S.1 INTRODUCTION

The Federal Railroad Administration (FRA) and New Jersey Transit Corporation (NJ TRANSIT) as joint lead agencies are preparing an Environmental Impact Statement (EIS) to evaluate the Hudson Tunnel Project (the Project) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 USC § 4321 et seq.). The Proposed Action is intended to preserve the current functionality of the Northeast Corridor's (NEC) Hudson River passenger rail crossing between New Jersey and New York and strengthen the resilience of the NEC. The Project's Preferred Alternative includes construction of a new rail tunnel under the Hudson River, including railroad infrastructure in New Jersey and New York connecting the new rail tunnel to the existing NEC, and rehabilitation of the existing NEC tunnel beneath the Hudson River.

The Project Sponsor that will advance the Project through final design and construction, including compliance with mitigation measures, has not yet been identified. The Project Sponsor may include one or more of the Port Authority of New York & New Jersey (PANYNJ), the National Railroad Passenger Corporation (Amtrak), NJ TRANSIT, and/or another entity that has not yet been determined. The Project Sponsor, once identified, will be responsible for ensuring all commitments and mitigation measures presented in the Environmental Impact Statement (EIS) and Record of Decision (ROD) are implemented. The Project Sponsor is expected to pursue Federal financial assistance from the U.S. Department of Transportation, including through the FRA or the Federal Transit Administration (FTA).

Prior to issuing permits or approvals for a project, including approval of funding, Federal agencies must consider the environmental effects of their actions under NEPA. Accordingly, FRA and NJ TRANSIT prepared this Draft EIS (DEIS) to comply with the requirements of the Council on Environmental Quality's (CEQ) regulations implementing NEPA (40 CFR Parts 1500-1508), the *FRA Procedures for Considering Environmental Impacts* (FRA's Environmental Procedures, 64 FR 28545, May 26, 1999, as updated in 78 FR 2713, January 14, 2013), and the Federal Highway Administration (FHWA) and FTA *Environmental Impact and Related Procedures* (23 CFR Part 771). The DEIS also documents compliance with other applicable Federal, New Jersey and New York State, and local environmental laws and regulations. Where relevant, the analysis was conducted to also meet the requirements of the NEPA procedures of the two Cooperating Agencies for the Project—the FTA and the U.S. Army Corps of Engineers (USACE)—as well as the requirements of other state and local agencies from which permits or approvals may be sought. Consistent with those regulations and procedures, this DEIS identifies the direct and indirect effects the Project would have on social, economic, and environmental conditions in the study area; and measures to avoid, minimize, or mitigate adverse impacts.

The existing NEC rail tunnel beneath the Hudson River is known as the North River Tunnel. **Figure S-1** illustrates the location of the North River Tunnel and its approach tracks. This tunnel is used by Amtrak for intercity passenger rail service and by NJ TRANSIT for commuter rail service. The tunnel operates at capacity to meet current demands. The existing tracks of the NEC within the Project area begin east of NJ TRANSIT's Frank R. Lautenberg Secaucus Junction Station in Secaucus, New Jersey, continue on a raised embankment through the New Jersey Meadowlands in Secaucus and North Bergen, New Jersey, and enter the North River

6/14/2017

Existing Northeast Corridor *Existing North River Tunnel*

0 5,000 FEET

HUDSON TUNNEL PROJECT

Project Location

Figure S-1

Tunnel portal at the western face of the Palisades[1] in North Bergen. The existing NEC passes beneath Union City and Weehawken, New Jersey and the Hudson River before emerging at Penn Station New York (PSNY) in New York City. The North River Tunnel actually consists of two separate tunnels (each referred to as a "tube"), each accommodating a single track for electrically powered trains.

In October 2012, seawater from Superstorm Sandy inundated the North River Tunnel. Damage caused by Superstorm Sandy is compounded by the tunnel's age (over 100 years old) and the intensity of its current use, resulting in frequent delays due to component failures within the tunnel. Today the tunnel, while safe for use, remains compromised and requires emergency maintenance that disrupts service for hundreds of thousands of rail passengers throughout the region. Despite the ongoing maintenance, the damage caused by the storm continues to degrade systems in the tunnel and can only be addressed through a comprehensive reconstruction of the tunnel.

S.2 PROJECT PURPOSE, NEED, GOALS, AND OBJECTIVES

S.2.1 PROJECT PURPOSE

The purpose of the Hudson Tunnel Project is to preserve the current functionality of Amtrak's NEC service and NJ TRANSIT's commuter rail service between New Jersey and PSNY by repairing the deteriorating North River Tunnel; and to strengthen the NEC's resiliency to support reliable service by providing redundant capability under the Hudson River for Amtrak and NJ TRANSIT NEC trains between New Jersey and the existing PSNY. These improvements must be achieved while maintaining uninterrupted commuter and intercity rail service and by optimizing the use of existing infrastructure.

S.2.2 PROJECT NEED

The existing North River Tunnel is a critical NEC asset and is the only intercity passenger rail crossing into New York City from New Jersey and areas west and south. This tunnel, constructed between 1904 and 1908 and opened for service in 1910, is more than 100 years old and was designed and built to early 20th-century standards. While the tunnel is safe for use, service reliability through the tunnel, already suboptimal because of the tunnel's age and antiquated standards, has been further compromised because of the damage to tunnel components caused by seawater inundation during Superstorm Sandy in October 2012. Chlorides from the seawater remain in the tunnel's concrete liner, bench walls, and ballast, causing ongoing damage to these elements as well as to embedded steel, track and third rail systems, and signaling, mechanical and electrical components. The damage to the bench walls and ballast and track systems necessitates full portal-to-portal replacement of these elements, which form integrated systems running the length of the tunnel.

The existing two-track North River Tunnel is operating at its full peak period capacity With the lack of redundant capability across the Hudson River into PSNY, any service outage, either unplanned or for planned maintenance, can thus substantially reduce or suspend rail service, causing delays that cascade up and down the NEC and throughout NJ TRANSIT's commuter system, disrupting service for hundreds of thousands of passengers. Because of the importance of the North River Tunnel to essential commuter and intercity rail service between New Jersey

[1] The Palisades are a line of steep cliffs that run along the western side of the Hudson River from northeastern New Jersey into southern New York State. In North Bergen and Union City, the Palisades are approximately 300 feet above the land to their west and east.

and New York City, rehabilitation of the existing North River Tunnel needs to be accomplished without notable reductions in weekday service, and redundant capability must be provided in order to allow for future maintenance without significant service disruption.

In summary, the Hudson Tunnel Project will address the following critical needs:

- *Improve the physical condition and rehabilitate the existing North River Tunnel*: Both tubes in the North River Tunnel were inundated with seawater during Superstorm Sandy in October 2012, resulting in the cancellation of all Amtrak and NJ TRANSIT service into New York City for five days. The more than 100-year-old North River Tunnel, already in need of repair due to its age, has been further compromised as a result of the storm damage and service reliability has suffered.
- *Preserve existing NEC capacity and functionality during rehabilitation of existing North River Tunnel*: The need to maintain existing levels of rail service is critical as it supports intercity, regional, and local mobility and associated economic benefits regionally and nationally.
- *Strengthen the NEC's resiliency to support reliable service by providing redundant capability at the critical Hudson River crossing, so as to reduce commuter and intercity rail delays caused by unanticipated events or routine maintenance:* The lack of redundant capability across the Hudson River means that any service outage, either unplanned or for planned maintenance, results in substantial reductions to NEC reliability and on-time performance. Once the Project is constructed, maintenance can take place without these service disruptions.

S.2.3 GOALS AND OBJECTIVES

FRA and NJ TRANSIT established five goals and related objectives to address the Project purpose and need. The objectives further define the goals and provide specific and measurable means by which to evaluate the Project alternatives.

Goal 1: Improve service reliability and upgrade existing tunnel infrastructure in a cost-effective manner.

- Objective 1.1: Reduce infrastructure-related delays due to poor condition of the North River Tunnel following Superstorm Sandy.
- Objective 1.2: Rehabilitate the North River Tunnel to modern system standards.

Goal 2: Maintain uninterrupted existing NEC service, capacity, and functionality by ensuring North River Tunnel rehabilitation occurs as soon as possible.

- Objective 2.1: Optimize use of existing infrastructure.
- Objective 2.2: Use conclusions from prior planning studies as appropriate and to the maximum extent possible.
- Objective 2.3: Avoid regional and national economic impacts associated with loss of rail service.

Goal 3: Strengthen the NEC's resiliency to provide reliable service across the Hudson River crossing, facilitating long-term infrastructure maintenance and enhancing operational flexibility.

- Objective 3.1: Construct additional tracks to allow for continued NEC rail operations during maintenance periods and unanticipated human-caused and natural events.

Goal 4: Do not preclude future trans-Hudson rail capacity expansion projects.

- Objective 4.1: Allow for connections to future capacity expansion projects, including connections to Secaucus Junction Station through to the Portal Bridge

over the Hackensack River, and connections to station expansion projects in the area of PSNY.

Goal 5: Minimize impacts on the natural and built environment.

- Objective 5.1: Avoid/minimize adverse impacts on communities and neighborhoods.
- Objective 5.2: Strive for consistency with local plans and policies.
- Objective 5.3: Preserve the natural and built environment to the extent practicable.

S.3 PROJECT ALTERNATIVES

S.3.1 ALTERNATIVES DEVELOPMENT AND PROCESS USED TO IDENTIFY THE PREFERRED ALTERNATIVE

In compliance with NEPA and FRA regulations, FRA and NJ TRANSIT conducted a multi-step alternatives development and evaluation process to identify reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions on the environment as well as meet the purpose and need for the Project. As the result of this process, two alternatives were identified for analysis in this EIS: the No Action Alternative (in which the North River Tunnel is not rehabilitated) and a single Build Alternative (an alternative that does rehabilitate the North River Tunnel).

S.3.1.1 DEVELOPMENT AND EVALUATION OF PRELIMINARY ALTERNATIVES

FRA and NJ TRANSIT's initial step in the development and evaluation of alternatives for the Project was to compile a "long list" of potential alternatives based on prior studies for a new Hudson River rail crossing, including the Access to the Region's Core (ARC) Project's Major Investment Study (MIS), DEIS, Supplemental DEIS, and Final Environmental Impact Statement (FEIS); possible alternatives presented in the Project's Scoping Document; and input received during the Project's NEPA scoping period.

The long list of alternatives was evaluated against a two-tiered set of criteria:

- First, each alternative was assessed for its ability to meet purpose and need, including Project goals and objectives as well as established design criteria (i.e., engineering and operational factors).
- Alternatives that were found to meet purpose and need were then assessed in terms of feasibility (i.e., whether the alternative can feasibly be constructed and operated given engineering, constructability, and rail operations considerations) and reasonableness (i.e., an alternative may not be reasonable if it would have a likelihood for substantial impacts, a protracted construction time, an unacceptably high cost or great environmental impact relative to other alternatives, or operational characteristics that are unacceptable).

Alternatives that were found to meet the Project purpose and need and to be feasible and reasonable were carried forward for further development and evaluation. The screening evaluation concluded that the only Build Alternative concept that meets both of the established criteria is a new two-track rail tunnel near the existing North River Tunnel, with rehabilitation of the existing tunnel. This Build Alternative was comprised of certain reasonable and feasible components of the 15 initial alternatives that also met the purpose and need. Other alternatives were dismissed because they did not meet the Project purpose and need or because they were found to be infeasible or unreasonable. Alternatives that did not meet the Project purpose and

need had constraints related to either (1) connecting from the NEC into the existing tracks at PSNY, or (2) maintaining uninterrupted NEC service and functionality.

S.3.1.2 REFINED SCREENING: EVALUATION OF ALIGNMENT OPTIONS

The single Build Alternative concept consisted of a new tunnel connecting the NEC to PSNY, together with rehabilitation of the North River. To meet the Project purpose and need, the Build Alternative must maintain current levels of train service on the NEC for Amtrak and NJ TRANSIT while the North River Tunnel is being rehabilitated. To do this, the Build Alternative alignment options had to meet the following requirements:

- On the west, the Build Alternative must connect to the NEC in New Jersey in a way that allows operational flexibility for trains moving between the NEC and the new tunnel. Therefore, to provide a new route close to the NEC that maximizes the use of existing infrastructure, maintains flexible and redundant NEC rail operations for Amtrak and NJ TRANSIT, and minimizes the potential for environmental and community impact associated with new right-of-way, the Build Alternative's two new tracks should be immediately adjacent to the existing NEC, using existing Amtrak right-of-way where possible, and connect to the NEC as close as possible to the tunnel portal while providing switches between tracks for operational flexibility. The new tunnel must be south of the existing North River Tunnel to connect to PSNY (as described below). New approach tracks to the tunnel on the south side of the NEC in New Jersey would avoid the need for tunneling beneath or flying over the NEC to connect to the tunnel, and therefore would have fewer potential environmental impacts than new approach tracks on the north.
- On the east, the Build Alternative must connect to the array of approach tracks that lead into PSNY, which provide access to PSNY Station Tracks 1 through 18. Connecting to these tracks allows trains to reach existing PSNY platforms and is essential to maintaining the NEC's current capacity and functionality. The only location where a new connection can be made is at the southwestern end of the PSNY approach tracks because areas farther north are occupied by the existing tracks from the North River Tunnel, Amtrak's Empire Line (which heads north to Albany), and tracks connecting to the Metropolitan Transportation Authority (MTA) Long Island Rail Road's (LIRR) John D. Caemmerer West Side Yard. The connection point on the southern end of the approach tracks would make use of the Hudson Yards Right-of-Way Preservation Project being constructed by Amtrak along the southern edge of the West Side Yard. The Hudson Yards Right-of-Way Preservation Project is a concrete tunnel box that preserves a rail right-of-way beneath the extensive overbuild project that is planned to be constructed on a platform above the rail complex. Any other connection point would conflict not only with the existing rail infrastructure but also with the foundations and supports for this platform.

These constraints establish the basic alignment for the Build Alternative's new tunnel, including its surface tracks in the New Jersey Meadowlands, its new tunnel under the Palisades and the Hudson River, and its connection to PSNY in Manhattan. This overall alignment was then refined with respect to the tunnel location from North Bergen, New Jersey to Manhattan, New York.

Multiple alignment options are possible for the Build Alternative's new tunnel between its portal at the western slope of the Palisades and the Manhattan shoreline. To identify the routing that best meets the Project goals and objectives, four conceptual alignment options were identified based on potential locations where a ventilation shaft and associated fan plant could be sited in New Jersey. The vertical ventilation shaft must be directly connected to the tunnel at a point east of the Palisades, in an area where few undeveloped properties exist. The location of the

ventilation shaft therefore determines the tunnel alignment between the tunnel portal and the waterfront area east of the Palisades.[2] The ventilation shaft site would also be used as a construction staging site. **Figure S-2** illustrates the four alignment options considered. As shown in the figure, these options were as follows:

- **Alignment Option 1:** Tunnel alignment close to the existing North River Tunnel, with a ventilation shaft site near the Lincoln Tunnel Helix in Weehawken, New Jersey.
- **Alignment Option 2:** Tunnel alignment south of Option 1, with a shaft site north of 19th Street near JFK Boulevard East in Weehawken.
- **Alignment Option 3:** Tunnel alignment south of Option 2, with a shaft site south of 19th Street near the Hudson-Bergen Light Rail (HBLR) in Weehawken. Two potential shaft sites were identified for this alignment.
- **Alignment Option 4:** Tunnel alignment south of Option 3, with a shaft site south of 18th Street in Hoboken, New Jersey. This option would follow the same horizontal alignment in New Jersey identified in the ARC Project's DEIS and SDEIS/FEIS Build Alternatives, and would use the same shaft site in Hoboken as the ARC Build Alternatives.

While Alignment Option 4 would have a slightly longer tunnel than the other options, this was not found to result in negative impacts that outweighed this option's advantages. Alignment Option 4 would have a greater construction cost for tunneling than Options 1 through 3 because of the additional length, but if construction were delayed for Options 1 through 3 because of their greater pre-construction risk, the cost difference would be minimized and might be eliminated after accounting for cost increases that occur from inflation. Similarly, while the tunneling for Alignment Option 4 could take slightly longer than for the other options, this would be a small difference relative to the total schedule of seven years, and could be eliminated with any delay in implementing Options 1 through 3. Finally, the slightly longer tunnel length for Option 4 would not meaningfully increase travel time for trains in the tunnel. Each of the other alignment options (Options 1 through 3) would be feasible, but was found to have one or more substantial disadvantages relative to Option 4.

FRA and NJ TRANSIT thus progressed Alignment Option 4 as the tunnel alignment for the Build Alternative. That alternative, including the tunnel alignment identified as a result of the screening process, is the Preferred Alternative for evaluation in the EIS.

S.3.2 NO ACTION ALTERNATIVE

NEPA requires examination of a No Action Alternative, which is an alternative to examine the conditions that would exist if the proposed action were not implemented. The No Action Alternative serves as a baseline against which the potential benefits and impacts of the Preferred Alternative can be compared. The No Action Alternative includes those projects that are necessary to keep the existing North River Tunnel in service and provide continued maintenance as necessary to address ongoing deterioration and maintain service. No new passenger rail tunnel across the Hudson River is included in the No Action Alternative. The No Action Alternative does not satisfy the purpose and need for the Project because it does not repair the deteriorating North River Tunnel, and does not strengthen the NEC's resiliency to

[2] While the Project's ventilation shafts must directly connect to the tunnel, and the Project's fan plants are also best placed directly above the tunnel, the Project's fan plants can be offset from the tunnel if necessary, in which case they would be connected to the tunnel by a plenum that carries air between the tunnel and the fan plant.

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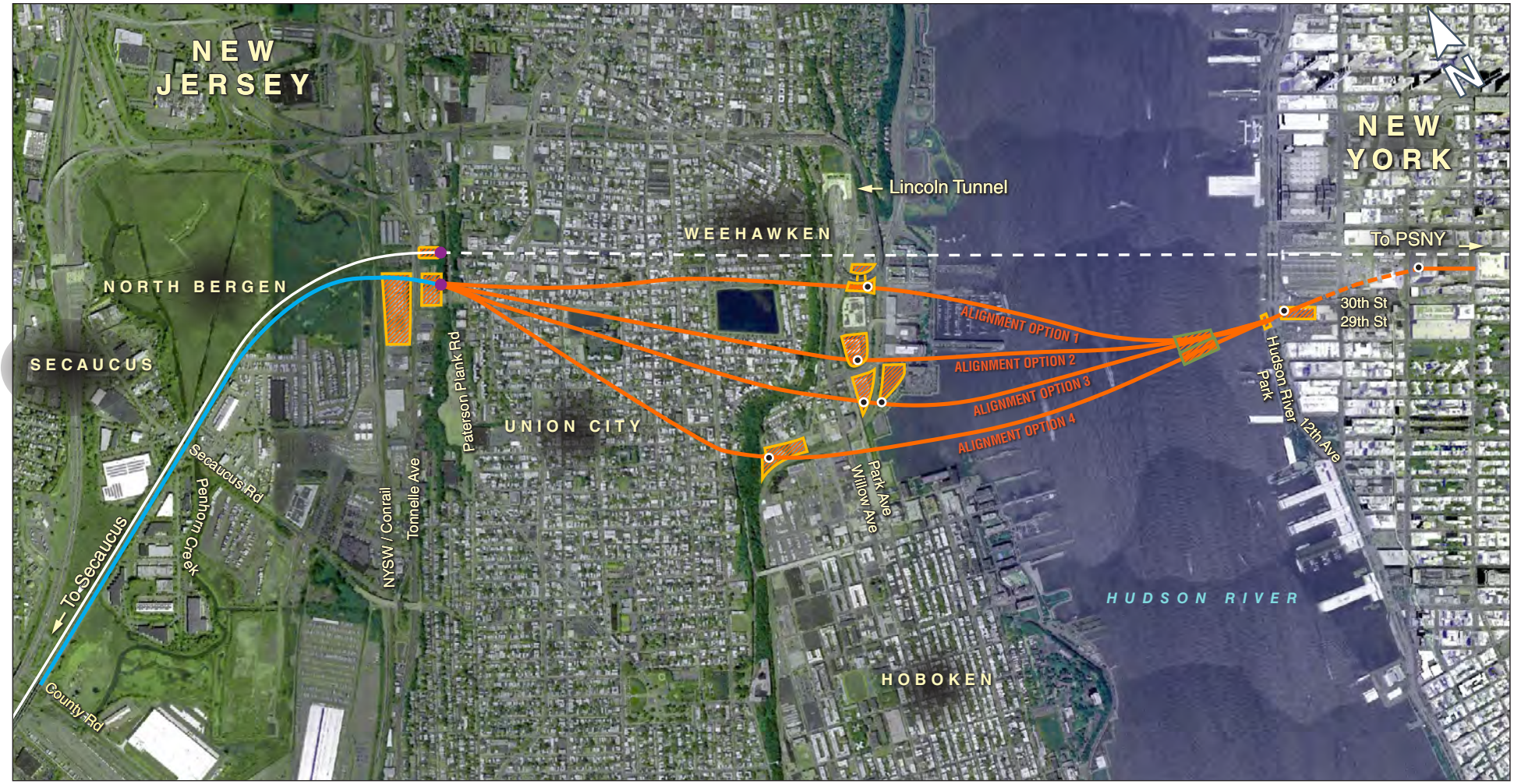

Existing Northeast Corridor

North River Tunnel to be Rehabilitated

Hudson Yards Right-of-Way Preservation

Tunnel Alignment Option

Tunnel Portal

New Surface Tracks

Construction Staging Area

In-Water Construction

New Ventilation Facilities

HUDSON TUNNEL PROJECT

Tunnel Alignment Options
Figure S-2

support reliable passenger rail service by providing redundant capability under the Hudson River.

In the No Action Alternative, the existing maintenance regimen in the tunnel will continue. However, this maintenance cannot address the damage to the ballast and bench walls in the tunnel, which require full removal of the tracks, ties, and bench walls. Therefore, despite the ongoing maintenance that will continue in the No Action Alternative, damage to the North River Tunnel caused by the storm will continue to degrade systems in the tunnel. This deterioration combined with the tunnel's age and intensity of use will likely lead to increasing instability of rail operations in the tunnel, and may lead to its eventual closure before the analysis year of this Project is reached. However, given the uncertainty about the timing and extent of any closure of the tunnel, for purposes of analysis in this EIS, FRA has made the assumption that the North River Tunnel would remain functional and in operation at least through the EIS analysis year of 2030. Since the No Action Alternative is the baseline against which the impacts of the Preferred Alternative are compared in this EIS, this approach allows for a conservative and rigorous analysis of the impacts of the Preferred Alternative.

S.3.3 PREFERRED ALTERNATIVE

S.3.3.1 DESCRIPTION OF THE PREFERRED ALTERNATIVE

The Preferred Alternative would consist of a new two-track passenger rail tunnel on the NEC between New Jersey and New York, referred to as the Hudson River Tunnel, and rehabilitation of the existing North River Tunnel. Upon completion of the Project, the NEC would have four tracks (two in the new Hudson River Tunnel and two in the North River Tunnel) between New Jersey and New York under the Hudson River, which would provide operational flexibility and redundancy for Amtrak and NJ TRANSIT rail operations.

The new Hudson River Tunnel would be parallel to, and south of, the existing NEC between Secaucus, New Jersey and PSNY. The western terminus of the new tunnel and related tracks and infrastructure would be at approximately County Road in Secaucus, New Jersey, and the eastern terminus would be at approximately Ninth Avenue in Manhattan, New York. No changes to Secaucus Junction Station in New Jersey or to PSNY platforms or platform tracks in New York are proposed as part of the Preferred Alternative.

Figure S-3 illustrates the Preferred Alternative. As shown in the figure, major project components of the Preferred Alternative would include:

- **New Jersey surface alignment:** Two new surface tracks would branch off from and run alongside and to the south of the existing NEC in New Jersey. The new tracks would begin at a realigned Allied Interlocking[1] in Secaucus, New Jersey just east of NJ TRANSIT's Secaucus Junction Station. These tracks would be accessible for maintenance via new access roads.[3] The surface tracks would be predominantly on a new embankment adjacent to the existing NEC embankment through the Meadowlands; one segment would be on a viaduct to avoid impacts to a creek below.
- **New tunnel in New Jersey:** The new Hudson River Tunnel would have two tracks in two separate tubes that would begin at a new portal in the western slope of the Palisades near Tonnelle Avenue (U.S. Routes 1 and 9) in North Bergen, New Jersey, about 600 feet south of the existing North River Tunnel portal. The tunnel would be 150 to 250 feet beneath the

[3] An interlocking is a system of switches and signals that allows trains to make connections from one track to another.

6.14.17

- *Existing Northeast Corridor*
- *North River Tunnel to be Rehabilitated*
- *Hudson Yards Right-of-Way Preservation*
- *Tunnel Alignment*
- *Tunnel Portal*
- *New Surface Tracks (Viaduct)*
- *New Surface Tracks (Retained Fill)*
- *New Surface Tracks (Embankment)*
- *New Surface Tracks (Retained Cut)*
- *Low Cover Area*
- *New Fan Plants*

HUDSON TUNNEL PROJECT

Preferred Alternative

Figure S-3

rock formation of the Palisades and then would continue about 60 to 75 feet below the surface beneath Hoboken.

- **New tunnel beneath Hudson River:** Beneath the Hudson River, the top (i.e., crown) of the tunnel would generally be located 25 to 50 feet below the river bottom for much of its length across the Hudson. In one area near the Manhattan shoreline, the tunnel would be shallower than the minimum depth required for tunnel boring, and ground improvements would be undertaken during construction (discussed below).
- **New tunnel in Manhattan:** The new tunnel would continue through the foundation of the Manhattan bulkhead below the river bottom and continue about 45 feet below the surface beneath Hudson River Park and Twelfth Avenue (New York State Route 9A); beneath the block between West 29th and West 30th Streets on the west side of Twelfth Avenue (Manhattan Block 675); and beneath West 30th Street. On the north side of West 30th Street, the alignment would meet the underground Hudson Yards Right-of-Way Preservation Project that Amtrak is constructing beneath the Hudson Yards overbuild project at the Western and Eastern Rail Yards in Manhattan.[4] The Preferred Alternative would then continue within the Hudson Yards Right-of-Way Preservation Project through the West Side Yard to connect to the existing approach tracks that serve PSNY. The Preferred Alternative would use the preserved right-of-way and would add new tracks and associated rail systems within the tunnel box.

  From the end of the Hudson Yards Right-of-Way Preservation Project, the new Hudson River Tunnel would continue beneath Tenth Avenue to a tunnel portal east of Tenth Avenue, within the complex of tracks located beneath the existing building that spans the tracks on the east side of Tenth Avenue (450 West 33rd Street, referred to as the Lerner Building) and connect to the existing PSNY approach tracks there in an area referred to as A Yard.
- **Ventilation shafts and fan plants:** The new Hudson River Tunnel would have a ventilation system designed to bring fresh air into the tunnel passively, through normal train movement. It would also have an active component, driven by fans, to remove hot air from the tunnel during congested (i.e., perturbed) conditions, when trains are stopped or moving slowly for extended periods, particularly during the summer. The active component would also be used to control and exhaust hot air and smoke during emergency conditions, such as a fire on a train in the tunnel. The fans would be used to move smoke so that smoke-free emergency routes are available for safe evacuation of passengers and fire-fighting operations.

  The ventilation system would have three fan plants housing large fans and other equipment. The shape and specific location of the fan plants is still being developed will be refined during preliminary and final engineering. The three fan plants would be as follows:

  - **Hoboken fan plant:** An approximately 130-foot-diameter vertical ventilation shaft would connect to the tunnel at a site east of the Palisades. At the surface, a fan plant would house fans and other equipment, and provide street-level emergency egress from and access to the tunnel. The site is predominantly in Hoboken, New Jersey, but also includes small areas that are in Union City and Weehawken, New Jersey. This site is located on the south side of 18th Street, just north of the HBLR right-of-way, and adjacent to the eastern face of the Palisades.
  - **Twelfth Avenue fan plant:** An approximately 130-foot-diameter vertical ventilation shaft would connect to the tunnel at a site on the west end of Block 675 (the Manhattan block

[4] The Hudson Yards Right-of-Way Preservation Project is a concrete tunnel box that preserves a rail right-of-way beneath the extensive overbuild project that is planned to be constructed on a platform above the rail complex.

between West 29th and West 30th Streets and Eleventh and Twelfth Avenues) in New York City. The only available site for such a ventilation shaft is on Block 675, since the area west of that block is parkland and the area east of that block is currently either being developed with a large-scale development or is already developed. At the surface, a fan plant would house fans and other equipment, and provide street-level emergency egress from and access to the tunnel.

  - **Tenth Avenue fan plant:** A fan plant would be located beneath the Lerner Building at Tenth Avenue between 31st and 33rd Streets, which sits above the rail right-of-way. At this location, existing emergency access to the tunnel for first responders would be maintained; no street-level egress would be provided at this location.

- **Rehabilitation of the existing North River Tunnel:** Once the new tunnel is completed and in operation, the Project Sponsor would rehabilitate and modernize the North River Tunnel. This would include localized repairs on the existing tunnel lining; new bench walls and duct banks; new direct fixation track system and track drainage system; and new or rehabilitated systems, including signal, overhead contact system, communications, traction power, and fire-life safety.

The new Hudson River Tunnel would be designed to comply with the fire-life safety standards established by the National Fire Protection Association (NFPA), and particularly NFPA 130, *Standard for Fixed Guideway Transit and Passenger Rail Systems*. The two tubes of the new Hudson River Tunnel would be connected by cross passages approximately every 750 feet, with fire-rated doors to separate the tubes.

During Superstorm Sandy in 2012, flood waters entered the North River Tunnel from Manhattan. The low-lying West Side Yard was inundated, and water flowed from the yard into the North River tunnel portal at Tenth Avenue and its ventilation shaft at Eleventh Avenue. The new Hudson River Tunnel would incorporate measures to protect the new tunnel from flooding and storm damage such as the damage incurred to the North River Tunnel during Superstorm Sandy. These would include floodgates on both the New Jersey and New York sides of the Hudson River and an additional floodgate at the portal for the new tunnel at Tenth Avenue. In addition, the rehabilitated North River Tunnel will also incorporate additional resiliency measures. Given the critical importance of the new tunnel and the vulnerability exhibited by the North River Tunnel during Superstorm Sandy, all Project features will be designed using a Design Flood Elevation (DFE) that is 5 feet higher than the Base Flood Elevation mapped by the Federal Emergency Management Agency (FEMA).[5]

When the Hudson Tunnel Project is complete and both the North River Tunnel and new tunnel are in service in 2030, a total of four tracks would be available for the Hudson River crossing between New Jersey and New York. Amtrak and NJ TRANSIT's NEC service between New Jersey and New York would benefit from redundant capability and increased operational flexibility for future regular maintenance activities as well as during emergencies.

While the Preferred Alternative addresses maintenance and resilience of the NEC Hudson River crossing, it would not increase rail capacity, which would remain constrained at PSNY. PSNY currently operates at capacity during the peak periods—there is no additional capacity to process trains at the platforms, given the time required for trains to wait at the platform for passengers to board and alight, and to move through the station. In addition, no peak-period

[5] FEMA's flood maps indicate the area where flooding will occur during the 1 percent probability storm (i.e., the "100-year storm," which has a 1 percent probability of occurring in any given year) and the Base Flood Elevation, which is the elevation of floodwaters during that storm.

capacity is available to route additional trains through the East River Tunnels for midday storage in Sunnyside Yard, and there is limited storage capacity within the PSNY complex. Ultimately, an increase in service between Newark Penn Station and PSNY cannot be realized until other substantial infrastructure capacity improvements are built, such as an expansion at PSNY, midday storage, and additional tracks over the Hackensack River. Therefore, this EIS assumes that when the Preferred Alternative is completed in 2030, Amtrak and NJ TRANSIT would operate the same number of peak-period trains using the four tracks beneath the Hudson River as in the No Action Alternative, when only two tracks would be available.

S.3.3.2 PREFERRED ALTERNATIVE COST

Based on conceptual engineering (10 percent design), the estimated cost to complete the new Hudson River Tunnel is $11.1 billion, in dollars escalated to the midpoint year of construction. The rehabilitation of the North River Tunnel is estimated to cost $1.8 billion, escalated to the midpoint year of rehabilitation. The estimated cost of the Hudson Tunnel Project, inclusive of both elements, would be $12.9 billion, in dollars escalated to the midpoint years of construction and rehabilitation. The total cost estimate includes estimates for design and engineering, construction, and other related Project costs. This estimated cost will continue to be refined as engineering and design continues.

S.3.3.3 CONSTRUCTION OF THE PREFERRED ALTERNATIVE

Construction activities for the Preferred Alternative would begin in 2019 with construction of the new Hudson River Tunnel. For the new Hudson River Tunnel, this includes construction of surface tracks in New Jersey from Secaucus to the new tunnel portal in North Bergen; a new tunnel consisting of two tracks in two separate tubes beneath the Palisades, the Hudson River, and the waterfront area in Manhattan; track modifications near PSNY in Manhattan; and construction of ventilation shafts and fan plants in Hoboken and Manhattan.[6] Once the new Hudson River Tunnel is completed and placed into service in 2026, the rehabilitation of the existing North River Tunnel would commence, with both tubes of the North River Tunnel back in service for passenger rail operations in 2030. The rehabilitation of the North River Tunnel includes conventional demolition and construction methods to replace tunnel elements and rail systems. The information about construction and used in the analyses in this EIS are all based on conceptual engineering (10 percent design). As final design and construction advances, the Project Sponsor will identify opportunities to advance the Project more efficiently and with reduced impact through innovation and use of improved technologies, and to leverage private-sector partnerships for procurement methods, project delivery, and long-term maintenance, where possible. A summary of the anticipated major construction activities for the Preferred Alternative is provided in Chapter 3 “Construction Methods and Activities,” Section 3.4 (see Table 3-2).

Most of the alignment for the two tubes of the new Hudson River Tunnel would be constructed by tunnel boring machine (TBM), with access from the Tonnelle Avenue portal in North Bergen, the Hoboken shaft site in Hoboken, and the Twelfth Avenue shaft site in Manhattan. To maintain an expedited schedule, the conceptual design and the analyses in this DEIS assume that two TBMs would bore the two tunnel tubes simultaneously. Tunneling would occur from west to east, with excavated rock and dirt (referred to as spoils) removed from the tunnel in New Jersey.

[6] The new Hudson River Tunnel would consist of two separate single-track tunnels, referred to as “tubes” throughout this EIS. This is similar to the North River Tunnel, which also consists of two separate single-track tubes.

During rehabilitation of the North River Tunnel, materials from the tunnel would also be removed in New Jersey.

The majority of the construction activities would be staged from the three main construction staging areas:

- The new and existing tunnel portal locations, with staging areas on either side of Tonnelle Avenue (U.S. Routes 1 and 9) in North Bergen, New Jersey. The Tonnelle Avenue staging site would be used for staging related to the surface alignment through the Meadowlands, construction of a new Tonnelle Avenue bridge over the new tracks, mining of the new tunnel segment beneath the Palisades to the Hoboken shaft, and rehabilitation of the North River Tunnel. Construction activities would commence in mid-2019 for the new tunnel construction and would extend to mid-2026, when the new tunnel would be completed. Immediately following completion of the new tunnel, the rehabilitation of the existing North River Tunnel would begin, starting in late 2026 and extending to early 2030 when the rehabilitation would be complete, and service using the North River Tunnel would be fully restored. Construction activities at the Tonnelle Avenue site would last approximately 11 years.
- The Hoboken shaft site and staging area in Hoboken, New Jersey, which is the same location where the new Hoboken fan plant would be constructed. This site would be used for staging for the tunnel between Hoboken and the Twelfth Avenue shaft site in Manhattan. Construction activities would commence in mid-2019 with the construction of the shaft, and would extend until mid-2026 with completion of the Hudson River segment of the new Hudson River Tunnel from the shaft site to the Manhattan bulkhead. Construction activities at the Hoboken shaft site would last approximately seven years.
- The Twelfth Avenue shaft site and staging area on the east side of Twelfth Avenue between West 29th and West 30th Streets in Manhattan, New York, which is the same location where the new Twelfth Avenue fan plant would be constructed. Construction would begin in mid-2019 with shaft construction, and would continue until mid-2026, as the trackwork, railroad systems, and finishing work is completed for the portion of the new tunnel in Manhattan and the connections to PSNY. This site would be used for staging of all the New York construction activities, which would last approximately seven years. The staging area would fully occupy all of Lot 1 on Block 675 for the duration of the Hudson River Tunnel's Manhattan construction. In addition, a portion of an adjacent lot, Lot 12, may be required to accommodate staging for the Hudson River Tunnel during all or part of the construction period.

The two tubes of the new tunnel beneath the Hudson River would be constructed by TBM beneath the river bottom. With one exception, no dredging or other work in the Hudson River would occur. As the tunnel approaches Manhattan, it would be relatively shallow beneath the river bottom, which could cause difficulties during tunnel boring. To address the construction risks associated with shallow (or low) cover, ground improvement would be conducted in this portion of the river bottom before the TBM excavation occurs. The work would be conducted from barges working in the river. This low cover area would be approximately 550 feet long and 120 feet wide, beginning about 200 feet west of the New York pierhead line. The ground improvement in the low cover area would take approximately 15 months. The work area within the river would first be enclosed by a cofferdam—a temporary, watertight structure created with sheet piles that would isolate the water affected by construction from the surrounding river water. Working within the cofferdam, the ground would be hardened in this area. Modifications to the river bottom would require a permit from the USACE and must meet conditions imposed by the USACE to protect the navigation channel and maritime safety. The hardened area would remain below the depth of the authorized Federal navigation channel.

Ground improvements would also be required from the water's edge to the Twelfth Avenue shaft site to allow below-grade tunneling in this area, which would avoid the potential for construction disruption that would otherwise be associated with cut-and-cover excavation. In advance of the TBMs passing through, this area would be hardened through ground freezing, a technique that involves installation of a network of underground pipes and then circulation of a cold liquid (calcium chloride brine) through the pipe network until the ground around the pipes freezes solid. Freeze pipes would be installed under portions of Twelfth Avenue from the median and from either side of Twelfth Avenue, and in Hudson River Park (including in the vicinity of the two southernmost helipads and fueling area of the West 30th Street Heliport), including into the landside portions of the bulkhead.

S.4 SOCIAL, ECONOMIC, AND ENVIRONMENTAL EFFECTS

The DEIS identifies the impacts of the No Action and Preferred Alternatives on social, economic, and environmental conditions as well as and measures to avoid, minimize, or mitigate impacts. For the Preferred Alternative, this includes impacts related to construction (from 2019 to 2030) and for the completed project in 2030. For certain quantified analyses, such as traffic and noise, the impacts of construction activities are considered for a specific time period, selected because it represents a period of peak construction activity, or worst-case conditions during construction. That peak would generally occur in 2021 or 2022.

S.4.1 EFFECTS OF THE NO ACTION ALTERNATIVE

The No Action Alternative would not meet the purpose and need for the Project, since it would not rehabilitate the North River Tunnel. The No Action Alternative would not involve construction and therefore no construction-related impacts would occur. In terms of direct and indirect permanent effects, the No Action Alternative would not involve any permanent new facilities and therefore no direct or indirect permanent impacts would generally occur to environmental resources.

However, without full rehabilitation of the North River Tunnel, the increased instability of rail operations and the potential for eventual closure of the tunnel would have wide-ranging impacts on travel in the region and on the regional economy. Extreme overcrowding and delays in public transportation service would likely occur, and a shift from train to auto travel would result, which would exacerbate already congested conditions on the Hudson River crossings and major roads on both sides of the river and in the region.

The No Action Alternative would result in adverse effects on socioeconomic conditions in New Jersey, New York, and the cities in the Northeast that currently benefit from Amtrak's intercity rail service. Without proper maintenance of the transportation infrastructure, delays on Amtrak and NJ TRANSIT service for unplanned maintenance and repairs would continue to worsen. As trans-Hudson travel demand continues to grow, more and more people would be affected as access to work, home, and areas of commerce would be more difficult in New Jersey, New York, and throughout the Northeast.

S.4.2 EFFECTS OF THE PREFERRED ALTERNATIVE

Table S-1 summarizes the findings of the environmental analyses, including the benefits and adverse impacts of the Preferred Alternative and the associated avoidance, minimization, or mitigation measures that the Project Sponsor will implement to address the identified impacts.

Table S-1
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Traffic and Pedestrians	• Disruptions from construction traffic at nearby intersections at the Tonnelle Ave. staging area in North Bergen (11 years); on streets in Weehawken during construction at the Hoboken staging area (7 years); and on streets used as truck routes during construction in Manhattan (7 years). • Potential street closure of West 30th St. between Eleventh and Twelfth Aves. for up to 3 years. • Impacts on sidewalks and crosswalks from temporary pedestrian detours on Tenth Ave between West 31st and 33rd Sts. in Manhattan.	• Maintenance and Protection of Traffic (MPT) plans for vehicular traffic during construction; changes to traffic signal timing at affected intersections. • Sidewalk or crosswalk widenings and pedestrian signal timing at affected locations during construction.
Transportation Services (Passenger & freight rail, mass transit, maritime, and helicopter services)	• Maintenance of full NEC peak-hour rail passenger service (Amtrak and NJ TRANSIT) during rehabilitation of North River Tunnel. • Rehabilitated North River Tunnel that would provide new resiliency against severe weather and redundancy for operational flexibility. • Potential for disruptions to rail passenger service during construction in the vicinity of active passenger rail tracks on the NEC and near PSNY, including PSNY approach tracks, the Empire Line tunnel approaching PSNY, and storage tracks to the west of PSNY. • Possible conflicts with Hudson-Bergen Light Rail (HBLR) right-of-way during construction at the Hoboken staging area. • Potential effects on bus service on and near truck routes near the Hoboken and Twelfth Ave shaft sites because of traffic congestion due to construction trucks. • Possible effects on freight rail operations during construction of a bridge over the Conrail and New York, Susquehanna & Western Railway (NYSW) freight rail right-of-way in North Bergen, NJ. • Construction work in the Hudson River's navigation channel that could affect maritime traffic. • 18-month ground freezing operation at the Manhattan waterfront that would require closing the West 30th St Heliport's fueling station and two helipads.	• To the extent possible, construction work during nights and weekends to avoid the need for daytime train outages. • Construction work within the operating envelope of the HBLR scheduled during off-peak time periods to avoid impacts on HBLR services; coordination of any required special safety protocols with NJ TRANSIT and the operators of the HBLR. • Traffic mitigation measures, including an MPT plan, to minimize traffic delays that might affect buses. • Construction activities at the new viaduct over the Conrail and NYSW right-of-way scheduled in coordination with the freight rail companies to avoid impacts on their operations. • Construction in the Hudson River in three stages to minimize the area of navigable waterway that is disturbed at any one time. Safety measures to protect maritime commerce and boating safety, including notifications to mariners via the USCG, installation of lighting on barges and the cofferdam, and AIS transponders affixed to barges and the cofferdam to enable electronic locating of the cofferdam and tracking of the barges. • Coordination with the West 30th St Heliport operator regarding disruptions to helicopter operations.

Table S-1 (Cont'd)
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Land Use, Zoning, and Public Policy	• Temporary but long-term disruption to nearby activities due to construction, trucks, noise, dust; may affect religious facility and businesses on Tonnelle Ave. in North Bergen (11 years); residences on Paterson Plank Rd., Grand Ave., and along Tonnelle Ave. in North Bergen (11 years); residents in Weehawken in the Shades neighborhood adjacent to the Hoboken construction staging area and truck routes (7 years); and residents, businesses, and park users in Manhattan (7 years). • Potential delay to completion of an adjacent residential development's one-story accessory garage on West 29th Street in Manhattan and a potential delay to possible Fire Department of NY Emergency Medical Services (EMS) station, because of the use of part of Block 675 Lot 12 (the site of the garage and EMS station) for construction staging for the Preferred Alternative. • New permanent above-ground fan plants at Hoboken and Twelfth Ave. fan plant sites.	• Outreach program to local neighborhoods; mitigation for traffic, noise, dust. • Use of off-road construction route that would connect to the existing street network at Willow and/or Park Aves. in Weehawken to divert construction traffic headed to and from the Hoboken staging area away from the nearby Shades neighborhood of Weehawken. • MPT plans for any roadways subject to disruption from construction, including in front of the North Hudson Regional Fire and Rescue Engine 3 station on Park Ave. in Weehawken. • Noise mitigation including barriers at construction sites and funding for window replacement along truck routes to buffer nearby residences and uses. • Fan plants to be designed to be compatible with adjacent uses in coordination with the local community in Weehawken and with NYCDCP in NY.
Property Acquisition	• Temporary and permanent surface easements for the rail right-of-way in Secaucus and North Bergen, NJ; possible fee acquisition of an industrial property in Hoboken to accommodate a truck route, if that route is selected to avoid other adverse effects. • Permanent easements and/or fee acquisitions for the below-grade Hudson River Tunnel alignment and above-grade Twelfth Ave. fan plant on Block 675 in NY; temporary easements for construction activity on Block 675 Lots 1 and 12.	• Coordination with private property owners regarding access during construction, to minimize adverse impacts on business activities. • Property acquisition in accordance with Federal and state laws.
Socioeconomic Conditions	• Direct, indirect, and induced economic benefits in NJ and NY from construction expenditures, including an estimated rounded total of 72,150 jobs (full-time equivalents (FTEs))—39,080 direct construction jobs (FTE), 12,780 indirect jobs, and 20,090 induced jobs in NJ and NY over the full 11-year construction period. On an annual basis (jobs per year), estimated total of 6,560 jobs in NJ and NY—3,550 direct construction jobs, 1,160 indirect jobs, and 1,850 induced jobs. • Temporary, short-term disruption to businesses in the Meadowlands near the NEC because of the need to use portions of parking lots and storage yards for Project construction access (generally 6 to 12 months per property, duration of four years at the NYSW lumber reload facility). Depending on the disruptions required, some businesses may need to relocate. • Temporary effects to West 30th St. Heliport during ground freezing in NY, requiring relocation of helicopter fueling facilities and rendering one or more of the landing pads inaccessible for 18 months.	• Coordination with property owners and businesses regarding timing of outages. • Maintaining access to businesses at all times, including use of MPT plans for roadways to minimize disruptions to access.

Table S-1 (Cont'd)
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Open Space and Recreational Resources	• Construction noise that would exceed FTA noise impact thresholds at three neighborhood parks in Hoboken (1600 Park, future park space at Harborside/ Hoboken Cove Park, and Hudson River Waterfront Walkway) from construction activities during limited period (four months) for pile drilling at Willow Ave. viaduct; construction noise that would exceed FTA noise impact thresholds at one park in Weehawken (19th St. Basketball Courts) for four years because of adjacent truck route. • Temporary construction activities in Hudson River Park for tunnel segment beneath the park (total of 18 months). • Construction noise that would exceed FTA noise impact threshold on High Line along West 30th St. during pile driving (12 months).	• Measures to mitigate noise impacts (see below). • No open cut excavation in Hudson River Park (ground freezing to avoid excavation); 8-foot-wide segment of Hudson River Park to be kept open; bikeway to be kept open. • Use of construction barricades to block views of construction equipment at heliport during ground freezing. • Measures to warn boaters during in-water construction in the Hudson River.
Historic and Archaeological Resources	• Adverse effects on historic architectural resources that are eligible for the National Register of Historic Places (NRHP): o Pennsylvania Railroad NY to Philadelphia Historic District, North River Tunnel, and NY Improvements and Tunnel Extension of the Pennsylvania Railroad. o NY Hudson River Bulkhead. • Potential for accidental construction damage to NRHP-Eligible historic architectural resources near construction: Substation No. 3 (North Bergen), Bergen Portal (North Bergen), High Line (NY), Master Printers Building (NY). • Potential for archaeological resources to be present in construction .zone that could be affected by construction: o Historic sea wall in Hoboken (NJ). o Historic piers, wharves, and fill-retaining devices in Hudson River Park, Block 675, and West 30th St (NY). o Industrial and manufacturing resources and domestic sites in Block 675 (NY).	• Draft Programmatic Agreement (PA) developed in consultation with FRA, NJHPO, NYSHPO, and other signatories and consulting parties as part of the Section 106 process that sets forth detailed measures to avoid, minimize, and/or mitigate adverse effects on historic properties, including: o Documentation of the North River Tunnel to the standards of the Historic American Engineering Record prior to rehabilitation work to supplement existing histories and/or to target a specific audience; interpretive displays about the tunnel to be located in a station along the NEC in NJ and at the new Moynihan station in NY. o Preparation of a report that documents the characteristics of the affected Hudson River Bulkhead location based on information gathered and drawings made in preparation for, and during the construction at, the bulkhead structure. o Implementation of construction monitoring plan at the bulkhead. o Implementation of Construction Protection Plan to protect Substation No. 3, Bergen Portal, the High Line, and Master Printers building. o Archaeological testing and/or monitoring for potential archaeological resources.
Visual and Aesthetic Resources	• Potential visual disruption to surrounding neighborhoods from construction activities at Tonnelle Ave., Hoboken staging area, and Twelfth Ave. staging area. • Large new fan plant in Hoboken adjacent to Shades neighborhood in Weehawken, which would be designed to be compatible with surrounding area. • Large new fan plant on Block 675 in Manhattan that would be similar in bulk and height to many of the mid-rise buildings that will be present in the surrounding area in the future and will be designed to be compatible with urban design guidelines for block.	• Use of construction barricades to block views of construction equipment; construction fencing at Hoboken site to be clad with aesthetically attractive or artistically enhanced fabric. • Fan plants to be designed to be compatible with adjacent uses in coordination with the local community in Weehawken and with NYCDCP in NY.

Table S-1 (Cont'd)
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Natural Resources	• Temporary impacts during construction: o Temporary impact to 4.307 acres of emergent wetlands and associated open water areas in the Meadowlands. o Potential temporary impacts to water quality and aquatic species in Penhorn Creek in the Meadowlands. o Potential impacts to state-listed birds and floating marsh-pennywort population in Penhorn Creek in the Meadowlands. o Potential for impacts to aquatic species in Hudson River, including endangered species, during in-water work within cofferdam in Hudson River (15 months). • Permanent impacts at Project completion: o Permanent impact to 8.005 acres of emergent wetlands and associated open waters and upland habitat in the Meadowlands and Hoboken (of which 0.3 acres of wetlands and 0.17 acres of uplands would be within the existing NYSW mitigation wetland being developed near the NEC). o Permanent alteration of stormwater flow and wetland hydrology in the Meadowlands. o Permanent loss of 0.7 acres of soft-bottom habitat where ground improvement would occur in Hudson River and the hardened river bottom would be above mud line. o Permanent loss of 0.7 acres of soft-bottom habitat in Hudson River, which would serve as foraging area for the endangered Atlantic sturgeon, may affect but is unlikely to adversely affect Atlantic sturgeon.	• Minimize impacts through erosion and sediment controls, best management practices (BMPs), restoration of wetland areas after construction. • Purchase of wetland credits from bank in same or nearby watershed. • Clearing in the Meadowlands to occur only between October 1 and March 14, outside of bird breeding season. • In-water and sediment-generating activities and pile driving near Penhorn Creek to occur only between July 1 and February 28 (i.e., not between March 1 and June 30) to protect anadromous fish species. • Transplantation plan for protected floating marsh-pennywort population in Penhorn Creek. • Sheet piles for cofferdam in Hudson River in low cover area to be installed and removed using vibratory hammer. • Other measures to mitigate effects in the Hudson River as determined in consultation with the National Marine Fisheries Service (NMFS) to minimize impacts to aquatic species during construction and upon Project completion (including Essential Fish Habitat, endangered species, and anadromous fish species during migration). • Monitoring of the recovery of the 0.7 acres of affected river bottom, as well as the remaining 0.8 acres of ground improvement, for five years, in consultation with USACE, NMFS, and the New York State Department of Environmental Conservation (NYSDEC), to assess the recovery of the area as foraging habitat.

Table S-1 (Cont'd)
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Noise and Vibration	• Temporary construction noise impacts from on-site construction activities at construction staging areas and along construction truck routes, including the following: o Audible construction noise from surface track construction that would not constitute an adverse impact. o Noise impacts from construction traffic at residences on Tonnelle Ave. near 10th St. and Secaucus Rd. (4 years for new tunnel construction and 4 years for existing tunnel rehabilitation). o Noise impacts from Tonnelle Ave staging area on residences on Paterson Plank Rd. and Grand Ave. between 19th and 23rd Sts. and on Hindu temple on Tonnelle Ave. near construction site (2.5 years for new tunnel construction, 4 years for existing tunnel rehabilitation). o Noise impacts along truck routes in Weehawken at residences on Willow Ave south of West 19th St and on Park Ave south of West 19th St. (4 years). o Noise impacts from Hoboken staging area at nearby residences if noise wall lower than 25 feet is provided; even with wall, high noise levels during five months of pile driving. o Noise that exceeds impact thresholds near the Twelfth Ave. shaft site for approximately 12 months during pile driving. • Construction vibration levels that would be noticeable at Tonnelle Ave. but no vibration impacts; construction vibration levels that would be noticeable and annoying during five months of pile driving in Hoboken, but no vibration impacts. • Construction vibration levels that would be noticeable and annoying for up to 12 months at High Line and nearby residential buildings in NY during pile driving. • No permanent noise or vibration impacts associated with train operations on surface tracks or in new Hudson River Tunnel. • No noise impacts from new fan plants, which would operate intermittently and have dampers to reduce noise.	• Construction activities to be coordinated with affected municipalities; noise and vibration complaint procedure to address community concerns; meetings with affected buildings to identify activities sensitive to noise and schedule construction activities around those where practicable. • No blasting after 7 PM in NJ and 10 PM in NY in residential areas unless permission from the relevant regulatory agency (i.e., North Hudson Regional Fire and Rescue in NJ and FDNY in NY) is provided; community outreach and notification related to anticipated times of blasting. • Underpinning of the Willow Ave. viaduct in Hoboken using drilled piles rather than driven piles to reduce resulting noise levels. • Use of acoustical noise tents and mufflers for loud equipment as practicable; vehicles routed through staging sites to minimize use of backup alarms. • Noise barriers around construction staging sites in Hoboken and Manhattan. • Offer of installation of improved windows for affected residents in North Bergen (along truck routes and above staging area) and Weehawken (along truck routes). • Use of off-street haul route in Hoboken to route trucks away from local streets. • Pre-construction inspection and vibration monitoring for buildings adjacent to construction sites. • Construction protection plan to avoid vibration damage to High Line.
Air Quality	• Construction air pollutant emissions. • No exceedances of National Ambient Air Quality Standards (NAAQS), but exceedance of New York City Environmental Quality Review (CEQR) *de minimis* criteria for fine particulates ($PM_{2.5}$) in New York City.	• Dust control plan and idling restrictions. • Use of ultra-low sulfur diesel and Best Available Tailpipe Reduction Technologies for all diesel engines, and electrically powered equipment to the extent practicable; use of newer equipment.

Table S-1 (Cont'd)
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Greenhouse Gas (GHG) Emissions and Resilience	• GHG emissions associated with construction and Project operation. • Potential vulnerability to severe storms during construction. • Project to be designed to address potential vulnerability to severe storms for permanent Project elements. Flood and storm resilience measures included in the Project such as: o Use of Design Flood Elevation (DFE) for the Project; for the new tunnel all entrances and openings would be above the DFE or any entrances below the DFE would be watertight and any equipment below the DFE would be water-resistant. o Floodgates on each side of the river in the new tunnel and at the new NY portal. o Use of ballastless track, which is resistant to salt water incursion, and water-resistant cables and conduits in new and existing tunnel. Use of concrete for tunnel walls and bench walls in new tunnel that would withstand salt water.	• Sustainability design guidelines for construction; construction contracts to include provisions related to locally produced, recycled building materials and biodiesel. • Sustainability design guidelines for permanent Project; construction contracts to require Energy Star and other high-efficiency building components, efficient lighting and energy systems, use of Building Management Systems for fan plants. • Storm risk management plan for construction sites. • Use of Design Flood Elevation (DFE) for the Project; all elements to be designed so additional protection can be included at a later date if necessary; incorporate floodgates for tunnel and flood resistance and hardening for both new and existing tunnels.
Geology and Soils	• Potential for geological and soil conditions to affect or be affected by construction and result in hazards during construction, including settlement, seismic conditions, instability of slopes, unstable soils. • Potential for encountering naturally occurring hazardous minerals (e.g., serpentinite or other asbestiform minerals). • Erosion of site soils could occur during construction as a result of removal of protective vegetation or pavement. • Potential for undermining settlement or introducing structural instability to adjacent railroad, roadway, utility structures, and/or other foundations in the construction zone. • Potential for ground displacement resulting from dewatering activities in the vicinity of the Hoboken shaft or Manhattan excavation areas.	• Project design reflecting and addressing potential hazards or construction effect. • Safety measures to protect workers and minimize environmental hazards if naturally occurring hazardous minerals encountered. • Erosion and sediment control plans that meet all applicable standards and regulations. • Control measures including ground improvement to stabilize soils, rock mass grouting, installation of waterproof earth retention systems, such as slurry walls or other lateral earth retention in areas of open cut or shaft construction, or underpinning of potentially affected existing structures.

Table S-1 (Cont'd)
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Contaminated Materials	• Potential for contaminated soil or groundwater to be encountered during construction; Project alignment has long history of industrial and railroad use that may have resulted in contamination.	• Phase II Site Investigation (SI) soil and groundwater sampling activities, as well as hazardous materials building investigations, at selected sites along the Project site where the potential for contamination exists. • Remedial measures where appropriate based on Phase II SIs, which may include excavation or in-situ treatment of contaminated soil, and disposal or treatment of contaminated groundwater or liquid from dewatering. • Implementation of a Project-specific Health and Safety Plan (HASP) prior to earth-disturbing activities. • Implementation of Project-wide Materials Management Plan to establish procedures for materials handling during construction, BMPs to be implemented during construction, such as procedures for stockpiled or containerized material and testing procedures for sampling material prior to off-site disposal or on-site reuse. • Management of groundwater generated during dewatering activities in accordance with applicable permits. • Restoration of all disturbed areas using engineering controls to prevent direct human exposure to contaminated materials. • Proper handling and disposal of all excavated soils and contaminated material encountered during construction in accordance with all applicable laws and regulations.
Utilities and Energy	• Relocation or support in place for utilities required for construction in NJ at Secaucus Rd. (at the NEC), at Tonnelle Ave. for the new bridge over the new tunnel's surface tracks; at Willow Ave. in Hoboken where ground improvement would occur. Temporary service disruptions could occur. • Relocation or support in place for utilities required for construction in NY at West 30th St. and at Tenth Ave., which could result in temporary service disruptions. • Large sewer within Twelfth Ave. (Route 9A) in NY to be supported in place where tunnel alignment would cross.	• Coordination with affected utility providers throughout final engineering design to identify potential issues and prescribe means to resolve them prior to construction. • Coordination of construction activities, including relocation of utilities, with the various utility companies and agencies, to ensure that service disruptions are avoided. • Relocation and reconnection of utilities prior to shut-off of existing lines, or protection in place with a slab or casing. • Agreements with utility providers and governmental agencies regarding temporary or permanent relocation of utility transmission lines. • Public outreach for any minor, short duration service interruptions.

Table S-1 (Cont'd)
Summary of Effects of the Preferred Alternative

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Safety and Security	• Construction sites, materials, and equipment to be kept secure. • Safety and security measures incorporated into the permanent Project in accordance with NFPA standards and all appropriate regulations and standards, including all applicable FRA regulations and guidance relative to the operation of railroad infrastructure, including tracks, train signals (including Positive Train Control), and bridges. • Potential for safety- and security-related impacts related to keeping rail passengers, railroad employees, and equipment safe and secure from natural events (e.g., severe storms, flooding, earthquakes), or emergencies caused by human error, mechanical failure, fire, or intentional or unintentional human intervention.	• Construction sites to be secured through the use of active and passive security measures; construction contractors to meet all applicable safety and security requirements. • Project design being developed in coordination with emergency responders, including FDNY and North Hudson Regional Fire and Rescue. • Operational safety and security measures to address natural events (e.g., severe storms, flooding, earthquakes), or emergencies caused by human error, mechanical failure, fire, or intentional or unintentional human intervention.
Public Health and Electric and Magnetic Fields (EMF)	• Construction noise and air emissions, and potential to encounter contaminated materials during construction to be managed to avoid public health effect. • No potential for EMF impacts during construction or operation.	• Implementation of mitigation measures described above for noise and vibration, air quality, and contaminated materials.
Indirect and Cumulative Effects	• Cumulative resiliency improvement to PSNY and NEC rail infrastructure with other ongoing resiliency projects. • Temporary delays of up to seven years for completion of development projects on Block 675 Lots 1 and 12 and related park improvements that would be funded by transfer of development rights from the park to the affected development projects. • Potential overlap with other construction of rail system improvements in and near PSNY and on the NEC. • Potential for concurrent construction with redevelopment projects in NJ: Lincoln Harbor Redevelopment, Rebuild By Design project in Hoboken, and Lincoln Tunnel Helix Replacement Program. • Concurrent construction with development projects in the NY study area.	• Coordination between the Hudson Tunnel Project and other nearby development projects in NJ and NY to minimize conflicts and cumulative impacts during construction. • Coordination of railroad improvements that will affect PSNY operations and NEC service to minimize disruptions to service. • Coordination between the Hudson Tunnel Project and the Rebuild By Design project during continuing design and engineering for each project, to ensure that the two projects do not have conflicting designs. • Coordination between the Hudson Tunnel Project and NYCDCP regarding design goals for Block 675, so that the Twelfth Ave fan plant is consistent with the goals for overall design in the vicinity.

S.5 SECTION 106 CONSULTATION

Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties that are listed in or meet the eligibility criteria for listing in the National Register of Historic Places (NRHP) and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The Project is being reviewed in accordance with Section 106. For this Project, FRA is serving as the Lead Federal Agency responsible for compliance with Section 106 and is conducting outreach and consultation required under Section 106 concurrently with the NEPA process.

FRA has engaged in consultation related to the Project and its potential effects on historic properties in accordance with Section 106. FRA initiated Section 106 consultation with the New Jersey Historic Preservation Officer (NJHPO) and New York State Historic Preservation Officer (NYSHPO) as well as with the following seven Federally recognized Indian Tribes: the Delaware Nation, the Delaware Tribe, the Delaware Tribe of Indians, the Shawnee Tribe of Oklahoma, the Shinnecock Indian Nation, the Stockbridge-Munsee Community of Mohican Indians, and the Eastern Shawnee Tribe of Oklahoma. FRA also invited additional organizations and individuals that could have an interest in the Project based on a legal or economic relation to affected properties or an interest in the Project's effects on historic properties to participate in the Section 106 process as consulting parties. FRA provided the consulting parties information about the Project and requested information regarding any concerns the parties may have related to the potential effects of the Project on historic properties. In addition, FRA also provided information regarding the Project's proposed APE, identification of historic properties, assessment of the Project's potential effects on historic properties, and measures proposed to avoid, minimize and/or mitigate adverse effects to historic properties to consulting parties.

In accordance with 36 CFR § 800.14(b)(3), FRA is preparing a Draft Programmatic Agreement (Draft PA) that sets forth detailed measures to avoid, minimize, and/or mitigate adverse effects on historic properties. The Draft PA will be agreed upon in consultation with FRA, NJHPO, NYSHPO, and other signatories and concurring parties to the PA as part of the Section 106 process. FRA notified the ACHP that the Project would adversely affect historic properties and that FRA proposes to develop a PA for complex or multiple undertakings, and invited ACHP to participate in consultation to resolve those effects. ACHP indicated that it will participate in Section 106 consultation for the Project, including development of the PA.

FRA invited FTA, USACE, NJ TRANSIT, Amtrak, and PANYNJ to be signatories to the PA. To date, ACHP, FTA, and Amtrak have accepted FRA's invitation to become signatories to the PA; USACE and PANYNJ have declined; and NJ TRANSIT is still evaluating its future role as a signatory.

The Draft PA is provided as **Appendix 9** to this DEIS. FRA is collecting comments on the Draft PA concurrent with comments on this DEIS.

S.6 DRAFT SECTION 4(f) EVALUATION

Section 4(f) (49 USC § 303; 23 USC 138) prohibits U.S. Department of Transportation (USDOT) agencies from approving any program or project that requires the use of any publicly owned parkland, recreation area, or wildlife and waterfowl refuge; or any land from a publicly or privately owned historic site of national, state, or local significance (collectively, Section 4(f) resources), unless (1) the agency determines that the use of the property will have a *de minimis* impact; or (2) there is no feasible and prudent avoidance alternative to the use of the land, and the action includes all possible planning to minimize harm to the Section 4(f) resource. Whenever a Section 4(f) property would be used for a transportation project, the responsible

USDOT operating administration must demonstrate that there is no feasible and prudent alternative to the use of the Section 4(f) resource, and that the project includes all possible planning to minimize harm to the Section 4(f) resource. In addition, the responsible USDOT operating administration must coordinate with the U.S. Department of the Interior (DOI), and if appropriate, with the U.S. Department of Housing and Urban Development (HUD) and the U.S. Department of Agriculture (USDA), and the appropriate official(s) with jurisdiction over the Section 4(f) property, prior to approving the use of a Section 4(f) resource.

The use of railroad and rail transit lines, or elements thereof, that are in use or that were historically used for the transportation of goods and passengers are exempt from Section 4(f) review. The exemption applies regardless of whether the railroad or rail transit line, or element thereof, is listed on or eligible for listing on the NRHP.[7] Therefore, although three railroad-related historic properties encompass the North River Tunnel (the North River Tunnel; the Pennsylvania Railroad New York to Philadelphia Historic District; and the New York Improvements and Tunnel Extension of the Pennsylvania Railroad) and would be adversely affected by the Preferred Alternative, this would not constitute a use under Section 4(f).

The Preferred Alternative would require the use of one Section 4(f) resource, the New York Hudson River Bulkhead, which is a historic property that has been determined eligible for the NRHP. The new Hudson River Tunnel must pass directly through the substructure portion of Manhattan's Hudson River Bulkhead, removing original components of the bulkhead and resulting in use of this Section 4(f) property. No prudent and feasible alternative to the use of the Hudson River Bulkhead exists.

FRA and NJ TRANSIT have developed measures to avoid, minimize, and/or mitigate adverse effects on the Hudson River Bulkhead in consultation with NJHPO, NYSHPO, and others in accordance with Section 106 (see Section S.5). These measures are set forth in the Project's Draft PA that is being shared for consulting party review and public comment during the public comment period for the DEIS.

Measures included in the Draft PA to minimize harm to the Hudson River Bulkhead are summarized as follows:

- The Project Sponsor will compile a report documenting the characteristics of the affected Hudson River Bulkhead location. This information will augment information about the bulkhead as previously documented in the 1989 Building-Structure Inventory Form on file with NYSHPO.
- To avoid damaging the structural integrity of the Hudson River Bulkhead structure while construction through the bulkhead is occurring, the Project Sponsor, in consultation with the FRA, NYSHPO, and the Hudson River Park Trust, will develop and implement a monitoring plan to protect the remaining bulkhead structure. The monitoring plan will describe the procedures and instrumentation to be used to monitor the structure for movement/tilt and settlement.

The DEIS contains FRA's Draft Section 4(f) Evaluation (see Chapter 24). FRA is providing the opportunity for public review and comment on the Draft Section 4(f) Evaluation in conjunction with the public review period for the DEIS.

[7] The exemption has two exceptions: (1) Rail stations or transit stations; and (2) Bridges or tunnels located on a rail line that has been abandoned under the process described in 49 USC § 10903, or a transit line that is not in use.

S.7 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), requires Federal agencies to identify and address disproportionately high and adverse effects of their actions on minority and low-income populations (environmental justice communities). EO 12898 also requires Federal agencies to work to ensure greater public participation in the decision-making process. FRA and NJ TRANSIT prepared an analysis of the Preferred Alternative's effects on environmental justice populations following guidance and methodologies for compliance with EO 12898 established by CEQ, USDOT (Updated Environmental Justice Order 5610.2(a), *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), and FTA (*Environmental Justice Policy Guidance for Federal Transit Administration Recipients* FTA C 4703.1) as well as New Jersey and New York State guidance.

The alignment of the Preferred Alternative in New Jersey would be located predominantly in areas with environmental justice communities. Even considering proposed mitigation measures, Project-related impacts, specifically the adverse effects associated with the construction of the Preferred Alternative, would result in disproportionately high and adverse effects to environmental justice communities in New Jersey. In New York, while adverse construction impacts would occur in environmental justice communities, similar or greater adverse construction impacts would also occur in areas that are not environmental justice communities. Therefore, in New York, the Preferred Alternative would not result in disproportionately high and adverse effects on environmental justice communities.

As set forth in the USDOT Order, for any actions that are found to have a disproportionately high and adverse effect on minority or low-income populations, these actions will be carried only be carried out if:

(1) Further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable.

(2) A substantial need for the action exists, based on overall public interest, and alternatives that would have less adverse effects on protected populations (and that still satisfy the need for the project) would have other adverse social, economic, environmental, or human health impacts that are severe; or would involve increased costs of extraordinary magnitude.

For the Hudson Tunnel Project, no alternatives that would avoid or reduce the disproportionately high and adverse effect are available. Mitigation measures for these adverse effects are identified in Section S.4.2. FRA will continue to develop measures in coordination with the affected community. As described above in Section S.2.2, a substantial need exists for the Hudson Tunnel Project.

A key component of environmental justice is engaging environmental justice populations as part of the transportation planning process. FRA and NJ TRANSIT have held public meetings throughout development of the EIS throughout the Project area, including meetings in areas where environmental justice communities live. FRA and NJ TRANSIT have undertaken targeted outreach to affected property owners and stakeholders in these communities.. Meeting materials have been translated into Spanish, which is the predominant language other than English that residents of the study area speak at home, and Spanish translators have been provided at all meetings to which environmental justice communities have been invited.

In the design and construction phases of the Project, FRA and NJTRANSIT will continue to involve environmental justice communities in the study area, including targeted outreach to LEP populations. During construction, the Project Sponsor will establish complaint procedures to

promptly address community concerns and implement additional control methods where necessary.

S.8 OTHER PERMITS AND APPROVALS

Implementation and construction of the Project is subject to a number of Federal, New Jersey and New York, and local permits and approvals in addition to NEPA. The permits and approvals that would be required to implement the Project are listed in **Table S-2**.

The permitting process for the Section 404/Section 10 permit from the U.S. Army Corps of Engineers is being conducted concurrently with the NEPA review. The NEPA review will also inform the other permits required (and listed in **Table S-2**).

S.9 AGENCY COORDINATION

For projects subject to NEPA, the lead agency is responsible for ensuring that the environmental review process is conducted properly and in accordance with all applicable environmental regulations. For this Project, the FRA and NJ TRANSIT are serving as joint lead agencies. The legislation at 23 USC § 139 directs the lead agency to identify Cooperating and Participating Agencies in its NEPA actions and to maintain an open line of communication with them as a project progresses. A cooperating agency is any Federal agency, other than a lead agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative. Participating Agencies as those Federal, state, or local agencies or Federally recognized tribal governmental organizations with an interest in the project.

The DEIS was prepared in coordination with numerous agencies, listed in **Table S-3**. FRA has actively engaged with these agencies through coordination during scoping, alternatives development, and environmental impact analyses. FRA has established an Agency Task Force with federal and state agencies with an approval or permitting role, in order that potential issues can be identified and resolved early in the NEPA process.

S.10 PUBLIC INVOLVEMENT

During preparation of this DEIS, FRA and NJ TRANSIT have informed and solicited early and continued feedback from the public; encouraged open discussion of Project details and issues; and provided opportunities for comments and questions. Public meetings were held during the NEPA scoping process for the Project (May 2016) and during alternatives development and evaluation (November 2016). In addition, FRA and NJ TRANSIT have conducted extensive outreach to stakeholders, including the owners of affected and nearby properties, from fall 2016 through summer 2017. The public has been informed of progress on the Project through a series of bi-lingual (English/Spanish) Fact Sheets, as well as postings of regularly updated Project information and Project documents, which are available on the Project website (www.hudsontunnelproject.com).

Table S-2
Major Permits and Approvals Required for the Hudson Tunnel Project

Permit / Approval	Reason
Federal	
USACE Section 404/Section 10 Individual Permit	Construction activity in the Hudson River; construction activity and permanent structures in wetlands (Meadowlands and Hoboken, NJ)
State of New Jersey	
NJDEP Waterfront Development Permit	Construction activities in or within 500 feet of tidal areas
NJDEP Freshwater Wetlands General Permit No. 10A	Project components in freshwater wetlands, wetland transition areas, and/or state open waters (for the Hoboken wetland)
NJDEP Flood Hazard Area Permit	Project components within flood hazard areas, regulated floodplain, and riparian zones
NJDEP Water Quality Certificate	Certification that the Project complies with relevant water quality standards; required for USACE Section 404 permit
NJDEP Tidelands Conveyance	Use of state-owned riparian lands (land that are now or were formerly covered by the mean high tide, which includes the Hudson River)
NJDEP Water Supply Allocation Permit or Permit-by Rule	Dewatering during construction
NJDEP National Pollutant Discharge Elimination System (NJPDES) General Permit 5G3 for Construction Activity Stormwater	Small construction activities less than 1 acre, and disturbance during construction of less than 1 acre of total land area that is part of a larger plan that will disturb between 1 and 5 acres.
NJDEP Stormwater Management Rules	Disturbance during construction of more than one acre of land or increasing impervious surface by one-quarter acre or more
NJDEP Green Acres Parkland Diversion	Tunnel alignment beneath parkland funded through Green Acres Program (in Hoboken)
NJDEP Coastal Zone Consistency Determination	Determination of consistency with the state's coastal zone management policies
State of New York	
NYSDEC Protection of Waters Permit	Construction activity in the Hudson River
NYSDEC Water Quality Certificate	Certification that the Project complies with relevant water quality standards; required for USACE Section 404 permit
NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharge from Construction Activity	Construction activities
NYSOGS Permit to Occupy State-Owned Underwater Lands	Tunnel alignment beneath Hudson River
New York State Department of State Coastal Zone Consistency Determination	Determination of consistency with the state's coastal zone management policies
Local	
Hudson-Essex-Passaic Soil Conservation District Soil Erosion and Sediment Control Plan Certification	Disturbance of more than 5,000 square feet of land
New York City Department of City Planning Coastal Zone Consistency Determination	Determination of consistency with New York City's Local Waterfront Revitalization Program
New York City Amendment to Amtrak's 1902 Franchise Agreement	To allow tunnel and rail operations beneath land owned by New York City (streets and land under water in the Hudson River)

Notes:

USACE = U.S. Army Corps of Engineers.
NJDEP = New Jersey Department of Environmental Protection.
NYSDEC = New York State Department of Environmental Conservation.
NYSOGS = New York State Office of General Services.

Table S-3
Lead Agencies and Invited Cooperating and Participating Agencies

Agency	Role	Accepted Invitation	Responsibilities
Lead Agencies			
Federal Railroad Administration (FRA)	Federal Lead Agency		Manage environmental review process; prepare EIS and decision document; provide opportunity for public and agency involvement; arbitrate and resolve issues
NJ TRANSIT	State Joint Lead Agency		Manage environmental review process; prepare EIS and decision document; provide opportunity for public and agency involvement; arbitrate and resolve issues
Federal Agencies			
Federal Transit Administration (FTA)	Cooperating Agency, Task Force member	Yes	Consultation related to NEPA
U.S. Army Corps of Engineers (USACE)	Cooperating Agency, Task Force member	Yes	Section 404, Clean Water Act permit Section 10, Rivers and Harbors Act permit
Advisory Council on Historic Preservation (ACHP)	Participating Agency, Section 106 Consulting Party, Task Force member	Yes	Consultation related to Section 106 of the National Historic Preservation Act
Federal Emergency Management Agency (FEMA), Federal Region II	Participating Agency, Task Force member	Yes	Consultation related to resilience and floodplain issues
NOAA National Marine Fisheries Service (NMFS)	Participating Agency, Task Force member	Yes	Consultation in accordance with Section 7, Endangered Species Act; Essential Fish Habitat, Magnuson-Stevens Fishery Conservation and Management Act; Section 10 permit, Section 404 permit
U.S. Coast Guard (USCG)	Participating Agency, Task Force member	Yes	Consultation related to navigational issues in the Hudson River
U.S. Department of Homeland Security (DHS)	Participating Agency, Task Force member	Yes	Consultation related to security
U.S. Department of Housing and Urban Development (HUD)	Task Force member	Yes	Coordination related to Rebuild by Design project in Hoboken
U.S. Environmental Protection Agency (USEPA)	Participating Agency, Task Force member	Yes	Consultation related to NEPA; Section 309, Clean Air Act; and Section 404, Clean Water Act
U.S. Fish and Wildlife Service (USDOI)	Participating Agency, Task Force member	Yes	Consultation related to NEPA; Section 404, Clean Water Act; and in accordance with Section 7, Endangered Species Act
State, Regional, and Local Agencies			
Port Authority of New York and New Jersey (PANYNJ)	Participating Agency	Yes	Assist in environmental review process
New Jersey Department of Environmental Protection (NJDEP)	Participating Agency, Task Force member	Yes	Various permits and reviews
New Jersey Department of Transportation (NJDOT)	Participating Agency	Yes	Consultation related to impacts on Tonnelle Avenue (U.S. Routes 1 and 9)
New Jersey Sports and Exposition Authority (NJSEA)	Participating Agency	Yes	Coordination related to impacts in the New Jersey Meadowlands
New Jersey State Historic Preservation Office (at NJDEP) (NJHPO)	Participating Agency, Section 106 consultation, Task Force member	Yes	Concurrence under Section 106, National Historic Preservation Act
North Jersey Transportation Planning Authority (NJTPA)	Participating Agency	Yes	Consultation and review of air quality conformity determination
Hudson River Park Trust (HRPT)	Participating Agency, Task Force member	Yes	Consultation related to impacts within Hudson River Park
Metropolitan Transportation Authority (MTA)	Participating Agency	Yes	Consultation related to PSNY
New York Metropolitan Transportation Council (NYMTC)	Participating Agency	Yes	NYMTC will participate in an advisory capacity Review of air quality conformity determination
New York State Department of Environmental Conservation (NYSDEC)	Participating Agency, Task Force member	Yes	Various permits and reviews

Table S-3 (Cont'd)
Lead Agencies and Invited Cooperating and Participating Agencies

Agency	Role	Accepted Invitation	Responsibilities
State, Regional, and Local Agencies (Cont'd)			
New York State Historic Preservation Office (at New York State Office of Parks, Recreation and Historic Preservation) (NYSHPO)	Participating Agency, Section 106 consultation, Task Force member	Yes	Concurrence under Section 106, National Historic Preservation Act
New York City Department of City Planning (NYCDCP)	Participating Agency	Yes	Consultation related to impacts in New York City
New York City Department of Parks and Recreation (NYC Parks)	Participating Agency	Yes	Consultation related to impacts in New York City
New York City Department of Transportation (NYCDOT)	Participating Agency	Yes	Consultation related to impacts in New York City
New York City Mayor's Office of Capital Project Development	Participating Agency	Yes	Consultation related to impacts in New York City
New York City Mayor's Office of Recovery and Resiliency (NYCORR)	Participating Agency	Yes	Consultation related to impacts in New York City
New York City Mayor's Office of Sustainability (NYCMOS)	Participating Agency	Yes	Consultation related to impacts in New York City
Agencies that did not Accept Invitation to Participate			
National Park Service (at USDOI)	Participating Agency	No	Consultation related to Section 4(f)
U.S. Department of Interior (USDOI)	Participating Agency	No	Consultation related to Section 4(f) of the U.S. Department of Transportation Act
New York City Department of Environmental Protection (NYCDEP)	Participating Agency	No. NYCMOS will participate on their behalf	Consultation related to impacts in New York City
New York State Department of State (NYSDOS)	Participating Agency	No	Coastal zone consistency review

S.11 REVIEW OF THE DEIS

Public comments are now being solicited on this DEIS. The full DEIS is available on the Project website at www.hudsontunnelproject.com and at viewing locations listed on the Project website.

FRA and NJ TRANSIT will hold public hearings to allow members of the public, elected officials, and agency representatives to provide oral testimony on the DEIS, and to speak with Project staff about the Project. The public comment period will be open for a minimum of 45 days after the publication of the DEIS, as specified in the Notice of Availability for the Project. Comments may be submitted in written form, as follows:

- Through the Project website: www.hudsontunnelproject.com/contact.html
- Via email at: comment@hudsontunnelproject.com
- To the contacts listed below.

S.12 PROJECT CONTACTS

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