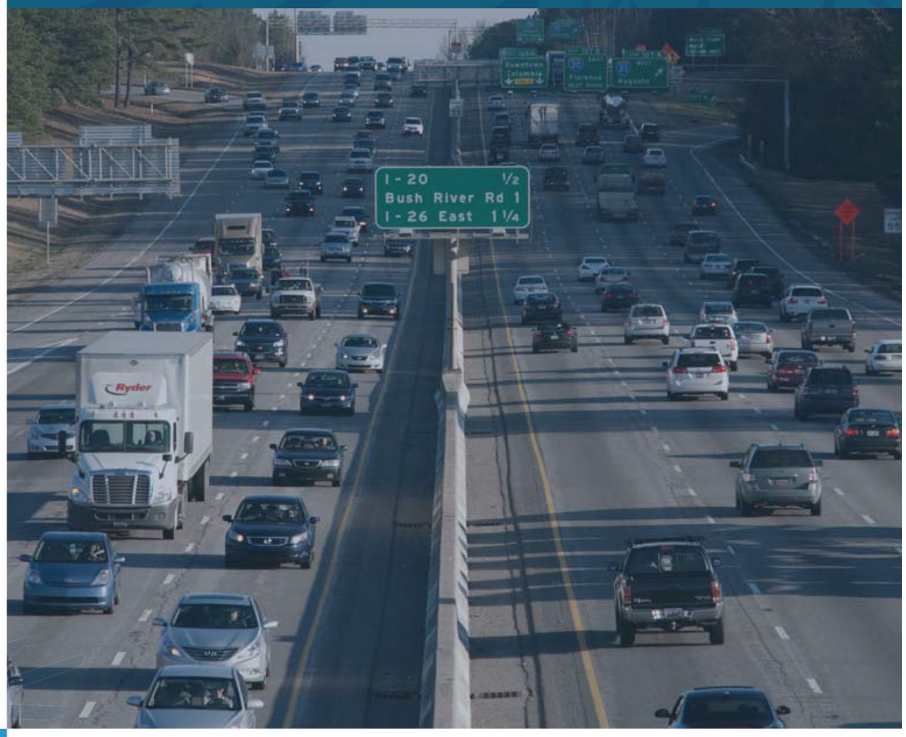
Appendix K—Natural Resources Technical Report

Part 1

CAROLINA
CROSSROADS
I-20/26/126 Corridor Project



Natural Resources Technical Report

Carolina Crossroads
I-20/26/126 Corridor Improvement Project
Lexington and Richland Counties, South Carolina

DEIS July 23, 2018

SCDOT
South Carolina Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Prepared for South Carolina Department of Transportation
and the Federal Highway Administration

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Prepared by

Mead & Hunt

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1 Introduction

1.1 Project Description

HDR, in cooperation with Mead & Hunt, STV, Inc. (STV), and other subconsultants (the Project Team) has been contracted by the South Carolina Department of Transportation (SCDOT) to provide environmental services necessary for the preparation of an Environmental Impact Statement (EIS), right of way plans, and final construction plans for roadways and bridges for improvements to the I-20/I-26/I-126 corridor in Lexington and Richland Counties, South Carolina.

The proposed project is a transportation corridor improvement located in Lexington and Richland Counties, South Carolina. To date, the project study area (PSA) has been defined as a mainline corridor including I-20 from west of the Saluda River to the Broad River, I-26 from US 378 to north of Broad River Road, and I-126 from Stone Ridge Drive to I-26. Furthermore, the PSA extends approximately 100-150 feet beyond the existing SCDOT right-of-way limits within the mainline corridor; please see Appendix A, Figure 1 for a Site Location Map.

This report provides an overall description of the project vicinity and specifically describes natural resources within the PSA, including wetlands, water resources, plant communities, and protected species. The qualifications of the personnel involved in the preparation of this report are located in Appendix F.

1.2 Purpose

The I-20/I-26/I-126 corridor is a vital transportation link in South Carolina, serving residents, commuters, travelers, and commerce. Due to nearby residential and commercial development, proximity to downtown Columbia, traffic volumes, and the overall geometric layout, including 11 interchange points, the I-20/I-26/I-126 corridor has become one of the most congested interstate sections in South Carolina. The primary purpose of the proposed project is to implement a transportation solution(s) that would improve mobility and enhance traffic operations by reducing existing traffic congestion within the I-20/I-26/I-126 corridor while accommodating future traffic needs.

1.3 Methodology

Prior to conducting fieldwork, the Project Team reviewed reference material including:

- S.C. Department of Health and Environmental Control (SCDHEC) Bureau of Water. Watershed Water Quality Assessment for the Broad River Basin (2007).
- SCDHEC Bureau of Water. Watershed Water Quality Assessment for the Saluda River Basin (2011).
- SCDHEC. Integrated Report for 2016. Part I: *Section 303(d) List of Impaired Waters.*
- S.C. Department of Natural Resources (SCDNR). Rare, Threatened, and Endangered Species and Communities Known to Occur in Lexington County (Accessed December 20, 2017).
- SCDNR. Rare, Threatened, and Endangered Species and Communities Known to Occur in Richland County (Accessed December 20, 2017).

- U.S. Geological Survey (USGS). 7.5 minute topographic quadrangles; Irmo, South Carolina (1990) and Columbia North, South Carolina (1990).
- USGS. National Hydrography Dataset (NHD) Geodatabase; Subregion 0305.
- U.S. Department of Agriculture (USDA). National Agriculture Imagery Program (NAIP). Aerial Photography; Lexington County, South Carolina (2015).
- USDA-NAIP. Aerial Photography; Richland County, South Carolina (2015).
- USDA. Natural Resource Conservation Service (NRCS). Soil Survey Geographic (SSURGO) Database; South Carolina, Statewide (2015).
- USDA-NRCS. National List of Hydric Soils Database; South Carolina. (Accessed December 2017).
- USDA. Soil Conservation Service (SCS). Soil Survey of Lexington County, South Carolina (1976).
- USDA-SCS. Soil Survey of Richland County, South Carolina (1972).
- U.S. Fish and Wildlife Service (USFWS). National Wetlands Inventory (NWI) Seamless Wetlands Data for South Carolina (Last Updated October 1, 2017).
- USFWS South Carolina Field Office. Endangered, Candidate, and At-Risk Species. County Listings. Lexington County (Last Updated October 3, 2017).
- USFWS South Carolina Field Office. Endangered, Candidate, and At-Risk Species. County Listings. Richland County (Last Updated October 3, 2017).
- USDA National Agriculture Imagery Program (NAIP) Aerial Photography; Lexington County, South Carolina (2015).
- USDA National Agriculture Imagery Program (NAIP) Aerial Photography; Richland County, South Carolina (2015).
- USGS High Resolution Orthoimagery; Columbia, South Carolina (2014).

Field reviews of the PSA were conducted between April 16, 2014 and November 18, 2015. Field reviews of the additional study area was conducted between July 25, 2017 and September 20, 2017. Mead & Hunt Environmental Scientist Matt DeWitt, PWS, led a team of environmental scientists and technicians from SCDOT and the Project Team during field surveys of the PSA for the presence of wetlands and other "waters of the U.S.", community types, and protected species habitat.

Wetlands were determined using the Routine On-Site Determination Method as defined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the appropriate Regional Supplement to the Manual. Please note: the majority of the PSA is located within the Eastern Mountains and Piedmont Region, and the southern extent of the project, in the vicinity of the US 378 (Sunset Boulevard) interchange with I-26 (Exit 110), is located within the Atlantic and Gulf Coastal Plain Region. The boundaries of delineated waters within the PSA were flagged (delineated) in the field during the surveys.

Delineated waters were subsequently located using a handheld Global Positioning System (GPS) unit capable of sub-meter accuracy. The GPS was used to collect point features with a minimum of 20 counts, using a five-second logging interval. The GPS settings used generally included a Positional Dilution of Precision (PDOP) of 4.0,

an elevation mask of 15-degrees, and a minimum Signal to Noise Ratio (SNR) of 33.0. GPS coordinates were validated using GPS Analyst and ArcGIS 10.2 software.

2 Physical Resources

2.1 Land Use

The proposed project is located in an urbanized area associated with Greater Columbia, South Carolina. Specifically, the project extends into the city limits of Lexington, Columbia, and West Columbia. Land use within the project vicinity, an area defined as extending one mile on all sides of the proposed project, is comprised primarily of commercial, residential, and industrial developments, and sparse undeveloped forestland.

Land use directly within the PSA is primarily comprised of commercial development, roadway and utility rights-of-way (ROWs), and sparse undeveloped forestland. Undeveloped forestland within the PSA is primarily located in the vicinity of the Saluda and Broad Rivers and consists of mixed pine/hardwood forests, pine forests, bottomland hardwood forests, and scrub-shrub communities.

2.2 Physiography and Topography

The PSA of the Carolina Crossroads project spans two physiographic provinces and two Level III Ecoregions, as depicted by the *Ecoregions of North and South Carolina* (Griffith et al., 2002).

2.2.1 LEVEL III ECOREGIONS

The majority of the PSA is located in the Piedmont physiographic province of South Carolina, and is specifically situated within the Piedmont (45) Level III Ecoregion (Griffith et al., 2002). The Piedmont is a transitional area between the mostly mountainous ecoregions of the Appalachian Mountains to the northwest and the relatively flat coastal plain to the southeast. The landforms of the ecoregion are comprised of moderately dissected irregular plains and some hills. Once largely cultivated, much of the Piedmont forest is planted pine or has reverted to successional pine and hardwood woodlands.

The southeastern-most portion of the PSA, including the Colonial Life Boulevard interchange with I-126 and the US 378 interchange with I-26, is located within the Upper Coastal Plain physiographic province and is specifically situated within the Southeastern Plains (65) Level III Ecoregion (Griffith et al., 2002). The Southeastern Plains are an area of irregular plains with historically broad interstream areas of croplands, pastures, woodlands, and forests. Elevations and relief are greater than in the Southern Coastal Plain, but generally less than that of the Piedmont.

The PSA is further characterized as spanning three Level IV Ecoregions, as depicted by the Ecoregions of North and South Carolina (Griffith et al., 2002).

2.2.2 LEVEL IV ECOREGIONS

The northwestern extent of the PSA is located within the Southern Outer Piedmont (45b) Level IV Ecoregion (Griffith et al., 2002). Specifically, the Southern Outer Piedmont extends along I-26 from the northwestern limits of the PSA to the interchange of I-26 and SC 60 (Lake Murray Boulevard). The Southern Outer Piedmont region has lower elevations than portions of the Piedmont to the northwest and is characterized by mostly irregular plains, rather than plains with hills. Gneiss, schist, and granite are typical rock types, covered with deep saprolite and mostly red, clayey subsoils.

The central portion of the PSA, located between Lake Murray Boulevard and the I-26/I-126 interchange, is located within the Carolina Slate Belt (45c) Level IV Ecoregion (Griffith et al., 2002). The Carolina Slate Belt region is characterized by dissected irregular plains, some low hills, and rounded hills and ridges. Streams in the region are typically low to moderate gradient and comprised of mostly cobble, gravel, and sandy substrates. Rock types are primarily comprised of mineral-rich slate; however silty and silty clay soils are also typical.

The southeastern-most portion of the PSA, including the Colonial Life Boulevard interchange with I-126 and the US 378 interchange with I-26 is located within the Sand Hills (65c) Level IV Ecoregion (Griffith et al., 2002). The Sand Hills are an area of gently sloping to strongly sloping uplands with a predominance of sandy areas and scrub vegetation. The region is characterized by its sandy bottomed streams, typically with moderate to steep stream banks. Marine sands and clays are common, and soils are comprised primarily of low-nutrient sand beds.

Based on USGS topographic mapping, elevations within the PSA range from approximately 160 to 350 feet above mean sea level (MSL). The highest elevations within the PSA are located in the vicinity of the US 176 (Broad River Road) interchange with I-26 (Exit 101). The lowest elevations within the PSA are located in the eastern extent of the project, within the floodplain of the Broad River. Twenty-four (24) blue-line streams are depicted on USGS mapping within the PSA, including five (5) named waters and nineteen (19) unnamed tributaries. Named waters include the Broad River, the Saluda River, Stoop Creek, Moccasin Branch, and Senn Branch; please see Appendix A, Figures 2-1 through 2-7 for USGS Topography Maps.

2.3 Geology and Soils

The origins of soil parent materials within the PSA are derived from different sources, depending on the ecoregion in which the soil is formed.

In the Southern Outer Piedmont, soils are primarily residual; that is, the parent materials have formed in place through the weathering of the underlying hard rock. The rocks underlying the Southern Outer Piedmont are primarily saprolite and gneissic granite, which contain minerals including quartz, mica, and feldspar. The resulting soils are typically red in color and clayey in texture.

The origins of the soil parent material in the Carolina Slate Belt are also residual; however, the underlying rocks are comprised of rocks known as slates. These are metamorphosed shale, fine-grained sandstone, and mica. The resulting soils are typically high in silt and very fine sands.

In the Sand Hills, soils are primarily derived from alluvium; that is, the parent materials were deposited by the Atlantic Ocean several thousand years ago. Soils derived from marine sediments typically consist of quartz-sand and silt of varying sizes, and interbedded with strata of kaolin clay. The resulting soils include clays capped with layers of fine sands.

The Farmland Protection Policy (FPPA) Act of 1981 requires evaluation of farmland conversions to nonagricultural uses. Farmland can be prime farmland, unique farmland, or farmland of statewide importance. The proposed project would likely require the acquisition of farmland soils; therefore, the project will be assessed under the provisions of the FPPA during the development of the Environmental Impact Statement.

According to the NRCS SSURGO data, forty-five (45) soil map units (SMUs) are mapped within the PSA. Of these, three (3) SMUs are classified as hydric, one (1) SMU is classified as predominantly hydric, and six (6) SMUs are classified as predominantly non-hydric. The remaining thirty-five SMUs are classified as non-hydric. In total, SMUs with a hydric component comprise approximately eight (8) percent of the PSA; please see Appendix A, Figures 3-1 through 3-7 for NRCS Soil Map Unit Maps.

Table 2.1 Soil Map Units Mapped within the Project Study Area

Symbol	Soil unit name	Farmland classification*	Hydric rating*
Lexington County			
CeB	Cecil fine sandy loam, 2 to 6 percent slopes	Prime farmland	Non-hydric
CeC	Cecil fine sandy loam, 6 to 10 percent slopes	Farmland of statewide importance	Non-hydric
CeD	Cecil fine sandy loam, 10 to 15 percent slopes	Not prime farmland	Non-hydric
CfD	Cecil-urban land complex, 8 to 15 percent slopes	Not prime farmland	Non-hydric
Ch	Chenneby silty clay loam	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	Predominantly non-hydric
Ck	Chenneby soils	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	Predominantly non-hydric
Co	Congaree silt loam	Prime farmland if protected from flooding or not frequently flooded during the growing season	Predominantly non-hydric
CvA	Craven fine sandy loam, 0 to 2 percent slopes	Prime farmland	Predominantly non-hydric
DoB	Dothan loamy sand, 2 to 6 percent slopes	Prime farmland	Non-hydric
DwB	Dothan-urban land complex, 0 to 6 percent slopes	Not prime farmland	Non-hydric

Symbol	Soil unit name	Farmland classification*	Hydric rating*
EnB	Enon silt loam, 2 to 6 percent slopes	Farmland of statewide importance	Non-hydric
Eo	Enoree silt loam, 0 to 2 percent slopes, frequently flooded	Not prime farmland	Predominantly hydric
GeB	Georgeville very fine sandy loam, 2 to 6 percent slopes	Prime farmland	Non-hydric
GeC	Georgeville very fine sandy loam, 6 to 10 percent slopes	Farmland of statewide importance	Non-hydric
GeD	Georgeville very fine sandy loam, 10 to 15 percent slopes	Not prime farmland	Non-hydric
GoA	Goldsboro sandy loam, 0 to 2 percent slopes	Prime farmland	Predominantly non-hydric
HrB	Herndon silt loam, 2 to 6 percent slopes	Prime farmland	Non-hydric
JO	Johnston soils	Not prime farmland	Hydric
MeC	Mecklenburg silt loam, 6 to 10 percent slopes	Farmland of statewide importance	Non-hydric
NaD	Nason silt loam, 6 to 15 percent slopes	Not prime farmland	Non-hydric
OrB	Orangeburg loamy sand, 2 to 6 percent slopes	Prime farmland	Non-hydric
OrC	Orangeburg loamy sand, 6 to 10 percent slopes	Farmland of statewide importance	Non-hydric
PeC	Pelion loamy sand, 6 to 10 percent slopes	Not prime farmland	Non-hydric
PkD	Pickens slaty silt loam, 6 to 15 percent slopes	Not prime farmland	Non-hydric
Ra	Rains sandy loam	Farmland of statewide importance	Hydric
TaE	Tatum silt loam, 15 to 25 percent slopes	Not prime farmland	Non-hydric
Richland County			
AtA	Altavista silt loam, 0 to 2 percent slopes	Prime farmland	Non-hydric
Cd	Chastain silty clay loam	Not prime farmland	Hydric
Co	Congaree loam	Prime farmland if protected from flooding or not frequently flooded during the growing season	Predominantly non-hydric
DoB	Dothan loamy sand, 2 to 6 percent slopes	Prime farmland	Non-hydric

Symbol	Soil unit name	Farmland classification*	Hydric rating*
FaB	Faceville sandy loam, 2 to 6 percent slopes	Prime farmland	Non-hydric
GeB	Georgeville silt loam, 2 to 6 percent slopes, severely eroded	Prime farmland	Non-hydric
GeC	Georgeville silt loam, 6 to 10 percent slopes	Farmland of statewide importance	Non-hydric
HeB	Herndon silt loam, 2 to 6 percent slopes	Prime farmland	Non-hydric
HeC	Herndon silt loam, 6 to 10 percent slopes	Farmland of statewide importance	Non-hydric
HnB	Herndon-urban land complex, 2 to 6 percent slopes	Not prime farmland	Non-hydric
NaB	Nason silt loam, 2 to 6 percent slopes	Farmland of statewide importance	Non-hydric
NaC	Nason silt loam, 6 to 10 percent slopes	Farmland of statewide importance	Non-hydric
NaE	Nason complex, 10 to 30 percent slopes	Not prime farmland	Non-hydric
OaB	Orange loam, 0 to 4 percent slopes	Not prime farmland	Non-hydric
OgB	Orangeburg-Urban land complex, 2 to 6 percent slopes	Not prime farmland	Non-hydric
OgD	Orangeburg-Urban land complex, 6 to 15 percent slopes	Not prime farmland	Non-hydric
Sm	Smithboro loam	Farmland of statewide importance	Predominantly non-hydric
StA	State sandy loam, 0 to 2 percent slopes	Prime farmland	Non-hydric
To	Toccoa loam	Prime farmland if protected from flooding or not frequently flooded during the growing season	Non-hydric
Ud	Udorthents	Not prime farmland	Non-hydric
WeB	Wedowee loamy sand, 2 to 6 percent slopes	Prime farmland	Non-hydric
WeE	Wedowee loamy sand, 10 to 30 percent slopes	Not prime farmland	Non-hydric

* Reference: USDA-NRCS Web Soil Survey. (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx).

A description of each soil series mapped within the PSA can be found below:

The *Altavista Series* consists of mostly deep, moderately permeable and moderately drained soils that were created in loamy sediment on terraces of streams. Runoff capability and available water capacity are both high,

and erosion potential rating is low. Slopes generally range from 0 to 2 percent (USDA, 1978). *Altavista silt loam, 0 to 2 percent slopes (AtA)* is an Altavista Series soil located within the PSA and it accounts for approximately 3.3 percent of the PSA. This soil is classified as prime farmland, and is not included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

The *Cecil Series* consists of gently sloping to strongly sloping, deep, well-drained soils on uplands of the Piedmont. These soils formed in materials that weathered from granite rock. Permeability is moderate and available water capacity is medium. Erosion potential rating ranges from moderate to severe (USDA, 1976). Cecil Series soils located within the PSA include *Cecil fine sandy loam, 2 to 6 percent slopes (CeB)*; *Cecil fine sandy loam, 6 to 10 percent slopes (CeC); Cecil fine sandy loam 10 to 15 percent slopes (CeD); and Cecil-Urban land complex, 8 to 15 percent slopes (CfD)*. These soils account for approximately 6.5 percent of the PSA. *CeB* is classified as prime farmland; whereas *CeC* is classified as a farmland of statewide importance. Both *CeD* and *CfD* are classified as not prime farmland. None of the Cecil SMUs are included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Chastain Series* consists of deep, nearly level, poorly drained and permeable soils that originated from clayed alluvial sediment. These soils are located within the broad floodplains of the Wateree and Congaree Rivers. These soils are frequently flooded and saturated with water for five months or more during any given year. Erosion potential rating is slight (USDA, 1978). *Chastain silty clay loam (Cd)* is a Chastain Series soil located within the PSA, and it accounts for less than one-percent of the PSA. *Cd* is classified as not prime farmland, and is included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

The *Chenneby Series* consists of nearly level, deep, and somewhat poorly drained soils. These soils formed in the silty fluvial sediment of stream flood plains. Permeability is moderate in these soils, and water capacity is high. Erosion potential rating is low (USDA, 1976). *Chenneby soils (Ck)* and *Chenneby silty clay loam (Ch)* are Chenneby Series soils located within the PSA. They account for less than one-percent of the PSA. *Ck* and *Ch* are both classified as prime farmland if drained, and either protected from flooding or are not frequently flooded during the growing season. *Ck* and *Ch* are both included on the hydric soils list for Lexington County (USDA, 2017).

The *Congaree Series* consists of deep, well-drained or moderately well-drained, moderately permeable soils that formed in loamy alluvial sediment washed from soils of the Piedmont province. Congaree soils are closely associated with floodplain areas, but are usually found at slightly higher elevations than other floodplain soils. The erosion potential rating for the soil series is low (USDA, 1978). *Congaree loam (Co)* and *Congaree silt loam (Co)* are both Congaree Series soils located within the PSA. They account for approximately one-percent of the PSA. *Co* soils are classified as prime farmland if they are protected from flooding, or are not frequently flooded during the growing season. *Co* soils are included on the hydric soils list for both Lexington and Richland County, South Carolina (USDA, 2017).

The *Craven Series* consists of nearly level, deep, and moderately well-drained soils. These soils formed in fine-textured marine sediment on stream terraces. Permeability is slow in these soils, and available water capacity is medium. Erosion potential rating is low (USDA, 1976). *Craven fine sandy loam, 0 to 2 percent slopes (CvA)* is

Craven Series soil located within the PSA, and it accounts for less than one-percent of the PSA. *CvA* is classified as prime farmland and is included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Dothan Series* consists of deep, moderately slowly permeable, well-drained soils that formed in the thick beds of loamy marine sediment. These soils are typically located on broad ridgetops in the Coastal Plain; slopes range from 0 to 6 percent and erosion potential rating is low (USDA, 1976). *Dothan loamy sand, 2 to 6 percent slopes (DoB)* and *Dothan-Urban land complex, 0 to 6 percent slopes (DwB)* are both Dothan Series soils located within the PSA. They account for approximately 5.4-percent of the PSA. *DoB* soil is classified as prime farmland; whereas *DwB* is classified as not prime farmland. Neither of these SMUs are included on the hydric soils list for Lexington or Richland County, South Carolina (USDA, 2017).

The *Enon Series* consists of gently sloping, moderately deep, well-drained soils on uplands of the Piedmont. These soils formed in parent material derived from mixed acid and basic rocks. Permeability is slow in these soils, and available water capacity is medium. Erosion potential rating is moderate (USDA, 1976). *Enon silt loam, 2 to 6 percent slopes (EnB)*, is an Enon Series soil located within the PSA, and it accounts for approximately 5.2-percent of the PSA. *EnB* is classified as a farmland of statewide importance, and is not included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Enoree Series* consists of nearly level and poorly drained soils. These soils formed in deposits of sandy and loamy alluvium on floodplains. These soils are typically found on flats or slight depressions. Permeability is moderate in Enoree soils, and available water capacity is medium. Runoff is very slow, and soils are subject to frequent flooding. Ponding of water on the surface of these soils is common. Most of these soils are located in wooded areas. Erosion potential rating is low (USDA, 1976). *Enoree silt loam, 0 to 2 percent slopes frequently flooded (Eo)* is an Enoree Series soil located within the PSA, and accounts for less than one percent of the PSA. *Eo* is classified as not prime farmland, and is included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Faceville Series* consists of deep, well-drained, moderately permeable soils that formed in thick, clayey marine sediment. These soils are located on broad ridges in the Coastal Plain. Slopes can range from 0 to 6 percent. Erosion potential rating is low (USDA, 1978). *Faceville sandy loam, 2 to 6 percent slopes* (*FaB*) is a Faceville Series soil located within the PSA, and it accounts for less than one-percent of the PSA. *FaB* is classified as prime farmland, and is not included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

The *Georgeville Series* consists of deep, well-drained, moderately permeable soils that formed in residuum weathered from Carolina slate. These soils are located on uplands in the Piedmont. Slopes for these soils can range from 2 to 15 percent. Erosion potential ranges from moderate to severe (USDA, 1978). Georgeville Series soils located within the PSA include *Georgeville silt loam, 2 to 6 percent slopes (GeB); Georgeville silt loam, 6 to 10 percent slopes (GeC); and Georgeville very fine sandy loam, 10 to 15 percent slopes (GeD)*. These soils account for approximately 11.9 percent of the PSA. *GeB* is classified prime farmland; whereas *GeC* is classified as a farmland of statewide importance. *GeD* is classified as not prime farmland. None of the Georgeville SMUs are included on the hydric soils list for Lexington or Richland County, South Carolina (USDA, 2017).

The *Goldsboro Series* consists of deep, moderately well-drained, moderately permeable soils that formed in loamy sediment on marine and fluvial terraces. Slopes range from 0 to 2 percent and erosion potential rating is low (USDA, 1976). *Goldsboro sandy loam, 0 to 2 percent slopes (GoA)* is a Goldboro Series soil located within the PSA and it accounts for less than one percent of the PSA. *GoA* is classified as prime farmland, and is not included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Herndon Series* consists of deep, well-drained, moderately permeable soils that formed in clayey residuum weathered from fine textured Carolina slate. These soils are located on smooth ridgetops and side slopes in the Piedmont. Slopes can range from 2 to 10 percent and erosion potential rating is moderate (USDA, 1978). Herndon Series soils located within the PSA include *Herndon silt loam, 2 to 6 percent slopes (HeB/HrB); Herndon silt loam 6 to 10 percent slopes (HeC); and Herndon-Urban complex, 2 to 6 percent slopes (HnB)*. These soils account for approximately 13.4 percent of the PSA. *HeB* and *HrB* are classified as a prime farmland; whereas *HeC* is classified a farmland of statewide importance. *HnB* is classified as not prime farmland. None of the Herndon SMUs are included on the hydric soils list for Lexington or Richland County, South Carolina (USDA, 2017).

The *Johnston Series* consists of deep, very poorly drained soils that formed in the loamy fluvial and marine sediment. These soils are located on floodplains along streams in the Coastal Plain and exhibit moderately rapid permeability in the surface layer and rapid permeability in the underlying layer material. Saturation most of the year is common. Slopes are typically less than one percent, and erosion potential rating is low (USDA, 1976). *Johnston soils (JO)* is a Johnston Series soil located within the PSA, and it accounts for less than one-percent of the PSA. *JO* is classified as not prime farmland, and is included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Mecklenburg Series* consists of sloping, deep, well-drained soils. These soils formed in the material that weathered from Carolina slate. These soils are located on the side slopes of uplands in the Piedmont. Permeability is slow, and available water capacity is medium. Runoff is rapid, and erosion potential rating is moderate (USDA, 1976). *Mecklenburg silt loam, 6 to 10 percent slopes (MeC)* is a Mecklenburg Series soil located within the PSA, and accounts for less than one percent of the PSA. *MeC* is classified a farmland of statewide importance, and is not included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Nason Series* consists of gently sloping to strongly sloping, moderately deep, well-drained soils. These soils formed in material weathered from Carolina slate in the Piedmont. Nason soils are located on upland ridges and side slopes of uplands. Permeability is moderate, and available water capacity is high. Erosion potential rating ranges from moderate to severe (USDA, 1978). Nason Series soils within the PSA include *Nason silt loam, 2 to 6 percent slopes (NaB); Nason silt loam, 6 to 10 percent slopes (NaC); Nason silt loam, 6 to 15 percent slopes (NaD); and Nason silt loam, 10 to 30 percent slopes (NaE*). These soils account for approximately 12.2 percent of the PSA. *NaB* and *NaC* are classified as farmlands of statewide importance; whereas *NaD* and *NaE* are classified as not prime farmland. None of the Nason SMUs are included on the hydric soils list for Lexington or Richland County, South Carolina hydric (USDA, 2017).

The *Orange Series* consists of deep slowly permeable, somewhat poorly drained soils that formed in material weathered from Carolina slate in the Piedmont. Slopes can range from 0 to 4 percent. Erosion potential rating is

low (USDA, 1978). These soils are located at lower elevations in smooth, gently sloping drainageways. *Orange loam (OaB)* is an Orange Series soil located within the PSA, and it accounts for approximately 3.6-percent of the PSA. *OaB* is classified as not prime farmland, and is not included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

The *Orangeburg Series* consists of nearly level, gently sloping or sloping, well-drained soils. These soils formed in loamy marine sediment on uplands of the Coastal Plain and on terraces. Permeability is moderate, and available water capacity is medium. Erosion potential rating ranges from slight to moderate (USDA, 1978). Orangeburg Series soils within the PSA include *Orangeburg-Urban land complex, 2 to 6 percent slopes (OgB); Orangeburg-Urban land complex, 6 to 15 percent slopes (OgD); Orangeburg loamy sand, 2 to 6 percent slopes (OrB); and Orangeburg loamy sand 6 to 10 percent slopes (OrC)*. These soils account for approximately 13.3 percent of the PSA. *OrB* is classified as prime farmland; whereas *OrC* is designated as a farmland of statewide importance. *OgB* and *OgD* are classified as not prime farmland. None of the Orangeburg SMUs are included on the hydric soils list for Lexington or Richland County, South Carolina (USDA, 2017).

The *Pelion Series* consists of nearly level, gently sloping or sloping, deep, moderately well drained soils. These soils formed in loamy marine sediment in the Sand Hills region. Permeability is moderate, and available water capacity is low. Pelion Series soils are located on stream valleys, toe slopes, side slopes, and in some depressions. Runoff can range from slow to medium. Erosion potential rating is moderate to severe (USDA, 1976). The Pelion Series is commonly associated with forests and pasture lands. *Pelion loamy sand, 6 to 10 percent slopes (PeC)* is a Pelion Series soil located within the PSA, and accounts for less than one percent of the PSA. *PeC* is classified as not prime farmland soil, and is not included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Pickens Series* consists of sloping to strongly sloping, shallow, somewhat excessively drained soils. These soils formed by weathered Carolina slate and shale. Permeability is moderate, and available water capacity is low. These soils are typically associated with side slopes on uplands and runoff is rapid. Erosion potential rating is moderate (USDA, 1976). *Pickens slaty silt loam, 6 to 15 percent slopes (PkD)* is a Pickens Series soil located within the PSA, and accounts for less than one percent of the PSA. *PkD* is classified as not prime farmland, and is not included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Rains Series* consists of nearly level, deep, poorly drained soils. These soils formed in the loamy marine sediments on the uplands of the Sand Hills regions and on stream terraces. Permeability is moderate, and available water capacity is medium. Runoff is generally slow, and water will pond on the surface after rain events in undrained areas. These soils maintain a seasonally high water table at a depth of less than one foot. Erosion potential rating is low (USDA, 1976). *Rain sandy loam (Ra)* is a Rains Series soil located within the PSA, and it accounts for approximately 2.0 percent of the PSA. *Ra* is classified as a farmland soil of statewide importance and is included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Smithboro Series* consists of deep, somewhat poorly drained, slowly permeable soils that formed in clayey marine sediment. These soils are located on broad terraces within the Coastal Plain. Slopes are typically less than two percent, and the erosion potential rating is low (USDA, 1978). *Smithboro loam (Sm)* is Smithboro Series

soil located within the PSA, and it accounts for approximately 1.4 percent of the PSA. *Sm* soil is classified as a farmland soil of statewide importance, and is included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

The *State Series* consists of deep, well-drained, moderately permeable soils that formed in loamy and fluvial sediment derived from Carolina slate. These soils are located on high stream terraces in the Piedmont and the Coastal Plain. Slopes are generally less than two percent, and the erosion potential is low (USDA, 1978). *State sandy loam, 0 to 2 percent slopes (StA)* is a State Series soil located within the PSA, and accounts for approximately 5.5 percent of the PSA. *StA* is classified as a prime farmland soil, and is not included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

The *Tatum Series* consists of moderately steep, moderately deep, well-drained soils. These soils formed in material weathered from Carolina slate. The Tatum series has moderate permeability, and available water capacity is high. These soils are usually located on short side slopes of upland areas or stream terraces (USDA, 1976). *Tatum silt loam, 15 to 25 percent slopes (TaE*), is a Tatum Series soil located within the PSA, and it accounts for approximately 4.4 percent of the PSA. *TaE* is classified as prime farmland, and is not included on the hydric soils list for Lexington County, South Carolina (USDA, 2017).

The *Toccoa Series* consists of deep, well-drained, moderately rapid permeable soils that formed in thick alluvium deposited from the Piedmont. These soils are located on broad floodplain areas of rivers such as the Broad, Congaree, Saluda, and Wateree Rivers. Toccoa series soils are frequently flooded, and slopes are less than two percent (USDA, 1978). *Toccoa loam (To)* is a Toccoa Series soil located within the PSA, and it accounts for less than one percent of the PSA. *To* is classified as prime farmland, and is not included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

The *Udorthents Series* consists of borrow pits from which soil has been excavated. Generally, these soils have a surface layer of yellowish brown loamy sand about 4 inches thick, however, the specific characteristics of this soil vary from one site to another (USDA, 1978). *Udorthents* (Ud) accounts for less than one percent of the PSA. Ud is classified as not prime farmland and is not included on the hydric soils list for Richland County (USDA, 2017).

The *Wedowee Series* consists of deep, well-drained, moderately permeable soils that formed in material weathered from granitic rock in the Carolina Slate Belt. These soils are located on medium to narrow ridges and irregular side slopes in the Piedmont. Slopes can range from as much as 30 percent to as little 2 percent (USDA, 1978). Wedowee Series soils within the PSA include *Wedowee loamy sand, 10 to 30 percent slopes (WaE)* and *Wedowee loamy sand, 2 to 6 percent slopes (WeB)*. These soils account for approximately 3.3 percent of the PSA. *WeB* is classified as prime farmland; whereas *WeE* is designated as not prime farmland. None of the Wedowee SMUs are included on the hydric soils list for Richland County, South Carolina (USDA, 2017).

Water (W) is also mapped in multiple locations within the PSA. The *Water* SMU accounts for approximately 1.5 percent of the PSA.

2.4 Water Resources and Water Quality

2.4.1 WATER RESOURCES

The SC Department of Health and Environmental Control (SCDHEC) divides South Carolina into eight (8) major river basins. A basin can be described as a geographic area in which all surface waters drains to a common point. The Carolina Crossroads PSA extends into two of these major river basins; the Saluda and Broad River Basins.

2.4.1.1 Broad River Basin

The Broad River Basin extends across the Piedmont region of North Carolina and South Carolina. In South Carolina, the Broad River Basin encompasses approximately 4,000 square miles, and is roughly bounded by the Cities of Greenville to the west, York to the east, and Columbia to the south. Of the 2.5 million acres within the basin, approximately 59 percent is forested land. Agricultural and urban lands comprise the majority of the remaining land within the basin. The Broad River Basin also contains nearly 4,700 miles of streams and 18,500 acres of lake waters.

The basin is subdivided into three major sub-basins, or hydrologic unit codes (HUCs), including the Enoree River Sub-Basin (HUC 03050108), the Tyger River Sub-Basin (HUC 03050107), and the Broad River Sub-Basin (HUCs 03050105 & 03050106). Of these, approximately 11.5 percent of the PSA is located within the Broad River Sub-Basin.

The Broad River Sub-Basin (HUCs 03050105 & 03050106) is located in Cherokee, Spartanburg, York, Union, Chester, Fairfield, Newberry, and Richland Counties, and encompasses approximately 2,500 square miles. Of the approximately 1.5 million acres, 60.6 percent is forested land, 23.8 percent is agricultural land, 1.2 percent is scrub/shrub land, 2.1 percent is forested wetland, 9.8 percent is urban land, 1.6 percent is water, and 0.9 percent is barren land. The urban land percentage is comprised primarily of the Cities of Spartanburg, Gaffney, and Chester, and portions of the Cities of York, Union, and Columbia.

Within the Broad River Sub-Basin, there are approximately 2,800 stream miles and 14,500 acres of lake waters. The Broad River flows across the North Carolina/South Carolina state line and accepts drainage from Buffalo Creek, Cherokee Creek, Kings Creek, Thicketty Creek, Bullock Creek, and the Pacolet River. The Broad River then accepts drainage from Turkey Creek, the Sandy River, the Little River, and Cedar Creek before converging with the Saluda River in Columbia.

Specifically, the portion of the PSA within the Broad River Sub-Basin lies within the Broad River Watershed (HUC 03050106-07). HUC 03050106-07 is located in Newberry, Fairfield, and Richland Counties and consists primarily of the Broad River and its tributaries from the Parr Shoals dam to its confluence with the Saluda River. Within the PSA, the Broad River Watershed encompasses the northern portion of US 176 (Broad River Road) interchange with I-26, and the area along I-20 east of the interchange of US 176 (Broad River Road). Furthermore, HUC 03050106-07 incorporates Tributaries 1, 2, 39, 40, 59, and 60; Wetlands 16 through 19, 39, and 50; as well as pond 3. The Broad River basin includes two named waterbodies, the Broad River (Tributary 40), and Moccasin Branch (Tributary 60).

2.4.1.2 Saluda River Basin

The Saluda River Basin originates at the South Carolina state line and extends from the Blue Ridge Mountains through the Piedmont and into the Sand Hills region. The basin encompasses approximately 2,500 square miles, and is roughly bounded by the Cities of Easley to the west, Greenville to the east, and Lake Marion to the south. Of the 1.6 million acres within the basin, approximately 53 percent is forested land. Agricultural and urban lands comprise the majority of the remaining land within the basin. The Saluda River Basin contains over 6,700 miles of streams and 74,500 acres of lake waters.

The basin is subdivided into two major sub-basins including the Saluda River Sub-Basin (HUC 03050109) and the Congaree River Sub-Basin (HUC 03050110). Of these, approximately 88.5 percent of the PSA is located within the Saluda River Sub-Basin.

The Saluda River Sub-Basin (HUC 03050109) is located in Greenville, Pickens, Anderson, Abbeville, Laurens, Greenwood, Newberry, Saluda, Lexington, and Richland Counties, and encompasses approximately 2,500 square miles. Of the approximately 1.6 million acres, 53.7 percent is forested land, 26.1 percent is agricultural land, 12.9 percent is urban land, 4.2 percent is water, 2.1 percent is forested wetland, and 1.0 percent is barren land. The urban land percentage is comprised primarily of the Cities of Greenville and Columbia, and to a lesser extent the Cities of Laurens and Newberry.

Within the Saluda River Sub-Basin, there are approximately 5,600 miles of streams and 69,000 acres of lake waters. The Saluda River forms at the confluence of the South Saluda River and North Saluda River, approximately 11 aerial miles northwest of the City of Greenville. The Saluda River flows past the City of Greenville and is joined by Georges Creek, Big Brushy Creek, Big Creek, and Broad Mouth Creek before forming the headwaters of Lake Greenwood. The Reedy River joins the Saluda River as a separate arm of Lake Greenwood. Downstream of the lake, Ninety Six Creek and Little River flow into the Saluda River before forming the headwaters of Lake Murray. Further downstream, the Little Saluda River and the Bush River merge with the Saluda River to form the headwaters of Lake Murray. The Saluda River emerges from the Lake Murray dam and joins the Broad River in the City of Columbia to form the Congaree River.

Specifically, the portion of the PSA within the Saluda River Sub-Basin lies within the Lower Saluda River Watershed (HUC 03050109-14). HUC 03050109-14 is located in Lexington and Richland Counties and consists primarily of the lowest reach of the Saluda River and its tributaries from the Lake Murray dam to its confluence with the Broad River. Within the PSA, the Lower Saluda River Watershed encompasses the area south of US 176 (Broad River Road) at I-26, and the area west of US 176 (Broad River Road) at I-20. Furthermore, HUC 03050109-14 incorporates Tributaries 3 through 38, 41 through 58, and 61 through 68; the NPDES-Permitted Treatment Basin; Ponds 1, 2, and 4, and Wetlands 1 through 15, 20 through 38, 40 through 49, and 51 through 55. These include three named waterbodies, as listed below:

- Stoop Creek (Tributary 21)
- Saluda River (Tributary 30)
- Senn Branch (Tributary 53)

Please see Section 4.0 for complete details of Delineated Waters of the U.S. identified within the PSA.

Due to the size of the proposed project, hydrology from the Carolina Crossroads PSA drains to multiple streams that are monitored by four different water-quality monitoring stations (WQMS). Please see Appendix A, Figure 4 for the extent of drainage areas within the PSA, and their associated water-quality monitoring stations. The Basinwide Watershed Water Quality Assessment Reports for the Broad River Basin (SCDHEC, 2007) and the Saluda River Basin (SCDHEC, 2011) were reviewed along with the S.C. List of 303(d) Impaired Waters (SCDHEC, 2016) for information pertaining to water resources and water quality.

All surface waters located within HUC 03050106-07 drain through unnamed tributaries and Moccasin Branch and eventually to the Broad River. WQMS B-834 is located on the Broad River at Columbia Diversion Canal. The Basinwide Watershed Water Quality Assessment Report for the Broad River Basin does not provide any information pertaining to WQMS B-834; however, WQMS B-337 is located approximately 0.5 mile downstream of WQMS B-834. Aquatic life uses are fully supported at the WQMS B-337, but recreational uses are only partially supported due to higher than allowable fecal coliform bacterial levels (SCDHEC, 2007).

The upper central portion of the PSA along I-26, from north of US 176 (Broad River Road) to Tram Road, drains to Kinley Creek, where WQMS S-260 is located at St. Andrews Road, approximately 1.2 miles west of I-26. Aquatic life uses are partially supported at this station based on macroinvertebrate community data. In addition, there are significant decreasing trends in dissolved oxygen concentrations and increasing trends in total phosphorus concentrations and total suspended solids. Recreational uses are not supported due to higher than allowable fecal coliform bacterial levels (SCDHEC, 2011).

The lower central portion of the project area along I-26, from Tram Road to the I-20 interchange, drains to Stoop Creek, where WQMS S-507 is located at Bush River Road. The Basinwide Watershed Water Quality Assessment Report for the Saluda River Basin does not provide any information pertaining to WQMS S-507; however, WQMS S-298 is located approximately 2.3 miles downstream of WQMS S-507. More information regarding WQMS S-298 is below.

The remainder of the project area drains eventually into the Saluda River. WQMS S-298 is located on the Saluda River, approximately one-mile upstream of the Millrace Rapids and the Riverbank Zoo. Aquatic life and recreational uses are fully supported at this station; however, there is a significant increasing trend in five-day biochemical oxygen demand and total suspended solids. There is also a significant increasing trend in pH levels. Significant increasing trends in dissolved oxygen concentration and decreasing trends in turbidity, total phosphorus concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters at this site (SCDHEC, 2011).

Qualitative water quality sampling was not conducted within the PSA as part of this assessment.

2.4.2 303(D) LIST OF IMPAIRED WATERS

In accordance with Section 303(d) of the 1972 Federal Clean Water Act (CWA), SCDHEC evaluates water bodies identified as impaired for appropriate inclusion on the Section 303(d) list. The 303(d) list is a State list of waters

that are impaired and outlines the parameters that do not meet standards. A WQMS can be listed for one or more impairments. Table 2.2 lists the WQMS on the 2016 303(d) List.

Table 2.2 303(D) List of Impaired Waters within the Project Study Area

Waterbody	Monitoring station	Impaired use(s)	Impairment cause(s)	TMDL status
Kinley Creek	S-260	Aquatic life uses	Impaired biological integrity	
Kinley Creek	S-260	Recreational uses	E. coli	Approved TMDL
Stoop Creek	S-507	Aquatic life uses	Impaired biological integrity	
Saluda River	S-298	Recreational uses	E. coli	
Saluda River	S-298	Fish consumption advisory		
Broad River	B-834	Recreational uses	E. coli	Approved TMDL

Station S-260 (Kinley Creek) and Station S-507 (Stoop Creek) are both impaired for aquatic life uses based on the assessment of biological data at these stations. Stations S-260 (Kinley Creek), S-298 (Saluda River), and B-834 (Broad River) are all impaired for recreational uses due to the presence of E. coli in the water. In addition, there is a fish consumption advisory for the portion of the Saluda River within the project area.

Once a WQMS has been added to the 303(d) List, it will remain on the list until the water quality standard set by SCDHEC has been attained or a plan has been developed and approved by the USEPA to attain the standard. This plan is known as a total maximum daily load (TMDL).

2.4.3 TOTAL MAXIMUM DAILY LOADS

A TMDL refers to both a calculation of a pollutant entering a waterbody as well as a plan document. The calculation determines the amount of a single pollutant (e.g., bacteria, nutrients, metals) that can enter a waterbody on a daily basis and still meet water quality standards set forth by the state. The TMDL plan document includes this calculation along with source assessments, watershed and land use information, reductions and allocations information, implementation of the program and other relevant information, maps, figures and pictures (SCDHEC, 2007).

The goal of a TMDL is to identify potential pollution sources, calculate and quantify the reduction of those sources, and provide general implementation information needed in order to meet water quality standards and improve water quality. After the approval of the TMDL, an implementation plan can be developed to realize the goals of the written TMDL plan document. Implementation of a TMDL has the potential to reduce sources of pollution within a watershed and the potential to restore the full use of the waterbody.

TMDLs are calculated by adding all the sources for the pollutant causing the impairment. After a TMDL is calculated, the amount of pollutant entering the water is compared to the water quality standards for that waterbody. Then this total loading is reduced to the levels where the water quality standards can be met. This reduced loading is then divided among all contributing sources.

According to the SCDHEC, two (2) TMDLs have been developed within the vicinity of the proposed project. These TMDLs are implemented for all waters within the impaired drainage area.

A TMDL was approved for fecal coliform bacteria in the Broad River in September 2005. There are eight (8) facilities that have fecal coliform limits in their NPDES permits that discharge into this section of the Broad River. Part of the City of Columbia's Municipal Separate Storm Sewer System (MS4) is in this section of the Broad River watershed. Possible sources of fecal coliform bacteria in the Broad River, identified in the TMDL, include MS4 stormwater runoff, leaking sewers, sanitary sewer overflows (SSOs), failing onsite wastewater disposal systems, stormwater runoff containing manure from agricultural land application, waste from pets and wildlife, and direct contributions resulting from cattle watering in creeks. The TMDL specifies a reduction in the load of fecal coliform bacteria into this section of the Broad River of 62 percent in order for the river to meet the recreational use standard. The northern portion of US 176 (Broad River Road) interchange with I-26, and the area along I-20 east of the interchange of US 176 (Broad River Road), are located within the limits of this TMDL.

TMDLs were also approved for the Lower Saluda River and tributaries Kinley Creek and Twelvemile Creek in September 2004. There is a NPDES facility permitted to discharge fecal coliform bacteria on Twelvemile Creek and one on the Saluda River. Much of this watershed has been incorporated into one or more MS4s. Possible sources of fecal coliform bacteria in the Twelvemile Creek watershed are leaking sewers, SSOs, failing septic systems, improper land application of manure, cattle watering in the creeks, wildlife, and urban runoff. Fecal coliform sources in the Saluda River and Kinley Creek watersheds are the same except for the exclusion of agricultural sources. The TMDLs require reductions of 89 to 92 percent in fecal coliform loading for these streams to meet the recreational use standard. The central portion of the project area along I-26, from US 176 (Broad River Road) to Tram Road are located within the limits of this TMDL.

2.4.4 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Point source discharge means a discharge which is released to the waters of the State by a discernible, confined and discrete conveyance, including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft from which waste is or may be discharged. The National Pollutant Discharge Elimination System (NPDES) Permit Program was created by Section 402 of the CWA. In 1975, the SCDHEC Bureau of Water (BOW) received authority from the EPA to administer the NPDES Permit Program in South Carolina. The BOW is responsible for the permitting, compliance, monitoring, and enforcement activities of the program.

Persons/facilities with point source discharges to surface waters are required to have NPDES permits. Typical regulated point source discharges are:

- discharges from wastewater treatment systems owned by municipalities, industries, private utilities, State and Federal government, etc.;
- discharges such as cooling water, boiler blow down, etc.;
- stormwater discharges from municipal separate storm sewer systems (MS4s);
- stormwater discharges associated with industrial activity; and,

- stormwater dischargers from construction sites.

Two NPDES permitted facilities are operating within the project area. Both facilities are located in the vicinity of the I-20 crossing of the Saluda River. NPDES Permit SC0029475 authorizes minor domestic discharge, including non-potable water, to the Saluda River from Woodland Utilities. NPDES Permit SC0035564 authorizes minor domestic discharge, including non-potable water, to the Saluda River from Carolina Water Services (CWS) Regional Sewer System. SCDHEC has recently issued a Notice of Intent to deny reissuance of NPDES Permit SC0035564 and currently supports a requirement that CWS tie into the regional system and eliminate discharge into the Saluda River.

2.4.5 WATER QUALITY SUMMARY

SCDHEC's Watershed and Water Quality Information was provided by an online query in January 2018. According to these reports, all waters within the project study area are listed as impaired on the 303(d) list and/or are within an approved TMDL watershed. Please see Appendix B for a copy of the SCDHEC Watershed and Water Quality Information Reports.

Due to the existing water quality impairments and approved TMDL within the PSA watershed, SCDHEC may require additional water quality protection and stormwater treatment measures during and after construction. However, the proposed project is not anticipated to contribute to these impairments or have long term impacts on water quality within the impaired watersheds.

During construction activities, temporary siltation may occur in adjacent waters and erosion will be of a greater degree than presently occurring. It is recommended that the contractor minimize this impact through implementation of construction best management practices, reflecting policies contained in 23 CFR 650 B and S.C. Code of Regulations 72-400. The SCDOT has also issued an Engineering Directive Memorandum (Number 23), dated March 10, 2009, regarding Department procedures to be followed in order to ensure compliance with S.C. Code of 72-400, Standards for Stormwater Management and Sediment Reduction. Exposed areas may be stabilized by following the Department's Supplemental Technical Specification for Seeding (SCDOT Designation SC-M-810 (11-08)).

3 Biotic Resources

3.1 Terrestrial Plant Communities

Vegetative terrestrial communities within the Carolina Crossroads PSA were distinguished by plant species, location in the landscape, past disturbances, and hydrologic characteristics. For the purpose of this report, only habitats located directly within the PSA are summarized. Based on the field review, the following six (6) terrestrial habitat communities are present within the PSA: 1) maintained lawns, 2) maintained and disturbed roadside, 3) mixed pine/hardwood forest, 4) pine forest, 5) bottomland hardwood forest, and 6) scrub-shrub. A brief summary of the terrestrial plant communities found within the PSA is described below.

Maintained Lawns

Maintained lawns are associated with commercial and residential development and comprise the majority of the Carolina Crossroads PSA. Commercial development dominates the land use along I-26, from Lake Murray Boulevard to the I-126 interchange, and along I-20, between Bush River Road and the I-26 interchange. Residential development comprises the majority of land use along I-20, between the I-26 interchange and the Broad River. Small areas of residential development can be found throughout the PSA. Dominant vegetation within the maintained lawns community type includes a variety of ornamental and native shrub and tree species, along with maintained grasses including common fescue (*Festuca* sp.), ryegrass (*Lolium perenne*), and bluegrass (*Poa* sp.).

Maintained and Disturbed Roadside

Maintained and disturbed roadside is the dominant vegetated community type throughout the PSA, and occurs immediately alongside the existing roadways within the project area. This community type comprises approximately 30 percent of the PSA. Most of the disturbed roadway edges are comprised of herbaceous species and a few shrubs, including various grasses such as common fescue, ryegrass, and bluegrass.

Mixed Pine/Hardwood Forest

Mixed pine/hardwood forest is the dominant habitat community type comprising approximately 271.33 acres, or 18.8 percent, of the PSA. Within the PSA, this habitat generally occurs on flats and slopes adjacent to streams and rivers and within wooded corridors buffering residential development. Dominant vegetation consists of pine and hardwood tree species, at varying levels of growth or successional stages from young and intermediate forest (five to 30 years old) to mature forest (30+ years old). Dominant tree species observed within the community varied depending on degree of wetness and location within the landscape but generally included sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), loblolly pine (*Pinus taeda*), Virginia pine (*Pinus virginiana*), water oak (*Quercus nigra)*, northern red oak (*Quercus rubra*), American elm (*Ulmus americana*), winged elm (*Ulmus alata*), white oak (*Quercus alba*), willow oak (*Quercus phellos*), tulip poplar (*Lirodendron tulipifera*), white ash (*Fraxinus americana*), mockernut hickory (*Carya tomentosa*), blackgum (*Nyssa sylvatica*), eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), and persimmon (*Diospyros virginiana*). Dominant herbaceous plant species observed within the community included woodoats *(*Chasmanthium latifolium*)*, Christmas fern (*Polystichum acrostichoides*), ebony spleenwort (*Asplenium platyneuron*), broomsedge (*Andropogon virginicus*), and blackberry (*Rubus* spp.). Dominant vining plant species observed within the community included Virginia creeper (*Parthenocissus quinquefolia*), common greenbrier (*Smilax rotundifolia*), trumpet vine (*Campsis radicans*), muscadine (*Vitis rotundifolia*), and poison ivy (*Toxicodendron radicans*). Invasive plant species, including Chinese privet (*Ligustrum sinense*), tree-of-heaven (*Ailanthus altissima*), Japanese honeysuckle (*Lonicera japonica*), and autumn olive (*Elaeagnus umbellate*), were also observed.

Pine Forest

Pine forest comprises approximately 28.65 acres, or two percent, of the PSA and primarily includes tracts of land planted with pine trees for the production of timber or other purposes. Within the PSA, this habitat generally occurs in association with large residential properties and within existing roadway interchanges along I-20 and I-26. Naturally occurring areas of pine-dominated forest are also present within limited portions of the PSA intermingled with areas of mixed pine/hardwood forest. The dominant vegetation within the pine forest community is primarily loblolly pine. Opportunistic tree species such as red maple, sweetgum, and American elm were also observed in the understory. Groundcover vegetation was generally sparse due to the density of the overhead tree canopy. Dominant vining species observed within the community included Virginia creeper, poison ivy, and common greenbrier. Invasive species including Chinese privet, autumn olive, tree-of-heaven, and Japanese honeysuckle were also observed.

Bottomland Hardwood Forest

Bottomland hardwood forest comprises approximately 30.93 acres, or 2.2 percent, of the PSA and includes primarily the floodplains of large streams, creeks, and rivers and other low-lying areas. Specifically, this habitat can be found immediately adjacent to the Saluda and Broad Rivers. Dominant tree species observed within the bottomland hardwood forest community included red maple, water oak, laurel oak (*Quercus laurifolia*), willow oak, tulip poplar, American sycamore (*Platanus occidentalis*), sweetgum, red bay (*Persea borbonia*), and ironwood (*Ostrya virginiana*). Groundcover vegetation was sparse to moderately dense and included pepper bush (*Clethra alnifolia*), giant cane (*Arundinaria gigantea*), cinnamon fern (*Osmundastrum cinnamomeum*), and netted chain fern (*Woodwardia areolata*). Dominant vining species observed within the community included poison ivy, muscadine, laurel-leaf greenbrier (*Smilax laurifolia*), and common greenbrier. Invasive species including Chinese privet and Japanese honeysuckle were also observed.

Scrub-Shrub

Scrub-Shrub comprises approximately 20.54 acres, or 1.4 percent, of the PSA. The scrub-shrub community includes irregularly maintained or otherwise disturbed areas dominated by herbaceous and shrubby plant species and tree seedlings. Within the PSA, this habitat is found within roadway and/or utility rights-of-way and other overgrown areas associated with development. Dominant vegetation observed within the scrub-shrub community included blackberry, goldenrod (*Solidago* sp.), common greenbrier, eastern baccharis (*Baccharis halimifolia*), winged sumac (*Rhus copallinum*), broomsedge, vasey grass (*Paspalum urvillei*), and seedlings of various tree species including sweetgum, red maple, loblolly pine, eastern red cedar, and winged elm. Invasive species including Chinese privet, tree-of-heaven, and Japanese honeysuckle were also observed.

3.2 Wetland Plant Communities

Wetland communities located within the PSA include sixteen (16) freshwater emergent wetlands (PEM1 and PEM2), two (2) freshwater scrub/shrub wetlands (PSS1), 34 freshwater forested (PFO1 and PFO4) wetlands, and three (3) mixed community types (Cowardin, 1979), designated Freshwater Wetlands 1 through 55. More

information on the aforementioned wetland areas, including approximate size, dominant vegetation, soils, and indicators of hydrology and hydric soils, is included in Section 4.0 - Delineated Waters of the U.S.

3.3 Aquatic Plant Communities

One (1) aquatic plant community was observed within the PSA during field reviews and designated Pond 1. Submerged aquatic vegetation (SAV), including algae, submerged plants, and emergent plants was observed within the limits of the waterbody. Floating plants were not directly observed, however they may be present within the pond during the growing season. More information related to Pond 1, including approximate size and jurisdictional status, is included in Section 4.0 - Delineated Waters of the U.S.

4 Waters of the U.S.

Waters of the U.S. are defined by 33 CFR 328.3(b) and protected by Section 404 of the Clean Water Act (33 U.S.C. 1344), which is administered and enforced in South Carolina by the U.S. Army Corps of Engineers (USACE), Charleston District. The term "waters of the U.S." is defined in 33 CFR Part 328 as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    - Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs 1 – 4 above;
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in 1 – 6 above.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition), are not waters of the United States. Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.

Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and

similar areas. Wetlands are defined in the field as areas that display positive evidence of three environmental parameters including dominance of hydrophytic vegetation, wetland hydrology, and hydric soils (Environmental Laboratory, 1987).

The boundaries of waters of the U.S. within the PSA were delineated between April 16, 2015, and November 18, 2015. Wetlands were determined using the Routine On-Site Determination Method as defined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the appropriate Regional Supplements to the Manual. The majority of the PSA is located within the Eastern Mountains and Piedmont Region, and the southern extent of the project, in the vicinity of the US 378 (Sunset Boulevard) interchange with I-26 (Exit 110), is located within the Atlantic and Gulf Coastal Plain Region. The USACE was provided a preliminary jurisdictional determination (PJD), which identifies the approximate locations and boundaries of wetlands and other aquatic resources on-site that are presumed to be the subject of regulatory jurisdiction. The USACE approved the PJD on March 9, 2016 (SAC 2015-10870-DS). Please see Appendix C for a copy of the Jurisdictional Determination Verification Letter.

Please note: As the project has developed, the project team learned the study area would need to be enlarged to accommodate all areas of potential impact. Field reviews of the additional study area was conducted between July 25, 2017 and September 20, 2017. The USACE was provided an amended PJD to incorporate the additional study areas. The USACE approved the amended PJD on June 27, 2018. A copy of the amended Jurisdictional Determination Verification Letter is also included in Appendix C. This report includes all waters of the U.S. delineated in 2015 and 2017 as part of the project.

4.1 Wetlands

Prior to conducting fieldwork, Mead & Hunt reviewed National Wetlands Inventory (NWI) maps on the U.S. Fish and Wildlife Service (USFWS) NWI Wetlands Mapper via the internet (USFWS, 2017). Sixteen (16) wetland communities were depicted within the PSA on the NWI Wetlands Mapper within the PSA, and were mapped as two (2) Riverine systems (R2UBH), one (1) lake (L1UBHh), eight (8) freshwater ponds (PUBHh, PUBHx, and PUSCx), one (1) freshwater emergent wetland (PEM1Fx), and four (4) freshwater forested/shrub wetlands (PFO1A, PSS1A, and PFO1A). Please see Appendix A, Figures 5-1 through 5-7 for the location and extent of NWI elements within the PSA.

A total of 55 wetland communities were identified within the PSA during site reviews by the project team, as listed in Table 4.1. Please see Appendix A, Figures 6-1 through 6-33 for the location and extent of delineated wetlands in the PSA.

Table 4.1 Wetlands within the Project Study Area

Feature	Wetland type	Figure	Acreage
Freshwater Wetland 1	Forested (PF01/PF04)	6-3	0.045
Freshwater Wetland 2	Emergent/Forested (PEM2/PF01/PF04)	6-4	0.061
Freshwater Wetland 3	Forested (PF01)	6-4	0.014

Feature	Wetland type	Figure	Acreage
Freshwater Wetland 4	Emergent (PEM2)	6-8	0.020
Freshwater Wetland 5	Emergent (PEM1)	6-9	0.092
Freshwater Wetland 6	Emergent (PEM2)	6-10	0.051
Freshwater Wetland 7	Forested (PF01)	6-11	0.134
Freshwater Wetland 8	Forested (PF01)	6-12	0.330
Freshwater Wetland 9	Forested (PF01)	6-17	0.358
Freshwater Wetland 10	Forested (PF01)	6-17	0.040
Freshwater Wetland 11	Forested (PF01)	6-17	0.800
Freshwater Wetland 12	Forested (PF01)	6-17	0.057
Freshwater Wetland 13	Forested (PF01)	6-20	0.066
Freshwater Wetland 14	Forested (PF01)	6-20	0.024
Freshwater Wetland 15	Forested (PF01)	6-21	0.091
Freshwater Wetland 16	Forested (PF01)	6-24	0.041
Freshwater Wetland 17	Forested (PF01)	6-24	0.393
Freshwater Wetland 18	Forested (PF01)	6-24	0.251
Freshwater Wetland 19	Forested (PF01)	6-24	0.015
Freshwater Wetland 20	Forested & Scrub/Shrub (PF01/PSS1)	6-25	0.046
Freshwater Wetland 21	Forested (PF01)	6-26	0.189
Freshwater Wetland 22	Forested (PF01)	6-26	0.579
Freshwater Wetland 23	Forested (PF01)	6-26	2.483
Freshwater Wetland 24	Forested (PF01)	6-26	0.148
Freshwater Wetland 25	Forested (PF01)	6-26	1.537
Freshwater Wetland 26	Forested (PF01)	6-26	0.200
Freshwater Wetland 27	Forested (PF01)	6-26 & 6-27	0.470
Freshwater Wetland 28	Forested (PF01)	6-26	0.181
Freshwater Wetland 29	Forested (PF01)	6-27	0.039
Freshwater Wetland 30	Forested (PF01)	6-27	0.311
Freshwater Wetland 31	Scrub/Shrub (PSS1)	6-27 & 6-28	0.106
Freshwater Wetland 32	Emergent (PEM2)	6-30	0.166
Freshwater Wetland 33	Scrub/Shrub (PSS1)	6-30	0.085
Freshwater Wetland 34	Forested (PF01)	6-30	0.026
Freshwater Wetland 35	Emergent (PEM1)	6-31	0.470
Freshwater Wetland 36	Forested (PF01)	6-31	0.168
Freshwater Wetland 37	Forested (PF01)	6-31	0.022
Freshwater Wetland 38	Forested (PF01)	6-31	0.474
Freshwater Wetland 39	Emergent (PEM1)	6-2	0.020
Freshwater Wetland 40	Emergent (PEM1)	6-3	0.240
Freshwater Wetland 41	Emergent (PEM1)	6-4	0.011
Freshwater Wetland 42	Emergent (PEM1)	6-5	0.262

Feature	Wetland type	Figure	Acreage
Freshwater Wetland 43	Emergent (PEM1)	6-6	0.034
Freshwater Wetland 44	Emergent (PEM1)	6-7	0.040
Freshwater Wetland 45	Emergent (PEM1)	6-8	0.018
Freshwater Wetland 46	Emergent (PEM1)	6-9 & 6-10	0.051
Freshwater Wetland 47	Emergent (PEM1)	6-11	0.070
Freshwater Wetland 48	Emergent/Forested (PEM2/PF01/PF04)	6-18	0.029
Freshwater Wetland 49	Forested (PF01)	6-19	0.017
Freshwater Wetland 50	Forested (PF01)	6-22	0.371
Freshwater Wetland 51	Emergent (PEM1)	6-25	0.017
Freshwater Wetland 52	Forested (PF01)	6-27	0.037
Freshwater Wetland 53	Forested (PF01)	6-27	0.098
Freshwater Wetland 54	Forested (PF01)	6-27	0.021
Freshwater Wetland 55	Emergent (PEM1)	6-28	0.015
Freshwater Wetland Total			**11.934 acres**

Wetland 1

Wetland 1 is a palustrine, forested wetland located immediately west of Columbiana Drive, approximately 0.25 mile south of the I-26 interchange with Broad River Road. The entire wetland is contained within the PSA and encompasses approximately 0.045 acre. The overstory of Wetland 1 is dominated by loblolly pine and red maple. Understory vegetation is dominated by saplings of American elm and red maple. Poison ivy and common greenbrier are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 1 include: surface water, high water table, saturation, water-stained leaves, hydrogen sulfide odor, thin muck surface, and geomorphic position. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 1 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 1 is included in Appendix D, Photograph 6.

Wetland 2

Wetland 2 is a palustrine, emergent and forested wetland located immediately north of the Lake Murray Boulevard intersection with Columbiana Drive. Approximately 0.061 acre of the wetland is located within the PSA. The overstory of the forested portion of Wetland 2 is dominated by loblolly pine, sweetgum, and black willow (Salix nigra). Understory vegetation is dominated by saplings, shrubs, and herbaceous species of winged elm, black willow, pepper bush, eastern baccharis, sedges (Carex spp.), broadleaf cattail (Typha latifolia), and woolgrass (Scirpus cyperinus). Muscadine is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 2 include: surface water, saturation, water marks, iron deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 2 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 2 is included in Appendix D, Photograph 14.

Wetland 3

Wetland 3 is a palustrine, forested wetland located immediately west of Evergreen Drive and north of the I-26 interchange with Lake Murray Boulevard. The entire wetland is contained within the PSA and encompasses approximately 0.014 acre. The overstory of Wetland 3 is dominated by red maple, sweetgum, and green ash (Fraxinus pennsylvanica). Understory vegetation is dominated by saplings, shrubs, and herbaceous species of willow oak, American holly, eastern baccharis, and sedges. Poison ivy and Virginia creeper are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 3 include: surface water, high water table, saturation, water marks, water-stained leaves, hydrogen sulfide odor, thin muck surface, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 3 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 3 is included in Appendix D, Photograph 16.

Wetland 4

Wetland 4 is a palustrine, emergent wetland located immediately east of Fernandina Road, approximately 0.40 mile south of the I-26 interchange with Harbison Road. The entire wetland is contained within the PSA and encompasses approximately 0.020 acre. Wetland 4 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, winged elm, eastern baccharis, soft rush (Juncus effuses), and sedges. Primary and secondary wetland hydrology indicators within Wetland 4 include: water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 4 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 4 is included in Appendix D, Photograph 32.

Wetland 5

Wetland 5 is a palustrine, emergent wetland located immediately east of Fernandina Road, approximately 0.35 mile north of the I-26 interchange with Piney Grove Road. The entire wetland is contained within the PSA and encompasses approximately 0.092 acre. Wetland 5 is maintained by regular mowing and has no overstory. Vegetation is dominated by shrubs and herbaceous species of eastern baccharis, soft rush, Alabama supplejack (Berchemia scandens), and sedges. Primary and secondary wetland hydrology indicators within Wetland 5 include: surface water, high water table, saturation, water marks, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 5 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 5 is included in Appendix D, Photograph 38.

Wetland 6

Wetland 6 is a palustrine, emergent wetland located immediately west of Fernandina Road, approximately 800 feet south of the I-26 interchange with Piney Grove Road. The entire wetland is contained within the PSA and encompasses approximately 0.051 acre. Wetland 6 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of black willow, red maple, soft rush, and sedges. Hempvine (Mikania scandens) is a common vine found in this wetland. Primary and secondary wetland

hydrology indicators within Wetland 6 include: surface water, high water table, saturation, water marks, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 6 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 6 is included in Appendix D, Photograph 44.

Wetland 7

Wetland 7 is a palustrine, forested wetland located immediately west of Jamil Road, approximately 0.65 mile south of the I-26 interchange with Piney Grove Road. Approximately 0.134 acre of the wetland is located within the PSA. The overstory of Wetland 7 is dominated by white oak, willow oak, and sweetgum. Understory vegetation is dominated by saplings and shrubs of winged elm, willow oak, sweetgum, and Chinese privet. Roundleaf greenbrier, muscadine, and Virginia creeper are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 7 include: surface water, high water table, saturation, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 7 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 7 is included in Appendix D, Photograph 48.

Wetland 8

Wetland 8 is a palustrine, forested wetland located immediately west of Jamil Road, approximately one mile south of the I-26 interchange with Piney Grove Road. Approximately 0.330 acre of the wetland is located within the PSA. The overstory of Wetland 8 is dominated by sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of sweetgum, southern arrowwood (Viburnum dentatum), blackberry, soft rush, and sedges. Roundleaf greenbrier, hempvine, poison ivy, and Virginia creeper are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 8 include: water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 8 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 8 is included in Appendix D, Photograph 49.

Wetland 9

Wetland 9 is a palustrine, forested wetland located immediately north of I-20, approximately 600 feet east of the Saluda River. Approximately 0.358 acre of the wetland is located within the PSA. The overstory of Wetland 9 is dominated by red maple, American sycamore, and sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, American elm, hazel alder (Alnus serrulata), sweetgum, lizard's tail (Saururus cernuus), and netted chain fern. Laurel greenbrier, woodvamp (Decumaria barbara), and poison ivy are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 9 include: surface water, high water table, saturation, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 9 is not depicted on the USFWS NWI Wetland Mapper. Representative photographs of Wetland 9 are included in Appendix D, Photographs 66 and 67.

Wetland 10

Wetland 10 is a palustrine, forested wetland located immediately north of I-20, approximately 600 feet east of the Saluda River. The entire wetland is contained within the PSA and encompasses approximately 0.040 acre. The overstory of Wetland 10 is dominated by red maple, American sycamore, and sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, American elm, hazel alder, sweetgum, lizard's tail, and netted chain fern. Laurel greenbrier, woodvamp, and poison ivy are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 10 include: surface water, high water table, saturation, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 10 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 10 is included in Appendix D, Photograph 68.

Wetland 11

Wetland 11 is a palustrine, forested wetland located immediately south of I-20, approximately 600 feet east of the Saluda River. Approximately 0.800 acre of the wetland is located within the PSA. The overstory of Wetland 11 is dominated by red maple, American sycamore, willow oak, and sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, sweetgum, willow oak, American elm, marsh seedbox (Ludwigia palustris), spiderwort (Murdannia keisak), and little duckweed (Lemna obscura). Poison ivy is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 11 include: surface water, high water table, saturation, water marks, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 11 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 11 is included in Appendix D, Photograph 72.

Wetland 12

Wetland 12 is a palustrine, forested wetland located immediately north of I-20, approximately 300 feet east of the Saluda River. The entire wetland is contained within the PSA and encompasses approximately 0.057 acre. The overstory of Wetland 12 is dominated by red maple. Understory vegetation is dominated by shrubs and herbaceous species of red maple, hazel alder, netted chain fern, and giant cane. Laurel greenbrier is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 12 include: surface water, high water table, saturation, drift deposits, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 12 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 12 is included in Appendix D, Photograph 73.

Wetland 13

Wetland 13 is a palustrine, forested wetland located immediately north of I-20, approximately 0.35 mile east of the I-20 interchange with I-26. The entire wetland is contained within the PSA and encompasses approximately 0.066 acre. The overstory of Wetland 13 is dominated by red maple and river birch (Betula nigra). Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, American holly, netted chain fern, and giant cane. Laurel greenbrier is a common vine found in this wetland. Primary and secondary wetland

hydrology indicators within Wetland 13 include: surface water, high water table, saturation, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 13 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 13 is included in Appendix D, Photograph 88.

Wetland 14

Wetland 14 is a palustrine, forested wetland located south of I-20, approximately 0.20 mile southwest of the I-20 interchange with I-26. The entire wetland is contained within the PSA and encompasses 0.024 acre. The overstory of Wetland 14 is dominated by red maple and sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, blackgum, possumhaw (Viburnum nudum), sweetspire (Itea virginica), netted chain fern, and giant cane. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 14 include: high water table, saturation, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 14 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 14 is included in Appendix D, Photograph 89.

Wetland 15

Wetland 15 is a palustrine, forested wetland located immediately north of I-20, approximately 0.40 mile east of the I-20 interchange with I-26. The entire wetland is contained within the PSA and encompasses approximately 0.091 acre. The overstory of Wetland 15 is dominated by red maple, blackgum, and sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, possumhaw, southern arrowwood, netted chain fern, and false nettle (Boehmaria cylindrical). Laurel greenbrier and poison ivy are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 15 include: surface water, high water table, saturation, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 15 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 15 is included in Appendix D, Photograph 96.

Wetland 16

Wetland 16 is a palustrine, forested wetland located immediately north of I-20, approximately 0.20 mile west of the Broad River. Approximately 0.041 acre of the wetland is located within the PSA. The overstory of Wetland 16 is dominated by red maple and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, sweetgum, and lizard's tail. Trumpet creeper is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 16 include: high water table, saturation, water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 16 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 16 is included in Appendix D, Photograph 103.

Wetland 17

Wetland 17 is a palustrine, forested wetland located immediately north of I-20, approximately 600 feet west of the Broad River. Approximately 0.393 acre of the wetland is located within the PSA. The overstory of Wetland 17 is dominated by red maple and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, sweetgum, and lizard's tail. Trumpet creeper is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 17 include: high water table, saturation, water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 17 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 17 is included in Appendix D, Photograph 104.

Wetland 18

Wetland 18 is a palustrine, forested wetland located immediately north of I-20, approximately 600 feet west of the Broad River. The entire wetland is contained within the PSA and encompasses approximately 0.251 acre. The overstory of Wetland 18 is dominated by red maple and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, sweetgum, and lizard's tail. Trumpet creeper is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 18 include: high water table, saturation, water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 18 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 18 is included in Appendix D, Photograph 105.

Wetland 19

Wetland 19 is a palustrine, forested wetland located immediately north of I-20, approximately 350 feet west of the Broad River. Approximately 0.015 acre of the wetland is located within the PSA. The overstory of Wetland 19 is dominated by red maple and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, sweetgum, and lizard's tail. Trumpet creeper is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 19 include: high water table, saturation, water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 19 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 19 is included in Appendix D, Photograph 106.

Wetland 20

Wetland 20 is a palustrine, forested wetland located immediately west of I-26, approximately 750 feet south of Bush River Road. The entire wetland is contained within the PSA and encompasses approximately 0.046 acre. The overstory of Wetland 20 is dominated by American sycamore and slippery elm (Ulmus rubra). Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm and netted chain fern. Poison ivy is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 20 include: saturation, water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric

soil indicators identified in the wetland include a depleted matrix. Wetland 20 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 20 is included in Appendix D, Photograph 113.

Wetland 21

Wetland 21 is a palustrine, forested wetland located immediately west of I-26, approximately 750 feet west of the I-26 interchange with I-126. The entire wetland is contained within the PSA and encompasses approximately 0.189 acre. The overstory of Wetland 21 is dominated by sweetgum, box elder (Acer negundo), and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of green ash, box elder, slippery elm, and sweetgum. Poison ivy is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 21 include: water-stained leaves and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 21 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 21 is included in Appendix D, Photograph 115.

Wetland 22

Wetland 22 is a palustrine, forested wetland located immediately north of I-26, approximately 900 feet southwest of the I-26 interchange with I-126. The entire wetland is contained within the PSA and encompasses approximately 0.579 acre. The overstory of Wetland 22 is dominated by red maple and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of sweetgum, red maple, slippery elm, lizard's tail, and green ash. Poison ivy is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 22 include: saturation, water marks, drift deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 22 is depicted on the USFWS NWI Wetland Mapper as a palustrine, forested, broad-leaved deciduous, temporarily flooded wetland (PF01A). A representative photograph of Wetland 22 is included in Appendix D, Photograph 116.

Wetland 23

Wetland 23 is a palustrine, forested wetland located immediately south of I-26, approximately 950 feet southwest of the I-26 interchange with I-126. The entire wetland is contained within the PSA and encompasses 2.483 acres. The overstory of Wetland 23 is dominated by loblolly pine, green ash, and slippery elm. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm, box elder, red maple, and lizard's tail. Poison ivy and crossvine (Bignonia capreolata) are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 23 include: high water table, saturation, water marks, drift deposits, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 23 is depicted on the USFWS NWI Wetland Mapper as a palustrine, forested, broad-leaved deciduous, seasonally flooded wetland (PF01C). A representative photograph of Wetland 23 is included in Appendix D, Photograph 117.

Wetland 24

Wetland 24 is a palustrine, forested wetland located immediately south of I-26, approximately 900 feet southwest of the I-26 interchange with I-126. The entire wetland is contained within the PSA and encompasses approximately 0.148 acre. The overstory of Wetland 24 is dominated by red maple and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of sweetgum, green ash, slippery elm, and giant cane. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 24 include: surface water, high water table, saturation, water marks, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 24 is depicted on the USFWS NWI Wetland Mapper as a palustrine, forested, broad-leaved deciduous, seasonally flooded wetland (PF01C). A representative photograph of Wetland 24 is included in Appendix D, Photograph 118.

Wetland 25

Wetland 25 is a palustrine, forested wetland located west of I-126, approximately 0.20 mile south of the I-126 interchange with I-26. The entire wetland is contained within the PSA and encompasses 1.537 acres. The overstory of Wetland 25 is dominated by red maple and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of sweetgum, green ash, slippery elm, and giant cane. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 25 include: surface water, high water table, saturation, water marks, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 25 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 25 is included in Appendix D, Photograph 120.

Wetland 26

Wetland 26 is a palustrine, forested wetland located immediately west of I-126, approximately 0.25 mile south of the I-126 interchange with I-26. Approximately 0.200 acre of the wetland is located within the PSA. The overstory of Wetland 26 is dominated by slippery elm and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm, red maple, and box elder. Poison ivy is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 26 include: high water table, saturation, water marks, drift deposits, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 26 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 26 is included in Appendix D, Photograph 124.

Wetland 27

Wetland 27 is a palustrine, forested wetland located immediately west of I-126, approximately 0.30 mile south of the I-126 interchange with I-26. The entire wetland is contained within the PSA and encompasses 0.470 acre. Approximately 0.250 acre of the wetland is located within the PSA. The overstory of Wetland 27 is dominated by slippery elm and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm, red maple, and box elder. Poison ivy is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 27 include: high water table, saturation, water marks, drift deposits, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted

matrix. Wetland 27 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 27 is included in Appendix D, Photograph 127.

Wetland 28

Wetland 28 is a palustrine, forested wetland located immediately east of I-126, approximately 0.25 mile south of the I-126 interchange with I-26. Approximately 0.181 acre of the wetland is located within the PSA. The overstory of Wetland 28 is dominated by black willow, American sycamore, and eastern cottonwood (Populus deltoids). Understory vegetation is dominated by saplings, shrubs, and herbaceous species of black willow, Chinese privet, hazel alder, and jewelweed (Impatiens capensis). No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 28 include: high water table, saturation, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a redox dark surface. Wetland 28 is depicted on the USFWS NWI Wetland Mapper as a palustrine, unconsolidated bottom, permanently flooded, impounded wetland (PUBHh). A representative photograph of Wetland 28 is included in Appendix D, Photograph 128.

Wetland 29

Wetland 29 is a palustrine, forested wetland located immediately west of I-126, approximately 0.20 mile north of the I-126 interchange with Colonial Life Boulevard. The entire wetland is contained within the PSA and encompasses approximately 0.039 acre. The overstory of Wetland 29 is dominated by red maple, green ash, and sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of sweetgum, red maple, and soft rush. Trumpet creeper is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 29 include: saturation, drift deposits, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 29 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 29 is included in Appendix D, Photograph 131.

Wetland 30

Wetland 30 is a palustrine, forested wetland located immediately west of I-126, approximately 200 feet northwest of the I-126 interchange with Colonial Life Boulevard. The entire wetland is contained within the PSA and encompasses 0.311 acre. The overstory of Wetland 30 is dominated by sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of sweetgum, false nettle, and soft rush. Virginia creeper, Japanese honeysuckle, and poison ivy are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 30 include: saturation, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 30 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 30 is included in Appendix D, Photograph 136.

Wetland 31

Wetland 31 is a palustrine, forested wetland located immediately west of I-126, approximately 200 feet southwest of the I-126 interchange with Colonial Life Boulevard. The entire wetland is contained within the PSA

and encompasses approximately 0.106 acre. The overstory of Wetland 31 is dominated by sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of sweetgum, false nettle, and soft rush. Virginia creeper, Japanese honeysuckle, and poison ivy are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 31 include: saturation, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 31 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 31 is included in Appendix D, Photograph 139.

Wetland 32

Wetland 32 is a palustrine, emergent wetland located immediately north of I-26, approximately 400 feet west of the Saluda River. Approximately 0.166 acre of the wetland is located within the PSA. Wetland 32 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, black willow, soft rush, and sedges. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 32 include: saturation, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 32 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 32 is included in Appendix D, Photograph 145.

Wetland 33

Wetland 33 is a palustrine, forested and scrub/shrub wetland located immediately north of I-26, approximately 700 feet west of the Saluda River. The entire wetland is contained within the PSA and encompasses approximately 0.085 acre. The overstory of Wetland 33 is dominated by sweetgum, red maple, and slippery elm. Understory vegetation is dominated by saplings and herbaceous species of slippery elm, red maple, and red mulberry (Morus rubra). Roundleaf greenbrier, trumpet creeper, poison ivy, and Japanese honeysuckle are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 33 include: water-stained leaves and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 33 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 33 is included in Appendix D, Photograph 146.

Wetland 34

Wetland 34 is a palustrine, forested wetland located immediately south of I-26, approximately 850 feet west of the Saluda River. The entire wetland is contained within the PSA and encompasses approximately 0.026 acre. The overstory of Wetland 34 is dominated by sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of American elm, sweetgum, and lizard's tail. Virginia creeper is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 34 include: high water table, saturation, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 34 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 34 is included in Appendix D, Photograph 149.

Wetland 35

Wetland 35 is a palustrine, forested and emergent wetland located immediately north of I-26, approximately 0.45 mile west of the Saluda River. The entire wetland is contained within the PSA and encompasses approximately 0.470 acre. The overstory of the forested portion of Wetland 35 is dominated by loblolly pine and sweetgum. Understory vegetation is dominated by saplings and shrubs of sweetgum and soft rush. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 35 include: saturation, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 35 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 35 is included in Appendix D, Photograph 150.

Wetland 36

Wetland 36 is a palustrine, forested wetland located immediately north of I-26, approximately 0.55 mile west of the Saluda River. The entire wetland is contained within the PSA and encompasses approximately 0.168 acre. The overstory of Wetland 36 is dominated by loblolly pine and red maple. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm, and sweetgum. Virginia creeper, Japanese honeysuckle, muscadine, and roundleaf greenbrier are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 36 include: high water table, saturation, water marks, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 36 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 36 is included in Appendix D, Photograph 151.

Wetland 37

Wetland 37 is a palustrine, forested wetland located immediately north of I-26, approximately 0.65 mile west of the Saluda River. Approximately 0.022 acre of the wetland is located within the PSA. The overstory of Wetland 37 is dominated by loblolly pine and red maple. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm, and sweetgum. Virginia creeper, Japanese honeysuckle, muscadine, and roundleaf greenbrier are common vines found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 37 include: high water table, saturation, water marks, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 37 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 37 is included in Appendix D, Photograph 152.

Wetland 38

Wetland 38 is a palustrine, forested wetland located immediately north of I-26, approximately 0.60 mile west of the Saluda River. Approximately 0.474 acre of the wetland is located within the PSA. The overstory of Wetland 38 is dominated by red maple, tulip poplar, and sweetgum. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, sweetgum, sweetbay (Magnolia virginiana), spicebush (Lindera benzoin), netted chain fern, lizard's tail, soft rush, and southern lady fern (Athyrium asplenioides). No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 38 include:

surface water, high water table, saturation, water marks, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 38 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 38 is included in Appendix D, Photograph 153.

Wetland 39

Wetland 39 is a palustrine, emergent wetland located immediately south of Broad River Road, approximately 0.25 miles northwest of the I-26 interchange with Broad River Road. The entire wetland is contained within the PSA and encompasses approximately 0.020 acre. Wetland 39 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, soft rush, woolgrass, and fescue. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 39 include: saturation and water marks. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 39 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 39 is included in Appendix D, Photograph 4.

Wetland 40

Wetland 40 is a palustrine, emergent wetland located immediately north of Columbiana Road, approximately 0.13 miles southwest of the I-26 interchange with Broad River Road. The entire wetland is contained within the PSA and encompasses approximately 0.240 acre. Wetland 40 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, soft rush, and sedges. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 40 include: surface water, high water table, and saturation. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 40 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 40 is included in Appendix D, Photograph 4.

Wetland 41

Wetland 41 is a palustrine, emergent wetland located immediately east of Columbiana Road at its intersection with Lake Murray Boulevard. The entire wetland is contained within the PSA and encompasses approximately 0.011 acre. Wetland 41 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, fescue, woolgrass, and sedges. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 41 include: saturation and water marks. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 41 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 41 is included in Appendix D, Photograph 12.

Wetland 42

Wetland 42 is a palustrine, emergent wetland located immediately east of I-26, approximately 0.30 miles south of the I-26 interchange with Lake Murray Boulevard. Approximately 0.262 acre of the wetland is located within the PSA. Wetland 42 maintains persistent, regulated water levels and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, black willow, broadleaf cattail, and sedges. No

woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 42 include: surface water, high water table, and saturation. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 42 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 42 is included in Appendix D, Photograph 22.

Wetland 43

Wetland 43 is a palustrine, emergent wetland located south of Palmetto Health Parkway, approximately 0.50 miles south of the I-26 interchange with Lake Murray Boulevard. The entire wetland is contained within the PSA and encompasses approximately 0.034 acre. Wetland 43 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, broadleaf cattail, soft rush, giant cane. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 43 include: saturation and water marks. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 43 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 43 is included in Appendix D, Photograph 23.

Wetland 44

Wetland 44 is a palustrine, emergent wetland located immediately north of Harbison Boulevard, approximately 0.15 miles east of the I-26 interchange with Harbison Boulevard. The entire wetland is contained within the PSA and encompasses approximately 0.040 acre. Wetland 44 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of fescue, soft rush, woolgrass, and black willow. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 44 include: high water table, saturation and water marks. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 44 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 44 is included in Appendix D, Photograph 29.

Wetland 45

Wetland 45 is a palustrine, emergent wetland located immediately east of Fernandina Road, approximately 0.40 mile south of the I-26 interchange with Harbison Road. Approximately 0.018 acre of the wetland is located within the PSA. Wetland 45 maintains persistent, regulated water levels and has no overstory. Vegetation is dominated by broadleaf cattail. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 45 include: surface water, high water table, and saturation. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 45 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 45 is included in Appendix D, Photograph 33.

Wetland 46

Wetland 46 is a palustrine, emergent wetland located immediately west of the I-26 eastbound entrance ramp from Piney Grove Road. Approximately 0.051 acre of the wetland is located within the PSA. Wetland 46 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, broadleaf cattail, and soft rush. No woody vines are found in this

wetland. Primary and secondary wetland hydrology indicators within Wetland 46 include: high water table and saturation. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 46 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 46 is included in Appendix D, Photograph 42.

Wetland 47

Wetland 47 is a palustrine, emergent wetland located immediately east of Fernandina Road at its intersection with Westpark Boulevard. Approximately 0.070 acre of the wetland is located within the PSA. Wetland 47 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of eastern baccharis, woolgrass, soft rush, and sedges. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 47 include: high water table and saturation. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 47 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 47 is included in Appendix D, Photograph 46.

Wetland 48

Wetland 48 is a palustrine, emergent and forested wetland located east of Davega Road and 1.1 miles northeast of the Sunset Boulevard interchange with I-20 (Exit 61). The entire wetland is contained within the PSA and encompasses approximately 0.029 acre. The overstory of Wetland 48 is dominated by American elm. Understory vegetation is dominated by shrubs and herbaceous species of black willow, red maple, farkleberry (Vaccinium arboretum), bushy seedbox (Ludwigia alternifolia), and woodoats. Woodvamp is a common vine found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 48 include: surface water, high water table, and saturation. Hydric soil indicators identified in the wetland include a depleted matrix and depleted below dark surface. Wetland 48 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 48 is included in Appendix D, Photograph 176.

Wetland 49

Wetland 49 is a palustrine, linear wetland located approximately 0.20 mile northeast of the Bush River Road interchange with I-20 (Exit 63) and 50 east of Tributary 23. The entire wetland is contained within the PSA and encompasses approximately 0.017 acre. Wetland 49 has no overstory. Vegetation is dominated by shrubs and herbaceous species of red maple and marsh seedbox. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 49 include: saturation. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 49 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 49 is included in Appendix D, Photograph 177.

Wetland 50

Wetland 50 is a palustrine, forested wetland located immediately south of Garner Lane and 900 feet east of the Broad River Road interchange with I-20 (Exit 65). Approximately 0.371 acre of the wetland is located within the PSA. The overstory of Wetland 50 is dominated by tulip poplar and sweetgum. Understory vegetation is

dominated by saplings, shrubs, and herbaceous species of red maple, sweetgum, and Chinese privet. Chinese wisteria (Wisteria sinensis) is a common vine located in this wetland. Primary and secondary wetland hydrology indicators within Wetland 50 include: high water table, saturation, and drainage patterns. Hydric soil indicators identified in the wetland include a dark surface. Wetland 50 is not depicted on the USFWS NWI Wetland Mapper. Representative photographs of Wetland 50 are included in Appendix D, Photograph 178, 179, and 180.

Wetland 51

Wetland 51 is a palustrine, emergent wetland located immediately south of Bush River Road within the interchange with I-26 (Exit 107). The entire wetland is contained in the PSA and encompasses approximately 0.017 acre. The overstory of Wetland 51 is dominated by sweetgum and willow oak. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of Chinese privet, red maple, willow oak, Japanese privet (Ligustrum japonicum), poison ivy, and Virginia creeper. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 51 include: saturation, water marks, iron deposits, water-stained leaves, and drainage patterns. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 51 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 51 is included in Appendix D, Photograph 186.

Wetland 52

Wetland 52 is a palustrine, forested wetland located immediately south of Tributary 45 and west of I-126, approximately 0.35 mile south of the interchange with I-26. The entire wetland is contained in the PSA and encompasses approximately 0.037 acre. The overstory of Wetland 52 is dominated by slippery elm and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm, red maple, box elder and poison ivy. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 27 include: high water table, saturation, water marks, drift deposits, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 52 is depicted on the USFWS NWI Wetland Mapper as a palustrine, scrub/shrub, broad-leaved deciduous, temporarily flooded wetland (PSS1A). A representative photograph of Wetland 52 is included in Appendix D, Photograph 187.

Wetland 53

Wetland 55 is a palustrine, forested wetland located directly south of Tributary 46 west of I-126, approximately 0.40 mile south of the I-126 interchange with I-26. Approximately 0.098 acre of the wetland is located within the PSA. The overstory of Wetland 53 is dominated by slippery elm and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of slippery elm, red maple, box elder and poison ivy. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 53 include: high water table, saturation, water marks, drift deposits, and water-stained leaves. Hydric soil indicators identified in the wetland include a depleted matrix. Wetland 53 is depicted on the USFWS NWI Wetland Mapper as a palustrine, scrub/shrub, broad-leaved deciduous, temporarily flooded wetland (PSS1A). A representative photograph of Wetland 53 is included in Appendix D, Photograph 188.

Wetland 54

Wetland 54 is a palustrine, forested wetland located directly east of the Tributary 49 and 0.02 mile southwest of I-126 interchange with Colonial Life Boulevard. The entire wetland is contained within the PSA and encompasses approximately 0.021 acre. The overstory of Wetland 54 is dominated by slippery elm and green ash. Understory vegetation is dominated by saplings, shrubs, and herbaceous species of red maple, green ash, and Chinese privet. Virginia creeper is a common vine in this wetland. Primary and secondary wetland hydrology indicators within Wetland 54 include: surface water, water stained leaves, and saturation. Hydric soil indicators identified in the wetland include a redox dark surface. Wetland 54 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 54 is included in Appendix D, Photograph 189.

Wetland 55

Wetland 55 is a palustrine, emergent wetland located south of Tributary 66, north of Gracern Road and 150 feet west of Janice Drive. The entire wetland is contained within the PSA and encompasses approximately 0.015 acre. Wetland 55 is maintained by regular mowing and has no overstory. Vegetation is dominated by saplings, shrubs, and herbaceous species of green ash, arrowleaf tearthumb (persicaria sagittata), common rush, and bushy seedbox. No woody vines are found in this wetland. Primary and secondary wetland hydrology indicators within Wetland 55 include: surface water, water stained leaves, drift deposits, and saturation. Hydric soil indicators identified in the wetland include soils depleted below dark surface. Wetland 55 is not depicted on the USFWS NWI Wetland Mapper. A representative photograph of Wetland 55 is included in Appendix D, Photograph 190.

4.2 Streams or Tributaries

A total of 68 streams, or tributaries, were identified by the project team within the PSA during site reviews, as listed in Table 4.2.

Table 4.2 Streams or Tributaries within the Project Study Area

Feature	Figure	Delineated area Linear feet	Acre
Tributary 1	6-2	11	0.001
Tributary 2	6-2	234	0.023
Tributary 3	6-3	440	0.046
Tributary 4	6-4	160	0.019
Tributary 5	6-4	157	0.022
Tributary 6	6-4	22	0.003
Tributary 7	6-5 & 6-6	970	0.130
Tributary 8	6-6	571	0.070
Tributary 9	6-6	188	0.014
Tributary 10	6-7	86	0.009
Tributary 11	6-8	1,755	0.308

Feature	Figure	Delineated area Linear feet	Acre
Tributary 12	6-8	10	0.001
Tributary 13	6-9	14	0.001
Tributary 14	6-9	195	0.035
Tributary 15	6-9	164	0.015
Tributary 16	6-11	99	0.007
Tributary 17	6-11	25	0.003
Tributary 18	6-13	485	0.084
Tributary 19	6-13	166	0.017
Tributary 20	6-13	101	0.015
Tributary 21, aka Stoop Creek	6-14 & 6-15, 6-19, & 6-120	1,281	0.594
Tributary 22	6-15	143	0.031
Tributary 23	6-16 & 6-19	1,031	0.141
Tributary 24	6-16	323	0.035
Tributary 25	6-16	94	0.011
Tributary 26	6-16	295	0.022
Tributary 27	6-17	752	0.112
Tributary 28	6-17	153	0.032
Tributary 29	6-17	56	0.007
Tributary 30, aka Saluda River	6-17, 6-26, 6-27, & 6-30	1,345	9.956
Tributary 31	6-17	76	0.008
Tributary 32	6-19	70	0.008
Tributary 33	6-19	101	0.010
Tributary 34	6-20	382	0.043
Tributary 35	6-20	522	0.052
Tributary 36	6-20	76	0.005
Tributary 37	6-20	372	0.034
Tributary 38	6-21 & 6-22	342	0.064
Tributary 39	6-23 & 6-24	3,958	0.753
Tributary 40, aka Broad River	6-24	531	9.247
Tributary 41	6-25	517	0.107
Tributary 42	6-25	874	0.071
Tributary 43	6-25, 6-26, & 6-30	2,244	1.135
Tributary 44	6-26	229	0.021
Tributary 45	6-26 & 6-27	934	0.088
Tributary 46	6-27	322	0.026
Tributary 47	6-27	1,052	0.292
Tributary 48	6-27	29	0.010
Tributary 49	6-27	298	0.024

Feature	Figure	Delineated area Linear feet	Acre
Tributary 50	6-30	889	0.098
Tributary 51	6-30	21	0.002
Tributary 52	6-30	35	0.002
Tributary 53, aka Senn Branch	6-31	933	0.279
Tributary 54	6-31	46	0.004
Tributary 55	6-31	70	0.005
Tributary 56	6-31	20	0.001
Tributary 57	6-31	187	0.027
Tributary 58	6-33	16	0.001
Tributary 59	6-1	113	0.008
Tributary 60	6-2	195	0.030
Tributary 61	6-17 & 6-18	224	0.047
Tributary 62	6-26	46	0.005
Tributary 63	6-26	38	0.005
Tributary 64	6-26	138	0.014
Tributary 65	6-28	205	0.041
Tributary 66	6-28	60	0.004
Tributary 67	6-29	8	0.001
Tributary 68	6-29	19	0.003
Tributary Total		**27,518-lf**	**24.339 acres**

Tributary 1

Tributary 1 is an unnamed, intermittent tributary to Moccasin Branch. Tributary 1 is located immediately south of Broad River Road, approximately 0.30 miles northwest of the I-26 interchange with Broad River Road. Tributary 1 originates at a pipe outfall within the PSA and drains northwesterly into a pipe that outfalls beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 1 discharges from the pipe and flows approximately 50 feet to the north and discharges to Moccasin Branch. Within the PSA, Tributary 1 ranges from approximately 3 to 4 feet in width, with bank heights ranging from 1 to 2 feet. Approximately 11 linear feet (0.001 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand, cobble, gravel, and installed riprap. Aquatic life was not directly observed within Tributary 1. Within the PSA, Tributary 1 accepts drainage from Freshwater Wetland 39, the surrounding commercial development and roadside drainage. Tributary 1 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 1 is included in Appendix D, Photograph 1.

Tributary 2

Tributary 2 is an unnamed, perennial tributary to Moccasin Branch. Tributary 2 is located immediately east of the I-26 westbound entrance ramp from Broad River Road. Tributary 2 originates at a pipe outfall within the PSA and drains northerly beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 2 flows approximately 0.10 mile to the north and discharges to Moccasin Branch. Within the PSA, Tributary 2 ranges from approximately 3 to 8 feet in width, with bank heights ranging from 1 to 2 feet. Approximately 234 linear feet (0.023 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand, silt, cobble, and gravel. Aquatic life, including macroinvertebrate insect species was observed within Tributary 2. Within the PSA, Tributary 2 accepts drainage from the surrounding upland forest, commercial development, and roadside and interchange drainage. Tributary 2 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 2 are included in Appendix D, Photographs 2 and 3.

Tributary 3

Tributary 3 is an unnamed, partially intermittent and partially perennial tributary to Kinley Creek. The tributary crosses I-26 approximately 0.20 mile east of Broad River Road. Tributary 3 originates at a pipe outfall within the PSA, drains southwesterly and traverses a pipe under I-26. From the pipe outfall south of I-26, Tributary 3 drains in a general direction to the south, under Columbiana Drive, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 3 flows approximately 1.30 miles to the south and discharges to Kinley Creek. Within the PSA, Tributary 3 ranges from approximately 3 to 8 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 440 linear feet (0.046 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand, silt, cobble, and installed riprap. Aquatic life was not observed within Tributary 3. Within the PSA, Tributary 3 accepts drainage from Freshwater Wetland 1, the surrounding upland forest, commercial development, and roadside drainage. Tributary 3 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 3 are included in Appendix D, Photographs 7, 8, and 9.

Tributary 4

Tributary 4 is an unnamed, perennial tributary to Kinley Creek, and a lower reach of Tributary 3. Tributary 4 is located immediately north of the Lake Murray Boulevard intersection with Columbiana Drive. Tributary 4 originates north of the PSA, drains southerly and traverses a pipe under Lake Murray Boulevard, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 4 flows approximately 0.85 mile to the south and discharges to Kinley Creek. Within the PSA, Tributary 4 ranges from approximately 3 to 10 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 160 linear feet (0.019 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand, silt, cobble, and gravel. Aquatic life, including macroinvertebrate insect species, was observed within Tributary 4. Within the PSA, Tributary 4 accepts drainage from Freshwater Wetlands 2 and 41, the surrounding upland forest, commercial development, and roadside drainage. Tributary 4 is depicted on

USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. A representative photograph of Tributary 4 is included in Appendix D, Photograph 13.

Tributary 5

Tributary 5 is an unnamed, perennial tributary to Kinley Creek. Tributary 5 is located immediately west of Evergreen Drive and north of the I-26 interchange with Lake Murray Boulevard. Tributary 5 originates north of the PSA, drains south and traverses a pipe under I-26, and discharges to Tributary 6. Within the PSA, Tributary 5 ranges from approximately 4 to 12 feet in width, with bank heights ranging from 0 to 2 feet. Approximately 157 linear feet (0.022 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited strong flow, moderate sinuosity, and a substrate consisting of sand and silt. Aquatic life, including macroinvertebrate insect species, was observed within Tributary 5. Within the PSA, Tributary 5 accepts drainage from Freshwater Wetland 3, the surrounding upland forest, and roadside drainage. Tributary 5 is depicted on USGS topographic mapping as an intermittent blue-line and is included in the National Hydrography Dataset. A representative photograph of Tributary 5 is included in Appendix D, Photograph 15.

Tributary 6

Tributary 6 is an unnamed, perennial tributary to Kinley Creek, and a lower reach of Tributary 5. Tributary 6 is located immediately west of I-26 eastbound entrance ramp from Lake Murray Boulevard. Tributary 6 originates at a pipe outfall within the PSA, drains southwesterly, and enters a pipe carrying hydrology beyond the PSA. Beyond the PSA, hydrology from Tributary 6 flows approximately 0.80 mile to the south and discharges to Kinley Creek. Within the PSA, Tributary 6 is approximately 6 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 22 linear feet (0.003 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited strong flow, no sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 6. Within the PSA, Tributary 6 accepts drainage from Tributary 5, the surrounding upland forest, and roadside and interchange drainage. Tributary 6 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. A representative photograph of Tributary 6 is included in Appendix D, Photograph 17.

Tributary 7

Tributary 7 is an unnamed, perennial tributary to Kinley Creek and crosses I-26 approximately 0.25 mile east of Lake Murray Boulevard. Tributary 7 originates at a pipe outfall within the PSA, drains southerly and traverses a pipe under I-26. From the pipe outfall south of I-26, Tributary 7 drains southeasterly along I-26, traverses a pipe under commercial development, and discharges to Tributary 8. Within the PSA, Tributary 7 ranges from approximately 4 to 12 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 838 linear feet (0.113 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand, silt, gravel, and cobble. Aquatic life, including macroinvertebrate insect species, was observed within Tributary 7. Within the PSA, Tributary 7 accepts drainage from Freshwater Wetland 42, Tributary 8, the surrounding upland forest, commercial development, and roadside drainage. Tributary 7 is depicted on USGS topographic mapping as an intermittent blue-line, and

included in the National Hydrography Dataset. Representative photographs of Tributary 7 are included in Appendix D, Photographs 18, 19, 20, and 21.

Tributary 8

Tributary 8 is an unnamed, perennial tributary to Kinley Creek and crosses I-26 approximately 0.55 mile east of Lake Murray Boulevard. Tributary 8 originates north of the PSA, drains south, traverses a pipe under I-26, and drains beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 8 flows approximately 2.10 miles to the south and discharges to Kinley Creek. Within the PSA, Tributary 8 ranges from approximately 4 to 20 feet in width, with bank heights ranging from 1 to 5 feet. Approximately 571 linear feet (0.070 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited strong flow, moderate sinuosity, and a substrate consisting of sand, silt, gravel, and cobble. Aquatic life, including macroinvertebrate insect species, was observed within Tributary 8. Within the PSA, Tributary 8 accepts drainage from Freshwater Wetland 43, Tributary 7, the surrounding upland forest, and roadside drainage. Tributary 8 is depicted on USGS topographic mapping as a solid blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 8 are included in Appendix D, Photographs 24 and 25.

Tributary 9

Tributary 9 is an unnamed, perennial tributary to Kinley Creek and crosses I-26 approximately 0.35 mile west of Harbison Boulevard. Tributary 9 originates east of the PSA, drains west, and traverses a pipe under I-26. From the pipe outfall west of I-26, Tributary 9 drains in a general direction to the west, an into a pipe traversing Columbiana Circle and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 9 flows approximately one mile to the southwest and discharges to Kinley Creek. Within the PSA, Tributary 9 ranges from approximately 3 to 6 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 188 linear feet (0.014 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand, silt, and gravel. Aquatic life, including macroinvertebrate insect species, was observed within Tributary 9. Within the PSA, Tributary 9 accepts drainage from Pond 1, the surrounding upland forest, commercial development, and roadside drainage. Tributary 9 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 9 are included in Appendix D, Photographs 27 and 28.

Tributary 10

Tributary 10 is an unnamed, perennial tributary to Kinley Creek and crosses Harbison Boulevard approximately 0.30 mile east of I-26. Tributary 10 originates north of the PSA, drains south and traverses a pipe under Harbison Boulevard. From the pipe outfall south of Harbison Boulevard, Tributary 10 drains in a general direction to the south and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 10 flows approximately two miles to the south and discharges to Kinley Creek. Within the PSA, Tributary 10 ranges from approximately 2 to 8 feet in width, with bank heights ranging from 0 to 3 feet. Approximately 86 linear feet (0.009 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, weak

sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 10. Within the PSA, Tributary 10 accepts drainage from Freshwater Wetland 44, the surrounding upland forest, commercial development, and roadside drainage. Tributary 10 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 10 are included in Appendix D, Photographs 30 and 31.

Tributary 11

Tributary 11 is an unnamed, perennial tributary to Kinley Creek and a lower reach of Tributary 10. Tributary 11 crosses I-26 approximately 0.50 mile west of Harbison Boulevard. Tributary 11 originates at a culvert draining from pond 4, drains south and traverses a pipe under I-26 and Giles Parkway. From the pipe outfall west of Giles Parkway, Tributary 11 drains in a general direction to the southeast and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 11 flows approximately 1.30 miles to the south and discharges to Kinley Creek. Within the PSA, Tributary 11 ranges from approximately 4 to 13 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 1,755 linear feet (0.308 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited strong flow, moderate sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 11. Within the PSA, Tributary 11 accepts drainage from Tributaries 10 and 12, Pond 4, the surrounding upland forest, commercial development, and roadside drainage. Tributary 11 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 11 are included in Appendix D, Photographs 34, 35, 171, and 172.

Tributary 12

Tributary 12 is an unnamed, intermittent tributary to Kinley Creek. Tributary 12 originates at a headcut within the PSA, drains northwest, and discharges to Tributary 12. Tributary 12 ranges from approximately 3 to 4 feet in width, with bank heights ranging from 0 to 1 feet. Tributary 12 is contained within the PSA and is approximately 10 linear feet (0.001 acre) in total length. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 12. Tributary 12 accepts drainage from the surrounding upland forest and commercial development. Tributary 12 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 12 is included in Appendix D, Photograph 36.

Tributary 13

Tributary 13 is an unnamed, intermittent tributary to Kinley Creek. Tributary 13 north of the PSA, drains south, and discharges to Freshwater Wetland 5. Within the PSA, Tributary 13 ranges from approximately 3 to 4 feet in width, with bank heights ranging from 0 to 1 feet. Approximately 14 linear feet (0.001 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 13. Within the PSA, Tributary 13 accepts drainage from the surrounding upland forest and commercial development. Tributary

13 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 13 is included in Appendix D, Photograph 37.

Tributary 14

Tributary 14 is an unnamed, perennial tributary to Kinley Creek and crosses I-26 approximately 0.22 mile west of Piney Grove Road. Tributary 14 originates east of the PSA, drains southwesterly, and traverses a pipe under I-26. From the pipe outfall west of I-26, Tributary 14 drains in a general direction to the west and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 14 flows approximately 1.80 miles to the southwest and discharges to Kinley Creek. Within the PSA, Tributary 14 ranges from approximately 6 to 8 feet in width, with bank heights ranging from 3 to 6 feet. Approximately 195 linear feet (0.035 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand, silt, and gravel. Aquatic life, including macroinvertebrate insect species, was observed within Tributary 14. Within the PSA, Tributary 14 accepts drainage from Freshwater Wetland 5, the surrounding upland forest, commercial development, and roadside drainage. Tributary 14 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 14 are included in Appendix D, Photographs 39 and 40.

Tributary 15

Tributary 15 is an unnamed, perennial tributary to Kinley Creek. Tributary 15 is located immediately west of I-26, approximately 400 feet south of Piney Grove Road. Tributary 15 originates at a pipe outfall within the PSA, drains westerly and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 15 flows approximately one mile to the southwest and discharges to Kinley Creek. Within the PSA, Tributary 15 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 164 linear feet (0.015 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not observed within Tributary 15. Within the PSA, Tributary 15 accepts drainage from Freshwater Wetlands 6 and 46, the surrounding upland forest, commercial development, and roadside drainage. Tributary 15 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. A representative photograph of Tributary 15 is included in Appendix D, Photograph 41.

Tributary 16

Tributary 16 is an unnamed, perennial tributary to Kinley Creek. Tributary 16 is located immediately west of I-26, approximately 0.55 mile south of Piney Grove Road. Tributary 16 originates at a pipe outfall within the PSA, drains westerly and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 16 flows approximately 1.20 miles to the southwest and discharges to Kinley Creek. Within the PSA, Tributary 16 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 1 to 2 feet. Approximately 99 linear feet (0.007 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand, silt, and installed riprap. Aquatic life was not observed within Tributary 16. Within the PSA, Tributary 16 accepts drainage from commercial development and

roadside drainage. Tributary 16 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 16 is included in Appendix D, Photograph 45.

Tributary 17

Tributary 17 is an unnamed, intermittent tributary to Kinley Creek. Tributary 17 is located immediately west of I-26, approximately 0.65 mile south of Piney Grove Road. Tributary 17 originates at a pipe outfall within the PSA, drains westerly and discharges to Freshwater Wetland 7. Tributary 17 ranges from approximately 3 to 6 feet in width, with bank heights ranging from 0 to 1 feet. Tributary 17 is contained within the PSA and is approximately 25 linear feet (0.003 acre) in total length. During field investigations, the stream channel exhibited pools of standing water, weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not observed within Tributary 17. Tributary 17 accepts drainage from Freshwater Wetland 47, the surrounding upland forest, and roadside drainage. Tributary 17 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 17 is included in Appendix D, Photograph 47.

Tributary 18

Tributary 18 is an unnamed, perennial tributary to Stoop Creek and crosses I-26 approximately 0.50 mile north of Saint Andrews Road. Tributary 18 originates west of the PSA, drains easterly, and traverses a pipe under I-26. From the pipe outfall west of I-26, Tributary 18 drains in a general direction to the southeast and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 18 flows approximately 0.35 mile to the southeast and discharges to Stoop Creek. Within the PSA, Tributary 18 ranges from approximately 6 to 12 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 485 linear feet (0.084 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand, silt, gravel, and cobble. Aquatic life, including macroinvertebrate insect species, was observed within Tributary 18. Within the PSA, Tributary 18 accepts drainage from Tributary 19, the surrounding upland forest, commercial development, and roadside drainage. Tributary 18 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 18 are included in Appendix D, Photographs 50 and 51.

Tributary 19

Tributary 19 is an unnamed, perennial tributary to Stoop Creek. Tributary 19 is located immediately east of I-26, approximately 0.50 mile north of Saint Andrews Road. Tributary 19 originates north of the PSA, drains southerly and traverses a pipe under Evelyn Drive. From the pipe outfall south of Evelyn Drive, Tributary 19 drains southerly and discharges to Tributary 18. Within the PSA, Tributary 19 ranges from approximately 4 to 10 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 166 linear feet (0.017 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 19. Within the PSA, Tributary 19 accepts drainage from the surrounding upland forest, commercial development,

and roadside drainage. Tributary 19 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 19 is included in Appendix D, Photograph 52.

Tributary 20

Tributary 20 is an unnamed, perennial tributary to Stoop Creek. Tributary 20 is located immediately east of I-26, approximately 0.35 mile north of Saint Andrews Road. Tributary 20 originates at a pipe outfall within the PSA, drains easterly and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 20 flows approximately 0.20 mile to the east and discharges to Stoop Creek. Within the PSA, Tributary 20 ranges from approximately 4 to 10 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 101 linear feet (0.015 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand, silt, and installed riprap. Aquatic life was not observed within Tributary 20. Within the PSA, Tributary 20 accepts drainage from commercial development and roadside drainage. Tributary 20 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 20 are included in Appendix D, Photographs 53 and 54.

Tributary 21

Tributary 21, aka, Stoop Creek, is a perennial tributary to the Saluda River. Tributary 21 crosses I-26 approximately 200 feet south of Saint Andrews Road. Stoop Creek also crosses I-20 approximately 0.30 miles west of the I-20 interchange with I-26. Tributary 21 originates north of the PSA, drains south and traverses a culvert under I-26. From the culvert outfall south of I-26, Tributary 21 drains approximately 0.5 mile and traverses a culvert under I-20. From the culvert outfall south of I-20, Stoop Creek drains approximately one mile south and discharges to the Saluda River. Within the PSA, Tributary 21 ranges from approximately 10 to 40 feet in width, with bank heights ranging from 1 to 6 feet. Approximately 1,281 linear feet (0.594 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity and a substrate consisting of silt, sand, gravel, cobble and boulders. Aquatic life, including fish and including macroinvertebrate insect species, was directly observed within Tributary 21. Within the PSA, Tributary 21 accepts drainage from Tributaries 32, 33, and 34, the surrounding upland forests, residential and commercial development, and roadside drainage. Tributary 21 is depicted on the USGS topographic mapping as a solid blue-line stream, and included in the National Hydrography Dataset. Representative photographs of Tributary 21 are included in Appendix D, Photographs 55, 56, 58, and 82.

Tributary 22

Tributary 22 is an unnamed, perennial tributary to Stoop Creek and crosses I-26 approximately 0.25 mile south of Saint Andrews Road. Tributary 22 originates east of the PSA, drains west, and traverses a pipe under I-26 and Berryhill Drive and continues beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 22 flows approximately 400 feet to the west and discharges to Stoop Creek. Within the PSA, Tributary 22 ranges from approximately 6 to 10 feet in width, with bank heights ranging from 4 to 6 feet. Approximately 143 linear feet (0.031 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited

weak flow, no sinuosity, and a substrate consisting of sand and installed riprap. Aquatic life was not directly observed within Tributary 22. Within the PSA, Tributary 22 accepts drainage from the surrounding upland forest, commercial development, and roadside drainage. Tributary 22 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. A representative photograph of Tributary 22 is included in Appendix D, Photograph 57.

Tributary 23

Tributary 23 is an unnamed, perennial tributary to Stoop Creek and crosses I-20 approximately 0.20 mile east of Bush River Road. Tributary 23 originates north of the PSA, drains southeasterly, and traverses a pipe under I-20. From the pipe outfall west of I-26, Tributary 23 drains in a general direction to the southeast crossing under Rockland Road before flowing beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 23 flows approximately 250 feet to the southeast and discharges to Stoop Creek. Within the PSA, Tributary 23 ranges from approximately 1 to 3 feet in width, with bank heights ranging from 1 to 2 feet. Approximately 1,031 linear feet (0.141 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, moderate sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 23. Within the PSA, Tributary 23 accepts drainage from the surrounding upland forest, commercial development, and roadside drainage. Tributary 23 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 23 are included in Appendix D, Photographs 59 and 79.

Tributary 24

Tributary 24 is an unnamed, perennial tributary to the Saluda River. Tributary 24 is located immediately west of I-20 and immediately south of Bush River Road. Tributary 24 originates at a pipe outfall within the PSA, drains in a general southerly direction and discharges to Tributary 25. Tributary 24 ranges from approximately 3 to 10 feet in width, with bank heights ranging from 1 to 10 feet. Tributary 24 is contained within the PSA and is approximately 323 linear feet (0.035 acre) in total length. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand, cobble, and gravel. Aquatic life was not observed within Tributary 24. Tributary 24 accepts drainage from commercial development and roadside drainage. Tributary 24 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 24 are included in Appendix D, Photographs 60 and 61.

Tributary 25

Tributary 25 is an unnamed, perennial tributary to the Saluda River. Tributary 25 is located immediately west of I-20 and approximately 200 feet south of Bush River Road. Tributary 25 originates at a pipe outfall within the PSA, drains easterly, and traverses a pipe under I-20 and continues beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 25 flows approximately 0.65 to the south and discharges to the Saluda River. Within the PSA, Tributary 25 ranges from approximately 3 to 8 feet in width, with bank heights ranging from 3 to 6 feet. Approximately 90 linear feet (0.015 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand,

silt, cobble, gravel, and boulders. Aquatic life, including fish and including macroinvertebrate insect species, was directly observed within Tributary 25. Within the PSA, Tributary 25 accepts drainage from Tributaries 24 and 26, the surrounding upland forest, commercial development, and roadside drainage. Tributary 25 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 25 are included in Appendix D, Photographs 62 and 63.

Tributary 26

Tributary 26 is an unnamed, intermittent tributary to the Saluda River. Tributary 26 is located immediately west of I-20 and approximately 350 feet south of Bush River Road. Tributary 26 originates at a headcut within the PSA, drains northerly and discharges to Tributary 25. Tributary 26 ranges from approximately 3 to 6 feet in width, with bank heights ranging from 0 to 3 feet. Tributary 26 is contained within the PSA and is approximately 295 linear feet (0.022 acre) in total length. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not observed within Tributary 26. Tributary 26 accepts drainage from commercial development and roadside drainage. Tributary 26 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 26 are included in Appendix D, Photographs 64 and 65.

Tributary 27

Tributary 27 is an unnamed, intermittent tributary to the Saluda River. Tributary 26 is located immediately west of I-20 and immediately north of the Saluda River. Tributary 26 originates at a pipe outfall, approximately 875 feet northeast of the Saluda River, drains southwesterly through Freshwater Wetland 12, and discharges to the Saluda River (Tributary 30). Tributary 27 ranges from approximately 6 to 12 feet in width, with bank heights ranging from 0 to 2 feet. Tributary 27 is contained within the PSA and is approximately 752 linear feet (0.112 acre) in total length. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not observed within Tributary 27. Tributary 27 accepts drainage from Freshwater Wetlands 9, 10, and 12, commercial development, and roadside drainage. Tributary 27 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 27 are included in Appendix D, Photographs 70 and 71.

Tributary 28

Tributary 28 is an unnamed, intermittent tributary to the Saluda River. Tributary 28 is located approximately 250 feet west of I-20 and immediately north of the Saluda River. Tributary 28 originates north of the PSA, drains southwesterly, and discharges to the Saluda River. Within the PSA, Tributary 28 ranges from approximately 10 to 12 feet in width, with bank heights ranging from 4 to 8 feet. Approximately 153 linear feet (0.032 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, no sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 28. Within the PSA, Tributary 28 accepts drainage from the surrounding upland forest. Tributary 28 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 28 is included in Appendix D, Photograph 74.

Tributary 29

Tributary 29 is an unnamed, intermittent tributary to the Saluda River. Tributary 29 is located approximately 275 feet west of I-20 and immediately north of the Saluda River. Tributary 29 originates north of the PSA, drains southwesterly, and discharges to the Saluda River. Within the PSA, Tributary 29 ranges from approximately 4 to 6 feet in width, with bank heights ranging from 4 to 8 feet. Approximately 56 linear feet (0.007 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, no sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 29. Within the PSA, Tributary 29 accepts drainage from the surrounding upland forest. Tributary 29 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 29 is included in Appendix D, Photograph 75.

Tributary 30

Tributary 30, aka, the Saluda River, is a Traditional Navigable Water (TNW) that drains to the Congaree River. Tributary 30 crosses I-20 approximately 0.60 mile west of Bush River Road. The Saluda River also crosses I-26 approximately 0.30 miles south of the I-26 interchange with I-126. Tributary 30 originates west of the PSA, drains easterly and flows under the I-20 bridge. From the I-20 bridge, the Saluda River drains approximately 1.4 miles and flows under the I-26 bridge. From the I-26 bridge, the Saluda River drains approximately 3.2 miles and merges with the Broad River to form the Congaree River. Within the PSA, Tributary 30 ranges from approximately 270 to 440 feet in width, with bank heights ranging from 6 to 20 feet. Approximately 1,345 linear feet (9.956acres) of the river is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of silt, sand, gravel, cobble and boulders. Aquatic life, including fish and including macroinvertebrate insect species, was directly observed within Tributary 30. Within the PSA, Tributary 30 accepts drainage from Tributaries 27, 28, 29, 31, 43, and 50, the surrounding upland forests, and roadside drainage. Tributary 30 is depicted on the USGS topographic mapping as a solid blue-line stream, and included in the National Hydrography Dataset. Representative photographs of the Saluda River are included in Appendix D, Photographs 76 and 119.

Tributary 31

Tributary 31 is an unnamed, intermittent tributary to the Saluda River. Tributary 31 is located approximately 250 feet east of I-20 and approximately 200 feet south of the Saluda River. Tributary 31 originates at a headcut within the PSA, drains easterly, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 31 flows approximately 200 feet to the southeast and discharges to the Saluda River. Within the PSA, Tributary 31 ranges from approximately 3 to 6 feet in width, with bank heights ranging from 2 to 6 feet. Approximately 76 linear feet (0.008 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, no sinuosity, and a substrate consisting of sand, silt, and cobble. Aquatic life was not directly observed within Tributary 31. Within the PSA, Tributary 31 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 31 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 31 are included in Appendix D, Photographs 77 and 78.

Tributary 32

Tributary 32 is an unnamed, intermittent tributary to Stoop Creek. Tributary 32 is located immediately south of I-20 and approximately 0.40 miles east of Bush River Road. Tributary 32 originates at a headcut within the PSA, drains easterly and discharges to Stoop Creek (Tributary 21). Tributary 32 ranges from approximately 4 to 6 feet in width, with bank heights ranging from 3 to 4 feet. Tributary 32 is contained within the PSA and is approximately 70 linear feet (0.008 acre) in total length. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand, cobble, gravel, and boulders. Aquatic life was not observed within Tributary 32. Tributary 32 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 32 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 32 are included in Appendix D, Photographs 80 and 81.

Tributary 33

Tributary 33 is an unnamed, intermittent tributary to Stoop Creek. Tributary 33 is located immediately south of I-20 and approximately 0.45 miles east of Bush River Road. Tributary 33 originates at a pool/headcut within the PSA, drains westerly and discharges to Stoop Creek (Tributary 21). Tributary 33 ranges from approximately 4 to 6 feet in width, with bank heights ranging from 0 to 1 feet. Tributary 33 is contained within the PSA and is approximately 101 linear feet (0.010 acre) in total length. During field investigations, the stream channel exhibited pools of standing water, weak flow, weak sinuosity, and a substrate consisting of sand, silt, and cobble. Aquatic life was not observed within Tributary 33. Tributary 33 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 33 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 33 are included in Appendix D, Photographs 83 and 84.

Tributary 34

Tributary 34 is an unnamed, intermittent tributary to Stoop Creek. Tributary 34 is located immediately north of I-20 and approximately 0.45 miles east of Bush River Road. Tributary 34 originates at a pipe outfall within the PSA, drains westerly and discharges to Stoop Creek (Tributary 21). Tributary 34 ranges from approximately 4 to 8 feet in width, with bank heights ranging from 1 to 8 feet. Tributary 34 is contained within the PSA and is approximately 382 linear feet (0.043 acre) in total length. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand, silt, and installed riprap. Aquatic life was not observed within Tributary 34. Tributary 34 accepts drainage from the surrounding upland forest, commercial development, and roadside drainage. Tributary 34 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 34 are included in Appendix D, Photographs 85, 86, and 87.

Tributary 35

Tributary 35 is an unnamed, intermittent tributary to the Saluda River and crosses I-20 approximately 0.35 mile east of the I-26 interchange with I-20. Tributary 35 originates north of the PSA, drains southerly and traverses a

pipe under I-20. From the pipe outfall south of I-20, Tributary 35 drains southeasterly, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 35 flows approximately one mile to the south and discharges to the Saluda River. Within the PSA, Tributary 35 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 522 linear feet (0.052 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 35. Within the PSA, Tributary 35 accepts drainage from Freshwater Wetland 13, Tributary 36, the surrounding upland forest, commercial development, and roadside drainage. Tributary 35 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 35 are included in Appendix D, Photographs 90 and 91.

Tributary 36

Tributary 36 is an unnamed, intermittent tributary to the Saluda River. Tributary 36 is located approximately 200 feet south of I-20 and approximately 0.35 mile east of the I-26 interchange with I-20. Tributary 36 originates at a pool/headcut within the PSA, drains easterly, and discharges to Tributary 35. Tributary 36 ranges from approximately 4 to 6 feet in width, with bank heights ranging from 0 to 2 feet. Tributary 36 is contained within the PSA and is approximately 76 linear feet (0.005 acre) in total length. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 36. Tributary 36 accepts drainage from the surrounding upland forest, commercial development, and roadside drainage. Tributary 36 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 36 are included in Appendix D, Photographs 92 and 93.

Tributary 37

Tributary 37 is an unnamed, perennial tributary to the Saluda River. Tributary 37 is located immediately south of I-20 and approximately 0.35 mile east of the I-26 interchange with I-20. Tributary 37 originates at a pipe outfall within the PSA, drains in a general southerly direction, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 37 flows approximately one mile to the south and discharges to the Saluda River. Within the PSA, Tributary 37 ranges from approximately 4 to 6 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 372 linear feet (0.034 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 37. Within the PSA, Tributary 37 accepts drainage from Freshwater Wetland 15, the surrounding upland forest, and roadside drainage. Tributary 37 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 37 are included in Appendix D, Photographs 94 and 95.

Tributary 38

Tributary 38 is an unnamed, perennial tributary to the Saluda River and crosses I-20 approximately 650 feet west of Broad River Road. Tributary 38 originates at a pipe outfall within the PSA, drains southerly and traverses a

pipe under I-20. From the pipe outfall south of I-20, Tributary 38 continues to drain southerly, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 38 flows approximately 1.30 miles to the southwest and discharges to the Saluda River. Within the PSA, Tributary 38 ranges from approximately 4 to 20 feet in width, with bank heights ranging from 1 to 8 feet. Approximately 342 linear feet (0.064 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand, silt, gravel, and installed riprap. Aquatic life was not directly observed within Tributary 38. Within the PSA, Tributary 38 accepts drainage from the surrounding upland forest, commercial development, and roadside drainage. Tributary 38 is depicted on USGS topographic mapping as an intermittent blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 38 are included in Appendix D, Photographs 97, 98 and 99.

Tributary 39

Tributary 39 is an unnamed, partially intermittent and partially perennial tributary to the Broad River. Tributary 39 is located immediately south of I-20 and immediately west of the Broad River. Tributary 39 originates at a headcut, approximately 0.75 mile west of the Broad River, drains easterly, and discharges to the Broad River (Tributary 40). Tributary 39 ranges from approximately 4 to 12 feet in width, with bank heights ranging from 1 to 8 feet. Tributary 39 is contained within the PSA and is approximately 3,958 linear feet (0.753 acre) in total length. During field investigations, the stream channel exhibited weak to moderate flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not observed within Tributary 39. Tributary 39 accepts drainage from the surrounding upland forest, residential and commercial development, and roadside drainage. Tributary 39 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 39 are included in Appendix D, Photographs 100, 101, and 102.

Tributary 40

Tributary 40, aka, the Broad River, is a Traditional Navigable Water (TNW) that drains to the Congaree River. Tributary 40 crosses I-20 approximately 1.30 miles east of Broad River Road. Tributary 40 originates north of the PSA, drains southerly and flows under the I-20 bridge. From the I-20 bridge, Tributary 40 drains approximately three miles and merges with the Saluda River to form the Congaree River. Within the PSA, Tributary 40 ranges from approximately 780 to 800 feet in width, with bank heights ranging from 6 to 20 feet. Approximately 531 linear feet (9.247 acres) of the river is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of silt, sand, gravel, cobble and boulders. Aquatic life, including fish and including macroinvertebrate insect species, was directly observed within Tributary 40. Within the PSA, Tributary 40 accepts drainage from Tributary 39, Freshwater Wetlands 16, 17, 18, and 19, the surrounding upland forests, and roadside drainage. Tributary 40 is depicted on the USGS topographic mapping as a solid blue-line stream, and included in the National Hydrography Dataset. A representative photograph of the Broad River is included in Appendix D, Photograph 107.

Tributary 41

Tributary 41 is an unnamed, perennial tributary to the Saluda River. Tributary 41 is located immediately west of the I-26 eastbound exit ramp to Bush River Road. Tributary 41 originates at a pipe outfall within the PSA, drains south, and traverses a pipe under Bush River Road and continues beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 41 flows approximately 0.50 mile to the south and discharges to the Saluda River. Within the PSA, Tributary 41 ranges from approximately 3 to 10 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 517 linear feet (0.107 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand, cobble, and gravel. Aquatic life was not directly observed within Tributary 41. Within the PSA, Tributary 41 accepts drainage from the surrounding upland forest, commercial development, and roadside drainage. Tributary 41 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 41 are included in Appendix D, Photographs 108 and 109.

Tributary 42

Tributary 42 is an unnamed, perennial tributary to the Saluda River and a lower reach of Tributary 35. Tributary 42 crosses I-26 within the I-26 interchange with Bush River Road. Tributary 42 originates north of the PSA, drains south and traverses a pipe under Browning Road and I-26. From the pipe outfall west of I-26, Tributary 42 drains in a general direction to the south and discharges to Tributary 43. Within the PSA, Tributary 42 ranges from approximately 4 to 10 feet in width, with bank heights ranging from 0 to 3 feet. Approximately 874 linear feet (0.071 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, moderate sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 42. Within the PSA, Tributary 42 accepts drainage from Tributary 35, the surrounding upland forest, commercial development, and roadside drainage. Tributary 42 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 42 are included in Appendix D, Photographs 110 and 111.

Tributary 43

Tributary 43 is an unnamed, perennial tributary to the Saluda River and a lower reach of Tributary 38. Tributary 43 crosses I-26 within the I-26 interchange with I-126. Tributary 43 originates north of the PSA, drains south and traverses a pipe under Bush River Road. From the pipe outfall south of Bush River Road, Tributary 43 drains south and traverses a pipe under I-26. From the pipe outfall west of I-26, Tributary 43 drains in a general southerly direction and discharges to the Saluda River. Within the PSA, Tributary 43 ranges from approximately 6 to 50 feet in width, with bank heights ranging from 1 to 8 feet. Approximately 2,244 linear feet (1.135 acres) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand, silt, gravel, cobble, and boulders. Aquatic life was not directly observed within Tributary 43. Within the PSA, Tributary 43 accepts drainage from Tributaries 38 and 42, Freshwater Wetland 20, the surrounding upland forest, commercial development, and roadside drainage. Tributary 43 is depicted on USGS topographic mapping as a solid blue-line, and included in the National

Hydrography Dataset. Representative photographs of Tributary 43 are included in Appendix D, Photographs 112 and 114.

Tributary 44

Tributary 44 is an unnamed, intermittent and perennial tributary to the Saluda River. Tributary 44 is located immediately west of I-126 and approximately 750 feet south of the I-26 interchange with I-126. Tributary 44 originates at a pipe outfall within the PSA, drains in a general southerly direction, and traverses a pipe under a railroad corridor. From the pipe outfall south of the railroad, Tributary 44 drains south and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 44 flows approximately 350 feet to the south and discharges to the Saluda River. Within the PSA, Tributary 44 ranges from approximately 3 to 10 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 229 linear feet (0.021 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak to moderate flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 44. Within the PSA, Tributary 44 accepts drainage from Freshwater Wetland 25, the surrounding upland forest, and roadside drainage. Tributary 44 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 44 are included in Appendix D, Photographs 121, 122, and 123.

Tributary 45

Tributary 45 is an unnamed, perennial tributary to the Saluda River and crosses I-126 approximately 0.25 mile south of the I-26 interchange with I-126. Tributary 45 originates north of the PSA, drains southwesterly and traverses a pipe under I-126. From the pipe outfall southwest of I-126, Tributary 45 drains southwesterly, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 45 flows approximately 300 feet to the south and discharges to the Saluda River. Within the PSA, Tributary 45 ranges from approximately 4 to 12 feet in width, with bank heights ranging from 0 to 2 feet. Approximately 934 linear feet (0.088 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, moderate sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 45. Within the PSA, Tributary 45 accepts drainage from Freshwater Wetlands 27 and 28, the surrounding upland forest, and roadside drainage. Tributary 45 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 45 are included in Appendix D, Photographs 125 and 126.

Tributary 46

Tributary 46 is an unnamed, intermittent tributary to the Saluda River. Tributary 46 is located immediately west of I-126 and approximately 0.30 northwest of the I-126 interchange with Colonial Life Boulevard. Tributary 46 originates at a pipe outfall within the PSA, drains in a general westerly direction, and traverses a pipe under a railroad corridor. From the pipe outfall west of the railroad, Tributary 46 drains southwest into a pipe and beyond the limits of PSA. Beyond the PSA, hydrology from Tributary 46 flows approximately 300 feet to the southwest and discharges to the Saluda River. Within the PSA, Tributary 46 ranges from approximately 4 to 6

feet in width, with bank heights ranging from 0 to 2 feet. Approximately 322 linear feet (0.026 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, no sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 46. Within the PSA, Tributary 46 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 46 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 46 are included in Appendix D, Photographs 129 and 130.

Tributary 47

Tributary 47 is an unnamed, intermittent tributary to the Saluda River and crosses I-126 approximately 900 feet northwest of the I-126 interchange with Colonial Life Boulevard. Tributary 47 originates east of the PSA, drains westerly and traverses a pipe under I-126. From the pipe outfall southwest of I-126, Tributary 47 drains northerly, and traverses a pipe under an abandoned roadbed. From the pipe outfall under the abandoned roadbed, Tributary 47 drains in a general southerly direction to Tributary 49. Beyond the PSA, hydrology from Tributary 47 flows approximately 0.30 mile to the south and discharges to the Saluda River. Within the PSA, Tributary 47 ranges from approximately 2 to 14 feet in width, with bank heights ranging from 0 to 2 feet. Approximately 1,052 linear feet (0.292 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, moderate sinuosity, and a substrate consisting of sand, gravel, and cobble. Aquatic life was not directly observed within Tributary 47. Within the PSA, Tributary 47 accepts drainage from Freshwater Wetland 29, Tributary 28, the surrounding upland forest, and roadside drainage. Tributary 47 is depicted on USGS topographic mapping as a solid blue-line, and included in the National Hydrography Dataset. Representative photographs of Tributary 47 are included in Appendix D, Photographs 132, 133, and 134.

Tributary 48

Tributary 48 is an unnamed, perennial tributary to the Saluda River. Tributary 48 is located immediately west of I-126, approximately 900 feet northwest of I-126 interchange with Colonial Life Boulevard. Tributary 48 originates at a pipe outfall within the PSA, drains westerly, and discharges to Tributary 47. Tributary 48 ranges from approximately 14 to 25 feet in width, with bank heights ranging from 1 to 3 feet. Tributary 48 is contained within the PSA and is approximately 29 linear feet (0.010 acre) in total length. During field investigations, the stream channel exhibited weak flow, no sinuosity, and a substrate consisting of sand. Aquatic life was not directly observed within Tributary 48. Tributary 48 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 48 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 48 is included in Appendix D, Photograph 135.

Tributary 49

Tributary 49 is an unnamed, perennial tributary to the Saluda River. Tributary 49 is located immediately southwest of the I-126 interchange with Colonial Life Boulevard. Tributary 49 originates at the discharge of Freshwater Wetland 31, drains northwesterly, and discharges to Freshwater Wetland 30. Tributary 49 ranges from approximately 3 to 6 feet in width, with bank heights ranging from 0 to 1 feet. Tributary 49 is contained within the PSA and is approximately 298 linear feet (0.024 acre) in total length. During field investigations, the

stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 49. Tributary 49 accepts drainage from Freshwater Wetland 30, Tributary 47, the surrounding upland forest, and roadside drainage. Tributary 49 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 49 are included in Appendix D, Photographs 137 and 138.

Tributary 50

Tributary 50 is an unnamed, perennial tributary to the Broad River and crosses I-20 approximately 800 feet south of the Broad River. Tributary 50 originates at a pipe outfall within the PSA, drains westerly and traverses a pipe under I-20. From the pipe outfall west of I-20, Tributary 50 drains in a general northerly direction, along I-20, and discharges to the Saluda River. Within the PSA, Tributary 50 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 1 to 6 feet. Approximately 889 linear feet (0.098 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 50. Within the PSA, Tributary 50 accepts drainage from Freshwater Wetlands 33 and 34, Tributaries 51 and 52, the surrounding upland forest, residential development, and roadside drainage. Tributary 50 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 50 are included in Appendix D, Photographs 141 and 142.

Tributary 51

Tributary 51 is an unnamed, intermittent tributary to the Saluda River. Tributary 51 is located approximately 200 feet west of I-20 and approximately 275 feet south of the Saluda River. Tributary 51 originates at a pipe outfall within the PSA, drains easterly, and discharges to Tributary 50. Tributary 51 ranges from approximately 3 to 6 feet in width, with bank heights ranging from 0 to 2 feet. Tributary 51 is contained within the PSA and is approximately 21 linear feet (0.002 acre) in total length. During field investigations, the stream channel exhibited weak flow, no sinuosity, and a substrate consisting of sand and installed riprap. Aquatic life was not directly observed within Tributary 51. Tributary 51 accepts drainage from Pond 2, the surrounding upland forest, and roadside drainage. Tributary 51 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 51 are included in Appendix D, Photographs 143 and 144.

Tributary 52

Tributary 52 is an unnamed, intermittent tributary to the Saluda River. Tributary 52 is located approximately 150 feet west of I-20 and approximately 675 feet south of the Saluda River. Tributary 52 originates at a headcut within the PSA, drains northerly, and discharges to Tributary 50. Tributary 52 ranges from approximately 3 to 4 feet in width, with bank heights ranging from 0 to 1 feet. Tributary 52 is contained within the PSA and is approximately 35 linear feet (0.002 acre) in total length. During field investigations, the stream channel exhibited weak flow, no sinuosity, and a substrate consisting of sand. Aquatic life was not directly observed within Tributary 52. Tributary 52 accepts drainage from the surrounding upland forest and roadside drainage.

Tributary 52 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 52 are included in Appendix D, Photographs 147 and 148.

Tributary 53

Tributary 53, aka, Senn Branch, is a perennial tributary to the Saluda River. Tributary 53 crosses I-20 approximately 0.55 mile south of the Saluda River. Tributary 53 originates west of the PSA, drains easterly and traverses a culvert under I-20. From the culvert outfall east of I-20, Tributary 53 drains approximately 0.5 mile and traverses a culvert under I-20. From the culvert outfall south of I-20, Stoop Creek drains approximately 0.60 mile easterly and discharges to the Saluda River. Within the PSA, Tributary 53 ranges from approximately 6 to 40 feet in width, with bank heights ranging from 0 to 6 feet. Approximately 933 linear feet (0.229 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity and a substrate consisting of silt, sand, gravel, cobble and boulders. Aquatic life, including fish and macroinvertebrate insect species, was directly observed within Tributary 53. Within the PSA, Tributary 53 accepts drainage from Tributaries 55 and 56, Freshwater Wetlands 36, 37, and 38, the surrounding upland forests, and roadside drainage. Tributary 53 is depicted on the USGS topographic mapping as a solid blue-line stream, and included in the National Hydrography Dataset. Representative photographs of Tributary 21 are included in Appendix D, Photographs 154 and 155.

Tributary 54

Tributary 54 is an unnamed, intermittent tributary to Senn Branch. Tributary 54 is located approximately 150 feet west of I-20 and approximately 0.55 mile south of the Saluda River. Tributary 54 originates at a headcut within the PSA, drains southerly, and discharges to Tributary 53 (Senn Branch). Tributary 54 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 0 to 2 feet. Tributary 54 is contained within the PSA and is approximately 46 linear feet (0.004 acre) in total length. During field investigations, the stream channel exhibited weak flow, moderate sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 54. Tributary 54 accepts drainage from the surrounding upland forest. Tributary 54 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 54 are included in Appendix D, Photographs 156 and 157.

Tributary 55

Tributary 55 is an unnamed, perennial tributary to Senn Branch. Tributary 55 is located approximately 150 feet west of I-20 and approximately 0.60 mile south of the Saluda River. Tributary 55 originates at the discharge of Freshwater Wetland 38, drains northwesterly, and discharges to Tributary 53 (Senn Branch). Tributary 55 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 0 to 2 feet. Tributary 55 is contained within the PSA and is approximately 70 linear feet (0.005 acre) in total length. During field investigations, the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 55. Tributary 55 accepts drainage from Freshwater Wetland 38 and the surrounding upland forest. Tributary 55 is not depicted on USGS topographic mapping, or included in the

National Hydrography Dataset. Representative photographs of Tributary 55 are included in Appendix D, Photographs 158 and 159.

Tributary 56

Tributary 56 is an unnamed, intermittent tributary to Senn Branch. Tributary 56 is located approximately 100 feet west of I-20 and approximately 0.60 mile south of the Saluda River. Tributary 56 originates at a headcut within the PSA, drains northerly, and discharges to Tributary 55. Tributary 56 ranges from approximately 2 to 4 feet in width, with bank heights ranging from 0 to 2 feet. Tributary 56 is contained within the PSA and is approximately 20 linear feet (0.001 acre) in total length. During field investigations, the stream channel exhibited moderate flow, no sinuosity, and a substrate consisting of sand and silt. Aquatic life was not directly observed within Tributary 56. Tributary 56 accepts drainage from the surrounding upland forest. Tributary 56 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 56 are included in Appendix D, Photographs 160 and 161.

Tributary 57

Tributary 57 is an unnamed, perennial tributary to Senn Branch. Tributary 57 is located approximately 200 feet east of I-20 and approximately 0.60 mile south of the Saluda River. Tributary 57 originates east of the PSA, drains northwesterly, and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 57 flows approximately 300 to the north and discharges to Tributary 53 (Senn Branch). Within the PSA, Tributary 57 ranges from approximately 6 to 8 feet in width, with bank heights ranging from 0 to 3 feet. Approximately 187 linear feet (0.027 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of sand, cobble, and gravel. Aquatic life was not directly observed within Tributary 57. Within the PSA, Tributary 57 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 57 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 57 is included in Appendix D, Photograph 162.

Tributary 58

Tributary 58 is an unnamed, intermittent tributary to Double Branch. Tributary 58 is located immediately west of I-26, approximately 575 feet south of Sunset Boulevard. Tributary 58 originates at a pipe outfall within the PSA, drains easterly into a pipe that outfalls beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 58 discharges from the pipe and flows approximately 1.50 miles to the east and discharges to Double Branch. Within the PSA, Tributary 58 ranges from approximately 3 to 4 feet in width, with bank heights ranging from 1 to 2 feet. Approximately 16 linear feet (0.001 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, no sinuosity, and a substrate consisting of sand, cobble, gravel, and installed riprap. Aquatic life was not directly observed within Tributary 58. Within the PSA, Tributary 58 accepts drainage from the surrounding upland forest, commercial development, and roadside drainage. Tributary 58 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. Representative photographs of Tributary 58 are included in Appendix D, Photographs 163 and 164.

Tributary 59

Tributary 59 is an unnamed, intermittent tributary to Nichols Creek. Tributary 59 crosses I-26 approximately 0.7 miles northwest of the Broad River Road interchange (Exit 101). Tributary 59 originates at a headcut within the PSA, drains east and traverses a pipe under I-26 and Western Lane. From the pipe outfall east of Western Lane, Tributary 59 drains in a general direction to the east and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 59 flows 1.3 miles east and discharges to Nichols Creek. Within the PSA, Tributary 59 ranges from approximately 2 to 6 feet in width, with banks of 0-2 feet. Approximately 133 linear feet (0.008 acre) of the tributary is found in the PSA. During field investigation the stream channel exhibited weak flow, moderate sinuosity, and a substrate consisting of silt and sand. Aquatic life was not directly observed within Tributary 59. Within the PSA, Tributary 59 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 59 is depicted on USGS topographic mapping, as an intermittent blue-line stream and is included in the National Hydrography Dataset. Representative photographs of Tributary 59 are included in Appendix D, Photographs 165 and 166.

Tributary 60

Tributary 60, aka, Moccasin Branch, is a perennial tributary to the Nichols Creek. Tributary 60 crosses I-26 approximately 0.35 mile northwest of the Broad River Road interchange (Exit 101). Tributary 60 originates west of the PSA, drains east and traverses a pipe under I-26 and Western Lane. From the pipe outfall east of Western Lane, Tributary 60 drains in a general direction to the east and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 59 flows 1.3 miles east and discharges to Nichols Creek. Within the PSA, Tributary 60 ranges from approximately 3 to 13 feet in width, with bank heights ranging from 0 to 3 feet. Approximately 195 linear feet (0.030 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity and a substrate consisting of silt, sand, gravel, cobble and boulders. Aquatic life was not directly observed within Tributary 60. Within the PSA, Tributary 60 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 60 is depicted on the USGS topographic mapping as an intermittent blue-line stream, and included in the National Hydrography Dataset. Representative photographs of Tributary 60 are included in Appendix D, Photographs 168 and 169.

Tributary 61

Tributary 61 is an unnamed, perennial tributary to the Saluda River. Tributary 61 crosses I-20 approximately 1,400 feet southwest of the Saluda River. The tributary originates south of the PSA, drains north and traverses a pipe under Devaga Lane and I-20. From the pipe outfall north of I-20, the tributary traverses a pipe within a residential development and continues in a general direction to the northeast and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 61 flows 1,000 feet and discharges to Tributary 30 (the Saluda River). Approximately 224 linear feet (0.047 acre) of the tributary is found in the PSA. During field investigation the stream channel exhibited weak flow, weak sinuosity, and a substrate consisting of silt, sand, cobble, and boulders. Aquatic life was not directly observed within Tributary 61. Within the PSA, Tributary 61 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 61 is depicted on USGS

topographic mapping, as a solid blue-line stream and is included in the National Hydrography Dataset. Representative photographs of Tributary 61 are included in Appendix D, Photographs 173, 174, and 175.

Tributary 62

Tributary 62 is an unnamed, intermittent tributary to the Saluda River. Tributary 62 is located approximately 0.07 mile west of I-126 and 0.26 mile south of the interchange with I-26. Tributary 62 originates from Wetland 25, drains south, and discharges to Tributary 30 (the Saluda River) within the PSA. Tributary 62 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 3 to 6 feet. Tributary 62 is contained within the PSA and is approximately 46 linear feet (0.005 acre) in total length. During field investigations, the stream channel exhibited moderate flow, no sinuosity, and a substrate consisting of silt and sand. Aquatic life, including fish and macroinvertebrate insect species, was directly observed within Tributary 62. Within the PSA, Tributary 62 accepts drainage from Wetland 25, Tributary 44, the surrounding upland forest, and roadside drainage. Tributary 62 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 62 is included in Appendix D, Photograph 181.

Tributary 63

Tributary 63 is an unnamed, intermittent tributary to the Saluda River. Tributary 63 is located approximately 0.06 mile west of I-126 and 0.27 mile south of the interchange with I-26. Tributary 63 originates from Wetland 25, drains south, and discharges to Tributary 30 (the Saluda River) within the PSA. Tributary 63 ranges from approximately 2 to 6 feet in width, with bank heights ranging from 4 to 19 feet. Tributary 63 is contained within the PSA and is approximately 38 linear feet (0.005 acre) in total length. During field investigations, the stream channel exhibited moderate flow, no sinuosity, and a substrate consisting of silt and sand. Aquatic life, including fish and macroinvertebrate insect species, was directly observed within Tributary 63. Within the PSA, Tributary 63 accepts drainage from Wetland 25, Tributary 44, the surrounding upland forest, and roadside drainage. Tributary 63 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 63 is included in Appendix D, Photograph 182.

Tributary 64

Tributary 64 is an unnamed, intermittent tributary to the Saluda River. Tributary 64 is located approximately 0.06 mile east of I-126 and 0.23 mile southeast of the interchange with I-26. Tributary 64 originates northeast of the PSA, drains southwest and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 64 drains 150 feet to Wetland 28. Within the PSA, Tributary 64 ranges from approximately 3 to 8 feet in width, with bank heights ranging from 1 to 3 feet. Approximately 138 linear feet (0.014 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of silt and sand. Aquatic life was not directly observed within Tributary 64. Within the PSA, Tributary 64 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 64 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 64 is included in Appendix D, Photograph 183.

Tributary 65

Tributary 65 is an unnamed, perennial tributary to the Saluda River. Tributary 65 crosses I-126 approximately 0.5 mile east of the Colonial Life Boulevard interchange. The tributary originates north of the PSA, drains southeasterly and traverses a pipe under Gracern Road, I-126, and a railroad line. From the pipe outfall south of the railroad, hydrology form Tributary 65 drains 1,000 feet and discharges to Tributary 30 (the Saluda River). Within the PSA, tributary 65 ranges from approximately 7 to 16 feet in width, with banks of 3 to 10 feet. Approximately 205 linear feet (0.041 acre) of the tributary is found in the PSA. During field investigation the stream channel exhibited moderate flow, weak sinuosity, and a substrate consisting of silt, sand, cobble, and boulders. Aquatic life was not directly observed within Tributary 65. Within the PSA, Tributary 65 accepts drainage from the surrounding upland forest, residential areas, and roadside drainage. Tributary 65 is depicted on USGS topographic mapping, as a solid blue-line stream and is included in the National Hydrography Dataset. A representative photograph of Tributary 65 is included in Appendix D, Photograph 184.

Tributary 66

Tributary 66 is an unnamed, intermittent tributary to the Saluda River. Tributary 66 is located approximately 50 feet north of Gracern Road and 200 feet west of its intersection with Janice Drive. Tributary 66 originates from Wetland 55, drains west, and discharges to Tributary 65 within the PSA. Tributary 66 ranges from approximately 2 to 5 feet in width, with bank heights ranging from 2 to 5 feet. Tributary 66 is contained within the PSA and is approximately 60 linear feet (0.004 acre) in total length. During field investigations, the stream channel exhibited moderate flow, moderate sinuosity, and a substrate consisting of silt and sand. Aquatic life was not directly observed within Tributary 66. Within the PSA, Tributary 66 accepts drainage from Wetland 55, the surrounding upland forest, residential development, and roadside drainage. Tributary 66 is not depicted on USGS topographic mapping, and is not included in the National Hydrography Dataset. A representative photograph of Tributary 66 is included in Appendix D, Photograph 185.

Tributary 67

Tributary 67 is an unnamed, intermittent tributary to the Saluda River. Tributary 67 is located approximately 0.02 mile south of I-126 and 0.11 mile west of the Stoneridge Road. Tributary 67 originates at a pipe outfall within the PSA, drains south and discharges to Tributary 68. Tributary 67 is approximately 4 feet in width, with bank heights ranging from 3 to 6 feet. Tributary 67 is contained within the PSA and is approximately 8 linear feet (0.001 acre) in total length. During field investigations, the stream channel exhibited moderate flow, no sinuosity, and a substrate consisting of silt, sand cobble and boulders. Aquatic life was not directly observed within Tributary 67. Within the PSA, Tributary 67 accepts drainage from the surrounding upland forest and roadside drainage. Tributary 67 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset. A representative photograph of Tributary 67 is included in Appendix D, Photograph 191.

Tributary 68

Tributary 68 is an unnamed, intermittent tributary to the Saluda River. Tributary 68 is located approximately 0.02 mile south of I-126 and 0.11 mile west of the Stoneridge Road. Tributary 68 originates at a pipe outfall within the PSA, drains south and beyond the limits of the PSA. Beyond the PSA, hydrology from Tributary 68

flows approximately 400 feet to Tributary 30 (the Saluda River). Within the PSA, Tributary 68 is approximately 8 feet in width, with bank heights ranging from 3 to 8 feet. Approximately 19 linear feet (0.003 acre) of the tributary is found within the PSA. During field investigations, the stream channel exhibited moderate flow, no sinuosity, and a substrate consisting of silt, sand cobble and boulders. Aquatic life was not directly observed within Tributary 68. Within the PSA, Tributary 68 accepts drainage from Tributary 67, the surrounding upland forest, and roadside drainage. Tributary 68 is not depicted on USGS topographic mapping, or included in the National Hydrography Dataset A representative photograph of Tributary 68 is included in Appendix D, Photograph 192.

4.3 Ponds/Open Waters

A total of four ponds and one NPDES permitted treatment basin were identified by the project team within the PSA during site reviews, as listed in Table 4.3.

Table 4.3 Open Water Ponds within the Project Study Area

Feature	Figure	Photograph	Area (ac.)
Pond 1	6-5	26	0.035
Pond 2	6-27	140	0.023
NPDES permitted treatment basin	6-16	69	0.161
Pond 3	6-1	167	0.155
Pond 4	6-8	170	0.365
Ponds, basins/other waters total			**0.739 acre**

4.4 Permitting

A Clean Water Act Section 404 permit is required for impacts to waters of the U.S., including wetlands. Section 404 is administered by the U.S. Army Corps of Engineers (USACE). Depending on the type and extent of waters of the U.S., including wetlands to be impacted, Section 404 permitting requirements can range from activities that are considered exempt or preauthorized to those requiring pre-construction notification (PCN) for a Nationwide Permit (NWP) or Individual Permit (IP) from the USACE.

In addition to the Section 404 permit, SCDHEC must grant, deny, or waive a Water Quality Certification (WQC), in accordance with Section 401 of the Clean Water Act. Waters considered by SCDHEC to be sensitive may also require additional consideration during the 401 WQC process. These include, but are not limited to, Outstanding Resource Waters (ORW), Shellfish Harvesting Waters (SFH), trout waters, areas draining to waters included on the 303(d) list of impaired waters, and areas draining to waters with an approved TMDL. As discussed in Section 2.4, portions of the PSA drain to waters with an EPA-approved TMDL. Depending on the type of impairments, extent of the project, and other factors, SCDHEC may require additional water quality protection and stormwater treatment measures during and after construction.

Specific permitting requirements and strategies for the project will be determined once impacts to wetlands, and other waters of the U.S. are quantified following establishment of proposed project construction limits.

Pursuant to Section 404, regulated discharges would include, but are not necessarily limited to, the placement of fill material, riprap, pipes, culverts, etc., into waters of the U.S. The permit application must include a delineation of affected waters of the U.S., including wetlands, as well as a description of impact avoidance and minimization strategies, and an alternatives analysis. It is anticipated that an IP will be required for this project.

4.5 Compensatory Mitigation

Compensatory mitigation is normally required to offset unavoidable losses of waters of the U.S. The Council on Environmental Quality (CEQ) has defined mitigation in 40 CFR Part 1508.20 to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts. Three general types of mitigation include avoidance, minimization, and compensatory mitigation. Compensatory mitigation means the restoration, establishment, enhancement, and/or in certain circumstances preservation of wetlands, streams and other aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Under the 2008 Final Compensatory Mitigation Rule regulations, there are three mechanisms for providing compensatory mitigation (listed in order of preference as established by the regulations): mitigation banks, in-lieu fee programs, and permittee-responsible mitigation.

It is anticipated that compensatory mitigation for permanent project impacts will be attained through purchase of mitigation credits from a USACE approved mitigation bank. Specific mitigation requirements will be established during the Section 404 permitting process.

5 Floodplains

Floodplains are low-lying areas adjacent to rivers, streams, and other waterbodies that are susceptible to inundation during rain events. These areas provide important functions in the natural environment such as providing storage for flood waters, protecting the surrounding environment from erosion, and providing habitat for wildlife. As such, agencies are required to take actions that reduce the risk of impacts to floodplains and their associated floodway, or main channel of flow.

Floodplain and floodway protection is required under several federal, state, and local laws, including Executive Order 11988 entitled “Floodplain Management,” which requires federal agencies to avoid making modifications to and supporting development in floodplains wherever practical. Floodplains subject to inundation by the one-percent-annual-chance flood event are regulated by the Federal Emergency Management Agency (FEMA).

FEMA publishes maps which depict areas of regulated floodplains and floodways. The Flood Insurance Rate Map (FIRM) is the most common of these flood maps. FIRMs depict the boundaries of flood hazard areas and differentiates them by Zone.

Zone A floodplains are areas subject to inundation by the 1-percent-annual-chance flood event and are generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, Base Flood Elevations (BFEs) or flood depths are not available for Zone A floodplains.

Zone AE floodplains are areas subject to inundation by the 1-percent-annual-chance flood event and are determined by detailed methods. BFEs are available for Zone AE floodplains and are provided on FIRMs.

Based upon a review of the floodplain mapping and a GIS analysis of the project study area, the proposed project crosses or encroaches on six (6) FEMA-regulated floodplains. Table 5.1 below lists these floodplains by their associated waterbody. The extent of each floodplain can be found in **Appendix A, Figures 7-1 through 7-7**.

Table 5.1 FEMA-Regulated Floodplains within the Project Study Area

Floodplain	FIRM map ID	Existing crossing	Figure	FEMA zone
Moccasin Branch	45079C0210K	Culvert	7-2	Zone AE floodway
Tributary to Kinley Creek	45063C0134G	Culvert	7-3	Zone AE floodway
Stoop Creek	45079C0236K & 45063C0161G	Culvert	7-5 & 7-7	Zone AE floodway
Saluda River	45063C0144G & 45063C0163G	Bridge	7-5 & 7-7	Zone AE floodway
Broad River	45079C0237K	Bridge	7-6	Zone AE floodway
Senn Branch	45063C0163G	Culvert	7-7	Zone AE floodway

In accordance with Executive Order 11988, a hydraulic analysis must be conducted for an encroachment of a FEMA-regulated floodplain. The hydraulic analysis is used to determine if the project is likely to increase the risk of flooding within the floodplain. In order to meet the requirements of a “No-Rise” condition, FEMA requires projects which would encroach on Regulated Floodways and Zone AE floodplains to result in a change no greater than 0.1 feet from the established 100-year flood elevations. Furthermore, SCDOT requires all Zone A crossings to be analyzed for the 100-year flood to insure that the floodplain encroachment does not cause one (1) foot or more of backwater when compared to unrestricted or natural conditions. A preliminary hydraulic analysis will be performed for each encroachment of a FEMA-regulated floodplain and a detailed hydraulic analysis will be performed during final design.

Hydrology studies have not been conducted at this stage of project development; however, the project would be designed in an effort to meet “No-Rise” requirements. In the event a “No-Rise” condition cannot be achieved, coordination with FEMA will require the preparation of a CLOMR (Conditional Letter of Map Revision)/ LOMR (Letter of Map Revision) package for the encroachment. This includes a detailed hydraulic analysis, determination of floodplain impacts, and preparation of the CLOMR. Following construction, impacts to the floodplain would be verified prior to the issuance of the LOMR.

6 Threatened and Endangered Species

The Federal Endangered Species Act (ESA) of 1973, as amended, is the federal regulatory tool that serves to administer permits, implement recovery plans, and monitor federally protected (endangered and threatened) species. The ESA is administered and regulated by the USFWS and/or National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS).

Because of the federal nexus of this proposed project, consultation with USFWS and/or NOAA-NMFS is required under Section 7 of the ESA, as amended (16 U.S.C. 1531-1534) for proposed projects that "may affect" federally-classified endangered and threatened species.

Federal Protected Species - Species with the federal classification of Endangered (E) or Threatened (T), or Threatened due to Similarity of Appearance (T [S/A]) are protected under the ESA of 1973, as amended (16 U.S.C. 1531 et seq.). The term "endangered species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range", and the term "threatened species" is defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532).

The term "Proposed" (P) is defined as "any species proposed for official listing as endangered or threatened." "Candidate" (C) species are taxons under consideration for which there is sufficient information to support listing but development of a proposed listing regulation is precluded by other higher priority listing activities. "At-Risk Species" (ARS) is an informal term that refers to those species which may be in need of concentrated conservation actions, and have been petitioned for listing as threatened or endangered. The USFWS designations P, C, and ARS do not provide federal protection and require no Section 7 consultation under the ESA.

State Protected Species – Animal species that are on the South Carolina state protected species list receive protection under the South Carolina Nongame and Endangered Species Conservation Act (South Carolina Code, Title 50). State endangered species are defined as any species or subspecies of wildlife whose prospects of survival or recruitment within the state are in jeopardy or are likely within the foreseeable future to become so. It is unlawful for any person to take, possess, transport, export, process, sell or offer for sale or ship, and for any common or contract carrier knowingly to transport or receive for shipment any species or subspecies of wildlife appearing on the state list of protected species without appropriate authorization.

A search of the USFWS database, updated October 3, 2017, provided existing information concerning the potential occurrence of threatened or endangered species within Lexington and Richland Counties. This database identifies eight (8) federally threatened or endangered species known to occur or to have formerly occurred in Lexington and Richland Counties, as listed in Table 6.1 (USFWS, 2015). Please note: The table also includes bald eagle which is no longer protected under the ESA but is afforded protection through the Bald and Golden Eagle Protection Act (BGEPA) of 1940 and the Migratory Bird Treaty Act of 1918. The USFWS Information, Planning, and Conservation (IPaC) online database was also reviewed for information pertaining to designated protected species critical habitats.

The South Carolina Department of Natural Resources (SCDNR) Rare, Threatened and Endangered Species Inventory database, accessed December 20, 2017, was also reviewed for information regarding species with state endangered or threatened status. Two (2) additional species are currently listed as state threatened or endangered in Lexington or Richland County. These species are listed as Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) and Pine Barrens treefrog (*Hyla andersonii*), as listed in Table 6.1 below.

At-Risk Species (ARS) are included in Table 6.1 for informational purposes. These species do not receive legal protection from the ESA; therefore, surveys for ARS were not conducted.

Table 6.1 Threatened and Endangered Species in Lexington and Richland Counties, South Carolina

Protected species		County listed	Protection status	
Common name	Scientific name		Federal	State
Amphibian species				
Chamberlain's dwarf salamander	*Eurycea chamberlaini*	Richland	ARS	-
Pine Barrens treefrog	*Hyla andersonii*	Richland	-	T
Bird species				
American wood stork	*Mycteria americana*	Lexington & Richland	T	-
Bald eagle	*Haliaeetus leucocephalus*	Lexington & Richland	BGEPA	T
Red-cockaded woodpecker	*Picoides borealis*	Lexington & Richland	E	E
Crustacean species				
Broad River spiny crayfish	*Cambarus spicatus*	Richland	ARS	-
Fish species				
American eel	*Anguilla rostrate*	Lexington & Richland	ARS	-
Atlantic sturgeon*	*Acipenser oxyrinchus*	Richland	E	-
Blueback herring	*Alosa aestivalis*	Lexington & Richland	ARS	-
Robust redhorse	*Moxostoma robustum*	Lexington & Richland	ARS	-
Shortnose sturgeon*	*Acipenser brevirostrum*	Richland	E	-
Mammal species				
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	Richland	ARS	E
Tri-colored bat	*Perimyotis subflavus*	Lexington & Richland	ARS	-
Mollusk species				
Savannah lilliput	*Toxolasma pullus*	Lexington & Richland	ARS	-
Plant species				
Bog spicebush	*Lindera subcoriacea*	Lexington & Richland	ARS	-
Canby's dropwort	*Oxypolis canbyi*	Richland	E	-
Carolina-birds-in-a-nest	*Macbridea caroliniana*	Lexington & Richland	ARS	-
Ciliate-leaf tickseed	*Coreopsis integrifolia*	Lexington & Richland	ARS	-
Georgia aster	*Symphyotrichum georgianum*	Richland	ARS	-
Long Beach seedbox	*Ludwigia brevipes*	Lexington	ARS	-
Michaux's sumac	*Rhus michauxii*	Richland	E	-
Purple balduina	*Balduina atropurpurea*	Richland	ARS	-
Rocky shoals spider lily	*Hymenocallis coronaria*	Lexington & Richland	ARS	-
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Richland	E	-
Sandhills lily	*Lilium pyrophilum*	Richland	ARS	-
Smooth coneflower	*Echinacea laevigata*	Lexington & Richland	E	-
Spathulate seedbox	*Ludwigia spathulata*	Lexington & Richland	ARS	-
Wire-leaved dropseed	*Sporobolus teretifolius*	Lexington & Richland	ARS	-

Protected species Common name Reptile species	Scientific name	County listed	Protection status Federal	 State
Florida pine snake	*Pituophis melanoleucus mugitus*	Lexington	ARS	-
Southern hognose snake	*Heterdon simus*	Richland	ARS	-
Spotted turtle	*Clemmys guttata*	Lexington	ARS	-

ARS = At Risk Species; BGEPA = Bald and Gold Eagle Protection Act; E = Endangered; T = Threatened

* Jurisdiction of National Marine Fisheries Service

6.1 Methodology and Results

The list of protected species for Lexington and Richland Counties was reviewed, and literature and field reviews were performed to determine the presence of potential habitat for the protected species within the project study area (PSA). Specifically, field reviews of the PSA were conducted between April 2015 and April 2016. Areas that matched the descriptions of preferred habitat for protected species were classified as protected species habitat and surveyed accordingly for the presence of individuals. Species-specific surveys were conducted in accordance with protocols provided by the USFWS.

Prior to the field reviews, the USFWS Information, Planning, and Conservation (IPaC) online database was reviewed to obtain information pertaining to any federally designated critical habitat for the protected species. Per review of the USWFS IPaC database, no USWFS-designated critical habitat for any of the protected species is located within the PSA. The SCDNR South Carolina Heritage Trust (SCHT) Geographic Database of Rare and Endangered Species, updated January 17, 2006, was also reviewed to determine the presence of known populations of protected species within the vicinity of the project. Information obtained from the SCDNR-SCHT database revealed one known documented occurence of bald eagle (*Haliaeetus leucocephalus*) within approximately one mile of the PSA. According to the SCDNR-SCHT records, the occurrence was observed in 1977 on the Broad River approximately 0.75 mile north of its confluence with the Saluda River. The present status of the occurrence is reported as unknown. The SCDNR-SCHT database does not include any other occurrences of threatened or endangered species within two miles of the PSA.

Descriptions of the state and/or federally-listed endangered and threatened species, determinations of potential habitat, and survey methodology are included below.

Pine Barrens tree frog – State Threatened

The Pine Barrens tree frog is a small, predominately green-colored frog that occurs in seepages within the downslopes of herbaceous and/or shrubby bogs, pocosins, wet pine forests, and other related open disturbed wet habitats. The Pine Barrens tree frog typically lays its eggs in shallow, acidic ponds. No habitat for the Pine Barrens tree frog was identified within the PSA; therefore, no surveys were conducted for the species.

Photo credit: Bill Beck (2017)

American wood stork – Federal Threatened

The American wood stork is a large, long-legged wading bird that prefers freshwater and estuarine wetlands for breeding, feeding, and roosting. American wood storks are colonial nesters with colonies ranging from less than 12 to more than 500 in size. Nesting occurs in small to large trees typically on small islands surrounded by standing water. The species generally forages in water six to 10 inches deep. No habitat for the American wood stork was identified within the PSA; therefore, no surveys were conducted for the species.

Photo credit: Wikimedia user: Googie man (2008)

Photo credit: http://true-wildlife.blogspot.com/2011/02/eagle.html

Bald eagle – Bald and Golden Eagle Protection Act/State Threatened

The bald eagle is a large raptor species that nests in large, mature live pine or cypress trees near water. Bald eagles typically nest within two miles of coasts, rivers, and lakes near waterbodies in which the bird feeds. In South Carolina, bald eagles nest from October 1st through May 15th. Potential nesting and foraging habitat for bald eagle is located within the PSA in the vicinity of the Broad and Saluda Rivers and within mature forested tracts located adjacent to these large waterways; therefore, species-specific surveys were conducted.

Surveys for bald eagle were completed in October 2015 and April 2016 during the USFWS-designated optimum survey window. Per USFWS survey protocol, the bald eagle survey area included a 660-foot buffer around potential nesting habitat as this is the specified distance at which project construction activities have been determined to disturb nesting eagles. Additionally, where applicable, the survey area was extended approximately 3,280 feet (one km) out from the open water nesting habitat as this is the specified distance in which nesting may occur.

No bald eagles and no evidence of nesting were observed during the species-specific field surveys. The potential habitat present within the bald eagle survey area was determined to be less than optimal and occurrences of bald eagles are unlikely due to the relatively few number of large mature pine trees in the overstory of the forests located adjacent to the rivers and the high level of development and associated noise. Per coordination with the SCDNR-SCHT program, there is one documented historic bald eagle nesting site located within approximately one mile of the PSA; however, this historic nesting site is located outside of the bald eagle survey area. Additionally, per the local river guides, no bald eagles have been sited on the portions of the Broad or Saluda River located within the project survey area. For more information on the bald eagle survey, please refer to Appendix E for a species-specific survey report detailing the methodology and results of the survey.

Photo credit: James Hanula (1992)

Red-cockaded woodpecker – Federal and State Endangered

Red-cockaded woodpeckers are native to southern pine forests and typically nests within open pine stands containing trees 80 years or older. Roosting and nesting cavities are excavated within live pine trees which are often infected with a fungus that causes what is known as red-heart disease. Foraging occurs in open pine and/or mixed pine-hardwood stands 30 years or older containing a dominance of trees 10 inches or larger in diameter at breast height (dbh). Potential foraging habitat for red-cockaded woodpecker was identified in the PSA within areas of mature pine forest; therefore, species-specific surveys were conducted.

Surveys for red-cockaded woodpecker were completed in May 2015 during the USFWS-designated optimum survey window. Per USFWS survey protocol for red-cockaded woodpecker, a one-half mile buffer around potential foraging habitat identified within the PSA was also reviewed for potential red-cockaded woodpecker nesting habitat.

No red-cockaded woodpeckers and no nesting habitat were observed within the PSA or within the one-half mile buffer area during the species-specific field surveys. Habitat was determined to be unsuitable due to the age of pine trees, highway traffic, mechanical silvicultural practices, and the relatively dense subcanopies of pine forests.

Atlantic sturgeon – Federal Endangered

The Atlantic sturgeon is an anadromous fish species meaning it spends most of the year in brackish or salt water but moves into freshwaters during the spring to spawn. Optimum spawning habitat includes clean, deep, swiftly flowing water over a hard, rough, or rocky bottom. No habitat for Atlantic sturgeon is present in the PSA. Supporting information for this habitat determination follows.

Photo credit: Dan Greenburg (2011)

On August 17, 2017, NOAA-NMFS issued 82 Fed. Reg. 39160 to issue critical habitat designations for the Atlantic sturgeon[1]. According to this final rule, the segments of the Broad and Saluda Rivers above the Columbia Dam are not included in a critical habitat unit. Additionally, the NOAA-NMFS has recently concluded population and habitat studies for sturgeon species in the southeastern United States. Occurrence maps included in the NOAA-NMFS Southeast Regional Office (SERO) Best Management Practices Manual indicate that sturgeon species have not been identified in the Broad or Saluda Rivers above the Columbia Dam. Based on this data and consultation with NOAA-NMFS-SERO staff, the Atlantic sturgeon is not expected to occur within the portions of the Broad or Saluda Rivers located within the PSA and species-specific surveys determined not to be necessary.

[1] Endangered and Threatened Species: Designation of Critical Habitat for the Endangered New York Bight, Chesapeake Bay, Carolina and South Atlantic Distinct Population Segments of Atlantic Sturgeon and the Threatened Gulf of Maine Distinct Population Segment of Atlantic Sturgeon; Final Rule, 82 Fed. Reg. 39160 (August 17, 2017). Available at: https://www.gpo.gov/fdsys/pkg/FR-2017-08-17/pdf/2017-17207.pdf

Photo credit: Virginia Living Museum (2017)

Shortnose sturgeon – Federal Endangered

The shortnose sturgeon is also an anadromous fish species similar in habitat requirement and appearance to the Atlantic sturgeon. The shortnose sturgeon shares the same habitat as the Atlantic sturgeon inhabiting the lower portions of large rivers and coastal bays and estuaries along the Atlantic Coast and moving up rivers into similar freshwater habitat to spawn. No habitat for shortnose sturgeon is present in the PSA.

Based on the data and consultation with NOAA-NMFS-SERO staff, as noted above for Atlantic sturgeon, the shortnose sturgeon is not expected to occur within the portions of the Broad or Saluda Rivers located within the PSA and species-specific surveys determined not to be necessary.

Rafinesque's big-eared bat – State Endangered

The Rafinesque's big-eared bat occurs in a variety of habitats within the southeastern United States and will hibernate rather than migrate. Rafinesque's big-eared bats characteristically roost in dilapidated buildings or tree cavities near water and have been known to day-roost under bridges. Potential habitat for Rafinesque's big-eared bat is present within the PSA. Specifically, roosting habitat for Rafinesque's big-eared bat may exist in tree cavities near waterbodies within the PSA. Additionally, bridges within the PSA also provide day-roosting habitat for the species. State listed species are not provided protection under the ESA; therefore, species specific surveys were not conducted for Rafinesque's big-eared bat.

Photo credit: J. Scott Altenbach (2017)

Photo credit: USFWS (1997)

Canby's dropwort – Federal Endangered

Canby's dropwort is a perennial herbaceous (i.e., non-woody) plant species that grows in moist habitats, including wet meadows, wet pineland savannas, ditches, sloughs, and along the edges of Cypress-pine ponds, in the coastal plain and sandhill regions of South Carolina. The plant seems to be more abundant in open areas where any underbrush has been burned or otherwise maintained. No habitat for Canby's dropwort was identified within the PSA; therefore, no surveys were conducted for the species.

Michaux's sumac – Federal Endangered

Michaux's sumac is a small, densely hairy shrub generally flowering from June to July. The plant produces fruits from August to October. Michaux's sumac grows in sandy or rocky open areas including clear cuts, roadsides, and utility line rights-of-way. No habitat for Michaux's sumac was identified within the PSA; therefore, no surveys were conducted for the species.

Photo credit: USFWS/Susan Miller (2011)

Photo credit: James Henderson; Bugwood.org (2004)

Rough-leaved loosestrife – Federal Endangered

The rough-leaved loosestrife is a perennial herbaceous plant that flowers from mid-May through June and fruits from July through October. Rough-leaved loosestrife typically grows in densely vegetated areas along the edges of longleaf pine uplands and pond pine pocosins. Rough-leaved loosestrife has also been identified in other wet areas containing saturated sands and deep organic material or peat. No habitat for rough-leaved loosestrife was identified within the PSA; therefore, no surveys were conducted for the species.

Smooth coneflower – Federal Endangered

Smooth coneflower is a perennial herbaceous plant that flowers from late May through mid-July. Fruiting occurs from late June to September with fruits often persisting on plants through the fall. Historically, smooth coneflower occurred in prairie-like habitats or oak-savannas maintained by natural or man-made fire. Now, the plant occurs primarily in maintained openings within wooded areas, clear cuts, and along roadsides and utility line rights-of-way. Smooth coneflower requires full or partial sun and is usually found in areas containing magnesium and calcium-rich soils. Associated plant species include eastern red cedar and rattlesnake master. Potential habitat for smooth coneflower is present in the PSA within clear cuts and roadway and utility line rights-of-way; therefore, species-specific surveys were conducted.

Photo credit: U.S. Forest Service (Date unknown)

Surveys for smooth coneflower were conducted in 2015 within the USFWS-designated optimum survey window and flowering period of the plant. No smooth coneflower plants were identified during the surveys.

Migratory Birds

The USFWS IPaC online database was reviewed for information pertaining to migratory bird species. Twenty migratory bird species are designated by the USFWS as occurring in Lexington and Richland counties. These

species include American bittern, American kestrel, Bachman's sparrow, bald eagle, brown-headed nuthatch, Chuck-will's widow, fox sparrow, Kentucky warbler, least bittern, loggerhead shrike, painted bunting, peregrine falcon, prairie warbler, prothonotary warbler, red-headed woodpecker, rusty blackbird, sedge wren, short-eared owl, wood thrush, and worm-eating warbler. None of the above-listed migratory bird species were observed during the field reviews of the PSA.

6.2 Biological Conclusions

Based on the literature and field reviews and agency correspondence, it has been determined that the proposed project would have 'no effect' on American wood stork, Atlantic sturgeon, shortnose sturgeon, Canby's dropwort, Michaux's sumac, and rough-leaved loosestrife. It has been determined that the proposed project 'may affect, not likely to adversely affect' red-cockaded woodpecker and smooth coneflower due to the presence of potential habitat within the PSA for these species. A project affect determination on bald eagle is not necessary as the species is no longer protected by the ESA and does not require Section 7 consultation. Table 6.2 summarizes the determinations of potential habitat and biological conclusions.

Table 6.2 Summary of Federally Endangered and Threatened Species and Biological Conclusions

Protected species Common name	Scientific name	Potential habitat	Biological conclusion
Bird species			
American wood stork	*Mycteria americana*	No	'No Effect'
Bald eagle	*Haliaeetus leucocephalus*	Yes	N/A **
Red-cockaded woodpecker	*Picoides borealis*	Yes (foraging)	'May Affect, Not Likely to Adversely Affect'
Fish species			
Atlantic sturgeon*	*Acipenser oxyrinchus*	No	'No Effect'
Shortnose sturgeon*	*Acipenser brevirostrum*	No	'No Effect'
Plant species			
Canby's dropwort	*Oxypolis canbyi*	No	'No Effect'
Michaux's sumac	*Rhus michauxii*	No	'No Effect'
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	No	'No Effect'
Smooth coneflower	*Echinacea laevigata*	Yes	'May Affect, Not Likely to Adversely Affect'

* Jurisdiction of National Marine Fisheries Service

** No project affect determination required as the species is no longer protected by the Endangered Species Act and does not require Section 7 consultation

The USFWS was provided the methodology and biological conclusions described in this chapter. In a letter dated March 28, 2018, the USFWS concurred that the project may effect, but is not likely to adversely affect the red-cockaded woodpecker and smooth coneflower. A copy of the USFWS concurrence letter is included in Appendix F (FWS Log No. 2018-I-0645).

Migratory Birds

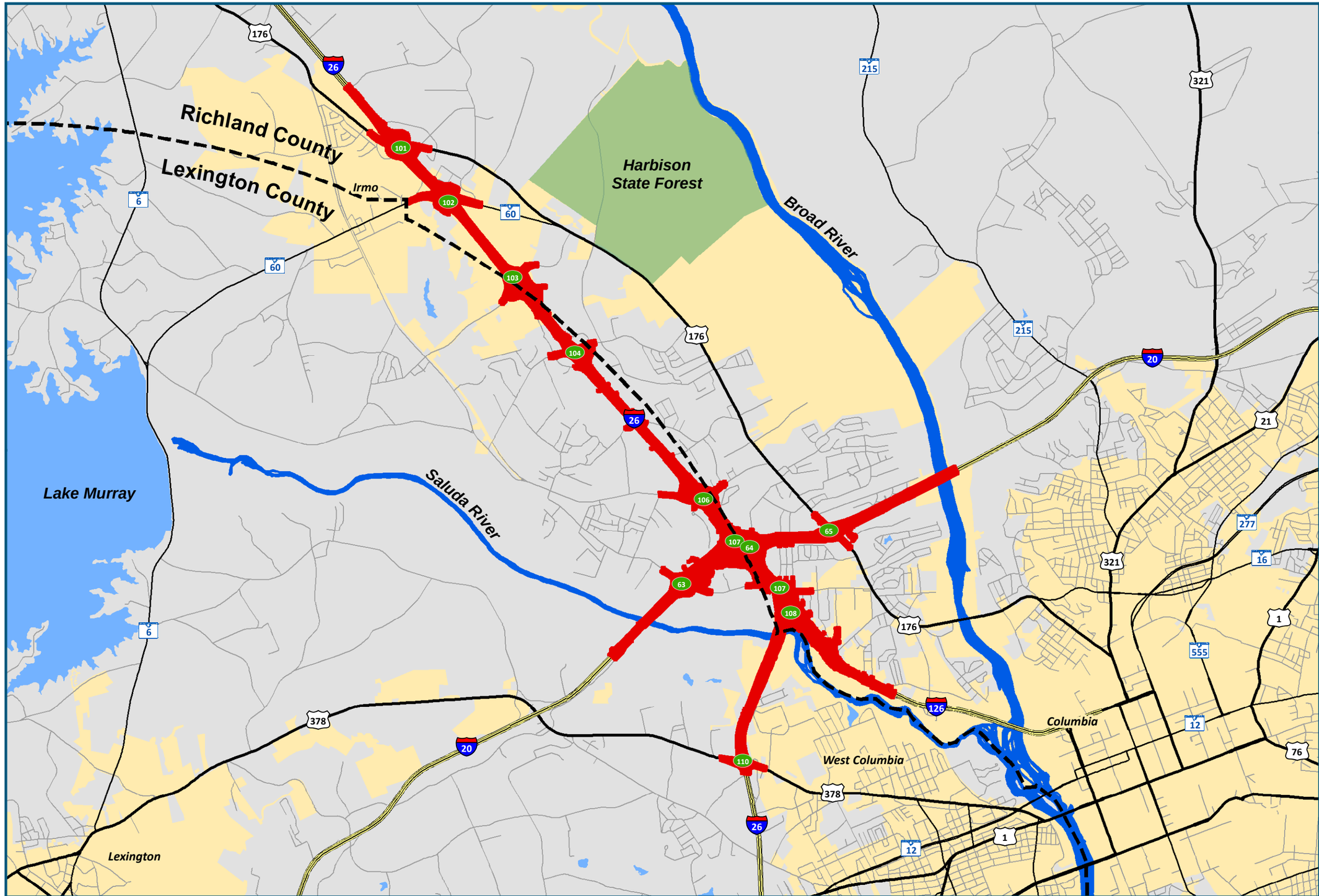
Migratory birds have been documented to use bridges and other artificial roadway drainage structures, such as large culverts, as nesting sites. The PSA contains many bridges and large drainage structures; however, no migratory birds or evidence of these birds utilizing these structures was observed during field reviews. Based on the field reviews, it has been determined that the proposed project would not impact any migratory bird species. Migratory birds that may be utilizing habitats within the PSA are also less likely to be affected by project impacts as they can generally move more readily from construction-related disturbances.

6.3 Environmental Commitments

The SCDOT will comply with the Migratory Bird Treaty Act of 1918 in regard to the avoidance of taking of individual migratory birds and the destruction of their active nests. Specifically, the construction contractor will notify the Resident Construction Engineer (RCE) at least four (4) weeks prior to the construction, demolition, or maintenance of any artificial habitat structures including bridges and box culverts. Subsequently, the RCE will notify the SCDOT Environmental Services Office (ESO) Compliance Division who will coordinate with the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) to conduct inspections for migratory birds. Any migratory birds nests will be removed by USDA APHIS personnel. If a suspect migratory bird nest is observed after construction, demolition, or maintenance activities have begun, the contractor will cease work and immediately notify the RCE who will notify the ESO Compliance Division. In an effort to prevent birds from nesting after project activities have commenced, the contractor may implement the use of deterrents as approved by the RCE with coordination from the ESO Compliance Division.

In the event additional species are listed as federally threatened or endangered prior to the construction of the project, SCDOT will consult with USFWS on the results of the surveys performed, if necessary, and will follow any USFWS regulations/requirements resulting from that consultation.

Appendix A—Figures



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Miles

1 inch = 5,280 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: TIGER Road Data, TIGER County Boundaries, and TIGER Municipality Data (2010)

Legend

- Project Study Area (1,440 acres)
- Municipality
- Lake
- Major River
- County Boundary
- 83 Exit Location/Number

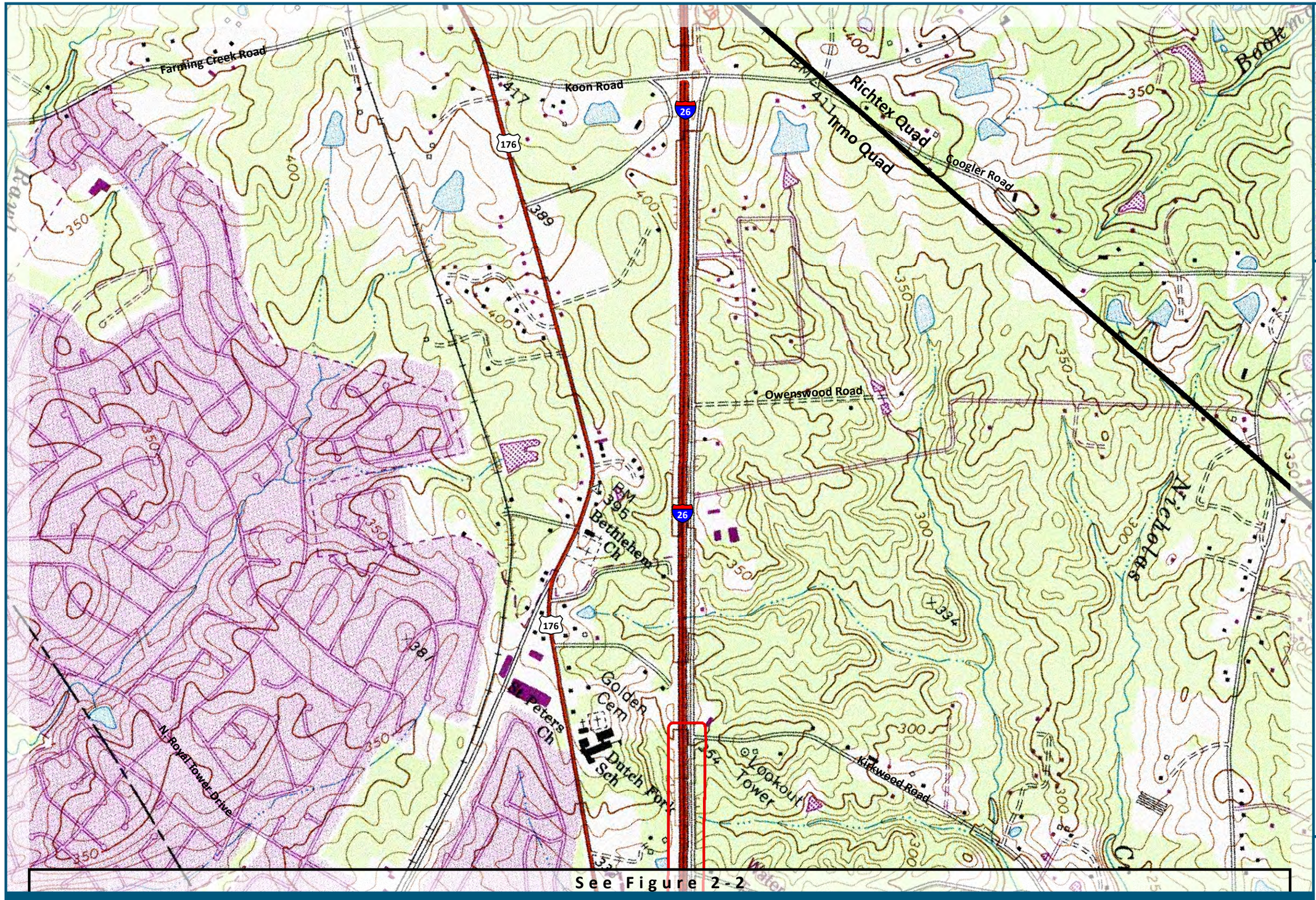
Figure 1
Site Location Map

12/19/2017 Sheet 1 of 1

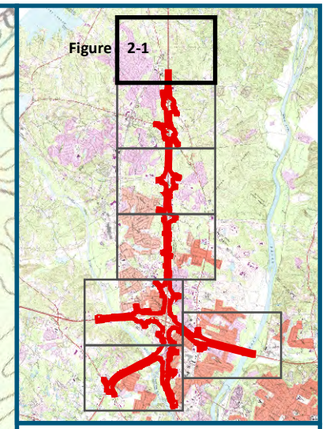
SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS



See Figure 2-2



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Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USGS 7.5 Minute Quad Map [Irmo (1990)]

Legend

- Project Study Area (1,440 acres)
- USGS Quad Index

Figure 2-1
USGS Topography Map

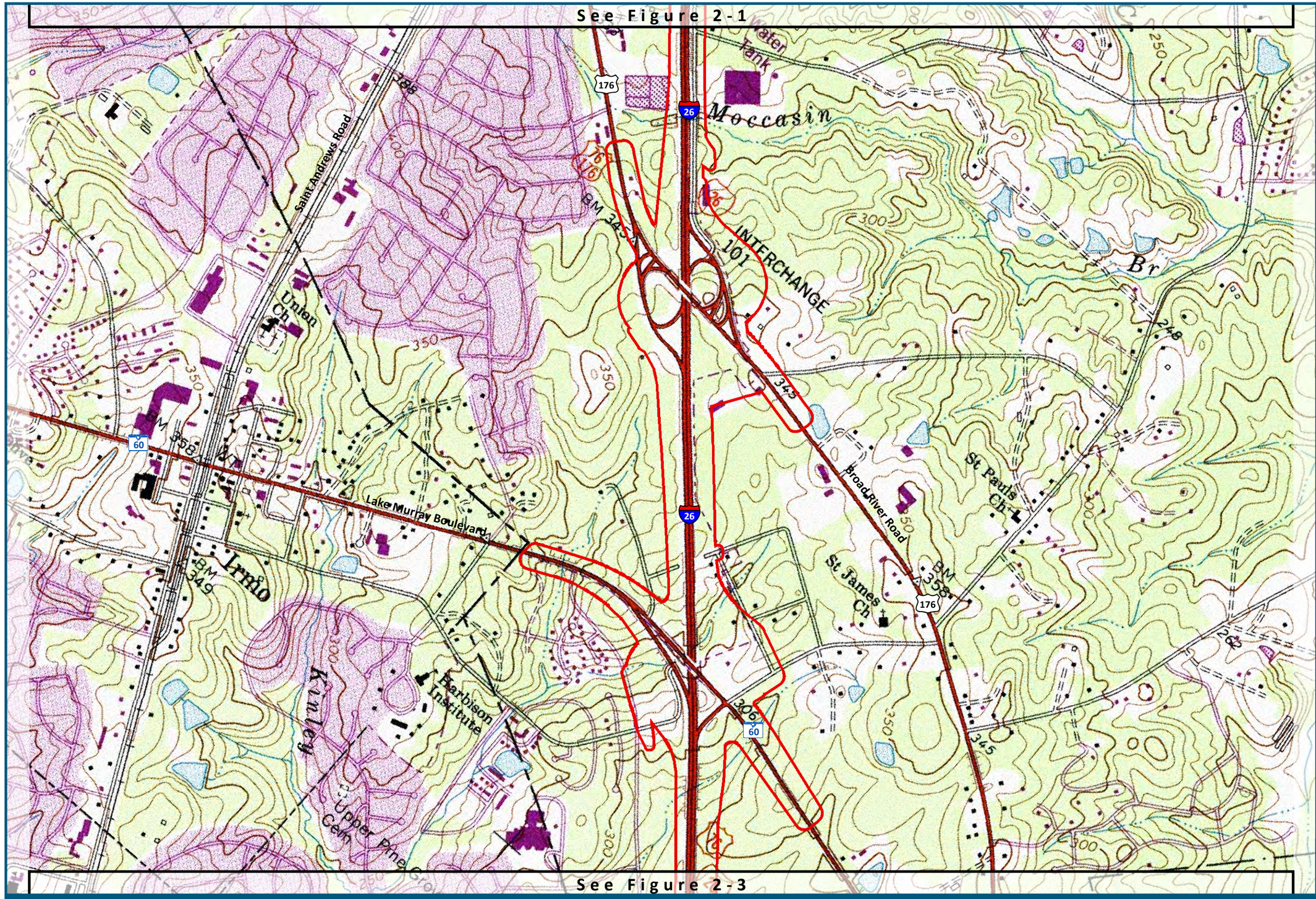
12/19/2017 Sheet 1 of 7

SCDOT South Carolina Department of Transportation

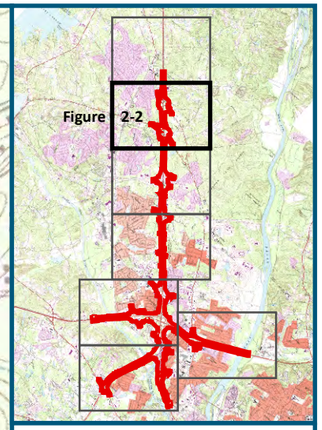
U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

See Figure 2-1



See Figure 2-3



0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USGS 7.5 Minute Quad Map [Irmo (1990)]

Legend

- Project Study Area (1,440 acres)
- USGS Quad Index

Figure 2-2
USGS Topography Map

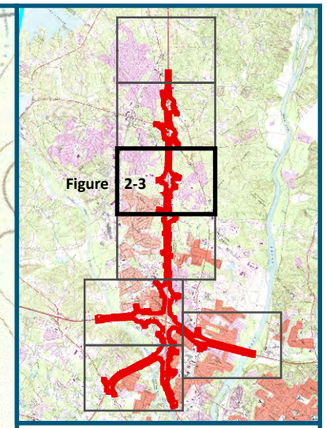
12/19/2017 Sheet 2 of 7

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

See Figure 2-2



0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USGS 7.5 Minute Quad Map [Irmo (1990)]

Legend

- Project Study Area (1,440 acres)
- USGS Quad Index

Figure 2-3
USGS Topography Map

12/19/2017 Sheet 3 of 7

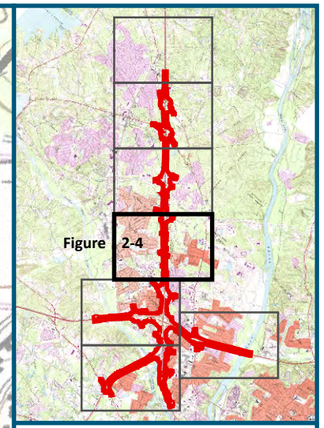
See Figure 2-4

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

See Figure 2-3



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Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USGS 7.5 Minute Quad Map [Irmo (1990) and Columbia North (1990)]

Legend

- Project Study Area (1,440 acres)
- USGS Quad Index

Figure 2-4
USGS Topography Map

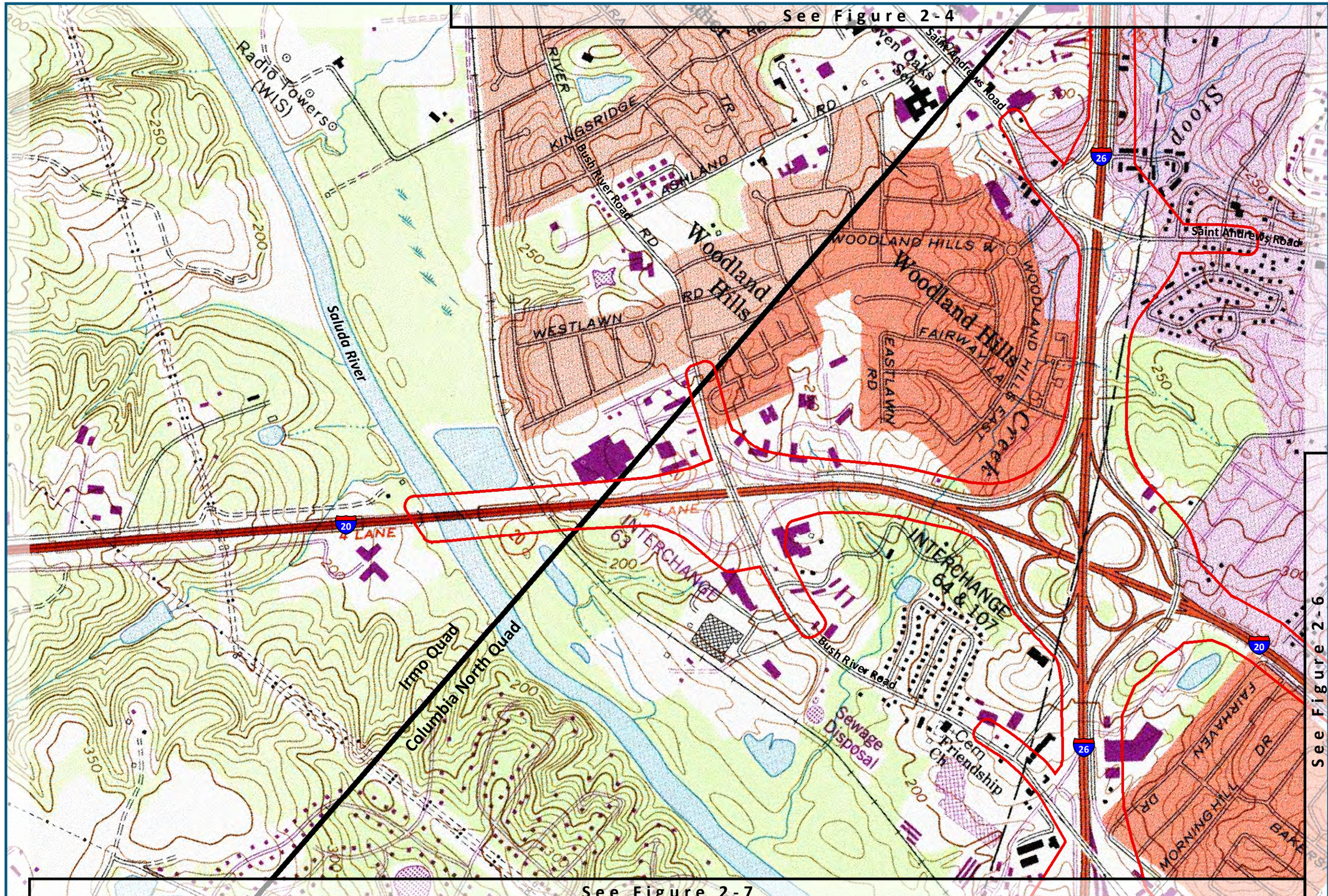
12/19/2017 Sheet 4 of 7

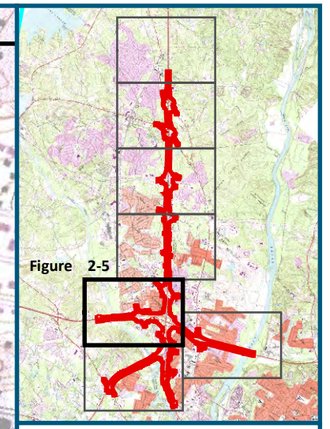
See Figure 2-5

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USGS 7.5 Minute Quad Map [Irmo (1990) and Columbia North (1990)]

Legend

- Project Study Area (1,440 acres)
- USGS Quad Index

Figure 2-5
USGS Topography Map

12/19/2017 Sheet 5 of 7

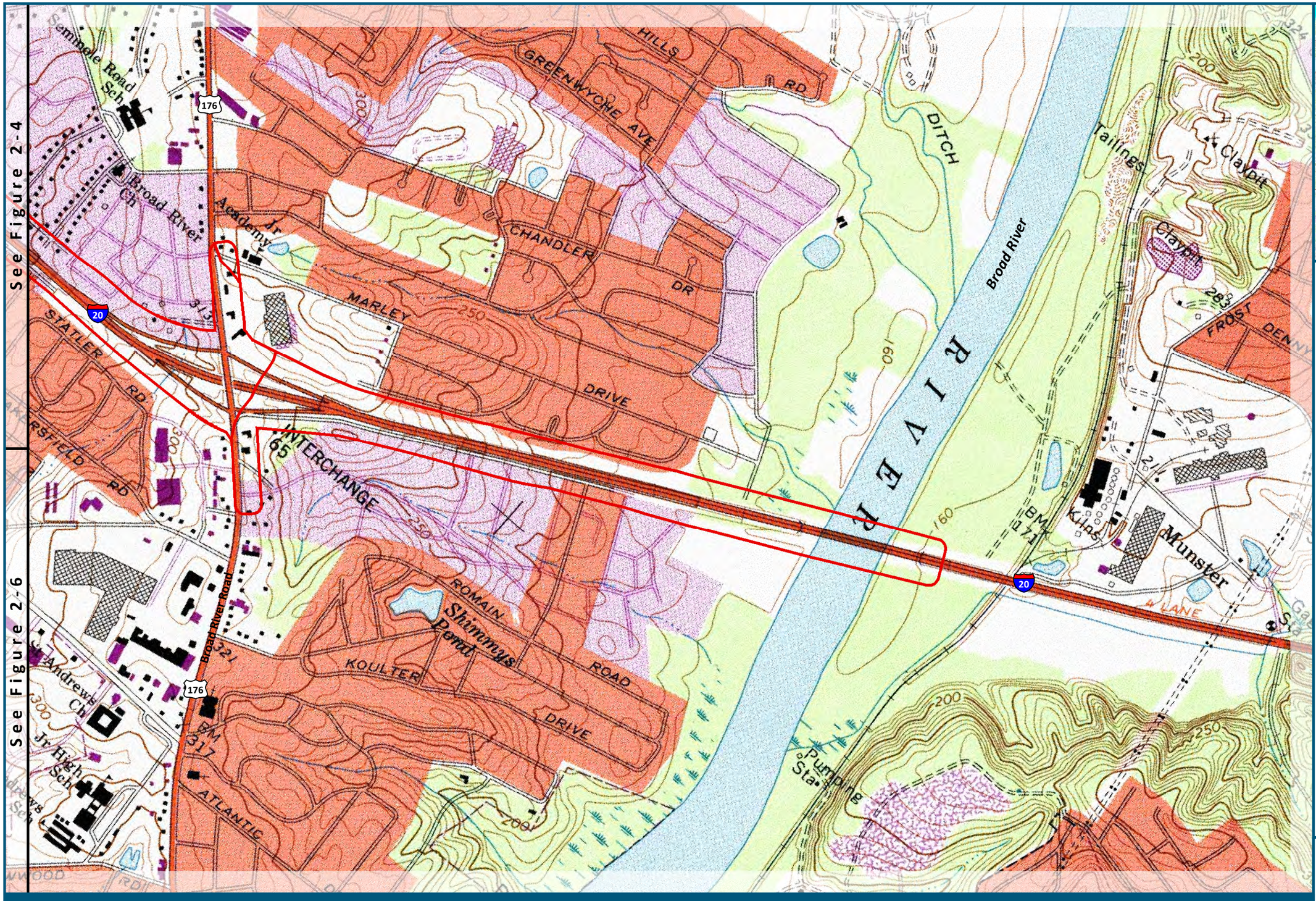
SCDOT South Carolina Department of Transportation

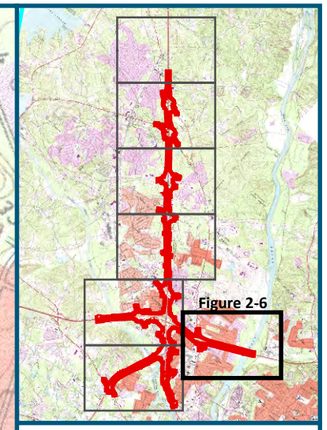
U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

See Figure 2-4

See Figure 2-6





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USGS 7.5 Minute Quad Map
[Columbia North (1990)]

Legend

- Project Study Area (1,440 acres)
- USGS Quad Index

Figure 2-6
USGS Topography Map

12/19/2017 Sheet 6 of 7

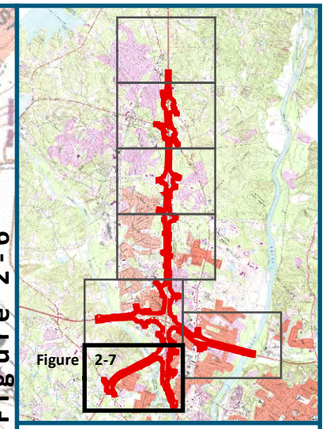
SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

See Figure 2-5

See Figure 2-6



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Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USGS 7.5 Minute Quad Map [Irmo (1990) and Columbia North (1990)]

Legend

- Project Study Area (1,440 acres)
- USGS Quad Index

Figure 2-7
USGS Topography Map

12/19/2017 Sheet 7 of 7

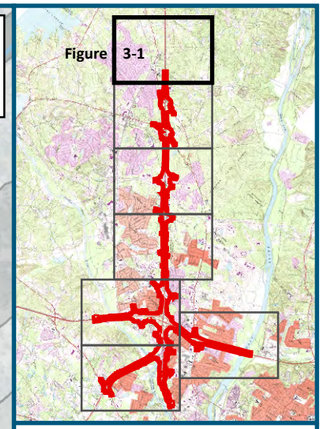
SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

Soil Map Units on this Figure Within the Project Study Area

NaC	Nason silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
NaB	Nason silt loam, 2 to 6 percent slopes	Nonhydric	Farmland of statewide importance



0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: NRCS Soil Survey Geographic (SSURGO)
Database [Statewide (2015)]

Legend

- Project Study Area (1,440 acres)
- National Hydrography Dataset (NHD) Flowline
- 83 Exit Location/Number

Figure 3-1
NRCS Soil Map Unit Map

12/19/2017 Sheet 1 of 7

See Figure 3-2

SCDOT South Carolina Department of Transportation

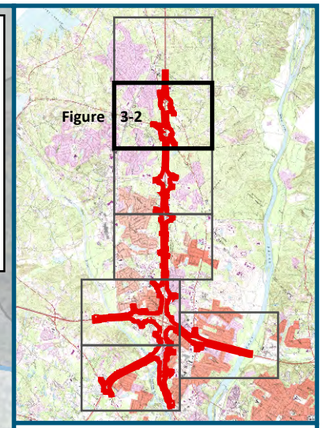
U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

See Figure 3-1

Soil Map Units on this Figure Within the Project Study Area

AtA	Altavista silt loam, 0 to 2 percent slopes	Nonhydric	Prime Farmland
CeC	Cecil fine sandy loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
GeC	Georgeville silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
HeB	Herndon silt loam, 2 to 6 percent slopes	Nonhydric	Prime Farmland
NaB	Nason silt loam, 2 to 6 percent slopes	Nonhydric	Farmland of statewide importance
NaC	Nason silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
NaE	Nason complex, 10 to 30 percent slopes	Nonhydric	Not Prime Farmland
OaB	Orange loam, 0 to 4 percent slopes	Nonhydric	Not Prime Farmland
W	Water	Nonhydric	Not prime farmland



0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: NRCS Soil Survey Geographic (SSURGO) Database [Statewide (2015)]

Legend

- Project Study Area (1,440 acres)
- National Hydrography Dataset (NHD) Flowline
- 83 Exit Location/Number

Figure 3-2
NRCS Soil Map Unit Map

12/19/2017 Sheet 2 of 7

See Figure 3-3

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

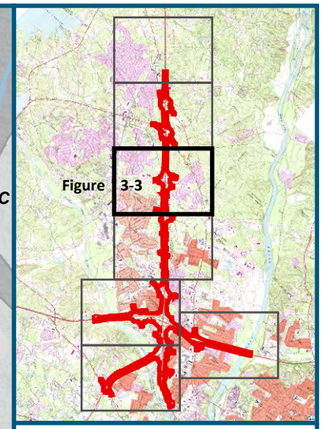
Soil Map Units on this Figure Within the Project Study Area

AtA	Altavista silt loam, 0 to 2 percent slopes	Nonhydric	Prime Farmland
Ck	Chenneby soils	Predominantly nonhydric	Prime farmland*
EnB	Enon silt loam, 2 to 6 percent slopes	Nonhydric	Farmland of statewide importance
GeC	Georgeville silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
HeB	Herndon silt loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
HeC	Herndon silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
HrB	Herndon silt loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
MeC	Mecklenburg silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
NaC	Nason silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
NaD	Nason silt loam, 6 to 15 percent slopes	Nonhydric	Not prime farmland
OaB	Orange loam, 0 to 4 percent slopes	Nonhydric	Not prime farmland
PkD	Pickens slaty silt loam, 6 to 15 percent slopes	Nonhydric	Not prime farmland

* if drained and either protected from flooding or not frequently flooded during the growing season

See Figure 3-2

See Figure 3-4



0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: NRCS Soil Survey Geographic (SSURGO) Database [Statewide (2015)]

Legend

- Project Study Area (1,440 acres)
- National Hydrography Dataset (NHD) Flowline
- 83 Exit Location/Number

Figure 3-3
NRCS Soil Map Unit Map

12/19/2017 Sheet 3 of 7

SCDOT South Carolina Department of Transportation

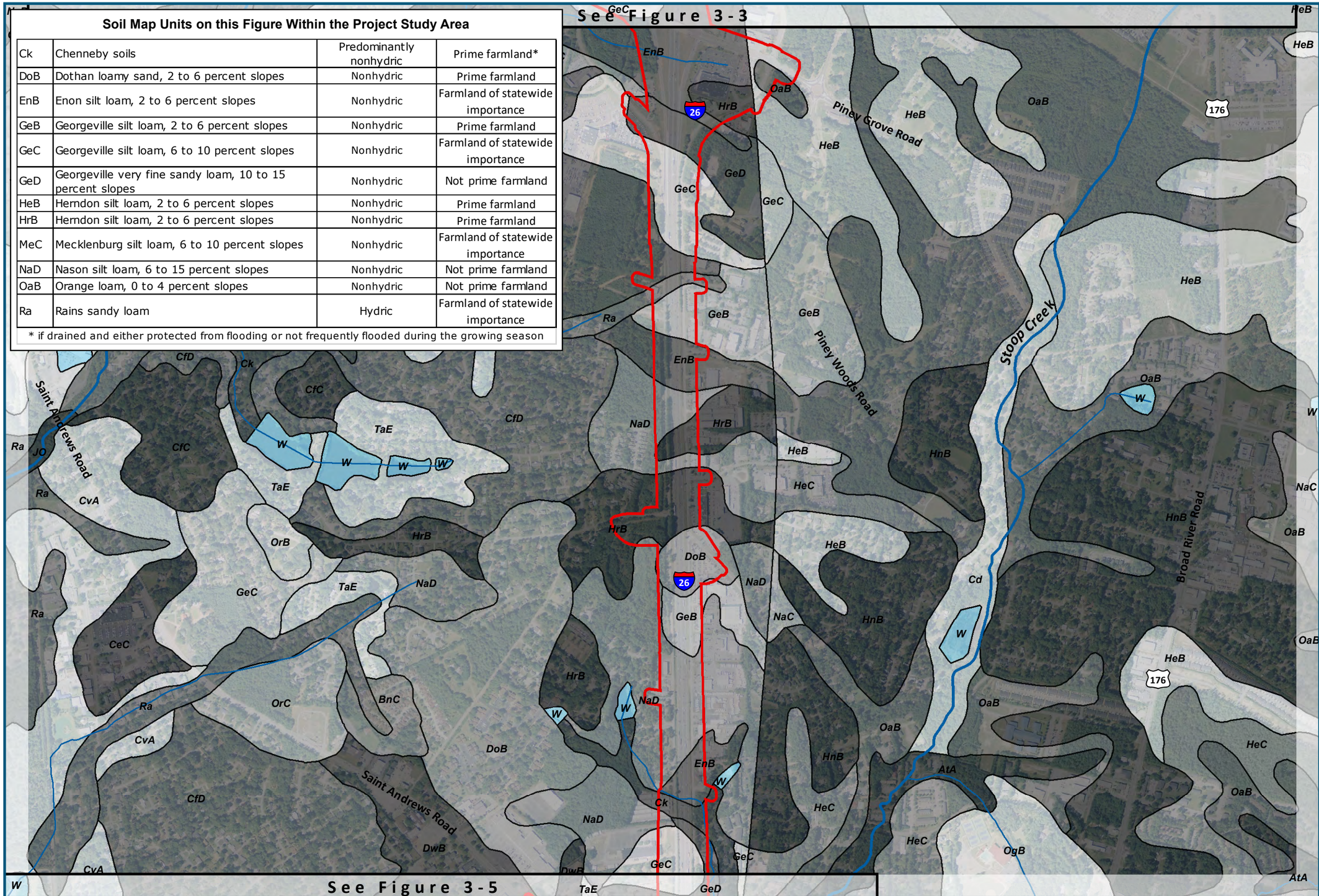
U.S. Department of Transportation Federal Highway Administration

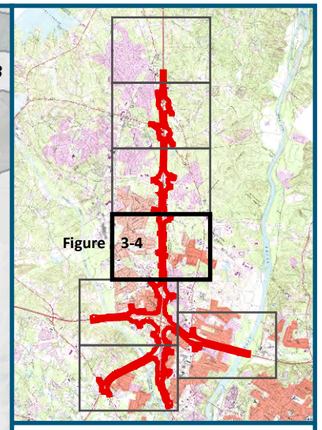
CAROLINA CROSSROADS

Soil Map Units on this Figure Within the Project Study Area

Ck	Chenneby soils	Predominantly nonhydric	Prime farmland*
DoB	Dothan loamy sand, 2 to 6 percent slopes	Nonhydric	Prime farmland
EnB	Enon silt loam, 2 to 6 percent slopes	Nonhydric	Farmland of statewide importance
GeB	Georgeville silt loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
GeC	Georgeville silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
GeD	Georgeville very fine sandy loam, 10 to 15 percent slopes	Nonhydric	Not prime farmland
HeB	Herndon silt loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
HrB	Herndon silt loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
MeC	Mecklenburg silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
NaD	Nason silt loam, 6 to 15 percent slopes	Nonhydric	Not prime farmland
OaB	Orange loam, 0 to 4 percent slopes	Nonhydric	Not prime farmland
Ra	Rains sandy loam	Hydric	Farmland of statewide importance

* if drained and either protected from flooding or not frequently flooded during the growing season





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: NRCS Soil Survey Geographic (SSURGO) Database [Statewide (2015)]

Legend

- Project Study Area (1,440 acres)
- National Hydrography Dataset (NHD) Flowline
- 83 Exit Location/Number

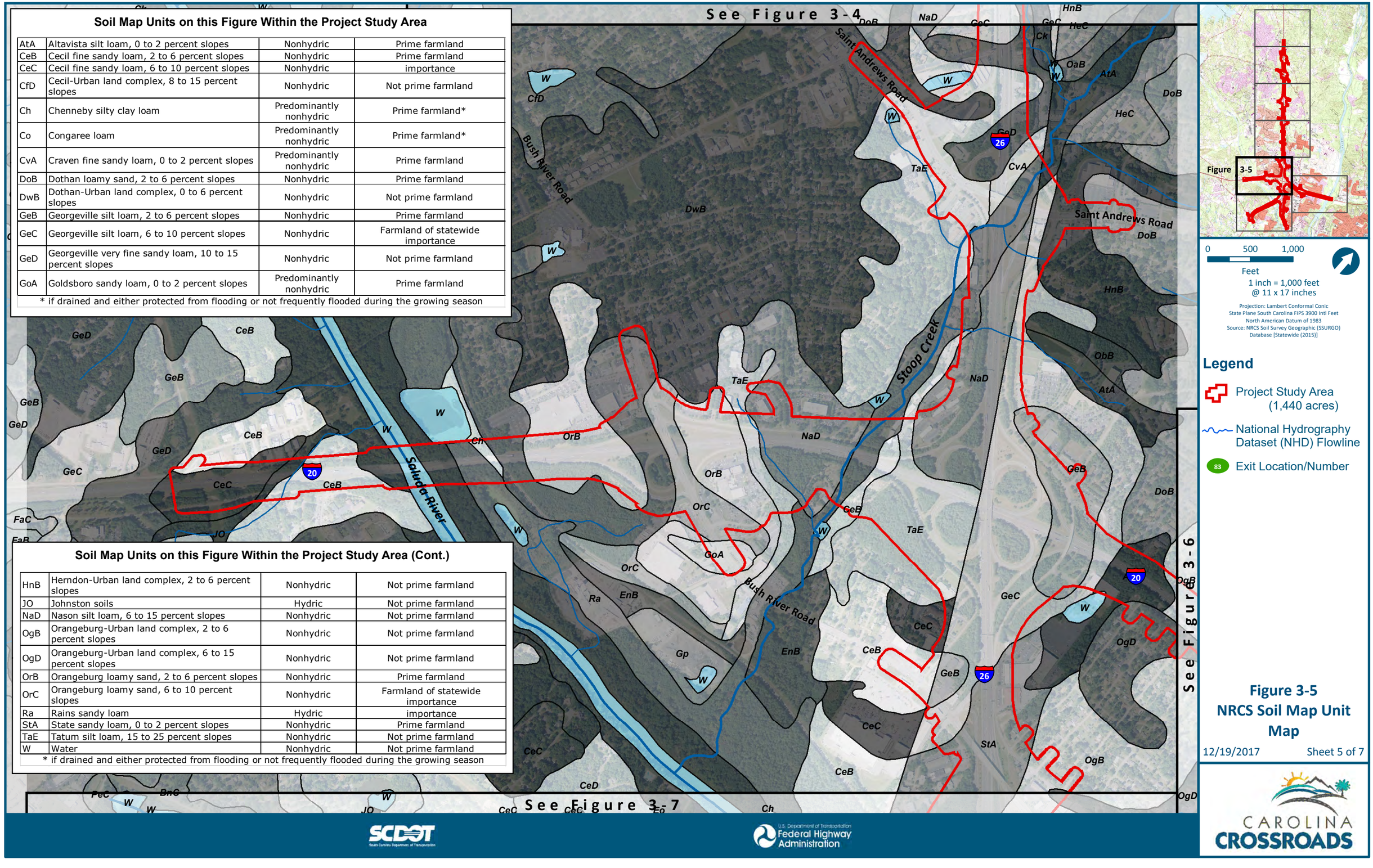
Figure 3-4
NRCS Soil Map Unit Map

12/19/2017 Sheet 4 of 7

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS



Soil Map Units on this Figure Within the Project Study Area

AtA	Altavista silt loam, 0 to 2 percent slopes	Nonhydric	Prime farmland
CeB	Cecil fine sandy loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
CeC	Cecil fine sandy loam, 6 to 10 percent slopes	Nonhydric	importance
CfD	Cecil-Urban land complex, 8 to 15 percent slopes	Nonhydric	Not prime farmland
Ch	Chenneby silty clay loam	Predominantly nonhydric	Prime farmland*
Co	Congaree loam	Predominantly nonhydric	Prime farmland*
CvA	Craven fine sandy loam, 0 to 2 percent slopes	Predominantly nonhydric	Prime farmland
DoB	Dothan loamy sand, 2 to 6 percent slopes	Nonhydric	Prime farmland
DwB	Dothan-Urban land complex, 0 to 6 percent slopes	Nonhydric	Not prime farmland
GeB	Georgeville silt loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
GeC	Georgeville silt loam, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
GeD	Georgeville very fine sandy loam, 10 to 15 percent slopes	Nonhydric	Not prime farmland
GoA	Goldsboro sandy loam, 0 to 2 percent slopes	Predominantly nonhydric	Prime farmland

* if drained and either protected from flooding or not frequently flooded during the growing season

Soil Map Units on this Figure Within the Project Study Area (Cont.)

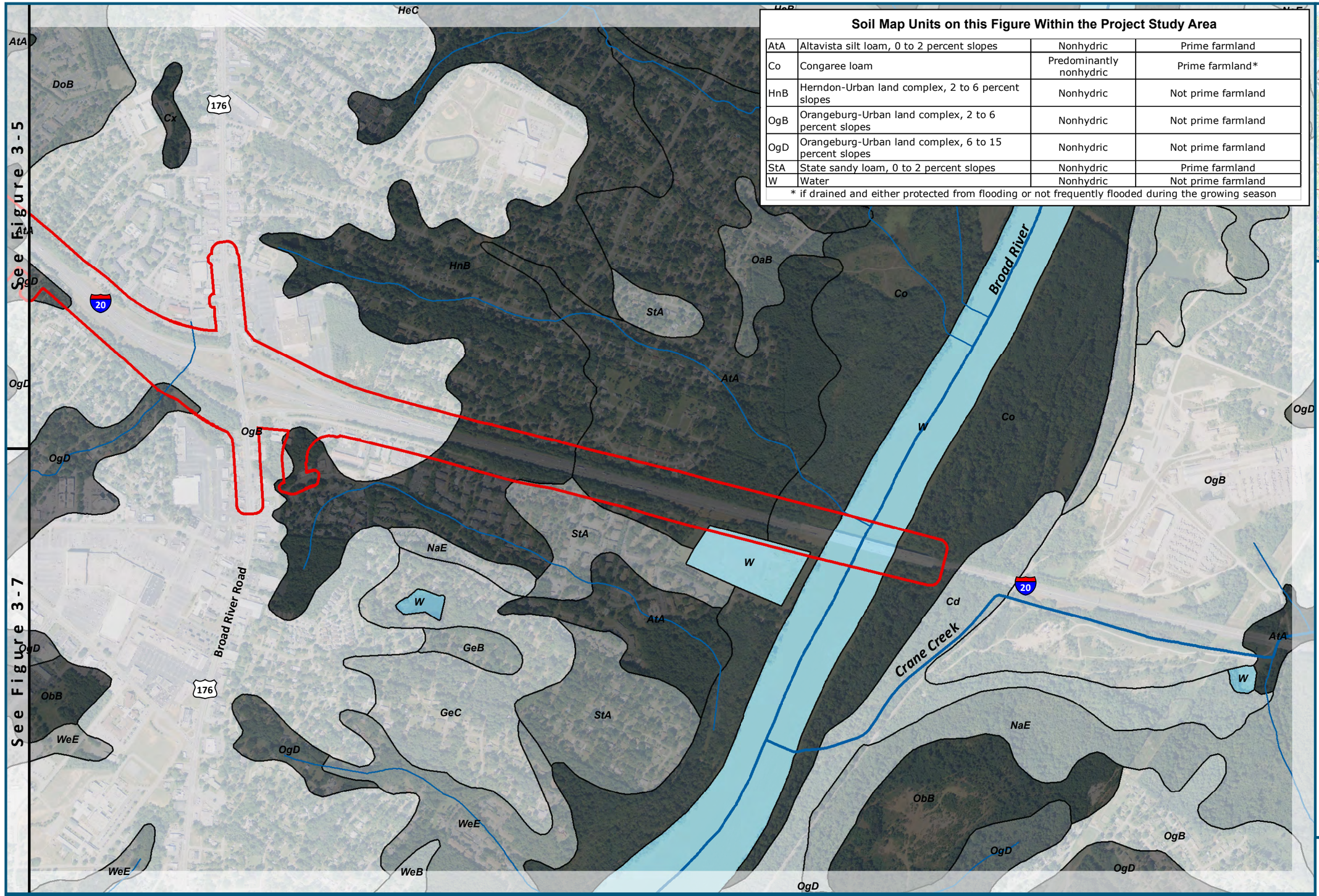
HnB	Herndon-Urban land complex, 2 to 6 percent slopes	Nonhydric	Not prime farmland
JO	Johnston soils	Hydric	Not prime farmland
NaD	Nason silt loam, 6 to 15 percent slopes	Nonhydric	Not prime farmland
OgB	Orangeburg-Urban land complex, 2 to 6 percent slopes	Nonhydric	Not prime farmland
OgD	Orangeburg-Urban land complex, 6 to 15 percent slopes	Nonhydric	Not prime farmland
OrB	Orangeburg loamy sand, 2 to 6 percent slopes	Nonhydric	Prime farmland
OrC	Orangeburg loamy sand, 6 to 10 percent slopes	Nonhydric	Farmland of statewide importance
Ra	Rains sandy loam	Hydric	importance
StA	State sandy loam, 0 to 2 percent slopes	Nonhydric	Prime farmland
TaE	Tatum silt loam, 15 to 25 percent slopes	Nonhydric	Not prime farmland
W	Water	Nonhydric	Not prime farmland

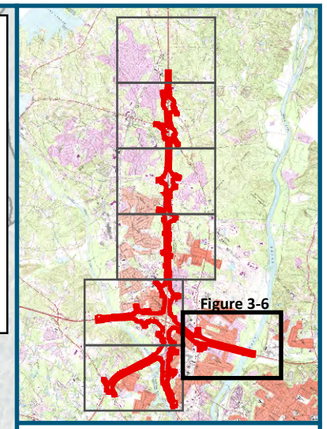
* if drained and either protected from flooding or not frequently flooded during the growing season

Soil Map Units on this Figure Within the Project Study Area

AtA	Altavista silt loam, 0 to 2 percent slopes	Nonhydric	Prime farmland
Co	Congaree loam	Predominantly nonhydric	Prime farmland*
HnB	Herndon-Urban land complex, 2 to 6 percent slopes	Nonhydric	Not prime farmland
OgB	Orangeburg-Urban land complex, 2 to 6 percent slopes	Nonhydric	Not prime farmland
OgD	Orangeburg-Urban land complex, 6 to 15 percent slopes	Nonhydric	Not prime farmland
StA	State sandy loam, 0 to 2 percent slopes	Nonhydric	Prime farmland
W	Water	Nonhydric	Not prime farmland

* if drained and either protected from flooding or not frequently flooded during the growing season





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: NRCS Soil Survey Geographic (SSURGO) Database [Statewide (2015)]

Legend

- Project Study Area (1,440 acres)
- National Hydrography Dataset (NHD) Flowline
- 83 Exit Location/Number

Figure 3-6
NRCS Soil Map Unit Map

12/19/2017 Sheet 6 of 7

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

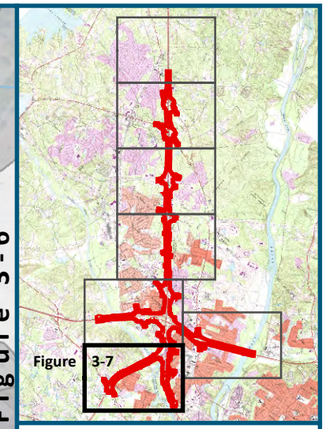
Soil Map Units on this Figure Within the Project Study Area

Cd	Chastain silty clay loam	Hydric	Not prime farmland
CeB	Cecil fine sandy loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
CeC	Cecil fine sandy loam, 6 to 10 percent slopes	Nonhydric	importance
CeD	Cecil fine sandy loam, 10 to 15 percent slopes	Nonhydric	Not prime farmland
Ch	Chenneby silty clay loam	Predominantly nonhydric	Prime farmland*
Co	Congaree loam	Predominantly nonhydric	Prime farmland*
DoB	Dothan loamy sand, 2 to 6 percent slopes	Nonhydric	Prime farmland
Eo	Enoree silt loam, 0 to 2 percent slopes, frequently flooded	Hydric	Not prime farmland
FaB	Faceville sandy loam, 2 to 6 percent slopes	Nonhydric	Prime farmland
JO	Johnston soils	Hydric	Not prime farmland
OgB	Orangeburg-Urban land complex, 2 to 6 percent slopes	Nonhydric	Not prime farmland
OgD	Orangeburg-Urban land complex, 6 to 15 percent slopes	Nonhydric	Not prime farmland

* if drained and either protected from flooding or not frequently flooded during the growing season

See Figure 3-5

See Figure 3-6



0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: NRCS Soil Survey Geographic (SSURGO)
Database [Statewide (2015)]

Legend

- Project Study Area (1,440 acres)
- National Hydrography Dataset (NHD) Flowline
- 83 Exit Location/Number

Soil Map Units on this Figure Within the Project Study Area (Cont.)

PeC	Pelion loamy sand, 6 to 10 percent slopes	Nonhydric	Not prime farmland
Ra	Rains sandy loam	Hydric	importance
Sm	Smithboro loam	Predominantly nonhydric	Farmland of statewide importance
StA	State sandy loam, 0 to 2 percent slopes	Nonhydric	Prime farmland
To	Toccoa loam	Nonhydric	Prime farmland*
Ud	Udipsamments, smoothed	Nonhydric	Not prime farmland
W	Water	Nonhydric	Not prime farmland
WeB	Wedowee loamy sand, 2 to 6 percent slopes	Nonhydric	Prime farmland
WeE	Wedowee loamy sand, 10 to 30 percent slopes	Nonhydric	Not prime farmland

* if drained and either protected from flooding or not frequently flooded during the growing season

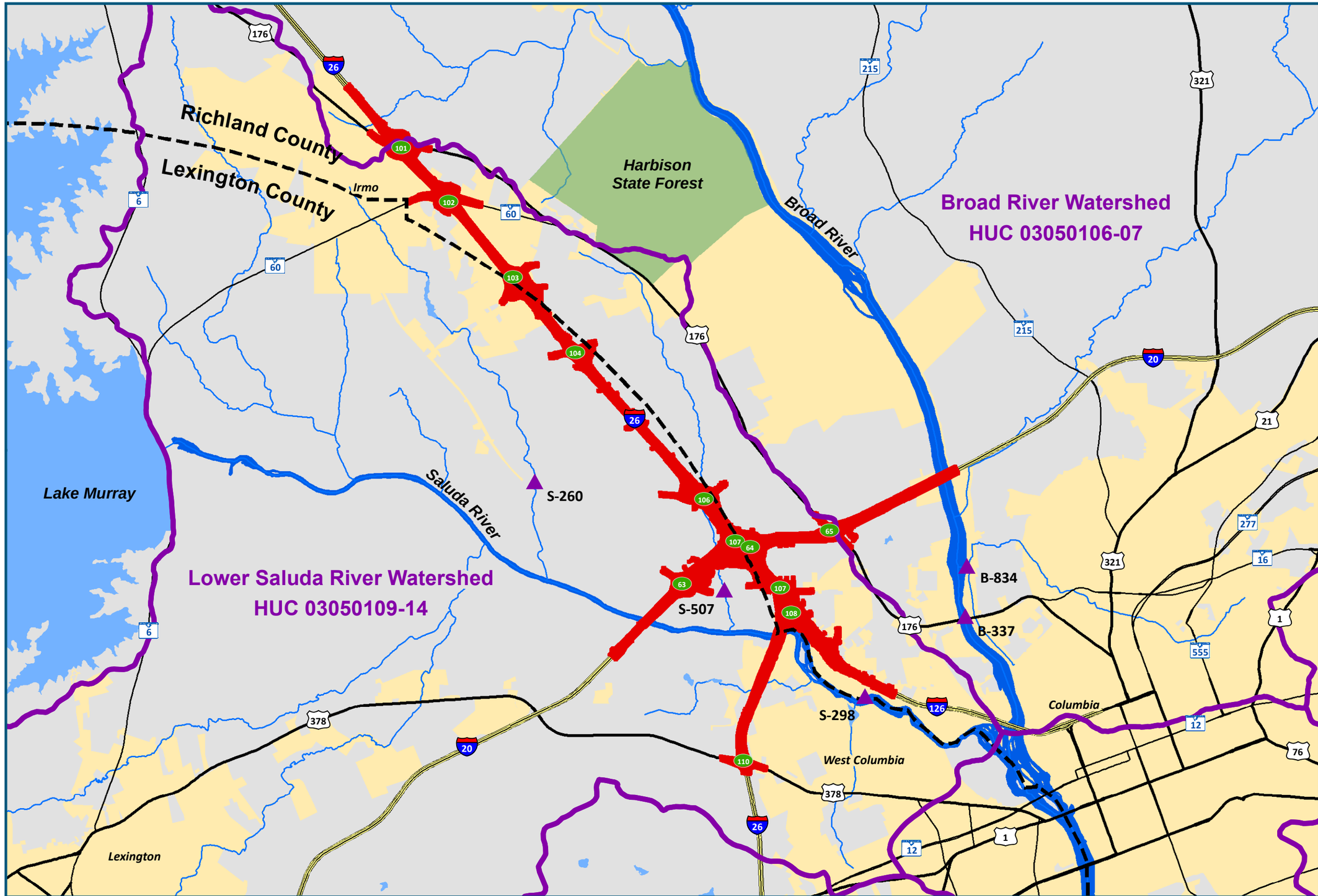
Figure 3-7
NRCS Soil Map Unit Map

12/19/2017 Sheet 7 of 7

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS



0 0.5 1

Miles

1 inch = 5,280 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: SCDHEC Watershed Water Quality Assessment Reports
[Saluda River Basin (2011) and Broad River Basin (2007)]

Legend

- Project Study Area (1,440 acres)
- SCDHEC Watershed Boundary
- SCDHEC Monitoring Station
- Municipality
- Lake
- Major River
- County Boundary
- 83 Exit Location/Number

Figure 4
Water Quality Station Map

12/19/2017 Sheet 1 of 1

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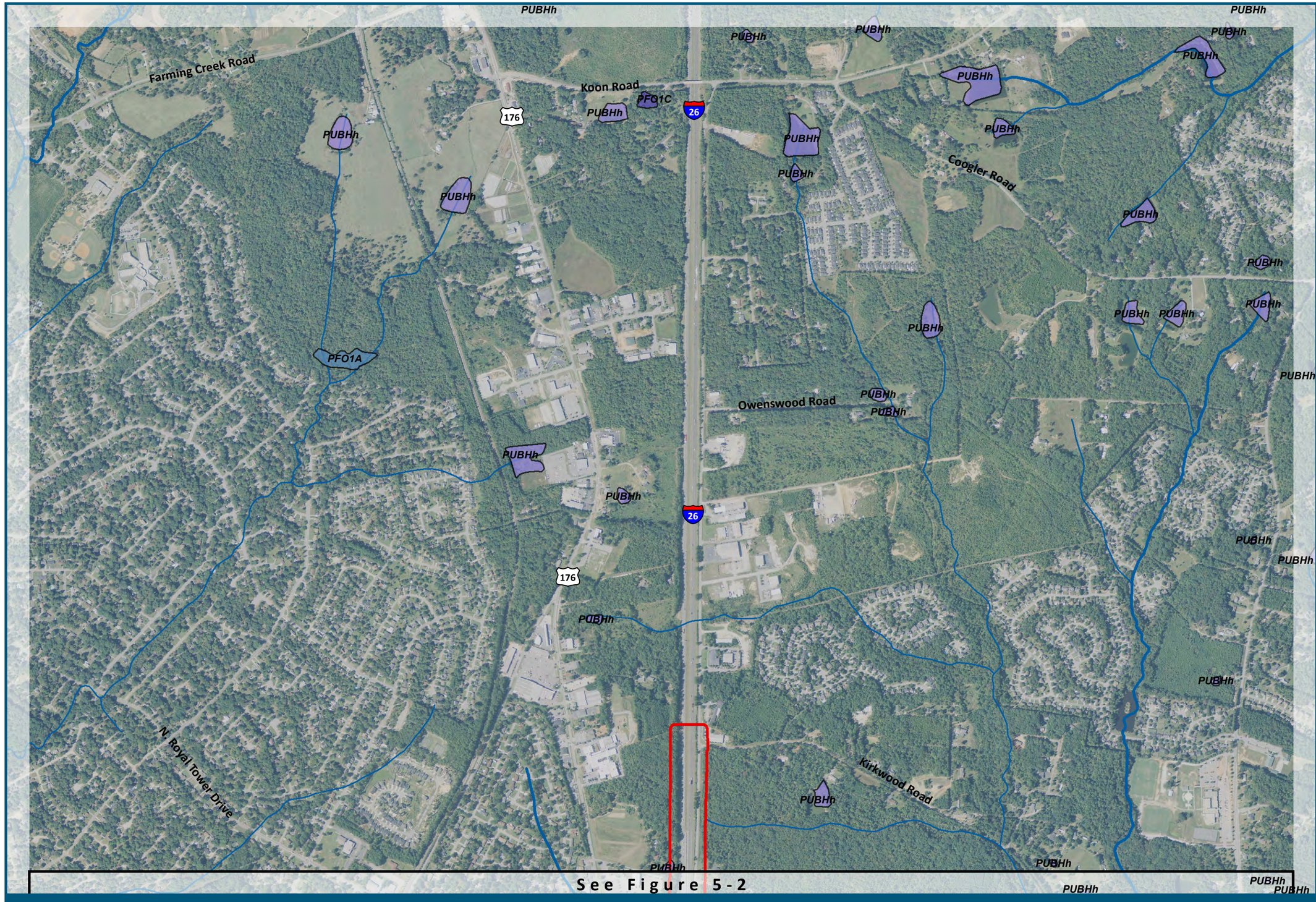
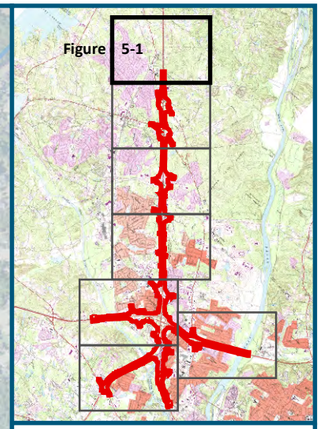
U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USFWS CONUS Wetland Data [Statewide (2012)]

Legend

- Project Study Area (1,440 acres)
- 83 Exit Location/Number
- PUBHh - Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

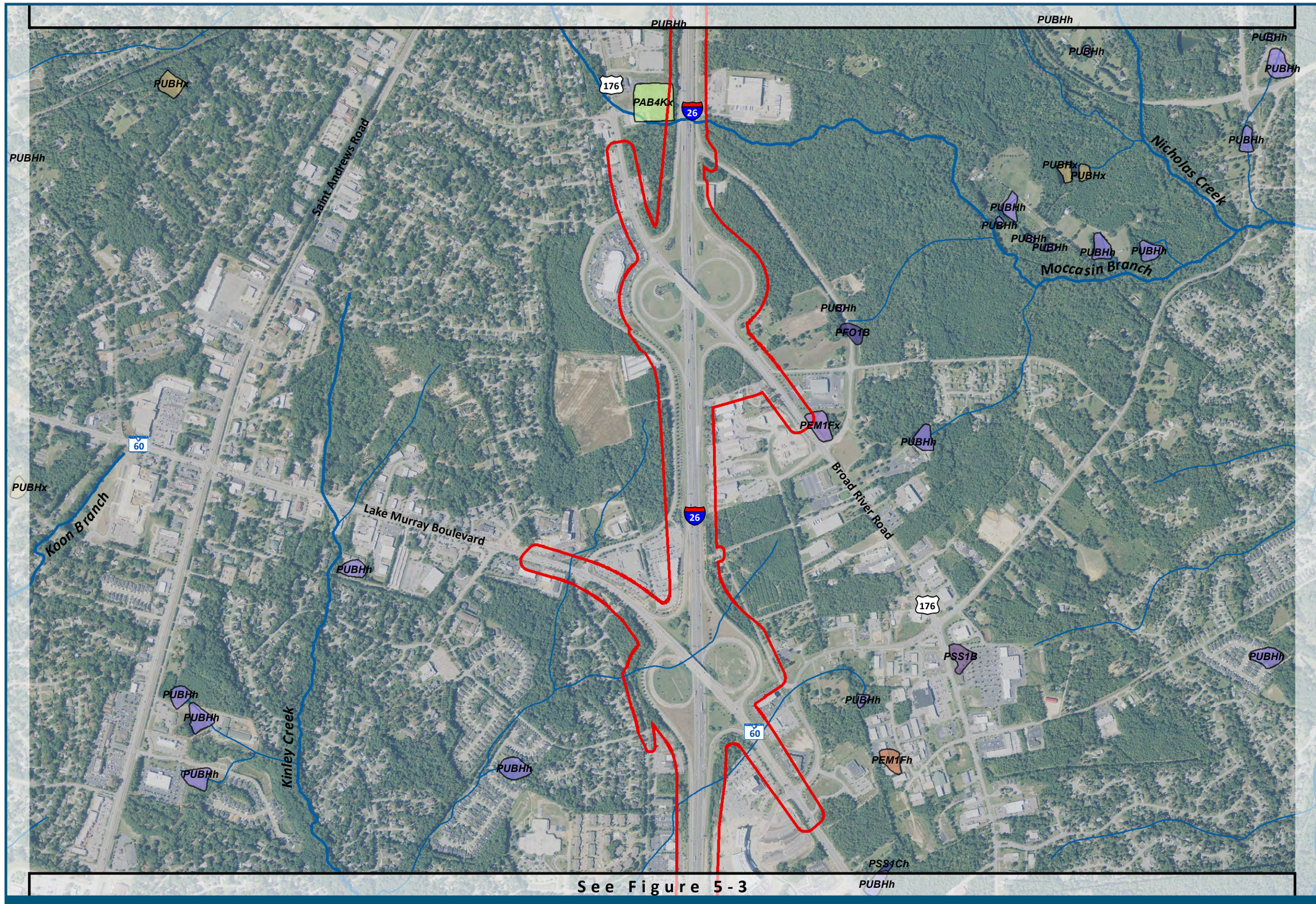
Figure 5-1
National Wetland Inventory (NWI) Map

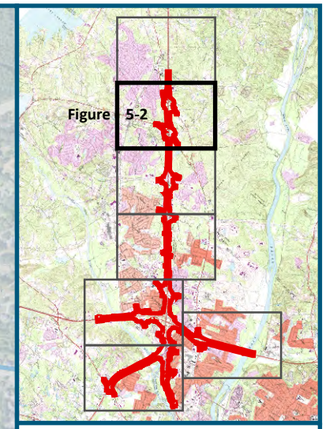
12/19/2017 Sheet 1 of 7

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USFWS CONUS Wetland Data [Statewide (2012)]

Legend

- Project Study Area (1,440 acres)
- 83 Exit Location/Number
- PUBHh - Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded
- PEM1Fx - Palustrine, Emergent, Persistent, Semipermanently Flooded, Excavated
- PAB4Kx - Palustrine, Aquatic Bed, Floating Vascular, Artificially Flooded,Excavated

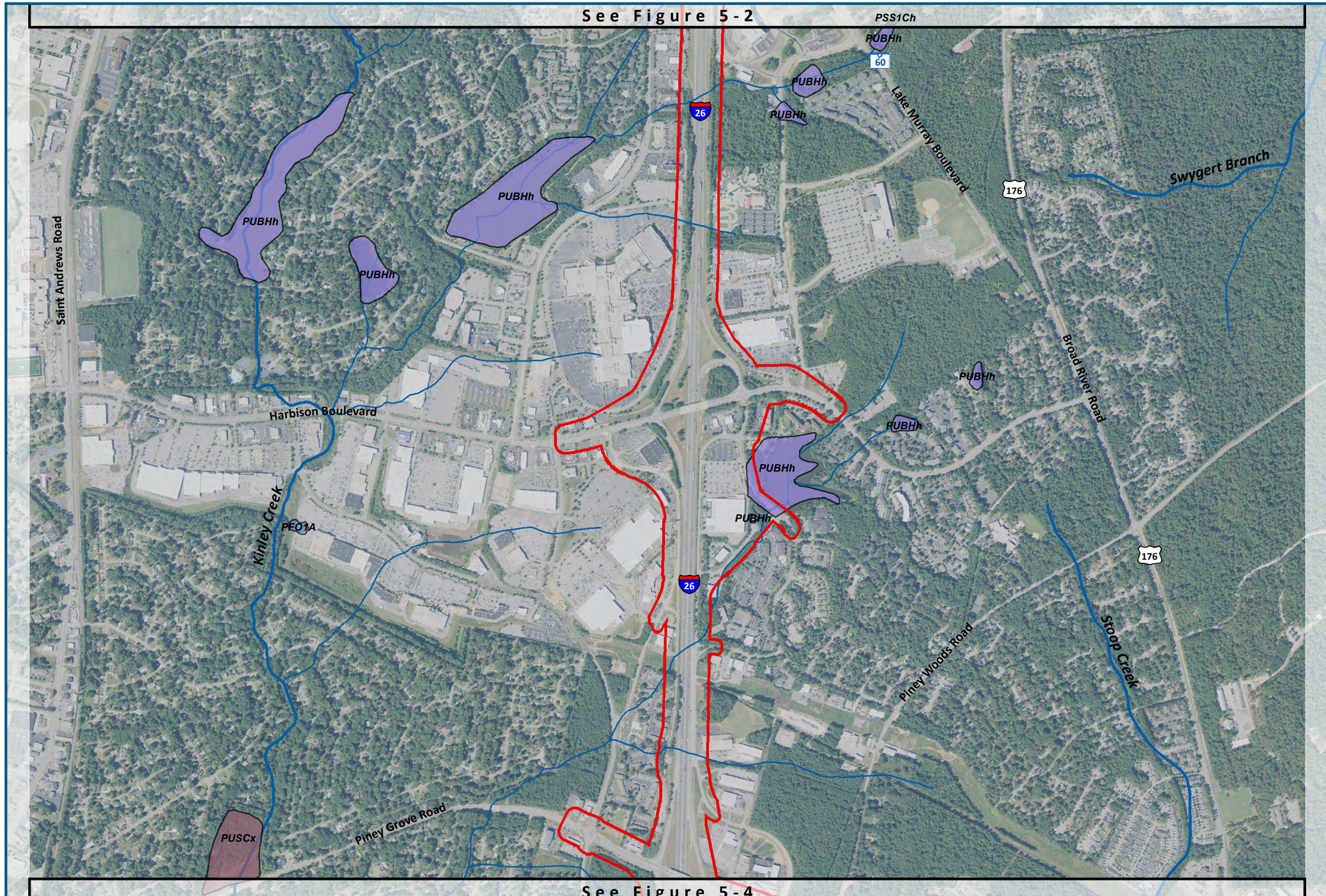
Figure 5-2
National Wetland Inventory (NWI) Map

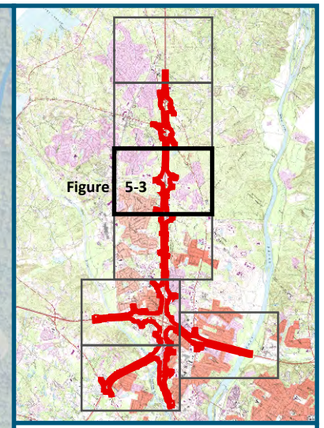
12/19/2017 Sheet 2 of 7

SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USFWS CONUS Wetland Data [Statewide (2012)]

Legend

- Project Study Area (1,440 acres)
- 83 Exit Location/Number
- PUBHh - Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

Figure 5-3
National Wetland Inventory (NWI) Map

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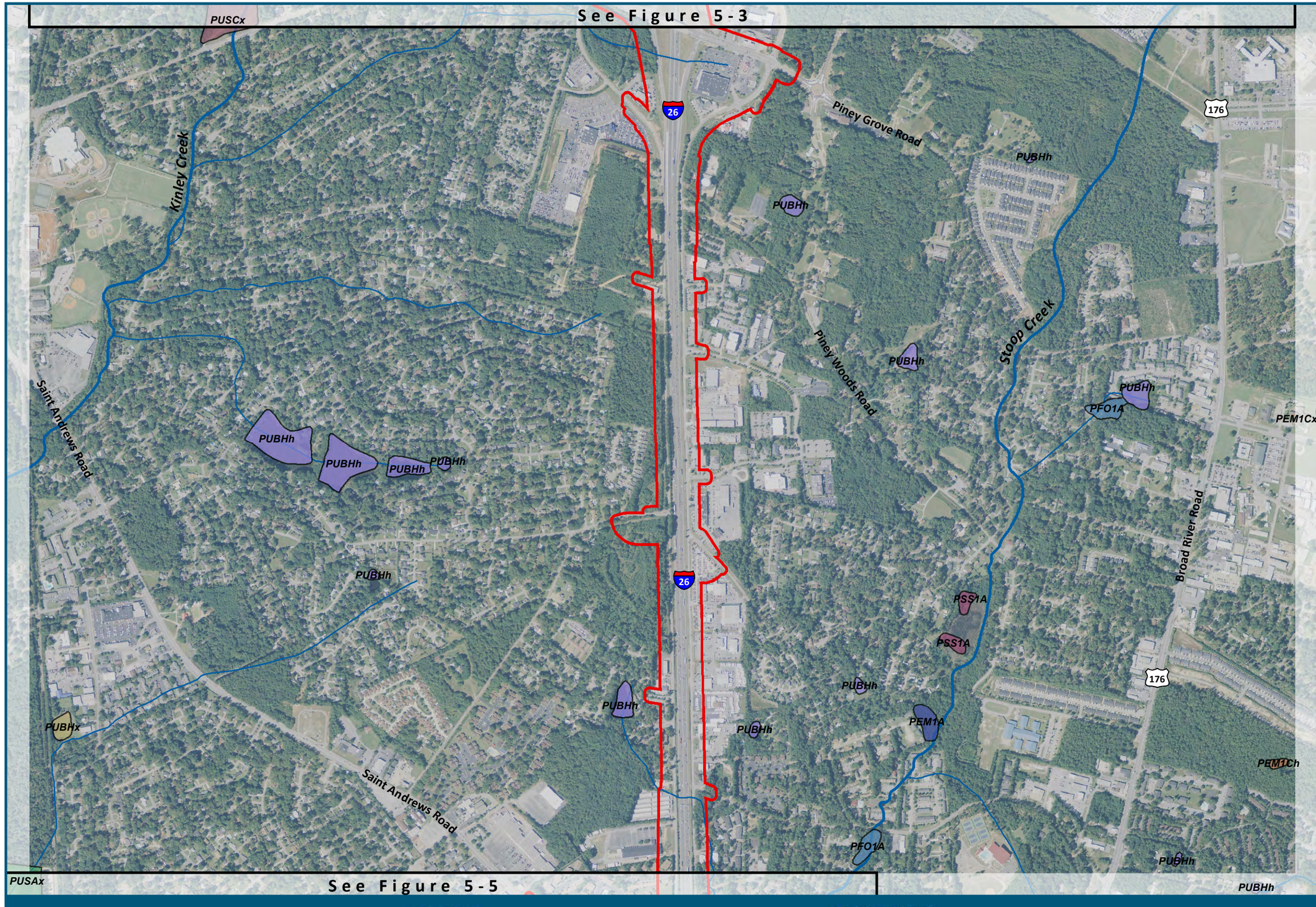
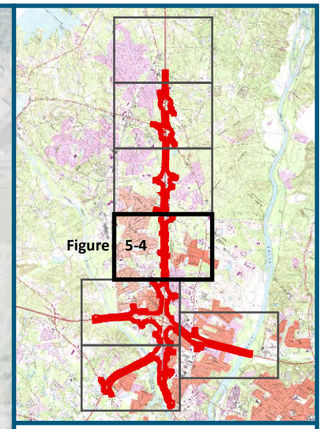
SCDOT South Carolina Department of Transportation

U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS





0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USFWS CONUS Wetland Data [Statewide (2012)]

Legend

Project Study Area (1,440 acres)

83 Exit Location/Number

No National Wetland Inventory (NWI) Elements Are Found On This Figure Within The Project Study Area

Figure 5-4 National Wetland Inventory (NWI) Map

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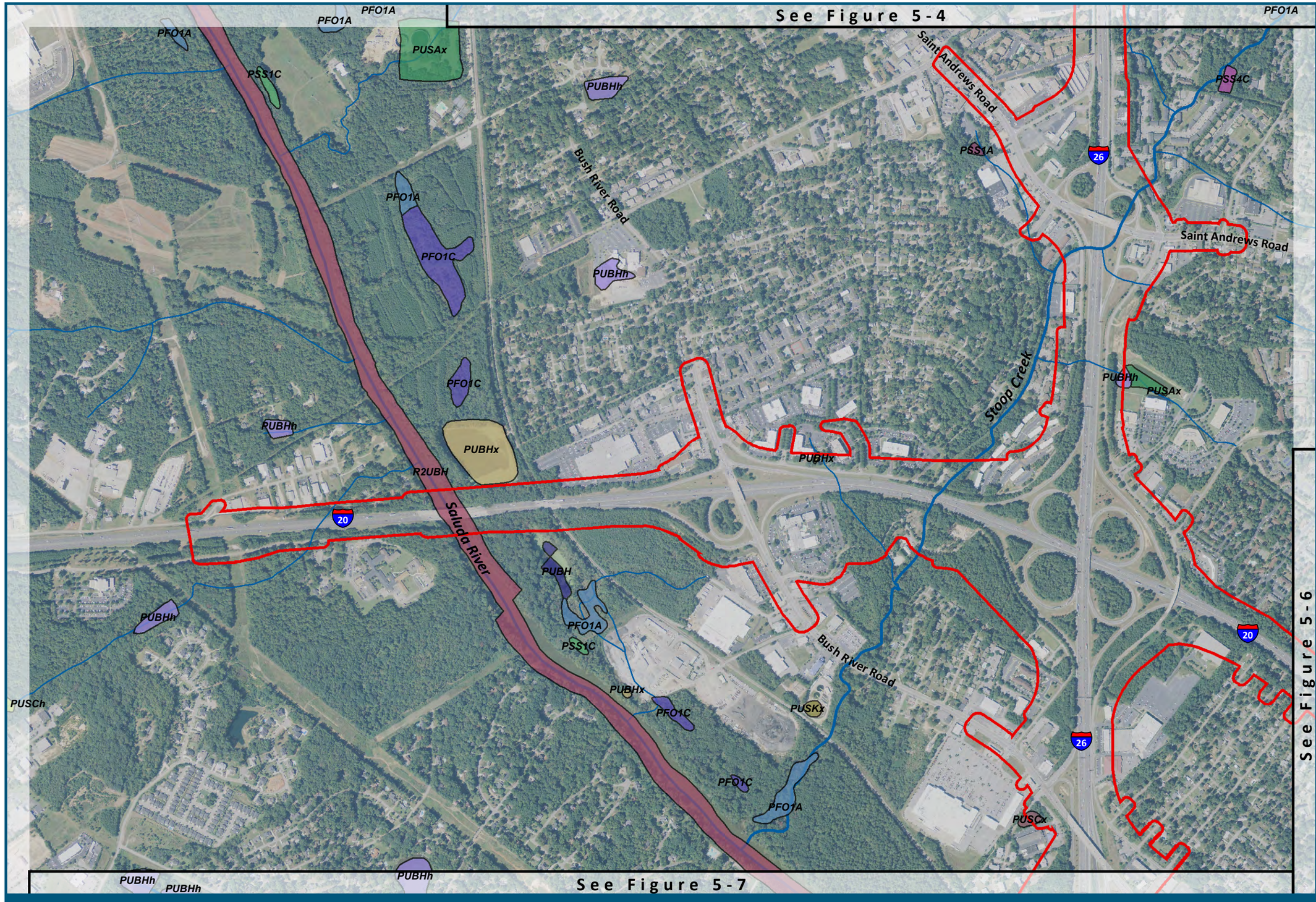
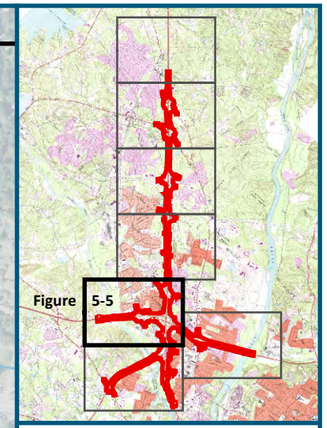
CAROLINA CROSSROADS

See Figure 5-4



See Figure 5-6

See Figure 5-7



0 500 1,000

Feet

1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USFWS CONUS Wetland Data [Statewide (2012)]

Legend

- Project Study Area (1,440 acres)
- 83 Exit Location/Number
- PUBHh - Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded
- PUBHx - Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
- R2UBH - Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded
- PUSCx - Palustrine, Unconsolidated Shore, Seasonally Flooded, Excavated

Figure 5-5
National Wetland Inventory (NWI) Map

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SCDOT South Carolina Department of Transportation

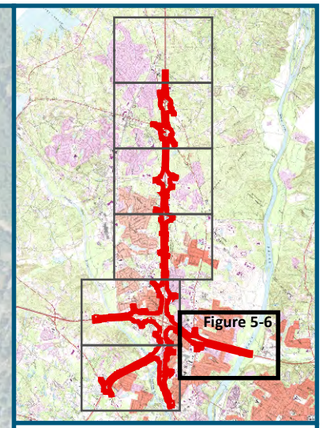
U.S. Department of Transportation Federal Highway Administration

CAROLINA CROSSROADS

See Figure 5-5

See Figure 5-7

PUBHh
PFO1C
PEM1Ad
PUSAd
PEM1Ad
PFO1A
R2UBHx
PEM1Fh
PUBHh
PUBHh
PUBHh
PFO1C
PFO1A
PFO1C
PFO1C
Broad River
R2UBH
PUBHx
PUBHx
PFO1C
PFO1A
PUBHh
PSS1Fh
PUBHx
PFO1A
PFO1C
PUBHh
PUBHh
PUBHx
PFO1A
PFO1C
PUBHh
PEM1A
PSS1A
PFO1A
PFO1A
PEM1C
PUBHh
Broad River Road
PFO1C
Crane Creek
PFO1A
PSS1F
PFO1C
PUBH
L1UBHh
PFO1C
PFO1A
PUBHh
PFO1C



0 500 1,000
Feet
1 inch = 1,000 feet
@ 11 x 17 inches

Projection: Lambert Conformal Conic
State Plane South Carolina FIPS 3900 Intl Feet
North American Datum of 1983
Source: USFWS CONUS Wetland Data [Statewide (2012)]

Legend

- Project Study Area (1,440 acres)
- 83 Exit Location/Number
- R2UBH - Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded
- L1UBHh - Lacustrine Limnetic, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

Figure 5-6
National Wetland Inventory (NWI) Map

12/19/2017 Sheet 6 of 7

SCDOT South Carolina Department of Transportation
U.S. Department of Transportation Federal Highway Administration
CAROLINA CROSSROADS