WEST 526 LOWCOUNTRY CORRIDOR

# Appendix O

## Essential Fish Habitat Assessment

## NOAA Consultation


# Essential Fish Habitat Assessment and NOAA Fisheries Consultation

## I-526 Lowcountry Corridor WEST

Charleston County, South Carolina 5/8/20 Project ID: P027507

Prepared for:

SCDOT

# Table of Contents

# 1. Introduction

The South Carolina Department of Transportation (SCDOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Impact Statement (EIS) for the proposed I-526 Lowcountry Corridor WEST Project (I-526 LCC WEST) to address the existing and future transportation demands on the I-526 corridor from Paul Cantrell Boulevard to Virginia Avenue in North Charleston, South Carolina. The purpose of the project is to increase capacity and improve operations at the I-26/I-526 interchange and along the I-526 mainline from Paul Cantrell Boulevard to Virginia Avenue.

The project is subject to regulations protecting essential fish habitat (EFH) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1976 (as amended 1996). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC 1802, 50 CFR 600.10). Waters designated as EFH by the South Atlantic Fisheries Management Council (SAFMC) and the Mid-Atlantic Fisheries Management Council (MAFMC) occur within the boundaries of the project. SCDOT is coordinating with the National Marine Fisheries Service (NOAA Fisheries) to ensure proper assessment of EFH and to communicate efforts to minimize and mitigate EFH impacts. All coordination between SCDOT and NOAA Fisheries can be found in Appendix A of this report.

This document describes the existing conditions of EFH within the project area and the potential impacts to EFH by the proposed action.


Figure 1-1. I-526 LCC WEST Project Study Area

## 2. Proposed Action

The proposed project consists of 3.5 miles and 9.2 miles of improvements to 1-26 and I-526 respectively for a total of 12.7 miles. The boundaries of the project study area (PSA), shown in Figure 1, generally follow the section of I-526 from Paul Cantrell Boulevard to Virginia Avenue including the I-26/I-526 interchange. The I-526 LCC WEST project also proposes upgrades/changes to five interchanges along I-526; the I-526 at Paul Cantrell Boulevard interchange; the I-26/I-526 system-to-system interchange; the I-526 at Rivers Avenue; the I-526 at N Rhett Avenue and the I-526 at Virginia Avenue interchange. These project limits were selected as the rational end points for the transportation improvements and the environmental review, also referred to as logical termini. The western terminus of Paul Cantrell and the eastern terminus of Virginia Avenue are major points of congestion based on traffic analyses for the project. Construction activities are scheduled to begin in 2023.

The proposed project occurs within the Cooper River watershed [8-digit Hydrologic Unit Code (HUC) 03050201] and may impact EFH associated with two main waterbodies, the Ashley River of the Ashley River Watershed [10-digit HUC 03050201-06] and Filbin Creek of the Cooper River Watershed [10-digit HUC 03050201-07]. I-526 crosses the Ashley River between North Charleston and West Ashley. This portion of the project occurs between the coordinates 32.837486°, -80.022572° and 32.828582°, -80.029641°. I-526 passes through the Filbin Creek floodplain from Attaway Street to its confluence with the Cooper River. This portion of the project occurs between the coordinates 32.893394°, -80.000548° and 32.891651°, -79.967041°. Figure 2 depicts the two areas of the project where EFH is present.

Components of the proposed action that will result in impacts to EFH include construction of additional bridge structures over the Ashley River to accommodate the proposed widening of I-526, construction of new structures for collector distributor (C-D) roads over portions of Filbin Creek and its associated floodplain, and construction of improved interchange access for the I-526 connections at North Rhett Avenue and Virginia Avenue.

## 3. Existing Environment

The project area was assessed for the presence of EFH and two main areas were identified; the portion that crosses the Ashley River and the portion that crosses Filbin Creek near North Rhett Avenue to its junction with the Cooper River. These two areas are described in this section as two separate EFH evaluation areas, as shown in Figure 3-1. The total area of EFH within the project area is summarized at the end of this section.

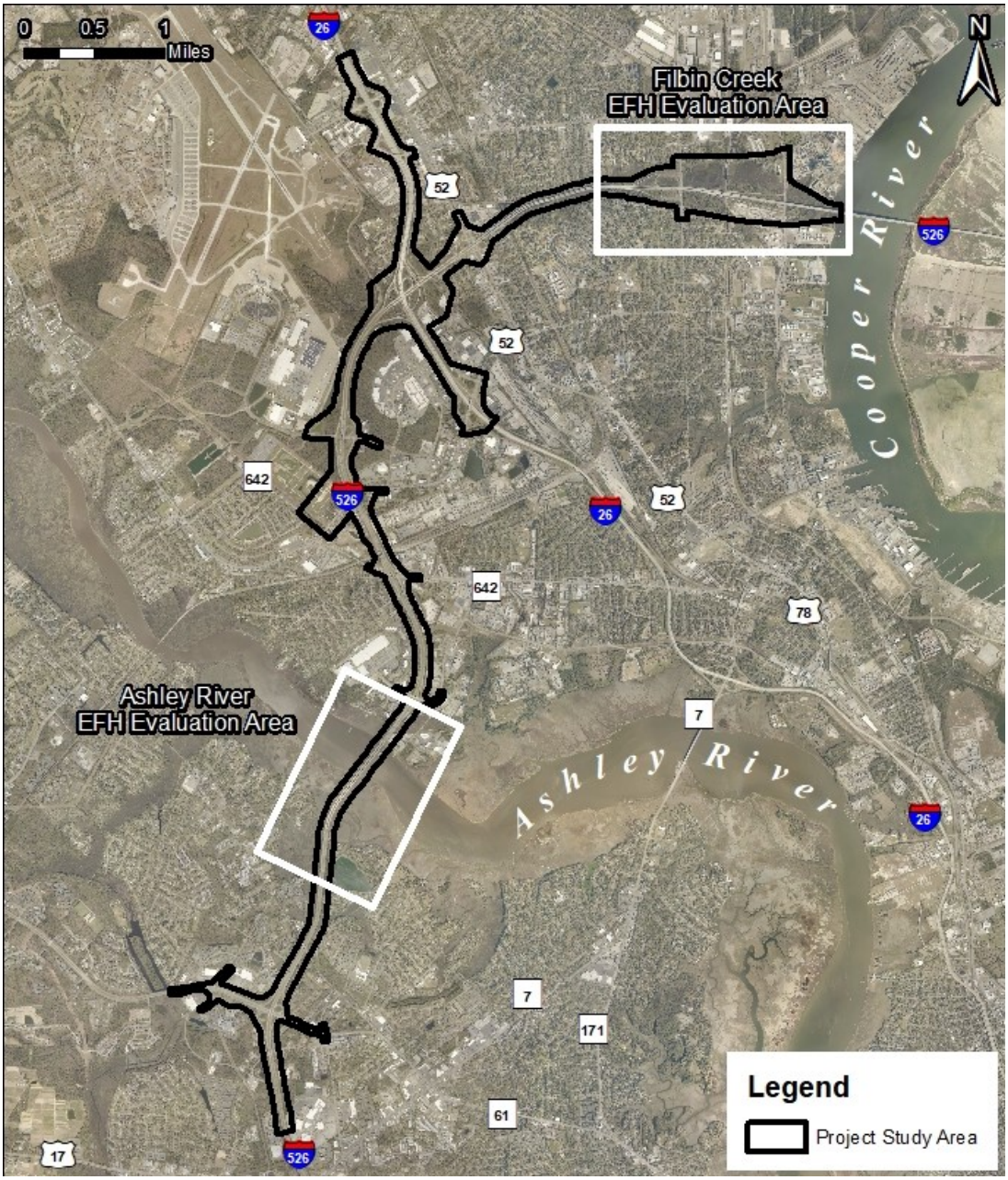


Figure 3-1. Project Study Area and EFH Evaluation Areas

Each essential fish habitat type provides ecosystem services necessary for a variety of species. Differences between habitat types pertain to vegetative cover, flood regime, salinity, and sediment. Six different types of EFH were identified within the project boundary: estuarine emergent wetlands, estuarine tidal creeks, intertidal non-vegetated flats, palustrine emergent wetlands, riverine tidal creeks, unconsolidated bottom, and oysters. Maps of the different types of EFH existing in the Ashley River evaluation area and Filbin Creek evaluation area are displayed in Figure 3-2 and Figure 3-3, respectively.

Using GIS software and recent aerial imagery (2019), GIS shapefiles were produced of all predicted habitat type boundaries within the EFH evaluation areas based on their photographic signatures.

Using GIS software and recent aerial imagery (2019), GIS shapefiles were produced of all predicted habitat type boundaries within the EFH evaluation areas based on their photographic signatures. These shapefiles were uploaded to a Trimble Geo7x GPS unit and printed maps were generated to ground truth the predicted habitat boundaries in the field from December 9th to December 12th, 2019. Field assessments were conducted during low tide to allow for all potential habitat types to be evaluated. During the ground truthing process, qualitative and quantitative data was collected at sample sites to either confirm predicted habitats or indicate a needed change of the predicted habitat in that area. Data collected include habitat type, vegetation composition, current tidal conditions, and salinity. The extent of the EFH habitat boundaries was recorded using the GPS unit. The location of these data collection sites was collected using the GPS unit. The shapefiles of the predicted habitat boundaries were then refined using the GPS locations and data collected in the field.

## 3.1. Ashley River EFH

The Ashley River evaluation area occurs between Paul Cantrell Boulevard and Leeds Avenue and extends 300 feet from both sides of the existing I-526 centerline. This section of the project occurs within the Ashley River Watershed (HUC 03050201-06). Within this evaluation area is the Ashley River, Bulls Creek, and their respective wetlands and tributaries. There are two water quality monitoring stations within the Ashley River watershed, including Station MD-049 upstream of the EFH evaluation area and Station MD-135 downstream of the evaluation area. Station MD-049 is listed on SCDHEC's Section 303(d) list due to impairments related to elevated levels of Enterococcus bacteria, turbidity, and pH. Station MD-135 is not listed as impaired on the 2016 and draft 2018 303(d) lists.

Table 3-1 provides a summary of the EFH types and approximate acreage identified within the Ashley River evaluation area based on aerial photography review and ground truthing efforts. Figure 3-2 provides an overview of the different EFH types associated with the Ashley River and Bulls Creek. Figure 3-3 displays the qualitative determination of EFH within the evaluation area.

Table 3-1: Ashley River EFH Evaluation Area

| EFH Type | Quality | Acres |
|---|---|---|
| Estuarine Emergent Wetland | High | 48.3 |
| Estuarine Tidal Creek | High | 4.1 |
| Intertidal Non-Vegetated Flat | High | 0.6 |
| Unconsolidated Bottom | High | 21.1 |
| Oyster Reef | High | 0.5 |
| **Total** | | **74.6** |

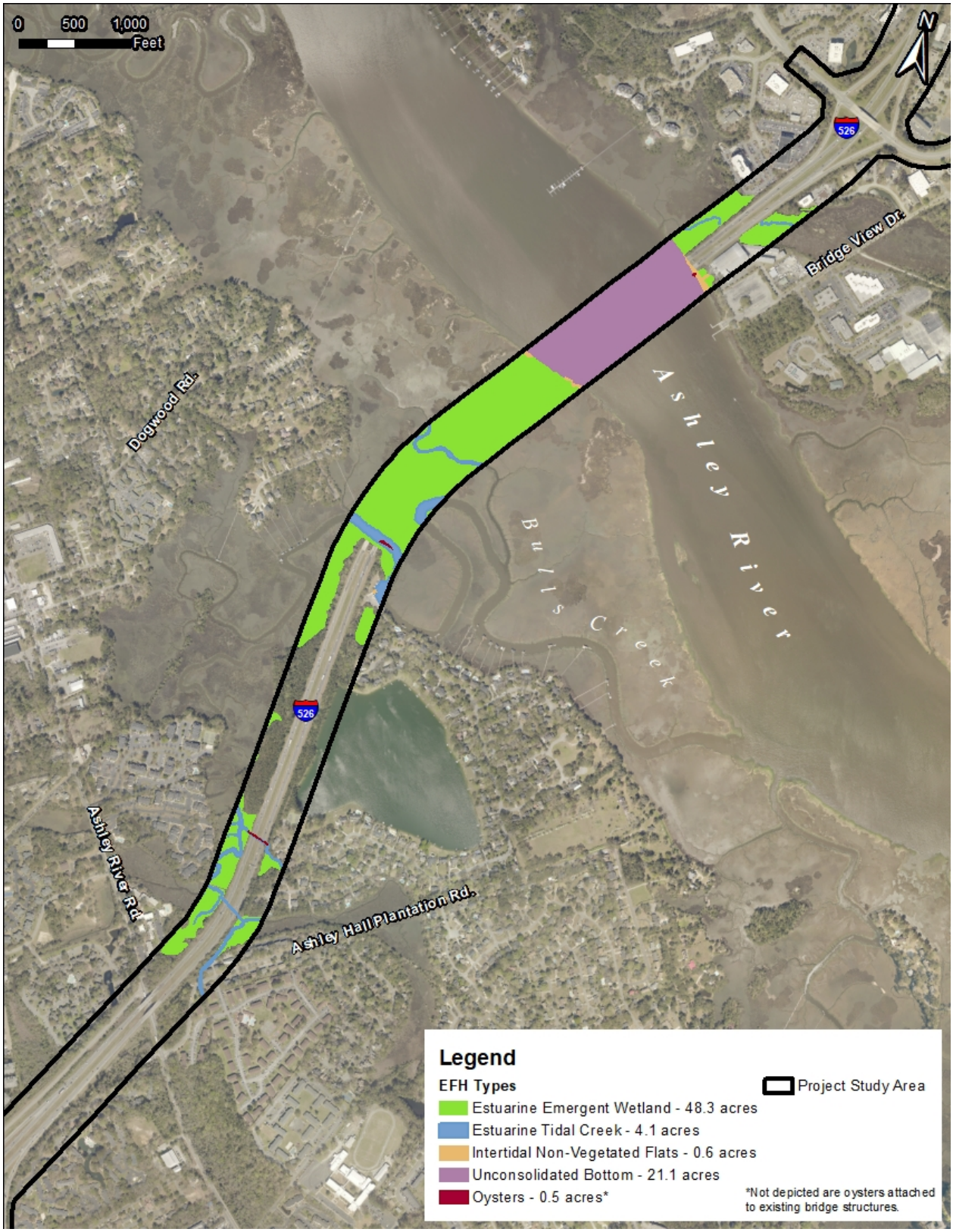


Figure 3-2. Ashley River Evaluation Area – EFH Types


Figure 3-3 Ashley River Evaluation Area - EFH Quality

**Estuarine Emergent Wetland**

*Estuarine emergent wetland. Taken next to I-526 near Bulls Creek, facing southwest. (Photo by Three Oaks Engineering)*

Estuarine emergent wetlands are salt or brackish marshlands that are intertidal, or regularly inundated by the tide cycle. The vegetation of these wetlands is typically dominated by one or two plant species that remain standing at least until the beginning of the next growing season (USFWS, 1979). This habitat serves as a nursery for many fish and other aquatic organisms. The high primary productivity of estuarine emergent wetlands provides abundant food stores for prey species and larval fish in the form of detritus. The shallow water column of these wetlands during high tides provides both a low-energy environment away from wave action and currents as well as a refuge for these organisms to avoid predation by larger predators. Other ecosystem services provided by estuarine emergent wetlands are the trapping of pollutants, storing of sediment, and the attenuation of floodwaters (SAFMC, 2016a).

This habitat makes up the majority of EFH within the Ashley River evaluation area, covering 48.3 acres. These estuarine emergent wetlands are saltmarsh, mostly dominated by smooth cordgrass (*Sporobolus alterniflora*). In areas of slightly higher elevation that receive less saltwater flooding during the tide cycle, the vegetation is dominated by black needlerush (*Juncus roemerianus*). These estuarine emergent wetlands are fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The estuarine emergent wetlands surrounding Bulls Creek and the Ashley River are functioning as high quality EFH.

**Intertidal Non-Vegetated Flat**

An intertidal area is a subsystem of an estuarine environment that lies between the high and low tide lines (USFWS, 1979). Intertidal non-vegetated flats are sediment deposits that occur across areas of gentle slope within the intertidal zone. These are dynamic habitats because of the drastic changes in salinity and temperature that occur each tide cycle (SAFMC, 2020c). Despite being called “non-vegetated”, these flats can have extensive communities of microalgae that benefit macroinvertebrates and other benthic feeders.

*Intertidal non-vegetated flat. Taken from mouth of Filbin Creek, facing south. (Photo by Three Oaks Engineering)*

Along the South Atlantic coast, these flats typically have very fine sediments, which are inhabitable by benthic organisms such as nematodes, copepods, annelids, bivalves, etc. High tide brings food and predators onto the flat while low tide provides residents a temporal refuge from the mobile predators (SAFMC, 2020c). Therefore, intertidal non-vegetated flats are important foraging habitat for managed species. Intertidal non-vegetated flats cover a combined 0.6 acres of the Ashley River evaluation area. These intertidal non-vegetated flats are fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The intertidal flats located within the project area are functioning as high quality EFH.

**Estuarine Tidal Creek**

*Estuarine tidal creek. Taken from within Bulls Creek, facing east. (Photo by Three Oaks Engineering)*

Estuarine tidal creeks are sinuous drainage channels that are subject to the ebb and flow of each tide cycle. As the tide rises, tidal waters flow upstream filling the channel before spilling into the surrounding marshlands. The depths of tidal creeks vary depending on tide range, land use, and distance upstream from coastal inlet channels. Shallow depths of tidal creeks serve as nurseries for fish, crustaceans, and mollusks because they are inaccessible to larger predators (SAFMC, 2016a). Tidal creeks also have soft-bottom substrate that provides benefits like those provided by intertidal flats.

The only named estuarine tidal creek system identified within the Ashley River EFH evaluation area is Bulls Creek. Bulls Creek varies in width from approximately 80 feet near the confluence with the Ashley River to less than 2 feet in its uppermost extents. Bull Creek and its tributaries are estuarine tidal creeks, with an observed salinity range of 4-20 parts per thousand. There is 4.1 acres of estuarine tidal creek habitat identified within the Ashley River evaluation area. Bulls Creek and its tributaries are fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The sections of Bulls Creek that are within and adjacent to the project area are functioning as high quality EFH.

**Unconsolidated Bottom**

Unconsolidated bottom includes all wetland and deep-water habitats with at least 25% cover of particles smaller than stones, less than 30% vegetative cover, and subtidal, permanently flooded, intermittently exposed, or semi-permanently flooded water regimes (USFWS, 1979). This designation was chosen to describe the group of habitats that are permanently to semi-permanently beneath tidal waters. Within the Ashley River evaluation area, unconsolidated bottom habitat is associated with the main channel of the Ashley River.

The Ashley River drains to the Charleston Harbor and receives seawaters from the Atlantic Ocean during high tides. The channel of the Ashley River within the project area ranges from 3-20 feet deep (NOAA, 2020b). The depth of the water level fluctuates with the range of the tide. The Ashley River has a soft-bottom substrate and a stable water column that provides spawning and foraging habitat for benthic and pelagic organisms. Unconsolidated bottom accounts for 21.1 acres within the Ashley River Evaluation area. This habitat is fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The unconsolidated bottom located within the project area is functioning as high quality EFH.

*Unconsolidated bottom. Taken from western bank of Ashley River, facing southeast. (Photo by Three Oaks Engineering)*

**Oysters**

*Oysters on existing bridge structures in the Ashley River. (Photo by Three Oaks Engineering)*

The Eastern oyster (*Crassostrea virginica*) is harvested along the coast of South Carolina. Oysters primarily settle and develop in intertidal habitats creating beds, reefs, or banks. These reefs contain live oysters as well as remaining shells from previous generations (NOAA, 2020d). The waters of the Ashley River are classified as Shellfish Management Growing Areas (SMGA) by the South Carolina Department of Health and Environmental Control (SCDHEC) and is within SCDHEC Shellfish Management Growing Area 10B. Shellfish harvesting is prohibited throughout the waters of Charleston Harbor including the portion of the Ashley River in the project area. No commercial culture, grant, or mariculture permits, or recreational shellfish grounds are located within the evaluation area (SCDHEC, 2019). Furthermore, SCDNR does not have any managed state or recreational shellfish grounds within the Ashley River evaluation area (SCDNR, 2019). Spatial data from 2015 of intertidal oyster reefs and shell deposits located by SCDNR did not depict any occurrences within the Ashley River evaluation area.

During field investigations clusters of oysters were found occupying a variety of surfaces (bridge piles, riprap, culverts, and natural surfaces) within the Ashley River evaluation area. Oysters that were present along riprap or other horizontal surfaces were captured with point data and logged on a GPS. Oysters attached to existing bridge structures were observed around the entire circumference or perimeter of the structures. It was estimated oysters were on average three feet

in height and generally two to three oysters in thickness. Using the data logged with GPS points and accounting for oysters present on existing bridge structure sizes at an average height of three feet an estimated 0.5 acres of oysters are present in the Ashley River EFH evaluation area. The oysters in the Ashley River EFH evaluation area are high quality EFH.

## 3.2. Filbin Creek Evaluation Area

The boundaries of the Filbin Creek evaluation area are more variable than the Ashley River evaluation area due to proposed interchange improvements at North Rhett Avenue and Virginia Avenue. Beginning at Attaway Street, this evaluation area has a width of 300 feet from both sides of the existing I-526 centerline. From Attaway Street to North Rhett Avenue, the evaluation area expands to approximately 1,200 feet from the existing I-526 centerline. This section of the project occurs within the Cooper River Watershed (HUC 03050201-07). Within this evaluation area is the main channel of Filbin Creek, surrounding wetlands and tributaries of Filbin Creek, and the confluence of Filbin Creek and the Cooper River. There is one water quality monitoring station found within the Filbin Creek evaluation area. Station MD-249 is located along Filbin Creek and is listed on SCDHEC's 2016 and draft 2018 Section 303(d) lists due to impairments related to elevated levels of *Enterococcus* bacteria. Two other water quality monitoring stations are found nearby within the Cooper River. Station MD-044 and Station MD-248 are located upstream and downstream of the project, respectively. Neither MD-248 nor MD-044 are listed on the 303(d) list.

Table 3-2 provides a summary of the EFH types and acreage identified within the Filbin Creek evaluation area based on aerial photography review and ground truthing efforts. Figure 3-4 provides an overview of the different EFH types associated with Filbin Creek. Figure 3-5 displays the qualitative differences in EFH throughout the evaluation area.

Table 3-2: Filbin Creek Evaluation Area

| EFH Type | Quality | Acres |
|---|---|---|
| Estuarine Emergent Wetland | High | 24.1 |
| | Low | 35.2 |
| Estuarine Tidal Creek | High | 7.5 |
| | Low | 7.8 |
| Intertidal Non-Vegetated Flats | High | 2.4 |
| Palustrine Emergent Wetland | Low | 59.8 |
| Riverine Tidal Creek | Low | 1.3 |
| Unconsolidated Bottom | High | 3.9 |
| Oyster Reef | High | 0.3 |
| **Total** | | **142.3** |

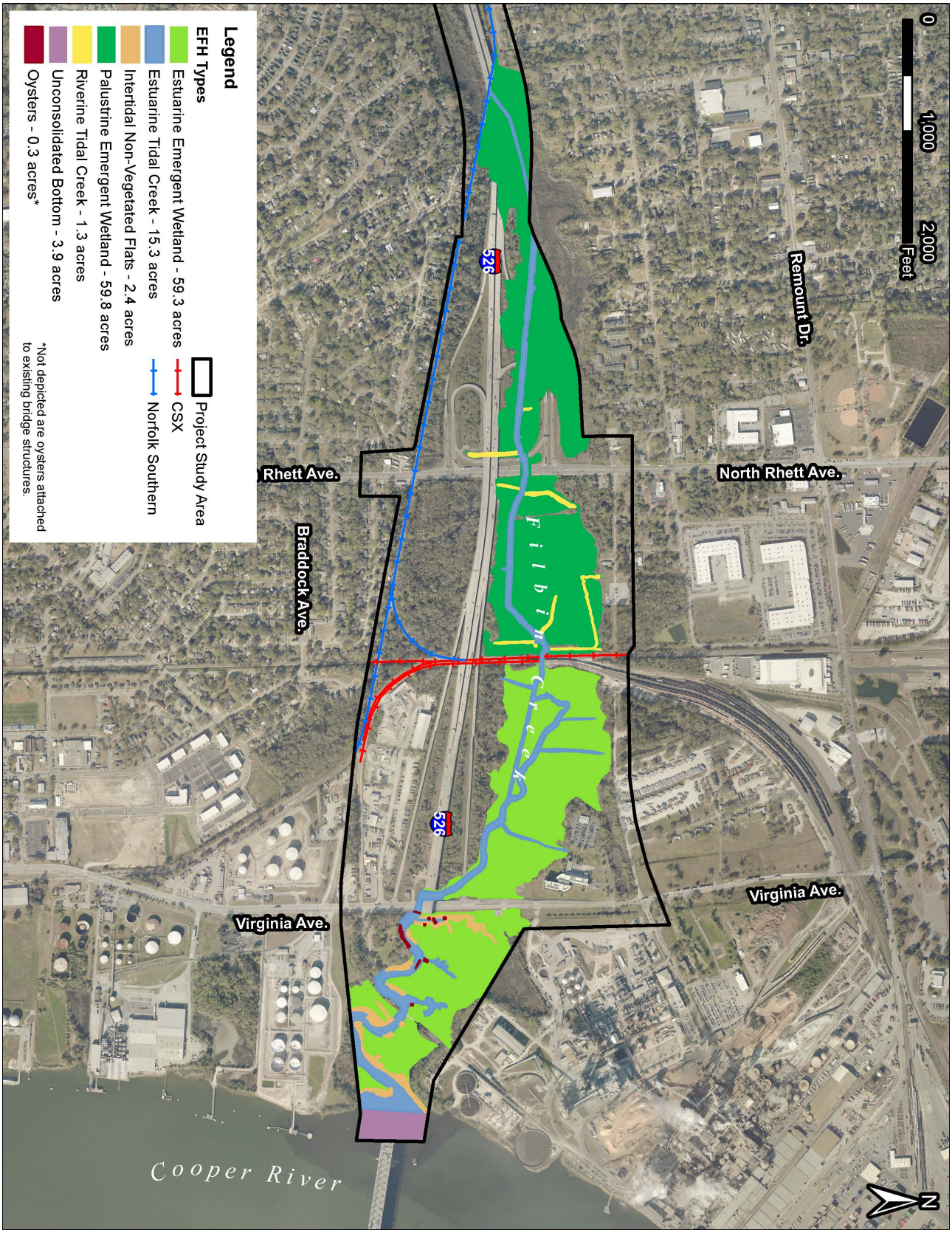


Figure 3-4. Filbin Creek EFH Evaluation Area

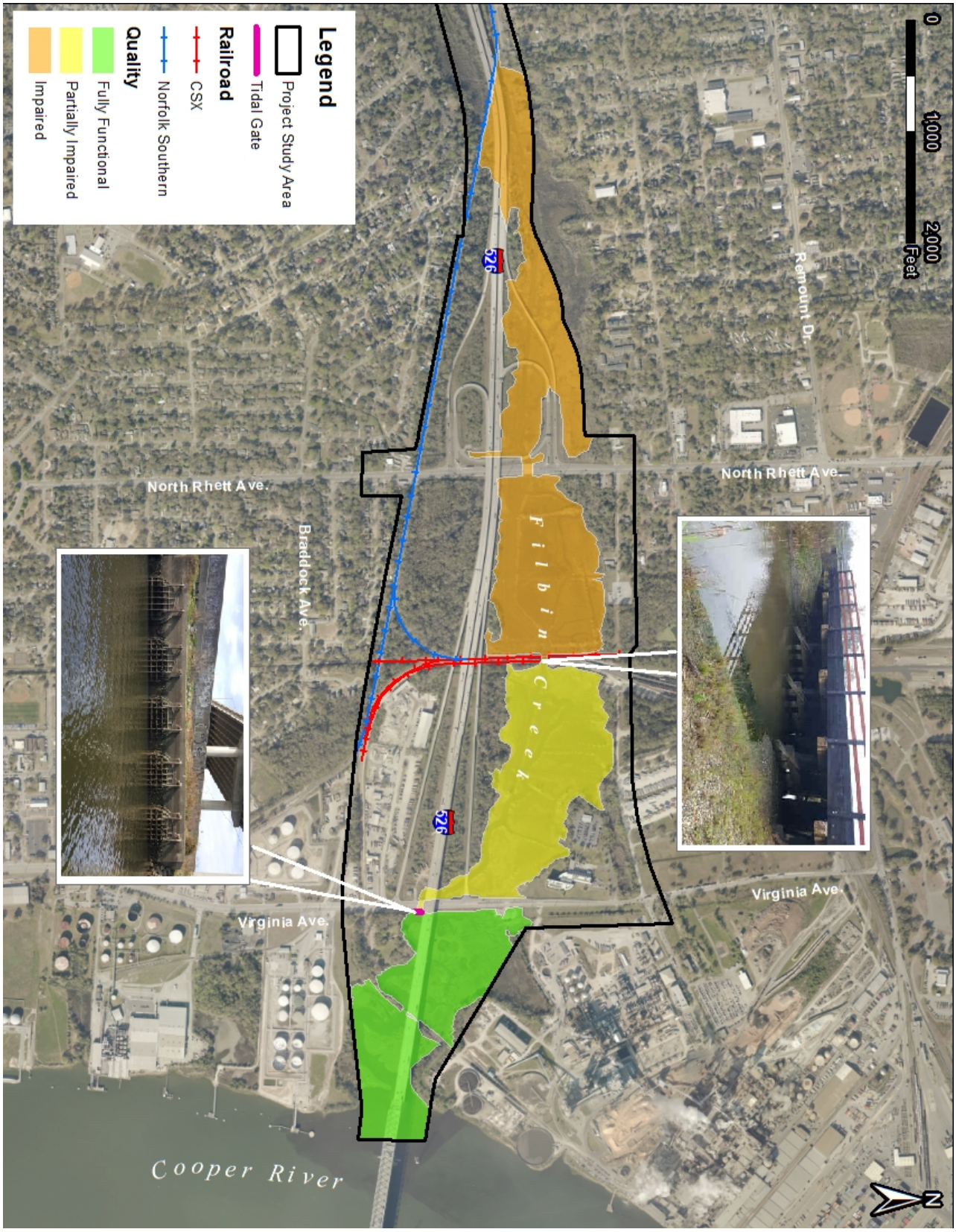


Figure 3-5. Filbin Creek EFH Quality

**Estuarine Emergent Wetland**

*Estuarine emergent wetland.*
*(Photo by Three Oaks Engineering)*

Estuarine emergent wetland habitat makes a large portion of EFH within the Filbin Creek Evaluation Area, covering 59.3 acres in total. Estuarine emergent wetlands within the Filbin Creek evaluation area can be qualitatively separated into two different plant communities with respect to tidal regime: east of Virginia Avenue and west of Virginia Avenue. The section of Filbin Creek east of Virginia Avenue to the Cooper River, is similar in quality and function to the estuarine emergent wetlands described in the Ashley River evaluation area. These wetlands receive an uninhibited tidal regime and the vegetative community is dominated by smooth cordgrass (*Sporobolus alterniflora*) and black needlerush (*Juncus roemerianus*). Sea oxeye daisy (*Borrichia frutescens*) and saltgrass (*Sporobolus pumilus*) are found along the fringes of this habitat. These estuarine emergent wetlands are fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The estuarine emergent wetlands to the east of Virginia Avenue are high quality EFH.

Upstream of the tidal gate, west of Virginia Avenue and east of the CSX railroad causeway, is also classified as estuarine emergent wetland. The estuarine emergent wetlands in this section of the evaluation area are dominated by giant cordgrass (*Sporobolus cynosuroides*) and common reed (*Phragmites australis*) in areas that appear to receive regular tidal influence. In areas of slightly higher elevation that receive even less saltwater during the tidal flooding events, the vegetation is dominated by marsh alder (*Iva frutescens*), groundsel bush (*Baccharis halimifolia*), and rattlebox (*Sesbania punicea*). This change in vegetative community can be attributed to the altering of saltwater flood regime by the tidal gate at Virginia Avenue. Salinity measurements taken from waters in this section of the evaluation area ranged between 3-12 parts per thousand. The presence of saline waters and the vegetation indicate that some tidal connectivity remains despite the tidal gate. However, there appears to be a natural transition from highly salt tolerant vegetation to a more brackish and less salt tolerant vegetation. This likely a function of limited connectivity to tidal flows because of the functional tide gate at Virginia Avenue. This section of estuarine emergent wetlands is considered partially impaired in that some ecosystem services essential to fisheries have been diminished. Specifically, regular tidal exchange is effectively limited by the tidal gate. It is expected the tidal gate will remain in place and thus, the ecosystem services provided by the estuarine emergent wetland habitat type are not expected to function at a high level and will likely continue to see a transition to a more brackish vegetative community. Access to this habitat by managed fishery species is considered restricted due to the tidal gate limiting tidal exchange. While salinity levels remain high, this habitat is still considered partially impaired. Due to partial

impairment and the obvious vegetative succession, the area west of Virginia Avenue and east of the CSX railroad causeway is considered low quality estuarine emergent wetland EFH.

**Estuarine Tidal Creek**

Filbin Creek and its tributaries are largely a system of estuarine (saltwater) tidal creeks that drain to the Cooper River. A total of 15.3 acres of estuarine tidal creeks are present in the Filbin Creek evaluation area. The Filbin Creek estuarine system is complicated by the tidal gate at Virginia Avenue and two railroad causeways west of Virginia Avenue. However, from the east of Virginia Avenue to the Cooper River is a fully functional estuarine tidal creek. The width of Filbin Creek varies from 70-90 feet and the observed salinity in this section ranged from 4-15 parts per thousand. This section of Filbin Creek is fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The estuarine tidal creeks east of Virginia Avenue are considered high quality EFH.

West of Virginia Avenue, Filbin Creek flow is considerably altered by the tidal gate which limits the amount of tidal exchange upstream during normal tidal cycles. West of Virginia Avenue and east of the CSX railroad causeway, salinity measurements taken from Filbin Creek and its tributaries ranged from 4-8 parts per thousand. Because these measurements exceed 0.5 parts per thousand, these waters are still considered estuarine tidal creeks (USFWS, 1979). The estuarine tidal creeks, including the main channel of Filbin Creek, in this section of the evaluation area are partially impaired because of the restricted connectivity to downstream EFH and the limited access by managed fishery species. However, this impairment does not result a complete degradation of the quality of EFH in the context of estuarine tidal creek habitat. Enough tidal influence is still present that the main channel of Filbin Creek west of Virginia Avenue to the CSX railroad causeway is still considered high quality EFH.

*CSX railroad causeway and bridge. (Photo by Three Oaks Engineering)*

West of the CSX railroad causeway to the western-most limits of EFH in the Filbin Creek evaluation area the main channel of Filbin Creek remains an estuarine tidal creek because of its direct connection to the tidal gate and obvious tidal influence. Salinity measurements at the surface of Filbin Creek in this segment of the evaluation area were consistently documented as 0 parts per thousand despite visual evidence of tidal influence. This can likely be attributed to stormwater runoff having a more regular influence than saline waters infiltrating the tidal gate this far upstream. Samples taken from the bottom of the channel contained salinity in quantities more than the 0.5 parts per thousand required to maintain estuarine tidal creek designation. The main channel of Filbin Creek in this section west of the CSX railroad causeway is considered impaired because some ecosystem services essential to fisheries have been diminished or lost. The presence of the tidal gate at Virginia Ave restricts tidal flow and access to this habitat by managed fishery species is therefore more restricted. Additionally, stormwater runoff having a more regular influence than saline waters would suggest that this portion of Filbin Creek, while tidally influenced, receives more influence from stormwater runoff and freshwater flows from headwaters further upstream than through tidal exchanges. Although some tidal action still reaches this area, the ecological integrity is impaired. Therefore, estuarine tidal creek areas west of the CSX railroad causeway are considered low-quality EFH.

**Intertidal Non-Vegetated Flat**

*Intertidal non-vegetated flat. Taken from mouth of Filbin Creek, facing south. (Photo by Three Oaks Engineering)*

An intertidal area is a subsystem of an estuarine environment that lies between the high and low tide lines (USFWS, 1979). Intertidal non-vegetated flats are sediment deposits that occur across areas of gentle slope within the intertidal zone. These are dynamic habitats because of the drastic changes in salinity and temperature that occur each tide cycle (SAFMC, 2020c). Despite being called "non-vegetated", these flats can have extensive communities of microalgae that benefit macroinvertebrates and other benthic feeders. Along the South Atlantic coast, these flats typically have very fine sediments, which are inhabitable by benthic organisms such as nematodes, copepods, annelids, bivalves, etc. High tide brings food and predators onto the flat while low tide provides residents a temporal refuge from the mobile

predators (SAFMC, 2020c). Therefore, intertidal non-vegetated flats are important foraging habitat for managed species. Intertidal non-vegetated flats cover 2.4 acres of the Filbin Creek portion of the project area. These intertidal non-vegetated flats are fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The intertidal non-vegetated flats in the Filbin Creek EFH evaluation area are high quality EFH.

**Palustrine Emergent Wetland**

Palustrine emergent wetlands are like estuarine emergent wetlands in that their vegetative community is dominated by one or more annual plant species. However, these freshwater marshlands have a salinity of less than 0.5 parts per thousand (USFWS, 1979). These wetlands, where present, occur upstream of the estuarine emergent wetlands and receive less tidal influence. Although the low salinity of these waters limits its use by several managed fish species, tidal freshwater plays an important role as the transition zone between freshwater habitats upstream and the tidal saltwater habitats downstream. Palustrine emergent wetlands provide nursery habitat for managed species as well as the prey of managed species (SAFMC, 2016a). Like other wetland habitats, palustrine emergent wetlands provide important ecosystem services of absorbing pollutants, storing sediments, and attenuating floodwaters.

*Palustrine emergent wetland. (Photo by Three Oaks Engineering)*

Palustrine emergent wetland habitat was only found within the Filbin Creek Evaluation Area, occurring west of the CSX railroad causeway and east of the Norfolk Southern railroad causeway. There are 59.8 acres of palustrine emergent wetlands in the Filbin Creek evaluation area. These wetlands are a monoculture plant community dominated by the non-native common reed (*Phragmites australis*). All salinity recordings of waters in this area were 0 parts per thousand. These characteristics can be attributed to the restricted connectivity to other EFH waters caused by the existing causeway associated with North Rhett Avenue, CSX railroad causeway and the tidal gate at Virginia Avenue. Additionally, multiple outfall pipes that appear to carry local stormwater to Filbin Creek are present in this section of the evaluation area. The regular influx of freshwater runoff further weakens the tidal exchange received by these wetlands.

The palustrine emergent wetlands in the Filbin Creek evaluation area are impaired because multiple ecosystem services essential to fisheries have been diminished or lost. The monoculture of the invasive common reed, the restricted flows resulting from the tidal gate and CSX railroad causeway,

and regular flushing of freshwater stormwater runoff all contribute to impairment of this section of Filbin Creek. Although some tidal action still reaches this area in the main channel of Filbin Creek, the ecological integrity of the adjacent wetlands is ultimately impaired in the context of EFH. Therefore, the palustrine emergent wetlands associated with Filbin Creek are considered low-quality EFH.

**Riverine Tidal Creek**

Riverine tidal creeks are sinuous drainage channels that are subject to the ebb and flow of each tide cycle. However, these tidal creeks have a salinity of less than 0.5 parts per thousand (USFWS, 1979). As the tide rises, tidal waters flow upstream filling the channel before spilling into the surrounding wetlands. The depths of tidal creeks vary depending on tide range, land use, and distance upstream from coastal inlet channels. Shallow depths of tidal creeks serve as nurseries for fish, crustaceans, and mollusks because they are inaccessible to larger predators (SAFMC, 2016a).

*Riverine tidal creek adjacent to Filbin Creek (Photo by Three Oaks Engineering)*

Riverine tidal creeks account for 1.3 acres in the Filbin Creek evaluation area. Located west of the CSX railroad causeway are multiple small tributaries that feed into the main channel of Filbin Creek. Salinity measurements of these tributaries were consistently documented as 0 parts per thousand despite visual evidence of tidal influence. This can be attributed to stormwater runoff having a more regular influence than saline waters infiltrating from the main channel of Filbin Creek. These tributaries are therefore designated as riverine tidal creeks based on the lack of salinity but obvious tidal influence. The riverine tidal creeks are impaired because some ecosystem services essential to managed fisheries have been diminished or lost. No salt tolerant species were observed in these waters during field surveys. The presence of the tidal gate at Virginia Ave restricts tidal flow and access to this habitat by managed fishery species is therefore more restricted. Additionally, stormwater runoff having a more prevalent influence than saline waters serves as an impairment for some managed fishery species. Therefore, the riverine tidal creeks within the Filbin Creek evaluation area are considered low quality EFH.

**Unconsolidated Bottom**

Unconsolidated bottom includes all wetland and deep-water habitats with at least 25% cover of particles smaller than stones, less than 30% vegetative cover, and subtidal, permanently flooded, intermittently exposed, or semi-permanently flooded water regimes (USFWS, 1979). This designation was chosen to describe the group of habitats that are permanently to semi-permanently beneath tidal waters.

*Unconsolidated bottom. Taken from mouth of Filbin Creek (Photo by Three Oaks Engineering)*

The Cooper River is a coastal river that drains to Charleston Harbor and receives seawater from the Atlantic Ocean during tidal exchange. Channel depth of the Cooper River at the mouth of Filbin Creek ranges from 2-30 feet (NOAA, 2020b). The depth of the water level fluctuates with the range of the tide. This habitat has a soft-bottom substrate and a stable water column that provides spawning and foraging habitat for benthic and pelagic organisms. Unconsolidated bottom habitat accounts for 24.2 acres within the Filbin Creek Evaluation Area. This habitat is fully functional in that all ecosystem services essential to fisheries are present. Existing disturbances, such as the existing I-526 structures, have not significantly altered functions of this habitat. The unconsolidated bottom in the Filbin Creek evaluation area is functioning as high quality EFH.

**Oysters**

*Oyster reef in Filbin Creek at low tide. (Photo by Three Oaks Engineering)*

The Eastern oyster is harvested along the coast of South Carolina. Oysters primarily settle and develop in intertidal habitats creating beds, reefs, or banks. These reefs contain live oysters as well as remaining shells from previous generations (NOAA, 2020d). The waters of the Ashley River and Filbin Creek are within an area classified as Shellfish Management Growing Areas (SMGA) by the South Carolina Department of Health and Environmental Control (SCDHEC). Both evaluation areas are within SCDHEC Shellfish Management Growing Area 10B. Shellfish harvesting is prohibited throughout the waters of Charleston Harbor. No commercial culture, grant, or mariculture permits, or recreational shellfish grounds are located within the evaluation area (SCDHEC, 2019). SCDNR does not have any managed state or recreational shellfish grounds within the Filbin Creek evaluation area (SCDNR,

2019). Spatial data from 2015 of intertidal oyster reefs and shell deposits previously located by SCDNR does not show any occurrences within either evaluation area.

During field investigations clusters of oysters were found occupying a variety of surfaces (bridge piles, riprap, tidal gate, natural surfaces) within the Filbin Creek evaluation area east of Virginia Avenue. Oysters that were present along riprap or other horizontal surfaces were captured with point data and logged on a GPS. Oysters attached to existing bridge structures were observed around the entire circumference of the structures. It was estimated oysters were three feet in height and generally two to three oysters in thickness. Using the data logged with GPS points and accounting for oysters present on existing bridge shaft diameters at an average height of three feet an estimated 0.3 acres of oysters are present in this section in the Filbin Creek EFH evaluation area. The oysters in the Filbin Creek EFH evaluation area are high quality EFH.

## 3.3. Existing EFH Summary

EFH within the project area is found in both the Ashley River and Filbin Creek Evaluation Areas. Both systems are tidally influenced and have similar habitats. Table 3-3 provides a total acreage for each EFH type and quality found within the project area.

Table 3-3: EFH Habitat Acreage

| EFH Type | Quality | Acres |
|---|---|---|
| Estuarine Emergent Wetland | High | 72.4 |
| | Low | 35.2 |
| Estuarine Tidal Creek | High | 11.6 |
| | Low | 7.8 |
| Intertidal Non-Vegetated Flats | High | 3 |
| Palustrine Emergent Wetland | Low | 59.8 |
| Riverine Tidal Creek | Low | 1.3 |
| Unconsolidated Bottom | High | 25 |
| Oysters | High | 0.8 |
| ***TOTAL EFH Area*** | | ***216.9*** |

# 4. Essential Fish Habitat Species

As mandated by the Magnuson-Stevens Act, the eight regional councils are tasked with identifying, describing, mapping and protecting EFH in their respective jurisdictions. The SAFMC is tasked with conserving and managing fisheries for the South Atlantic region, which includes the coast of South Carolina (SAFMC, 2020a). Some fisheries managed by the MAFMC also have designated EFH along the coast of South Carolina. Species habitat descriptions provided by SAFMC and MAFMC and geospatial data from the NOAA EFH Mapper were used to assist in the identification of which managed fisheries may be affected by any potential impacts to either of the habitat types listed in the previous section as a result of the proposed project. The following species or groups of species have designated EFH present within the project area.

## 4.1. Habitat Areas of Particular Concern

Habitat areas of particular concern (HAPC) are discreet subsets of EFH that 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 (SAFMC, 2020b). HAPC for a given fishery can include intertidal habitats, estuarine habitats, and deep-water habitats used for migration, spawning, and rearing of fish or other managed organisms. "At the interface of NOAA trust resources and SCDOT projects, oyster reefs are the most common HAPC in South Carolina. Coastal inlets and other designated HAPCs are present in the state but will rarely be encountered by SCDOT (SCDOT SCREENING FORM CITATION)." HAPCs present within the project area include all oysters found within the Ashley River and Filbin Creek evaluation areas.

## 4.2. Federally Managed Species

**Penaeid Shrimp**

Essential habitat for white shrimp (*Litopenaeus setiferus*) and brown shrimp (*Farfantepenaeus aztecas*) is present within the project area. These penaeid shrimp species are managed by the SAFMC because of their economic and ecological significance (SAFMC, 2020d). These shrimp species, like all penaeid shrimp, have an annual life cycle. Penaeid shrimp spawn year-round in deepwater habitats offshore, larval shrimp move to estuarine areas, and new adults return to offshore areas to spawn. White shrimp begin to migrate to estuarine waters in April and May, whereas brown shrimp migrate to estuarine waters from February to April (NOAA). Juvenile shrimp forage and mature in tidally influenced nursery areas where the mud-silt substrate and salinity range provide a suitable feeding environment. Once maturity is reached, Brown shrimp egress to offshore areas between May and August. White shrimp egress from August to December (NOAA). Some smaller adult individuals may remain in the estuary over the winter (SAFMC). According to the fishery management plan (FMP) for shrimp, essential habitat for White and Brown shrimp includes estuarine emergent wetlands, palustrine emergent wetlands, intertidal non-vegetated flats, riverine tidal creeks, estuarine tidal creeks, and coastal inlets (SAFMC, 1993). HAPC for these shrimp species is identified as all coastal inlets, which is not present within the project area (SAFMC, 2016c).

**Snapper-Grouper Complex**

The snapper-grouper complex managed by the SAFMC is made up of 59 species across ten families: sea basses and groupers (*Serranidae*), wreckfish (*Polyprionidae*), snappers (*Lutjanidae*), porgies (*Sparidae*) grunts (*Haemulidae*), jacks (*Carangidae*), tilefishes (*Malacanthidae*), triggerfishes (*Balistidae*), wrasses, (*Labridae*), and spadefishes (*Eppiphidae*) (SAFMC). Species in the complex spawn offshore in hard-bottom areas (SAFMC, 2016d). Snapper-grouper larvae are transported to estuarine areas by tides and currents where they grow to maturity. The nursery areas of estuarine waters and wetlands provide shelter from predation as well as an abundance of food. Snapper-grouper species are predatory, feeding on smaller fish and invertebrates. Adult snapper-groupers can be found feeding in estuarine environments (SAFMC, 2016c). Several species within the complex, such as the gray snapper (*Lutjanus griseus*), are known to use tidal freshwaters as well.

According to the FMP for the snapper-grouper complex, EFH for all life stages includes estuarine emergent wetlands, riverine tidal creeks, estuarine tidal creeks, and coastal inlets. HAPC for the snapper-grouper complex is identified as all coastal inlets and oyster beds (SAFMC, 2016b). All oysters present within the project area are considered HAPC for the snapper-grouper complex.

**Bluefish**

Bluefish (*Pomatomus saltatrix*) is a fish species managed the MAFMC (MAFMC, 1989). Bluefish live up to 12 years, reaching maturity at 2 years of age. Spawning occurs multiple times a year in the offshore waters of the South Atlantic and Mid-Atlantic Bights. Juvenile bluefish are known to occur in estuarine environments where they feed on smaller fish and avoid predation by larger fish in the offshore waters (MAFMC, 2020). According to the EFH spatial data from NOAA, EFH for the juvenile life stage of bluefish includes estuarine tidal creeks and coastal inlets (NOAA, 2019). No HAPC are designated for Bluefish.

**Summer Flounder**

Summer flounder (*Paralichthys dentatus*) is a fish species managed by summer flounder, scup, and black seabass FMP of the MAFMC. Summer flounder live up to 14 years, reaching maturity between 2-3 years of age. Spawning occurs several times during the fall and early winter in offshore waters of the continental shelf (NOAA, 2020a). Larval summer flounder are transported by tides and currents from offshore areas to estuarine areas where they grow to maturity. Summer flounder stay along the bottom of the water column where they hide against the substrate to hunt and ambush their prey. Larval summer flounder feed on zooplankton and small invertebrates while juveniles and adults feed on invertebrates and fish. Larvae, juvenile, and adult summer flounder are known to commonly occur in estuarine environments, venturing into offshore waters during spawning season. According to the FMP for summer flounder, intertidal non-vegetated flats, estuarine tidal creeks, and coastal inlets are designated as EFH for the larval, juvenile, and adult life stages of summer flounder. HAPC for summer flounder includes submerged aquatic vegetation, which is not present within the project area (MAFMC, 1987).

**Other Fishes**

The waters of the Ashley River and Filbin Creek evaluation areas also serve as nursery and forage habitat for other species including red drum (*Sciaenops ocellatus*). Red drum is an important state-managed fishery and estuarine environments within the project area provide habitat necessary for the development and survival of several life stages of red drum. Highly migratory pelagic species such as Atlantic blacktip shark (*Carcharhinus limbatus*) are managed by NOAA Fisheries. Spatial data from the EFH mapper indicates the presence of EFH for highly migratory pelagic species within the project boundary (NOAA, 2019). Estuarine environments within the project area may also be of importance to the Atlantic blacktip shark.

# 5. Alternatives Analysis

The sections below discuss the No-Build Alternative and the potential impacts from the Recommended Preferred Alternative on EFH for recreational and commercial fisheries and federally managed species. Adverse effects analyzed of the Proposed Project Alternative include direct and indirect physical, chemical, or biological alterations resulting in the reduction to quality and quantity of EFH and managed species.

## 5.1. No Build Alternative

Under the No Build Alternative, EFH would remain as described in Section 3. The existing roadway and bridges would remain in place with no additional structures being placed in EFH. No long-term effects are expected from the No Build Alternative.

## 5.2. Recommended Preferred Alternative

Under the Recommend Preferred Alternative there are two additional bridge structures to be constructed over the Ashley River to accommodate the widening of I-526, construction of new structures C-D roads over portions of Filbin Creek and its associated floodplain, and construction of improved interchange access for the I-526 connections at North Rhett Avenue and Virginia Avenue.

Most of the EFH within the project area is proposed to be spanned with bridges. Due to the project being in the early stages of design, the exact methods used to construct the proposed bridges have not been determined. Additionally, since the construction of the project will be awarded as a design-build contract, the specific construction methods and extent and duration of impacts would ultimately be determined by the design-build contractor based on guidelines and conditions established by SCDOT, FHWA, and state and federal regulatory agencies including SCDHEC-OCRM, USACE, USFWS, and NOAA Fisheries.

## 5.3. Construction Methods

Choosing which bridge construction method to use can be a complicated endeavor dependent on several factors. Construction schedule, bridge layout and complexity, material costs, soil conditions, and contracting methods must be compared against wetland impacts, mitigation requirements, benefits, and costs.

Due to the wetland and stream crossings that function as EFH and the corresponding challenges these crossings present to bridge construction, a range of construction methods will be evaluated. From a construction standpoint, the soft soils encountered in EFH environments do not support construction equipment, material delivery trucks, or material storage and can settle significantly under load. Therefore, the soils generally require very deep foundations to support bridge loads. These types of foundations require larger equipment and extra effort to install as compared to similar size bridges in firmer soil conditions. Construction access points will likely also be limited, complicating the logistics of equipment usage, material storage, and delivery potentially resulting in longer construction times.
Building bridges over EFH environments as found in the project area can be accomplished with multiple methods. Some methods are more cost effective by maximizing construction efficiency,

while other methods sacrifice some level of building efficiency to provide a lesser impact on the environment. The duration of temporary impacts associated with the potential construction access methods noted below will ultimately be determined by the final design established by the design-build contractor in coordination with SCDOT and will also be dependent upon uncontrollable variables including weather and other unanticipated environmental conditions. In South Carolina, four different methods, or a combination thereof, are typically used to build bridges over sensitive environments such EFH. These methods include causeway on temporary fill, causeway on barges and/or timber mats, temporary bridge or trestle, and top-down construction. A brief explanation of these construction methods and temporary impacts associated with each are discussed below.

**Causeway on Temporary Fill**

This construction method would involve placing a geotextile mat topped with dirt or stone fill on the marsh to create a temporary embankment causeway or access road alongside the proposed bridge alignment. The fill causeway provides access for material delivery and support for cranes and other construction equipment, typically extending from the nearest adjacent upland or haul road. Once construction of the bridge is complete, the fill is removed, and the marsh is allowed to restore itself naturally. Prior to the placement of fill, a geotextile fabric is typically placed over the marsh/wetland surface thus allowing all or most of the discharged fill material to be removed from the area and limiting the disruption of the native soils and vegetative root mass. Silt fencing would be installed along the toe of the fill slopes to prevent runoff and displacement of fill material into adjacent waters.

Impacts to EFH associated with a fill causeway would be temporary and may include the smothering of aquatic organisms, subsidence/compaction of the marsh ground surface, and the disruption/inhibition of hydrology and tidal flows on either side of the fill causeway. Depending on the size of the bridge being constructed, temporary fill causeways would likely need to be in place for six to 24 months.

Causeways on temporary fill will not be utilized as the sole method of construction access for the proposed project. This construction method may be utilized adjacent to existing fill or to establish access to other construction methods discussed below. The preliminary design and identified construction access areas minimize the use of causeway on temporary fill. The design-build contractor will coordinate with SCDOT to determine where causeways on temporary fill are allowable.

**Causeway on Barges and/or Timber Mats**

This construction method would involve placing floating barges and/or portable timber mats over the waterway or marsh alongside/adjacent the proposed bridge alignment. These type barges are designed to link together and would be placed side by side to produce a temporary access causeway. This method provides similar benefits as a fill causeway; however, once construction is completed, the barges or timber mats are more easily removed from the site. Temporary impacts to the marsh caused by floatable barges or timber mats would be similar to placing temporary fill but is generally considered less damaging to the environment due to the potential displacement or runoff of sediment associated with fill dirt.

Impacts to the tidal salt marsh environment associated with the placement of barges and/or timber mats would be temporary and may include the smothering of aquatic organisms, subsidence/compaction of the marsh ground surface, and the disruption/inhibition of hydrology and tidal flows on either side of the barge or mat. Depending on the size of the bridge being constructed, the barges and/or timber mats would likely need to be in place for six to 24 months. This construction method may be utilized adjacent to existing fill or to establish access to other construction methods discussed below.

**Temporary Bridge/Trestles**

This construction method involves the utilization of a temporary bridge or pile supported trestles constructed alongside the proposed bridge alignment. Once construction is completed on the new permanent bridge, the temporary bridge/trestles are removed. Typically, the piles are either pulled out of the ground or cut or snapped off below ground level. Impacts to the marsh environment from temporary trestle bridges are less than the previous two methods (causeway on barges/timber mats or causeway on temporary fill), since the only point of contact between the temporary bridge/working area and the marsh is at the pile locations. However, this method generally includes longer construction times, and subsequently more project costs, due to the construction of temporary bridge structures.

Impacts to the tidal salt marsh environment associated with the construction of a temporary bridge or pile supported trestle would be temporary and may include an increase in noise levels during pile driving activities, scouring or deposition of sediment around the piles, shading of marsh vegetation, and localized mortality of aquatic organisms. Movements of aquatic species within the tidal salt marsh and feeder creeks would be less affected by this construction method than the other methods discussed. Depending on the size of the bridge being constructed, the temporary bridge or trestle structures would likely need to be in place for six to 24 months.

**Top-Down Construction**

This construction method involves utilizing completed portions of the new bridge structure to construct the bridge. The ends (outer bents) of the new bridge are constructed from existing adjacent upland areas, if available, or from the roadway approach fills. The remainder of the bridge is then constructed from the completed end portions. The top-down construction method would result in little to no temporary impacts to the marsh environment; however, the duration of construction is generally longer as the contractor is restricted to working from the nearest upland embankment or from the ends of the finished bridge structure rather than at multiple points along the proposed alignment. Due to these restrictions, top-down construction is not considered as a practicable sole alternative for building long bridge structures.

Top-down methods may not be particularly suitable for all construction access for this project due to the multiple bridges and the need to set up and break down the construction system at each site. Due to proposed project interchanges also being built on bridge structure, top-down construction methods would not be practical in these situations due to the variations in deck geometry and the

multiple bridge alignments. It is anticipated that top-down will be utilized during construction but will not be the sole method used by the design-build contractor.

**Selection of a Construction Method**

The project construction schedule will largely affect which construction method is the most advantageous. For instance, a tight construction schedule will favor the use of barge/timber mat causeways as these can be disassembled and mobilized to multiple sites relatively rapidly. A longer construction schedule would favor the use of temporary construction bridges since these structures require extra time to put in place. The proposed project necessitates cost effectiveness, flexibility with multiple bridge sites, alignment curvature, intersections on structure and minimization of EFH impacts. Based on the consideration of all these variables, the proposed construction of the bridges over the main channel of the Ashley River and associated EFH would most likely involve the utilization of timber mats, trestles, and barges for construction access, although existing approaches may also be used as construction access areas for top-down construction if determined by the design-build contractor to be feasible. Additionally, due to the intricate network of tidal creek feeder channels located within the tidal salt marsh wetlands, pile supported trestles would likely be used to minimize impacts and maintain the movement of tidal waters and aquatic organisms to the upper reaches of the marsh.

**Construction Sequencing**

The following describes the general sequence of events that are anticipated to take place during construction based on the conceptual design of the two proposed Ashley River bridges, new structures for C-D roads over portions of Filbin Creek and its associated floodplain, and new interchange access for the I-526 connections at North Rhett Avenue and Virginia Avenue. Site preparation would begin with the clearing of vegetation from the approach embankments for equipment access. The embankments would then be graded as necessary for the roadway approaches and abutments and used for the placement of cranes and other construction equipment. Steel piles would likely be installed at the end bents and drilled shafts (approximately six-foot in diameter) installed at all interior bents within the waterway and adjacent tidal salt marsh wetlands. End bent piles would likely not be installed in the waterway or wetlands but rather within the upland embankments. Bridge construction access areas for the end bents would be located within existing upland areas to the maximum extent practicable.

Within the marsh, the bridge foundations would be installed from either temporary pile supported trestles, ballasted/floating barges, timber mats, or a combination of these methods. Floatable barge or temporary trestle sections would also likely be used as “fingers” to access the interior bent locations and construct the drilled shafts, bent columns, and caps and to erect the prestressed concrete beams. These sections will be moved from bent to bent as construction progresses.

The drilled shafts for the interior bents would likely be installed using a wet-construction method utilizing steel casings to protect the integrity of the shaft, as well as, to contain spoils during excavation of the shafts. The casing would also be used to contain slurry used to stabilize the excavation. The slurry would be captured and contained during placement of the shaft and reinforcing concrete columns. During this operation, permanent fixtures, including the drilled shafts and associated columns, would be placed. Once the drilled shafts are installed, column and cap

construction would be performed from the barges or temporary trestles to complete the interior piers. After completion of the bents, cranes operating from the barges or temporary trestles would be utilized to construct the superstructure of the bridges, which entails placement of the beams, deck, and railings. All timber mats, barges, and trestles and associated piles would be removed in their entirety upon completion of the bridges.

## 6. Potential Impacts to Essential Fish Habitat

Construction and demolition are expected to begin in 2023. Construction methods cannot be finalized because the project is still in the conceptual design phase. Final design and construction will occur once SCDOT has selected a Design Build team to complete the project. However, under the Recommended Preferred Alternative there are two additional bridge structures to be constructed over the Ashley River to accommodate the widening of I-526, construction of new structures for C-D roads over portions of Filbin Creek and its associated floodplain, and construction of improved interchange access for the I-526 connections at North Rhett Avenue and Virginia Avenue. Figures 6-1 and 6-2 depict a typical section of the proposed structures over the Ashley River and the C-D roads over Filbin Creek, respectively.

Most of the EFH within the project area is proposed to be spanned with bridges. Due to the project being in the early stages of design, the exact methods used to construct the proposed bridges have not been determined. Additionally, since the construction of the project will be awarded as a design-build contract, the specific construction methods and extent and duration of impacts would ultimately be determined by the design-build contractor based on guidelines and conditions established by SCDOT, FHWA, and state and federal regulatory agencies including SCDHEC-OCRM, USACE, USFWS, and NOAA Fisheries.

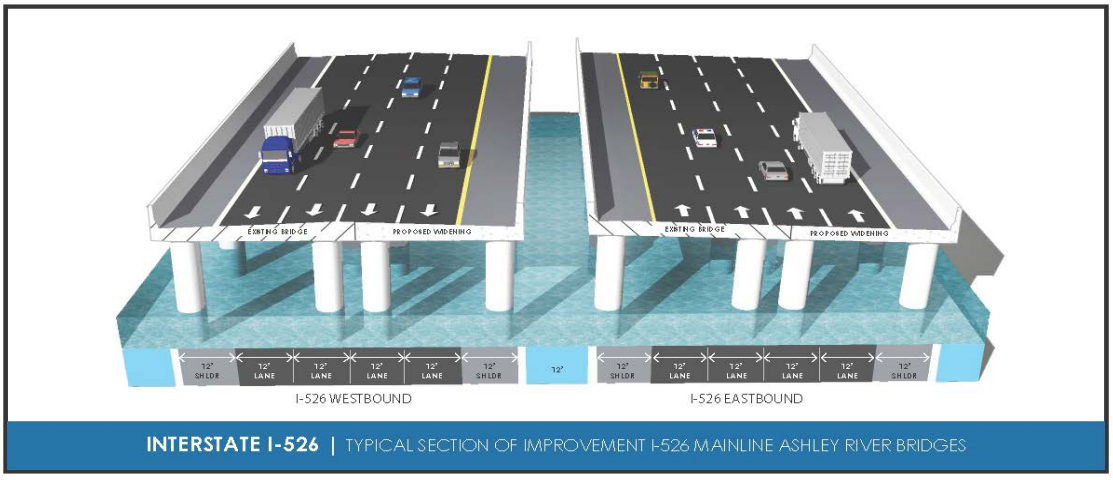


Figure 6-1. Typical Section of Improvements over Ashley River

Construction of the proposed structures would likely include a combination of drilling shafts and pile driving for the bridge support structures. Bridge construction access will be in upland areas to the maximum extent practicable. Work in deep water habitats will likely occur from barges. Temporary work trestles may be installed over the tidal marsh using pile driving. Timber mats and/or barges may be used over salt marsh areas also.

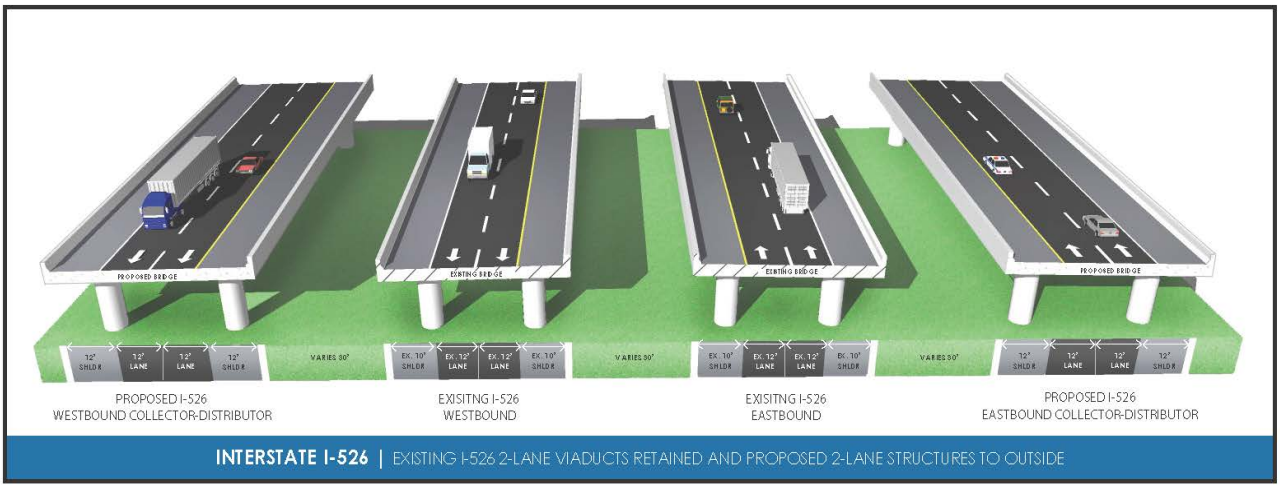


Figure 6-2. Typical Section of Improvements and New Viaduct Over Filbin Creek

SCDOT has assumed the contractor will utilize temporary trestle to the greatest extent practical to avoid impacts to EFH and tidal wetlands. Utilization of temporary fill causeways were not considered practicable alternatives due to extremely high impacts to EFH. This scenario is based on conceptual plans and represents a worst-case scenario established for threatened and endangered species and was applied to this EFH evaluation. The conceptual plan includes a conservative combination of pile driving techniques to install bridge support structures and a temporary trestle to be used during construction and drilled shafts for bridge support structures in the main channel of the Ashley River. During final design and permitting, the Design-Build contractor would be responsible for coordinating with SCDOT and NOAA Fisheries regarding design changes that would alter the effects on EFH.

This analysis is based on the conceptual design of the preferred alternative**.** The preferred alternative is depicted in relation to Ashley River evaluation area EFH in Figure 6-3 and in relation to Filbin Creek evaluation area EFH in Figure 6-4. Due to the conceptual level of design the final construction limits and final bridge span arrangements are not known at this time. The proposed impacts discussed in subsequent sub-sections are the best attempt to quantify potential impacts to EFH based on the conceptual design. Additionally, the potential impact to managed species will vary based on life stage, habitat use, distribution, and abundance. Table 6-1 summarizes possible temporary and permanent impacts to EFH in the project area.

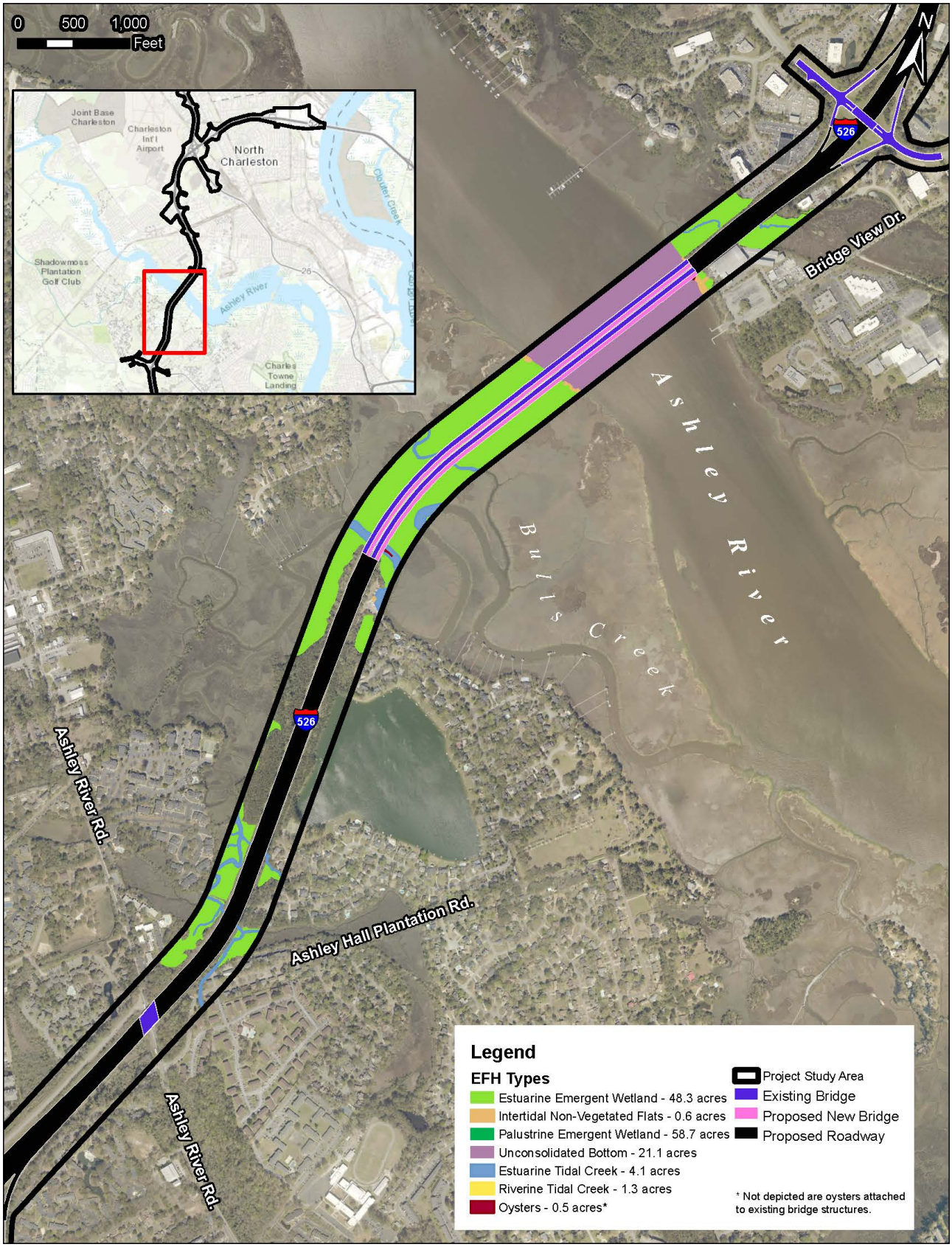


Figure 6-3. Preferred Alternative Over Ashley River EFH

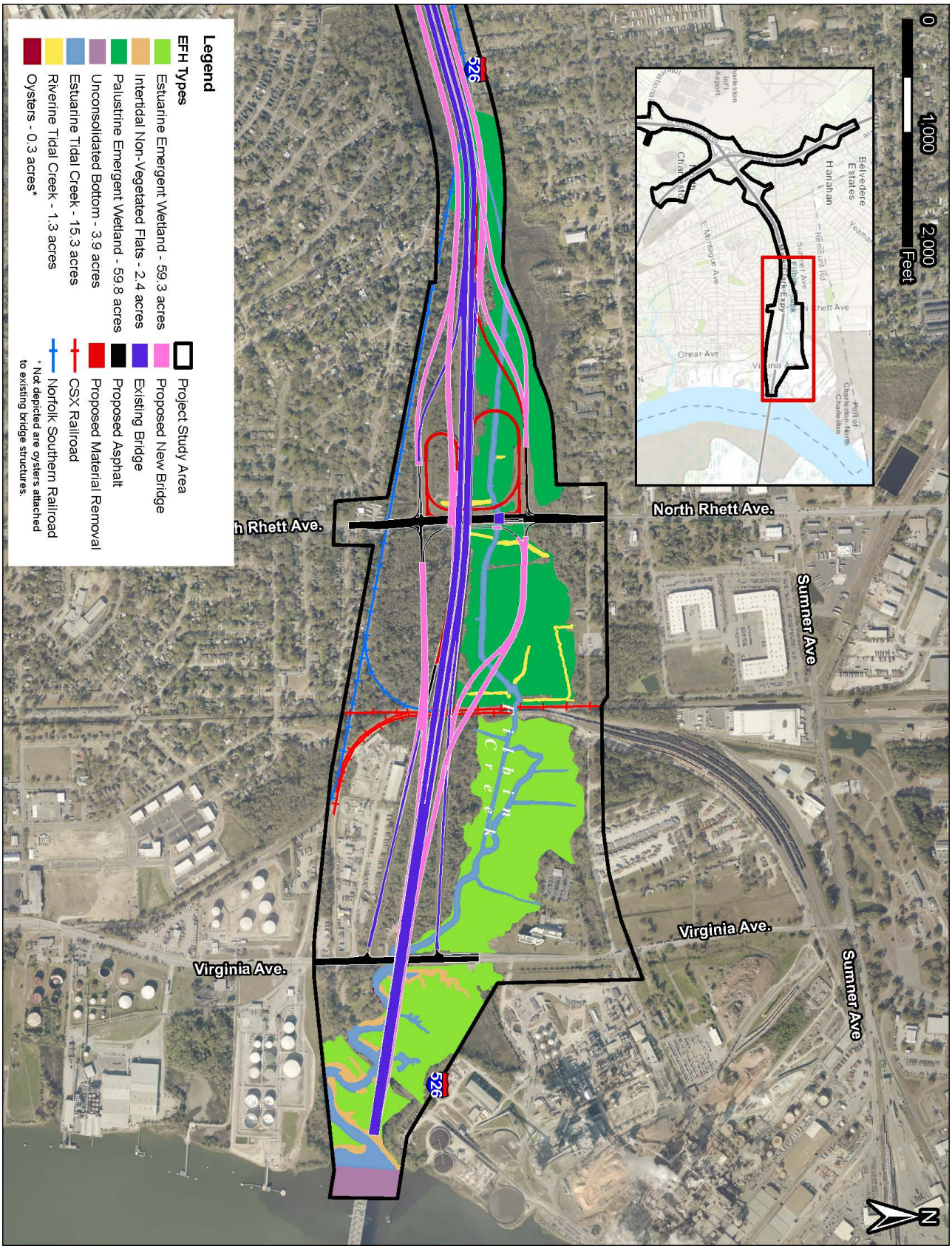


Figure 6-4. Preferred Alternative Over Filbin Creek EFH

Table 6-1. Potential Impacts to EFH

| Habitat Type | Permanent Impacts | | Temporary Impacts | |
|---|---|---|---|---|
| | Direct | Indirect | Direct | Indirect |
| Estuarine Emergent Wetlands | Fill, Columns | Shading | Temporary Trestle Pilings, Barges, Timber Mats* | Shading, Siltation |
| Estuarine Tidal Creek | None | None | Temporary Trestle Pilings, Barges, Timber Mats* | Siltation |
| Intertidal Non-Vegetated Flats | Fill, Columns | None | Temporary Trestle Pilings, Barges, Timber Mats* | Siltation |
| Palustrine Emergent Wetlands | Fill, Columns, Removal of Fill | Shading | Temporary Trestle Pilings, Barges, Timber Mats* | Shading, Siltation |
| Riverine Tidal Creek | None | None | Temporary Trestle Pilings, Barges, Timber Mats* | Siltation |
| Unconsolidated Bottom | Fill, Columns | None | Temporary Trestle Pilings, Barges, Timber Mats* | Siltation |
| Oysters | Fill, Columns | Additional Surface Area for Oysters | Temporary Trestle Pilings, Barges, Timber Mats* | Siltation |

* Impacts are estimated based on a conceptual design. The final design, location, and use of temporary trestle piles or barges is unknown at this time of this report.

## 6.1. Permanent Impacts - Direct

Direct impacts to EFH will result from the placement of permanent fill for bridge approaches or bridge structures and sub-structures, such as concrete bridge pilings or shafts. Bridge approaches and existing causeways will generally align with existing roadway alignments but may be required to expand to accommodate additional lanes and shoulders of the proposed widening. Bridge structure and sub-structure will consist of prestressed concrete piles and shafts that are drilled and poured in place. The prestressed piles would have an H-pile steel "stinger" at the end of the concrete pile to prevent damage to the pile as it is driven into hard subsurface materials. Piles would be installed with a hammer or vibratory hammer. Bridge shafts or columns would be installed using drilled shaft construction, which typically includes the following process: install steel casing using vibratory hammer, drill inside casing to remove material, install rebar cage, pour concrete inside casing. Bridge piles and drilled shafts will impact EFH as permanent fill.

All EFH types identified within the project study boundary may be impacted with the placement of permanent fill in some form during construction of the project. Final construction limits and final bridge span arrangements are not finalized at this stage in the conceptual design. Therefore, the following potential impacts represent an estimation of the worst-case scenario for the placement of new fill for bridge approaches, bridge structure, and bridge sub-structure.

**Ashley River Evaluation Area**

SCDOT proposes to widen the existing two bridges over the Ashley River to the east of the existing structures. The additional structure will be tied into the existing to accommodate the proposed 8-lane widening. The permanent direct impacts to EFH associated with the Ashley River bridges will impact high quality estuarine emergent wetlands, high quality intertidal non-vegetated flats, oysters, and high quality unconsolidated bottom EFH.

It is estimated that 580 24-inch prestressed concrete piles would be needed for the bridge widening over the Ashley River. With one work crew performing installation, approximately 6 piles would be driven per day with an average of 300 impact hammer strikes per pile. If additional crews are utilized, more piles would be driven per day. The placement of the 580 24-inch concrete piles may result in permanent impacts to ≤0.1 acres to high quality estuarine emergent wetlands, ≤0.1 acres to high quality estuarine tidal creek, ≤0.1 acres to high quality intertidal non-vegetated flats, ≤0.1 acres to high quality unconsolidated bottom, and≤0.1 acres to high quality oysters.

At the approaches to, and over the main channel of the Ashley River, drilled shafts are proposed to support the new bridge structures. Each shaft would be approximately 7 feet in diameter. Approximately 120 drilled shafts would be needed for the bridge widening. One shaft per day would be constructed by one work crew, but multiple crews could install supports concurrently. The placement of 120 7-foot concrete shafts will result in approximately ≤0.1 acres to high quality estuarine emergent wetlands, ≤0.1 acres to high quality estuarine tidal creek, ≤0.1 acres to high quality intertidal non-vegetated flats, ≤0.1 acres to high quality unconsolidated bottom, and ≤0.1 acres to high quality oysters.

Expansion of existing bridge approaches and the possible widening of existing causeway adjacent to EFH may occur as part of the widening of I-526 LCC WEST. The proposed widening will utilize the existing median and shoulders to the greatest extent practicable and attempt to limit permanent direct impacts to EFH. Based on EFH types adjacent to existing bridge approaches and causeways in the Ashley River evaluation area it can be assumed that some impacts to estuarine emergent wetlands, estuarine tidal creeks, and intertidal non-vegetated flats may occur. If the existing toe of fill is extended by approximately 20 feet an estimated impact to approximately 0.8 acres of high quality estuarine emergent wetlands, ≤0.1 acres to high quality estuarine tidal creek, 0.2 acres to high quality intertidal non-vegetated flats, and ≤0.1 acres to high quality oysters may occur.

Table 6-2 summarizes the potential permanent direct impacts to EFH within the Ashley River evaluation area. The total impacts represent an estimation of the worst-case scenario for the placement of new fill for bridge approaches, bridge structure, and bridge sub-structure associated with the preferred alternative. Quality areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-2. Estimated Direct Impacts to Ashley River EFH

| | EFH Type | | | | |
|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Unconsolidated Bottom | Oyster |
| Concrete Piles | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤ 0.1 acres (HQ) | ≤0.1 acres (HQ) |
| Drilled Shafts | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤ 0.1 acres (HQ) | ≤0.1 acres (HQ) |
| Approach/Causeway Fill | 0.8 acres (HQ) | ≤0.1 acres (HQ) | 0.2 acres (HQ) | 0 acres | ≤0.1 acres (HQ) |
| **Total** | **1 acre** | **0.3 acres** | **0.4 acres** | **0.2 acres** | **0.3 acres** |

**Filbin Creek Evaluation Area**

SCDOT proposes to construct multiple new viaduct bridges to provide access to new C-D routes and to modify interchanges at I-526 and North Rhett Avenue and at I-526 and Virginia Avenue. The permanent direct impacts to EFH associated with these new structures will permanently impact high and low quality estuarine emergent wetlands, high and low quality estuarine tidal creeks, high quality intertidal non-vegetated flats, low quality palustrine emergent wetlands, high quality riverine tidal creeks, and high quality oysters.

It is estimated that 35 24-inch prestressed concrete piles would be placed in EFH for the new bridges for C-D routes and modified interchanges adjacent to Filbin Creek EFH. With one work crew performing installation, approximately 10 piles could be driven per day with an average of 400 impact hammer strikes per pile. If additional crews are utilized, more piles would be driven per day. The placement of the 35 24-inch concrete piles would result in permanent impacts to ≤0.1 acres of high quality estuarine tidal creek, ≤0.1 acres of low quality palustrine emergent wetland, and ≤0.1 acres of low quality riverine tidal creek EFH.

The conceptual design also calls for a total of 112 concrete shafts to be placed in EFH for the construction of the new bridges for C-D routes and modified interchanges adjacent to Filbin Creek. There will be multiple sized drilled shafts ranging from 6-foot in diameter to 10-foot in diameter. A maximum of 2 shafts could be installed per day by one crew, but multiple crews could install supports concurrently. The placement of the 13 of the 112 drilled shafts are located east of Virginia Avenue and may result in the permanent impact to ≤0.1 acres of high quality estuarine emergent wetlands, ≤0.1 acres of high quality estuarine tidal creek, ≤0.1 acres of high quality intertidal non-vegetated flats, and ≤0.1 acres of high quality oysters. The placement of the 99 of the 112 drilled shafts in EFH will be located to the west of the CSX railroad causeway. The placement of these 99 shafts will result in permanent impacts to ≤0.1 acres of low quality estuarine tidal creek, ≤0.1 acres of low quality palustrine emergent wetlands, and ≤0.1 acres of low quality riverine tidal creek EFH.

Alteration of existing approaches and addition of new ramps associated with the I-526 and North Rhett Avenue interchange may require expanding existing causeway adjacent to EFH as part of the

project. The proposed alteration of the interchange will utilize upland areas to the greatest extent practicable and attempt to limit permanent direct impacts to EFH. However, based on EFH types adjacent to existing interchange it can be assumed that some impacts to low quality estuarine tidal creeks, low quality palustrine emergent wetlands, and low quality riverine tidal creeks may occur. There is a proposed ramp connection to the east of the existing North Rhett Avenue causeway that allows for access to I-526 East from Virginia Avenue that is required for the preferred alternative. If this connection is assumed to be on causeway to match the existing grades of the adjacent roadways and to meet vertical height requirements of the existing I-526 mainline bridges. Additionally, if the existing toe of fill along the North Rhett Avenue causeway is extended by approximately 20 feet, this would represent the worst-case scenario of placement of permanent roadway fill in EFH. The placement of fill for the ramp connection to I-526 East and additional fill added to the North Rhett Avenue causeway would result in permanent impacts to ≤0.1 acres of low quality estuarine tidal creeks, approximately 1.2 acres of low quality palustrine emergent wetlands, and ≤0.1 acres of low quality riverine tidal creeks EFH.

The conceptual plans call also for the existing ramps associated with the existing North Rhett Avenue interchange to be removed at the completion of construction. The footprint for this proposed removal of material from EFH is approximately 2 acres. This may allow for the re-establishment of EFH in these previously impacted areas. However, this is part of the conceptual design and may be altered by the Design-Build contractor once a final design is established.

Table 6-3 summarizes the potential permanent direct impacts to EFH within the Filbin Creek evaluation area. The total impacts represent an estimation of the worst-case scenario for the placement of new fill for interchange improvements and bridge structure and sub-structure associated with the preferred alternative. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6.3 Estimated Permanent Direct Impacts Filbin Creek EFH

| | **EFH Type** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Palustrine Emergent Wetlands | Riverine Tidal Creek | Unconsolidated Bottom | Oysters |
| Concrete Piles | 0 acres | ≤0.1 acres (HQ)<br>≤0.1 acres (LQ) | 0 acres | ≤0.1 acres (LQ) | ≤0.1 acres (LQ) | 0 acres | ≤0.1 acres (HQ) |
| Drilled Shafts | ≤0.1 acres (HQ) | ≤0.1 acres (HQ)<br>≤0.1 acres (LQ) | ≤0.1 acres (HQ) | ≤0.1 acres (LQ) | ≤0.1 acres (LQ) | 0 acres | ≤0.1 acres (HQ) |
| Approach/Causeway Fill | 0 acres | ≤0.1 acres (LQ) | 0 acres | 1.2 acres (LQ) | ≤0.1 acres (LQ) | 0 acres | 0 acres |
| Potential Existing Material Removal | 0 acres | 1 acre | 0 acres | 2 acres (LQ) | 0 acres | 0 acres | 0 acres |
| **Total** | **0.1 acres** | **1.5 acres** | **0.1 acres** | **3.4 acres** | **0.3 acres** | **0 acres** | **0.2 acres** |

## 6.2. Permanent Impacts - Indirect

Permanent indirect impacts to EFH include the possible conversion of EFH due to loss of vegetation from shading. The proposed project would indirectly impact EFH by shading salt marsh grasses and freshwater wetland vegetation underneath the proposed bridges. The shading effects could potentially result in areas of sparse vegetation or the existing vegetation dying off. The extent of adverse indirect impact is dependent on several factors, including the proposed bridge orientation and height to width ratio. Impacts to salt marsh vegetation generally occur when the bridge height to bridge width ratio is less than 0.70 (Broome et al, 2005). No permanent loss of EFH is anticipated, but rather an anticipated loss of functions associated with vegetated EFH. These impacts were estimated under the assumption that only estuarine emergent wetlands and palustrine emergent wetlands would be impacted by shading.

A second indirect impact associated from the placement of new bridge structure and sub-structure in tidally influenced waters is the creation of suitable habitat for oyster propagation. The creation of oyster habitat may provide a net improvement to EFH as oysters are considered HAPC. While the new structures may provide similar surface areas for oysters to attach, it is not guaranteed they will attach to the new structures. However, based on existing conditions observed in the field the likelihood of oysters attaching and colonizing on new bridge structures and sub-structures is high. Therefore, creation of oyster habitat is evaluated as a permanent indirect impact for the project. It is assumed that oysters are the only habitat that will potentially benefit from the placement of new or additional bridge structures in EFH.

**Ashley River Evaluation Area**

Based on field assessments of EFH in the Ashley River evaluation area vegetation occurs from the western bank of the Ashley River and continues westward to the causeway adjacent to Bulls Creek. No vegetation was noted on the eastern banks of the Ashley River within the project area. Areas below the existing structures were observed as being shaded by the existing bridges and it is assumed that the new structure will also shade out vegetation and therefore impact EFH. Shading impacts are only assumed to occur to vegetated EFH which is limited to only estuarine emergent wetlands in the Ashley River evaluation area.

The existing bridge structures are approximately 1,700 feet long and 42 feet 10 inches wide over vegetated areas from the western bank of the Ashley River to the existing I-526 causeway. An additional structure that is 32 feet 5.5 inches wide will be constructed and attached to each existing bridge. The final bridge widths at the end of construction will be 75 feet 3.5 inches and will match existing bridge lengths. Based on the 0.7 bridge height to bridge width ratio (Broome et al, 2005), indirect impacts to vegetated salt marsh may occur in areas where the bridge height is approximately 53 feet or lower. The conceptual plans depict the bridge height above existing ground elevations staying below this 53-foot threshold for the entire length of the bridges. Therefore, it is assumed the entire footprint of the bridges will result in permanent impacts from shading. This equates to approximately 5.9 acres of shade impacts. However, the existing bridges already shade approximately 3.3 acres of EFH. Therefore, a total of 2.6 acres of permanent shade impacts to estuarine emergent wetlands are anticipated from the project.

The placement of new bridge structure within the main channel of the Ashley River are anticipated to have a positive impact on oyster beds. The existing structures within the Ashley River currently serve as hard structure for oysters to attach and colonize. An estimated 14,000 square feet (0.3 acres) of surface area of existing bridge structure was observed with oysters present in the Ashley River Since the existing structures will be maintained, no loss of oyster habitat is anticipated. A net increase in oyster habitat is anticipated from the placement of bridge structures within the Ashley River. While the new structures may provide similar surface areas for oysters to attach, it is not guaranteed they will attach to the new structures. Assuming an average height of three feet of oyster growth on each new bridge structure it is anticipated approximately 22,000 square feet (0.5 acres) of new surface area will be available for oysters to colonize once construction is completed.

Table 6-4 summarizes the potential permanent indirect impacts to EFH within the Ashley River evaluation area. The total impacts represent an estimation of the worst-case scenario for the permanent shading and new oyster habitat associated with the preferred alternative. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-4. Estimated Permanent Indirect Impacts Ashley River EFH

| | **EFH Type** | | | | |
|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Unconsolidated Bottom | Oyster |
| Shading Impact | 2.6 acres (HQ) | 0 acres | 0 acres | 0 acres | 0 acres |
| **Total** | **2.6 acres** | **0 acres** | **0 acres** | **0 acres** | **0 acres** |
| | | | | | |
| **Potential Benefit** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Unconsolidated Bottom | Oyster |
| Potential New Oyster Habitat | 0 acres | 0 acres | 0 acres | 0 acres | 0.5 acres (HQ) |
| **Total** | **0 acres** | **0 acres** | **0 acres** | **0 acres** | **0.5 acres** |

**Filbin Creek Evaluation Area**

The proposed bridge widths vary throughout Filbin Creek EFH due to the construction of new interchange ramps and connections to the proposed C-D routes. While bridge heights are not currently established for all structures during this conceptual design phase it is assumed that bridges located to the east of Virginia Avenue will match existing bridge heights. No existing shading effects were observed in the field for this section of the Filbin Creek evaluation area. Therefore, no shading impacts to high quality estuarine emergent wetlands in the Filbin Creek evaluation area are anticipated.

From the west of the CSX railroad causeway the proposed interchange ramp bridges are approximately 36-50 feet wide and split in multiple locations to create connections to the proposed C-D routes. Shading impacts were quantified based on an average bridge of width of 42 feet. Based on the 0.7 bridge height to bridge width ratio (Broome et al, 2005), indirect impacts to vegetated EFH may occur in areas where the bridge height is 30 feet or lower. Since bridge heights are not

currently established for all structures during this conceptual design phase it was assumed that all bridges over vegetated EFH in the Filbin Creek evaluation area are 30 feet or less to evaluate a worst-case scenario for shading impacts to EFH. The proposed bridges west of the CSX railroad causeway would result in permanent shading impacts to approximately 10.3 acres of low quality palustrine emergent wetlands.

A second indirect impact associated from the placement of new bridge structure and sub-structure in tidally influenced waters is the creation of suitable habitat for oyster propagation. The placement of new bridge structure in EFH to the east of Virginia Ave are may have a positive impact on oyster beds. The existing structures within EFH to the east of Virginia Avenue currently serve as hard structure for oysters to attach and colonize. Since the existing structures will be maintained, no loss of oyster habitat is anticipated. A net increase in oyster habitat is anticipated from the placement of bridge structures east of Virginia Avenue. While the new structures may not result in exactly the same surface area for oysters to attach, assuming an average height of three feet of oyster growth on each new bridge structure it is anticipated <0.1 acres of new surface area will be available for oysters to colonize once construction is completed. No oyster presence was observed in Filbin Creek west of Virginia Avenue.

Table 6-5 summarizes the potential permanent indirect impacts to EFH within the Filbin Creek evaluation area. The total impacts represent an estimation of the worst-case scenario for the permanent shading and new oyster habitat associated with the preferred alternative. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-5. Estimated Permanent Indirect Impacts to Filbin Creek EFH.

| | **EFH Type** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Palustrine Emergent Wetlands | Riverine Tidal Creek | Unconsolidated Bottom | Oysters |
| Shading Impact | 0 acres | 0 acres | 0 acres | 10.3 acres (LQ) | 0 acres | 0 acres | 0 acres |
| **Total** | **0 acres** | **0 acres** | **0 acres** | **10.3 acres** | **0 acres** | **0 acres** | **0 acres** |
| | | | | | | | |
| **Potential Benefit** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Palustrine Emergent Wetlands | Riverine Tidal Creek | Unconsolidated Bottom | Oysters |
| Potential New Oyster Habitat | 0 acres | 0 acres | 0 acres | 0 acres | 0 acres | 0 acres | <0.1 acres (HQ) |
| **Total** | **0 acres** | **0 acres** | **0 acres** | **0 acres** | **0 acres** | **0 acres** | **<0.1 acres** |

## 6.3. Temporary Impacts - Direct

Temporary direct impacts to EFH will result from the placement of temporary fill for construction access for the project. Bridge construction access would be in upland areas to the maximum extent practicable. However, for access over marsh areas between the existing bridges either trestle or a

combination of barge, barge mats, and timber mats would be needed due to the limited space between the structures. Deeper water and the main channel of the Ashley River and Filbin Creek will likely be accessed via barges for construction. Barges may be delivered and moved via water and transport vessels or via land on flatbed trucks with cranes and other heavy equipment. The piles required to construct the temporary trestle would act as temporary fill to EFH.

**Ashley River Evaluation Area**

Temporary trestle would be approximately 30 feet wide and would be supported by steel pipe piles. The steel piles would be approximately 24-inches in diameter and would be installed using a vibratory hammer. It is estimated that 240 24-inch steel pipe piles would be needed for temporary work trestle. With one work crew performing installation, approximately 4 piles would be driven per day with an average of 350 impact hammer strikes per pile. If additional crews are utilized, more piles would be driven per day.

The placement of temporary piles will act as fill and will result in a temporary loss of EFH. The use of temporary trestles in the EFH associated with the Ashley River will result in temporary fill impacts to approximately ≤0.1 acres of high quality estuarine emergent wetlands, ≤0.1 acres of high quality estuarine tidal creek, ≤0.1 acres of high quality intertidal non-vegetated flats, ≤0.1 acres of high quality unconsolidated bottom, and ≤0.1 acres of high quality oysters EFH.

Table 6-6 summarizes the potential temporary direct impacts to EFH within the Ashley River evaluation area. The total impacts represent an estimation of the worst-case scenario for the temporary fill associated with placement of temporary trestle piles to construct the preferred alternative. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-6. Estimated Temporary Direct Impacts to Ashley River EFH.

| | **EFH Type** | | | | |
|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Unconsolidated Bottom | Oyster |
| Temporary Trestle Piles | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) |
| **Total** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** |

**Filbin Creek Evaluation Area**

Since the design for the temporary work trestle will not be completed until the project is awarded to a Design-Build contractor, these impacts represent an estimated worst-case scenario. Temporary trestle would be approximately 36 feet wide and would be supported by steel pipe piles. The steel piles would be approximately 24-inches in diameter and would be installed using a vibratory hammer. It is estimated that 650 24-inch steel pipe piles would be needed for temporary work trestle. With one work crew performing installation, approximately 10 piles would be driven per day with an average of 400 impact hammer strikes per pile. If additional crews are utilized, more piles would be driven per day.

The placement of temporary piles will act as fill and will result in a temporary loss of EFH. It is anticipated that the use of temporary trestles of temporary trestles will result in temporary fill impacts to ≤0.1 acres of high quality estuarine emergent wetland, to ≤0.1 acres of low quality estuarine emergent wetland, ≤0.1 acres of high quality estuarine tidal creek, ≤0.1 acres of low quality estuarine tidal creek, ≤0.1 acres of high quality intertidal non-vegetated flats, ≤0.1 acres low quality palustrine emergent wetlands, ≤0.1 acres of low quality riverine tidal creek, ≤0.1 acres of high quality unconsolidated bottom, and ≤0.1 acres of high quality oysters EFH.

Table 6-7 summarizes the potential temporary direct impacts to EFH within the Filbin Creek evaluation area. The total impacts represent an estimation of the worst-case scenario for the temporary fill associated with placement of temporary trestle piles to construct the preferred alternative. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-7. Estimated Temporary Direct Impacts to Filbin Creek EFH.

| | **EFH Type** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Palustrine Emergent Wetlands | Riverine Tidal Creek | Unconsolidated Bottom | Oysters |
| Temporary Trestle Piles | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (LQ) | ≤0.1 acres (LQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) |
| | ≤0.1 acres (LQ) | ≤0.1 acres (LQ) | | | | | |
| **Total** | **0.2 acres** | **0.2 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** |

## 6.4. Temporary Impacts – Indirect

During construction activities and demolition of the existing bridge, temporary indirect impacts such siltation may occur along the margins of the estuarine emergent wetland, estuarine tidal creek, intertidal non-vegetated flats, palustrine emergent wetland, riverine tidal creek, unconsolidated bottom, and oyster reef habitats. Temporary siltation may cause indirect impacts by affecting thermal loading in the environment as well as temporarily increasing turbidity. Alterations in light attenuation in the water column can cause decreased visibility for organisms, affecting feeding, movement, and predator avoidance. Redistribution of sediments can alter nutrient distribution, dissolved oxygen levels, and primary productivity locally and throughout the estuarine waters. When suspended sediments begin to settle on the floor of the estuary, this can cause indirect impacts to benthic communities by smothering and burying organisms (Berry et al., 2003). Since turbidity is a natural condition along South Carolina's coast, impacts from the proposed project are expected to be relatively minor. Impacts should be minimal and would be limited to the immediate area of the construction.

Timber mats and/or barges may cause temporary impacts to vegetation during construction. Vegetation will likely die while covered by mats or barges. These areas are expected to regenerate vegetation once construction is completed, but there may be a lag due to compaction of the marsh from the weight of construction equipment. Additionally, possible conversion of EFH due to loss of vegetation from shading of vegetation from construction access. The proposed project would

indirectly impact EFH by shading salt marsh grasses and freshwater wetland vegetation underneath the proposed temporary trestles. Due to the conceptual design it is difficult to quantify an area of EFH that may be impacted by temporary placement of timber mats and barges. During final design and permitting, the Design-Build contractor would be responsible for coordinating with NOAA Fisheries regarding design changes that would alter the effects on EFH.

**Ashley River Evaluation Area**

Temporary trestle would be approximately 30 feet wide, approximately 2000 feet long and would be supported by steel pipe piles. Based on the 0.7 bridge height to bridge width ratio (Broome et al, 2005), indirect impacts to vegetated EFH may occur in areas where the bridge height is 21 feet or lower Trestle heights are anticipated to be below 20 feet for the length of the structure which would result in shading impacts to the high quality estuarine emergent wetland vegetation. Two trestles would be required, one for construction of each bridge over the Ashley River. Additionally, fingers of additional trestle or combination of barges or mats will be utilized to construct each bent of the new bridge. The proposed temporary trestle would result in the temporary shading impact to approximately 2.5 acres of high quality estuarine emergent wetlands.

Table 6-8 summarizes the potential temporary indirect impacts to EFH within the Ashley River evaluation area. The total impacts represent an estimation of the worst-case scenario for the temporary shading associated with placement of temporary trestle, barges, or timber mats to construct the preferred alternative. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-8. Estimated Temporary Direct Impacts to Ashley River EFH.

| | **EFH Type** | | | | |
|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Unconsolidated Bottom | Oyster |
| Temporary Trestle, Barge, or Timber Mat Shading | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) |
| **Total** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** |

**Filbin Creek Evaluation Area**

Temporary trestle would be approximately 36 feet wide and would be supported by steel pipe piles. Trestle heights are anticipated to be below 20 feet for the length of the structure which would result in shading impacts to the palustrine emergent vegetation and estuarine emergent wetlands associated with Filbin Creek. Multiple trestles will be required during construction with the estimated need for to be 12,000 feet of temporary structure. The proposed temporary trestle would shade approximately 2.9 acres of high quality estuarine emergent wetlands and approximately 7 acres of low quality palustrine emergent wetlands EFH.

Table 6-9 summarizes the potential temporary indirect impacts to EFH within the Filbin Creek evaluation area. The total impacts represent an estimation of the worst-case scenario for the

temporary shading associated with placement of temporary trestle, barges, or timber mats to construct the preferred alternative. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-9. Estimated Temporary Indirect Impacts to Filbin Creek EFH.

| | EFH Type | | | | | | |
|---|---|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Palustrine Emergent Wetlands | Riverine Tidal Creek | Unconsolidated Bottom | Oysters |
| Temporary Trestle, Barge, or Timber Mat Shading | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) | ≤0.1 acres (LQ) | ≤0.1 acres (LQ) | ≤0.1 acres (HQ) | ≤0.1 acres (HQ) |
| | ≤0.1 acres (LQ) | ≤0.1 acres (LQ) | | | | | |
| **Total** | **0.2 acres** | **0.2 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** | **0.1 acres** |

## 6.5. EFH Impacts Summary

Permanent direct impacts to EFH will result from the placement of permanent fill for bridge approaches or bridge structures and sub-structures, such as concrete bridge pilings or shafts. The permanent direct impacts to EFH associated with the Ashley River bridges will impact high quality estuarine emergent wetlands, high quality intertidal non-vegetated flats, oysters, and high quality unconsolidated bottom EFH. The permanent direct impacts to EFH associated with Filbin Creek will permanently impact high quality and low quality estuarine emergent wetlands, high quality and low quality estuarine tidal creeks, high quality intertidal non-vegetated flats, low quality palustrine emergent wetlands, low quality riverine tidal creeks, and high quality oysters.

Permanent indirect impacts to EFH include the possible conversion of EFH due to loss of vegetation from shading. Permanent shading impacts are expected to occur to high quality estuarine emergent wetlands in the Ashley River evaluation area and low quality palustrine emergent wetlands in the Filbin Creek evaluation area. A second indirect impact associated from the placement of new bridge structure and sub-structure in tidally influenced waters is the creation of suitable habitat for oyster propagation. This may result in a net benefit to oysters in both evaluation areas within the project limits.

Temporary direct impacts to EFH will result from the placement of temporary fill for construction access for the project. The piles required to construct the temporary trestle would act as temporary fill to EFH. The use of temporary trestles in the EFH associated with the Ashley River will result in temporary direct impacts to high quality estuarine emergent wetlands, high quality estuarine tidal creek, high quality intertidal non-vegetated flats, high quality unconsolidated bottom, and high quality oysters. The use of temporary trestles in Filbin Creek EFH will temporarily impact high quality and low quality estuarine emergent wetlands, high quality and low quality estuarine tidal creeks, high quality intertidal non-vegetated flats, low quality palustrine emergent wetlands, low quality riverine tidal creeks, and high quality oysters.

During construction activities and demolition of the existing bridge, temporary indirect impacts such

siltation may occur in EFH. Additionally, the proposed project would result in temporary indirect impacts to EFH from shading or loss of vegetation associated with construction access. The proposed temporary trestle would shade approximately high quality estuarine emergent wetlands and low quality palustrine emergent wetlands EFH.

Table 6-10 summarizes all impacts to EFH within the project limits. The total impacts represent an estimation of the worst-case scenario for the respective impact types discussed in previous sections. Quality of areas impacted are designated as HQ for high quality and LQ for low quality.

Table 6-10. Summary of Estimated Impacts to EFH for I-526 WEST LCC.

| | **EFH Type** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Impact Type** | Estuarine Emergent Wetlands | Estuarine Tidal Creek | Intertidal Non-Vegetated Flats | Palustrine Emergent Wetlands | Riverine Tidal Creek | Unconsolidated Bottom | Oysters |
| **Permanent Direct** (Concrete Piles, Drilled Shafts, Approach/Causeway Fill, Potential Existing Material Removal) | 1.1 acres (HQ) | 0.5 acres (HQ)<br>1.3 acres (LQ) | 0.5 acres (HQ) | 3.4 acres (LQ) | 0.3 acres (LQ) | 0.2 acres (HQ) | 0.5 acres (HQ) |
| **Permanent Indirect** (Shading, Additional Surface Area for Oysters) | 2.6 acres (HQ) | 0 acres | 0 acres | 10.3 acres (LQ) | 0 acres | 0 acres | 0.6 acres (HQ) |
| **Temporary Direct** (Temporary Trestle Pilings, Barges, Timber Mats) | 0.2 acres (HQ)<br>0.1 acres (LQ) | 0.2 acres (HQ)<br>0.1 acres (LQ) | 0.2 acres (HQ) | 0.1 acres (LQ) | 0.1 acres (LQ) | 0.2 acres (HQ) | 0.2 acres (HQ) |
| **Temporary Indirect** (Shading, Siltation) | 0.2 acres (HQ)<br>0.1 acres (LQ) | 0.2 acres (HQ)<br>0.1 acres (LQ) | 0.1 acres (HQ) | 0.1 acres (LQ) | 0.1 acres (LQ) | 0.2 acres (HQ) | 0.2 acres (HQ) |
| **Total** | **4.3 acres** | **2.4 acres** | **0.8 acres** | **13.9 acres** | **0.5 acres** | **0.6 acres** | **1.5 acres** |

# 7. Avoidance and Minimization

Impacts to EFH would be minimized to the maximum extent practicable. As the project design progresses, the actual construction limits will be refined, and further avoidance and minimization measures taken to reduce the amount of impact to EFH. The concepts for bridges over both estuarine and riverine tidal creeks have been designed to span the entire creek channels and avoid any roadway fill impacts to the channels where practicable. In addition, maximizing the length of spans and the distance between bents and columns where practicable will minimize the amount of fill being placed in EFH.

Through coordination efforts with NOAA Fisheries, the SCDOT and NOAA Fisheries have developed the following EFH-specific list of general best management practices (BMPs) to minimize construction-related

impacts to EFH and water quality within the project watershed. It is anticipated that many of these BMPs will be incorporated as conditions/commitments to the Section 404/401 permit. 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. The following avoidance and minimization methods and BMPs will be implemented to the greatest extent practicable during the construction of the project:

- During construction or post-construction, the impairment of the hydrologic flow of any creek system would be minimized to the maximum extent practicable.

- Construction BMPs must include measures to avoid or minimize temporary impacts including turbidity and sedimentation. For example, temporary sediment and runoff control fences (e.g., a silt fence consisting of geotextile fabric installed between supporting posts) would be installed along approaches adjacent to EFH; floating turbidity barriers would also be used when activities may result in increased turbidity downstream of the work site.
- To the maximum extent practicable, construction activities impacting EFH would be conducted during low biological use periods (during the winter from November 1 to February 28).

- To the maximum extent practicable, plan the stages of development so that only the areas that are actively being developed are exposed. All other areas should have a good cover of either temporary or permanent vegetation.

- No work would be conducted in a manner that results in permanent bank erosion or decreased stabilization to the maximum extent practicable. Sediment entering the waterway due to equipment presence and operation must be avoided to the maximum extent practicable. Double-row silt fencing will be installed along the toe of fill slopes and the limits of clearing to capture sediment runoff and avoid sediment form entering wetlands or channels.

- Grading should be completed as soon as possible after it has begun.

- Runoff velocities would be kept low and retained on-site using sediment and erosion control BMPs to the maximum extent practicable.

- No excavated material would be disposed of in adjacent waterways or sidecast into adjacent marsh.

- To the maximum extent practicable, project areas that are excavated adjacent to the marsh would be graded down to adjacent marsh levels.

- Where necessary, banks should be stabilized with bioengineering material (e.g., biologs, fiber matting, etc.).

- Raw or live concrete, which is toxic to aquatic life, may not come in contact with wetlands or open water until the concrete has cured.

- At the end of the workday, remove any debris that may enter EFH by wind, tides, etc.

- The area of temporary impacts associated with work mats will be minimized/avoided to the maximum extent practicable.

- Riprap would be minimized to the least amount practicable. Riprap placed within tidal wetlands should consist of clean rock or masonry clean of pollutants and debris.
- Material (e.g., riprap, pilings) would not be placed in large waterways/tidal rivers such that it impairs the hydrologic flow at mean low tide unless the riprap is needed to support the integrity of the bridge abutment or roadway that is susceptible to scour. Regarding smaller tidal creek channels, bridge pilings will be located outside of the outer (normal high tide) limits to the maximum extent feasible to avoid potential hydrological and scour impacts.

- Any impact pile driving would be conducted out-of-water wholly or during low tide where practicable.

- Appropriate soil erosion and sediment controls would be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Work within waters of the United States would be performed during periods of low-flow or no-flow when practicable.

- All steps necessary would be taken to prevent oil, tar, trash, debris and other pollutants from entering adjacent wetlands and/or waterways.

- Once initiated, construction activities would be carried to completion in an expeditious manner in order to minimize the period of disturbance and upon completion, all disturbed areas would be permanently stabilized with vegetative cover and/or riprap, as appropriate. Native vegetation and/or native seed mixtures would be utilized.

- Construction access areas would be clearly identified in the permit application. Construction access would consist of minimal clearing for the installation of elevated working platform(s), timber mat(s), or barge(s). Impacts would be temporary and minor in nature.

- No mechanized equipment would operate within jurisdictional areas unless clearly identified and authorized in the approved plans.

# 8. Conclusions

The proposed project is a design-build project that will require further evaluation and analysis as the project design develops. As such, SCDOT will be responsible for coordinating with NOAA Fisheries regarding design changes that would alter the effects on EFH.

The project will result in unavoidable impacts to EFH. The placement of fill for the widening of I-526 LCC WEST, bridge approaches, and new bridge structure and sub-structure will result in permanent direct impacts to EFH. Shading associated with permanent bridge structures will result in the permanent indirect impacts to EFH. Temporary impacts associated with construction access will result in temporary direct and indirect impacts. The permanent loss of EFH and the temporal lag for restoration to existing conditions from temporary impacts may take months or years. Therefore, it is the determination of SCDOT that the proposed project would adversely impact the EFH in the project area.

Since there will be impacts to the EFH and possibly aquatic species managed by the SAFMC, an EFH Mitigation Plan will be established. 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) methods such as causeway removal, living shorelines, oyster bed restoration, and/or other methods of mitigating for EFH impacts. SCDOT/FHWA will develop the mitigation plan in coordination with the appropriate resource agencies.

## 9. References

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# Appendix A
# Agency Coordination and Consultation

U.S. Department of Transportation
Federal Highway Administration

South Carolina

1835 Assembly Street, Suite 1270
Columbia, South Carolina 29201
803-765-5411
803-253-3989

March 29, 2019

In Reply Refer To:
HDA-SC

Dr. Roy E. Crabtree
Regional Administrator SE Regional Office
NOAA Fisheries
Attn: Kelly Shotts
263 13th Avenue South
St. Petersburg, FL 33701

Subject: Invitation to Become a Participating Agency for the Preparation of an Environmental Impact Statement (EIS) for the Proposed I-526 West Lowcountry Corridor Improvements Project in Charleston County, South Carolina; Federal Project Number P027507

Dear Dr. Crabtree:

The Federal Highway Administration (FHWA), in cooperation with the South Carolina Department of Transportation (SCDOT), is preparing an Environmental Impact Statement (EIS) for the I-526 West Lowcountry Corridor Improvements Project. The proposed project would make improvements to the I-526 corridor from Virginia Avenue to Paul Cantrell Boulevard in Charleston County, South Carolina. The purpose of the proposed project is to increase capacity and improve operations at the I-26/526 interchange and along the I-526 mainline from Virginia Avenue to Paul Cantrell Boulevard (see study area map on enclosed project information sheet). The Ashley River bridge crossing would be widened to accommodate the improvements on the I-526 mainline. Since this is a major infrastructure project that is starting after August 15, 2017, it will adhere to the One Federal Decision guidance and tracked on the federal permitting dashboard.

Pursuant to Section 6002 of SAFETEA-LU, as amended by Section 1304 of the Fixing America's Surface Transportation (FAST) Act, cooperating and participating agencies are responsible for identifying, as early as possible, any issues of concern regarding the project's potential environmental, social, or economic impacts. Section 6002 is intended to assure that agencies are fully engaged in the scoping of the project and the decisions regarding alternatives to be evaluated in detail in the NEPA analysis. In accordance with the SAFETEA-LU Section 6002, FHWA is in the process of identifying local, state, and federal agencies that may have an interest in the project. This same guidance is in the Memorandum of Understanding for Implementing One Federal Decision (issued April 9, 2018), as well as the One Federal Decision Working Agreement.

The FHWA, in coordination with your office has determined that your agency has special expertise regarding threatened and endangered species that may be in the project study area for the project. Since your agency has special expertise in these matters, we are inviting you to become a

Participating Agency in the development of the EIS. Areas of concern to be emphasized in the EIS will include potential environmental impacts upon existing ecological resources, wetlands, water resources, historic and archaeological resources, parks and recreation facilities, noise and air, social and community character, hazardous/contaminated materials, cumulative and indirect impacts, and potential impacts due to project construction.

Your agency's involvement in the proposed project would entail those areas under its jurisdiction or area of expertise. No direct writing or analysis by your agency will be necessary for this document unless you request to do so. We suggest that your agency's role in the development of the above project should include the following as they relate to your area of expertise:

1. Participate in coordination meetings as appropriate.
2. Consultation on any relevant technical studies that may be required for the project.
3. Timely review and comment on the environment document to reflect the views and concerns of your agency on the adequacy of the document, alternatives considered, and the anticipated impacts and mitigation.

**To become a Participating Agency with the FHWA, please respond to this office in writing with an acceptance or denial of the invitation within 30 days.** If you accept, please identify the appropriate contact person(s) within your organization for coordination. If your agency declines, please provide a written response that states your reason for declining the invitation, such as:

- Has no jurisdiction or authority with respect to the project;
- Has no expertise or information relevant to the project; and
- Does not intend to submit comments on the project.

If you have any questions or would like to discuss in more detail the project or each agency's respective roles and responsibilities during the preparation of the EIS, please contact Ms. Michelle Herrell at 803-765-5460 or by email at michelle.herrell@dot.gov; or Mr. J. Shane Belcher at 803-253-3187 or by e-mail at jeffrey.belcher@dot.gov.

Sincerely,

Emily O. Lawton
Division Administrator

Enclosures

ec: Ms. Kelly Shotts, NOAA Fisheries
Mr. Chad Long, SCDOT Environmental Division Manager
Mr. David Kelly, SCDOT RPG 1 NEPA Coordinator
Mr. Will McGoldrick, SCDOT Design-Build NEPA/Permitting Coordinator
Ms. Joy Riley, SCDOT Program Manager

U.S. Department of Transportation
Federal Highway Administration

South Carolina

1835 Assembly Street, Suite 1270
Columbia, South Carolina 29201
803-765-5411
803-253-3989

March 29, 2019

In Reply Refer To:
HDA-SC

Mr. Pace Wilber
South Atlantic Branch Supervisor
NOAA Fisheries
331 Fort Johnson Road
Charleston, SC 29412

Subject: Invitation to Become a Participating Agency for the Preparation of an Environmental Impact Statement (EIS) for the Proposed I-526 West Lowcountry Corridor Improvements Project in Charleston County, South Carolina; Federal Project Number P027507

Dear Mr. Wilber:

The Federal Highway Administration (FHWA), in cooperation with the South Carolina Department of Transportation (SCDOT), is preparing an Environmental Impact Statement (EIS) for the I-526 West Lowcountry Corridor Improvements Project. The proposed project would make improvements to the I-526 corridor from Virginia Avenue to Paul Cantrell Boulevard in Charleston County, South Carolina. The purpose of the proposed project is to increase capacity and improve operations at the I-26/526 interchange and along the I-526 mainline from Virginia Avenue to Paul Cantrell Boulevard (see study area map on enclosed project information sheet). The Ashley River bridge crossing would be widened to accommodate the improvements on the I-526 mainline. Since this is a major infrastructure project that is starting after August 15, 2017, it will adhere to the One Federal Decision guidance and tracked on the federal permitting dashboard.

Pursuant to Section 6002 of SAFETEA-LU, as amended by Section 1304 of the Fixing America's Surface Transportation (FAST) Act, cooperating and participating agencies are responsible for identifying, as early as possible, any issues of concern regarding the project's potential environmental, social, or economic impacts. Section 6002 is intended to assure that agencies are fully engaged in the scoping of the project and the decisions regarding alternatives to be evaluated in detail in the NEPA analysis. In accordance with the SAFETEA-LU Section 6002, FHWA is in the process of identifying local, state, and federal agencies that may have an interest in the project. This same guidance is in the Memorandum of Understanding for Implementing One Federal Decision (issued April 9, 2018), as well as the One Federal Decision Working Agreement.

The FHWA, in coordination with your office has determined that your agency has special expertise regarding essential fish habitat that may be in the project study area for the project. Since your agency has special expertise in these matters, we are inviting you to become a Participating Agency in the development of the EIS. Areas of concern to be emphasized in the EIS will include potential

environmental impacts upon existing ecological resources, wetlands, water resources, historic and archaeological resources, parks and recreation facilities, noise and air, social and community character, hazardous/contaminated materials, cumulative and indirect impacts, and potential impacts due to project construction.

Your agency's involvement in the proposed project would entail those areas under its jurisdiction or area of expertise. No direct writing or analysis by your agency will be necessary for this document unless you request to do so. We suggest that your agency's role in the development of the above project should include the following as they relate to your area of expertise:

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- Has no expertise or information relevant to the project; and
- Does not intend to submit comments on the project.

If you have any questions or would like to discuss in more detail the project or each agency's respective roles and responsibilities during the preparation of the EIS, please contact Ms. Michelle Herrell at 803-765-5460 or by email at michelle.herrell@dot.gov; or Mr. J. Shane Belcher at 803-253-3187 or by e-mail at jeffrey.belcher@dot.gov.

Sincerely,

Emily O. Lawton
Division Administrator

Enclosures

ec: Ms. Cynthia Cooksey, NOAA Fisheries
Mr. Chad Long, SCDOT Environmental Division Manager
Mr. David Kelly, SCDOT RPG 1 NEPA Coordinator
Mr. Will McGoldrick, SCDOT Design-Build NEPA/Permitting Coordinator
Ms. Joy Riley, SCDOT Program Manager

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

04/26/2019

F:SER/NS

Emily O. Lawton
Division Administrator
US Dept of Transportation
Federal Highway Administration
1835 Assembly Street, Suite 1270
Columbia, South Carolina 29201

Attention: Michelle Herrell, and Shane Belcher

Dear Ms. Lawton:

NOAA's National Marine Fisheries Service (NMFS) has received your letter dated April 02, 2019, requesting our participation as a participating agency on the 1-526 West Lowcountry Corridor Improvements project, pursuant to section 6002 of the Fixing America's Surface Transportation Act. Given our special expertise and jurisdiction by law under the Endangered Species Act, Marine Mammal Protection Act, and Magnuson Stevens Act, NMFS agrees to serve as a participating agency for this project. Due to staffing and travel constraints, our participation may be limited to our review and comment on draft National Environmental Policy Act documents, teleconferences, and occasional travel to meetings.

We appreciate your invitation to serve as a participating agency for the 1-526 West Lowcountry Corridor Improvements project. Please direct project correspondence related to habitat impacts and/or Essential Fish Habitat consultation to Cynthia Cooksey at 219 Fort Johnson Rd., Charleston, SC 29412; by telephone at (843) 460-9922, or by e-mail at cynthia.cooksey@noaa.gov. Please direct project correspondence related to sturgeon and/or Endangered Species Act coordination to Andy Herndon, at the letterhead address; by telephone (727) 824-5312, or by email at Andrew.herndon@noaa.gov. Please direct project correspondence related to dolphins and/or the Marine Mammal Protection Act to Jaclyn Daly, 1315 East-West Hwy, Silver Spring, MD 20910; by telephone at (301) 427-8438, or by email at Jaclyn.daly@noaa.gov.

Sincerely,

Roy E. Crabtree, Ph.D.
Regional Administrator

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

cc:
GCERC, Renshaw, Lipsy
F/SER, Strelcheck, Blough, Silverman,
F/SER3, Bernhart,
F/SER4, Fay, Dale
F/SER45, Wilber, Cooksey

## Russell Chandler

**From:** Russell Chandler
**Sent:** Monday, February 3, 2020 4:37 PM
**To:** Riddle, Nicole L.
**Cc:** Wade Biltoft; Tess Moody
**Subject:** RE: FW: I-526 West - EFH site visit
**Attachments:** 200203_526W_PhotoLog.pdf; 200203_I-526 LCC West_EFH Maps_Ashley River.pdf; 200203_I-526 LCC West_EFH Maps_Filbin Creek.pdf; 200203_526W_EFH_ExistingConditions_DRAFT_v3.docx

Nicole,

We would like to suggest meeting on the Filbin Creek side of the project Thursday morning at 9:30 AM. The best location for us to all meet is the Ralph M. Hendricks Park on Virginia Ave. (5250 Virginia Ave, North Charleston, SC 29405). Meeting at 9:30 AM should give us some time to chat before reviewing some of the areas along Filbin Creek as the tide falls (low tide @ 11:45 AM). Filbin Creek was also the most challenging area during our field surveys and we have quite a few questions and areas we would like to visit with you and Cindy.

The best location to meet for the Ashley River side of the project is at the Woodspring Suites off of Leeds Ave. in North Charleston (4475 Leeds Pl W, North Charleston, SC 29405).

We have attached maps and representative photos depicting the current extent of EFH based on GIS and field reviews. Also attached is our latest draft of the Existing Conditions narrative regarding EFH. We hope these attachments will give us some talking points during our visit later this week.

Please let me know if you have any questions or concerns about any of the information above or in the attachments. Thanks!

Regards,
Russell

T. Russell Chandler, II
Three Oaks Engineering
1022 State Street, Bldg 2
Cayce, SC 29033
803.360.5197

**From:** Riddle, Nicole L. <RiddleNL@scdot.org>
**Sent:** Friday, January 31, 2020 8:54 AM

**To:** Russell Chandler <russell.chandler@threeoaksengineering.com>
**Subject:** FW: FW: I-526 West - EFH site visit

She responded. Can you give us a time (if different than what is on the list below) and meeting location for next week.

---

**From:** Cynthia Cooksey - NOAA Federal <cynthia.cooksey@noaa.gov>
**Sent:** Friday, January 31, 2020 8:01 AM
**To:** Riddle, Nicole L. <RiddleNL@scdot.org>
**Cc:** McGoldrick, Will <McGoldriWR@scdot.org>
**Subject:** Re: FW: I-526 West - EFH site visit



Nicole,
Thursday and Friday should work. I've been out of touch dealing with family medical issues, but I should be able to make those dates. Where do you want to meet?
Cindy

Cynthia Cooksey
Fishery Biologist

NOAA
National Marine Fisheries Service
Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road
Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Thu, Jan 23, 2020 at 9:31 AM Riddle, Nicole L. <RiddleNL@scdot.org> wrote:

> Hey Cindy, we would like to set up a site visit to review the existing EFH conditions for the I-526 Lowcountry Corridor Project. We want to make sure we are all on the same page from the start so that we can minimize review time. Given the large study area the consultant has suggested we plan at least 2 days for the field review. 1 day for Ashley River/Bulls Creek and 1 day for Filbin Creek. It will also be great to meet you in person!
>
> Here are three different options with dates in Feb/March where low tide occurs near mid-day during the normal work week. Could you let us know which 2 days in a row you are available.

| Option 1 | Option 2 | Option 3 |
|---|---|---|
| Wed. Feb 5 (10:50 AM) | Thur. Feb 20 (11:55 AM) | Wed. March 18 (10:45 AM) |

| | | |
|---|---|---|
| Thur. Feb 6 (11:45 AM) | Fri. Feb 21 (12:45 PM) | Thur. March 19 (11:40 AM) |
| Fri. Feb 7 (12:35 PM) | | Fri. March 20 (12:30 PM) |

Thank you!!

**Nicole Levinson Riddle**

**Public Involvement Coordinator/Biologist**

**Environmental Services Office**

**South Carolina Department of Transportation**

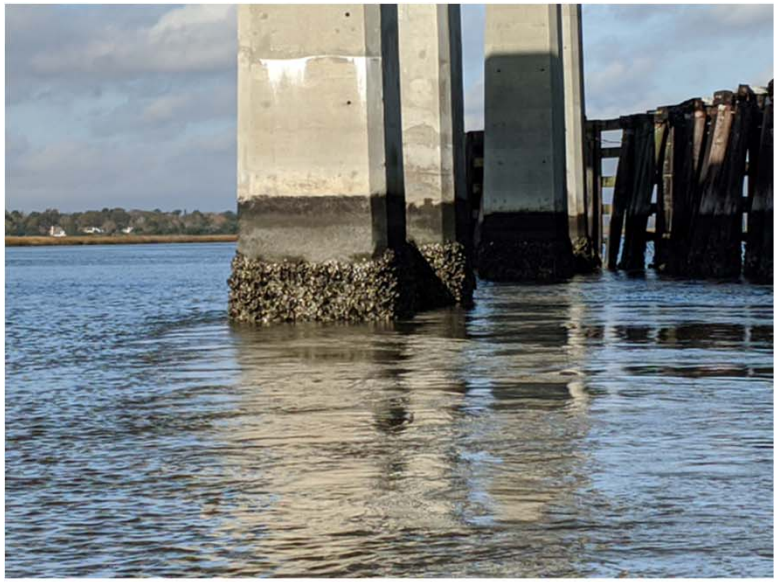
**955 Park Street**

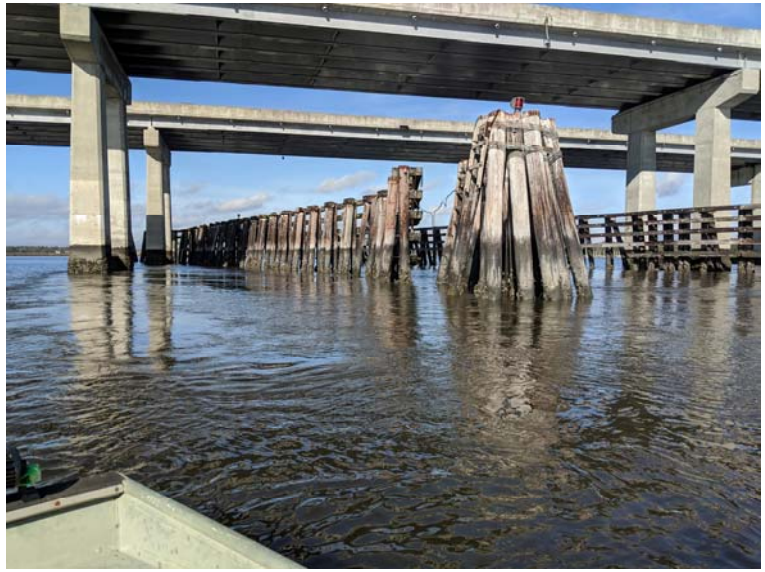
**Columbia, SC 29201**

**O: 803-737-0841**

# BULL CREEK
# TO
# ASHLEY RIVER

# ASHLEY RIVER



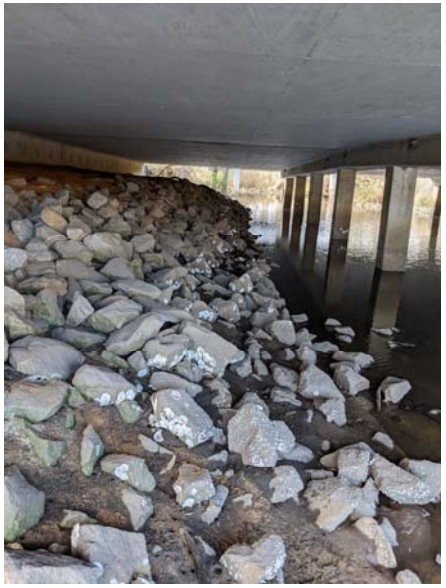


# FILBIN CREEK







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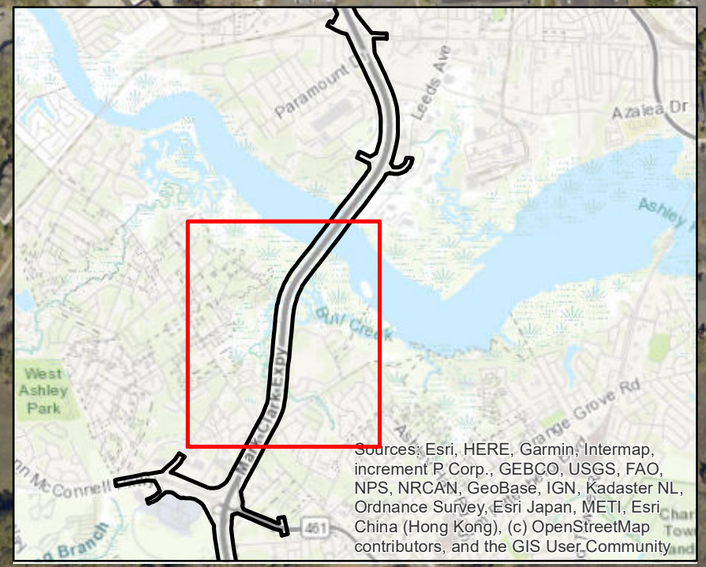


## Legend

- I-526 Lowcountry Corridor Project Area
- Oysters

**EFH Categories**

- Estuarine Emergent Wetland
- Intertidal Non-Vegetated Flats
- Palustrine Emergent Wetland
- Unconsolidated Bottom
- Estuarine Tidal Creek
- Riverine Tidal Creek

THREE OAKS ENGINEERING

Prepared For:

SCDOT

**I-526 Lowcountry Corridor Improvements**

EFH Field Maps

Ashley River

Charleston County
South Carolina

| | |
|---|---|
| Date: January 2020 | |
| Scale: 1:2,668 | |
| Job No.: 15-024 | |
| Drawn By: WCB | Checked By: TRC |

Figure

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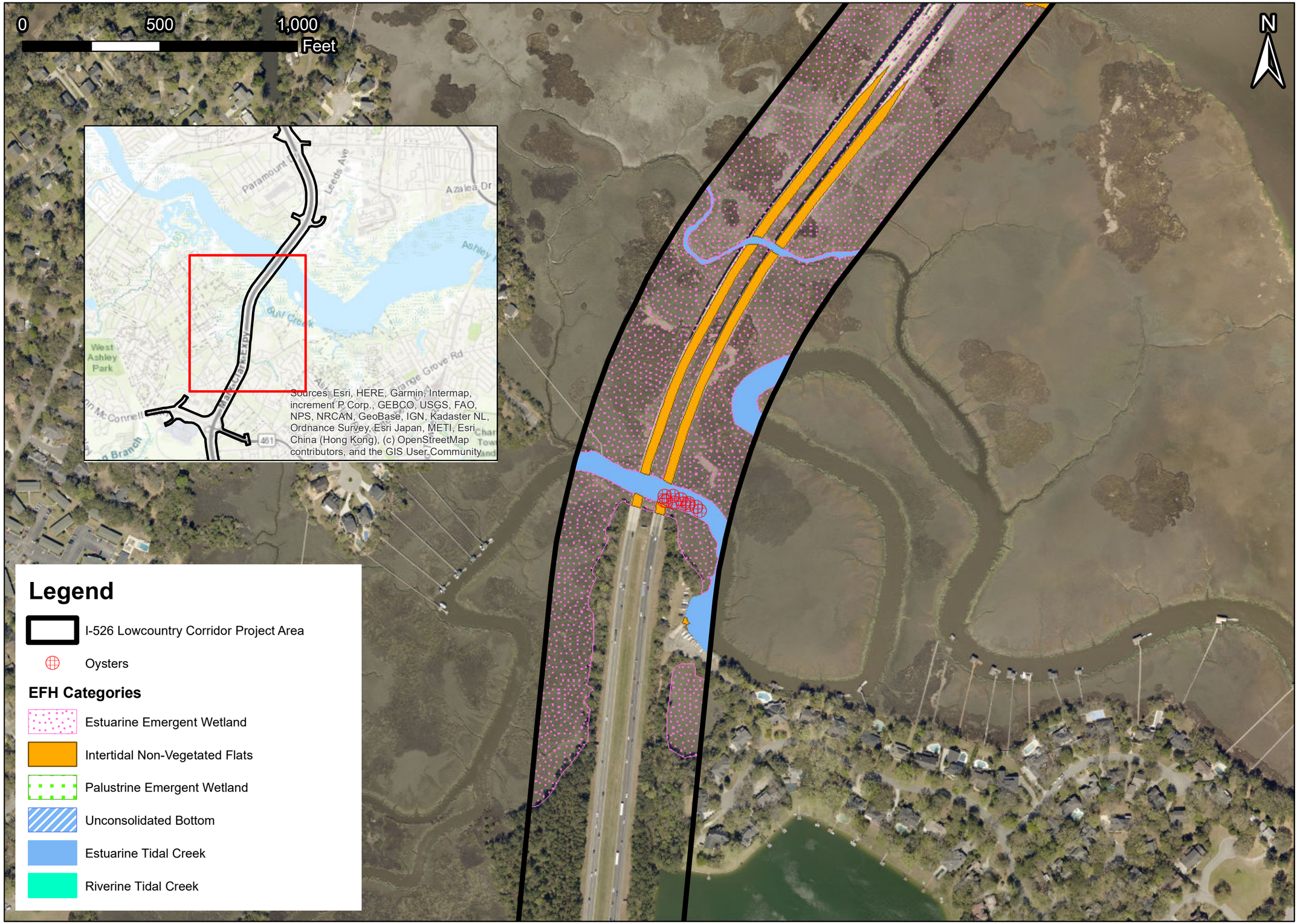



THREE OAKS ENGINEERING · THREE OAKS ENGINEERING ·

Prepared For:

SCDOT

**I-526 Lowcountry Corridor Improvements**

EFH Field Maps

Ashley River

Charleston County
South Carolina

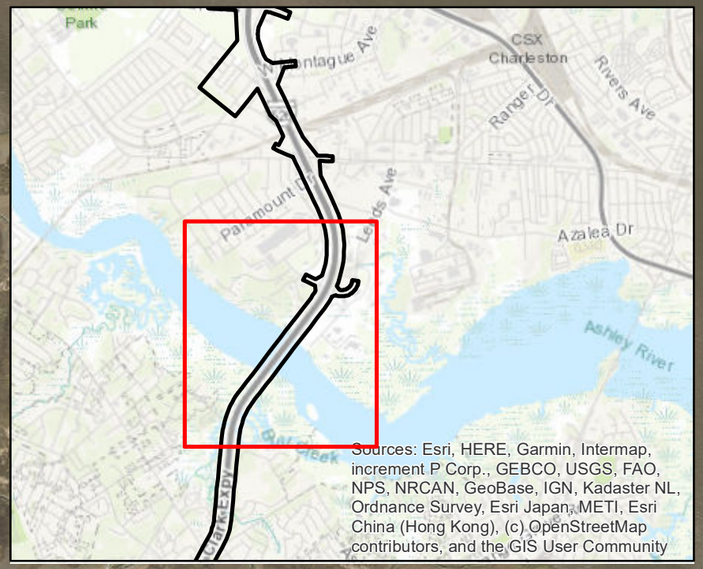
| | |
|---|---|
| Date: January 2020 | |
| Scale: 1:4,000 | |
| Job No.: 15-024 | |
| Drawn By: WCB | Checked By: TRC |

Figure

2

0 500 1,000 Feet

N




## Legend

- I-526 Lowcountry Corridor Project Area
- Oysters

**EFH Categories**

- Estuarine Emergent Wetland
- Intertidal Non-Vegetated Flats
- Palustrine Emergent Wetland
- Unconsolidated Bottom
- Estuarine Tidal Creek
- Riverine Tidal Creek

THREE OAKS ENGINEERING · THREE OAKS ENGINEERING · THREE OAKS ENGINEERING

Prepared For:

SCDOT

**I-526 Lowcountry Corridor Improvements**

EFH Field Maps

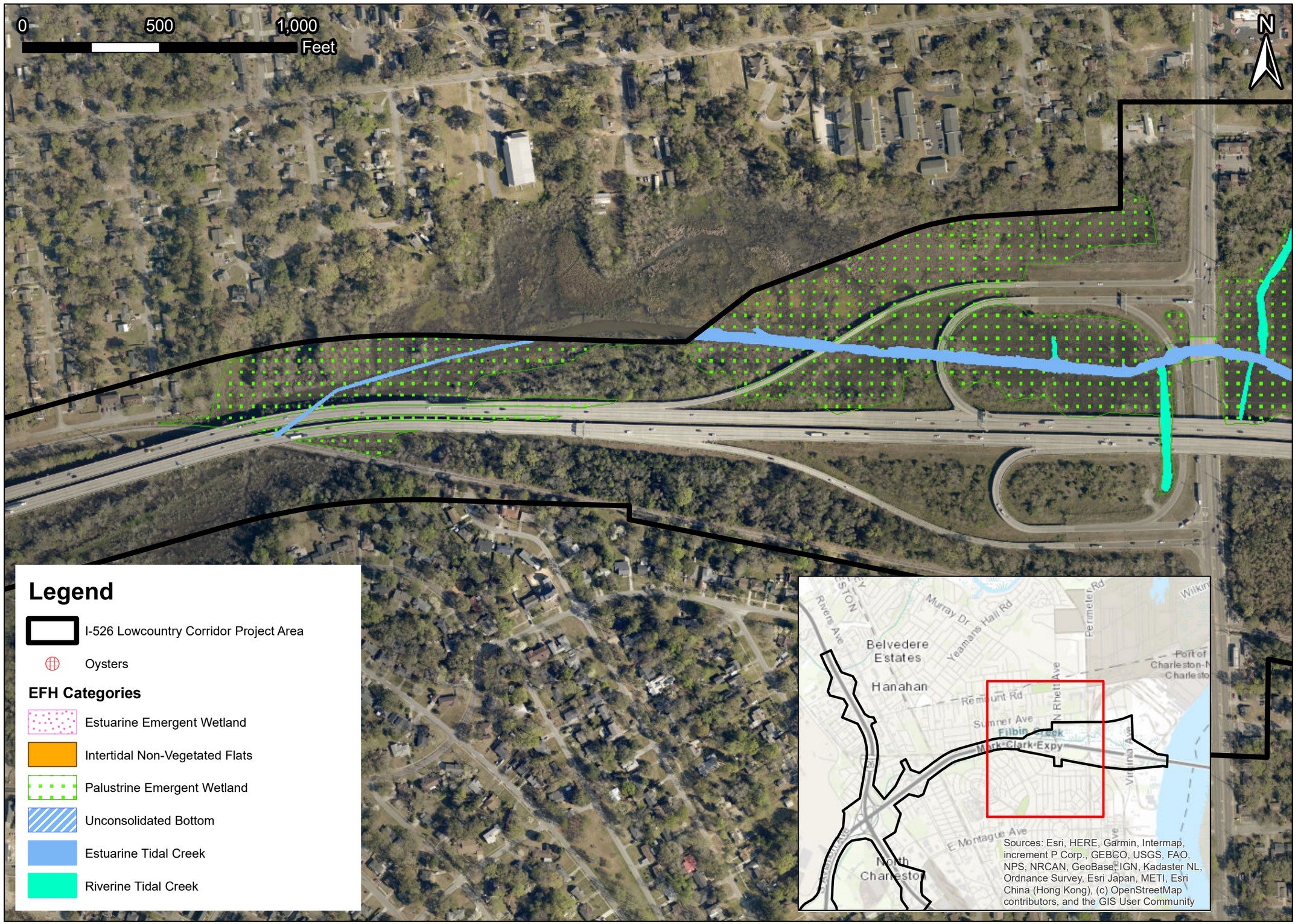
Ashley River

Charleston County
South Carolina

| | |
|---|---|
| Date: | January 2020 |
| Scale: | 1:4,000 |
| Job No.: | 15-024 |
| Drawn By: WCB | Checked By: TRC |

Figure

3




THREE OAKS ENGINEERING

Prepared For:

SCDOT

**I-526 Lowcountry Corridor Improvements**

EFH Field Maps

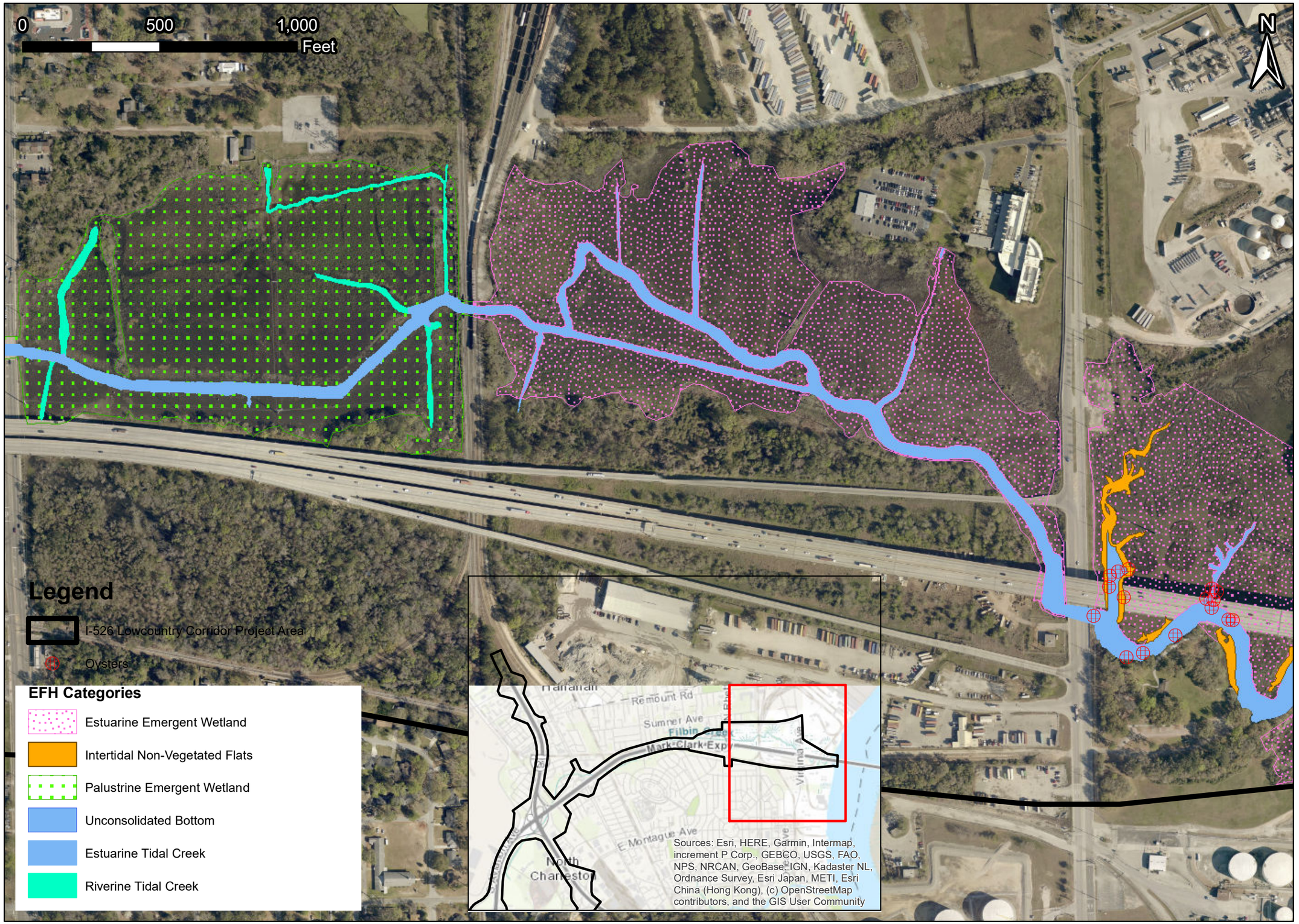
Filbin Creek

Charleston County
South Carolina

| | |
|---|---|
| Date: | January 2020 |
| Scale: | 1:4,000 |
| Job No.: | 15-024 |
| Drawn By: | WCB |
| Checked By: | TRC |

Figure

1




THREE OAKS ENGINEERING

Prepared For:

SCDOT

**I-526 Lowcountry Corridor Improvements**

EFH Field Maps

Filbin Creek

Charleston County
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| | |
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Figure

2

0 500 1,000 Feet

N

## Legend

- I-526 Lowcountry Corridor Project Area
- Oysters

**EFH Categories**

- Estuarine Emergent Wetland
- Intertidal Non-Vegetated Flats
- Palustrine Emergent Wetland
- Unconsolidated Bottom
- Estuarine Tidal Creek
- Riverine Tidal Creek

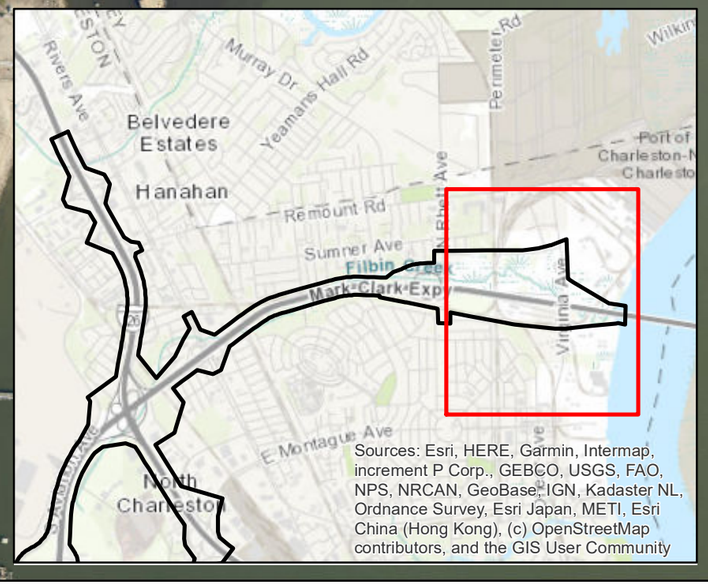


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Figure

3

## Russell Chandler

**From:** Riddle, Nicole L. <RiddleNL@scdot.org>
**Sent:** Monday, March 30, 2020 3:21 PM
**To:** Russell Chandler
**Subject:** FW: quick question

Here you go. Also note her response about the EFH mapper

Sent from Mail for Windows 10

---

**From:** Cynthia Cooksey - NOAA Federal
**Sent:** Tuesday, March 24, 2020 9:25 AM
**To:** Riddle, Nicole L.
**Subject:** Re: quick question



The coastal inlet does not extend that far up the Ashley River. Hope that helps, Cindy

Cynthia Cooksey
Fishery Biologist

NOAA
National Marine Fisheries Service
Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road
Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Mon, Mar 23, 2020 at 3:53 PM Riddle, Nicole L. <RiddleNL@scdot.org> wrote:

> Thanks! Additionally, I wanted to ask you another question. So I hope this one doesn't make me sound dumb but I'm just trying to confirm what I am thinking. So when talking about HAPCs within the project study area the consultant has designated the HAPCs for coastal inlet within the study area. Although, I realize the Ashley river is an inlet by time it gets to the project study area at 526 would you still consider it an inlet at that point? In summary, I'm thinking that the only HAPC in the project study area is the oyster habitats but wanted to check that with you before I respond back to them.
>
> Thanks! I hope all is well for you with this crazy virus stuff.

Nicole Riddle

Sent from Mail for Windows 10

---

**From:** Cynthia Cooksey - NOAA Federal
**Sent:** Wednesday, March 18, 2020 8:55 AM
**To:** Riddle, Nicole L.
**Subject:** Re: quick question

*** This is an EXTERNAL email. Please do not click on a link or open any attachments unless you are confident it is from a trusted source. ***

Hi Nicole,

The EFH Mapper can be useful as a first pass or for projects in federal waters, but for inshore, DOT related projects it lacks needed specificity.

Cindy

Cynthia Cooksey
Fishery Biologist

NOAA

National Marine Fisheries Service

Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road

Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Wed, Mar 18, 2020 at 8:31 AM Riddle, Nicole L. <RiddleNL@scdot.org> wrote:

> Hey Cindy, I hope all is well there. So I'm reviewing some EFH assessments and there are references to the EFH mapper. In the past your predecessors have told us not to use that because it is not accurate. Would you say the

same thing? Just wanted to make sure there hasn't been any changes to that before I tell them not to use that tool. Thanks!

**Nicole Levinson Riddle**

**Public Involvement Coordinator/Biologist**

**Environmental Services Office**

**South Carolina Department of Transportation**

**955 Park Street**

**Columbia, SC 29201**

**O: 803-737-0841**

## Russell Chandler

**From:** Riddle, Nicole L. <RiddleNL@scdot.org>
**Sent:** Tuesday, April 7, 2020 9:57 AM
**To:** Russell Chandler
**Subject:** FW: another question about 526 EFH review

Looks like you guys were right on this one. Glad I asked. Learn something new everyday.

And congrats on the baby!! I'm so happy for yall.

Sent from Mail for Windows 10

---

**From:** Cynthia Cooksey - NOAA Federal
**Sent:** Tuesday, April 7, 2020 9:47 AM
**To:** Riddle, Nicole L.
**Subject:** Re: another question about 526 EFH review



So they are correct, we do have EFH designated in South Carolina waters by the MAFMC. I routinely mention them in consultations that are directly on the coast (think sea islands), although any of the mid- to high salinity tidal creeks fall into the designations. Including them in the EFH Assessment will ensure a more complete document.
Cindy

Cynthia Cooksey
Fishery Biologist

NOAA
National Marine Fisheries Service
Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road
Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Tue, Apr 7, 2020 at 9:33 AM Riddle, Nicole L. <RiddleNL@scdot.org> wrote:

> So I have reviewed the draft the consultant provided and provided back responses to them. In the managed fisheries section they included a paragraph about Bluefish and summer flounder and referenced the mid-Atlantic fishery management council. My comment was that the mid-Atlantic fishery council doesn't cover south Carolina so I would only include fisheries that the SAFMC list and bluefish and summer flounder wasn't listed in the documents for SAFMC that I found. Even though after some research it appears that those species are found in South Carolina should they be included in the EFH assessment? I also stated to them that we haven't listed those in previous documents but I didn't feel confident either way to say for sure which way they should go with it. We are all just trying to make sure that the document is thorough to ease with review but not include unnecessary information. Thanks again for you guidance!

Nicole Riddle

Sent from Mail for Windows 10

## Russell Chandler

**From:** Cynthia Cooksey - NOAA Federal <cynthia.cooksey@noaa.gov>
**Sent:** Thursday, April 9, 2020 12:24 PM
**To:** Riddle, Nicole L.
**Cc:** Russell Chandler; McGoldrick, Will; Wade Biltoft
**Subject:** Re: 526 EFH discussion

Yes

Cynthia Cooksey
Fishery Biologist

NOAA
National Marine Fisheries Service
Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road
Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Thu, Apr 9, 2020 at 12:15 PM Riddle, Nicole L. <RiddleNL@scdot.org> wrote:

> Works for me
>
> ---
>
> **From:** Russell Chandler [mailto:russell.chandler@threeoaksengineering.com]
> **Sent:** Thursday, April 9, 2020 12:00 PM
> **To:** McGoldrick, Will <McGoldriWR@scdot.org>; Cynthia Cooksey - NOAA Federal <cynthia.cooksey@noaa.gov>
> **Cc:** Riddle, Nicole L. <RiddleNL@scdot.org>; Wade Biltoft <wade.biltoft@threeoaksengineering.com>
> **Subject:** RE: 526 EFH discussion
>
> 
>
> I will be glad to set up a call-in number/web meeting via Microsoft Teams. Does tomorrow afternoon at 2pm work for everyone?
>
> Thanks,

Russell

803.360.5197

**Three Oaks Engineering**

---

**From:** McGoldrick, Will <McGoldriWR@scdot.org>
**Sent:** Thursday, April 9, 2020 11:37 AM
**To:** Cynthia Cooksey - NOAA Federal <cynthia.cooksey@noaa.gov>
**Cc:** Russell Chandler <russell.chandler@threeoaksengineering.com>; Riddle, Nicole L. <RiddleNL@scdot.org>
**Subject:** RE: 526 EFH discussion

I am busy from 10-12 tomorrow but am free otherwise. I also am open on Monday.

RC or Nicole, would one of those be better for you? I suggest we shoot for tomorrow and use Monday as a back-up if possible.

RC, could you set up a call in number or webinar for the 4 of us?

--WM

---

**From:** Cynthia Cooksey - NOAA Federal [mailto:cynthia.cooksey@noaa.gov]
**Sent:** Thursday, April 9, 2020 10:51 AM
**To:** McGoldrick, Will <McGoldriWR@scdot.org>
**Cc:** Russell Chandler <russell.chandler@threeoaksengineering.com>; Riddle, Nicole L. <RiddleNL@scdot.org>
**Subject:** Re: 526 EFH discussion



I am available anytime tomorrow or Monday afternoon for a call.

Cindy

Cynthia Cooksey
Fishery Biologist

NOAA

National Marine Fisheries Service

Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road

Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Thu, Apr 9, 2020 at 10:49 AM McGoldrick, Will <McGoldriWR@scdot.org> wrote:

> Cindy,
>
> After our discussion yesterday and upon hearing some of your comments, Russell and I thought it would be beneficial for us to have a follow up discussion with you regarding the EFH assessment and how to sufficiently address your concerns in it relating to the flood plain mitigation. If you would be so kind as to provide some dates and times for when you would be available to conference with us, we will work to set something up.
>
> Respectfully,
>
> _____
>
> Will McGoldrick, Assoc. DBIA
>
> Design Build Environmental Coordinator
>
> SCDOT
>
> 955 Park St Rm 506
>
> Columbia SC 29202
>
> (o) 803-737-1326

## Russell Chandler

**From:** Riddle, Nicole L. <RiddleNL@scdot.org>
**Sent:** Friday, May 8, 2020 7:19 PM
**To:** cynthia.cooksey@noaa.gov
**Cc:** Belcher, Jeffery - FHWA; McGoldrick, Will; Long, Chad C.; Riley, Joy S.; Heather Robbins; Russell Chandler; Noah Silverman; Pace Wilber; Brian Rosegger
**Subject:** EFH submittal for the I-526 Lowcountry Corridor Charleston County, SC SCDOT PIN P027507
**Attachments:** Final Submittal 526W_EFH_TechnicalReport.pdf

The South Carolina Department of Transportation (SCDOT) on behalf of the Federal Highway Administration (FHWA), is requesting consultation with NOAA-NMFS as prescribed by the Magnuson-Stevens Act for the Proposed I-526 Lowcountry Corridor Project in Charleston County, SC. The project's Environmental Impact Statement (EIS) is being developed under the One Federal Decision/FAST Act 41 guidance. Included you should find a the EFH Assessment describing habitats, species, relevant construction activities with estimated impacts to EFH calculated based upon the described activities.

Please let me know if you need any additional information or any clarifications.

*I made a mistake on the previous submittal and attempted to recall it for those that haven't opened it yet. If you got my earlier submittal please disregard and use this one thanks.

**Nicole Levinson Riddle**
**Public Involvement Coordinator/Biologist**
**Environmental Services Office**
**South Carolina Department of Transportation**
**955 Park Street**
**Columbia, SC 29201**
**O: 803-737-0841 C: 803-351-8480**

## Russell Chandler

**From:** McGoldrick, Will <McGoldriWR@scdot.org>
**Sent:** Thursday, June 11, 2020 9:51 AM
**To:** Heather Robbins; Belcher, Jeffery - FHWA
**Cc:** Riddle, Nicole L.; Russell Chandler
**Subject:** FW: EFH Consult

I guess we're looking good for meeting out July deadline based on the overall conversation below. Unless she comes back with a request in the next couple of weeks.

--WM

---

**From:** Cynthia Cooksey - NOAA Federal <cynthia.cooksey@noaa.gov>
**Sent:** Thursday, June 11, 2020 8:58 AM
**To:** McGoldrick, Will <McGoldriWR@scdot.org>
**Subject:** Re: EFH Consult



Complete, in this context, means I have enough for the EFH consultation.

Cynthia Cooksey
Fishery Biologist

NOAA
National Marine Fisheries Service
Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road
Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Thu, Jun 11, 2020 at 8:25 AM McGoldrick, Will <McGoldriWR@scdot.org> wrote:

> That's good news. One of the reasons I wanted to follow up is that we have in our milestone table a deliverable to you for a "complete" EFH assessment on July 8. Do you foresee us needing to revise or update what we've sent in order to meet that objective? I think those dates are the ones on the dashboard and I just want to make sure both you and I are going to be on the same page about what will satisfy that. I was thinking if you had comments or something additional for us to provide, we could work on that now. But I'm really not sure what "complete" means for you guys, to be honest. Just let me know if I need to work on anything to ensure you can say we were able to meet that goal. Thank you.

--WM

---

**From:** Cynthia Cooksey - NOAA Federal <cynthia.cooksey@noaa.gov>
**Sent:** Thursday, June 11, 2020 8:18 AM
**To:** McGoldrick, Will <McGoldriWR@scdot.org>
**Subject:** Re: EFH Consult



Hi Will,

I do have enough information for my review. Thank you for checking in with me.

Regards,

Cindy

Cynthia Cooksey
Fishery Biologist

NOAA

National Marine Fisheries Service

Southeast Regional Office - Habitat Conservation Division
219 Fort Johnson Road

Charleston, SC 29412
PH: (843) 460-9922
E-Mail: cynthia.cooksey@noaa.gov

On Mon, Jun 8, 2020 at 3:15 PM McGoldrick, Will <McGoldriWR@scdot.org> wrote:

> Hey Cindy,
> Hope you are doing well. I wanted to check in with you since we haven't really connected after our EFH consultation request. I wanted to make sure you had enough information for your review or had some comments we needed to work on for you. I know Shane sent out concurrence letters and thought this would be a good time to touch base on EFH as well. Please let me know if you need anything.

Will McGoldrick | DB Env. Coordinator
SCDOT Environmental Services Office
Mobile Reply

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

September 2, 2020 F/SER47:CC/pw

(Sent via Electronic Mail)

Nicole Riddle
South Carolina Department of Transportation
Environmental Services Office
955 Park Street
Columbia, SC 29201

Dear Ms. Riddle:

NOAA's National Marine Fisheries Service (NMFS) reviewed the *Essential Fish Habitat Assessment I-526 Lowcountry Corridor West* dated May 8, 2020, prepared on behalf of the Federal Highway Administration (FHWA). The South Carolina Department of Transportation (SCDOT) and FHWA propose improvements to the I-526 Lowcountry Corridor West in Charleston County. FHWA and SCDOT are pursuing the proposed action under the One Federal Decision/FAST Act 41 guidance. The FHWA and SCDOT have determined the proposed action will adversely affect essential fish habitat (EFH) and, therefore, have included measures to avoid and minimize effects on EFH and will establish a plan to mitigate for unavoidable impacts to EFH. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the NMFS provides the following comments and recommendations pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

The EFH Assessment describes the proposed action, documents existing EFH conditions within the project area, and provides an analysis of the potential impacts to EFH from the proposed action. The proposed action involves 12.7 miles of improvements along I-526 from Paul Cantrell Boulevard to Virginia Avenue, inclusive of the I-26/I-526 interchange in the greater Charleston Metro Area. The project area includes portions of Ashley River, Filbin Creek, and their associated wetlands. The EFH Assessment outlines environmental protection provisions and best management plans for avoiding and minimizing adverse impacts to natural resources, including seasonal work restrictions; siting shore-side development on existing cleared, developed areas to avoid impacts to wetlands; noise reduction techniques; and pollution and erosion control measures. The proposed action is a design-build project. Accordingly, FHWA and SCDOT have committed to continue to coordinate with the NMFS as project plans further develop.

The EFH Assessment was comprehensive and complete. In addition to reviewing the document, NMFS participated in a site visit on February 6, 2020, a workshop on February 12, 2020, and several meetings of the interagency coordination team. The high level of engagement on this project between the SCDOT, FHWA, and NMFS allowed the EFH Assessment to address fully concerns raised during initial meetings. While the proposed action will result in adverse impacts

to EFH, the FHWA and SCDOT are implementing strategies to avoid and minimize those impacts and to increase the likelihood of recovery at locations not expected to have permanent impacts. These strategies include performing work during periods of low biological activity and using bridges where the highway will cross EFH, rather than lengthy causeways that remove EFH and alter the flows of tidal waters. Of the 216.9 total acres of EFH found within the project area, potentially up to 5.6 acres of EFH will be permanently impacted by fill, 12.9 acres of EFH will permanently impacted via shading, and 2.8 acres of EFH may be temporarily impacted. While the extents of these impacts are significant, FHWA, SCDOT, and NMFS expect the acreages to decrease during the design-build process. The FHWA and SCDOT have committed to working with the NMFS and other resource agencies to develop a mitigation plan to ensure all unavoidable EFH impacts are appropriately mitigated. The EFH mitigation plan may include purchasing mitigation credits from an approved mitigation bank or Permittee Responsible Mitigation (PRM), and the NMFS believes both options are viable for scope and scale of this project's impacts. During mitigation discussions, the NMFS highlighted that bank credits, if used, should come from a mitigation bank of similar salinity to the project area and be proximal to the Charleston Metro Area or that a PRM project be in-kind of the project effects. The NMFS looks forward to continued participation in development of the mitigation plan. Therefore, based on the information provided and the commitments from FHWA and SCDOT to seek opportunities to reduce further the EFH impacts during the design-build process and to develop appropriate compensatory mitigation, the NMFS has no EFH conservation recommendations at this time for the proposed improvements to the I-526 Lowcountry Corridor West.

The NMFS appreciates the opportunity to provide these comments and thanks the FHWA and SCDOT for their efforts in incorporating avoidance and minimization strategies and early engagement on the project. Please direct related correspondence to the attention of Cindy Cooksey at our Charleston Area Office. She may be reached at (843) 460-9922 or by e-mail at Cynthia.Cooksey@noaa.gov.

Sincerely,

WILBER.THOMAS.PAYSON.1365820186
Digitally signed by WILBER.THOMAS.PAYSON.1365820186
Date: 2020.09.02 15:18:10 -04'00'

/for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc: SCDOT, RiddleNL@scdot.org
FHWA, Jeffrey.Belcher@dot.gov
F/SER, Noah.Silverman@noaa.gov
F/SER47, Cynthia.Cooksey@noaa.gov