

## 5.6 FURTHER ASSESSMENT OF CUMULATIVE IMPACTS

Alternative 1 (Proposed Project) and the alternatives, in combination with the Future Actions identified in Section 5.2, could result in cumulative impacts. Each resource area with the potential to result in more than minor cumulative impacts (Table 5.5-1) was further considered with regard to the past, present, and Future Actions. These resources are wetlands and other waters of the U.S., traffic and transportation, land use, visual resources and aesthetics, cultural resources, noise and vibration, air quality, and socioeconomics and Environmental Justice, human health and safety, and Section 4(f) and 6(f) resources.

### 5.6.1 Wetlands and Other Waters of the U.S.

The Charleston harbor estuary is the state's third largest estuary and is prized for its valuable marshlands and open water habitat; however, this region has been altered by anthropogenic activities for over three centuries (Van Dolah et al. 1990). Many of the developments in the region have taken place on or adjacent to waters of the U.S., resulting in thousands of acres of wetlands altered or filled. Due to historic rice production in the region, a large proportion of wetland loss was located along the Ashley and Cooper Rivers.



A record of Corps Charleston District DA permits issued from April 1997 to February 2016 was reviewed for the Cooper River watershed (HUC 03050201) (Figure 5.6-1) within the greater Charleston metro area (Charleston, Berkley and Dorchester counties). In this record, only projects with wetland fill impacts were considered for this review. Implementation of these past and present projects has resulted in impacts to 2,135.72 acres of wetland habitat, including 409.53 acres of palustrine wetlands, 112.38 acres of estuarine wetlands and 1,613.82 acres of other wetlands (lacustrine, marine, riverine, riparian, upland or unclassified). Alternative 1 (Proposed Project) would result in fill impacts to 12.09 acres of wetland habitat (8.94 acres of estuarine and 1.77 acres of palustrine habitat).

Future Actions projects are expected to result in impacts to 259.21 acres of wetland habitat (22.72 acres of estuarine and 236.49 acres of palustrine habitat). It is important to note that one of the largest Future Actions, the Post 45 dredging project, is not included in the Future Actions estimate as the project would have no direct impacts to wetlands resulting from dredging or disposal. The project is expected to indirectly impact approximately 324 acres of wetlands along the Ashley and Cooper Rivers through increases in salinity, which will slowly change portions of the plant assemblage due to salt stress; however, the Post 45 dredging project would likely require mitigation in the form of preservation of about 665.6 acres of wetlands (Corps 2015). Alternative 1 (Proposed Project) will have negligible cumulative impacts on salinity even when combined with the Post 45 project.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community




**Legend**

-  Cooper River Watershed
-  Study Area

Source: USGS 8-digit HUC and Atkins 2016

0 5 10 Miles



NAVY BASE ICTF EIS

Cooper River Watershed  
Figure 5.6-1



It is anticipated that all permitted impacts to waters of the U.S., including Alternative 1 (Proposed Project) and other Future Actions, would be mitigated such that there is no net loss of functional value of estuarine and palustrine wetlands. Therefore, no cumulative impact to waters of the U.S. is anticipated.

### 5.6.2 Traffic and Transportation

The transportation study detailed in Appendix F was designed to account for other Future Actions in the study area, such as the HLT, committed STIP projects and background traffic growth to 2038. For example, the transportation study took into account projected (2038) port operations at each terminal and the resultant change in intermodal distribution (i.e. less cargo traveling to other terminals as a result of the HLT). Therefore, the impacts outlined below reflect cumulative effects.

Alternative 1 (Proposed Project) would have a negligible impact during construction to I-26, I-526, US 17, and at-grade rail crossings and a minor cumulative adverse impact during construction to North Charleston intersections. Alternative 1 (Proposed Project) would have a negligible impact on majority of the I-26 corridor in the opening year 2018 and design year 2038. For I-526, Alternative 1 (Proposed Project) would have a negligible impact on majority of the corridor in the opening year 2018 and design year 2038. Both of these would have beneficial or adverse permanent cumulative impacts on a few segments due to an LOS change. US 17 operations would have a negligible impact for the opening year 2018 and design year 2038 as Alternative 1 (Proposed Project) would have minimal influence on the US 17 traffic volumes. North Charleston intersection operations would experience a minor adverse cumulative impact for the opening year 2018 and design year 2038. Traffic patterns would change but slightly more intersections would degrade than improve operations. There would be a moderate adverse cumulative impact for the opening year 2018 and a major adverse cumulative impact for the design year 2038 for at-grade crossing operations as Alternative 1 (Proposed Project) would increase the frequency and number of train occurrences in North Charleston. Additionally, one new at-grade crossing would be created.

### 5.6.3 Land Use

The construction and operation of Alternative 1 (Proposed Project) and Alternatives 2-4 would primarily be consistent with the current zoning designation of M-2 (Heavy Industrial District) for the majority of the project area; however, a portion of the project site has a Future Land Use Designation of Institutional and a portion of the site is also zoned for Planned Development (PD). See section 4.9.3 for additional details. Construction of the berm on the western boundary (being constructed as part of the proposed mitigation) would also require a zoning and land use change for residential uses converted to industrial. As a result, Alternative 1 (Proposed Project) and its alternatives would require a rezoning as well as an amendment to the Comprehensive Plan. Alternative 1 (Proposed Project) would also require the demolition of approximately 88 structures. Additional off-site roadway and rail improvements would cause the demolition of approximately 23 structures, all of

which would be considered a major adverse impact. Overall impacts to land use as a result of the Proposed Project and its alternatives would be major.

The other Future Actions considered include projects consistent with the study area (port and navigation projects, urban and industrial development); however, zoning and a comprehensive plan amendment may be required as well. Because the contribution of the Proposed Project is a major land use impact, when combined with other Future Actions, there would be a cumulative impact. However, as discussed in Section 4.9, the Corps anticipates that the plan amendment will be approved and therefore will not result in a cumulative impact.

#### 5.6.4 Cultural Resources

Alternative 1 (Proposed Project) and Alternatives 3–7 would have an Adverse effect to historic properties, including the CNH Historic District and the USMC Barracks. Alternative 5 would also have an Adverse effect on the CNY and CNYOQ Historic Districts. There would be negligible impacts to the remaining historic properties near the Proposed Project. The potential for archaeological sites to exist within the Project site is minimal. Alternative 1 (Proposed Project) and alternatives would not result in cumulative impacts in light of the other Future Actions because the Future Actions are not located in the historic districts nor on or adjacent to the other historic properties within the study area. In addition, potential project-related impacts would be mitigated through the Cultural Resources MOA (Appendix G).

#### 5.6.5 Visual Resources and Aesthetics

Construction and operation of Alternative 1 (Proposed Project) would result in a minor, permanent adverse impact to scenic views from renovation and slight elevation of the existing rail bridge over Noisette Creek; major, permanent adverse impacts to scenic resources from the removal of contributing structures to the CNH Historic District and mature trees, as well as altered setting of USMC Barracks; and negligible to major impacts on visual quality and character of the Visual Resource study area. The introduction of high-mast lighting (illuminated from dusk until dawn) for all alternatives would introduce minor, permanent impacts from light and glare, and nighttime lighting from train headlamps could disturb sleep for residential structures along rail curvatures.

Other Future Actions in the study area also have the potential to impact visual resources. The HLT would include high-mast lighting and gantry cranes, but the impacts of these features are not anticipated to extend to the same areas that would be impacted by Alternative 1 (Proposed Project). The Port Access Road will introduce a new interchange with vertical elements in the study area that will be visible from the area surrounding Alternative 1 (Proposed Project); however, the new vertical elements would be consistent with existing two-story structures in the study area, as well as Port structures and would not represent an incongruent visual feature that would result in an adverse

visual effect. Alternative 1 (Proposed Project) and alternatives would result in cumulative impacts to visual resources and aesthetics when combined with Future Actions.

### 5.6.6 Noise and Vibration

The noise and vibration technical memorandum detailed in Appendix H utilized information developed during the transportation study (Appendix F) which was designed to account for other Future Actions in the study area, such as the HLT, committed STIP projects, and background traffic growth to 2038. For example, the transportation study took into account projected (2038) port operations at each terminal and the resultant change in intermodal distribution (i.e., less cargo traveling to other terminals as a result of the HLT). Traffic volumes and rail crossing data, developed for the No-Action Alternative and Project alternatives for the 2038 design year, accounted for the background growth rates within that timeframe, and thus incorporated cumulative effects of other concurrent and reasonably foreseeable projects in the study area and the vicinity. Therefore, the resulting traffic and rail noise predictions are considered conservative and incorporate cumulative impacts of other projects. The potential rail vibration impacts, as well as construction and operational noise impacts are local, confined within the immediate vicinity of the rail tracks, Project site, or River Center site, and thus are not considered cumulative.

For Alternative 1 (Proposed Project), traffic noise impacts would result in a negligible impact with a negligible beneficial effect for several streets. Rail noise impacts would be a minor to moderate adverse impact along several segments due to increased rail activity and new track builds. Rail vibration impacts would be negligible. Construction impacts would be a minor to moderate adverse impact in the vicinity due to frequent operations of construction equipment. Operational impacts would be a minor to moderate exterior daytime adverse impact, and major exterior nighttime impact, in the vicinity due to standard train/crane operations. 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 would occur at Virginia Avenue (Traffic + Rail Noise) and minor to moderate additive noise impacts would occur at St. Johns Avenue (Traffic + Rail Noise).

Based on the noise and vibration projections analyzed in Section 4.12, the Corps has determined that other concurrent and reasonably foreseeable future actions provide negligible additional noise or vibration impacts in the study area for Alternative 1 (Proposed Project) and Alternatives 2 through 7; therefore, no cumulative impacts are anticipated.

### 5.6.7 Air Quality

As discussed in Section 5.3, there are several recent and foreseeable future projects in the study area such as the Charleston Harbor Post 45, construction of the HLT, and Port Access Road Interchange. The analysis below focuses on long-term operational emissions from Alternative 1 (Proposed

Project) and alternatives when combined with anticipated air quality impacts from other Future Actions.

The Charleston Harbor Post 45 project proposes to deepen Charleston Harbor to accommodate larger vessels. The Final Integrated Feasibility Report and Environmental Impact Statement (FR/FEIS) for Post 45 included an analysis of cumulative air quality impacts from construction of the Post 45 project and the proposed ICTF facility. The FR/FEIS determined that since the total throughput is not predicted to change as a result of deepening, no landside changes in overall air pollutant emissions would result from channel improvements. However, implementation of any of the alternatives results in a reduction in the number of vessels used to transport cargo. As a result, total air emissions within the harbor and at each terminal would decrease as a result of any of the alternatives, with the 52/48 alternative resulting in the lowest overall emissions and the lowest emissions at each terminal. Additionally, increased depths would reduce congestion and allow vessels more flexibility of movement than under the without project conditions. This would allow traffic to be spread over wider time ranges rather than concentrating all of the largest vessel traffic during high tide stages (Corps 2015).

The HLT project proposes a marine container terminal at the south end of the former Charleston Naval Complex. The HLT development would support cargo marshalling areas, cargo processing areas, cargo-handling facilities, and related terminal operating facilities. To provide access to this Project, the South Carolina Department of Transportation will be constructing a new freeway interchange on I-26, located south of the existing Meeting Street ramps (Exit 217). The proposed Port Access Road Interchange project will remove the existing Spruill Avenue ramps (Exit 218) and build a new full movement directional T-interchange connecting to the new Port Access Road. The Final EIS prepared for the terminal project included analysis of the I-26 improvements, and these improvements were assumed in the Proposed Project analysis. The Final EIS determined that the projects would result in an increase in emissions from mobile sources, such as marine vessels, container trucks, employee automobiles, and support equipment; however, overall these additional air quality emissions represent a very small percentage of total permitted and mobile emissions in the region. Therefore, the Final EIS determined that the terminal project would result in a minimal adverse impact to regional air quality from its emissions inventory.

Alternative 1 (Proposed Project) and alternatives would have the potential to increase air pollutant emissions in the study area, including criteria pollutant and Hazardous Air Pollutants (HAPs). Direct impacts of Alternative 1 (Proposed Project) and alternatives are addressed in Section 4.13; however, the air quality analyses prepared for the cumulative projects determined that these projects would have a minimal impact on regional air quality from their operational emissions inventories. Therefore, although Alternative 1 (Proposed Project) and alternatives would result in greater direct air pollutant emissions, Alternative 1 (Proposed Project) and alternatives, in combination with the

reasonably foreseeable cumulative projects, would not result in a cumulative impact to the criteria pollutant emissions inventory of the study area.

The HLT project also included dispersion modeling in its air quality analysis to further analyze impacts to the NAAQS (Corps 2006). The Final EIS determined that the total anticipated ambient concentration would remain at or below the NAAQS; however, when the anticipated ambient concentrations of the HLT project are added to the existing ambient concentrations and the anticipated ambient concentrations of the Alternative 1 (Proposed Project), the resulting cumulative concentrations would not exceed the applicable NAAQS; therefore, the Alternative 1 (Proposed Project) would not put the Tri-County area into non-attainment for any NAAQS. Alternatives 2-4 cumulative concentrations would not exceed the applicable NAAQS and thus not put the Tri-County area into non-attainment for any NAAQS. Therefore, Alternative 1 (Proposed Project) and Alternatives 2-4 would not result in beneficial or adverse cumulative impacts to the NAAQS. Alternatives 5-7 may put the Tri-County area into non-attainment for NO<sub>2</sub>. Under full operation of Alternatives 5-7, the Tri-County area may not remain in compliance with the NAAQS (see also Section 4.13.7.3). Therefore, there may be an adverse cumulative impact to the NAAQS for Alternatives 5-7 (River Center site alternatives).

### 5.6.8 Climate Change

Climate Change impacts are inherently cumulative in nature. GHG emissions contribute cumulatively and adversely to Global Climate Change, such as sea level rise, increased frequency and intensity of storm events, and impacts to ecosystems. The GHG emissions Inventory would be 30,948 MT CO<sub>2</sub>e from Alternative 1 (Proposed Project), resulting in minor long-term adverse impacts. Alternatives would result in impacts with similar magnitude, with the exception of the No-Action Alternative, which would result in a major adverse impact. Impacts due to sea level rise at the Proposed Project and River Center project sites would be negligible. Impacts from increased frequency and intensity of storm events on the Proposed Project and River Center project sites would be major; therefore, this impact is discussed in more detail below.

Although major hurricanes make landfall in the South Carolina and Georgia approximately once every 25 years, it is likely the Proposed Project site would experience at least one over the life of the Project, between 2018 and 2068. According to the SLOSH model estimates shown in Table 4.14-8, the Proposed Project site would likely experience a storm surge of greater than 9 feet above ground (NOAA 2016c). This level of inundation could damage on-site structures to the point of altering their structural integrity, move and damage heavy equipment, and pose a threat to human health and safety of people on-site. This would be a major impact on the Proposed Project by climate change due to increased frequency and intensity of storm events.

Approximately 5 percent of containers at the ICTF are estimated to hold hazardous materials, as described in Section 4.15. It is possible that an intense storm could lead to a hazardous material spill

on-site if the containers of those materials are compromised during handling or derailment. Hazardous materials stored on-site and in containers should be tracked and stored with caution. Hazardous materials would also need to be checked after storm events to confirm no spill occurred. If the storage of hazardous materials is compromised due to the severity of a storm event, human health and safety of on-site employees would be comprised. To prevent such spillage, Palmetto Railways would create and implement an SPCC plan. Implementation of such a plan would make the Proposed Project site more resilient to Climate Change effects. While an SPCC Plan would work to prevent hazardous material from spilling, there would remain a threat to human health and safety from inundation expected from major hurricanes. Therefore, impacts on Alternative 1 (Proposed Project) by increased frequency and severity of storm events would be major.

### 5.6.9 Socioeconomics and Environmental Justice

The direct and indirect effects of Alternative 1 (Proposed Project) and alternatives on socioeconomic resources and Environmental Justice are presented in Section 4.16. This cumulative effects section focuses on the potential for socioeconomic resources and low-income and minority populations to be impacted by the collective effect of other past, present, and Future Actions in combination with Alternative 1 (Proposed Project) and alternatives.

During public involvement activities, the community voiced concerns that Alternative 1 (Proposed Project) may impact community cohesion and stability by reversing the positive investments and changes that have been made in the area in recent years, and may also indirectly impact the stability of newer businesses and residential developments in the area. These potential effects may be exacerbated when combined with the impacts of additional industrial development and associated rail and truck traffic anticipated as a result of other past, present, and Future Actions in the study area.

In terms of economic and business resources, all Project alternatives would provide major short-term and indirect, long-term economic benefits to the regional and local community as employment opportunities are directly and indirectly created as a result of Alternative 1 (Proposed Project). There is potential for cumulative benefits to economic and business resources as employment opportunities would also be provided by other Future Actions, such as the Boeing Assembly Plant Expansion and the HLT.

As presented in Section 4.16, Alternative 1 (Proposed Project) and alternatives have the potential for disproportionately high and adverse impacts to Environmental Justice populations. The adverse impacts associated with Alternative 1 (Proposed Project) and Alternatives 2-4 would be predominantly borne by the minority and low-income population of the Chicora-Cherokee neighborhood and are appreciably more severe than the adverse effects that would be suffered by the nonminority and non-low-income population of the City of North Charleston and Charleston County. Alternatives 5-7 would be predominantly borne by the minority and low-income population



in the Hospital District neighborhood (West Yard Lofts) and are appreciably more severe than the adverse effects that would be suffered by the nonminority and non-low-income population of the City of North Charleston and Charleston County. However, the Applicant and community groups entered into a Memorandum of Agreement on October 18, 2016 (see the Community Mitigation Plan and MOA in Appendix N for additional details). Measures outlined in this agreement would mitigate the adverse burdens borne by the Environmental Justice community.

The combination of Alternative 1 (Proposed Project) and activities at the port and other past, present, and Future Actions in the area, including the HLT, the Port Access Road, and the former Charleston County incinerator to the south of the Proposed Project, would result in cumulative impacts. These cumulative effects would be limited to areas impacted by these previous and ongoing projects, which generally includes the Chicora-Cherokee neighborhood.

### 5.6.10 Human Health and Safety

As discussed in Section 4.17, human health and safety impacts as a result of Alternative 1 (Proposed Project) and alternatives include increased risk of respiratory problems due to air quality impacts (Alternatives 5-7), increased potential for spill incidents involving petroleum products or hazardous waste, increased noise, and potential minor adverse impacts to community safety due to an additional at-grade crossing and potential for emergency response routes to be blocked by trains. Overall, impacts to human health and safety as a result of Alternative 1 (Proposed Project) and alternatives are anticipated to be minor to moderate and localized. Due to the spatial extent of the other Future Actions, and localized nature of Alternative 1 (Proposed Project) impacts, no cumulative impacts to human health and safety are anticipated.

### 5.6.11 Section 4(f) and 6 (f) Resources

Alternative 1 (Proposed Project) would result in a direct use of the CNH Historic District and USMC Barracks, which are 4(f) resources. Other Future Actions were researched to determine if there would be a permanent incorporation of a 4(f) resource or a constructive use of a Section 6(f) resources. The only project within the Section 4(f)/6(f) study area that involved 4(f)/6(f) was the I-26 Port Access Road Interchange project. The Port Access Road project has no 6(f) properties within the project area, but two Section 4(f) resources; Park South Recreation Center and Rosemont field. The intended use of this land is not anticipated to be impacted by the proposed project; however, designs of the field may have to be adjusted. The City of Charleston entered into a lease agreement with Liquid Transport Corporation for property in with Rosemont Field is located, which states, “in the event that the premises shall be taken for public use by the city, state, federal government, public authority or other corporation having the power of eminent domain, then this lease shall terminate. . .” Therefore, because of this lease, Section 4(f) is not applicable for this resource (FHWA 2013). No cumulative impacts to Section 4(f) or 6 (f) resources are anticipated.