

# Chapter 4: Existing Conditions and Environmental Consequences

## 4.0 Existing Conditions and Environmental Consequences

The Federal Highway Administration (FHWA) is required by the National Environmental Policy Act (NEPA) to evaluate potential impacts to the social, economic, and natural environments for the proposed Reasonable Alternatives discussed in Chapter 3. The best available information is provided to decision-makers, members of the public, stakeholders, and agencies to make informed decisions. This Environmental Assessment (EA) is developed in accordance with NEPA and provides an evaluation of potential effects on the natural and physical environments.

As previously discussed in Chapters 2 & 3, the Project Study Area (PSA) extends along US 278 from Moss Creek Drive to Wild Horse/Spanish Wells Road, refer to Figure 4-1. This chapter defines the existing conditions of the project study area and explains the anticipated impacts. Potential mitigation strategies are also proposed to address the associated impacts of the project.

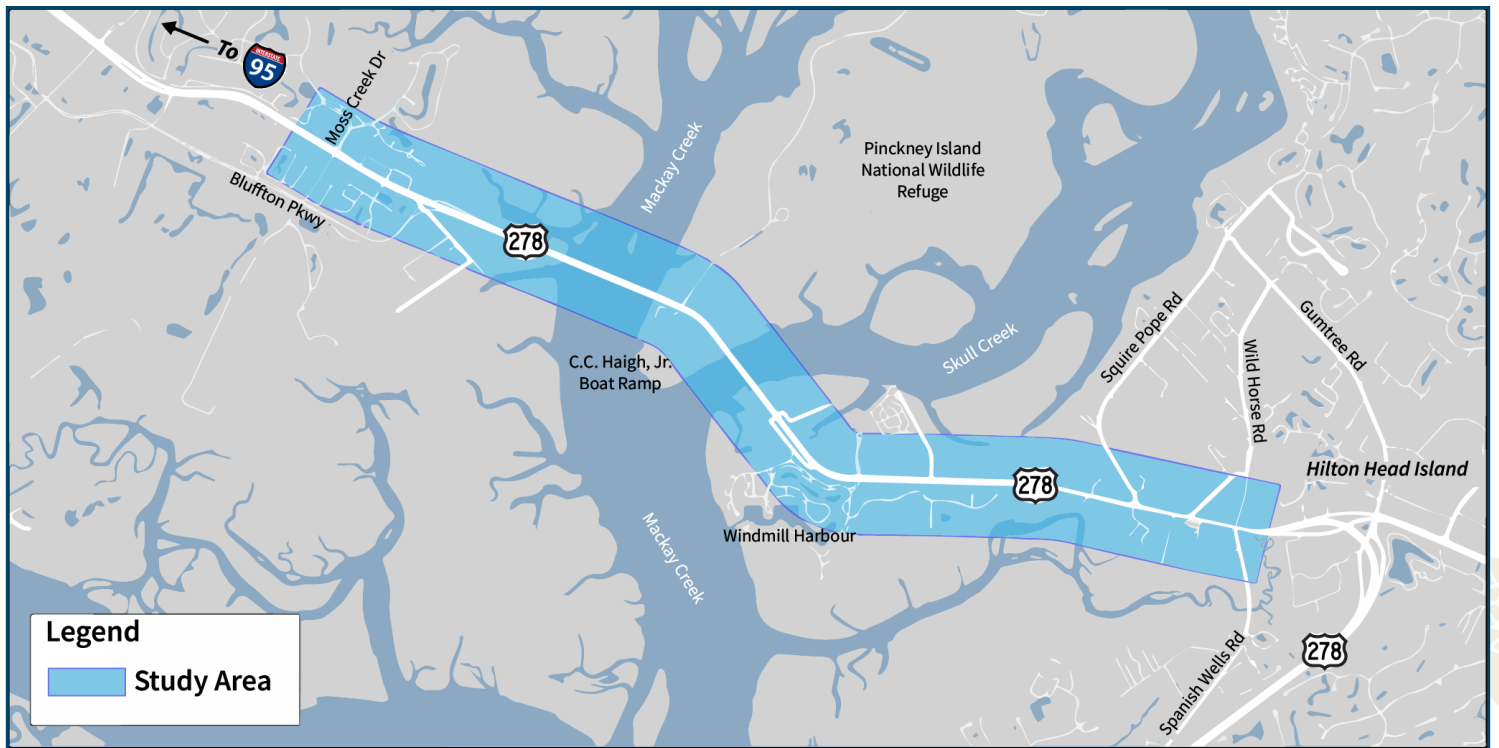


Figure 4-1 US 278 Corridor Improvements PSA

## 4.1 Land Use

### 4.1.1 Existing Conditions

The PSA extends approximately 4.11 miles from Bluffton on the mainland across Mackay Creek, Pinckney Island, Skull Creek, Hog Island, and Jenkins Island to Hilton Head Island. Within the PSA, land uses include residential, commercial, vacant/undeveloped, park/natural space, utility easements and existing roadway right-of-way.

The undeveloped and natural areas include coastal marshes and forested areas. There are two parks in the PSA. The Pinckney Island National Wildlife Refuge (PINWR) is a 4,053-acre public park comprised of salt marshes, tidal creeks, forests, fields, and freshwater ponds. The C.C. Haigh, Jr. Boat Landing is located on PINWR. This public boat landing includes a parking lot, two floating docks, and a kayak launch.

The Town of Hilton Head Island and Beaufort County jointly oversee a 7-acre public park in the eastern end of the PSA. The park provides basketball and tennis courts, a parking lot, and open fields for other recreational uses. The park is located on US 278 across from Old Wild Horse Road.

Santee Cooper overhead power lines extend through the PSA in an easement that parallels US 278. The power lines follow the northside of US 278 in Bluffton, then cross Mackay Creek where the easement splits to parallel the north and south sides of US 278 on PINWR and Hog Island. The south easement reconnects with the north easement on Jenkins Island and the power lines parallel US 278 through the study area on Hilton Head Island.

### 4.1.2 Area Land Use Planning Documents

According to the Town of Bluffton 2014 Comprehensive Plan, the PSA is in the unincorporated section of Bluffton and there is no zoning in this area including Hog Island. The Town of Bluffton 2014 Comprehensive Plan and South Beaufort County Regional Plan do not identify any parcels in the vicinity of the PSA for future development.

In the Town of Hilton Head Island, the PSA includes Jenkins Island and the Stoney community. Stoney is an unincorporated community within Hilton Head Island that extends from the Jenkins Island causeway to the US 278 intersection with Spanish Wells Road. For more information, refer to Section 4.12.2. According to the Official Zoning District Map for the Town of Hilton Head Island, there is no zoning on Jenkins Island while the Stoney community contains three zoning districts:

- RM-4 - Low to moderate density residential: this district permits by-right single-family, multi-family, and group living, as well as various institutional and civic uses.
- S - Stoney mixed use: this district permits a variety of uses, including multi-family, single-family, various civic and institutional uses, resort accommodations, commercial recreation, offices, retail, dining, entertainment, various auto-oriented businesses, and agriculture.
- PR - Parks and recreation: this district includes publicly owned lands for only active recreation, passive recreation, and environmental conservation.

Jenkins Island is not included in either the 2017 Town of Hilton Head Island’s Comprehensive Plan or the South Beaufort County Regional Plan for future development. There are two planning documents that also provide development recommendations specifically for the Stoney community:

The 2017 Town of Hilton Head Island’s Comprehensive Plan identifies the Stoney community and US 278 as the gateway to the island and high on the action list for redevelopment.

- The 2003 Stoney Initiative Area Plan developed as an appendix to the 2000 Hilton Head Island Comprehensive Plan. The plan focuses on land use, density and infrastructure and recommends strategies to guide future development and redevelopment opportunities. Recommendations include rezoning to allow a better mix of commercial and residential properties, traffic and safety improvements to US 278, and pedestrian facilities.
- The 2019 Background and Recommendations Report for Gullah-Geechee Culture Preservation Project was prepared for the Town of Hilton Head Island’s Gullah-Geechee Land and Cultural Preservation Task Force. This document presents strategies for Gullah culture preservation, identifies potential revisions to the Land Management Ordinance and land use related policies, and identifies tools addressing heirs’ property issues. The report addresses the need to monitor plans to expand US 278 so that potential impacts on historic Gullah neighborhoods can be identified and mitigated in advance.

The US 278 project is compatible with the current and future land use plans and zoning in the study area in both Bluffton and Hilton Head Island.

### 4.1.3 Impacts

The No Build Alternative would not impact land use within the PSA; however, this alternative is not consistent with regional and local plans to accommodate projected growth and the anticipated future development.

The Recommended Preferred Alternative 4A will convert residential, commercial, undeveloped, and recreational land uses to transportation right-of-way. To the extent practicable, the Recommended Preferred Alternative 4A will utilize existing US 278 and local roads in their design.

Design modifications were required to meet SCDOT and FHWA design standards for the proposed bridge and roadway approaches, as well as the intersection improvements for the Recommended Preferred Alternative 4A. Refer to Table 4-1 for the acres of land impacted.

Table 4-1 Recommended Preferred Alternative 4A Right-of-Way Impacts

Land Use	Residential	Commercial	Vacant	Recreational/ Natural Space	Existing Transportation Right-of-Way
Acres	22.46	12.65	44.45	31.82	60.62

## 4.2 Farmlands

The Farmland Protection Policy Act (FPPA) of 1981 requires evaluation of farmland conversions to nonagricultural uses. Farmland can be prime farmland, unique farmland, or farmland of statewide or local importance. Prime farmland soils are those that have characteristics favorable for economic production of sustained high yields of crops. These soils may or may not be presently used as cropland. Conversely, land that is presently used as cropland may or may not be prime farmland.

Table 4-2 shows the Natural Resources Conservation Service (NRCS) listings for farmland located on PINWR, which is managed by the US Fish and Wildlife Service (USFWS) for conservation purposes and is open to the public. A review of 2010 Census Urban Area Map for Beaufort County, SC, the PSA including the existing US 278 is considered an urban area or incorporated area<sup>2</sup>. In addition, most of the undeveloped areas along the PSA are zoned/planed for future development including the area on PINWR under and adjacent to US 278 and the existing boat landing facilities. Per the FPPA, the PSA is not subject to review if the impacted land is already in urban development and is considered in compliance.

Table 4-2 Farmland in the PSA

Rating	Rating Description	Total Acres
Farmland of Statewide Importance	Land not meeting the criteria for prime or unique farmlands	419.5
Prime Farmland	Land that has the best combination of characteristics for producing crops	30.6
Unique Farmland	Land used for production of high value food and fiber crops	0
Not Prime Farmland		70.9

## 4.3 Socioeconomics and Communities

The existing socioeconomic characteristics are discussed in this section, including population, economics, and households of the communities in the Community Impact Assessment (CIA) study area, refer to Appendix D, Community Impact Assessment. This section also includes the existing demographic profile for low-income, minority, elderly, and Limited English Proficiency (LEP) populations. The US Census data was reviewed to establish the demographics and proposed population growth of the proposed study area. As of July 1, 2019, the resident population of Beaufort County was estimated to be 192,122, which established the county as the tenth most populous in the state. Beaufort County experienced a growth rate of over 18 percent between 2010 and 2019 and this population growth is projected to continue.<sup>1</sup>

NEPA requires the consideration of social and economic impacts to ensure the potential effects to people and communities are incorporated into the decision-making process of the proposed project.

### 4.3.1 Study Area and Methodology

The PSA was developed to include all areas that could experience direct, indirect, and/or cumulative effects from the proposed project. Notable community features along the project corridor were also identified. The CIA study area uses census block group boundaries to identify special populations and provide insight into the demographics of residents.

Data collection for the CIA included a review of aerial imagery, field visits (2019), Geographic Information Systems (GIS), public outreach, websites, demographic data from the US Census Bureau, existing studies, and plans. Demographic and economic conditions were examined using US Census Bureau data, the 2013-2017 American Community Survey 5-year data and EJSCREEN—the US Environmental Protection Agency’s (USEPA) Environmental Justice Screening and Mapping Tool. Using the EJSCREEN mapping application, a polygon was created encompassing the project study area. The block group data is verified by conducting field surveys and reviewing aerial mapping of the CIA study area to identify the exact geographic location of special populations within each block group. Figure 4-2 shows the study area and block groups.

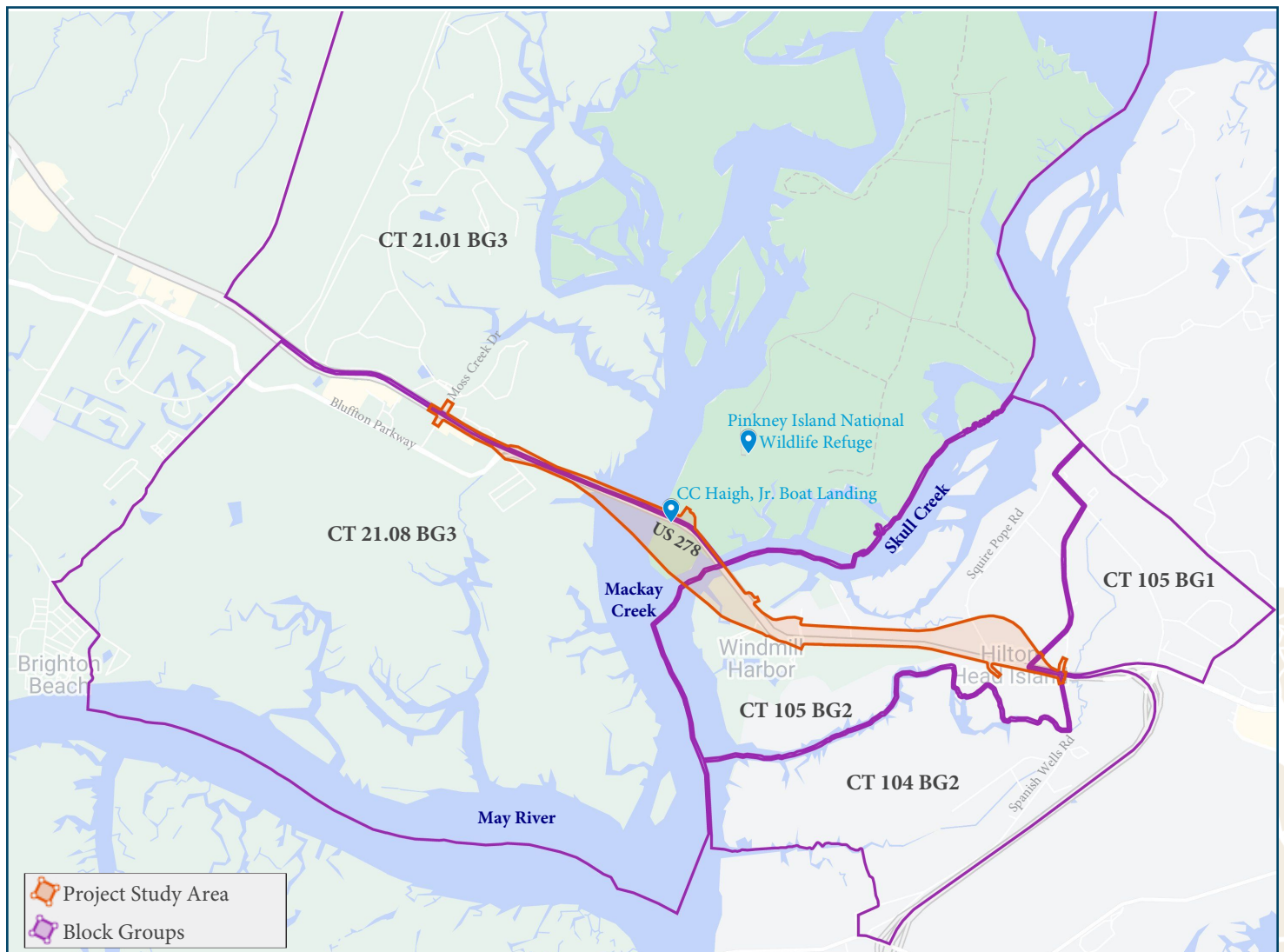


Figure 4-2 Study Area Block Groups

## 4.3.2 Existing Conditions

### 4.3.2.1 Bluffton and Hilton Head Island

According to the most recent US Census estimates, Bluffton is one of the fastest growing municipalities in South Carolina. It is the 22nd largest city in South Carolina with a population of 23,097 in 2018. Seasonal tourists and visitors increase this population to 40,000 or more.

There are five residential neighborhoods within the Bluffton portion of the study area:

- Moss Creek
- The Gatherings
- The Lakes at Edgewater
- Buckingham Landing
- Hog Island

There are two community facilities within the study area: PINWR and the C.C. Haigh, Jr. Boat Landing.

Hilton Head Island is the 10th largest municipality in South Carolina. According to the most recent US Census estimates, the 2018 population was 39,639. Seasonal tourists and visitors increase this population to 150,000 or more.

The Stoney community is the only residential neighborhood within the study area on Hilton Head Island. African American residents, who self-identify as Gullah, native islanders or simply islanders, have owned land since the 1890s in this area of Hilton Head Island. The Stoney community contains a mix of commercial, residential, parks, schools, Boys and Girls Club, marinas, and restaurants. For more detailed information about the Stoney community, refer to Section 4.12.2.

Table 4-3 is a summary of the demographics, housing and economic characteristics in Bluffton, Hilton Head Island, Beaufort County, and South Carolina. For more detailed information refer to Appendix D.

Table 4-3 Demographics, Housing, and Economic Characteristics

Characteristics	Bluffton <sup>3</sup>	Hilton Head Island <sup>4</sup>	Beaufort County <sup>5</sup>	South Carolina <sup>6</sup>
<b>Demographics</b>				
Total Population	62,327	40,007	186,095	5,148,714
White	85.8%	88.6%	74.7%	66.7%
Minorities	14.2%	11.4%	25.3%	33.3%
Median Age	49.0	58.0	45.5	39.9
<b>Housing</b>				
Homeowners	79.9%	79.4%	73.3%	70.3%
Median Home Value	\$298,100	\$489,000	\$298,100	\$179,800
Median Gross Rent	\$1,448	\$1,274	\$1,202	\$922
<b>Economics</b>				
Employment Rate	53.3%	50.7%	49.8%	56.7%
Median Household Income	\$74,508	\$84,575	\$68,377	\$56,227
Poverty Rate	6.6%	9.7%	10.2%	13.8%

## 4.3.3 Recommended Preferred Alternative 4A Impacts

### 4.3.3.1 Relocations

As a result of right-of-way minimization and design refinements, the Recommended Preferred Alternative 4A reduced the potential relocations to zero residential relocations and two commercial relocations. Based on the relocation report completed by SCDOT, there are available locations for these businesses to relocate, refer to the Relocation Impact Study in Appendix D.

*The acquisition of property for right-of-way would be in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646, as amended by 100-17; 49 CFR 24.205 (AF)).* This Act was enacted by congress in 1971 to assist residents, organizations, and businesses displaced by public agencies in relocating without suffering a disproportionate loss. In accordance with this Act, SCDOT will provide relocation advisory and financial assistance to homeowners, renters and business owners displaced as a direct result of the project. During construction, access to all neighborhoods, businesses and community facilities would be maintained to the extent practical through controlled construction scheduling, detours, and alternate routes of entry. Any access changes would be mitigated by providing adequate signage for the access changes and, where necessary, by working with local officials throughout the construction period to provide advanced notification to the communities.

### 4.3.3.2 Community Cohesion

The No Build Alternative would have no effect on community cohesion. As proposed, the project would not disrupt community cohesion in Bluffton or Hilton Head by causing isolation or altering or hindering access to community services and facilities and would ultimately improve community cohesion throughout the US 278 corridor by providing more sidewalks, multi-use paths, and crosswalks, as well as improving access to commercial, residential, and recreational properties.

The Recommended Preferred Alternative 4A follow the existing US 278 corridor through Bluffton and provide improved access throughout the PSA. A 10-foot paved multi-use path and a 5-foot sidewalk would be constructed along US 278 in Bluffton and across the new bridge. The multi-use path would extend along US 278 from Moss Creek Drive to Blue Heron Point Road on Hog Island which would provide additional bicycle and pedestrian access. A 10-foot wide multi-use path would be constructed along US 278 extending from Blue Heron Point Road on Hog Island to Old Wild Horse Road/Spanish Wells Road.

### 4.3.3.3 Community Facilities and Services

The No Build Alternative would have no effect on community facilities and services. No Schools, libraries, religious institutions, hospitals, police, EMS, or fire departments would be directly impacted by any of the Reasonable Alternatives. Access to community facilities and services would improve as a result of these alternatives. Additionally, emergency response times would improve throughout the study area as traffic congestion is reduced, lanes added, and intersections improved along US 278.

The proposed project would impact PINWR with the construction of a new right-in/right-out interchange. The new interchange would allow for full access to the island and the C.C. Haigh, Jr. Boat Landing. Minor impacts would also occur to a 7-acre public park jointly operated by the Town of Hilton Head Island and

Beaufort County. The park provides basketball and tennis courts, a parking lot, and open fields for other recreational uses. The park is located on US 278 across from Old Wild Horse Road. See Section 4.13 for more details on the impacts of the Recommended Preferred Alternative 4A on PINWR, C.C. Haigh, Jr. Boat Landing, and the park.

#### 4.3.3.4 Mobility and Access

The No Build Alternative would have no effect on mobility and access. The proposed project would improve mobility and access for pedestrians, bicyclists, and motorists throughout the US 278 corridor.

Currently, there are no sidewalks or multi-use paths in Bluffton along the existing US 278. As discussed in the Community Cohesion section above, the project would provide a multi-use path and sidewalk along US 278 between Moss Creek Drive and Salt Marsh Drive. The multi-use pathway would continue along US 278 to Blue Heron Point Road on Hog Island. The existing roadway would be widened to six-through (travel) lanes from Salt Marsh Drive to the Mackay Creek bridges and include a new six-lane bridge with multi-use path south of the existing Mackay creek bridge. These improvements would improve mobility through the US 278 corridor.

At PINWR, the roadway would shift from the newly constructed Mackay Creek bridge to use the existing US 278 alignment as much as possible as it crosses Skull Creek. A right-in/right-out via a modified interchange would provide to access PINWR. The interchange would replace the at-grade intersection and allow vehicles to pass underneath the existing bridges to access either side of the island and provide full access to US 278. The interchange and multi-use pathway would improve access to the PINWR and the C.C. Haigh, Jr. Boat Landing. Recommended Preferred Alternative 4A would provide improved access to Hog Island located to the north of existing US 278.

#### 4.3.3.5 Special Populations

The No Build Alternative would have no effect on special populations. There is one facility in the study area, Memory Matters located at 117 William Hilton Parkway in Hilton Head Island. Memory Matters is a non-profit agency, which focuses on brain health and provides memory care services for disabled and elderly persons. Census data shows that Limited English Proficiency populations does not exceed ten percent of the total census tract. To reach these populations, Public Involvement outreach has provided Spanish versions of project newsletters, surveys and public meeting materials. The proposed project would not impact special populations.

#### 4.3.3.6 Visual and Aesthetics

To determine the appropriate level of effort to assess the potential impacts on visual quality, FHWA's Visual Impact Assessment (VIA) Scoping Questionnaire was completed in accordance with the 2015 Guidelines for the Visual Impact Assessment of Highway Projects. Each question of the FHWA VIA Scoping Questionnaire was considered and the response that was most applicable to the proposed project was selected, Appendix D.

Based on the FHWA VIA Scoping Questionnaire it was determined that the potential for the project to cause adverse or beneficial impacts to visual resources, viewers, or visual quality is negligible because the Recommended Preferred Alternative 4A would not affect the visual quality of the US 278 Corridor.



The eastbound bridge over Mackay Creek would be replaced with a new bridge and will be consistent with the viewshed of the existing US 278 corridor over Mackay Creek. The Recommended Preferred Alternative 4A would provide a new modified interchange to the Pinckney Wildlife Refuge, which would replace the existing at-grade intersection. The interchange would be elevated over the island introducing a visual intrusion to the viewshed of the area.

The Recommended Preferred Alternative 4A would follow the existing US 278 corridor across Hog and Jenkins islands. These alternatives would not introduce any new visual intrusions to change the viewshed of the area. From the east end of Jenkins Island causeway to the end of the project at Wild Horse Road/Spanish Wells Road and would not introduce new visual intrusions to the viewshed of the Stoney Community along the US 278 Corridor.

### 4.3.3.7 Economics

The No Build Alternative would have no effect on economics. The proposed project would improve mobility, access, and reduce congestion within the US 278 corridor, which could enhance economic opportunities for existing businesses and encourage new businesses to develop along US 278.

### 4.3.3.8 Noise

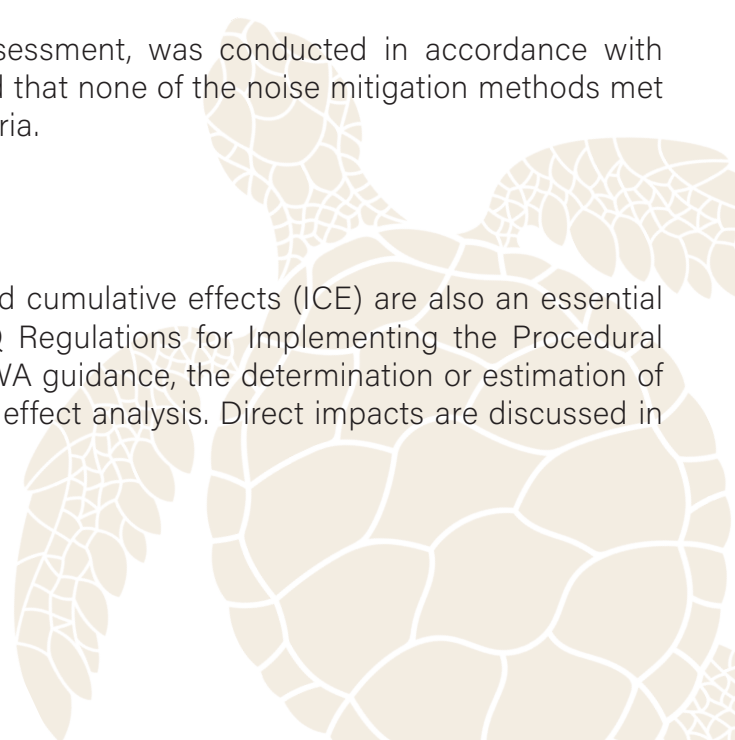
Based on the noise analysis completed, in 2045 the Recommended Preferred Alternative 4A will have noise impacts at 11 residential receivers within the project study area. According to the Preliminary Engineering Noise Report, June 2020, the properties would have noise levels that approach or exceed FHWA's noise abatement criteria for residential land use.

A noise mitigation analysis which included a barrier assessment, was conducted in accordance with SCDOT's Noise Abatement Policy. The analysis determined that none of the noise mitigation methods met the Noise Abatement Policy's feasible and reasonable criteria. Property values could decrease for homes and businesses adjacent to the US 278 and intersection improvements due to proximity and noise impacts. These potential impacts would occur throughout the project study.

A noise mitigation analysis which included a barrier assessment, was conducted in accordance with SCDOT's Noise Abatement Policy. The analysis determined that none of the noise mitigation methods met the Noise Abatement Policy's feasible and reasonable criteria.

## 4.3.4 Indirect and Cumulative Effects

The consideration and analysis of the potential indirect and cumulative effects (ICE) are also an essential element of the NEPA process as established in the CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508). According to FHWA guidance, the determination or estimation of future impacts is essential to both indirect and cumulative effect analysis. Direct impacts are discussed in Section 4.4.2.



Indirect effects (also known as secondary effects) are caused by the action but are later in time or farther removed in distance from the project but are still “reasonably foreseeable.” For example, growth-inducing effects related to land use changes that would not otherwise occur without the project implementation.

Cumulative effects are defined as “the impact of the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions...”.

To assess the potential indirect and cumulative effect on communities, a study area defined by the jurisdictional limits of the Town of Bluffton and the Town of Hilton Head Island was chosen, refer to Figure 4-3. A future time horizon of 25 years or to 2045 is the transportation planning horizon for US 278. The cumulative effects past timeframe is 10 years or 2010.

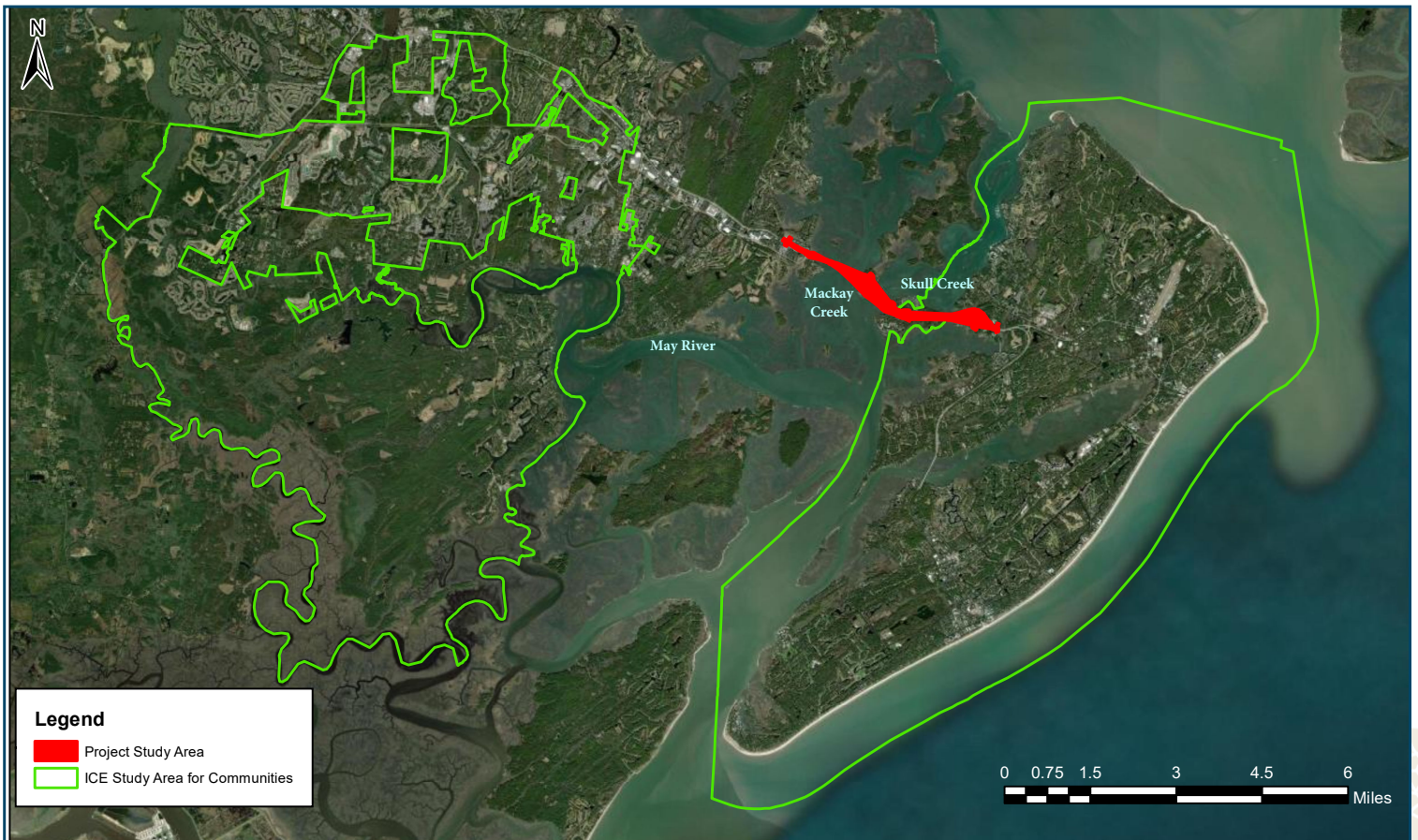


Figure 4-3 ICE Study Area for Communities

Notable features with the potential for indirect and cumulative project impacts to communities include:

- Community Cohesion - The impact on the community structure or social interactions, such as by a physical division of the neighborhood and affects to the use of community services and facilities.
- Access and Mobility - The ability of residents and tourists to move freely about the study area to access residences, commercial properties, services, recreational areas and to carry out daily activities.

### 4.3.4.1 Indirect Effects

Indirect effects are caused by the proposed project and occur later or farther away (off-site) but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Indirect effects are analyzed using the approach discussed below.

Impact-causing activities that are associated with the project's proposed improvements have the potential to result in indirect effects: additional travel lanes, a new right-in/right-out interchange, a new/modified access point, and additional mobility options. In addition to proposed improvements, construction access would need to be provided and may cause temporary impacts to residential and commercial properties as well as access to PINWR.

Project-induced growth is changes in capacity, traffic patterns, or accessibility that can influence the location of residential and commercial growth in the study area. The proposed project has the potential to indirectly affect communities in the Town of Bluffton and the Town of Hilton Head Island through community cohesion and access and mobility.

#### *Town of Bluffton*

The Town of Bluffton Comprehensive Plan, updated in 2014, mentions desired coordination for corridor planning along the US 278 travel corridor to "maintain the desired community image and function." It also identifies the Highway Corridor Overlay District for the US 278 corridor, created to provide for the safe and efficient use of highways; minimize congestion and conflict points; enhance the quality of development; protect and enhance the area's unique aesthetic character and natural environment; reduce unnecessary visual distractions; and encourage architecture, signage, landscape and lighting harmonious with the natural and man-made assets of the Low Country. The proposed design improvements provide sidewalks and multi-use paths along US 278 within the Town of Bluffton. The induced growth effects include access changes that may change travel patterns including more non-motorized trips by bicycle and walking providing beneficial impacts to reducing vehicle trips and improved quality of life. Indirect effects may include improved bicycle and walking amenities such as bicycle racks and benches. Improved access to PINWR for increased visitation, increased recreational usage, and need for additional amenities.

#### *Town of Hilton Head Island*

The 2017 Town of Hilton Head Island Comprehensive Plan mentions continued coordination with SCDOT and Beaufort County to maintain the current capacity of William Hilton Parkway (US 278) and other arterials by controlling access points and median crossing locations, improving intersections, adding decelerations lanes, optimizing the synchronized traffic lights with the mainland's system and investigating other methods of traffic management and development control is recommended. The proposed designed improvements provide a multi-use path along US 278 within the Hilton Head Island portion of the proposed project. The induced growth effects include access changes that may change travel patterns including more non-motorized trips by bicycle and walking providing beneficial impacts to reducing vehicle trips. Indirect effects may also include improved bicycle and walking amenities such as bicycle racks and benches.

### *Encroachment-Alteration Effects*

The proposed action could result in indirect effects on access and mobility by providing improved transportation amenities along the corridor, which could facilitate changes in development and land use patterns. Such secondary effects could result in indirect effects to the social and human environment. The proposed action may indirectly affect access and mobility during construction because of temporary changes in access, increased construction traffic, and construction noise. However, these indirect effects would be temporary and localized to the residences near the construction area.

Based on the potential indirect effects on access and mobility are considered to be acceptable or not adverse.

#### 4.3.4.2 Cumulative Effects

According to the CEQ definition (40 CFR 1508.7), cumulative effects are defined as impacts on the environment that result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

The analysis of past, present, and future growth within the indirect and cumulative study area will be used to determine the potential cumulative effects between 2010 and 2045. The proposed project includes improvements to an existing roadway facility within a highly developed area. The proposed improvements have the potential to impact community cohesion and access and mobility in the study area.

According to the Town of Bluffton Comprehensive Plan, approximately 90 percent of the Town of Bluffton is currently zoned as planned unit development (PUD) with commercial uses concentrated along US 278. The Town of Hilton Head Island is almost entirely developed with the majority of land occupied by golf courses, private residential communities, and resort developments. Zoning map for the Town of Bluffton can be viewed at <http://www.townofbluffton.us/gallery/PublicGallery/PDF/zoningmap.pdf> and the zoning map for the Town of Hilton Head Island can be viewed at <https://www.hiltonheadislandsc.gov/publications/maps/ZoningMap.pdf>.

As described previously, the proposed improvements will provide improved access throughout the study area with more sidewalks, multi-use paths, and cross-walks; and access to commercial, residential, and recreational properties.



Prior to the 1950's, Hilton Head Island was isolated, lacked electricity and was only accessible by boat. In the 1950s electricity was brought to the island and the first bridge connecting Hilton Head Island to the mainland was constructed. Table 4-4 presents a historical summary of the construction and subsequent improvements to US 278 since 1948. SCDOT archived final design plans were studied to identify community impacts resulting from US 278 and bridge construction. This research identified only two displacements within the ICE study area during the span of 60 years.

Table 4-4 Historical Summary of US 278 within the ICE Study Area

Year	Location	Improvement	Relocations
2008	US 278 and Squire Pope Road	<ul style="list-style-type: none"> <li>Realign Squire Pope Road to slightly west of previous original pavement</li> <li>Construct Chamberlin Drive (formerly Kirby Lane) to tie into new four-way intersection</li> </ul>	0
1989	US 278 and PINWR Entrance	<ul style="list-style-type: none"> <li>Reconstruct the entrance to PINWR by widening entrance lanes</li> <li>Added acceleration and deceleration lanes to US 278 westbound</li> </ul>	0
1983	US 278 approaches at Mackay and Skull Creeks	<ul style="list-style-type: none"> <li>Built new westbound bridge over Mackay Creek</li> <li>Removed old two-lane facility on Pinckney Island and created new four-lane facility</li> <li>Built two new bridges over Skull Creek (two lanes westbound and eastbound)</li> <li>Created new four-lane facility on Jenkins Island and connected old US 278 (Blue Heron Point Road) into new US 278</li> </ul>	1 (Hog Island near Blue Heron Point Road)
1980	US 278 Near Skull Creek to Road S-80	<ul style="list-style-type: none"> <li>Added two new lanes to the north side of existing US 278 on Hilton Head Island creating a four-lane divided highway</li> <li>In some sections, existing two-lane US 278 was expanded to five lanes through Stoney</li> </ul>	1 (Stoney on the south side of US 278 west of Squire Pope Road)
1955	Roads 39 and 44 from Buckingham Landing to Hilton Head Island	<ul style="list-style-type: none"> <li>Original US 278 constructed as a two-lane highway over Mackay Creek, Skull Creek, and Pinckney Island</li> <li>The first bridge connecting Hilton Head to the mainland was constructed, which replaced the original ferry service</li> </ul>	0
1948	Road 39 (Route 460), from Route 462 to Buckingham Ferry Landing	<ul style="list-style-type: none"> <li>Original US 278 constructed as a two-lane highway from Route 462 to Buckingham Ferry Landing</li> </ul>	0

Other actions that are completed and planned within the ICE study area for communities include various committed transportation projects listed in Table 4-5. These projects are either completed, under construction, or are anticipated to be operational within the forecast year.

Table 4-5 Committed Projects within Beaufort County<sup>7</sup>

Project Name	Description	Source	Year Open
New Orleans Road, Mathews Drive North, Avocet, Lagoon Road, WHP-Wexford Drive, WHP-Gardner Drive to Mathews Drive, Dunnagan's Alley, Palmetto Bay Road, WHP-Long Cove to Fresh Market, WHP-Jarvis Park to Honey Horn, O'Mutton, Pembroke Drive, and Gardner Drive	Pathways	THHI Comp Plan	2010 to 2014
Bluffton Parkway	Beautification	TB Comp Plan	2017
May River Infrastructure Extension	Sidewalk and Drainage Improvements	LATS MPO	2019
US 278 at Buck Island Road	Intersection Safety Improvements	SCDOT STIP	2020
US 278 at SC 46 Bluffton Road	Intersection Safety Improvements	SCDOT STIP	2020
US 278 at Hilton Head National Drive	Intersection Safety Improvements	SCDOT STIP	2020
US 278 at Salt Marsh Drive/Moss Creek Village	Intersection Safety Improvements	SCDOT STIP	2020
Bridge Along US 21 (Sea Island Parkway) over the Harbor River	New High-Level Fixed-Span Bridge	SCDOT STIP	2022
Median Improvements along US 21 & SC 170; SC 170 & S-761 - FPS 22-19 - Mast Arms	Intersection Improvements	SCDOT STIP	2020
Heritage Plaza Road Extension	Extension	THHI Comp Plan	2018
Reconstruction of South Lagoon Road	Improvements	THHI Comp Plan	2018
Reconstruction of Nassau Street	Improvements	THHI Comp Plan	2018
Pope Avenue Improvements	Improvements	THHI Comp Plan	2019
South Forest Beach Drive Improvements	Improvements	THHI Comp Plan	2020

In addition to completed or planned projects, Table 4-6 lists the recommended projects within the Town of Bluffton and Town of Hilton Head Island identified in the 2040 Lowcountry Area Transportation Study (LATS) Long Range Transportation Plan (LRTP).

Table 4-6 LATS Corridor Recommendations<sup>8</sup>

Corridor Recommendations	Type	Length (Miles)
Buck Island Road from Bluffton Parkway to US 278	ITS/Access Management	1.06
Bluffton Parkway from Buckwalter Parkway to Buck Island Road	New Location	2.30
SC 315/SC 46 from SC 170 to Pin Oak Street	ITS/Access Management	9.74
US 278 Bridges Over Mackay Creek and Skull Creek	Bridge Widening	0.47
Stroup Lane Extension from Burnt Church Road to Buckingham Plantation Drive	New Location	1.87
US 278/US 278 Business in Hilton Head Island	ITS/Access Management	16.73

ITS = Intelligent Transportation System

Improved access to the community and additional mobility options should not have any potential negative cumulative impacts on community cohesion and access and mobility.

## 4.4 Environmental Justice Analysis

FHWA defines Environmental Justice (EJ) as “identifying and addressing disproportionately high and adverse effects of (FHWA’s) programs, policies, and activities on minority and low-income populations to achieve an equitable distribution of benefits and burdens. This includes the full and fair participation by all potentially affected communities in the transportation decision-making process.” Executive Order (EO) 12898: “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994 directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

### 4.4.1 Existing Conditions

According to the FHWA definition, there are low-income and minority populations within the PSA. Four block groups have a minority population and four block groups have households in poverty, refer to Figure 4-2 in section 4.3. Within the study area, the highest percentage of minorities (56 percent) and low-income households (19.18 percent) are found in Census Tract (CT) 105 Block Group (BG) 2, which is the Stoney community on Hilton Head Island. Refer to Appendix E, Environmental Justice Analysis.

The Stoney community on Hilton Head Island is one of 14 Gullah neighborhoods on Hilton Head Island, refer to Figure 4-4. The Gullah-Geechee people of the Low Country and Sea Islands of South Carolina, Georgia, Florida, and North Carolina are the only African American population of the United States that have maintained a separate language and a distinct culture. The Stoney community contains a mix of commercial and residential developments. It also includes parks, schools, Boys and Girls Club, marinas, restaurants, and the Humane Society. The Stoney community is bisected by US 278, which is the only route on and off the island.

Hispanics are the largest minority group in both Bluffton and Hilton Head Island. The Hispanic population within the study area is represented in three block groups: CT 105 BG 1 and BG 2 and CT 21.08 BG 3. These Hispanic populations make up approximately 15 percent of the total population in the study area.





Figure 4-4 Stoney community on Hilton Head Island

### 4.4.2 Outreach & Community Enhancements

Outreach meetings were held with residents of the Stoney community that could be affected by the reasonable alternatives. The purpose of these meetings was to provide an opportunity to discuss the project, reasonable alternatives, and potential community enhancement opportunities. Refer to section 4.3.4.

Potential community enhancements were initially developed based on recommendations presented in the Background and Recommendations Report for the Gullah Geechee Cultural Preservation Project (draft 2019) prepared by the Walker Collaborative. This document provides recommendations for strategies to better preserve Gullah cultural on Hilton Head Island. In September 2019, the Hilton Head Island Town Council approved 13 of the recommendations, which address land preservation, economic opportunities and Town regulations.

The project team met with the Stoney community, Gullah stakeholders, and the Town of Hilton Head on multiple occasions to discuss the project and potential community enhancement opportunities, refer to Table 4-7.



Table 4-7 Community Meetings

Meeting Date	Location	Summary
March 10, 2020	Hilton Head Island Library	A series of four, one-hour meetings were held with the four Stoney families that may experience right-of-way acquisition.
August 20, 2020	Hilton Head Island Rowing & Sailing Center	This meeting started the dialogue about community enhancement.
September 29, 2020	Hilton Head Island Rowing & Sailing Center	This meeting focused on specific, potential community enhancement ideas including a Stoney community history video, family monuments, improvements to the Jenkins Island Cemetery, an access road for properties between the causeway and Squire Pope Road, and an access/driveway to the Stewart family properties.
October 27, 2020	Hilton Head Island Rowing & Sailing Center	The project team met with the Stewart family individually to discuss the proposed driveway to their property to address the safety concerns.
December 8, 2020	Central Oak Grove Church	This meeting explored the previously discussed community enhancement ideas: signage, an open-air pavilion, theme-based street and multi-use path lighting, a community history video/story map, improvements to the Jenkins Island Cemetery and the access road for the Stewart Family parcels.
January 26, 2021	Hilton Head Island Rowing & Sailing Center	As requested at the December 8, 2020 meeting, the project team discussed the additional renderings that were developed to better understand the community enhancement ideas.
February 8-9, 2021	Various	Individual property owner meetings to discuss the proposed project.

Initial discussions included the potential enhancement options derived from the background research and requested input from the Stoney community. Potential community enhancements developed through coordination with the Stoney community and based on the detailed cultural report it is recommended that the Stoney community be identified as a TCP, refer to Appendix M. Although it is anticipated that the US 278 Corridor Improvement project would not have an adverse impact on the Stoney community, the report recommended the project team “consider Stoney’s historic significance and help promote measures that lead to the preservation and understanding of Native Islander landownership on the Island”. Although the project would not have an adverse impact, it is the goal of the project to provide community enhancement options to preserve and highlight the history of the Stoney community. Potential enhancement options to further establish or reestablish the Stoney community as a “gateway” and a “place” include:

- *Signage to demarcate the Stoney community to include a more “gateway” entrance/exit to the community based on the boundary established in the TCP Report*
- *Open-air pavilion on town-owned property near the US 278 and Squire Pope Road intersection to highlight history of the Stoney community and other Gullah neighborhoods on the island*
- *Create a theme based street and multi-use path lighting*
  - *Install flags/signage to the lighting poles along US 278 to indicate they are within the Stoney community*
  - *Landscaping along US 278 within the Stoney community*
  - *Seating along multi-use path*
- *Develop an online interactive map of the History of Stoney community to share important historical information about the Stoney community, Gullah Communities, and Hilton Head Island.*



Figure 4-5 Community Enhancement Renderings

### 4.4.3 Impacts

The No Build Alternative would have no effect on environmental justice communities in the PSA. The potential impacts on the Stoney community, in comparison to the overall population in the study area, would not be appreciably greater. Based on the below discussion and analysis, the Recommended Preferred Alternative 4A will not cause disproportionately high and adverse impacts on any minority or low-income populations in accordance with the provisions of E.O. 12898 and FHWA Order 6640.23A. No further EJ analysis is required.

### 4.4.3.1 Economics

The Recommended Preferred Alternative 4A would improve mobility, access and reduce congestion within the US 278 corridor, which could enhance economic opportunities for existing businesses and encourage new businesses to locate along US 278. Two businesses would be relocated by the Recommended Preferred Alternative 4A, both are within the Stoney community. However, it is possible that the two commercial establishments could relocate within the Stoney community.

### 4.4.3.2 Relocations

As a result of right-of-way minimization and design refinements, the Recommended Preferred Alternative 4A reduced the potential relocations to zero residential relocations and two commercial relocations. Both commercial relocations are within the Stoney community. Based on the relocation report completed by SCDOT, there are available locations for these businesses to relocate within the Stoney community.

### 4.4.3.3 Aesthetic Values

The Recommended Preferred Alternative 4A would not introduce new visual intrusions to the viewshed of the Stoney Community along the US 278 Corridor. The project will include community enhancements such as landscaping along the multiuse path and within the median to add aesthetic value throughout the corridor. In addition, signage to demarcate the Stoney community to include a more "gateway" entrance/exit to the community, flags/signage on multi-use path light poles, and seating along the multiuse path is part of the project.

As the Stoney community has the character of a semi-rural Lowcountry area, the project is committed to retaining as much existing vegetation and tree canopy within the Stoney community as possible. Along US 278, strips of new right-of-way will require some tree/vegetation clearing in order to construct the project. However, those areas are buffered by additional wooded areas further off the alignment of the existing (and proposed) US 278, with the result that the loss of vegetation should not be impactful to the character of the Stoney community. A tree canopy section along Squire Pope Road will be maintained through minimization efforts to reduce the proposed project footprint.

### 4.4.3.4 Community Cohesion

The Recommended Preferred Alternative 4A would not disrupt community cohesion causing isolation or altering or hindering access to community services and facilities. Additionally, the project would ultimately improve community cohesion throughout the US 278 corridor by providing a multiuse path, landscaping, improved signage, as well as improving access to commercial, residential, and recreational properties. The project will include the construction of an open-air pavilion on town-owned property in the Stoney community to highlight the history of the Stoney community and other Gullah neighborhoods on Hilton Head Island.

### 4.4.3.5 Traffic Congestion and Safety

The Recommended Preferred Alternative 4A would improve mobility, accessibility, and reduce congestion within the US 278 corridor. The traffic analysis concludes that three lanes per direction over Mackay Creek, and through PINWR and Jenkins Island are needed to meet 2045 traffic needs along US 278. Three lanes in each direction is planned throughout the project study area and through the Stoney community.

### 4.4.3.6 Air Quality

The Recommended Preferred Alternative 4A may increase MSATs along portions of the US 278 Corridor, but the project is not anticipated to have an appreciable impact on regional MSAT levels. Construction-related impacts to air quality would be temporary, localized increased fugitive dust and mobile-source emissions. State and local regulations shall be followed for dust and other air quality emission controls. These potential impacts would occur throughout the project study area and would not be appreciably greater to the Stoney community.

### 4.4.3.7 Noise

Based on the noise analysis completed, in 2045 the Recommended Preferred Alternative 4A will have noise impacts at 11 residential receivers within the study area, ten of these residential properties are in the Stoney community. According to the Preliminary Engineering Noise Report, June 2020, the properties would have noise levels that approach or exceed FHWA's noise abatement criteria for residential land use. The noise analysis also indicated that eight of these ten residential properties would have noise impacts in 2045 even if the proposed project was not constructed.

A noise mitigation analysis which included a barrier assessment, was conducted in accordance with SCDOT's Noise Abatement Policy. The analysis determined that none of the noise mitigation methods met the Noise Abatement Policy's feasible and reasonable criteria. Property values could decrease for homes and businesses adjacent to the US 278 and intersection improvements due to proximity and noise impacts. These potential impacts would occur throughout the project.

### 4.4.3.8 Water Quality

The proposed bridge replacement project is not expected to result in adverse impacts to water quality in Mackay Creek and/or Skull Creek. Siltation and turbidity may occur in the channel and tidal creek beds as sediments are disturbed during construction of the bridge pilings. However, this increase will be temporary and should settle within a few hours of completion of each piling installation. Any direct impacts to water quality would be limited to the area within construction limits. These potential impacts would occur at the bridge locations and would not be appreciably greater to the Stoney community.

### 4.4.3.9 Hazardous Waste

The Recommended Preferred Alternative 4A would impact four sites that have the potential for hazardous waste. Additional investigations will be completed before construction of the project begins. Two of these four properties are located within the Stoney community.

## 4.5 Air Quality

The Clean Air Act (CAA), as amended, requires the USEPA to set standards for common outdoor air pollutants that are considered harmful to public health and the environment. These standards are the National Ambient Air Quality Standards (NAAQS) and regulate six common air pollutants known as “criteria air pollutants”.<sup>9</sup> The six criteria air pollutants are carbon monoxide (CO), Ozone (O3), Lead (Pb), Nitrogen Dioxide (NO2), Particulate Matter (PM), and Sulfur Dioxide (SO2). The CAA section 176(c) requires federal transportation projects to remain consistent with state air quality goals located in the State Implementation Plan (SIP). These goals are developed by the South Carolina Department of Health and Environmental Control (SCDHEC) to ensure Transportation Conformity which means that transportation activities will not cause new NAAQS violations or worsen existing conditions. Mobile Source Air Toxics (MSATs) are also regulated by the USEPA because they are hazardous air pollutants. These air pollutants emitted from roadway vehicles and are evaluated for potential effects during roadway projects.<sup>10</sup> The SCDHEC Bureau of Air Quality is responsible for regulating and ensuring compliance with the CAA in South Carolina.

Section 107 of the CAA requires the USEPA to publish a list of all geographic areas in compliance and not in compliance with the NAAQS. This designation is made on a pollutant-by-pollutant basis for a specific geographic area. The current designations and status of Beaufort County are listed below in Table 4-8.

Table 4-8 Attainment Designations, Definitions, and Status

Designation	Definition	Beaufort County Status
Attainment	Area is in compliance with the NAAQS	X
Unclassified	Area has insufficient data to make a determination and is treated as being in attainment	
Maintenance	Area once classified as nonattainment but has since demonstrated attainment of the NAAQS	
Nonattainment	Area is not in compliance with the NAAQS	

The Bluffton/Hilton Head Island area is considered in attainment based on air quality monitoring data collected in the region. Transportation Conformity does not apply to the US 278 Corridor Project because the area is in attainment with NAAQS.

The USEPA has identified nine compounds emitted from mobile sources that are cancer risk drivers/contributors and non-cancer hazard contributors. These compounds are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. FHWA considers these the priority MSATs but the list is subject to change in consideration of USEPA rulings.

On October 18, 2016 the FHWA issued guidance regarding analyzing MSAT in NEPA documents for highway projects. FHWA has identified three levels of analysis: (1) no analysis for project with no potential for meaningful MSAT effects; (2) qualitative analysis for projects with low potential MSAT effects, or (3) quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects. The level of analysis is based on specific details of each individual project.

The purpose of this project is to address structural deficiencies at the existing eastbound Mackay Creek bridge and reduce congestion within the PSA. In the No Build scenario, as industry and population grow there will be more vehicles within the corridor and congestion will also increase.

## 4.5.1 Impacts

The US 278 project falls within the second analysis category, a qualitative analysis for projects with low potential MSAT effects. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at: [www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/research\\_and\\_analysis/mobile\\_source\\_air\\_toxics/msatemissions.cfm](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm).

For the Recommended Preferred Alternative 4A, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT. The VMT estimated for the Recommended Preferred Alternative 4A is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts additional trips to this section of the transportation network. This phenomenon, called induced demand, accounts for the additional trips that may be generated and drawn to this corridor because more capacity is available for vehicles to use the roadway than what is available in the No Build scenario. This increase in VMT would lead to higher MSAT emissions along the project corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the Environmental Protection Agency's (EPA) MOVES2014 model, emissions of all of the priority MSAT decrease as speed increases. Also, the Recommended Preferred Alternative 4A, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under the Recommended Preferred Alternative 4A than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built on Jenkins Island and Hilton Head Island. However, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Construction-related impacts to air quality would be temporary, localized increased fugitive dust and mobile-source emissions. State and local regulations shall be followed for dust and other air quality emission controls.

## 4.6 Noise

Sound is created when an object moves, causing vibrations or waves in air molecules. Sound is a result of these vibrations reaching our ears. Noise is defined as unwanted or excessive sound. It is an undesirable by-product of modern life. Highway traffic noise sources include pavement interaction, as well as the engines and exhaust systems of vehicles. Sound levels are measured in units called decibels (dB). Adjustment for the high- and low-pitched sounds an average person can hear is called “A-weighted levels” or dBA. Highway traffic noise is assessed using dBA measurements. The impacts from noise are defined by the amount of interference the sound levels have with everyday human activity and are further described by their average level over time. A noise impact occurs if the projected future noise level at a receptor either approaches (within 1 dBA) or exceeds the Noise Abatement Criteria (NAC) as seen in Table 4-9 or if the predicted future noise levels for a receptor exceed existing levels by more than 15 dBA (defined as a substantial increase).

Leq is defined as the constant noise level that would result in the same total sound energy being produced over a given period.

Table 4-9 Noise Abatement Criteria<sup>11</sup>

Activity Category	Leq (h <sup>2</sup> ) Noise Levels (dBA)	Description of Activity Category
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 (exterior)	Residential
C	67 (exterior)	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	-	Undeveloped lands that are not permitted

A traffic noise analysis is required for proposed federal-aid highway projects on new location or that physically alter an existing highway, that will significantly change the horizontal or vertical alignment of the road, or will increase the number of through-traffic lanes. The US 278 Corridor Improvements project proposes to increase the number of lanes through the PSA as well as alter the horizontal and vertical alignment of the Mackay Creek and Skull Creek bridges. Therefore, a noise analysis was conducted to evaluate future noise levels, their associated impacts, and the feasibility of noise mitigation measures associated with the Reasonable Alternatives.

The SCDOT Traffic Noise Abatement Policy (October 16, 2019) establishes an official policy on highway noise. 23 CFR Part 772 describes SCDOT’s approach to implementation of this policy. The policy defines the process used to determine noise impacts due to traffic as well as construction and describes abatement

measures including available funding mechanisms. The FHWA Traffic Noise Model (TNM) (TNM version 2.5, released April 2004) was used in the analysis to compare existing and future noise levels. The analysis was performed in accordance with the procedures outlined in 23 CFR Part 772, Procedures for Noise Abatement of Highway Traffic Noise and Construction Noise and the SCDOT Traffic Noise Abatement Policy.

## 4.6.1 Impacts

The US 278 Corridor Improvements Detailed Noise Analysis Technical Report is in Appendix F and contains the technical details of the modeling and impact analysis. Ambient noise field measurements were taken at nine SCDOT approved locations within the noise study areas (NSAs), refer to Appendix F. Measurements were taken on January 25, 2019 and January 30, 2020. Traffic volumes recorded during the field studies were utilized to validate the TNM 2.5 model.

A total of 225 receivers were analyzed in the noise analysis. These include residential, recreational, commercial, and infrastructure service sites. The TNM 2.5 model results for the existing condition, and the 2045 design year No Build Alternative and Recommended Preferred Alternative 4A can be found in Appendix F. In the 2018 existing condition there are no receivers that are impacted by noise. The No Build Alternative would not have noise impacts in the 2045 design year.

Based on the noise analysis, 11 residential receivers would have noise levels that approach or exceed the NAC for the 2045 Build Alternative. Modeled 2045 design year Build Alternative noise impacts can be found in Appendix F.

## 4.6.2 Mitigation

FHWA requires evaluation of noise abatement for impacted receivers resulting from the proposed project. Abatement measures were considered since there are impacted receivers for the 2045 design year Build Alternative. As a result of the noise abatement analysis, there were no feasible and reasonable solutions to mitigate for the noise according to the SCDOT Traffic Noise Abatement Policy. Barrier analysis was completed for NSA 3, NSA 9, NSA 10, and NSA 11, refer to Figure 4-6. The noise barriers for NSA 3, NSA 10, and NSA 11 did not meet feasibility criteria due to the NSA not containing the minimum of three impacts necessary as listed in the SCDOT Traffic Noise Abatement Policy. The noise barrier for NSA 9 did not meet feasibility criteria due to the percentage of impacted receivers (less than 75 percent). In addition, safety and access issues limited acoustic and engineering feasibility. The noise analysis prepared for this project includes the detailed analyses and findings to support this determination, refer to Appendix F.

*Per 23 CFR 772.17, SCDOT will inform local planning officials of future, generalized noise levels expected to occur in the project vicinity after FHWA has made a final decision on the environmental document.*

*To minimize construction noise, the contractor would be required to comply with applicable local noise ordinances and Occupational Safety and Health Administration (OSHA) regulations concerning noise attenuation devices on construction equipment.* General construction noise impacts, such as temporary speech interference for pedestrians and those individuals living or working near the project, can be expected particularly from pile driving and other ground disturbing equipment during construction. However, these impacts are not anticipated to be substantial considering the likely limitation of construction to daytime hours and the temporary nature of construction noise.





Figure 4-6 US 278 Project Noise Study Areas

## 4.7 Water Quality

The Clean Water Act (CWA) of 1972 regulates the discharge of pollutants into our state's waters. The standards set by each state are based on criteria recommended by the USEPA. The USEPA has delegated the responsibility of monitoring and regulating water quality in South Carolina to SCDHEC. SCDHEC regulations establishes water quality uses, general rules, and specific water quality criteria for each classification.

The PSA is in the Savannah River Basin and the Calibogue Sound watershed designated by the US Geological Survey as Hydrologic Unit Code (HUC) 03060110-03, refer to Figure 4-7. The Calibogue Sound watershed encompasses approximately 123 square miles in the Coastal Zone region of South Carolina.<sup>12</sup> The watershed includes multiple coastal rivers and creeks which include the May River, the Cooper River, Broad Creek, Mackay Creek, and Skull Creek which all drain the Atlantic Ocean. Mackay Creek and Skull Creek are both found within the PSA.

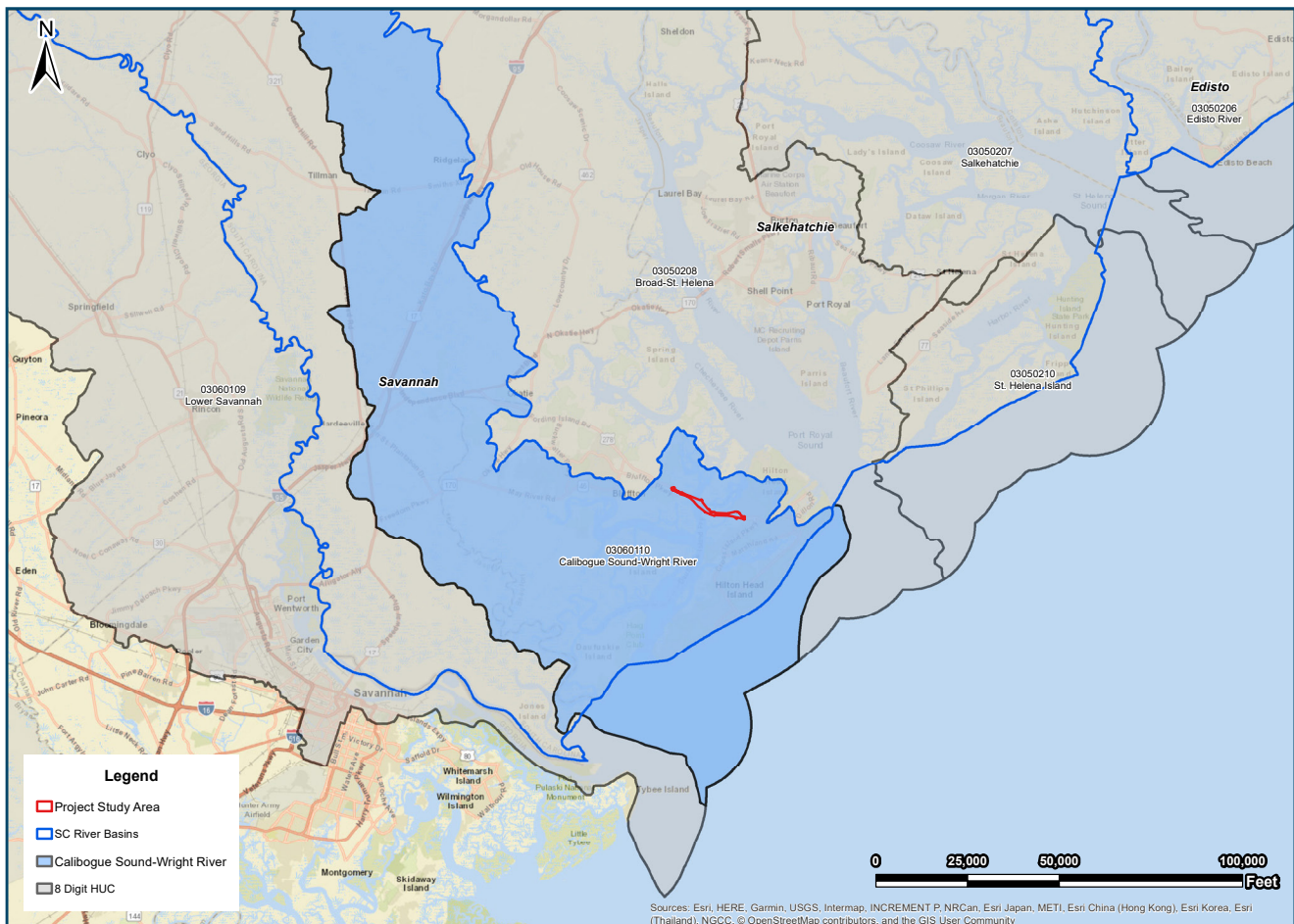


Figure 4-7 Savannah River Basin and Calibogue Sound Watershed

Mackay Creek and Skull Creek are both classified by SCDHEC as Shellfish Harvesting (SFH) waters, which are tidal saltwaters protected for shellfish harvesting. "SFH waters are suitable for recreation, crabbing, and fishing, as well as the survival and propagation of a balanced native aquatic community of marine fauna and flora".<sup>13</sup> SCDHEC may designate prohibited areas where shellfish harvesting for market purposes or human consumption are restricted. Additionally, SCDHEC has established additional protective measures for projects found in or near SFH waters to prevent pollution and maintain high water quality standards.

In addition to determining water quality classifications and standards, SCDHEC develops a priority list of waterbodies that do not currently meet State water quality standards pursuant to Section 303(d) of the CWA and 40 CFR 130.7. The list is commonly referred to as the 303(d) List of Impaired Waters and can be obtained from SCDHEC, Bureau of Water. There are no 303(d) listed waters found within the PSA.

SCDHEC monitors the water quality of Mackay Creek and Skull Creek with ambient water quality monitoring stations. These stations are used for “determining long-term water quality trends, assessing attainment of water quality standards, identifying locations in need of additional attention, and providing background data for planning and evaluating stream classifications and standards”.<sup>14</sup> There are two shellfish monitoring stations located within the PSA, refer to Figure 4-8. Shellfish Harvest station 20-07 monitors Mackay Creek and is located near the existing US 278 bridge adjacent to Buckingham Landing. Station 20-10 monitors Skull Creek and is located near a small tidal creek near the Mariners Cove development. Neither of these stations are currently listed for water quality impairments.

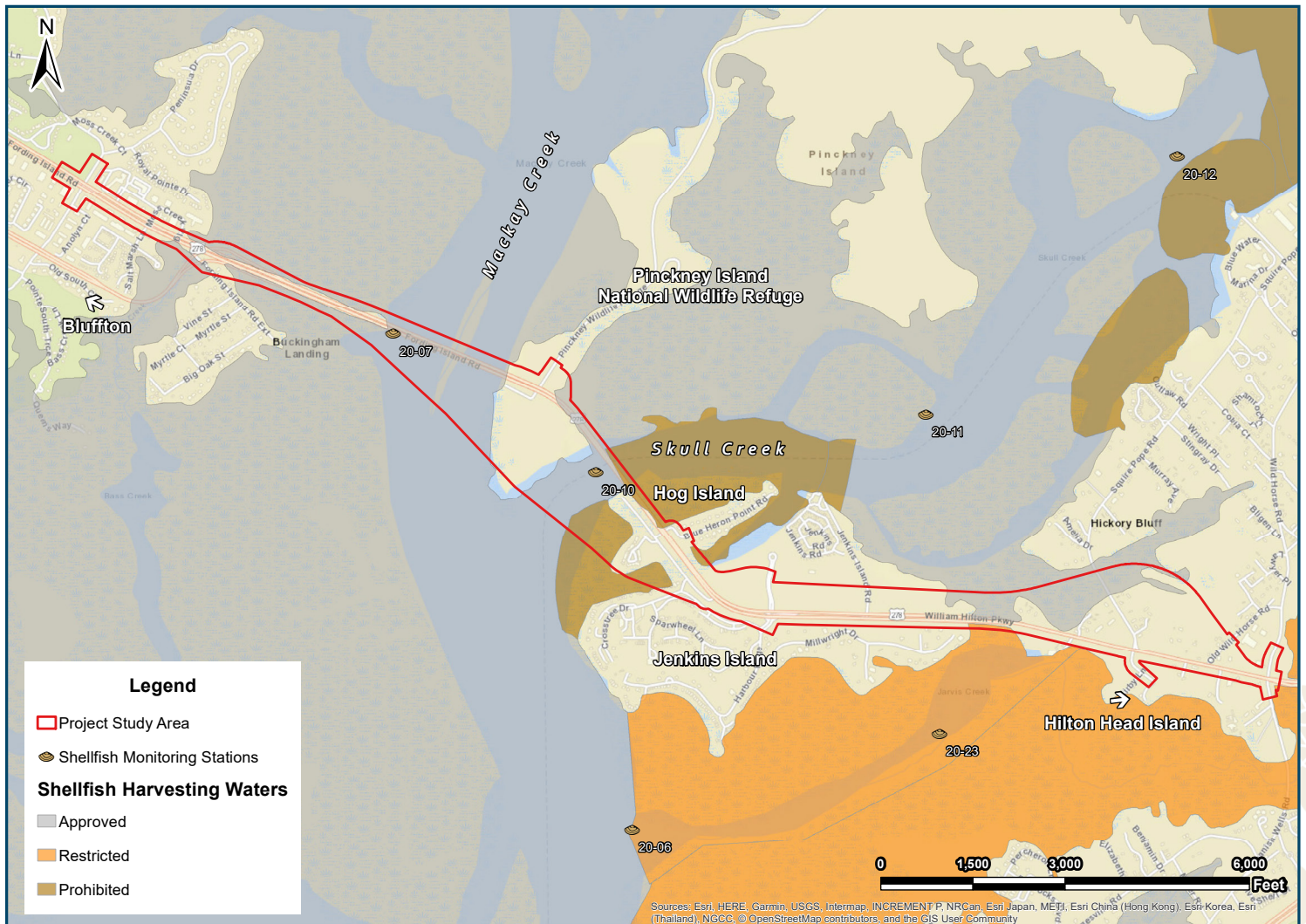


Figure 4-8 Shellfish Harvesting Waters

Neither Mackay Creek nor Skull Creek are classified as Wild and Scenic Rivers and neither body of water is part of the South Carolina Department of Natural Resources (SCDNR) State Scenic River Program.

## 4.7.1 Impacts

The No Build Alternative would not result in impacts to water quality. The proposed bridge replacement project is not expected to result in adverse impacts to water quality in Mackay Creek and/or Skull Creek. Siltation and turbidity may occur in the channel and tidal creek beds as sediments are disturbed during construction of the bridge pilings. However, this increase will be temporary and should settle within a few hours of completion of each piling installation. Any direct impacts to water quality would be limited to the area within construction limits.

Stormwater on the existing bridge flows through deck drains into the Mackay Creek, Skull Creek, and surrounding waters. To minimize the potential for water quality impacts, *SCDOT is proposing to treat stormwater runoff from the proposed bridge and roadway prior to discharge into waters below the new bridge. Stormwater will be treated per the SCDOT Stormwater Quality Design Manual.*

*SCDOT will avoid and minimize impacts to water quality by requiring the contractor to use all appropriate and practical stormwater BMPs and erosion control methods during the construction of the Recommended Preferred Alternative 4A.*

Additionally, through use of SCDOT designated seeding requirements and by treating stormwater runoff, the proposed bridge replacement is not anticipated to adversely affect water quality in the study area.

*The contractor would be required to minimize impacts to water quality through implementation of construction best management practices (BMPs) reflecting policies contained in 23 CFR 650 B and SCDOT's Supplemental Specifications on Seeding and Erosion Control Measures. Other measures including seeding, silt fences, sediment basins, etc. as appropriate will be implemented during construction to minimize impacts to water quality.*

## 4.8 Wetlands and Waters of the U.S.

Waters of the U.S. (WOUS) are defined by 33 CFR 328.3(b) and protected by Section 404 of the CWA (33 United States Code ([USC] 1344). WOUS includes the oceans, territorial seas, lakes, navigable inland and coastal waters, rivers, and streams (including intermittent streams) or tributaries of these waters. WOUS also includes mudflats, wetlands including those adjacent to waters (other than waters that are themselves wetlands), include sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds.

Wetland habitats are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."<sup>15</sup> USACE utilizes specific hydraulic, soil, and vegetation criteria in defining the boundary of wetlands within their jurisdiction. Wetlands generally include swamps, marshes, bogs, and similar areas. SCDHEC Ocean & Coastal Resource Management (OCRM) maintains jurisdiction over "critical areas" which can include certain types of wetlands, coastal waters, tidelands, and beach/dune systems.<sup>16</sup> The limits of jurisdictional WOUS are currently defined by the Navigable Waters Protection Rule of 2020.<sup>17</sup>

## 4.8.1 Existing Conditions

The initial step in identifying wetlands within the study area was a desktop analysis using GIS data and remote sensing technologies. This included an evaluation of National Wetland Inventory (NWI) maps, National Hydrography Data (NHD), Light Detection and Ranging (LIDAR), United State Geological Survey (USGS) topographic quadrangles, and aerial imagery. Additionally, field assessments of jurisdictional wetlands were completed between May 20 – July 11, 2019. All wetlands within the PSA were delineated using the methods outlined by the USACE for the Atlantic and Gulf Coastal Plain Region. The PSA contains freshwater wetlands, including forested and emergent wetlands. Critical area (tidally influenced wetlands and other waters) is also present within the PSA, including saltmarshes, tidal creeks and channels of Mackay and Skull Creeks, refer to Figure 4-9. Table 4-10 is a summary of the approximate acreage of jurisdictional wetlands within the PSA. For more detailed information on these wetland types please refer to Appendix G. The USACE Charleston District and SCDHEC OCRM received the delineation on February 2, 2021, refer to Appendix G.



Figure 4-9 Delineated Features in the PSA

Table 4-10 Wetland Types and Respective Acreage and Percent Coverage

Wetland Types	Area of Coverage (Acres)	Percentage of Total Wetlands in the PSA
Saltmarsh	100.5	53%
Tidal Creeks/Channels	74.9	40%
Freshwater Wetlands	13.6	7%
<b>Total</b>	<b>189</b>	<b>100%</b>

## 4.8.2 Impacts

The No Build Alternative would not result in impacts to wetlands. The proposed replacement of the bridges, construction of additional travel lanes, a new interchange, and an improved access point will result in unavoidable permanent and temporary impacts to wetlands. The proposed project would result in impacts to freshwater wetlands as well as critical area.

During the evaluation of Reasonable Alternatives, the Recommended Preferred Alternative 4A was estimated to impact approximately 18 acres of wetlands. Following the selection of the Recommended Preferred Alternative 4A, additional analysis was completed to review and determine potential impacts to environmental factors, including wetlands. During that analysis there have been revisions to the Recommended Preferred Alternative 4A footprint due to design modifications. These design modifications were required to meet SCDOT and FHWA design standards for the proposed bridge and roadway approaches, as well as the proposed intersection improvements within the project corridor. The design refinements and intersection improvements would be necessary for each of the Reasonable Alternatives, and therefore, the additional wetland impacts would increase in a similar manner for all Reasonable Alternatives. Based on these refinements, the Recommended Preferred Alternative 4A, as proposed, would impact approximately 22.9 acres of wetlands (3.8 acres of freshwater wetlands and 19.1 acres of critical area wetlands). Refer to Figure 4-10.

Permanent wetland impacts will result from clearing, excavation, addition of fill material, and rip-rap placement to accommodate the proposed project improvements. Temporary impacts to wetlands will occur during construction to create access and for the staging of materials and equipment. Additional temporary impacts may result due to unexpected failure of sediment and erosion control measures, accidental encroachment, or hazardous material spills. BMPs will be required to avoid or minimize the loss of sediment or hazardous materials from the construction site for the duration of the project.



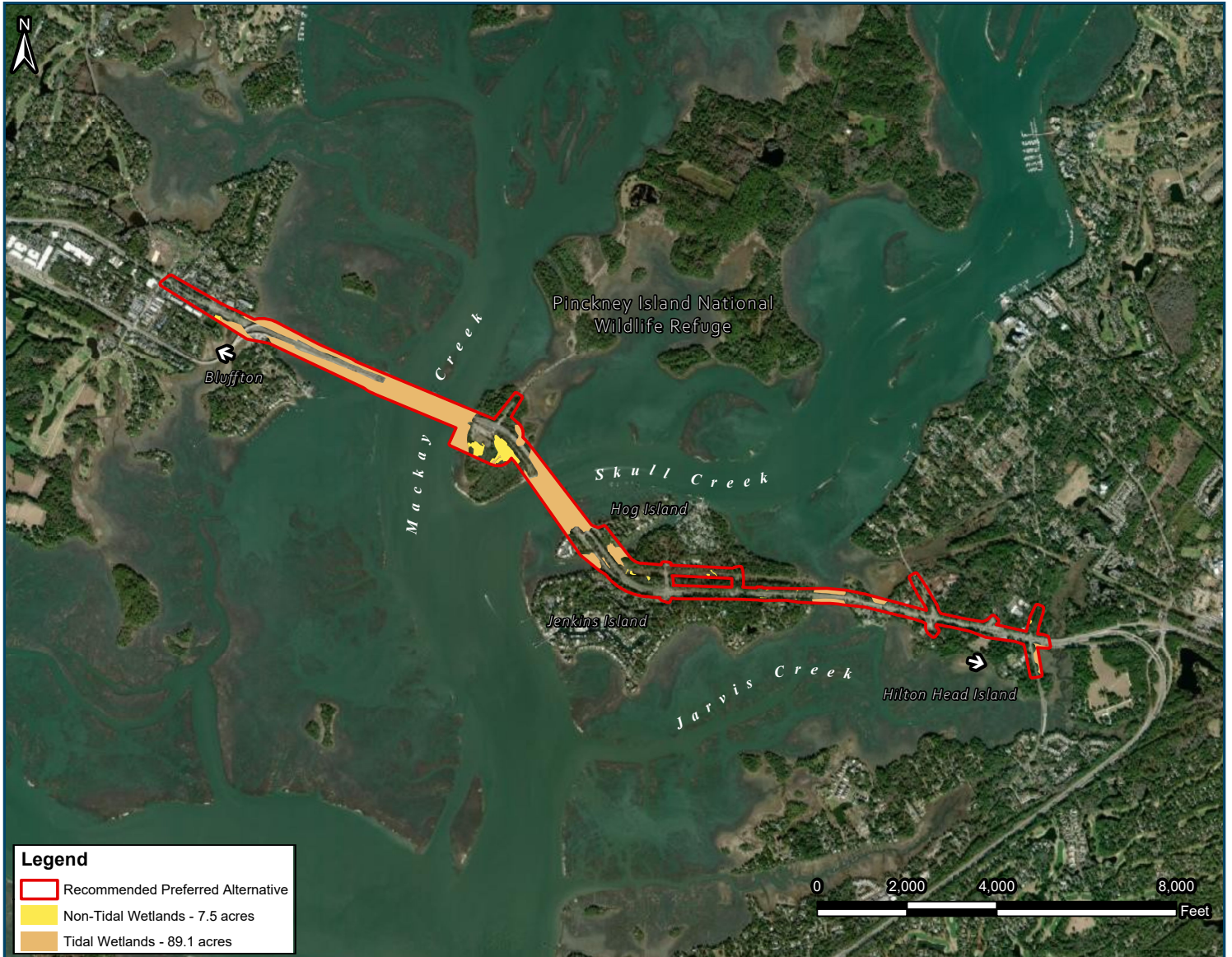


Figure 4-10 Recommended Preferred Alternative 4A Delineated Features

### 4.8.3 Indirect and Cumulative Effects

As discussed in Section 4.3.2.3, the defined indirect effects are caused by the project but are later in time or farther removed in distance but are reasonably foreseeable. Cumulative effects are explained as the incremental impact when combined with past, present, and reasonably foreseeable actions. The resource and regulatory agencies were consulted during the NEPA process regarding the scope, alternative analysis methodology, preliminary range of alternatives, and reasonable alternatives. The agencies consistently indicated that potential impacts to wetlands were a high priority; therefore, including an indirect and cumulative analysis was recommended.

As discussed in Section 4.3, the PSA is in a growing area of Beaufort County. The existing US 278 corridor provides the only access to/from Hilton Head Island. The Proposed Reasonable Alternatives would directly impact from 18 acres to 30.5 acres of wetlands. To evaluate potential indirect and cumulative effects a study area and timeframe were established.

To assess the potential ICE on wetlands a study area defined by the watershed boundaries was chosen to encompass all the potential impacts, refer to Figure 4-18. The US 278 project is located within the Savannah River Basin.

River basins are subdivided into smaller watersheds which are categorized by HUCs. There are two, 12-digit HUCs that encompass the proposed project, including HUC 03060110-0301 (May River) and HUC 03060110-0304 (Calibogue Sound). The ICE study area for wetlands is defined as the May River HUC and the Calibogue HUC, refer to Figure 4-11. The combined acreage of the sub-watersheds is over 50,000 acres and provides a clear boundary for the analyses, as described in Section 4.7.

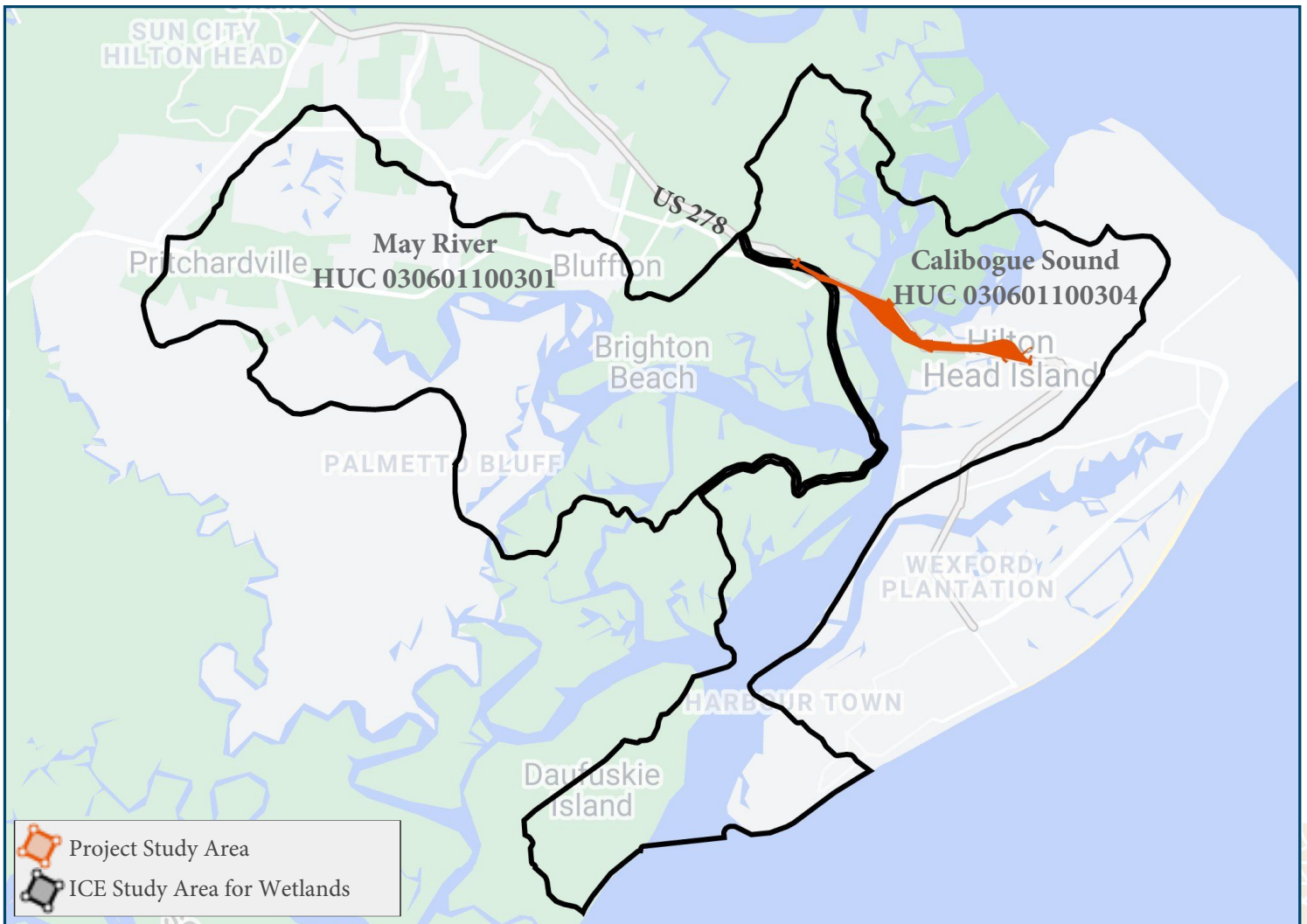


Figure 4-11 ICE Study Area for Wetlands



The May River and Calibogue Sound sub-watersheds are within the 10-digit HUC Calibogue Sound Watershed (0306011003) and consists of Calibogue Sound and its tributaries, which include the May River, the Cooper River, Broad Creek, Mackay Creek and Skull Creek. SCDHEC has prepared a watershed assessment for the Calibogue Sound Watershed, which encompasses over 78,000 acres in Beaufort County.<sup>18</sup> According to the assessment, there is a high potential for growth in this watershed which contains the Town of Bluffton and Town of Hilton Head Island. This growth is evidenced by the large amount of residential and commercial growth occurring along the US 278 corridor from Bluffton to Hilton Head Island. The potential for development is supported by the availability of septic system installations, water and sewer service, as well as the existing infrastructure.

A future time horizon of 25 years or to 2045 is the transportation planning horizon used for US 278. The cumulative effects past timeframe is ten years.

An inventory of the existing wetlands within the ICE study area for wetlands defined above was used to provide a baseline condition. The Multi-Resolution Land Characteristics Consortium (MRLC) National Land Cover Database (NLCD) maintains land cover data for various periods between 2001 and 2016. This data will be applied to estimate the acres of wetlands within the ICE study area.

Figures 4-12 and 4-13 show a comparison of the 2001 NLCD and the 2016 NLCD. These figures indicate a loss in environmental resources, which include open water, wetlands, forest, shrubland, herbaceous, and agriculture. The decrease in these environmental resources correlates with increases in developed and barren land, refer to Table 4-11.



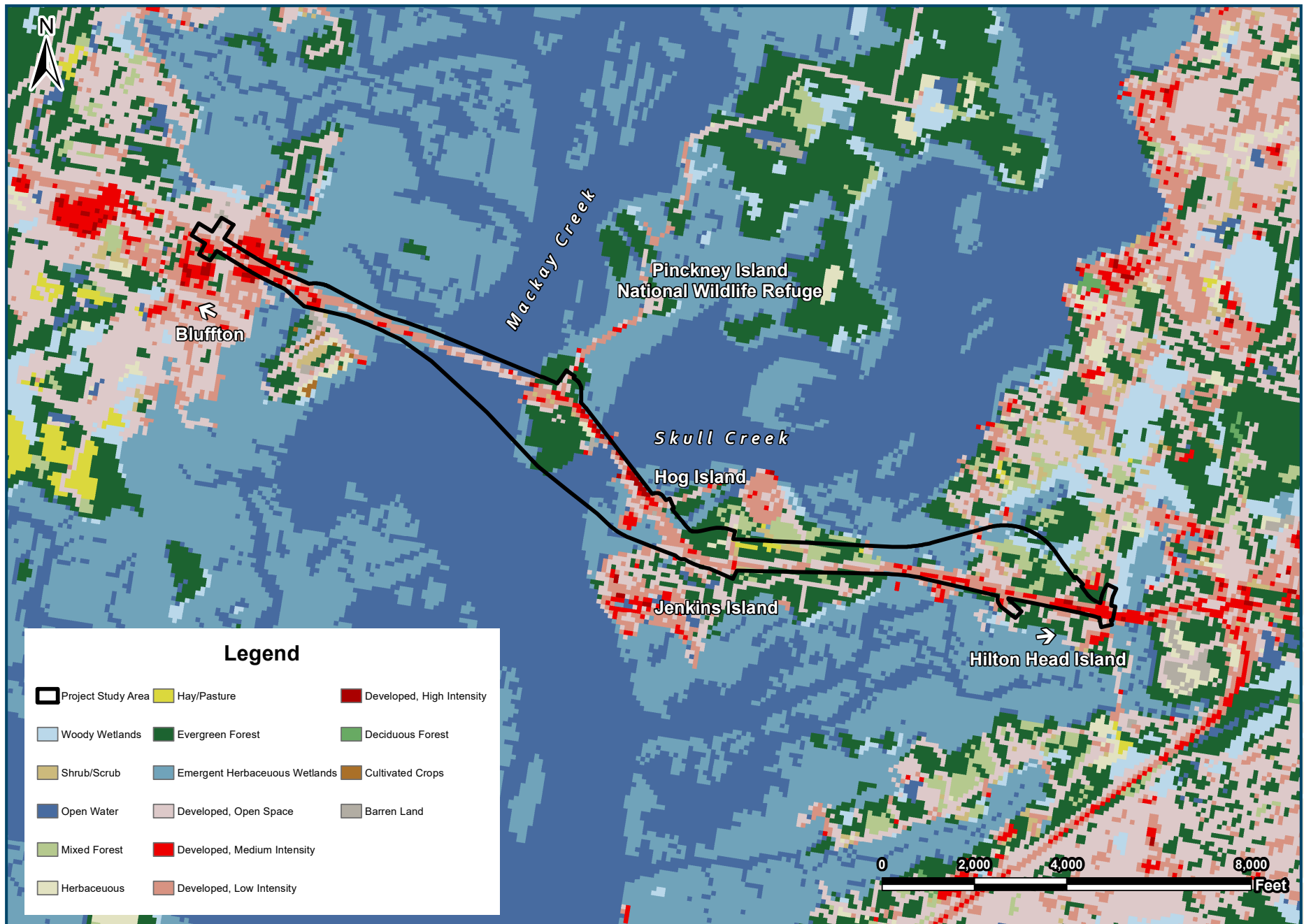


Figure 4-12 2001 NLCD

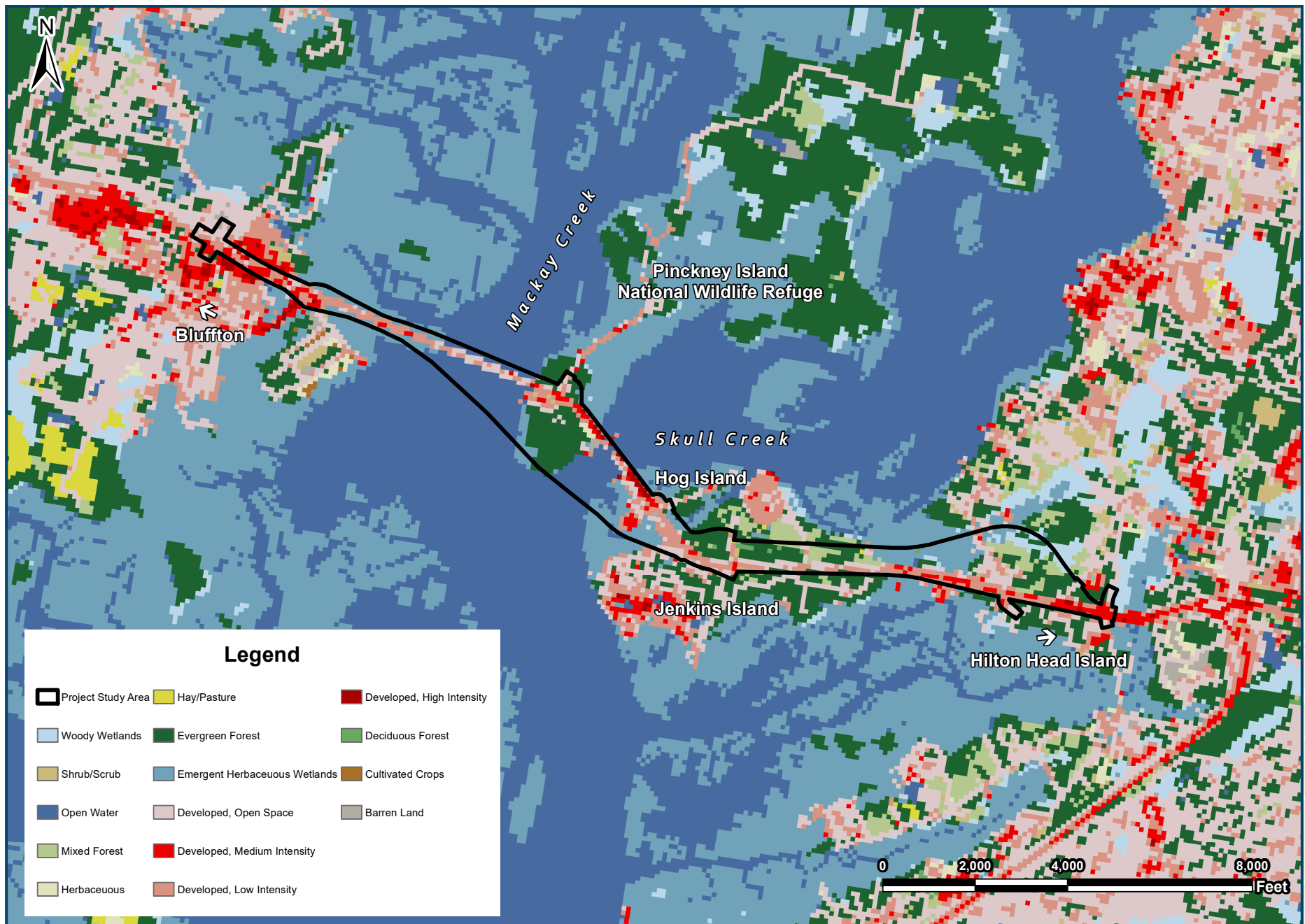


Figure 4-13 2016 NLCD

Table 4-11 2001 and 2016 NLCD Comparison

Land Cover	2001 Percentage	2016 Percentage
Barren	0.43	0.47
Developed	13.33	18.16
Open Water	25.57	25.19
Wetlands	31.94	31.62
Forest	23.98	21.74
Shrubland	1.22	1.00
Herbaceous	2.9	1.22
Agriculture	0.63	0.60

### 4.8.3.1 Indirect Effects

The purpose of this project is to address structural deficiencies at the existing eastbound Mackay Creek bridge and reduce congestion within the PSA. Impact-causing activities that are associated with the project’s proposed improvements are identified in Section 4.8.2. The following are specific modifications that have the potential to result in indirect impacts: additional travel lanes, a new right-in/right-out interchange, and a new/modified access point.

The analysis of induced growth from the US 278 project was used to determine the potential indirect effects until 2045. The anticipated growth caused by widening the existing US 278 corridor and the impacts to wetlands that could occur, due to that growth, was evaluated. Impact-causing activities for the ICE study area for wetlands are summarized in Table 4-12.

Table 4-12 Impact Causing Activities

Impact Causing Activity	Project Specific Activity	Relevant Details
Modification of Regime	Alteration of Ground Cover	Conversion of pervious surfaces to impervious surfaces would increase runoff
Modification of Regime	Wetland Fill and Stream Fill	New fill would be placed in wetlands for road widening embankments
Land Alteration	Reduced Wetland Quality	Reduced quality of wetlands due to increased runoff and fill

Project-induced growth includes changes in capacity, traffic patterns, or accessibility which can influence the location of residential and commercial growth in the study area. The proposed improvements of additional travel lanes would increase the acceptable threshold for daily traffic volumes, as well as minimize congestion. The new right-in/right-out interchange will be added to the PINWR and C.C. Haigh Jr. Boat Landing allowing vehicles to pass underneath the existing bridges to access either side and provide full access to US 278. Relocating Hog Island access from Blue Heron Point Drive to Gateway Drive will provide more efficient ingress/ egress to properties on Hog Island. These proposed improvements have the potential to accelerate growth in the area.

According to the 2040 Lowcountry Area Transportation Study (LATS) Long Range Transportation Plan (2040 LATS LRTP), the LATS area is densest in portions of Bluffton, Hilton Head Island, northeastern Port Royal, and Beaufort. Due to the dense population, the highest traffic volume in the area has been identified to occur between Moss Creek Drive and Spanish Wells Road on US 278. It is projected that Beaufort County will grow to 241,000 people by 2040 at an average rate of 1.3% per year.<sup>19</sup> Current growth trends will likely continue in the area regardless of the proposed project.

The proposed construction of additional travel lanes, a new interchange, and an improved access point will create impacts to wetlands during and after construction. Impacts during construction can occur because of the unintentional failure of sediment and erosion control measures, accidental encroachment, or hazardous material spills. Permitted impacts will directly alter wetlands which can lead to a change in hydrology in the ICE study area for wetlands resulting in more runoff or decreased floodplain storage. These effects on water resources can lead to the degradation of wetlands.

Encroachment-alteration effects are those effects that alter the behavior and function of the physical environment and are related to project design but are indirect in nature because they can be separated from the project by time or distance.

One way to assess indirect impacts to existing wetlands is to evaluate the increase in impervious surfaces associated with the proposed improvements. The increase in impervious surface associated with the project would lead to additional runoff carrying sediment and other pollutants into the adjacent wetlands. As streams and wetlands are connected, the pollutants and sediment would be transported farther downstream into other streams and wetlands.

### *Impact to Wetland Habitats*

- Saltmarsh - The proposed project would impact salt marsh by shading salt marsh grasses underneath the new bridge and may result in loss of oyster habitat as discussed in the Essential Fish Habitat (EFH) Technical Report, refer to Appendix H. Fill will be required for bridge approaches and ramps on the improved PINWR interchange and the existing causeway between Jenkins and Hilton Head Islands. The proposed containment and filtering of stormwater runoff from the new proposed bridges would also be a beneficial indirect effect as the current bridge structures have scuppers and drain directly into the marsh.
- Tidal Creeks and Channels - The proposed project would indirectly affect tidal creeks and channels in the Mackay and Skull Creeks by causing turbidity during placement of new structures and temporary construction access during demolition of the existing structures. However, this indirect impact would not be considered significant because the increased turbidity would be temporary and localized to the construction area. In addition, the contractor would be required to minimize potential indirect impacts to water resources through implementation of construction BMPs, reflecting policies contained in 23 CFR 650 B and SCDOT's Supplemental Specifications on Seeding and Erosion Control Measures. The removal of the existing structures may also result in loss of oyster habitat as discussed in the EFH Technical Report, refer to Appendix H. The project would have a beneficial indirect effect on water resources by containing and filtering stormwater runoff from the proposed bridge.
- Palustrine Wetlands - The proposed project would indirectly affect the function of palustrine wetlands. The resulting temporary and permanent clearing and filling of these wetlands from the project will reduce the overall capacity of wildlife habitat, natural stormwater management, and scenic value.

### Assess Potential Avoidance and Minimization Measures

Implementation of the measures below would minimize impacts to adjacent wetlands.

- Follow the SCDOT BMPs during construction reflecting policies contained in 23 CFR 650 B and the SCDOT's Supplemental Specifications on Seeding and Erosion Control Measures.
- Contain and filter stormwater runoff from bridges.
- Obtain National Pollutant Discharge Elimination System (NPDES) permit and prepare a Stormwater Pollution Prevention Plan (SWPPP).
- Remove existing bridge and allow salt marsh grasses to revegetate.

### 4.8.3.2 Cumulative Effects

The analysis of past, present, and future growth within the ICE study area for wetlands will be used to determine the potential cumulative effects between 2010 – 2045.

US 278 serves as the only connection from Bluffton to Hilton Head Island; the proposed project includes improvements to an existing roadway facility that is in a highly developed area. As such, wetlands throughout the US 278 Corridor have been impacted by past actions.

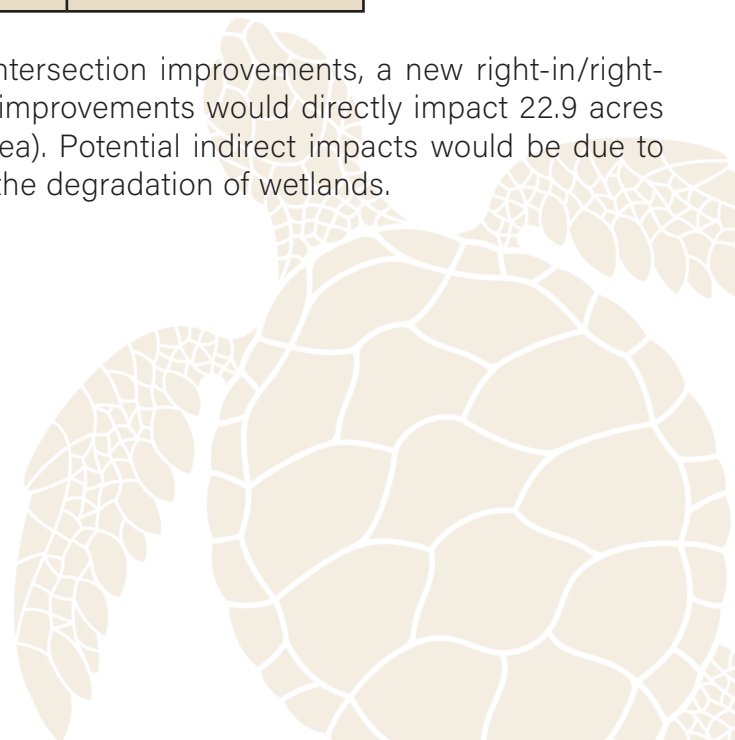
The ICE study area includes various wetlands, including salt marshes; tidal creeks and channels; forested wetlands; and freshwater herbaceous wetlands. As discussed earlier, a comparison of the 2001 NLCD and the 2016 NLCD indicates a decrease in open water and wetlands throughout the study area.

A comparison of the percent of impervious surfaces within the ICE study area for wetlands is a way to measure impacts to wetlands. Urban imperviousness data was obtained from the MRLC and NCLD and indicates an increase in imperviousness between 2001 and 2016, refer to Table 4-13.

Table 4-13 2001 and 2016 NLCD Impervious Surface Comparison within the ICE Study Area for Wetlands

Surface	2001 Percentage	2016 Percentage
Impervious	13.28	18.16
Non-Impervious	86.72	81.84

The proposed project would add additional travel lanes, intersection improvements, a new right-in/right-out interchange, and a new/modified access point. These improvements would directly impact 22.9 acres of wetlands (3.8 acres freshwater and 19.1 acres critical area). Potential indirect impacts would be due to additional runoff of impervious surfaces and could lead to the degradation of wetlands.



As discussed earlier, the project is in a rapidly growing area of Beaufort County. To accommodate this growth, both state and local municipalities are implementing various transportation projects within the ICE study area for wetlands. Committed transportation projects that are under construction or are reasonably expected to be operational in the forecast year are listed in Table 4-10.

Due to the growth that has already occurred in the ICE study area for wetlands, impacts to wetlands are already evident. The cumulative effect of the US 278 Corridor Improvements Project, as well as other committed transportation projects, could cause additional impacts to wetlands. While current regulations protect wetlands to some degree, impacts will continue to occur regardless of the proposed project. In summary, the cumulative impacts along the ICE study area for wetlands are local transportation projects, increased fill of wetlands, and an increase of impervious surfaces.

## 4.8.4 Mitigation

The CEQ has defined mitigation in 40 CFR 1508.20 to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts.<sup>20</sup> The USEPA and USACE provide guidance on a three-step process for the mitigation of wetland impacts; these include 1) avoidance, 2) minimization, and 3) compensatory mitigation to wetlands and WOUS.

### 4.8.4.1 Avoidance

As required by Executive Order 11990, Protection of Wetlands,<sup>21</sup> efforts were made to develop alternatives that avoid impacting WOUS to the greatest extent possible. The Recommended Preferred Alternative 4A for the proposed project results in the least environmentally damaging build alternative regarding potential jurisdictional WOUS. There are no practicable alternatives to the proposed construction in these WOUS; therefore, the proposed action would include all practicable measure to minimize harm to wetlands that may result from construction.

### 4.8.4.2 Minimization

Practicable measures taken to minimize impacts include extending and maximizing bridge lengths to minimize fill placement in wetlands, steepening fill slopes in wetlands to reduce required fill, and maximizing use of uplands for construction access. The Recommended Preferred Alternative 4A has the least amount of impacts to critical area. Additionally, SCDOT will be requiring the contractor to implement all practicable erosion control measures and BMPs during the entire construction phase of the project. *Impacts to jurisdictional waters will be permitted under a Department of the Army Section 404 permit from the U.S. Army Corps of Engineers (USACE). Based on preliminary design, it is anticipated that the proposed project would be permitted under an Individual Army Corps of Engineers Permit (IP). SCDOT will provide the Army Corps with information regarding any proposed demolition activities during the Section 404 permitting process. In accordance with the permit, the project plans and/or Environmental Compliance Plan will clearly state all environmental commitments and BMPs to be implemented during and following project construction.*

By maximizing bridge lengths, the Recommended Preferred Alternative 4A will minimize the placement of bridge support structures in Mackay Creek and Skull Creek.

### 4.8.4.3 Compensatory Mitigation

Compensatory mitigation is only undertaken after avoidance and minimization actions are exhausted. The concept of compensatory mitigation is to offset the unavoidable impacts and function loss of WOUS by setting aside or restoring a nearby property with high environmental value. A compensatory mitigation plan is required by the USACE if impacts to wetlands cannot be avoided and require a Section 404 permit. USACE is responsible for determining the appropriate level of compensatory mitigation required. Based on 22.9 acres of wetland impacts associated with the Recommended Preferred Alternative 4A, it is estimated that 45-50 freshwater wetland credits and 275-300 salt marsh credits may be required as compensatory mitigation.

Multiple mitigation banks are available to provide mitigation services to the project. According to the USACE Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS), possible private banks for salt marsh credits are the Clydesdale Mitigation Bank and Murray Hill Mitigation Bank. The only bank currently available for freshwater wetland credits is the Sweetleaf Swamp Mitigation Bank.

If mitigation credits are not available for purchase, SCDOT will pursue Permittee Responsible Mitigation (PRM). SCDOT will investigate on-site PRM opportunities as well as off-site PRM within the project watershed. PRM is not the preferred method of mitigation and will only be pursued if no mitigation bank credits are available for purchase to offset unavoidable impacts to wetlands.

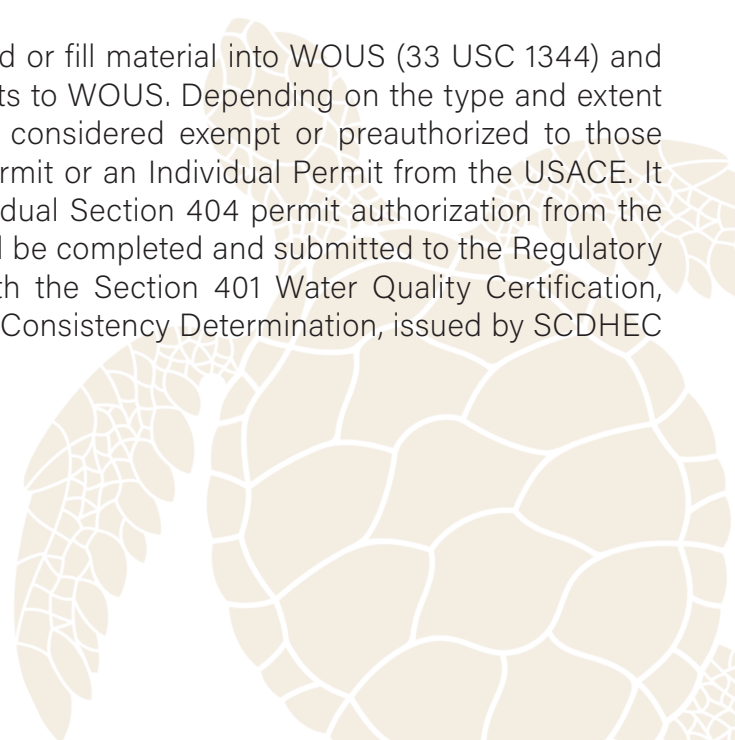
*The required mitigation for this project will be determined through consultation with the USACE and other resources agencies.*

## 4.9 Environmental Permits

### 4.9.1 Federal Environmental Permits

#### 4.9.1.1 Section 404 Permit

Section 404 of the CWA regulates the discharge of dredged or fill material into WOUS (33 USC 1344) and authorizes USACE to issue permits for projects with impacts to WOUS. Depending on the type and extent of impacts, permitting requirements range from activities considered exempt or preauthorized to those requiring pre-construction notification for a Nationwide Permit or an Individual Permit from the USACE. It is anticipated the proposed project would require an Individual Section 404 permit authorization from the USACE. The Section 404 permit application package would be completed and submitted to the Regulatory Division of the USACE Charleston District concurrent with the Section 401 Water Quality Certification, issued by SCDHEC Bureau of Water, and the Coastal Zone Consistency Determination, issued by SCDHEC OCRM.





### 4.9.1.2 404(b)1 Guidelines

The CWA established guidelines, known as the Section 404(b)1 guidelines, which give criteria used to evaluate activities regulated under Section 404 of the CWA. According to the 404(b)1 guidelines, fill material cannot be permitted in wetlands or WOUS if a practicable alternative would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences. The USACE may only issue a permit for the least environmentally damaging practicable alternative (LEDPA). Practicability considers cost, existing technology, and logistics of the alternatives.

### 4.9.1.3 US Coast Guard Bridge Permit

Section 9 of the Rivers and Harbors Act requires approval from the US Coast Guard (USCG) for any construction of a dam, dike, bridge, or causeway across navigable WOUS. Navigable WOUS are not always the same as state navigable waters. Navigable WOUS are those waters presently used, used in the past, or susceptible to use to transport interstate or foreign commerce. *The construction of the proposed Mackay Creek and Skull Creek bridges require a USCG Bridge Permit in compliance with Section 9 of the Rivers and Harbors Act of 1899 and the General Bridge Act of 1946. All USCG authorizations will be acquired prior to construction.* Chapter 5 of the EA discusses Navigation in more detail.

### 4.9.1.4 Public Interest Review Factors

USACE considers many factors when evaluating a Section 404 permit application, including probable impacts on the public interest (33 CFR 320.4). The public interest review for a proposed project includes an evaluation of the impacts on the 20 public interest factors listed in 33 CFR 320.4. A project may have an adverse effect, a beneficial effect, a negligible effect, or no effect on any or all of the factors. The benefits and disadvantages of a project are weighed during the permit application review. The Recommended Preferred Alternative 4A for the US 278 Corridor Improvements project would have negligible or no effect on land use, floodplains, fish and wildlife values, recreation, shore erosion and accretion, energy needs, mineral needs, or food and fiber production.

Although the Recommended Preferred Alternative 4A would impact conservation areas, wetlands, and aesthetics, it is expected to have an overall beneficial effect on economics, navigation, safety, and the needs and welfare of people.

## 4.9.2 State Environmental Permits

### 4.9.2.1 Section 401 Water Quality Certification

Section 401 of the CWA requires any request for a federal permit involving activities which impact WOUS (Section 404 permit) to also acquire a Water Quality Certification. Certification is required for activities permitted by USACE for construction occurring in navigable waters or discharge of dredged or fill material into the state's waters. This certification involves a review of the proposed project and analysis of its potential effects on water quality. Water quality standards are an effective tool available to states to protect the overall health of wetlands resources and the valuable functions they provide including shoreline stabilization, nonpoint source runoff filtration, wildlife habitat, and erosion control, which directly benefit adjacent and downstream waters.

In South Carolina, SCDHEC is responsible for granting, denying, or waiving Section 401 Water Quality Certifications in the coastal management zone of the state. SCDHEC has permitting authority over critical areas and a permit must be received before any alterations occur. Critical area is defined as coastal waters, tidelands, beaches, and dune/beach system.

Since the proposed project requires a Section 404 Individual permit, a Section 401 Water Quality Certification is also required. A Section 401 Water Quality Certification is required before the USACE will act on the Section 404 Permit.

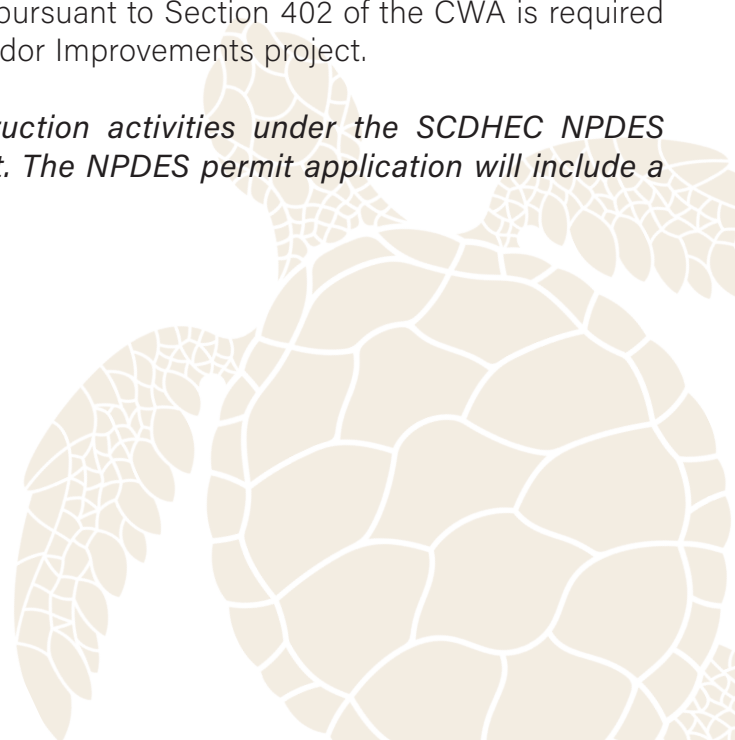
#### 4.9.2.2 Critical Area Permit and Coastal Zone Consistency Determination

The coastal zone includes all lands and waters in the coastal counties of South Carolina. SCDHEC OCRM is responsible for protecting the state's coastal zone and critical areas. SCDHEC OCRM is required to review all state and federal permit applications for activities within the eight-county coastal zone for consistency with the South Carolina Coastal Zone Management Plan (SCCZMP) and grant a Coastal Zone Consistency (CZC) Certification. A CZC Certification ensures the activity protects the quality of the coastal environment and promotes the economic and social improvement of the coastal zone. The proposed project is in a coastal county and is expected to involve impacts to critical areas. Critical areas include coastal waters, tidelands, beaches, and beach/dune systems. A Critical Area Permit and coastal consistency determination must be provided by SCDHEC OCRM to ensure the project would be consistent with the local management program.

#### 4.9.2.3 NPDES Construction General Permit

Section 402 of the CWA formed NPDES, which regulates pollutant discharges, including stormwater, into WOUS. An NPDES permit sets specific discharge limits for point-source pollutants into WOUS and outlines special conditions and requirements for a project to reduce impacts on water quality. NPDES permits require the project be designed to protect WOUS, that erosion control BMPs be implemented, and that a SWPPP be prepared for construction activities exceeding one acre of ground disturbance. SCDHEC is responsible for managing the NPDES program to ensure stormwater runoff during construction would not have an adverse effect on water quality. A NPDES permit pursuant to Section 402 of the CWA is required for construction activities associated with the US 278 Corridor Improvements project.

*SCDOT will obtain authorization for the project construction activities under the SCDHEC NPDES program, pursuant to Section 402 of the Clean Water Act. The NPDES permit application will include a SWPPP.*



## 4.10 Floodplains

A floodplain is an area of land adjacent to a stream, river, lake or ocean, which experiences flooding during storm events. Floodplains provide important functions in the natural environment including a habitat for wildlife and storage for floodwaters. The Federal Emergency Management Agency (FEMA) has created maps of floodplains throughout the United States and categorized these floodplains into zones. Zones are defined by the frequency or the chance of occurrence an area will flood in a given year. Special Flood Hazard Areas (SFHA) are areas that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. Zones A and AE are two of the 14 SFHAs. FEMA has regulatory authority over SFHAs. Moderate flood hazard areas are Zone B or Zone X. Areas of minimal flood hazard, which are outside the SFHA and higher elevation than the moderate flood hazard areas are labeled Zone C or Zone X500.

Refer to Figure 4-14 for the flood zones in the project study area.

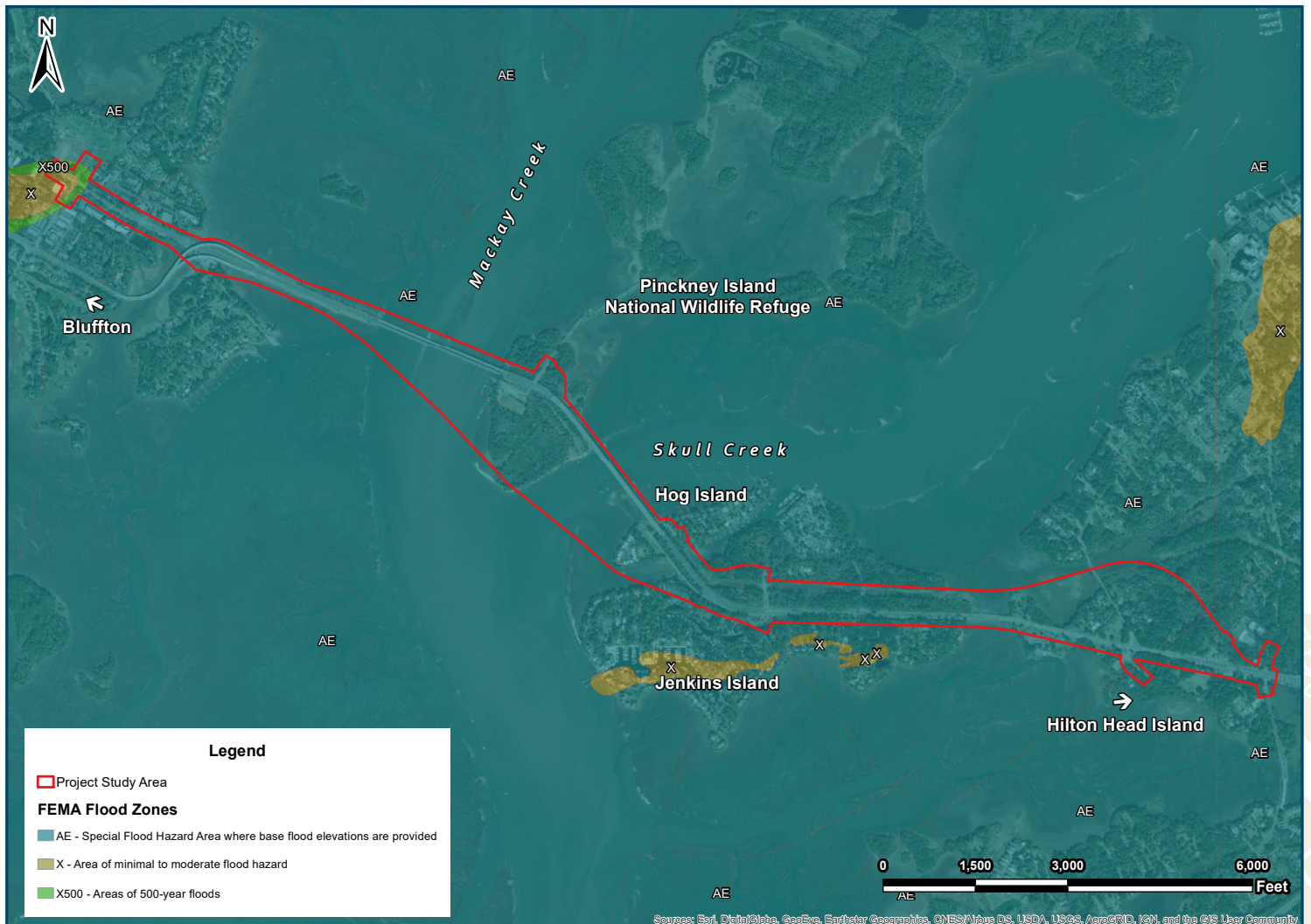


Figure 4-14 Floodplains within the PSA<sup>22</sup>

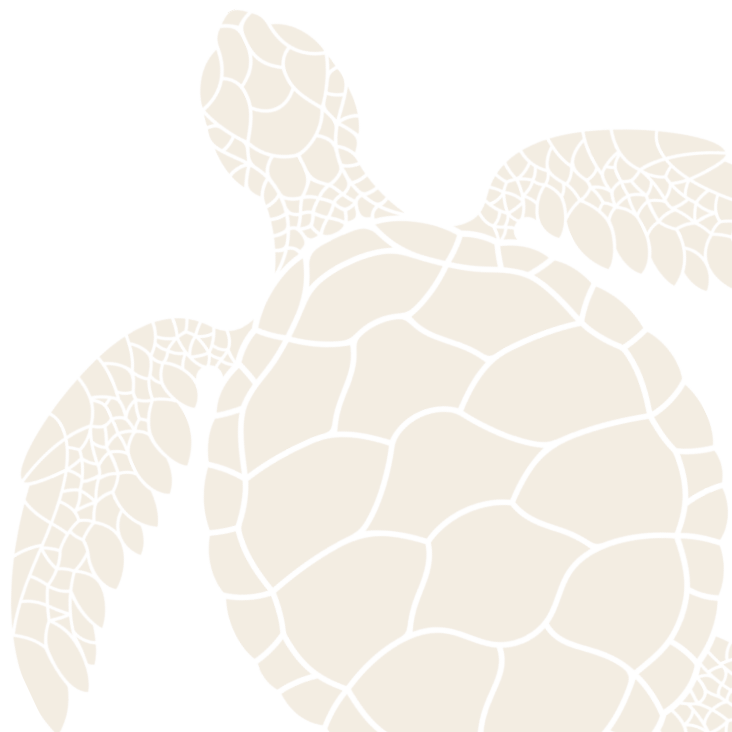
Executive Order 11988, Floodplain Management, requires that efforts be made by federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains. When there is a practicable alternative, federal agencies are required to avoid direct or indirect support of floodplain development. Floodplains are also regulated by state and local regulations. Encroachments into the floodplain are discouraged since this removes floodwater storage capacity. If impacts cannot be avoided, measures must be implemented to minimize impacts and restore the floodplain to the extent possible. Federal regulations will allow development in the 100-year floodplain or the floodway if hydrologic and hydraulic analysis demonstrate that the development would meet the requirements set forth by FEMA.

### 4.10.1 Impacts

The No Build Alternative would have no effect on the 100-year floodplain. Figure 4-14 shows the 100-year floodplains exist within the study area and the proposed project encroaches upon the 100-year floodplain.

The Recommended Preferred Alternative 4A, as proposed, would impact approximately 145 acres of floodplains.

Based on preliminary two-dimensional hydrological modeling completed in conjunction with the Bridge Replacement Scoping Trip Risk Assessment Form and the SCDOT Location and Hydraulic Design of Encroachments on Floodplains Checklist, it is expected that the project may be constructed to meet the "No-Rise" requirement due to the longer bridge lengths proposed, Appendix I. Detailed hydrologic studies and coordination with FEMA will occur during future design phases of the project, as required by 23 CFR Part 650, Subpart A. *The Engineer of Record will send a set of final plans and request for floodplain management compliance to the local County Floodplain Administrator prior to the project letting date.*



## 4.11 Natural Resources

Natural resources include, but are not limited to animals, plants, and ecosystems. These resources are important to environmental and human health.

Determining effects to natural resources during the planning process allows for measures to be taken to avoid, minimize, and mitigate adverse effects from the project.

Habitat communities within the PSA were assessed by reviewing aerial imagery, digital elevation models for Beaufort County, 2016 National Land Cover Data<sup>23</sup>, and National Wetland Inventory features to create a composite map of natural resources geospatial data within the PSA. This composite map has been used to estimate the types of various habitats within the corridor prior to field verification surveys. Habitat types were confirmed and updated with data collected during field surveys. Field surveys for natural resources were conducted May 20-24, 2019, July 9-11, 2019, and January 20-24, 2020. Data collected in the field was used to evaluate potential impacts to threatened or endangered species.

The proposed project is in the Sea Islands/Coastal Marsh Level IV ecoregion as defined by the USEPA. The Sea Islands/Coastal Marsh region contains the lowest elevations in South Carolina and is a highly dynamic environment affected by ocean wave, wind, and river action. The island, marsh, and estuary systems form an interrelated ecological web, with processes and functions valuable to humans, but also sensitive to human alterations and pollution. The coastal marshes, tidal creeks, and estuaries are important nursery areas for fish, crabs, shrimp, and other marine species.<sup>24</sup>

The characteristics of a soil determine nutrient availability and ground stability. The soils within the PSA are comprised of marsh-associated loams and clays and fine sands. These soils are created through marsh vegetative decay and marine deposits.

### 4.11.1 Existing Conditions

Much of the US 278 corridor contains urban development, residential communities, and surrounding natural buffers. All wetlands within the study area were delineated using the methods outlined by the USACE Atlantic and Gulf Coastal Plain Regional Supplement to determine jurisdictional boundaries. Non-wetland habitat types are classified using the 2016 NLCD. For more details on specific habitat types see the Biological Evaluation in Appendix J.

#### 4.11.1.1 General Wildlife

General wildlife, or evidence of wildlife, observed within the PSA included birds, amphibians, mammals, and aquatic species that are typical for the South Carolina coast. Birds observed include nesting ospreys, foraging bald eagles, great blue herons, great egrets, fishing crows, yellow-rumped warblers, rock pigeons, Northern mockingbirds, Northern cardinals, and clapper rails. Amphibians observed include southern cricket frogs, squirrel tree frogs, and green frogs. Mammals observed include dolphins, raccoons, white-tailed deer, gray squirrels, and opossums. Aquatic species observed include killifish, blue crabs, porcelain crabs, barnacles, oysters, and grass shrimp. General wildlife noted on PINWR include shorebirds, fox squirrels, corn snakes, rat snakes, and river otters.

### 4.11.1.2 Pinckney Island National Wildlife Refuge

The USFWS is tasked with managing and maintaining National Wildlife Refuges (NWR) to conserve habitats and species of environmental importance. A section of PINWR is located within the PSA. The primary management objectives for PINWR are:

- To protect and provide habitat for threatened and endangered species
- To provide and maintain habitat for migratory birds and resident birds that utilize and/or nest annually on the refuge
- To provide, enhance, and maintain habitat for native wildlife
- To promote wildlife interpretive and recreational opportunities

Wading bird nest colonies were observed on PINWR during field surveys. Species observed included Little blue herons, Snowy egrets, Black-crowned night herons, Yellow-crowned night herons, and Great egrets. In addition to the wading bird colonies, the refuge boasts records of over 250 species of birds including the painted bunting, wood stork, and warblers. Aside from birds, other common species include rat snakes, black racers, bobcats, raccoons, and river otters. PINWR is bordered by tidal salt marshes and Skull and Mackay Creeks.



Figure 4-15 Blue Heron  
Nest on PINWR

## 4.11.2 Federally Protected Species

### 4.11.2.1 Endangered Species Act

The Federal Endangered Species Act (ESA) of 1973, as amended (16 USC 1531 et seq.) is the federal regulation whose goal is “to protect and recover imperiled species and the ecosystems upon which they depend”. USFWS manages terrestrial and freshwater organisms while National Oceanic and Atmospheric Administration (NOAA) Fisheries manages marine and anadromous species. Both administer the ESA and establish a list of protected species. Because of the federal nexus of the proposed project, consultation with USFWS and NOAA Fisheries will be required under Section 7 of the ESA (16 USC 1531-1534) for actions that “may affect” federally classified endangered and threatened species.

### 4.11.2.2 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) prohibits, the “take” of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Jurisdiction for MMPA is shared by USFWS and NOAA Fisheries.<sup>25</sup> Marine mammals are mammals that rely on the ocean to survive. They include, but are not limited to, whales, dolphins, porpoises, manatees, and dugongs.<sup>26</sup> Because of the federal nexus of the proposed project, consultation with USFWS and NOAA Fisheries will be required under Section 101 and 404 of the MMPA. ***USFWS Standard Manatee Conditions for In-Water Work will be employed during construction, refer to Appendix K. Precautionary measures will be implemented during construction in summer months or early fall when the waterways may support increasing numbers of manatees.***

### 4.11.2.3 Migratory Birds and Bald and Golden Eagle Protection Act

Migratory birds listed in 50 CFR 10.13 of the Migratory Bird Treaty Act (MBTA) makes it illegal to “take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations”. Bald eagles were once listed in the ESA but are now protected by the MBTA and the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA (16 USC 668-668c) prohibits the taking of bald eagles, eagle “parts, nests, or eggs”.

*The contractor shall notify the Resident Construction Engineer (RCE) at least four (4) weeks prior to construction/demolition/maintenance of bridges and box culverts. The RCE will coordinate with SCDOT Environmental Services Office (ESO), Compliance Division, to determine if there are any active birds using the structure. After this coordination, it will be determined when construction/demolition/maintenance can begin. If a nest is observed that was not discovered after construction/demolition/maintenance has begun, the contractor will cease work and immediately notify the RCE, who will notify the ESO Compliance Division. The ESO Compliance Division will determine the next course of action.*

*The use of any deterrents by the contractor designed to prevent birds from nesting, shall be approved by the RCE with coordination from the ESO Compliance Division.*

### 4.11.3 Impacts

A list of threatened and endangered species was obtained for Beaufort County from the USFWS. Each species has specific habitat requirements that were compared to the habitats within the PSA. The evaluation of the listed species was based on the presence or absence of species-specific suitable habitat and observations made during the field surveys. Six of the species listed for Beaufort County are restricted to marine habitat that was not identified within the PSA, therefore, they were not included in the protected species evaluation. These include the finback whale, humpback whale, right whale, sei whale, sperm whale, and leatherback turtle. Potential impacts to federally protected species evaluated for the US 278 improvements project were the same for all Reasonable Alternatives. A detailed description of all federally protected species and their suitable habitats can be found in the Biological Evaluation, refer to Appendix J.

Permanent impacts to foraging habitat are anticipated to result from the placement of fill material into adjacent marshes for the construction of, and improvements to, bridge approaches.

Temporary impacts to foraging habitat and migration of listed aquatic species will consist of noise and minor turbidity. Temporary impacts to foraging habitat of wood storks, piping plover, and red knots are anticipated during construction activities. None of these impacts will affect the continued existence of any listed species for Beaufort County. A list of threatened, endangered, and other protected species can be found Table 4-14.



Table 4-14 Federally Protected Species in Beaufort County for the Recommended Preferred Alternative 4A

Common Name	Federal Protection Status	Habitat Present	Effect Determination
<b>Amphibian Species</b>			
Frosted flatwoods salamander	Threatened; Critical Habitat	No	No Effect
<b>Bird Species</b>			
American wood stork	Threatened	Yes	Not Likely to Adversely Affect
Bald eagle	BGEPA	Yes	Not required under Section 7 ESA
Eastern black rail	Threatened	Yes	Not Likely to Adversely Affect
Piping plover	Threatened	Yes	Not Likely to Adversely Affect
Red-cockaded woodpecker	Endangered	No	No Effect
Red knot	Threatened	Yes	Not Likely to Adversely Affect
<b>Fish Species</b>			
Atlantic sturgeon	Endangered; Critical Habitat	Yes	Not Likely to Adversely Affect
Shortnose sturgeon	Threatened	Yes	Not Likely to Adversely Affect
<b>Insect Species</b>			
<b>Mammal Species</b>			
Bottle nosed dolphin	MMPA	Yes	Not Likely to Adversely Affect
Finback whale	Endangered; MMPA	No	No Effect
Humpback whale	Endangered; MMPA	No	No Effect
Northern long-eared bat	Threatened	No	No Effect
Right whale	Endangered; MMPA	No	No Effect
Sei whale	Endangered; MMPA	No	No Effect
Sperm whale	Endangered; MMPA	No	No Effect
West Indian manatee	Threatened; MMPA	Yes	Not Likely to Adversely Affect
<b>Plant Species</b>			
American chaffseed	Endangered	No	No Effect
Pondberry	Endangered	No	No Effect
<b>Reptile Species</b>			
Green sea turtle	Endangered	Yes	Not Likely to Adversely Affect
Kemp's ridley sea turtle	Endangered	Yes	Not Likely to Adversely Affect
Leatherback sea turtle	Endangered	No	No Effect
Loggerhead sea turtle	Threatened; Critical Habitat	Yes	Not Likely to Adversely Affect

BGEPA = Bald and Golden Eagle Protection Act



## 4.11.4 Coordination

USFWS and NMFS received a Letter of Intent (LOI) from SCDOT as notification of the proposed project in September 2018. In March 2019, FHWA also sent an invitation to become a Participating Agency to USFWS and NMFS. Representatives from both USFWS and NMFS were present at multiple agency meetings where representatives were engaged early in the project development process and provided frequent feedback to SCDOT related to potential effects on federally protected species.

A Biological Evaluation (BE) was submitted to USFWS and NMFS for review and comment on July 16, 2020 following studies to identify the presence of protected species and determination of potential effects of Recommended Preferred Alternative 4A. Concurrence with the findings of the BE was received from the USFWS on July 28, 2020. Three requests for additional information were received from NMFS. A subsequent BE Addendum, dated November 3, 2020, was submitted to NMFS addressing only listed species requiring estuarine habitats following their initial request for additional information.

The Biological Evaluation was revised a third time to document based on refinements to the Recommended Preferred Alternative 4A and a change in protected species listing. During the preparation of the third revision to the BE, additional informal consultation was completed with NMFS to discuss the proposed project and potential effects on protected species. The revised BE was submitted to USFWS and NMFS on February 19, 2021. Concurrence was received from USFWS on March 3, 2021 and from NMFS on March 22, 2021. A copy of the BE and agency letters and other consultation efforts as described above can be found in Appendix J.

## 4.11.5 Environmental Commitments

SCDOT and the contractor will be required to honor/implement SCDOT standard Environmental Commitments and those project specific commitments developed through agency coordination and the permitting process. Commitments related to protected species include:

- *Develop a SWPPP and obtain a land disturbance permit and a NPDES permit from SCDHEC prior to construction.*
- *Contractor will adhere to all SCDOT construction and erosion and sediment BMPs.*
- *If existing permitted borrow sites are not available, the contractor will be required to follow SCDOT guidance in Engineering Directive Memorandum 30 (ED-30), Borrow Pit Location and Monitoring. The contractor will be responsible for addressing the potential effects to federally listed threatened and endangered species for any new borrow or disposal sites.*
- *Use of only vibratory hammers and augers for the installation of the steel casings for drilled shaft columns. No impact hammers will be used.*
- *The new US 278 bridge will not have permanent roadway lighting. Lighting will be restricted to red/green vessel navigational lighting, as required by the USCG, and multi-use path lighting which will consist of downward facing lights embedded in the barrier to illuminate the path.*
- *The use of "slow start" methods such as ramp up, dry firing, or soft starts at the beginning of bridge support structure installation activities.*
- *Noise impacts will be attenuated/mitigated by using cushion blocks on pile caps for piles installed by impact pile driving.*
- *Allow for a minimum of eight hours of "quiet hours" with no in water construction each night for the life of the project.*

- *To minimize potential effects to sea turtles, NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions will be employed during construction. Precautionary measures will be implemented during construction in summer (May 1 – October 31), as this is when the waterways are most likely to support increased numbers of sea turtles.*
- *During construction, the contractor will be required to have lights positioned to focus on the work area to minimize the amount of light on the water surface.*
- *During sea turtle nesting season (May 1 – October 31), the contractor will restrict in-water work at night to the maximum extent practicable. To avoid potential effects associated with construction lighting during the sea turtle nesting season, the minimum number and lowest wattage of lights necessary for construction will be used.*
- *The contractor will be required to maintain navigability during construction and will not be allowed to block the respective channels of Mackay or Skull Creeks.*
- *USFWS Standard Manatee Conditions for In-Water Work will be employed during all in-water construction. Precautionary measures will be implemented during construction in summer months or early fall when the waterways may support increasing numbers of manatees.*
- *If SCDOT or the contractor discovers an injured, sick, or dead marine mammal, the Resident Construction Engineer (RCE) and SCDOT Environmental Services Office (ESO) will be notified immediately. The SCDOT ESO will notify NMFS immediately by contacting the NMFS Stranding Coordinator for the Southeast Region. NMFS would be provided with the species or description of the animal(s), the condition of the animal (carcass condition if deceased stranding), location, the date and time of first discovery, observed behaviors (if alive), and photo or video (if available).*
- *Any collision, injury, or mortality to manatees will also be reported immediately to the RCE and SCDOT ESO. The SCDOT ESO will also notify the USFWS South Carolina Field Office immediately*
- *If explosives are required for demolition, the contractor, SCDOT, and FHWA will initiate additional coordination and consultation with the USFWS and NMFS.*



## 4.12 Essential Fish Habitat

Essential Fish Habitat (EFH) is defined as waterbodies and substrate that fish and other organisms need to spawn, breed, feed, and grow to maturity (16 USC 1802, 50 CFR 600.10). Wetlands, reefs, rivers, and other aquatic habitats are considered EFH because their importance to fish throughout their lifecycle. Proper management and conservation of EFH is necessary for the survival of fish populations, as well as the ecological and economic benefits they provide.<sup>27</sup>

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the law governing marine fisheries in the United States. A fishery is one or more species of fish that are managed as a unit for commercial, recreational, or subsistence purposes. The South Atlantic Fisheries Management Council (SAFMC) is tasked with conserving and managing fish stocks for the South Atlantic region, which includes the coast of South Carolina. Also, some fish species managed by the Mid-Atlantic Fisheries Management Council (MAFMC) occur within the coastal waters of South Carolina.

Certain locations and types of EFH have a greater need for conservation and management than others. These areas are referred to as Habitat Areas of Particular Concern (HAPC). HAPC are considered high priority areas for conservation, management, or research. HAPCs receive such designation because they are rare, sensitive, stressed by development, or important to overall ecosystem function.

NOAA Fisheries is responsible for managing the marine resources of the United States. NOAA Fisheries works closely with the regional fisheries management councils to describe and identify EFH and HAPC as well as minimize adverse impacts to these habitats. Adverse effects to EFH are those that reduce the quality and/or quantity of EFH, including direct, indirect, site specific, or habitat wide impacts, including individual, cumulative, or synergistic consequences of actions.<sup>28</sup>

### 4.12.1 Existing Conditions

The PSA was assessed for the presence of EFH using a combination of remote-sensing and groundtruthing methods. Mackay Creek, Skull Creek and their associated wetlands and tributaries within the PSA are designated as EFH.

The SAFMC provides descriptions of the different types of EFH in the region. These descriptions are being used to determine which habitat types are present within the PSA and where their boundaries lie. Using GIS data and aerial imagery, habitat types and their boundaries were predicted based on the visible water levels and the presence or lack of vegetation. Field assessments are being conducted to either confirm or make changes to the mapped EFH boundaries. These assessments were completed during low tide to allow for all habitat types to be evaluated. See the EFH Technical Report in Appendix H for more details on habitat types. The habitat types and managed fisheries listed below were identified within the PSA.

#### *Types of Essential Fish Habitat*

- Estuarine Emergent Wetland
- Intertidal Non-Vegetated Flat
- Tidal Creek
- Unconsolidated Bottom
- Oysters

#### *Managed Fisheries*

- Shrimp
- Caribbean Spiny Lobster
- Snapper-Grouper Complex
- Bluefish
- Summer Flounder

## 4.12.2 Impacts

EFH impacts were estimated based on conceptual bridge designs. Any required fill at the bridge approaches and construction of the bridge support structures would result in direct, permanent impacts to estuarine emergent wetland, tidal creek, intertidal non-vegetated flat, unconsolidated bottom, and oysters. Shading underneath the proposed bridges will result in permanent impacts to estuarine emergent wetlands. Temporary impacts to EFH would also occur during construction. The proposed project would result in impacts to approximately 24.7 acres of EFH.

Table 4-15 EFH Impacts

Impact Type	EFH Type					
	Estuarine Emergent Wetland	Intertidal Non-Vegetated Flats	Tidal Creek	Unconsolidated Bottom	Oysters	Total
<b>Permanent Impacts</b> (Concrete Piles, Drilled Shafts, Approach/Causeway Fill, Bridge Demolition, Shading)	15.4 acres	6.3 acres	0.2 acres	0.2 acres	1.4 acres	23.5 acres
<b>Temporary Impacts</b> (Temporary Trestle Pilings, Barges, Timber Mats, Shading, Siltation)	0.8 acres	0.1 acres	0.1 acres	0.1 acres	0.1 acres	1.2 acres
<b>Total</b>	16.2 acres	6.4 acres	0.3 acres	0.3 acres	1.5 acres	<b><u>24.7 acres</u></b>

## 4.12.3 Coordination

NOAA Fisheries received the Letter of Intent (LOI) and is serving as a participating agency in the development of the Environmental Assessment. NOAA Fisheries was engaged early in the project development process, attended multiple agency coordination meetings, and provided frequent feedback to SCDOT related to EFH impacts. NOAA Fisheries reviewed the delineated EFH in the project area during an agency coordination meeting on March 12, 2020. During this meeting the existing EFH site conditions and types were discussed in detail. NOAA Fisheries had no objections to the EFH limits and agreed with the preliminary findings presented by SCDOT. Additional coordination and consultation about how to document EFH conditions and potential impacts was conducted through email correspondence between SCDOT and NOAA Fisheries prior

to the submittal of the EFH Assessment. SCDOT submitted the EFH Assessment to NOAA Fisheries on July 28, 2020. NOAA Fisheries responded on September 14, 2020, and had no additional recommendations or conservation measures beyond what SCDOT provided in the EFH Assessment. A revised EFH Assessment based on refinements to the Recommended Preferred Alternative 4A was submitted to NOAA Fisheries on June 1, 2021. Copies of this correspondence between FHWA and NOAA Fisheries are included in Appendix H. A response from NOAA Fisheries is anticipated in July 2021.

## 4.12.4 Mitigation and Conservation

*A final mitigation plan will be developed for the 404/401 permit and will include consideration for impacts to EFH as part of that plan. This mitigation plan will be established as part of the Section 404 permitting phase of the project. The EFH Mitigation Plan may include mitigation measures such purchasing mitigation credits from an approved mitigation bank or Permittee Responsible Mitigation (PRM) method such as causeway removal, living shorelines, oyster bed restoration, and/or other methods of mitigating for EFH impacts. SCDOT and FHWA will develop the mitigation plan in coordination with the appropriate resource agencies.*

Additionally, the contractor, SCDOT, and FHWA will be required to stay in compliance with all approved environmental conditions listed below:

- *SCDOT and/or the contractor will develop a SWPPP and obtain both a land disturbance permit and a NPDES permit from the SCDHEC before construction can commence.*
- *The contractor will adhere to all SCDOT construction and erosion and sediment control BMPs and all practicable EFH-specific BMPs during construction.*
- *The limits of any clearing, grading, or fill in wetlands will be delineated and shown on approved permitted plans by the USACE and SCDHEC. SCDOT and the contractor will comply with all applicable permits and permit conditions for the placement of fill in wetlands.*
- *The contractor will be required to maintain navigability during construction and will not be allowed to block the respective channels of Mackay or Skull Creeks.*
- *These existing US 278 bridges will be removed in their entirety once construction of the new bridge is completed.*
- *Non-hazardous demolition debris will be hauled off site and disposed of in accordance SCDOT policy and SCDHEC regulations.*
- *If explosives are required for demolition, the contractor, SCDOT, and FHWA will initiate additional coordination and consultation with the USFWS and NMFS.*
- *SCDOT proposes to pre-treat future stormwater runoff from the proposed bridge deck prior to discharge into waters below the new US 278 bridge. Stormwater discharged within 1,000 feet of a shellfish bed will be pre-treated per the SCDOT Stormwater Quality Design Manual.*
- *The contractor, SCDOT, and FHWA will be required to stay in compliance with all approved environmental conditions established in the EA as well as any special conditions established in the required permit authorizations.*

## 4.13 Cultural Resources

A cultural resource survey was completed to identify and evaluate potential cultural resources within the PSA that may be affected by the proposed US 278 Corridor Improvements project. Cultural resources consist of archaeological sites; artifacts; structures such as bridges, buildings, other historic architecture; and historic districts, as well as TCPs. The results of this survey and any potential effects of the proposed project on cultural resources are summarized below. For more detailed information, refer to the Cultural Resource Survey Report in Appendix L.

Historic properties are cultural resources listed or eligible for listing in the NRHP, which is the official list of the nation's historic places worthy of preservation. The NRHP was established by the National Historic Preservation Act (NHPA) of 1966. Section 106 of the NHPA requires federal agencies involved in an undertaking (funding, permitting, etc.) to consider the impacts on cultural resources. 36 CFR 800, Subpart B establishes a process for federal agencies to follow when complying with the requirements of the Section 106 process which is completed in consultation with the State Historic Preservation Office (SHPO) and the federally recognized Native American tribes. Due to the proposed US 278 Corridor Improvements project being a federal undertaking, FHWA must comply with the NHPA including applicable regulations.

National  
Register of  
Historic Places  
= NRHP

### 4.13.1 Existing Resources

#### 4.13.1.1 Archaeological and Architectural Resources

According to the survey, fieldwork took place from March 9-27, 2020, resulting in the identification of two archaeological sites and the relocation of three previously recorded sites. Five previously recorded archaeological sites were not relocated. Two sites located on PINWR (38BU66 and 38BU67) are recommended eligible for the NRHP. One newly discovered site (38BU2338) requires additional work to determine its eligibility. Two sites (38BU64 and 38BU2337) did not contain evidence of the site within the Area of Potential Effect (APE). An underwater archaeological survey of two creek crossings was conducted but did not identify any anomalies or submerged cultural resources.

Site 38BU66, to the south of existing US 278, is located on the southeastern side of PINWR. The site follows the curve of the shoreline and recent surveys have expanded the original boundary. Site 38BU67, to the north of existing US 278, is located on PINWR adjacent to Skull Creek. Previous and current investigations determined sites 38BU66 and 38BU67 are eligible for the NRHP and recommended avoidance.

#### 4.13.1.2 Traditional Cultural Property

The proposed reasonable alternatives would directly impact the community of Stoney, where African American residents, who self-identify as Gullah, native islanders or simply islanders, have owned land since the 1890s. The Gullah culture developed in coastal South Carolina where significant numbers of West Africans enslaved as plantation laborers, formed their own creole culture now known as Gullah. The Town of Hilton Head Island recognizes two separate neighborhoods, Big Stoney and Little Stoney, but interviews with several longtime residents revealed the community has historically been known by the collective name of "Stoney." Stoney contains a mix of commercial and residential development, and it is roughly bounded by the tidal marshes of Skull, Jenkins, and Jarvis creeks to the north, south, east, and west.

As described in the Traditional Cultural Property (TCP) report in Appendix M, the origins of the historic African American Gullah communities in Northwestern Hilton Head Island are rooted in the antebellum plantation settlements and succeeding freedmen's community on the site in the decades after the Civil War. During the early twentieth century, residential settlement began shifting from concentrations along the Jarvis and Skull creeks to the current US 278 corridor as a result of increased commercial development in the area. This trend intensified with the construction of the bridge connecting Hilton Head Island to the mainland in 1956 with Stoney emerging as a commercial center for the island's Gullah communities during the late twentieth century. Widening the highway to accommodate increased traffic demands on the island has resulted in the loss of much of the historic built environment lining the commercial corridor at the southern edge of the Stoney community over the course of the late twentieth and early twenty-first centuries.

The Recommended Preferred Alternative 4A proposes improvements to US 278 through the Stoney community. The TCP study was completed in conjunction with the cultural resources study to provide a developmental history of the Stoney community, establish its historic geography, and to provide an initial evaluation of its potential as a TCP. Oral history interviews with longtime residents, archival research, and historical landscape analysis were carried out to better understand the Stoney community's significance as a TCP and to evaluate its eligibility for listing in the NRHP. Stoney is one of Hilton Head Island's historic and socially connected Gullah communities, which also include nearby Squire Pope, Spanish Wells, Jonesville, and Jarvis. Study of Stoney and the surrounding historic Gullah communities that are located along Jarvis and Skull creeks in Northwest Hilton Head Island, along with oral histories provided by knowledgeable residents, suggest that Stoney remains central to Gullah identity through its long history of Black landownership; as a cultural gateway to the island; and as a place of progress, prosperity, and education for the island's Black community. It is thus recommended eligible for the NHRP as a TCP and a site boundary has been proposed.

## 4.13.2 Impacts

### 4.13.2.1 Archaeological and Architectural Resources

The No Build Alternative would not result in impacts to historic archaeological or architectural resources. The Recommended Preferred Alternative 4A avoids impacting archaeological Site 38BU67 and Site 38BU2338 by minimizing the construction limits of the alignment. Potential impacts to Site 38BU66 have been minimized to the extent practicable by refining the construction limits, however complete avoidance was not possible.

The architectural survey examined residential and commercial resources. The historic architecture survey recorded 13 buildings, but none are recommended individually or collectively eligible for the NRHP. There was significant modern infill throughout the APE.

### 4.13.2.2 TCP

The Recommended Preferred Alternative 4A minimized potential impacts to the Stoney community of all alternatives considered. As outlined in Chapter 3 alternatives were considered that completely avoided impacting the Stoney community, but resulted in egregious impacts to natural resources. Additional alternatives were evaluated that made new "cuts" through the Stoney community in areas that are presently

undisturbed, but resulted in increased relocations. The Recommended Preferred Alternative 4A would involve the acquisition of approximately 4.77 acres of new right-of-way and the relocation of two commercial establishments from within the TCP boundary, constituting roughly one-and-a-half percent of the acreage of the entire TCP area.

The proposed project is not expected to induce growth within the Stoney community or introduce additional traffic into the area. The proposed project seeks to change an existing section of four (4)-lane roadway on US 278 to six (6) lanes. There are existing 6 lane sections on either side of the proposed project area, so the project only seeks to standardize the facility throughout the US 278 corridor rather than expanding US 278 to introduce increased traffic demand, a reactive rather than proactive strategy to address and existing need on the roadway and an existing deficiency that underserves that need.

As the Stoney community has the character of a semi-rural Lowcountry area, SCDOT is committed to retaining as much existing vegetation and tree canopy within the Stoney community as possible. Along US 278, strips of new right-of-way will require some tree/vegetation clearing in order to construct the project. However, those areas are buffered by additional wooded areas further off the alignment of the existing (and proposed) US 278, with the result that the loss of vegetation should not be impactful to the character of the Stoney community. A tree canopy section along Squire Pope Road will be maintained through minimization efforts to reduce the proposed project footprint. If potential effects to this tree canopy area along Squire Pope Road arise in later project planning, SCDOT will consult with SHPO for a renewed determination of effect.

The proposed US 278 project will acquire right-of-way within the boundary of the Stoney community TCP but this acquisition is minimal in nature, has no impacts to the integrity or the district, and does not substantially change the character, setting, or feel of the Stoney community TCP. The TCP Report was submitted to SHPO on February 5, 2021 for review. The proposed US 278 project will have No Adverse Effect to the Stoney community TCP.

## 4.13.3 Coordination

### 4.13.3.1 Archaeological Resources

A LOI was distributed on September 4, 2018 via email to the SCDAH. The Cultural Resources Survey of the US 278 Corridor Improvements Project was submitted to SHPO and THPOs on February 5, 2021. Concurrence on the Cultural Resources Survey was received from SHPO on June 1, 2021. FHWA provided an effect notification and copies of the survey and MOA to the Advisory Council on Historic Preservation (ACHP). A copy of the signed MOA has been filed with ACHP. The September 4, 2018, LOI was also sent via email to the THPO for the Catawba Indian Nation, Eastern Band of Cherokee Indians, and United Keetoowah Band of Cherokee. The Catawba Indian Nation responded via letter on August 25, 2020 indicating no immediate concerns of traditional cultural properties, sacred sites, or Native American archaeological sites within the proposed study area. Copies of the LOI and Catawba Indian Nation coordination are located in Appendix A. A letter was sent via email to the tribes listed above to invite each THPO to participate in the MOA to outline stipulations for impacts to Site 38BU66 and avoidance of Site 38BU67 on PINWR. The MOA was signed by SCDOT, SHPO, and the Catawba Indian Nation. FHWA and USFWS approval is pending, refer to Appendix N.



### 4.13.3.2 TCP

The project team met with the Stoney community, Gullah stakeholders, and the Town of Hilton Head on multiple occasions to discuss the project and potential community enhancement opportunities, refer to Section 4.4.3. On May 25, 2021 FHWA, SCDOT, SHPO, and the project team met with representatives of the Gullah Geechee Cultural Heritage Corridor Commission (GGCHCC) to discuss potential impacts to the Stoney community. Following the meeting, the GGCHCC sent a letter to SCDOT dated May 25, 2021 stating, "we register no objection to the current, revised plan..." refer to Appendix M. Concurrence on the No Adverse Effect determination for the Stoney community TCP was received from SHPO on June 1, 2021.

## 4.13.4 Mitigation

### 4.13.4.1 Archaeological Resources

In summary, the Recommended Preferred Alternative 4A will have an Adverse Effect to historic resources due to impacts to site 38BU66. A Memorandum of Agreement (MOA) has been completed in coordination with SHPO, various THPOs, and USFWS, to address mitigation for those impacts, Appendix N. FHWA has notified the Advisory Council for Historic Preservation (ACHP) of the project's adverse effect and the ACHP has stated that they do not need to be a consulting party on this project.

*A MOA for the adverse effect to Site 38BU66 has been executed between FHWA, SCDOT, SHPO, USFWS, and the Catawba Indian Nation. Refer to Appendix N. FHWA and SCDOT will ensure that the following stipulations are implemented:*

- A. *The proposed construction will result in unavoidable impacts to portions of Site 38BU66. SCDOT plans to mitigate through a data recovery effort to excavate, preserve, and document the presence and characteristics of any buried features on the site within the area of the proposed improvements outside the previously disturbed portion of Site 38BU66.*
- B. *SCDOT's archaeological consultant, or staff, will develop, in coordination with representatives from the Catawba Indian Nation (CIN) Tribal Historic Preservation Office (THPO), a treatment plan for data recovery investigations at Archaeological Site 38BU66. The treatment plan will include a description of the project's research design and sampling strategy. A burial discovery plan will also be developed and attached to the treatment plan. The treatment plan will be submitted to the South Carolina SHPO and the CIN THPO for review and approval prior to any fieldwork. The treatment plan will also be submitted to a qualified professional archaeologist for the purpose of peer review prior to any fieldwork. The South Carolina SHPO will make a reasonable effort to review the treatment plan(s) no later than thirty days after receipt.*
- C. *The construction of the existing US 278 has impacted a portion of Site 38BU67. The project's "area of potential effect" will be limited to this area. To protect the adjacent intact portion of Site 38BU67, the FHWA and SCDOT will ensure that the boundaries of the site will be identified as a "Restricted Area" on all construction plans. Construction, heavy equipment access, or storage for equipment and materials will not be allowed within the Restricted Area. SCDOT will also inform the selected contractor about these restrictions at the Pre-Construction meeting where all special provisions are discussed.*
- D. *Prior to the start of construction, SCDOT's contractor will install orange barrier fencing at the edge of site 38BU67 clearly indicate the location of the "Restricted Area" as shown on the construction plans.*

- E. *All construction activities within the boundaries of archaeological site 38BU67 will be monitored by a professional archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for Archaeology (48 FR 44738-39).*
- F. *SCDOT will provide FHWA, the USFWS, the SHPO and the CIN THPO with a written report that describes the results of monitoring activities.*
- G. *All plans and reports developed for the treatment of Archaeological Sites 38BU66 and 38BU67 shall incorporate guidance from the Secretary of the Interior's "Standards and Guidelines for Archaeological Documentation" (48 FR 44734-37) and the President's Advisory Council on Historic Preservation publication, Treatment of Archaeological Properties (ACHP 1980). In addition, these materials will be consistent with South Carolina Standards and Guidelines for Archaeological Investigations (2005).*
- H. *At least one on-site meeting between the SCDOT, the FHWA, the CIN THPO, and the SHPO will take place during field investigations in order to discuss any necessary revisions to the original scope of work. Any revisions made to the original scope of work will be attached to the approved treatment plan and this agreement.*
- I. *A minimum of two copies of the draft technical report of data recovery investigations will be submitted to the SHPO and the CIN THPO for review and approval within twelve (12) months from the last day of fieldwork. The draft technical report will be consistent with the standards outlined in South Carolina Standards and Guidelines for Archaeological Investigations (2005). The SHPO reserves the right to submit the draft technical report to qualified professional archaeologists for the purpose of peer review.*
- J. *Within three (3) months of draft report approval, SCDOT will provide one bound copy and one compact disk containing a Portable Document Format (PDF) of the final technical report for the SHPO, one bound copy and one compact disk for the CIN THPO, and two bound copies, one unbound copy, and one PDF copy of the final technical report for the South Carolina Institute of Archaeology and Anthropology, all submitted to SHPO. The PDF file will be developed according the specifications and requirements of the SHPO. A separate digital abstract from the report (in Word or html format) will also be provided to the SHPO. The abstract file can be provided on the same CD as the PDF file.*
- K. *The SCDOT, in coordination with the SHPO and the CIN THPO, will ensure that all artifacts recovered during archaeological investigations are stabilized and processed for curation at the Center. Copies of all records, including but not limited to field notes, maps, catalogue sheets, and representative photographs and negatives will be submitted for curation with the artifacts.*
- L. *The SCDOT will consult with the South Carolina SHPO and the CIN THPO to develop a creative mitigation component within one (1) year of the execution of this agreement.*
- M. *SCDOT proposes to provide a public education component that will be outlined in the Archaeological Memorandum of Agreement (MOA).*

*The contractor and subcontractors must notify their workers to watch for the presence of any prehistoric or historic remains, including but not limited to arrowheads, pottery, ceramics, flakes, bones, graves, gravestones, or brick concentrations during the construction phase of the project, if any such remains are encountered, the Resident Construction Engineer (RCE) will be immediately notified and all work in the vicinity of the discovered materials and site work shall cease until the SCDOT Archaeologist directs otherwise.*

#### 4.13.4.2 TCP

No mitigation is proposed based on the No Adverse Effect determination for the Stoney community TCP.

## 4.14 Section 4(f) Resources

Publicly owned parks, recreation areas, wildlife, and waterfowl refuges, as well as significant historic sites, are protected under Section 4(f) of the USDOT Act (the Act). The law, codified in Title 49 USC Section 303 and Title 23 USC Section 138, is implemented by the FHWA through regulation 23 CFR 774. Section 4(f) applies to projects that receive funding from a USDOT agency. FHWA and SCDOT cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless the following conditions apply:

1. There is no prudent and feasible alternative to using that land; and,
2. The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use

Historic sites protected by this regulation include sites that are eligible for listing or listed on the National Register of Historic Places. Section 4.12 provides details on the historic sites also protected under the provisions of Section 4(f). This section discusses the public recreational facilities and wildlife and waterfowl refuges in the PSA which are protected under the Act.

When property from a Section 4(f) site is permanently acquired and incorporated into a transportation project or when the occupancy of land is adverse in terms of Section 4(f) purposes to maintain the integrity of the Section 4(f) resource, it is considered a Section 4(f) "use". A "constructive use" of Section 4(f) property occurs when the transportation impacts on a Section 4(f) resource, even if acquisition of property does not occur, result in impairment of the elements and characteristics of the property. There are three methods available for approval when FHWA determines a proposed project could use a Section 4(f) resource:

1. A *de minimis* Section 4(f) impact determination
2. A programmatic Section 4(f) evaluation
3. An individual Section 4(f) evaluation<sup>29</sup>

The proposed US 278 project includes corridor improvements between Moss Creek Drive and Wild Horse/Spanish Wells Road. The proposed project also includes replacing the eastbound Mackay Creek bridge and making improvements to the westbound Mackay Creek, the eastbound Skull Creek, and the westbound Skull Creek bridges. Much needed intersection safety improvements for PINWR and the C.C. Haigh, Jr. Boat Landing have also been incorporated into the US 278 project. The requirements of Section 4(f) apply to the proposed project because the proposed Reasonable Alternatives require the use of land from the wildlife refuge, recreational facilities and resources eligible for inclusion on the NRHP.

### 4.14.1 Pinckney Island National Wildlife Refuge

PINWR was established in 1975 with the purpose to protect, maintain, and where possible, enhance habitat for native wildlife, including migratory and resident birds and threatened and endangered species. PINWR offers a variety of recreation activities including hunting, fishing, wildlife observation, photography, and environmental education and interpretation for the enjoyment of present and future generations.

A portion of the project corridor traverses PINWR, which is predominantly estuarine marine wetland near US 278. The proposed project would require a take from PINWR property.

The C.C. Haigh, Jr. Boat Landing is located on PINWR south of the existing US 278 Mackay Creek Bridge and provides access to Mackay and Skull Creeks. The boat landing is used by USFWS, Beaufort County residents, local emergency services, as well as individuals from outside the general area, for recreational boating and fishing opportunities. This facility provides a two-lane boat ramp, a courtesy dock and paved parking for approximately 90 vehicles/trailers. The current access to and from the existing C.C. Haigh, Jr. Boat Landing facility needs improvements due to the location and configuration of the access roads. Table 4-26 depicts the impacts of each Reasonable Alternative on the C.C. Haigh, Jr. Boat Landing. The boat landing is managed by an agreement with Beaufort County and used by USFWS, Beaufort County residents, local emergency services, as well as individuals from outside the general area, for recreational boating and fishing opportunities.

The C.C. Haigh, Jr. Boat Landing will be accessible as much as possible during the construction of the project with an emphasis on safety throughout construction. However, there will be a period when construction activities will take place in and around the boat landing area, and the use of this facility may be impacted. The proposed project will provide a safer, enhanced facility with an improved access road system to and from US 278. Overall, the proposed US 278 Project will have a positive impact on the C.C. Haigh, Jr. Boat Landing facility.

Permanent impacts to PINWR for Reasonable Alternative 4A include a use of approximately 32 acres of the 4,053 acres<sup>30</sup> on PINWR land parallel and directly adjacent to the existing US 278 alignment. This will be less than one percent of PINWR property. PINWR should experience no net loss because of SCDOT's plans to make much needed intersection safety and access improvements for PINWR and the C.C. Haigh, Jr. Boat Landing, and return portions of the existing US 278 back to PINWR. The use of PINWR will continue for its intended purpose. The Reasonable Alternative 4A is determined to meet the Section 4(f) prudent and feasible standard and is recommended as the Preferred Alternative.

Coordination between SCDOT, FHWA, and USFWS regarding planning and preliminary engineering of the impacts of the proposed project on the PINWR. USFWS expressed that Alternative 4A was the best alternative for their maintenance and regulatory needs. This alternative also results in fewer impacts on PINWR due to the proposed new facility being elevated. Alternative 4A would also avoid impacts to the intertidal marsh while both Alternative 2 and 3A would require fill in portions of the marsh.

Coordination with USFWS on January 30th, 2020 to discuss the six reasonable alternatives revealed Alternative 4A was the most consistent with PINWR purposes.

The Recommended Preferred Alternative 4A results in the relocation of the boat landing. Although the design of the boat ramp is still being developed, one option is for it to be relocated to the north of US 278 and placed on the existing US 278 alignment. Upon completion of construction, new access roads from the new US 278 facility will be provided. The completed project will result in improved access to the boat landing for both eastbound and westbound traffic, hence improving the overall safety of site access for those using these facilities. Following extensive coordination with USFWS, the net result of the proposed improvements is an overall enhancement of the Section 4(f) property when compared to the future No Build alternative and the present condition of the Section 4(f) property. A programmatic Net Benefit Section 4(f) Evaluation has been prepared in coordination with USFWS. Refer to Appendix O for a copy of the Programmatic Net Benefit Section 4(f) Evaluation. Appendix O contains a copy of the concurrence letter signed by the USFWS Refuge Manager providing their concurrence with the proposed action.

*If construction, including materials staging or stockpiling, would result in partial or full temporary closure of the boat landing or PINWR access, the contractor would be responsible for coordinating with SCDOT, FHWA, USFWS, and Beaufort County.*

#### 4.14.1.1 Mitigation

Based on coordination between FHWA, USFWS, SCDOT, and SHPO this project meets the criteria for a Net Benefit Programmatic Evaluation. SCDOT and FHWA acknowledge that the proposed project will encroach into PINWR property. SCDOT is committed to carrying out the following additional compensatory mitigation after coordinating with the USFWS and SHPO:

- A new right-in/right-out interchange will be introduced at the PINWR and C.C. Haigh, Jr. Boat Landing closer to the existing interchange alignment, allowing vehicles to pass underneath the newly constructed bridges to access the PINWR, the boat landing, and US 278. The addition of right-in/right-out interchange will enhance safety at this location and encourage use by citizens for many years to come.
- Adjusting the new US 278 interchange on PINWR to continue the minimization (or elimination) of impacts to saltmarsh located north of the existing US 278 alignment.
- New boat ramp & dock facilities for C.C. Haigh, Jr. Boat Landing.

#### 4.14.2 Property Owned by Town and County

The recommended intersection alternative for the segment of the corridor between Squire Pope Road and Spanish Wells Road (Reasonable Intersection Alternative 4B) would restrict left turns from US 278 to Spanish Wells Road. The westbound US 278 traffic travelling to Spanish Wells Road would pass through the intersection and complete a U-turn at the new Old Wild Horse Road signal. This traffic would then turn right onto Spanish Wells Road. In order for heavy trucks to make this U-turn, a loon, also called a bump-out, would be constructed to provide adequate turning radii. This loon results in the need for new right-of-way from a parcel of land owned jointly by the Town of Hilton Head Island and Beaufort County. The property consists of parking for nearby tennis and basketball courts that are open to the public. As a portion of a public park, the property is afforded protection under Section 4(f).

The proposed new right-of-way to be acquired would not impact the parking or the operation of the facility. Since the project would not adversely affect the activities, features, or attributes of the facility, a Section 4(f) *de minimis* is proposed for the use of the property. The FHWA defines *de minimis* impacts on public parks, recreation areas, and wildlife and waterfowl refuges as those that do not "adversely affect the activities, features and attributes" of the Section 4(f) resource. The FHWA is allowed to make a *de minimis* impact finding if the owner or official with jurisdiction over the park concurs that the impacts are not adverse and the public is afforded the opportunity to comment on the proposed impact.

Project information has been provided to the Town of Hilton Head Island and Beaufort County related to the proposed impacts to the park. Coordination is on-going, and the FHWA will make a final Section 4(f) determination following the Public Hearing.

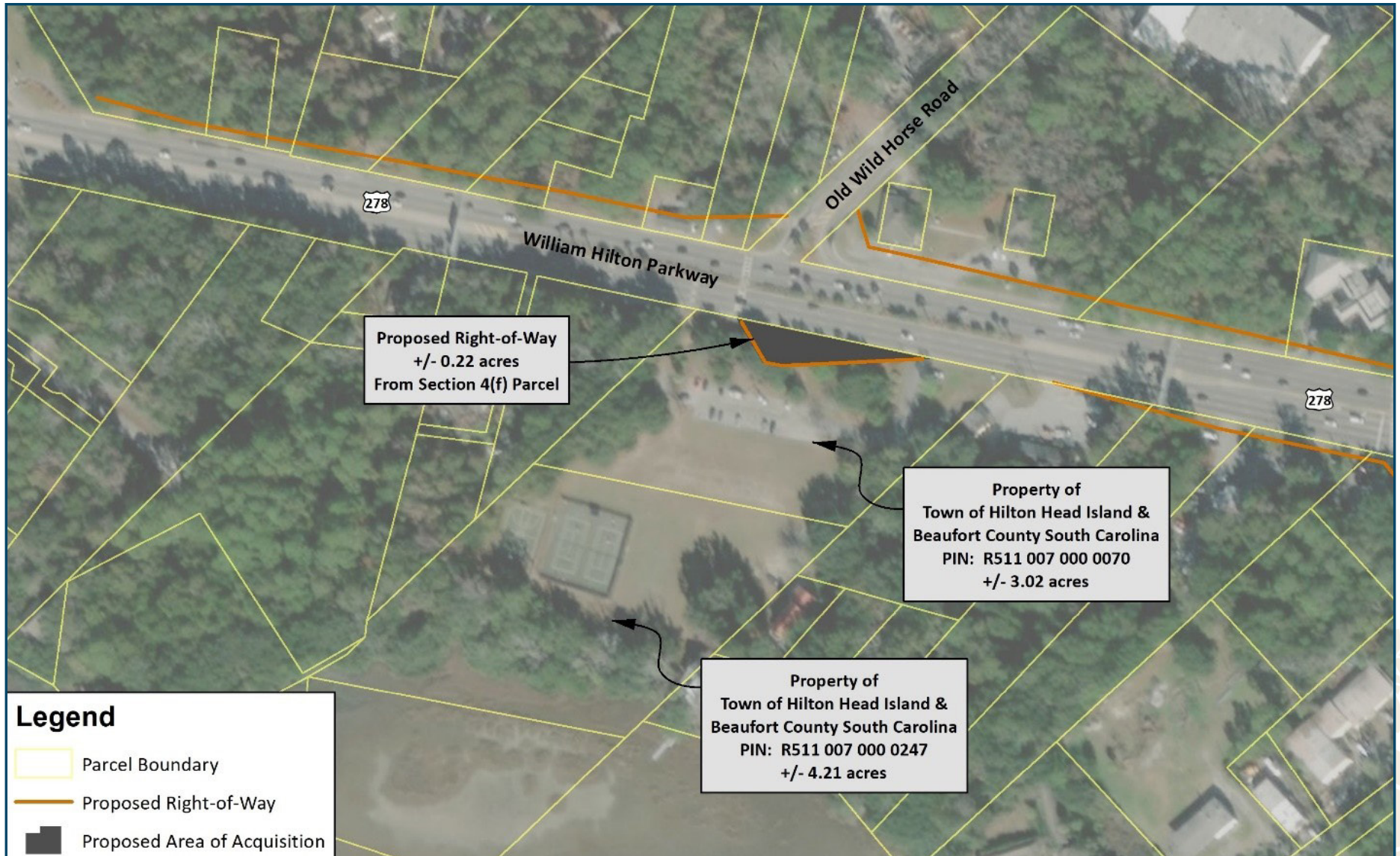


Figure 4-16 *de minimis* Impact

### 4.14.3 Stoney Community TCP

As detailed in Section 4.12.2, the TCP study was completed during SCDOT’s project development process and in conjunction with the cultural resource studies. It was recommended that the Stoney community be designated as a TCP because it remains central to the Gullah identity through its long history of Black landownership; as a cultural gateway to the island; and as a place for progress, prosperity, and education for the island’s Black community.

Based on the no adverse effect determination, FHWA intends to make a 4(f) de minimis impact finding for the minimal use of property within the Stoney community TCP. Refer to Appendix O.

### 4.14.4 Impacts

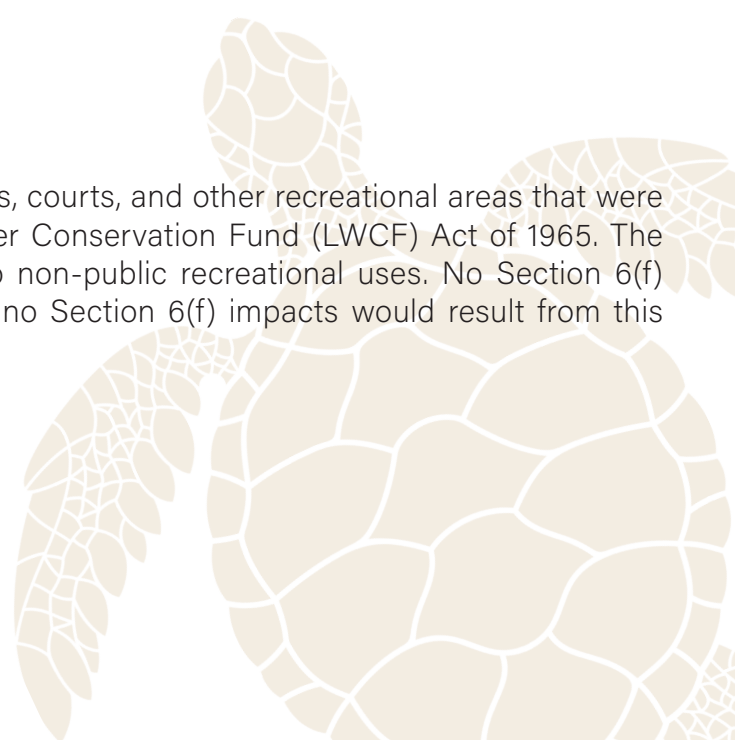
The No Build Alternative would not result in impacts to Section 4(f) resources. Alignments were developed to minimize impacts to both PINWR and the C.C. Haigh, Jr. Boat Landing. Refer to Appendix O for the Section 4(f) Programmatic Net Benefit Evaluation completed for PINWR, the Section 4(f) *de minimis* for property owned by the Town of Hilton Head Island and Beaufort County, and the Section 4(f) *de minimis* for the Stoney community that was recommended as a TCP.

Table 4-16 Recommended Preferred Alternative 4A Impacts

Section 4(f) Resources	Impact	Evaluation Type
PINWR	Property acquisition and relocation of C.C. Haigh Jr. Boat Landing. Access improved to the boat landing and PINWR improving overall safety.	Net Benefit Section 4(f)
Property Owned by the Town and County	Property acquisition, but not taking parking for nearby tennis and basketball courts.	Anticipated Section 4(f) <i>de minimis</i>
Stoney Community TCP	Property acquisition, but no adverse effect determination by SHPO based on minimal use of property.	Anticipated Section 4(f) <i>de minimis</i>

## 4.15 Section 6(f) Resources

Section 6(f) resources are places such as public parks, trails, courts, and other recreational areas that were purchased in part through grants from the Land and Water Conservation Fund (LWCF) Act of 1965. The properties are protected by the LWCF from conversion to non-public recreational uses. No Section 6(f) resources have been identified within the PSA; therefore, no Section 6(f) impacts would result from this project.



## 4.16 Hazardous Waste

Hazardous materials are defined as any material that has or will have, alone or when combined with other materials, a harmful effect on humans or the natural environment. They may be characterized as reactive, toxic, infectious, flammable, explosive, corrosive, or radioactive (RCRA Subtitle C, 40 CFR 251).

The Resource Conservation and Recovery Act of 1976 (RCRA), as amended; the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Amendments and Reauthorization Act of 1986 (SARA) largely regulate hazardous materials and waste sites. Hazardous waste sites are defined as having hazardous materials storage tanks, generating hazardous waste, or containing hazardous materials.

A Phase I Environmental Site Assessment (ESA) was performed for the PSA to determine the presence of potentially hazardous materials or waste sites located within or in proximity to the project study area, refer to Appendix P. The ESA was conducted using the American Society for Testing and Materials (ASTM) E 1527-13, Standard Practice for Environmental Site Assessments: Phase I ESA Process.

A review of reasonably ascertainable public records for the site and the immediate vicinity was conducted. This review was performed to characterize environmental features of the site and to identify past and present land use activities on or in the vicinity of the site, which may indicate a potential for recognized environmental conditions (RECs). The assessment also included a site reconnaissance to identify visual signs of past or existing contamination on or adjacent to the site. This reconnaissance was also performed to evaluate evidence found in our public record review that might indicate hazardous substances or petroleum products being used or deposited on the site. Interviews with appropriate local officials were conducted to consider any local knowledge of hazardous substances or petroleum products on the property or on adjacent properties.

### 4.16.1 Findings

Table 4-17 shows the ten properties identified in the Phase 1 ESA with potential environmental contamination concerns. Six of the 11 sites are considered REC sites located within the PSA.

Table 4-17 Types of High-Risk Sites in the Hazardous Materials PSA

Site Type	Number of Sites
Leaking Underground Storage Tank (LUST)/Underground Storage Tank (UST)	10
Dry Cleaners	1
Total	11



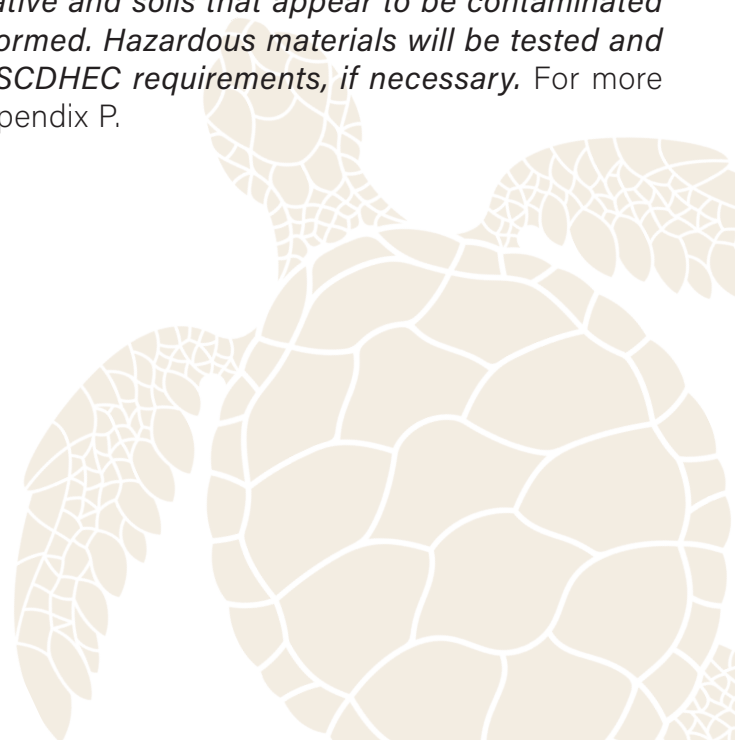
## 4.16.2 Impacts

The No Build alternative would not impact sites with potential hazardous materials or contamination. The six REC sites were further evaluated and four out of six are impacted by all of the Reasonable Alternatives. Using the construction limits of the Recommended Preferred Alternative 4A, it was determined these four sites will require additional investigation. Table 4-18 shows the REC sites from the Phase I ESA which fall within the alignment for the Recommended Preferred Alternative 4A.

Table 4-18 REC Sites Impacted by the Recommended Preferred Alternative 4A

Facility	Location	Database	Comments
Exxon Corporation	1544 Fording Island Road	Former retail petroleum and automobile repair shop	Exxon Corporation site is considered a REC based on historical use as a former retail petroleum site and automobile repair shop with no regulatory records documenting assessment or closure of the site.
Circle K #2720430	1610 Fording Island Road	Retail petroleum UST Site 00991. Three operating USTs installed in 1996. Release #1 received CNFA 5/1/07. In SUPERB program. Groundwater documented at 5 feet below ground.	Circle K #2720430 is considered a REC based on current use as an active retail petroleum UST site.
Mid Island Car Care	166 William Hilton Parkway	Automobile Repair Shop	Mid Island Car Care is considered a REC based on current use as an automobile repair shop.
Parkers 53	165 William Hilton Parkway	Retail petroleum UST Site ID 11733. 2 operating USTs. 8 abandoned USTs installed in 1997 and 1998. Release #1 received CNFA 11/1/06. Release #2 is currently monitored by SCDHEC. In SUPERB program. Groundwater documented at 5 feet below ground flowing in eastern direction. Site was also previously used for auto repair.	Parkers 53 is considered a REC based on current use as an active retail petroleum UST site, current regulatory status as having a previous petroleum release that is currently monitored by SCDHEC, and historical use as an auto repair garage.

*If avoidance of hazardous materials is not a viable alternative and soils that appear to be contaminated are encountered during construction, SCDHEC will be informed. Hazardous materials will be tested and removed and/or treated in accordance with USEPA and SCDHEC requirements, if necessary.* For more details regarding these sites refer to the Phase I ESA in Appendix P.



### 4.16.3 Mitigation

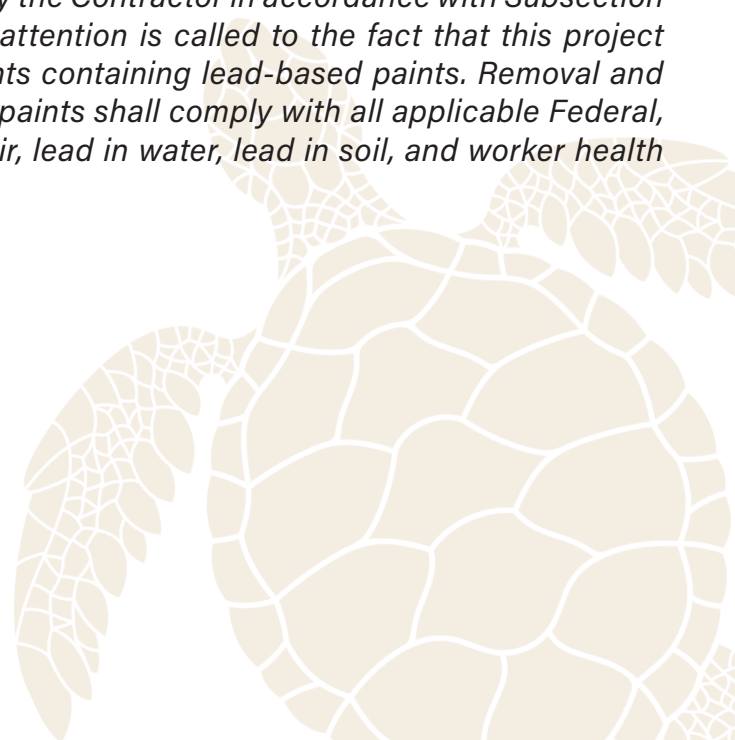
When feasible, it is SCDOT's practice to avoid the acquisition of USTs as well as other hazardous material sites and avoidance or minimization is the primary mitigation for identified hazardous materials sites. Four REC sites will require additional investigation based on the construction limits of the Recommended Preferred Alternative 4A.

*Prior to construction, the project contractor will perform Phase II ESAs on the properties identified within the footprint, including the Exxon at 1544 Fording Island Road, Circle K at 1610 Fording Island Road, Mid Island Car Care at 166 William Hilton Parkway, and Parkers 53 at 165 William Hilton Parkway, and/or on the adjoining properties or the right-of-way. Ultimately, the Phase II ESAs will include environmental sample collection (e.g. soil, soil gas, and groundwater), specifically, in areas where a potential for disturbance of soil and/or groundwater exists. Asbestos Containing Material and/or Lead Based Paint testing will be assessed separately. Materials containing asbestos and lead-based paints will be managed and disposed of properly at an appropriate permitted facility to minimize impact during the construction and cleanup. Activities will be monitored by a professional that is certified in the removal, handling and disposal of lead-based paint and/or asbestos-containing materials.*

For UST/LUST sites, the sampling strategy for the Phase II ESA will follow the field screening and sampling procedures, as directed in the SCDHEC Underground Storage Tank Programs Quality Assurance Program Plan (QAPP) to determine the presence of hydrocarbons. Samples should be analyzed for those parameters listed in the QAPP and those typical of a petroleum release, as noted in the research of the project corridor. If relocation or removal of an AST or UST is necessary, the removal/relocation would be addressed in accordance with the applicable laws and regulation of the State of South Carolina.

*Existing facilities shall be inspected and if asbestos containing materials (ACM) are identified on structures impacted by the project activities, they must be removed and disposed of in accordance with SCDHEC Regulation 61-86.1. Standards of performance of asbestos and the provisions of Subsection 107.27 apply. Direct questions about the permit to the SCDHEC Bureau of Air Quality.*

*The existing structures shall be removed and disposed of by the Contractor in accordance with Subsection 202.4.2 of the Standard Specifications. The Contractor's attention is called to the fact that this project may require removal and disposal of structural components containing lead-based paints. Removal and disposal of structural components containing lead-based paints shall comply with all applicable Federal, State, and Local requirements for lead as waste, lead in air, lead in water, lead in soil, and worker health and safety.*



- 1 <https://www.census.gov/quickfacts/fact/dashboard/beaufortcountysouthcarolina/PST045219>
- 2 [https://www2.census.gov/geo/maps/dc10map/UAUC\\_RefMap/ua/ua39079\\_hilton\\_head\\_island\\_sc/DC10UA39079.pdf](https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua39079_hilton_head_island_sc/DC10UA39079.pdf)
- 3 <https://data.census.gov/cedsci/profile?g=1600000US4507210>
- 4 <https://data.census.gov/cedsci/profile?g=1600000US4534045>
- 5 <https://data.census.gov/cedsci/profile?g=0500000US45013>
- 6 <https://data.census.gov/cedsci/profile?g=0400000US45>
- 7 SCDOT Statewide Transportation Improvement Program, <https://scdot.maps.arcgis.com/apps/MapSeries/index.html?appid=ca1cd69fc88945f4bb465e16765d761c>. Town of Hilton Head Island (THHI) Comprehensive Plan, Town of Bluffton (TB) Comprehensive Plan
- 8 Lowcountry Council of Governments, <http://cms.revize.com/revize/lowcountry/2040%20LATS%20LRTP.pdf>
- 9 <https://www.epa.gov/criteria-air-pollutants>
- 10 [https://www.fhwa.dot.gov/Environment/air\\_quality/air\\_toxics/](https://www.fhwa.dot.gov/Environment/air_quality/air_toxics/)
- 11 23 CFR Part 772, Table 1
- 12 SCDHEC. 03060110-03 (Calibogue Sound). 2010. <https://www.scdhec.gov/sites/default/files/docs/HomeAndEnvironment/Docs/Watershed/SAV60110-03.pdf> (Accessed April 17, 2020)
- 13 SCDHEC. Regulation 61-68: Water Classifications and Standards. 2014. pp. 30 [https://www.scdhec.gov/sites/default/files/media/document/R.61-68\\_0.pdf](https://www.scdhec.gov/sites/default/files/media/document/R.61-68_0.pdf)
- 14 SCDHEC. Technical Report No. 0802-17: State of South Carolina Monitory Strategy For Calendar Year 2018. (2018). <https://scdhec.gov/sites/default/files/docs/HomeAndEnvironment/Docs/Strategy.pdf>
- 15 <https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf> Accessed May 2020.
- 16 <https://www.scdhec.gov/environment/your-water-coast/ocean-coastal-management/beach-management/coastal-permits/critical-1> Accessed May 2020.
- 17 <https://www.epa.gov/nwpr/final-rule-navigable-waters-protection-rule>
- 18 [https://scdhec.gov/sites/default/files/docs/HomeAndEnvironment/Docs/Watershed/wwqa/Savannah\\_WWQA\\_2010.pdf](https://scdhec.gov/sites/default/files/docs/HomeAndEnvironment/Docs/Watershed/wwqa/Savannah_WWQA_2010.pdf) Accessed April 2020.
- 19 [https://www.hiltonheadislandsc.gov/publications/plans/2040\\_LATS\\_LongRangeTransportationPlan.pdf](https://www.hiltonheadislandsc.gov/publications/plans/2040_LATS_LongRangeTransportationPlan.pdf)
- 20 [https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation\\_and\\_Monitoring\\_Guidance\\_14Jan2011.pdf](https://ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf) Accessed May 2020.
- 21 <https://www.epa.gov/cwa-404/protection-wetlands-executive-order-11990> Accessed May 2020.
- 22 FEMA Flood Mapping Service Center, <https://msc.fema.gov/portal/advanceSearch#searchresultsanchor>
- 23 Yang et al. 2018
- 24 Griffith et al. 2002
- 25 <https://www.fws.gov/international/laws-treaties-agreements/us-conservation-laws/marine-mammal-protection-act.html>
- 26 <https://www.fisheries.noaa.gov/topic/marine-mammal-protection>
- 27 <https://www.fisheries.noaa.gov/national/habitat-conservation/essential-fish-habitat>
- 28 <https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/essential-fish-habitat-assessment-consultations>
- 29 U.S. Department of Transportation Federal Highway Administration (USDOT FHWA). 2012. Section 4(f) Tutorial: Project Examples. [https://www.environment.fhwa.dot.gov/env\\_topics/4f\\_tutorial/projects\\_netbenefit.aspx](https://www.environment.fhwa.dot.gov/env_topics/4f_tutorial/projects_netbenefit.aspx). Web accessed: 1/20/2020
- 30 [https://www.fws.gov/refuge/Pinckney\\_Island/about.html](https://www.fws.gov/refuge/Pinckney_Island/about.html)