

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

4.18.1 Methods and Impact Definitions

This section relies on, and incorporates the information and analysis in Section 3.10/4.10 (Cultural Resources) and 3.16/4.16 (Socioeconomics and Environmental Justice). For this analysis, impacts to Section 4(f) properties are classified as either “No Use” or “Use” and Section 6(f) properties are classified as either “No Conversion” or “Conversion” (Table 4.18-1).

Table 4.18-1
Impact Definitions for Section 4(f) Resources and Section 6(f) Resources

No Use of a Section 4(f) Resource	Use of a Section 4(f) Resource
There would not be an actual, temporary, or constructive use of the Section 4(f).	There would be an actual, temporary or constructive use of the Section 4(f) property.
No Conversion of a Section 6(f) Resource	Conversion of a Section 6(f) Resource
There would not be a conversion of the Section 6(f) property.	There would be a conversion of the Section 6(f) property.

4.18.2 Alternatives

As described in Chapter 2 (Development and Description of Alternatives), the Corps considered numerous alternatives to the Proposed Project, and after a step-wise screening process, identified a reasonable range of alternatives for further evaluation in the EIS. This allowed the Corps to evaluate each alternative and would support the Corps determination of which alternative, including the Proposed Project, is the Least Environmentally Damaging Practicable Alternative (LEDPA). The Corps may only issue a DA permit for the LEDPA, and this decision would be documented in the Corps’ Record of Decision.

With respect to FRA’s approval, as described above, FRA cannot approve an alternative that uses a 4(f) property unless it can be demonstrated there is no feasible and prudent avoidance alternative, and the project includes all measures to minimize a use. This section identifies and evaluates the potential uses of Section 4(f) properties that could result from the Proposed Project and the Project alternatives carried forward for detailed evaluation in the Draft EIS.

4.18.3 No-Action Alternative

Under the No-Action Alternative, there would be no Proposed Project and therefore no project-related Section 4(f) uses. However, under the No-Action Alternative, the proposed site would continue to be used for mixed-use industrial activities. Activities would likely include the demolition of existing buildings and infrastructure, the alteration of the ground surface, and the installation of new buildings and structures necessary to support the light industries and warehousing/shipping entities that may occupy the future industrial space. There would be no conversion of a 6(f) resource under the No-Action Alternative.

4.18.4 Alternative 1: Applicant's Proposed Project (South via Milford / North via Hospital District)

Construction and operation activities associated with Alternative 1 would not result in the use of the two Section 4(f) parks, Chicora-Cherokee Community Park and unnamed community park (also a Section 6(f) park) within the Study Area because these parks are located outside the Project site where construction and operation activities would occur. Construction activities and equipment could create vibration and noise that may affect the parks; however, potential impacts would be temporary and localized, based on the analyses presented in Section 4.12 (Noise and Vibration). Under Alternative 1 (Proposed Project), it is unlikely that construction and operation activities at the Project site would alter the visual setting of Section 4(f) or 6(f) properties. With respect to indirect impacts during construction and operations, the Chicora-Cherokee Community Park and the unnamed community park have intervening vegetation and mature trees that would eliminate most views of construction equipment or any new vertical elements that would be placed on the Project site (less than 3–4 stories in height). As such, there would not be a constructive use of these Section 4(f) properties from an alteration of the visual setting.

As discussed in Section 4.10 (Cultural Resources), historic properties within the Study Area would be adversely impacted as a result of the construction and operation of Alternative 1 (Proposed Project). These direct impacts would result in an adverse effect to the USMC Barracks and the CNH Historic District under Section 106, and would constitute direct permanent uses of Section 4(f) properties¹⁰². To resolve the potential adverse effects to these Section 106 historic properties, consultations with the SHPO have commenced, and a Cultural Resources MOA (Appendix G) was fully executed on May 30, 2018.

Operation of the Navy Base ICTF, including train activity on the northern rail connection through the CNH, would generate vibration and could possibly result in damage to the masonry of the historic properties; however, the vibration analysis discussed in Section 4.12 (Noise and Vibration) found that the ground-borne vibration generated by train activities would produce a negligible impact on

¹⁰² These uses would not qualify as a *de minimis* impact because the Section 106 determination is adverse effect.

the vibration-sensitive receptors along the railroad segments in the Study Area in comparison with the No-Action Alternative. Based on the adjusted reference curve (refer back to Figure 14.12-3), it was determined that only receptors located less than 20 feet from the track centerline would experience rail vibration impacts, which are defined as 80 VdB. Under Alternative 1 (Proposed Project), none of the receptors are located at a distance less than 20 feet from the track centerline. For example, the USMC Barracks and the CNH are located 95 feet and 105–634 feet (depending on location in the CNH building) away from the track centerline, respectively. Therefore, vibration impacts from operation of Alternative 1 (Proposed Project) would have no effect to cultural resources, and there would be no constructive use of the Section 4(f) resources in the Study Area. Vibrations related to construction activities under Alternative 1 (Proposed Project) would be temporary and similar to those that occurred during the operation of Navy Base Charleston or industrial activities that occur today within the CNC. As a result, construction-related vibration would have no effect on historic properties and would not result in a constructive use of the Section 4(f) resources.

Under Alternative 1 (Proposed Project), the Navy Base ICTF would operate within new buildings/structures and transportation corridors; however, these new buildings/structures and infrastructure are industrial in nature and would not alter the character of the nearby historic properties within the CNY and CNYOQ. The former Navy Base Charleston was an industrial facility that built and maintained ships. The historic properties within the CNY and CNYOQ were the location of these industrial activities or supported the operation of the base and its assigned personnel. The industrial activities of Alternative 1 (Proposed Project) support commercial maritime traffic rather than the military maritime traffic of the former navy base. The adaptive reuse of the CNC since the closure of Navy Base Charleston in 1996 has altered the character of the CNC from military to commercial over the last 20 years. Thus, changes in character of the historic properties within the CNY and CNYOQ related to Alternative 1 (Proposed Project) would have no effect.

Under Alternative 1 (Proposed Project), operation of the Navy Base ICTF would also result in higher volumes of rail and road traffic on dedicated rail lines and thoroughfares, increasing noise and vibration. Navy Base Charleston was an industrial facility and generated a great deal of noise and vibration during its operation as a military installation throughout the twentieth century. The noises associated with the operation of the ICTF would create local, long-term, increased noise levels, but would not alter the industrial character and associations of the historic properties within the CNC. Similarly, historic properties in the nearby residential neighborhoods outside the CNC were built in support of the former Navy Base Charleston and witnessed the noises associated with the operation of the military facility. Since the closure of Navy Base Charleston in 1996, these noises have been reduced, but the CNC still contains industrial facilities similar to those that operated at the former Navy Base Charleston. Thus, increased noise levels related to the operation of the Navy Base ICTF would result in long-term, increased noise levels, but would not alter the character and associations of the nearby historic properties outside the CNC. As a result, noise impacts would have no effect on

historic properties within and outside the CNC. Impacts to noise-sensitive receptors are detailed in Section 4.12.3.

As mentioned above, the former Navy Base Charleston was an industrial facility that built and maintained ships. Vertical visual elements such as cranes were common. The historic properties within the CNC were the location of these industrial activities or supported the operation of the base and its assigned personnel. The industrial activities of Alternative 1 (Proposed Project) support commercial maritime traffic rather than the military maritime traffic of the former navy base. The adaptive reuse of the CNC since the closure of Navy Base Charleston in 1996 has altered the character of the CNC from military to commercial over the last 20 years. While construction activities and equipment, as well as the introduction of new vertical elements within the Project site, would be visible from the CNY and CNYOQ historic districts, the alteration of the visual setting would be temporary and have no effect under Section 106 and would not result in a use under Section 4(f).

None of the situations that trigger a 6(f) conversion as discussed in Table 4.18-1 would occur under the Alternative 1 (Proposed Project), therefore there would be no conversion of a 6(f) resource.

4.18.5 Alternative 2: Proposed Project Site (South via Milford / North via S-Line)

No constructive or permanent uses of Section 4(f) resources or conversions of 6(f) resources would occur under Alternative 2. Ancillary impacts would primarily result from noise and visual alterations, though their effect would not result in a substantial impairment of the resources, and thus there would not be a constructive use. Unlike Alternative 1 (Proposed Project), the arrival/departure tracks to the north of the ICTF would utilize the existing out-of-service CSX S-line within CSX ROW along Spruill Avenue and would not traverse through the CNH Historic District. With this new alignment, there would be no permanent use of the USMC Barracks or the CNH historic district (or any other Section 4(f) resource) as these properties would remain in their current state. Alternative 2 would not result in a proximity impact that is so severe that the attributes that qualify the CNH Historic District or the USMC Barracks for protection under Section 4(f) will be substantially impaired. Specifically, Alternative 2 would not affect the CNH Historic District's reflection of Spanish colonial revival, colonial revival, classical revival, bungalow/craftsman, or modern architecture at Naval Base Charleston (NR Criterion C) or the buildings' association with events that have made a significant contribution to the broad patterns of U.S. history (U.S. involvement in WWII) (NR Criterion A). Also, Alternative 2 would not affect the USMC Barracks' reflection of Classical Revival architecture at Naval Base Charleston (NR Criterion C) or the building's association with events that have made a significant contribution to the broad patterns of U.S. history (U.S. involvement in WWII and defense of U.S. Navy installations during first half of twentieth century) (NR Criterion C). Therefore, as Alternative 2 would not permanently incorporate land that is part of the CNH Historic District or the USMC Barracks, temporarily occupy land that is part of the CNH Historic District or the USMC

Barracks, or result in a “constructive use” of the CNH Historic District or the USMC Barracks, the Proposed Project would not result in the use of this Section 4(f) property.

4.18.6 Alternative 3: Proposed Project Site (South via Kingsworth / North via Hospital District)

The design for the northern rail connection of Alternative 3 is the same as Alternative 1 (Proposed Project). Therefore, Alternative 3 would result in the use of same Section 4(f) resources and no conversion of 6(f) resources as Alternative 1 (Proposed Project).

4.18.7 Alternative 4: Proposed Project Site (South via Milford)

The design for the northern rail connection of Alternative 4 is the same as Alternative 1 (Proposed Project). Therefore, Alternative 4 would result in the use of same Section 4(f) resources and no conversion of 6(f) resources as Alternative 1 (Proposed Project).

4.18.8 Alternative 5: River Center Project Site (South via Milford / North via Hospital District)

The CNY historic district, the CNH historic district, and the USMC Barracks lie within the River Center project site, with an additional eight historic properties outside the site but within the Study Area.

Similar to Alternative 1 (Proposed Project), there would be no direct or constructive uses of the Section 4(f) or conversion of 6(f) parks within the Study Area under Alternative 5 because of the distance between the parks and the construction and operation activities associated with the alternative. Placement of the ICTF on the River Center project site would, however, result in the permanent incorporation of historic properties, and thus permanent use of Section 4(f) resources (Section 4.10.7). Construction activities associated with Alternative 5 would require the removal of multiple elements from the CNY and CNH historic districts, as well as the removal of the USMC Barracks. Specifically, CNC Buildings 64, NSC 66, NSC 67 (all three are storehouses that contribute to the NRHP eligibility of the district), and CNC Building 1655 (a modern storage building that does not contribute to the district). Fourteen elements of the CNH Historic District lie completely within Alternative 5 and would be impacted. These elements include CNC Buildings M-3A, M6/M7, NH-45, NH-46, NH-47, NH-49, NH-51, NH-53, NH-55, NH-61, NH-68, and 758 (treatment facilities, storehouses, residences, and a garage that contribute to the NRHP eligibility of the district); CNC Building NH-62 (a storehouse) does not contribute. The NRHP-eligible USMC Barracks also stands within Alternative 5, and its demolition would result in an adverse effect to this historic building. These direct impacts would result in an Adverse Effect under Section 106, and would constitute direct permanent uses of Section 4(f) properties. The altered visual setting with the River Center ICTF adjacent to the CNYOQ historic district would result in an Adverse Effect and a “use” under Section 4(f). The CNYOQ district is listed on the NRHP under Criteria A and C, and retains integrity of

location, setting, design, workmanship, materials, association, and feeling. The planned park-like nature of the residential area serves as a defining characteristic of its setting and design. Industrial facilities needed to build and operate Alternative 5 will intrude on this setting, altering viewsheds to the west on Noisette Creek. Structures designed to mitigate noise and direct views of the ICTF will alter the setting of the district, detracting from its park-like feel and design. Therefore, the construction of the ICTF and associated noise wall would alter the residential and landscape character of the CNYOQ historic district to the effect that these attributes would be substantially impaired.

Ancillary impacts would primarily result from noise and visual alterations, though their effect would not result in a substantial impairment of any Section 4(f) resource, and thus there would not be a constructive use. None of the situations that trigger a 6(f) conversion as discussed in Table 4.18-1 would occur under Alternative 5, therefore there would be no conversion of a 6(f) resource.

4.18.9 Alternative 6: River Center Project Site (South via Kingsworth / North via Hospital District)

Constructive and permanent uses of Section 4(f) resources and conversion of 6(f) resources under Alternative 6 would be the same as those described under Alternative 5.

4.18.10 Alternative 7: River Center Project Site (South via Milford)

Constructive and permanent uses of Section 4(f) resources and conversion of 6(f) resources under Alternative 7 would be the same as those described under Alternative 5.

4.18.11 Related Activities

Construction and operation activities associated with the Related Activities would not result in adverse impacts to Section 4(f) resources or conversion of Section 6(f) resources because they would not occur near or within them. As a result, the Related Activities would not result in constructive or permanent uses of Section 4(f) resources or conversion of 6(f) resources.

4.18.12 Feasible and Prudent Avoidance Alternatives

Before approving the use of a Section 4(f) property, FRA must first determine whether there are feasible and prudent alternatives to avoiding the use. As described above, only one of the Build Alternatives evaluated in detail in the Draft EIS would completely avoid the use of a Section 4(f) property. That alternative, Alternative 2, was evaluated by USACE for comparison purposes and was carried forward in response to scoping meeting comments (Appendix C). In this section, FRA analyzes whether Alternative 2 and the No-Action Alternative are feasible and prudent avoidance alternatives applying the factors described in Section 3.18.1.

Table 4.18-2 provides a summary of uses of Section 4(f) resources and conversion of Section 6(f) resources within the Study Area. For purposes of this analysis, FRA is assuming construction and operation the No-Action Alternative is feasible. FRA has determined that the No-Action Alternative would not meet the Proposed Project's purpose and need (Section 2.4.1). Alternative 2 was evaluated in this document for comparative analysis purposes and its design includes the potential use of an existing, inactive CSX-owned rail ROW known as the S-Line.

Before discussing whether Alternative 2 is feasible, it is important to first ascertain whether the northern rail connection is necessary to meet the Proposed Project's purpose and need. According to the Applicant, "The proposed design of the NBIF calls for the use of the northern trackage both for potential access by either Class I railroad and/or operationally by Palmetto Railways to switch, stage and build trains moving into and out of the NBIF" (see Appendix B Palmetto Railways' response to FRA comments, January 29, 2018). The Applicant has consistently affirmed that northern access to the ICTF is "necessary for efficient operation of the NBIF (ICTF), even if neither Class I chooses to immediately utilize that access, because Palmetto Railways' analysis has demonstrated that the entire length of northern trackage is necessary for the efficient operation of the facility. This trackage allows for full switching capability at the NBIF (ICTF).... In addition to its use for switching, the northern trackage are also necessary for the arrival/departure functionality, i.e., the accommodation of 10,000 ft. trains, of the [ICTF]" (see Appendix B Palmetto Railways' response to FRA comments, January 29, 2018). Further, without the northern rail connection, the Applicant has stated that "a 10,000-foot train would not be possible...multiple trains would result (e.g., two 5,000-foot trains) because the cargo volume would remain the same. With more trains traversing the communities, then more signal and crossing delays result" (see Appendix B Palmetto Railways' response to FRA comments, January 29, 2018).

An alternative is not feasible if it cannot be built as a matter of sound engineering judgment. According to the Applicant, "Palmetto Railways conducted an evaluation of the feasibility of using the CSX "S-Line" and its ROW as a part of its analysis of feasible alternatives. As a part of that evaluation, Palmetto Railways determined that utilization of the S-Line in its ROW alignment would be challenging due to the horizontal and vertical curvature of the track. From an engineering perspective, the radius of a curve on a track should not be more than 10 degrees, and should also not be combined with a grade change (as is presented by the topography of that area) in order to allow for mainline engines and intermodal railcars to traverse safely around the curve. Multiple-well articulating intermodal railcars, which are the type of railcars that the Class I carriers utilize for intermodal transport that will be arriving and departing the NBIF [ICTF], and which are typically much longer than standard railcars and cannot traverse the tighter degree curves that shorter railcars can, even at the lower speeds that are seen within city limits. The combination of curves tighter than 10 degrees, topography changes, and longer railcars increases the possibility of derailment occurrences exponentially. The existing curvature of the S-Line connection exceeds the safety tolerances that Palmetto Railways can accept because of the increased derailment risk to

railcars that would traverse the northern lead in the S-Line alignment” (see Appendix B Palmetto Railways’ response to FRA comments, January 29, 2018). After independent review of the design by FRA engineers, FRA agrees that the alignment of Alternative 2 presents operational challenges, specifically sharp reverse curves, that would make it difficult for Alternative 2 to meet the purpose and need of the Project.

Access to the S-line is problematic because it is owned and operated by CSX. In general, Class I railroads are independently owned and neither the Applicant nor the Corps nor FRA can make decisions on their behalf or force them to contribute ROW through condemnation or provide operational control of their facilities for use in this Project. The Applicant attempted to purchase CSX ROW at the north end of the Project site referred to as the S-line (Shipyard Creek to Bexley Avenue) in 2012 (see Appendix B, Response to Request for Additional Information, October 17, 2016, Exhibit 1); however, CSX in a November 2, 2012, letter to the Applicant stated “CSXT respectively declines SCPR’s offer at this time. Changing market conditions dictate that CSXT retain its current infrastructure in Charleston for the foreseeable future” (see Appendix B Response to Request for Additional Information, October 17, 2016, Exhibit 2). In a DEIS comment letter from CSX dated July 15, 2016, CSX again stated their position on the S-Line: “CSX will also continue to preserve the S-Line corridor, and will work with Palmetto to assure that the corridor south of the planned ICTF can be shared where practical, provided that CSX’s operations and access to Cooper Yard are not compromised. CSX also plans to continue to serve the existing and future customers and industrial sites accessible from Cooper Yard and will retain the ability to reactivate the S-Line north of that yard in the future” (see Appendix O). In a January 29, 2018, response to a request for information from the FRA, the Applicant indicated “CSX declined Palmetto Railways’ inquiries and has, to date, declined to further negotiate Palmetto Railways’ offer to either acquire the trackage rights to or purchase the S-Line” (see Appendix B Palmetto Railways’ response to FRA comments, January 29, 2018). As such, the Applicant is unable to gain ownership or operational control of this track from CSX. According to the Applicant, “...the term “operational control” means, simply, complete control over operations [...]. Operational control would mean that Palmetto Railways would have the complete, autonomous authority to conduct, perform, manage and maintain all rail operations and activities on or associated with the subject line without the input or directives from third parties, regardless of the line’s ownership” (see Appendix B Palmetto Railways’ response to FRA comments, January 29, 2018). Further, “[...] if “operational control” or “operational control with ownership” is not achieved, and CSX would maintain ownership or some measure of operational control, then CSX would perpetually maintain a singular advantage over its competitors with respect to pricing, usage, and operational fluidity of train movements at the [ICTF]. Thus, equal access would either be unachievable or subject to the discretion of CSX, thereby impacting a primary characteristic and criteria of the project” (see Appendix B Palmetto Railways’ response to FRA comments, January 29, 2018). Equal access is part of the Applicant’s defined purpose and need (Section 1.4.1).

In determining whether an alternative is prudent, the FRA may consider whether the alternative would result in any of the following: (1) compromise the project to a degree that is unreasonable for proceeding with the project in light of its stated purpose and need, (2) unacceptable safety or operational problems, (3) after reasonable mitigation the project results in severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts on minority or low-income populations; or severe impacts on environmental resources protected under other federal statutes, (4) additional construction, maintenance, or operational costs of an extraordinary magnitude, (5) other unique problems or unusual factors, (6) multiple factors that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude¹⁰³.

Alternative 2 would require additional infrastructure when compared with Alternative 1 and other project alternatives. According to the Applicant, the “additional infrastructure alterations and improvements in the City of North Charleston, [are] including, but not limited to:

- the permanent closure of St. John’s Avenue, south of the Turnbull gate;
- the construction of an arrival/departure track on the S-line right of way (ROW) in order to connect the NBIF to the existing CSX line and ROW;
- the replacement and reactivation of track within the existing CSX ROW that runs parallel to Spruill Avenue;
- the construction of a new multiple track rail bridge [replacing the existing single-track bridge] within the existing ROW across Noisette Creek;
- improvements to ROW and construction of new trackage east of Spruill and Aragon Avenues to connect to existing North Charleston Terminal Company track along Virginia Avenue; and
- the construction of a [new] rail bridge [to replace the existing inadequate structure] across Noisette Creek between O’Hear and NCTC ROW along Virginia Avenue.

These additional infrastructure improvements would substantially increase the cost of the NBIF [ICTF] to Palmetto Railways” (Jan. 11, 2017, Palmetto Railways – NBIF Responses to Dec. 13, 2016, Corps of Engineers RFAI).

The problems with safety and operations associated with Alternative 2 are described above. Alternative 2 would result in increased impacts to the natural environment over Alternative 1 (Proposed Project) and other project alternatives as it would require a new multiple track bridge over Noisette Creek to replace the existing single-track bridge. Alternative 2 has the most (17.92 acres) impacts to waters of the U.S. (Table 4.5-10) and EFH (Table 4.7-2) compared with Alternative 1 (Proposed Project) and other project alternatives. Related Activities as defined in Section 2.4.9 would be required for all alternatives to connect the ICTF to existing Class I carrier rail networks. For

¹⁰³ 23 C.F.R. 774.17

the Related Activity associated with the northern rail connection of Alternative 2, impacts to waters of the U.S. would be greater (an additional 1.99 acres) than Alternative 1 (Proposed Project) and other project alternatives, due to a crossing of Noisette Creek to tie into the NCTC tracks as part of the Related Activity (Table 4.5-9). This additional impact to waters of the U.S. ranges between 4 and 9 acres greater than other project alternatives. The impacts to waters of the U.S. exceed the impact limits for the available Corps' Nationwide Permits (greater than 0.5 acre of non-tidal waters of the U.S.; greater than 0.33 acre of tidal waters of the U.S.), therefore an Individual Permit would be required. This magnitude of impact would be major permanent adverse for all alternatives (Table 4.5-10).

Alternative 2 would result in impacts that are similar in magnitude compared with Alternative 1 (Proposed Project) and other project alternatives for other environmental resources such as vegetation and wildlife (Table 4.4-10), protected species (Table 4.6-4), water quality (Table 4.3-2), hydrology (Table 4.2-2), and geology and soils (Table 4.1-2).

Alternative 2 would result in increased impacts to the human environment over Alternative 1 (Proposed Project). The northern rail connection in Alternative 2 is located in an Environmental Justice community. An Environmental Justice analysis has been conducted (see Section 3.16 and 4.16) to assess whether the population meets the criteria for the presence of minority and/or low-income population. This area of potential impact is located within block groups CT 37 BG 3 and CT 55 BG 1 (see Figure 4.18-1). CT 37 BG 3 and CT 55 BG 1 both have Black or African American minority Environmental Justice populations (see Table 3.16-19). In addition, CT 55 BG 1 also has a low-income Environmental Justice population (see Table 3.16-20). As a result, impacts within this section of the study area would result in additional impacts to an Environmental Justice community. Specifically, Alternative 2 would have the most residential relocations (167) compared to Alternative 1 (Proposed Project) (134) and other project alternatives.

Increased traffic impacts would result under Alternative 2 with an additional at-grade crossing at O'Hear Avenue (Table 4.8-23). The northern rail connection would route trains along residences along St Johns Avenue, Reddin Road, O'Hear Avenue, and Bexley Street and in proximity to Edmund A. Burns Elementary School (outside of the 4(f) study area). Alternative 2 would also result in a major noise impact [above 10 dB(A)] for land uses such as residential homes and St. John Catholic Church and School along the new build rail segment from O'Hear to the ICTF facility (Section 4.12.4.2). Finally, additional socioeconomic impacts would result from the closure of St. Johns Avenue and creation of a cul-de-sac at St. Johns Avenue and McMillian Avenue affecting access and mobility (Section 4.16.4). Further, according to the Applicant, "although the S-line alternative may avoid Section 4(f) properties, it would require displacement of a greater number of residences in areas with a greater percentage of homes from a minority community. In addition to the safety and disruption concerns caused by the S-line route, the acquisition costs associated with the condemnation (or diminution in value) of required commercial and residential structures along the proposed ROW of

the alternative would be significantly higher than the proposed alternative [Alternative 1 (Proposed Project)], where Palmetto Railways already owns a significant portion of the land and structures required for the route, which mostly avoids the impacts to majority minority communities that would be caused by adopting the S-line route” (Jan. 11, 2017, Palmetto Railways – NBIF Responses to Dec. 13, 2016, Corps of Engineers RFAI). For the northern rail connection, Alternative 1 (Proposed Project) would result in impacts to 14 structures, none of which are residential and all Palmetto Railways owned, while Alternative 2 would result in impacts to 17 structures, 8 of which are residential (3 are multi-family).

After review, FRA has determined that Alternative 2 would compromise the Proposed Project to an unreasonable degree, in light of the Proposed Project’s purpose and need and would result in unacceptable operational problems. In addition, Alternative 2 results in severe impacts to environmental resources and the human environment, which includes Environmental Justice communities. After considering these factors, FRA has determined that Alternative 2 is not prudent.

As detailed above, Alternative 2 presents safety and operational challenges, specifically sharp curves, that present serious operational challenges. According to the Applicant, “in order to reduce such risk, substantial improvements to the CSX ROW would be required in order to soften these curves. These improvements would increase the cost of the project, as well as cause additional impacts to adjacent communities due to the wider scope of the ROW. Additionally, as stated above, any improvements to CSX ROW require CSX approval, which has not been offered or obtained” (Jan. 11, 2017, Palmetto Railways – NBIF Responses to Dec. 13, 2016, Corps of Engineers RFAI).

Assuming CSX would allow work on the S Line, if Alternative 2 was realigned to more acceptable track curvatures, the realigned Alternative 2 would require all of the same infrastructure improvements noted above, but would result in similar impacts. In addition, an undetermined number of additional residential and commercial structures would have to be removed, all of which are in the Environmental Justice community depicted in Figure 4.18-1. In that Environmental Justice community, there are approximately 155 structures, which include 113 residential, 14 other (Palmetto Railways owned), eight commercial, five church and school, three public housing, two non-profit, and one utility. Several of the residential structures are Section 8 public housing units owned by the North Charleston Housing Authority. These units are referred to as the Phoenix Apartments (16 units) located at 3835 St Johns Avenue. Impacts to or required relocation of this site would clearly result in an impact to the Environmental Justice community.





Service Layer Credits: Esri, USDA Farm Service Agency

Block Group 2
Census Tract 003700









Block Group 3
Census Tract 003700

Block Group 1
Census Tract 005500

Legend

-  Structure Location
-  Alternative 1 (Proposed Project)
-  Alternative 2
-  Census Boundary

Land Use Classification

-  Residential
-  Commercial
-  Vacant
-  PR Owned/Navy Base
-  Church/School
-  Non-Profit
-  Public Housing
-  Utility


0 310 620 Feet

Sources: ESRI, Charleston County 2018, Google Earth.



NAVY BASE ICTF EIS

Northern Rail Connection
Figure 4.18-1



US Army Corps
Of Engineers
Charleston District

Structure_Removal_Update04242018.mxd JNL 04/24/2018

4.18.13 Summary of Impacts Table

Table 4.18-2 provides a summary of uses of Section 4(f) resources and conversion of Section 6(f) resources within the Study Area.

Table 4.18-2
Summary of Impacts, Section 4(f) Resources and Section 6(f) Resources

Alternative	Section 4(f) ¹ and 6(f) Resources ²
No-Action	No constructive or permanent use of any 4(f) resource. No conversion of 6(f) resources.
1: Proposed Project: South via Milford / North via Hospital District	Uses of Section 4(f) resources: permanent use of CNH Historic District from demolition of contributing elements of the historic district and permanent use of the parade ground of the USMC Barracks. No conversion of 6(f) resources.
2: South via Milford / North via S-line	Not prudent (per 23 C.F.R. 774.17). See Section 4.18 for analysis and full details.
3: South via Kingsworth / North via Hospital	Same as Alternative 1 (Proposed Project).
4: South via Milford	Same as Alternative 1 (Proposed Project).
5: River Center Project Site: South via Milford / North via Hospital District	Uses of Section 4(f) resources: permanent use of CNH Historic District, CNY Historic District, and USMC Barracks from demolition of contributing elements of the historic district. Use of CNYOQ Historic District from altered setting of the historic district. No conversion of 6(f) resources.
6: River Center Project Site: South via Kingsworth / North via Hospital	Same as Alternative 5.
7: River Center Project Site: South via Milford	Same as Alternative 5.

- Section 4(f) resources in the Study Area include: unnamed community park, Chicora-Cherokee Community Park, Charleston Navy Yard (CNY) Historic District, Charleston Naval Hospital (CNH) Historic District, Charleston Navy Yard Officers' Quarters (CNYOQ) Historic District, Ben Tillman Homes, Chicora Elementary School, Ben Tillman Graded School, Six Mile Elementary School, GARCO Residences [Resources 1663 and 1664], Charleston Freedman's Cottages [Resources 4306 and 4309]), and the former U.S. Marine Corps Barracks.
- Section 6(f) resources in the Study Area include: unnamed community park.

4.18.14 Mitigation

4.18.14.1 Applicant's Proposed Avoidance and Minimization Measures

The Applicant has committed to several measures that avoid and/or minimize potential impacts of Alternative 1 (Proposed Project). These measures are taken from Palmetto Railways Mitigation Plan provided in Appendix N. Some of these measures are required under federal, state, and local permits; others are measures that Palmetto Railways has incorporated into the design and operations of

Alternative 1 (Proposed Project). Each mitigation measure is also designated as one that either helps to avoid an impact or one that minimizes an impact.

- Minimize and avoid impacts to buildings and structures on the CNC, where possible. (Avoidance and Minimization)
- Minimize and avoid direct interaction with historic buildings and structures, where possible. (Avoidance and Minimization)
- Consulted with multiple agencies (state and federal) and historic organizations regarding potential impacts and mitigation for cultural resources. (Minimization)
- Executed a Cultural Memorandum of Agreement (MOA) regarding effects of the Project on historic properties (May 30, 2018) between the Corps, the Federal Railroad Administration (FRA), Palmetto Railways, the Advisory Council on Historic Preservation (ACHP), the Muscogee (Creek) Nation, and the State Historic Preservation Office (SHPO). The Cultural Resources MOA commits the Applicant to the following requirements:
 - The Applicant shall monitor adversely affected historic properties for vibration damage during construction and for a period of 2 years during operation of the facility. If damage does occur during construction, the Applicant or its contractors shall be responsible for repairs of vibration damage to historic properties, in coordination with the Corps and SHPO and in accordance with the Secretary of the Interior Standards. (Minimization)
 - Construction activities shall occur in accordance with local noise regulations, policies, and guidance to minimize adverse noise effects. (Minimization)
 - The Applicant will develop and erect three state historical markers regarding the history of the USMC Barracks, CNH, and CNYOQ within 2 years of the execution of the Cultural Resources MOA and in coordination with SHPO. (Minimization)
 - The Applicant shall prepare a nomination of the USMC Barracks to the National Register of Historic Places (if deemed appropriate by SHPO) within 1 year of the execution of the Cultural Resources MOA. (Minimization)
 - The Applicant shall establish the Charleston Naval Base Historical Trust (CNB Historical Trust). The CNB Historical Trust governing board shall consist of at least one representative from the City of North Charleston, each concurring party, the Redevelopment Authority, Palmetto Railways, and SHPO. (Minimization)
 - The Applicant shall provide funding in the amount of \$2 million for the CNB Historical Trust for use in preserving and rehabilitating the Charleston Naval Hospital and USMC Barracks. (Minimization)
 - The Applicant shall fund an additional historic resource survey of the study area under the oversight of SHPO, which is intended to update and catalogue changes to the properties listed in the Programmatic Agreement for use by the signatories on a going forward basis. (Minimization)
 - The Applicant shall lease the CNH and/or USMC Barracks to the CNB Historical Trust for a nominal fee as long as they are actively implementing rehabilitation and preservation

efforts. A transfer of title shall be provided upon satisfaction of certain conditions. (Minimization)

- The Applicant shall work with the CNB Historical Trust to place appropriate restrictive covenants on the CNH and/or USMC Barracks to reasonably protect the historic and cultural value of such structures for any rehabilitation or use to be held by the CNB Historical Trust if such properties are transferred or leased to any third party (or held by an appropriate third party), if title is retained by the CNB Historical Trust. Rehabilitation and reuse may include use for residential, commercial, office, mixed-use, and retail space and which may include an exhibit of historic or cultural interest. (Minimization).
- The Applicant will cause rehabilitation and reuse of the Power House (CNC Building 32 – Central Power Plant), which may include use for commercial, office, and retail space which may include an exhibit or other recognition of CNC objects of historical, scientific, artistic, or cultural interest, including but not limited to the transfer of title to any appropriate entity to accomplish these tasks upon reasonable request, subject to SHPO's prior consent approval. The Applicant has sold the Powerhouse to a private ownership entity with the stipulation that it be redeveloped within 4 years of purchase or returned to Palmetto Railways. (Minimization)
- The Applicant shall follow post-review discovery requirements and suspend construction operations if cultural resources are found and notify relevant parties for consultation including the Corps, SHPO, Muscogee (Creek) Nation, Catawba Indian Nation, and the FRA. (Minimization).
- The Applicant shall prepare an Annual Report documenting actions carried out in the MOA and distribute to the signatories and concurring parties. (Minimization)

The complete list of Applicant-proposed avoidance and minimization measures for the Navy Base ICTF is provided in Chapter 6, Table 6.1.

4.18.14.2 Additional Potential Mitigation Measures

Alternative 1 (Proposed Project) and Alternatives 3-7 would result in an Adverse Effect to Section 106 historic properties, and as such, a use of Section 4(f) resources. The Corps' proposed mitigation measures to mitigate for these Adverse Effects (and use) include:

- The Applicant will comply with the terms, conditions, and mitigative actions outlined in the Cultural Resources MOA.
- If any previously unknown historic, cultural, or archaeological remains or artifacts are discovered during construction, the District Engineer for the Charleston District, U.S. Army Corps of Engineers, must be notified immediately. Construction activity in the area should be avoided until required coordination has occurred.

Additional avoidance, minimization, and mitigation may be considered by the Corps in its decision-making process. Final mitigation measures may be adopted as conditions of the DA permit and documented in the Record of Decision (ROD).

4.18.15 Least Overall Harm Analysis

Since FRA has determined there are no feasible and prudent alternatives that would avoid a use of a Section 4(f) resource, FRA has conducted an analysis to determine which alternative causes the least overall harm to Section 4(f) resources. Table 4.18-3 and the following discussion identifies the least overall harm alternative using the following factors:

- The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the official(s) with jurisdiction over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- Substantial differences in costs among the alternatives.

4.18.15.1 Alternative 1: Proposed Project: South via Milford / North via Hospital District

Alternatives 1, 3, and 4 have the same design of the northern rail connection and therefore would have the same degree of construction and operation related impacts to the Section 4(f) resources. The alternatives differ in the design of the southern rail connection, which would not result in uses to any Section 4(f) resources. Alternatives 1, 3, and 4 meet the purpose and need for the project. The magnitude of any adverse impacts to resources (after reasonable mitigation) not protected by Section 4(f) would be similar for all alternatives. Cost estimates have not been developed for the alternatives. Since there is similarity between Alternatives 1, 3, and 4 in the impact to Section 4(f) resources, meeting purpose and need, magnitude of any adverse impacts to resources, and the lack of cost estimate information, the least overall harm alternative analysis is based on the other factors described in 23 C.F.R. 774.3(c).

Uses of Section 4(f) resources associated with Alternative 1 (Proposed Project) include a permanent use of CNH Historic District from demolition of contributing elements of the historic district and permanent use of the parade ground of the USMC Barracks. Specifically, the northern rail connection passes through the southwest corner of the parade ground of the USMC Barracks and then passes through or very close to several buildings in the CNH Historic District (CNC Buildings M-5, M-6/M-7, M-8/M-9, AA/LL, BB/CC, DD/EE, FF/GG, HH/II, JJ/KK, 762, and 763). The northern rail connection will separate CNC Buildings M-6/M-7, M-8/M-9, FF/GG, HH/II, JJ/KK, and 758-763 from the remaining elements of the CNH. All of these buildings are contributing elements of the CNH Historic District, and originally served as residences for hospital staff. The northern rail connection also

would pass through the southwest corner of the USMC Barracks, altering the setting of this building and reducing the open lawn that served as a parade ground when the building housed the USMC detachments assigned to Navy Base Charleston.

The CNH Historic District is an intact collection of thirty-two buildings located in the northwest corner of the former Charleston Navy Base. This collection of extant buildings provides a good representation of the significance of the Charleston Naval Hospital and forms a cohesive district with a high degree of integrity (Appendix G - NRHP CNC Registration Form). The former USMC Barracks (CNC Building M17) on the CNC stands north of a grassed lawn on Marine Street. The lawn served as a parade ground when the barracks was occupied. Building M17 was built in 1910 and served as the residence of USMC enlisted personnel throughout the operation of Navy Base Charleston. In a letter dated July 7, 2016, the SHPO stated, "For six of the seven alternatives, the report states that adverse effects on historic properties will occur and will require mitigation, as well as possible monitoring for long-term effects. Alternative 2 is the only alternative that may avoid adverse effects to historic properties. We concur with the report that if an alternative that causes adverse effects is selected, a MOA will need to be developed outlining mitigation and possible monitoring of indirect effects."

Adverse impacts to each Section 4(f) property will be mitigated as per the Cultural Resources MOA (Appendix G), which was fully executed on May 30, 2018. The Cultural Resources MOA addresses adverse impacts to the CNH Historic District and the USMC Barracks. Details of the MOA are included in Appendix G; however, the Cultural Resources MOA generally plans for monitoring of vibratory effects, ensures compliance with noise rules, erects state historical markers, nominates the USMC Barracks to the National Register of Historic Places, requires an additional historic resource survey, and funds the CNB Historical Trust for use in preserving and rehabilitating the CNC and surrounding cultural resources. Currently demolition, vandalism and unsympathetic alterations have affected the historic characteristics of some of the individual resources on the CNC (Appendix G - NRHP CNC Registration Form); therefore, the implementation of the stipulations in the Cultural Resources MOA will improve conditions in the remaining elements of the CNC and surrounding cultural resources. The relative severity of the remaining harm, after mitigation, to the Section 4(f) properties is unknown now; however, monitoring of vibratory effects is included in the Cultural Resources MOA. The magnitude of impacts to 4(f) resources is less than Alternative 5 (as discussed below); therefore, Alternative 1 (Proposed Project) is the least overall harm alternative.

4.18.15.2 Alternative 2: South via Milford / North via S-line

Because Alternative 2 is not prudent per 23 C.F.R. 774.17, a least harm analysis is not required and Alternative 2 is not discussed further in this section.

4.18.15.3 Alternative 3: South via Kingsworth / North via Hospital

Impacts to Section 4(f) resources associated with Alternative 3 are the same as Alternative 1 (Proposed Project); therefore, an additional least harm analysis is not required.

4.18.15.4 Alternative 4: South via Milford

Impacts to Section 4(f) resources associated with Alternative 4 are the same as Alternative 1 (Proposed Project); therefore, an additional least harm analysis is not required.

4.18.15.5 Alternative 5: River Center Project Site: South via Milford / North via Hospital District

Alternatives 5, 6, and 7 have similar design of the northern rail connection (except Alternative 7's northern rail connection stops short of Noisette Creek) and therefore would have the same degree of construction and operation related impacts to the Section 4(f) resource. The alternatives differ in the design of the southern rail connection, which would not result in uses to any Section 4(f) resources. Alternatives 5, 6, and 7 meet the purpose and need for the project. The magnitude of any adverse impacts to resources (after reasonable mitigation) not protected by Section 4(f) would be similar for all alternatives. Cost estimates have not been developed for Alternatives 2-7. Since there is similarity between Alternatives 5, 6 and 7 in the impact to Section 4(f) resources, meeting purpose and need, magnitude of any adverse impacts to resources, and the lack of cost estimate information, the least overall harm alternative analysis is based on the other factors described in 23 C.F.R. 774.3(c).

Uses of Section 4(f) resources associated with Alternative 5 include a permanent use of CNH Historic District, CNY Historic District, and USMC Barracks from demolition of contributing elements of the historic districts. Specifically, fourteen elements of the CNH Historic District lie completely within Alternative 5. These elements include CNC Buildings M-3A, M6/M7, NH-45, NH-46, NH-47, NH-49, NH-51, NH-53, NH-55, NH-61, NH-68, and 758 (treatment facilities, storehouses, residences, and a garage that contribute to the NRHP eligibility of the district); and CNC Building NH-62 (a storehouse) that does not contribute. Four elements of the CNY Historic District lie within Alternative 5. These elements are CNC Buildings 64, NSC 66, NSC 67 (all three are storehouses that contribute to the NRHP eligibility of the district), and CNC Building 1655 (a modern storage building that does not contribute to the district).

The CNH Historic District and USMC Barracks have the same significance as stated in (Section 4.18.13.1). The CNY Historic District was listed in the NRHP in 2006 and contains 86 buildings, structures, and objects that are a cohesive representative example of permanent naval industrial construction that reflect the major trends in United States naval development between 1900 and 1945. The views of the SHPO with jurisdiction over each Section 4(f) property is included in (Section 4.18.13.1). Details of how adverse impacts to each Section 4(f) property in Alternative 5 will be mitigated is unknown, but could be assumed to be similar to the details provided in the Cultural

Resources MOA. However, the magnitude of impacts to 4(f) resources is greater than Alternative 1 (Proposed Project); therefore Alternative 5 is not the least overall harm alternative.

4.18.15.6 Alternative 6: River Center Project Site: South via Kingsworth / North via Hospital

Impacts to Section 4(f) resources associated with Alternative 6 are the same as Alternative 5; therefore, an additional least harm analysis is not required.

4.18.15.7 Alternative 7: River Center Project Site: South via Milford

Impacts to Section 4(f) resources associated with Alternative 7 are the same as Alternative 5; therefore, an additional least harm analysis is not required.

Table 4.18-3
Least Overall Harm Analysis

Alternative	Mitigation	Harm After Mitigation	Significance	Views of Officials	Purpose and Need	Adverse Impacts to other Resources	Cost Differences
No-Action	N/A	N/A	N/A	N/A	Does not meet purpose and need	N/A	N/A
1: Proposed Project: South via Milford / North via Hospital District	See Cultural MOA.	Unknown	The CNH Historic District is an intact collection of thirty-two buildings located in the northwest corner of the former Charleston Navy Base. This collection of extant buildings provides a good representation of the significance of the Charleston Naval Hospital and forms a cohesive district with a high degree of integrity (Appendix G - NRHP CNC Registration Form). The former USMC Barracks (CNC Building M17) on the CNC stands north of a grassed lawn on Marine Street. The lawn served as a parade ground when the barracks was	Letter dated July 7, 2016, from SHPO: dated July 7, 2016, the SHPO stated, "For six of the seven alternatives, the report states that adverse effects on historic properties will occur and will require mitigation, as well as possible monitoring for long-term effects. Alternative 2 is the only alternative that may avoid adverse effects to historic properties. We concur with the report that if an	Meets purpose and need	See Table 4.18-4	Unknown

Alternative	Mitigation	Harm After Mitigation	Significance	Views of Officials	Purpose and Need	Adverse Impacts to other Resources	Cost Differences
			occupied. Building M17 was built in 1910 and served as the residence of USMC enlisted personnel throughout the operation of Navy Base Charleston.	alternative that causes adverse effects is selected, a MOA will need to be developed outlining mitigation and possible monitoring of indirect effects.”			
3: South via Kingsworth / North via Hospital	N/A	Unknown	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	See Table 4.18-4	Unknown
4: South via Milford	N/A	Unknown	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	See Table 4.18-4	Unknown
5: River Center Project Site: South via Milford / North via Hospital District	N/A	Unknown	The CNH Historic District and USMC Barracks have the same significance as stated above for Alternative 1. The CNY Historic District was listed in the NRHP in 2006 and contains 86 buildings, structures, and objects that are a cohesive representative example of permanent naval industrial construction that reflect the major trends in United States naval development between 1900 and 1945.	Same as Alternative 1	Meets purpose and need	See Table 4.18-4	Unknown
6: River Center Project Site: South via Kingsworth / North via Hospital	N/A	Unknown	Same as Alternative 5	Same as Alternative 1	Same as Alternative 5	See Table 4.18-4	Unknown
7: River Center Project Site: South via Milford	N/A	Unknown	Same as Alternative 5	Same as Alternative 1	Same as Alternative 5	See Table 4.18-4	Unknown

Source: Atkins 2018.

4.18.15.8 Summary of Least Overall Harm Analysis

The magnitude of impacts to 4(f) resources for Alternative 1 (Proposed Project), 3, and 4 (Proposed Project Alternatives) are less than Alternatives 5, 6, and 7 (River Center Alternatives). Specifically, uses of Section 4(f) resources by the Proposed Project Alternatives include a permanent use of the CNH Historic District from demolition of contributing elements to the historic district and the permanent use of the parade ground of the USMC Barracks, whereas uses of Section 4(f) resources for River Center Alternatives include the permanent use of the CNH Historic District, CNY Historic District, and USMC Barracks from demolition of contributing elements to the historic districts and the use of the CNYOQ Historic District from altered setting of the historic district. Therefore, the Proposed Project Alternatives have the least overall harm to Section 4(f) resources. Between the Proposed Project Alternatives, impacts to Section 4(f) resources are the same because the design of the northern rail alternative is the same in each alternative. However, the alternatives differ in the magnitude of any adverse impacts to resources not protected by Section 4(f) after reasonable mitigation.

Since the magnitude of impacts to 4(f) resources for Alternative 1 (Proposed Project), 3, and 4 (Proposed Project Alternatives) are less than Alternatives 5, 6, and 7 (River Center Alternatives), the magnitude of any adverse impacts to resources not protected by Section 4(f) were compared for Proposed Project Alternatives. The following resources have impacts that are similar between the Proposed Project Alternatives: geology and soils, hydrology, vegetation and wildlife, water quality, EFH, air quality, and climate change (Table 2.5-1). Impacts for remaining resources are presented in Table 4.18-4 and discussed below. For waters of the U.S., Alternative 3 has the least impact (11.80 acres), followed by Alternative 1 (Proposed Project) (15.84 acres), and Alternative 4 (15.98 acres) (Section 4.5.11). Impacts to protected species are similar between Alternative 1 (Proposed Project) and Alternative 3; however, the potential for impacts associated with Alternative 4 are expected to be less than Alternative 1 and 3 because there would be no in-water construction over Noisette Creek (Section 4.6.11).

Impacts to traffic and transportation for Alternative 3 and Alternative 4 are the same as Alternative 1 (Proposed Project) for I-26, I-526, US 17, and North Charleston intersections (Section 4.8.11). For impacts due to at-grade rail crossings, Alternative 1, 3, and 4 would result in moderate, permanent adverse impact on the opening year 2018 and major, permanent adverse impact for design year 2038 at-grade crossing operations as Proposed Project alternatives would increase the frequency and number of train occurrences in North Charleston. Alternative 1 (Proposed Project) would have one new at-grade crossing, while Alternative 3 would have two (Meeting Street and Spruill Avenue at Kingsworth Avenue). Alternative 4 would have double (8/day) the number of train occurrences as Alternative 1 on the southern rail connection because all trains would enter and exit the ICTF utilizing a parallel southern rail connection (Section 4.8.11).

Alternative 1 (Proposed Project) and Alternative 4 have similar impacts to land use and infrastructure. Alternative 3 is similar to Alternative 1 (Proposed Project) except off-site roadway and rail improvements would cause the demolition of approximately 2 more structures (Section 4.9.11).

For visual resources, impacts are similar between Alternative 1 (Proposed Project) and Alternative 4; however, there would be no renovated rail bridge over Noisette Creek and a negligible effect resulting from nighttime train head lamps due to lack of curvatures (and affected residences) on the southern arrival/departure tracks (Section 4.11.11). Alternative 1 (Proposed Project) and Alternative 3 would result in a minor, permanent adverse impact from light and glare associated with nighttime train head lamps in areas of the northern rail connection where train headlights could shine into residential windows at points where the track curves (Section 4.11.3).

Impacts from noise are similar among Alternative 1 (Proposed Project), Alternative 3, and Alternative 4 for traffic noise, construction noise, and operational noise (Section 4.12.11). Noise impacts for Alternative 4 differ slightly from Alternative 1 (Proposed Project) as rail noise impacts would be concentrated in the southern rail connection, but the magnitude of impacts is the same (minor to moderate impact [3 to 10 dB(A)] along several segments). Vibration impacts for Alternative 3 differ slightly from Alternative 1 (Proposed Project) as there is potential impact for one or two receptors near the curved track at Kingsworth Avenue; all other impacts are negligible (below 80 VdB). Alternative 4 would have no additive noise impacts. Alternative 1 (Proposed Project) and Alternative 3 would have an additive noise impact from traffic and rail noise in the rail segment from North of Virginia Avenue to Avenue B (negligible) and St. Johns Avenue between O'Hear Avenue and McMillan Avenue (minor to moderate) (Section 4.12.11).

For HTRW, impacts from Alternative 4 are similar to Alternative 1 (Proposed Project). Alternative 3 differs from Alternative 1 (Proposed Project) in that there are fewer contaminated sites requiring investigation, approximately 10 fewer buildings requiring demolition/renovation/potentially asbestos containing materials and metals-based paints, and 12 fewer sites with potential soil contamination (Section 4.15.11).

Impacts to socioeconomic and environmental justice from Alternative 4 are similar to Alternative 1 (Proposed Project) except for localized moderate impacts to emergency response from Alternative 4. Alternative 3 differs from Alternative 1 (Proposed Project) in that approximately eight additional residential displacements would occur, two new at-grade crossings would be located in the vicinity of Kingsworth Avenue at Meeting Street and Spruill Avenue, there would be localized moderate impacts to emergency response, and a few businesses north of Milford Street would be avoided (Section 4.16.11).

After balancing the factors included in a least overall harm analysis, Alternative 1 (Proposed Project) has the least overall harm in light of the Section 4(f) statute's preservation purpose and identified appropriate measures to minimize harm, and is thus the least overall harm Alternative. Alternative 1

(Proposed Project) incorporates all possible planning to minimize harm to Section 4(f) properties, as documented in the above evaluation. Alternative 1 (Proposed Project) has been designed to minimize harm to Section 4(f) resources and to minimize impacts to other resources such as environmental justice communities. Mitigation measures in the Cultural Resources MOA (Appendix G) will be used to further address impacts to Section 4(f) properties that could not be avoided or minimized. Although Alternative 1 (Proposed Project) has greater wetland impact than Alternative 3, the minimization of impacts to the environmental justice community outweighs the remaining harm, after mitigation, to Section 4(f) properties. Substantial mitigation measures included under Alternative 1 (Proposed Project), developed in consultation with Consulting Parties and described in the MOA (Appendix G), will mitigate the impacts to Section 4(f) resources resulting from Alternative 1 (Proposed Project).

Table 4.18-4
Summary of Potential Impacts by Alternative and Environmental Resource

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
Waters of the United States	Major adverse impacts to Waters of the U.S. Direct impacts from fill/shading activities during construction would result in the permanent impact of approximately 15.84 acres of Waters of the U.S., including 6.65 acres of tidal salt marsh, 8.01 acres of freshwater wetlands, 1.14 acres of tidal open waters, and 0.04 acre of non-tidal open waters.	Major adverse impacts to Waters of the U.S. Similar to Alternative 1 (Proposed Project) but would result in the permanent impact of approximately 11.81 acres of Waters of the U.S. including 6.66 acres of tidal salt marsh, 3.86 acres of freshwater wetlands, 1.14 acres of tidal open waters, and 0.15 acres of non-tidal open waters.	Major adverse impacts to Waters of the U.S. Similar to Alternative 1 (Proposed Project) but would result in the permanent loss of approximately 15.98 acres of Waters of the U.S. including 6.66 acres of tidal salt marsh, 8.22 acres of freshwater wetlands, 1.03 acres of tidal open waters, and 0.07 acre of non-tidal open waters.
Protected Species	Negligible effect on habitat alteration/fragmentation of Protected Species with implementation of avoidance and minimization measures during construction activities. Potential exists for direct and indirect short-term species displacement effects during construction; but negligible with implementation of Applicant’s prescribed avoidance and minimization measures in combination with the additional Corps mitigation measures listed in Section 4.6.12.	Same as Alternative 1 (Proposed Project).	Habitat alteration/fragmentation impacts would be same as Alternative 1 (Proposed Project). Species displacements impacts would be similar to Alternative 1 (Proposed Project) but in-water construction activities would be limited to Shipyard Creek.

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
<p>Traffic and Transportation</p>	<p>Negligible short-term impact during construction to I-26, I-526, US 17, and at-grade rail crossings; minor short-term adverse impact during construction to North Charleston intersections. Negligible permanent impact on majority of I-26 corridor in the opening year 2018 and design year 2038; beneficial or adverse permanent impact on a few segments due to a LOS change. Negligible permanent impact on majority of I-526 corridor in the opening year 2018 and design year 2038; beneficial or adverse permanent impact on a few segments due to a LOS change. Negligible permanent impact on the opening year 2018 and design year 2038 US 17 operations as Alternative 1 (Proposed Project) would have minimal influence on the US 17 traffic volumes. Minor permanent adverse impact on the opening year 2018 and design year 2038 North Charleston intersection operations. Traffic patterns would change but slightly more intersections would degrade than improve operations. Moderate permanent adverse impact on the opening year 2018 and major permanent adverse impact design year 2038 at-grade crossing operations as the Proposed Project would increase the frequency and number of train occurrences in North Charleston. Additionally, one new at-grade crossing would be created.</p>	<p>Same as Alternative 1 (Proposed Project) except for: different number of new at-grade rail crossings, locations (2-Meeting Street and Spruill Avenue at Kingsworth Avenue), and operations.</p>	<p>Same as Alternative 1 (Proposed Project) except for: Impacts to at-grade rail crossings are similar to Alternative 1 (Proposed Project) but with different at-grade rail crossing locations and operations as this Alternative would have double (8/day) the number of train occurrences on the southern rail connection as Alternative 1.</p>

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
<p>Land Use and Infrastructure</p>	<p>Major permanent impact on land use change. Rezoning of the residential area along the western boundary of the ICTF and rezoning of portions of the project site from Institutional future land use. Comprehensive Plan amendment also required. Major permanent impact on displacement of structures. Approximately 88 non-Palmetto Railways owned or specially designated structures would have to be displaced or demolished. Additional off-site roadway and rail improvements would cause the displacement of approximately 19 structures. Negligible short-term impact on infrastructure and utilities as any interruption of service to local area residents and businesses would be less than 12 hours.</p>	<p>Similar to Alternative 1 (Proposed Project) except additional off-site roadway and rail improvements would cause the demolition of approximately 21 structures.</p>	<p>Similar to Alternative 1 (Proposed Project)</p>
<p>Cultural Resources</p>	<p>Adverse effect on Charleston Naval Hospital (CNH) Historic District from demolition of contributing elements of the Historic District, and altered setting of the District. No effect on Charleston Naval Yard (CNY) Historic District, Charleston Navy Yard Officer’s Quarters (CNYOQ) Historic District, or other historic properties outside the Charleston Naval Complex (CNC). Adverse effect from altered setting for U.S. Marine Corps (USMC) Barracks.</p>	<p>Same as Alternative 1 (Proposed Project)</p>	<p>Same as Alternative 1 (Proposed Project)</p>

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
<p>Visual Resources and Aesthetics</p>	<p>Minor, permanent adverse impact to scenic views from renovation and slight elevation of existing rail over Noisette Creek along Noisette Boulevard. Major, permanent adverse impact to scenic resources from the removal of contributing elements of the CNH Historic District and mature trees, as well as the altered setting of the USMC Barracks. Major, permanent adverse impact to visual quality and character from demolition of contributing elements of the CNH historic district and altered setting of the USMC Barracks. Moderate, permanent adverse impact from new vertical elements in the VRSA (wide-span gantry cranes and high mast lighting). Minor, permanent adverse impact to visual quality and character from renovation and slight elevation of existing rail bridge) over Noisette Creek. Negligible impact to visual quality and character from the arrival/departure tracks to the south of the ICTF. Negligible impact to visual quality and character from the realignment of Hobson Ave/Bainbridge Ave and construction of the drayage road; minor, permanent adverse impact from the removal of the Viaduct Road Overpass. Minor, permanent adverse impact to visual quality and character from the construction of the earthen berm adjacent to the Chicora-Cherokee neighborhood. Minor, permanent adverse impact from light and glare associated with the new 85-foot tall mast lighting that will be illuminated from dusk to dawn, and from nighttime train head lamps.</p>	<p>Same as Alternative 1 (Proposed Project).</p>	<p>No impact to scenic views. Same impacts to scenic resources as Alternative 1 (Proposed Project). Similar impacts to visual quality and character as described under Alternative 1 (Proposed Project), but without renovated rail bridge over Noisette Creek. Similar impacts from light and glare as those described under Alternative 1 (Proposed Project), but negligible effect resulting from nighttime train head lamps due to lack of curvatures (and affected residences) on the southern arrival/departure tracks.</p>

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
<p>Noise and Vibration</p>	<p>Negligible traffic noise impacts with negligible beneficial effect for several streets. Minor to moderate rail noise impact along several segments due to increased rail activity and new track builds. Negligible rail vibration impact. Minor to moderate construction noise impact in the vicinity of noise berm. Minor to Moderate exterior daytime operational noise impact and major exterior nighttime operational noise impact. Refer to subsection 4.12.3.5 for information on exterior to interior noise reduction. Interior noise levels are not anticipated to disrupt sleep. Negligible additive noise impacts (Virginia Avenue - Traffic + Rail Noise) and minor to moderate additive noise impacts (St. Johns Avenue - Traffic + Rail Noise)</p>	<p>Similar to Alternative 1 (Proposed Project), except additional potential for rail vibration impact for one or two receptors near the curved track at Kingsworth Avenue.</p>	<p>Similar to Alternative (Proposed Project) except minor to moderate rail noise impact along several segments due to increased rail activity in the southern alignment.</p>

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
<p>Hazardous, Toxic, and Radioactive Waste</p>	<p>Eight active monitoring sites with contamination (15 requiring investigation) for a total of 23. Approximately 107 buildings requiring demolition/renovation. Potential minor adverse impacts to soil (contamination) from excavation activities (after compliance with the Navy's permitting process, RCRA Permit #SC0 170 022 560 and all applicable laws for testing and disposal of contaminated soils). 24 potentially contaminated sites would be impacted. Potential minor adverse impacts to groundwater (contamination) from dewatering in excavation areas (after compliance with the Navy's permitting process, RCRA Permit SC0 170 022 560, and all applicable laws for treatment and disposal of dewatering effluent. Multiple areas with groundwater monitoring would be impacted and potentially contaminated sites would be impacted. No anticipated involvement with the Macalloy Superfund Site. Potential minor adverse impact from demolition of approximately 107 structures with asbestos and/or metals-based paints (after survey and applicable abatement measures). Potential for minor and/or major adverse impacts from accidental spills resulting from use of above ground storage tanks (ASTs) (diesel fuel), storage of other minor amounts of solvents on the premises, and from containers containing hazardous materials.</p>	<p>Similar to Alternative 1 but with: Eight active monitoring sites with contamination, three requiring investigation for a total of 11. Approximately 109 buildings requiring demolition/renovation. 13 fewer potentially contaminated sites would be impacted. Impact approximately 109 buildings through demolition of structures with asbestos and/or metals-based paints (after survey and applicable abatement measures).</p>	<p>Similar to Alternative 1</p>

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
<p>Socio-economics and Environmental Justice</p>	<p>Major short-term and indirect long-term benefit to local and regional economy; minor indirect adverse impact to local businesses adjacent to project (access, relocations, and aesthetics). Minor short-term adverse impacts from construction; minor adverse access impacts for Chicora-Cherokee residents; minor adverse mobility impacts from new at-grade rail crossings and increased delay at intersections and at-grade crossings. Potential minor adverse emergency response time impacts due to delay at at-grade crossings compared to No-Action however, alternate routes are available. Potential minor safety impacts due to additional conflict points at Meeting Street at-grade crossing. Negligible impact from displacement of Sterett Hall and surrounding arts facilities as they would be displaced with or without Alternative 1 (Proposed Project). Major adverse impacts to Chicora-Cherokee neighborhood from approximately 134 residential displacements; minor to moderate adverse impact from visual and noise impacts. Minor indirect impact from exacerbation of housing and population loss. Minor adverse impacts to Olde North Charleston and minor to moderate impacts to Howard Heights, Union Heights, and Windsor neighborhoods from noise. Negligible impact in terms of new barriers to the elderly and handicapped. Environmental Justice considerations are applicable: Major adverse impact from displacement of approximately 134 residential units would result in a disproportionately high and adverse impact to Chicora-Cherokee neighborhood.</p>	<p>Similar to Alternative 1 (Proposed Project) except: Businesses north of Milford Street would be avoided. Location of 2 new at-grade crossings are located at Meeting Street and Spruill Avenue at Kingsworth Avenue. Localized moderate impacts to emergency response. Approximately 8 additional residential displacements from Union Heights neighborhood.</p>	<p>Similar to Alternative 1 (Proposed Project). except: Localized moderate impacts to emergency response.</p>

Resource Area	Alternative 1 (Proposed Project)	Alternative 3	Alternative 4
Section 4(f)/6(f)	Uses of Section 4(f) resources: permanent use of CNH Historic District from demolition of contributing elements of the historic district and permanent use of the parade ground of the USMC Barracks. No conversion of 6(f) resources.	Same as Alternative 1 (Proposed Project)	Same as Alternative 1 (Proposed Project).

Source: Atkins 2018.