by the US Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS).

The most recent USFWS list of protected species for Brunswick and New Hanover counties dated July 17, 2020 and October 8, 2020 includes eight endangered species and seven threatened species (Table 9). The most recent list of protected species for North Carolina from National Oceanic and Atmospheric Administration (NOAA) Fisheries, also known as the National Marine Fisheries Service (NMFS), dated February 5, 2020, includes seven endangered species and two threatened species (Table 10).

Table 9: Threatened and Endangered Species listed by USFWS for Brunswick and New Hanover Counties

Common Name	Scientific Name	Federal Status[1]	County[2]	Potential to Occur in the Project Study Area under Normal Circumstances
American alligator	*Alligator mississippiensis*	T(S/A)	B, NH	Yes
Green sea turtle[3]	*Chelonia mydas*	T	B, NH	No
Hawksbill turtle[3]	*Eretmochelys imbricate*	E	B, NH	No
Kemp's ridley sea turtle[3]	*Lepidochelys kempii*	E	B, NH	No
Leatherback sea turtle[3]	*Dermochelys coriacea*	E	B, NH	No
Black rail	*Laterallus jamaicensis*	T	NH	Yes
Piping plover	*Charadrius melodus*	T	B, NH	No
Red knot	*Calidris canutus rufa*	T	B, NH	Yes
Red-cockaded woodpecker	*Picoides borealis*	E	B, NH	Yes
Waccamaw silverside[4]	*Menidia extensa*	T	B	No
West Indian manatee	*Trichechus manatus*	E	B, NH	Yes
Wood stork	*Mycteria americana*	T	B	Yes
Northern long-eared bat	*Myotis septentrionalis*	T	NH	Yes
Cooley's meadowrue	*Thalictrum cooleyi*	E	B, NH	Yes
Golden sedge	*Carex lutea*	E	NH	Yes
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E	B, NH	Yes
Seabeach amaranth	*Amaranthus pumilus*	T	B, NH	No

[1] E=endangered; T=threatened; T(S/A) =threatened due to similarity of appearance.

[2] B=Brunswick County; NH=New Hanover County

[3] For sea turtle species, USFWS only has jurisdiction on land and NMFS has jurisdiction while in the water.
[4] Range by basin.

Table 10: Threatened and Endangered Species listed by NMFS for Brunswick and New Hanover Counties

Common Name	Scientific Name	Federal Status[1]	Potential to Occur in the Project Study Area under Normal Circumstances
Shortnose sturgeon	*Acipenser brevirostrum*	E	Yes
Atlantic sturgeon	*Acipenser oxyrhynchus*	E	Yes
Oceanic whitetip shark	*Carcharhinus longimanus*	T	No
Giant manta ray	*Manta birostris*	T	No
Fin whale	*Balaenoptera physalus*	E	No
Sperm whale	*Physeter macrocephalus*	E	No
Sei whale	*Balaenoptera borealis*	E	No
Blue whale	*Balaenoptera musculus*	E	No
North Atlantic right whale	*Eubalaena glacialis*	E	No

[1] E=endangered; T=threatened

A report generated using the NHP Natural Heritage Data Explorer on August 11, 2020 showed no records of species currently protected under the ESA in the Project Study Area. The following ESA-protected species have been documented within a one-mile radius of the Project Study Area: shortnose sturgeon, Atlantic sturgeon, West Indian manatee, and American alligator.

Critical habitat for a species is an area considered to be essential to that species' conservation. Designated critical habitat for the Carolina Distinct Population Segment of Atlantic sturgeon is present in the Project Study Area. The Carolina Unit 4 critical habitat for Atlantic sturgeon includes portions of the Cape Fear River and Northeast Cape Fear River. The total stream length in the Project Study Area considered critical habitat for Atlantic sturgeon is approximately 26,881 linear feet. No other protected species have designated critical habitat in the Project Study Area.

ESSENTIAL FISH HABITAT

Essential fish habitat (EFH) is defined as "those waters and substrate necessary for species to spawn, breed, feed, and/or grow to maturity." EFH is present within the Project Study Area for the following species: coastal migratory pelagic which is a group including king mackerel, Spanish mackerel, and cobia; snapper grouper that includes the management of snapper, grouper, porgy,

triggerfish, jack, tilefish, grunt, spadefish, wrass, and sea bass species; bluefish; summer flounder; spinner shark; tiger shark; and blacktip shark (NOAA Fisheries 2018).

AREAS OF ENVIRONMENTAL CONCERN

Coastal Area Management Act (CAMA) areas of environmental concern (AEC) were identified in the Project Study Area in the form of public trust areas, estuarine waters, and coastal shorelines; coastal wetlands may be present. The features designated as AECs are reflected in the Natural Resources Existing Conditions Memorandum (WSP 2020).

ANADROMOUS FISH HABITAT AND PRIMARY NURSERY AREAS

The Cape Fear River, Alligator Creek, and Northeast Cape Fear River have been designated as Anadromous Fish Spawning Areas (ASFA) by the NMFS. NOAA described anadromous fish as those "born in freshwater who spend most of their lives in saltwater and return to freshwater to spawn."

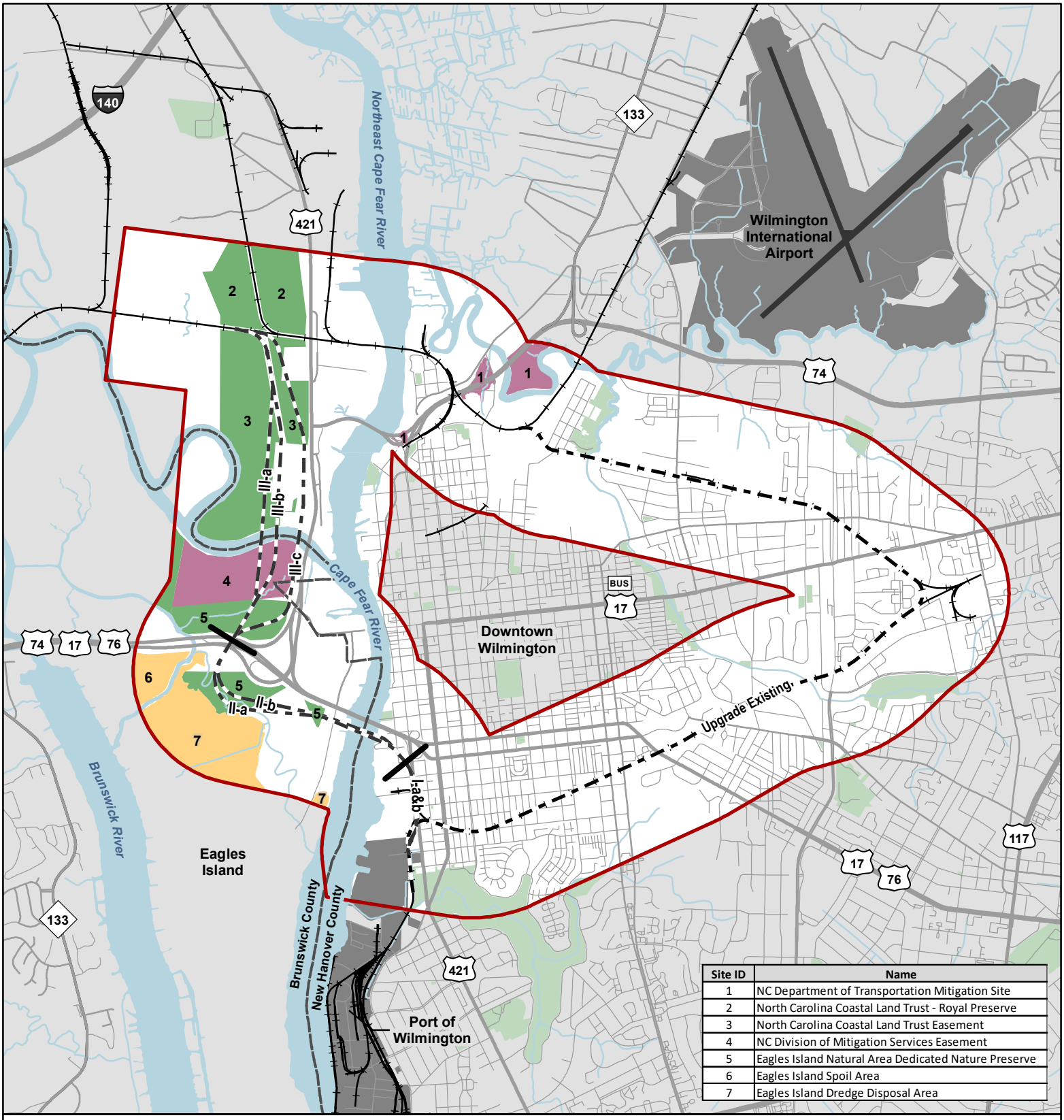
Primary nursery areas (PNA) "are defined as those areas inhabited by the embryonic, larval or juvenile life stages of marine or estuarine fish or crustacean species due to favorable physical, chemical or biological factors." There are five PNA identified by the NCDEQ in the Project Study Area.

CONSERVATION AREAS AND MITIGATION SITES

There are four conservation areas identified by the North Carolina Natural Heritage Program (NHP) located in the Project Study Area, all of which are located on Eagles Island (Figure 15). There are also four mitigation sites identified by the NHP. In addition, there are two areas identified by NHP as "managed areas" that are spoil and dredge disposal areas. Managed areas are defined by NHP as "fee-simple properties and easements where natural resource conservation is one of the management goals" (NCNHP 2020a).

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) RESOURCES

The Federal Emergency Management Agency (FEMA) defines the Special Flood Hazard Area (SFHA) as an area "that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood". There are 3,608 acres of the 100-year floodplain in the Project Study Area which is approximately 48 percent of the Project Study Area (Figure 16).



Site ID	Name
1	NC Department of Transportation Mitigation Site
2	North Carolina Coastal Land Trust - Royal Preserve
3	North Carolina Coastal Land Trust Easement
4	NC Division of Mitigation Services Easement
5	Eagles Island Natural Area Dedicated Nature Preserve
6	Eagles Island Spoil Area
7	Eagles Island Dredge Disposal Area

CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: NC OneMap - Managed Areas

Legend

- Study Area
- County Boundary
- Park
- Conservation Area
- Mitigation Site
- Spoil/Disposal Area
- Railroad
- Screening Study Options

Figure 15
Conservation Areas & Mitigation Sites

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

3.5.2 POTENTIAL ENVIRONMENTAL IMPACTS

WATERS OF THE UNITED STATES

Potential impacts based on the 200-foot buffered Option limits are summarized in Table 11. During development of alternatives at the Alternatives Analysis phase, efforts to avoid and minimize where practicable will be made.

Table 11: Impacts to Streams and Wetlands

Sections/Options		NCDEQ Wetlands (acres)	NHD Flowline Streams (linear feet)	NHD Flowline Streams (Number of Crossings)
No Build		0	0	0
Upgrade Existing		20.1	1,680	3
Section I	Option a	0.2	362	1
	Option b	0.0	46	1
Section II	Option a	18.7	392	2
	Option b	20.4	2,061	2
Section III	Option a	37.5	853	4
	Option b	35.8	1,006	4
	Option c	33.9	221	1

Note: Stream impacts are calculated using NHD Flowlines and not field verified delineations, therefore, many streams in urban environments may already be impacted and flow through culverts.

PROTECTED SPECIES

Biological conclusions for the Project's likely effect on protected species have not been determined. Section 7 consultation would be required for species with a biological conclusion of May Affect-Likely to Adversely Affect and additional coordination with the USFWS would be required for species with a biological conclusion of May Affect-Not Likely to Adversely Affect. Surveys will be conducted during the Alternatives Analysis phase of the Project following further design refinements.

ESSENTIAL FISH HABITAT

This Project includes the construction of a new bridge structure over identified EFH waters, which would require footings to be placed within designated EFH. The bridge structures have not yet been designed, but it is likely that bents would be installed in coastal marshes and streambed. Best management practices (BMPs) for the protection of surface waters should be implemented

and strictly adhered to, although it is not anticipated impacts would occur other than those from the piles themselves. No substantial impacts to EFH are anticipated.

AREAS OF ENVIRONMENTAL CONCERN

A CAMA permit from DCM would be required for all impacts to designated CAMA AECs within the Project Study Area.

ANADROMOUS FISH HABITAT AND PRIMARY NURSERY AREAS

Per NCWRC and NCDMF, an in-water construction moratorium would likely be in effect from February 1 through June 30 for waters designated as AFSA and PNAs.

CONSERVATION AREAS AND MITIGATION SITES

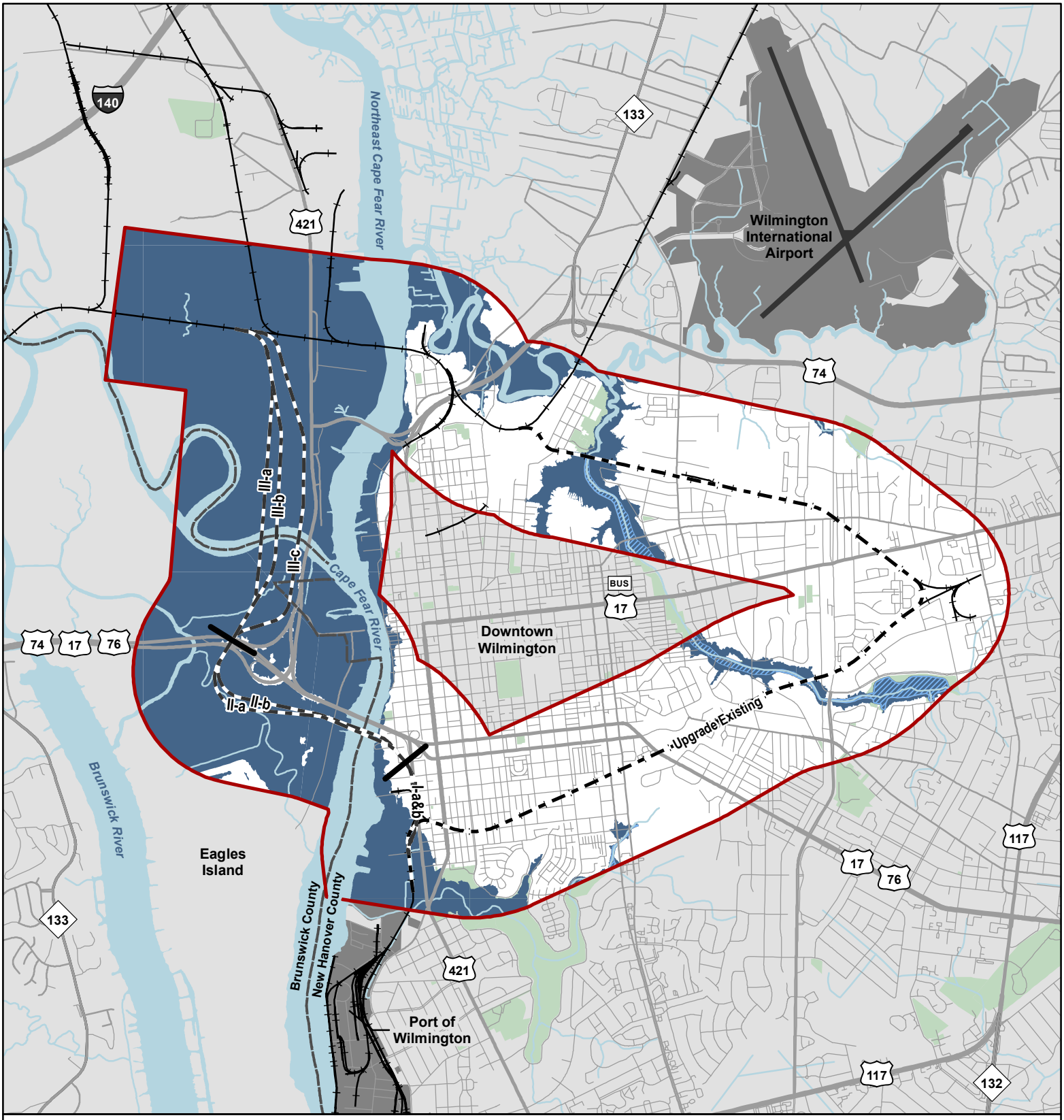
Sections II and III of the Project would encroach on Managed and Natural NHP Areas. In Section II, both Options (a and b) would impact the Eagles Island Natural Area Dedicated Nature Preserve, a conservation area owned by the NC Department of Agriculture, Division of Soil and Water Conservation. In Section III, all Options (a, b and c) would impact the NC Division of Mitigation Services Easement, a mitigation site owned by the NCDOT and the North Carolina Coastal Land Trust Easement, a conservation site owned by the North Carolina Coastal Land Trust. However, Option b utilizes approximately 3,500 feet of former railroad right-of-way, which is excluded from the conservation area, reducing impacts to the conservation site owned by the North Carolina Coastal Land Trust

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) RESOURCES

The construction of the Project would encroach in several areas on the designated floodplain associated with several local stream systems. Table 12 summarizes the impacts to floodplains and floodways within the Project Study Area.

Table 12: Impacts to Floodplain and Floodways

Sections / Options		Impacts to 100-year Floodplain (acres)	Impacts to Floodway (acres)
No Build		0.0	0.0
Upgrade Existing		18.5	0.7
Section I	Option a	4.7	0.0
	Option b	0.6	0.0
Section II	Option a	32.0	0.0
	Option b	30.0	0.0
Section III	Option a	47.4	0.0
	Option b	48.2	0.0
	Option c	50.8	0.0



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Source: NC FRIS Data

Legend

- Study Area
- County Boundary
- Park
- Regulatory Floodway
- 100-Year Floodplain (1% annual chance)
- Railroad
- Screening Study Options

Figure 16
Floodplains & Floodways

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

3.6 SECTION 6(F) AND SECTION 4(F) RESOURCES

3.6.1 DESCRIPTION OF AFFECTED ENVIRONMENT

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 (16 U.S.C. 4601-4 et seq.) states that parks developed or improved using LWCF grant funds cannot be acquired unless no other reasonable and feasible alternative exists and requires coordination with the National Park Service (NPS). Section 6(f) resources within the Project Study Area include Empie Park, Greenfield Lake, Greenfield Park, Riverfront Park I, Riverfront Park II, Dram Tree Park, and Anne Bowden McCrary Park.

Section 4(f) of the US Department of Transportation Act of 1966 provides protection for publicly owned parks, recreation areas, and wildlife and waterfowl refuges as well as significant historic sites. Resources eligible for protection under Section 4(f) include those listed above as well as Archie Blue Park and Optimist Park. Historic sites protected by this regulation include sites that are eligible for listing or are listed on the NHRP (see Table 6).

3.6.2 POTENTIAL ENVIRONMENTAL IMPACTS

Section 6(f) resources are not anticipated to be impacted by the Project.

Section 4(f) resources that could be affected by this project include historic sites and publicly owned parks. Archaeological sites potentially impacted by the project have been determined not eligible for NRHP listing. According to Section 4(f), a use of land occurs when, "(1) Land from a 4(f) site is permanently incorporated into a transportation facility, (2) there is a temporary occupancy of land that is adverse in terms of the Section 4(f) statute's preservational purposes (23 C.F.R 771.135(p)(2)), or (3) when there is a constructive use of land (23 C.F.R. 771.125(p)(2))".

In both Sections I and II Options (a and b), Section III – Option c, and the Upgrade Existing corridor would have impacts to the Wilmington Historic District. The Upgrade Existing corridor would also impact Archie Blue Park and Optimist Park.

Additional design refinements as a part of the Alternatives Analysis would likely reduce effects to resources.

3.7 ENGINEERING CONSIDERATIONS

Various engineering considerations are taken into account to evaluate the impacts of the Project. Geometric factors of the design are considered in order to optimize operation performance and reduce costs. Steeper track grades require additional locomotive power resulting in additional operating costs. Shorter track lengths are preferred for optimal operational performance, smaller maintenance area, as well as the need for less new track. Additionally, fewer curves and turnouts

optimize the operational performance. The number of at-grade and grade-separated crossings is an important metric to consider for safety purposes. Fewer at-grade crossings equate to fewer potential conflicts with other transportation modes, impacting safety, vehicular traffic congestion, and other related environmental impacts as well as operational maintenance costs. While grade separated crossings are preferred over at-grade crossings due to better safety and traffic operations, more grade-separated crossings and bridges over water could increase the project footprint, construction costs, and maintenance costs. Larger footprints also increase environmental impacts. Finally, reducing the number of potential conflicts with major utility corridors is preferred to reduce utility relocation costs. A determination of utility relocations will be made during design refinements of the Preferred Alternative.

Various engineering considerations factor into the level of complexity of construction and associated costs. At this phase in the project, construction cost estimates have not been developed. However, based on the factors previously identified, it is assumed the Upgrade Existing Corridor would have a "very high" level of costs due to the elevated rail section through urban area, detour tracks, and rail bridge structures. The new location corridors would have a "medium to high" level of costs due to the amount of structure required to cross the Cape Fear River and travel along Eagles Island. A GIS Right-of-Way estimate tool was used to produce cost estimates based on the 200-foot corridor. The tool identified parcels that were within the corridors and produced an approximate cost for acquisition to be used for estimation purposes only. The findings are presented in Table 13.

3.8 Section and Option Comparison Matrix

Engineering considerations, various human, socioeconomic, cultural, physical, and natural environmental metrics are also taken into consideration, shown in Table 13 and on Figure 17. At this stage in the development of corridors, impacts shown are only to be used for comparison purposes. Design refinements will be made during the Alternatives Analysis phase to further avoid and minimize impacts to resources.

Table 13: Section and Option Comparison Matrix

Criterion	Metric	No Build	Upgrade Existing	Section I		Section II		Section III		
				Option a	Option b	Option a	Option b	Option a	Option b	Option c
Engineering Considerations	Length of new track/length of existing track (miles)	0.0/8.02	0.0/6.38	0.56/0	0.50/0	1.53/0	1.45/0	1.97/0	2.00/0	2.11/0
	Number of curves (8 deg or greater)	5	3	2	3	0	0	0	0	2
	Number of turnouts	7	5	3	1	0	0	1	1	1
	Number of public at-grade crossings	30[1]	0[2]	0	3	1	1	0	0	1
	Number of grade separations	5	22[2]	0	0	2	2	0	0	1
	Number of bridges over water	3	2	0	0	1	1	2	2	1
	Allows for a direct movement to the CSXT SE Line north to Castle Hayne?	Yes	Yes	n/a	n/a	n/a	n/a	Yes	Yes	Yes
	Potential to accommodate future Cape Fear Memorial Bridge replacement project?	n/a	n/a	n/a	n/a	No	Yes	n/a	n/a	n/a
	Impacts to major utility lines[3]	Low	Medium	Medium	Low	Low	Low	Low	High	High
Cost Considerations	Estimated of ROW cost[4]	n/a	High	Medium	Low	Low	Low	Low	Low	Low
	Complexity of Construction	n/a	Very High	Medium to High	Medium to High	Medium to High	Medium to High	Medium to High	Medium to High	Medium to High
Land Use Impacts – Zoning	Total acreage of residential	0	57.5	0.4	0.3	3.2	3.1	8.6	9.8	3.8
	Total acreage of mixed use	0	8.0	0.2	1.1	0.2	0.3	0.0	0.0	0.0
	Total acreage of commercial	0	34.3	0.0	0.0	0.0	0.0	0.0	0.1	1.6
	Total acreage of industrial	0	77.8	13.1	8.2	22.1	22.2	30.3	29.8	29.5
	Total acreage of conservation	0	0.0	0.0	0.0	8.1	6.5	5.7	5.8	8.4
	Total acreage of cemetery district	0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Human Environment and Socioeconomic Impacts	Number of publicly owned parks	0	2	0	0	0	0	0	0	0
	Number of schools	0	1	0	0	0	0	0	0	0
	Number of cemeteries	0	2	0	0	0	0	0	0	0
	Number of churches	0	6	0	0	0	0	0	0	0
	Number of community centers	0	1	0	0	0	0	0	0	0
	EJ Community Presence	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Physical Environmental Impacts	Hazardous Materials Sites	0	37	7	5	1	1	0	0	0
Cultural Resources	Number of known archaeological sites	0	1	1	1	0	0	1	2	3
	Number of historical properties	0	4	1	1	1	1	0	0	1
Natural Environmental Impacts	Total acreage of NCDCM wetlands	0	20.1	0.2	0.0	20.4	18.7	37.5	35.8	33.9
	Total linear feet of NHD streams[5]	0	1,680	362	46	2,061	392	853	1,006	221
	Number of NHD streams crossed	0	3	1	1	2	2	4	4	1

Criterion	Metric	No Build	Upgrade Existing	Section I		Section II		Section III		
				Option a	Option b	Option a	Option b	Option a	Option b	Option c
	T&E species presence/habitat	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Number of NHP Managed Areas	0	1	0	0	1	1	4	4	5
	Number of NHP Natural Areas	0	0	0	0	2	2	1	1	1
	Total acreage of 100-year floodplain	0	18.5	4.7	0.6	32.0	30.0	47.4	48.2	50.8
	Total acreage of floodway	0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Section 4(f) of the USDOT Act	Number of properties 4(f) properties	0	7	2	2	1	1	1	2	4
Land and Water Conservation Fund Act Section 6(f)	Number of properties 6(f) properties	0	0	0	0	0	0	0	0	0

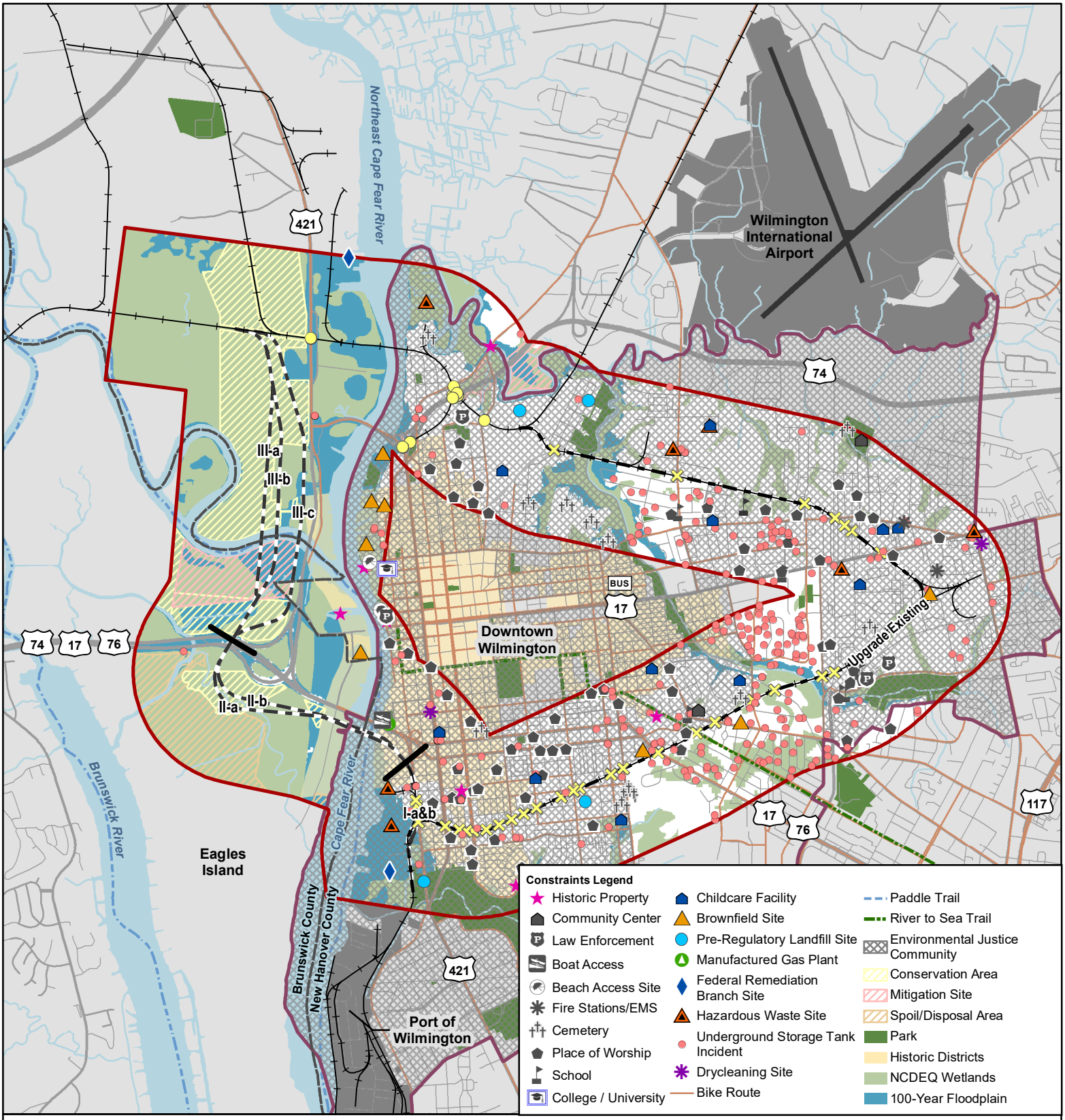
[1] The No-Build scenario includes 2 private at-grade crossings; Section I Option a includes 2 private at-grade crossings.

[2] Preliminary estimates are based upon best available information considering existing conditions and constraints and current projects in the Project Study Area. Due to the early status of the project, designs have not been fully developed to determine the feasibility of which crossings will be grade separated.

[3] Low impact considered less than 1; Medium impact considered between 2 and 9; High impact considered more than 10.

[4] Right-of-way costs generated by a GIS Right-of-Way cost estimating tool used for estimating purposes only. Low impacts considered $0-$20m; Medium considered $20m-$100m; High considered greater than $100m.

[5] Stream impacts are calculated using NHD Flowlines and not field verified delineations, therefore, many streams in urban environments may already be impacted and flow through culverts.



CITY OF WILMINGTON NORTH CAROLINA

Wilmington Rail Realignment Project

New Hanover County and Brunswick County, NC

Legend

- Study Area
- Demographic Study Area
- County Boundary
- Railroad
- Screening Study Options
- Grade-Seperated Crossing
- At Grade Crossing

Figure 17
Combined Constraints

Date: January 2021

0 0.25 0.5 1
Miles

1 inch = 4,000 feet

Source: NCDOT, NC OneMap, NCDEQ, NC FRIS, NCHPO, USGS, U.S. Census Bureau & Google Maps

3.9 RESULTS OF SECONDARY SCREENING

Based upon the potential environmental impacts described in Sections 3.1 through 3.6 and summarized in Section 3.7, the following sections provide justification for proposing to eliminate certain Options from further study in the Alternatives Analysis phase.

As previously stated, impacts were calculated using a 200-foot centered buffer, with bulb-outs at proposed grade separations along the Upgrade Existing Corridor. The Upgrade Existing Corridor would impact numerous community resources while the new location Options would result in no impacts to community resources. It is anticipated the new location corridors could result in an overall net benefit to the community, as it will remove rail traffic from going through the City. The Upgrade Existing Corridor on elevated structure through the southern half of the corridor could be perceived as a barrier that changes access and impact community cohesion in an area with populations that meet the threshold for Environmental Justice Populations. The new location Options would result in impacts to NCNHP Managed and Natural Areas. Stream and wetland impacts are greater in Section I – Option a and Section II – Option b. The Upgrade Existing Corridor would result in potential impacts to 37 hazardous materials sites, whereas the new location Options would impact up to seven sites (Section I – Option a).

3.9.1 UPGRADE EXISTING

Due to the higher impacts of the Upgrade Existing Corridor, it is not recommended to move forward for additional design refinements in the Alternatives Analysis phase.

The Upgrade Existing Corridor includes several engineering constraints as well as human and natural impacts. Many of the at-grade crossings would be eliminated by carrying the roadway over the rail or elevating the railway, reducing traffic congestion; however, hazardous materials would still be transported throughout the city, an area that consists of communities that meet the threshold for low-income and/or minority populations. Additionally, the elevated rail structure poses greater risk to the surrounding communities if a train derailment were to occur. The elevated structure may also be perceived as a wall or separation of neighborhoods. Furthermore, due to the urban context of the area surrounding the Upgrade Existing corridor, right-of-way costs could be substantially higher due to the increased number of parcels impacted. The Upgrade Existing corridor would impact more hazardous materials sites.

Several sites listed on the NRHP were found within or adjacent to the existing rail corridor, particularly within Wilmington's Historic District along 3rd Street. These sites are primarily houses and churches of historic significance. The Upgrade Existing corridor would also impact two parks as well as the Wilmington Historic District, all which would be considered Section 4(f) impacts.

Additionally, several comments received during the virtual Open House expressed opposition to the Upgrade Existing Corridor due to impacts to communities, traffic congestion, and safety concerns.

3.9.2 SECTION I

It is recommended that both Options (a and b) in Section I be carried forward for refinement and evaluation in the Alternatives Analysis. In general, Section I - Option a has more impacts from a natural environmental perspective and considerably higher right-of-way costs; however, it is anticipated some of these impacts can be minimized further once designs are developed.

3.9.3 SECTION II

It is recommended that Section II – Option a be eliminated from further consideration, as it is not consistent with Cape Fear Memorial Bridge Replacement Feasibility Study and has considerably higher natural resources impacts. Only Section II – Option b would advance for further refinement and evaluation in Alternatives Analysis.

3.9.4 SECTION III

In Section III, Option a has considerably lower right of way costs in comparison to the other Options (b and c), and it is anticipated there will be medium impacts to major utility lines (compared to high impacts anticipated for Option b and Option c). Additionally, Option c impacts a portion of the Wilmington Historic District; however, with refined design it is anticipated impacts to the district can be avoided or minimized. During the Agency Coordination Meeting held on November 12, 2020, it was noted Section III Option b, which utilizes approximately 3,500 feet of the former railroad roadbed/causeway, would likely have less impacts to tidal wetlands and the conservation area.

As there are no considerable differences from an environmental or engineering perspective, and it is anticipated there will be several design refinements to avoid and/or minimize impacts in this area, it is recommended to carry forward all three Options (a, b and c) from Section III for refinement and evaluation in the Alternatives Analysis.

3.10 NEXT STEPS

The next phase of refinement and evaluation of alternatives will occur in the Alternatives Analysis phase and be documented in an Alternatives Analysis Report. Options identified in the three sections identified in the Secondary Screening of this report will be used to form contiguous end-to-end corridors, within which preliminary designs will be developed. Preliminary designs will then be evaluated using refined criteria, input from the public, and input from regulatory and resource agencies. This evaluation will be an iterative process that will ultimately result in the identification of a Preferred Alternative to be evaluated in detail in the NEPA document.

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