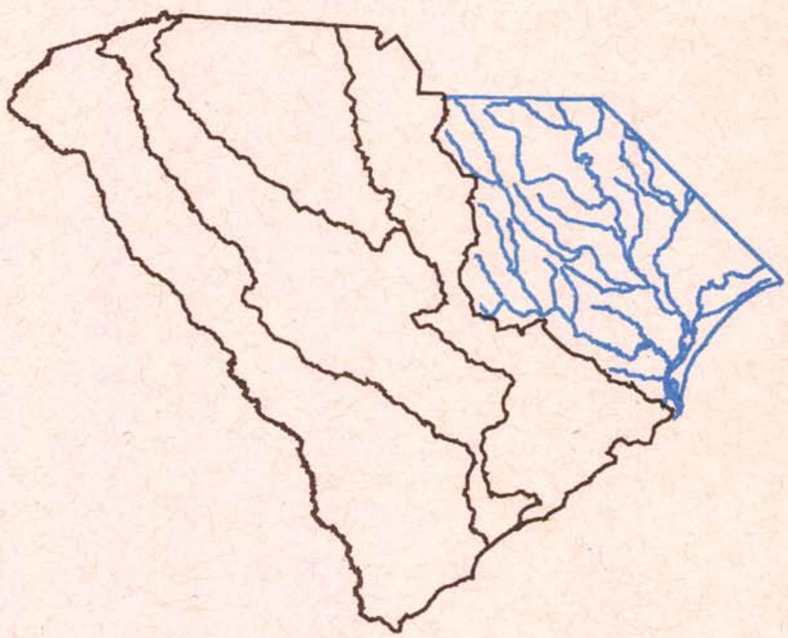
Bureau of Water

Watershed Water Quality Management Strategy

Pee Dee Basin



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Technical Report No. 001-97

Watershed Water Quality Management Strategy

Pee Dee Basin

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Bureau of Water

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Introduction

The South Carolina Department of Health and Environmental Control (SCDHEC or the Department) initiated its first watershed planning activities as a result of a U.S. Environmental Protection Agency (USEPA) grant in June of 1972. These activities were soon extended by §303(e), "Federal Water Pollution Control Act Amendments of 1972", U.S. Public Law 92-500. In 1975, the SCDHEC published basin planning reports for the four major basins in South Carolina. The next major planning activity resulted from §208 of the Federal Water Pollution Control Act, which required states to prepare planning documents on an areawide basis. Areawide plans were completed in the late 1970's for the five designated areas of the State and for the nondesignated remainder of the State. To date, these plans or their updated versions have served as information sources and guides for water quality management.

During the past decade, special water quality initiatives and Congressional mandates have diverted attention and resources from comprehensive water quality assessment and protection. The Bureau of Water now emphasizes watershed planning to better coordinate river basin planning and water quality management. Watershed-based management allows the Department to address Congressional and Legislative mandates in a coordinated manner and to better utilize current resources. The watershed approach also improves communication between the Department, the regulated community, and the public on existing and future water quality issues (SCDHEC 1991a).

Purpose of the Watershed Water Quality Management Strategy

By definition, a watershed is a geographic area into which the surrounding waters, sediments, and dissolved materials drain, and whose boundaries extend along surrounding topographic ridges. Watershed-based water quality management recognizes the interdependence of water quality related activities associated with a drainage basin including: monitoring, problem identification and prioritization, water quality modeling, planning, permitting, and other activities. The Bureau of Water's Watershed Water Quality Management Program integrates these activities by watershed, resulting in watershed management plans and implementation strategies that appropriately focus water quality protection efforts. While an important aspect of the strategy is water quality problem identification and solution, the emphasis is on problem prevention.

Five major drainage basins divide the State along hydrologic lines and serve as management units. A Watershed Water Quality Management Strategy (WWQMS) will be created for each of the five basins and will be updated on a five-year rotational basis. This will allow for effective allocation and coordination of water quality activities and efficient use of available resources. The Pee Dee Basin is divided into 3 watershed management units (WMU) and 76 watersheds or hydrologic units. The hydrologic units used are the USDA Natural Resource Conservation Service (1990) 11-digit codes for South Carolina. All water quality related evaluations will be made at the watershed level. The stream names used are derived from USGS topo maps.

The watershed-based strategy fulfills a number of USEPA reporting requirements including various activities under §303(d), §305(b), §314, and §319 of the Clean Water Act (CWA). Section 303(d) identifies waters located within a watershed which do not meet applicable water quality standards and indicates where total maximum daily load (TMDL) development is applicable. Section 305(b) requires that the State biennially submit a report that includes a water quality description and analysis of all navigable waters to estimate environmental impacts. Section (§314) requires that the State submit a biennial report that identifies, classifies, describes, and assesses the status and trends in water quality of publicly owned lakes. The watershed plan is also a logical evaluation, prioritization, and implementation tool for nonpoint source (§319) requirements. Nonpoint source best management practices (BMPs) can be selected by identifying water quality impairments and necessary controls, while considering all the activities occurring in the drainage basin.

The Strategy also allows for more efficient issuance of National Pollutant Discharge Elimination System (NPDES) and State wastewater discharge permits. Proposed permit issuances within a watershed will be consolidated and presented to the public in groups, rather than one at a time, allowing the Department to realize a resource savings, and the public to realize an information advantage.

The Watershed Water Quality Management Strategy is a geographically-based document that describes, at the watershed level, all water quality related activities that may potentially have a negative impact on water quality. Each watershed in the Pee Dee Basin is evaluated and a strategy described to address impaired streams.

The Watershed Implementation Staff investigates the impaired and threatened streams mentioned in the WWQMS to determine, where possible, the source of the impairment and recommends solutions to correct the problems. As part of this effort, the watershed staff is forging partnerships with various federal and state agencies, local governments, and community groups. In particular, the Watershed Program and the Natural Resource Conservation Service (NRCS) district offices are working together to address some of the nonpoint source (NPS) concerns in the basin. By combining NRCS's local knowledge of land use and the Department's knowledge of water quality, we are able to build upon NRCS's close relationships with landowners and determine where NPS projects are needed. These projects may include educational campaigns or special water quality studies.

Pee Dee Basin Description

The ***Pee Dee Basin*** incorporates 76 watersheds within 3 Watershed Management Units (WMU) and some 5.1 million acres within the State of South Carolina (a portion of the basin resides in North Carolina). There are a total of 13,554.6 stream miles in the Pee Dee Basin and 25,946.7 acres of estuarine areas. Within the Department's Pee Dee Basin are the Lynches River Basin, the Black River Basin, the Pee Dee River Basin, the Little Pee Dee River Basin, the Waccamaw River Basin, and a basin incorporating the Sampit River, the Atlantic Intracoastal Waterway, and Winyah Bay.

The ***Lynches River Basin*** encompasses 1,422 square miles with geographic regions that extend from the Piedmont to the Sandhills and to the Upper and Lower Coastal Plains. The Lynches River Basin is described in WMU-0401 and encompasses 18 watersheds, some 910,249 acres of which 0.9% is urban land, 30.2% is agricultural land, 16.8% is scrub/shrub land, 0.4% is barren land, 44.9% is forested land, 6.4% is forested wetland, 0.1% is nonforested wetland, and 0.3% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the City of Lake City. This predominantly rural area has a total of 2,219.7 stream miles. The Lynches River originates in North Carolina and accepts drainage from Flat Creek, Fork Creek, the Little Lynches River, Sparrow Swamp, Big Swamp, and Lake Swamp before draining into the Pee Dee River.

The ***Black River Basin*** encompasses 2,102 square miles with geographic regions extending from the Sandhills to the Upper and Lower Coastal Plains and into the Coastal Zone. The Black River Basin is described in WMU-0401 and encompasses 18 watersheds, some 1.3 million acres of which 2.2% is urban land, 28.1% is agricultural land, 17.6% is scrub/shrub land, 38.0% is forested land, 12.7% is forested wetland, 0.8% is nonforested wetland, and 0.6% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the City of Sumter. There are a total of 3,247.3 stream miles in the Black River Basin, and 995.0 acres of estuarine areas. The Black River originates near the City of Bishopville and accepts drainage from Rocky Bluff Swamp, the Pocotaligo River, Pudding Swamp, Kingstree Swamp Canal, and Black Mingo Creek before merging with the Pee Dee River.

The ***Pee Dee River Basin*** (also referred to as the Great Pee Dee River) is described in Watershed Management Unit 0402 and encompasses 18 watersheds and 2,414 square miles excluding the Lynches River, the Black River, and the Little Pee Dee River, which all drain into the Pee Dee River. The portion of the Pee Dee River in South Carolina flows across the Sandhills region to the Upper and Lower Coastal Plain regions and into the Coastal Zone region. Of the 1.5 million acres, 3.1% is urban land, 22.5% is agricultural land, 18.9% is scrub/shrub land, 0.2% is barren land, 38.8% is forested land, 13.9% is forested wetland, 0.8% is nonforested wetland, and 1.8% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the Cities of Florence, Darlington, and Bennettsville. There are a total of 4,459.2 stream miles in the Pee Dee River Basin, and 3,333.4 acres of estuarine areas. The Pee Dee River originates in North Carolina and after flowing across the state line accepts drainage from Thompson Creek, Crooked Creek, Cedar Creek, Three Creeks, Black Creek, Jeffries Creek, Catfish Creek, the Lynches River, and the Little Pee Dee River.

The ***Little Pee Dee River Basin*** (incorporating the Lumber River Basin) is described in WMU-0402 and encompasses 11 watersheds and 1,131 square miles. -The Little Pee Dee River flows across the Upper and Lower Coastal Plain regions and into the Coastal Zone region. Of the 723,830 acres, 1.1% is urban land, 24.0% is agricultural land, 21.2% is scrub/shrub land, 30.2% is forested land, 21.8% is forested wetland, 1.3% is nonforested wetland, and 0.3% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the City of Dillon. There are a total of 2,431.5 stream miles in the Little Pee Dee River Basin. The Little Pee Dee River originates in South Carolina and accepts drainage from Buck Swamp, the Lumber River, Lake Swamp, Brunson Swamp, and Kingston Lake before flowing into the Pee Dee River.

The ***Waccamaw River Basin*** is described in Watershed Management Unit 0403 and encompasses 8 watersheds and 626 square miles. The Waccamaw River Basin incorporates the Lower Coastal Plain and Coastal Zone regions. Of the 400,919 acres, 6.3% is urban land, 6.0% is agricultural land, 16.7% is scrub/shrub land, 0.2% is barren land, 38.9% is forested land, 28.3% is forested wetland, 1.6% is nonforested wetland, and 2.0% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the Cities of Conway and Georgetown. There are a total of 827.2 stream miles in this watershed and 1,939.1 acres of estuarine areas. The Waccamaw River originates in North Carolina, and crosses into South Carolina to accept drainage from Kingston Lake and the Atlantic Intracoastal Waterway before flowing into Winyah Bay.

The ***Atlantic Intracoastal Waterway (AIWW)/Sampit River/Winyah Bay Basin*** is described in Watershed Management Unit 0403 and encompasses 3 watersheds and 368 square miles flowing through the Coastal Zone region. Of the 235,709 acres, 14.4% is urban land, 0.9% is agricultural land, 9.2% is scrub/shrub land, 0.2% is barren land, 54.5% is forested land, 6.4% is forested wetland, 9.6% is nonforested wetland, and 4.8% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the Cities of Georgetown, Myrtle Beach, and North Myrtle Beach. There are a total of 369.7 stream miles in this watershed and 19,679.2 acres of estuarine areas. The AIWW flows out of North Carolina and drains into the Waccamaw River. All the Grand Strand Beaches are in this sub-basin. The Sampit River joins the Pee Dee and Waccamaw Rivers to form Winyah Bay, which drains into the Atlantic Ocean.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service (USDA 1982). The MLRAs are physiographic regions that have soils, climate, water resources and land uses in common. The physiographic regions that define South Carolina are as follows:

The **Blue Ridge** is an area of dissected (separated by erosion into many closely spaced valleys), rugged mountains with narrow valleys dominated by forests; elevations range from 1,000 to 3,300 feet.

The **Piedmont** is an area of gently rolling to hilly slopes with narrow stream valleys dominated by forests, farms and orchards; elevations range from 375 to 1,000 feet.

The **Sand Hills** are an area of gently sloping to strongly sloping uplands with a predominance of sandy areas and scrub vegetation; elevations range from 250 to 450 feet.

The **Upper Coastal Plain** is an area of gentle slopes with increased dissection and moderate slopes in the northwestern section that contain the state's major farming areas; elevations range from 100 to 450 feet.

The **Lower Coastal Plain** is an area that is mostly nearly level and is dissected by many broad, shallow valleys with meandering stream channels; elevations range from 25 to 125 feet.

The **Coastal Zone** is a mostly tidally-influenced area that is nearly level and dissected by many broad, shallow valleys with meandering stream channels; most of the valleys terminate in tidal estuaries along the coast; elevations range from sea level to about 25 feet.

Land Use/Land Cover

General land use/land cover data for South Carolina was derived from SPOT multispectral satellite images using image mapping software to inventory the State's land classifications, which are as follows (SCLRCC 1990).

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial and residential uses, as well as vegetated portions of urban areas.

Agricultural/Grass land is characterized by cropland, pasture and orchards, and may include some grass cover in Urban, Scrub/Shrub and Forest areas.

Scrub/Shrub land is adapted from the western Rangeland classification to represent the "fallow" condition of the land (currently unused, yet vegetated), and is most commonly found in the dry Sandhills region including areas of farmland, sparse pines, regenerating forest lands and recently harvested timber lands.

Forest land is characterized by deciduous and evergreen trees not including forests in wetland settings.

Forested Wetland (swampland) is the saturated bottomland, mostly hardwood forests that are primarily composed of wooded swamps occupying river floodplains and isolated low-lying wet areas, primarily located in the Coastal Plain.

Nonforested Wetland (marshland) is dependent on soil moisture to distinguish it from Scrub/Shrub since both classes contain grasses and low herbaceous cover; nonforested wetlands are most common along the coast and isolated freshwater areas found in the Coastal Plain.

Barren land is characterized by an unvegetated condition of the land, both natural (rock, beaches and unvegetated flats) and man-induced (rock quarries, mines and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh and tidal waters.

Soil Types

The dominant soil associations, or those soil series comprising, together, over 40% of the land area, were recorded for each watershed in percent descending order. The individual soil series for the Pee Dee Basin are described as follows (USDA 1963-1990).

Alpin soils are well drained and excessively drained, sandy soils with a loamy or sandy subsoil.

Aycock soils are nearly level to gently sloping, well drained soils on Coastal Plain uplands, grayish brown in color and a very fine sandy loam.

Badin soils are moderately deep, well drained, moderately permeable, clayey soils that formed in material weathered from Carolina Slate or other fine grained rock, on ridgetops and side slopes.

Bladen soils are poorly drained soils on low, nearly level areas and low ridges.

Blaney soils are nearly level to strongly sloping, excessively drained and well drained soils, some sandy throughout and some with a loamy subsoil and a fragipan on coastal plains.

Blanton soils are excessively drained soils that have loamy subsoil or are sandy throughout.

Bohicket soils are very poorly drained soils, clayey throughout or mucky and underlain with clayey layers, frequently flooded.

Bonneau soils are deep, moderately well drained soils with loamy subsoil on ridges.

Candor soils are somewhat excessively drained soils that formed in sandy and loamy marine sediments on broad flats, narrow ridges, and side slopes.

Cantey soils are moderately well drained soils with a loamy surface layer and a clayey or loamy subsoil and poorly drained soils with a loamy surface layer and a clayey subsoil.

Cape Fear soils are very poorly drained soils that formed in sandy and clayey marine sediments in upland areas of the Coastal Plain, and in flat and depressional areas.

Cecil soils are deep, well drained, gently sloping to sloping soils that have red subsoil.

Chastain soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Chipley soils are moderately to excessively well drained soils, sandy throughout, on high ridges.

Coxville soils are deep, poorly drained soils in thick beds of clayey sediment, nearly level.

Dorovan soils are deep, level, very poorly drained, organic soils on floodplains adjacent to upland.

Emporia soils are well drained, gently sloping soils with surface and subsoils of loamy fine sand.

Eulonia soils are moderately well drained, moderately slowly permeable soils that formed in clayey marine sediment, nearly level to gently sloping and on broad flats.

Foreston soils are moderately well drained soils that formed in loamy marine sediments in upland areas of the Coastal Plain, and on high ridges and slight rises within broad flats.

Fuquay soils are well drained, loamy and sandy soils with clayey or loamy subsoil.

Gilead soils are gently sloping to sloping, moderately well drained, moderately deep soils underlain by a compact, brittle substratum, in beds of unconsolidated sand and clay.

Goldsboro soils are moderately well to poorly drained soils with loamy subsoil on nearly level ridges and in shallow depressions.

Goldston soils are dominantly sloping to steep, well drained to excessively drained soils.

Hobcaw soils are nearly level, very poorly drained soils in depressions.

Hobonny soils are very poorly drained, moderately permeable soils that formed in organic deposits of remains of herbaceous and woody plants, on flood plains of major rivers, covered by water a large part of the time.

Johnston soils are nearly level, moderately well drained to very poorly drained soils, loamy throughout with a sandy surface layer on floodplains.

Lakeland soils are well drained, sandy soils with loamy subsoil and excessively drained soils.

Leon soils are somewhat poorly drained to poorly drained, level to nearly level, sandy soils with weakly cemented layers stained by organic matter.

Levy soils are nearly level, very poorly drained soils, mucky throughout or loamy and underlain with clayey layers, rarely or frequently flooded with fresh water.

Lynchburg soils are moderately well to poorly drained soils, with loamy subsoil, on nearly level ridges and in shallow depressions.

Lynnhaven soils are poorly drained sandy soils, with sandy subsoil, in low areas, and prone to ponding.

Meggett soils are poorly drained to very poorly drained, level to nearly level soils with a loamy to sandy surface layer and a loamy to clayey subsoil.

Mouzon soils are poorly drained, loamy and sandy soils with a loamy subsoil.

Nansemond soils are moderately well drained, rapidly permeable soils that formed in loamy Coastal Plain sediments on stream terraces and adjacent to small drainages.

Newhan soils are excessively drained, very rapidly permeable soils that formed in sandy marine sediment, nearly level to gently sloping, adjacent to beaches and waterways along the coastline.

Noboco soils are well drained, sandy soils with a loamy or clayey subsoil.

Norfolk soils are deep, well drained soils, with loamy subsoil, nearly level and gently sloping elevated uplands.

Ogeechee soils are poorly drained and moderately well drained, loamy soils with clayey or loamy subsoil, on terraces.

Pacolet soils are well drained, moderately steep soils with clayey subsoil, moderately deep.

Paxville soils are somewhat to very poorly drained soils, with loamy subsoil, on low ridges and in depressions.

Pelion soils are well drained and moderately well drained soils that have a sandy surface layer and a loamy subsoil, many with a fragipan in the subsoil.

Persanti soils are deep, moderately well drained, slowly permeable soils that formed in clayey marine sediment, found on broad estuary terraces.

Pocomoke soils are very poorly drained, moderately rapidly permeable soils that formed in sandy Coastal Plain sediments in small drainageways, in shallow depressions, and on flats.

Rains soils are moderately well to poorly drained soils, with a loamy subsoil, on nearly level ridges and in shallow depressions.

Rutledge soils are somewhat poorly drained to moderately well drained, nearly level, sandy soils on ridges and poorly drained to very poorly drained, sandy soils in depressions.

Smithboro soils are deep, somewhat poorly drained, slowly permeable soils that formed in clayey marine sediment, found on the Coastal Plain on broad estuary terraces.

Tatum soils are dominantly sloping to steep, well drained to excessively drained soils, with a loamy subsoil, moderately deep or shallow to weathered rock.

Tawcaw soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Troup soils are well drained, sandy soils with loamy subsoil and excessively drained soils.

Vaucluse soils are well drained, loamy and sandy soils with clayey or loamy subsoil.

Wagram soils are well drained to very poorly drained, depressional to nearly level and gently sloping soils with a loamy to sandy surface layer and a clayey to loamy subsoil.

Wahee soils are poorly drained soils on low, nearly level areas and low ridges.

Whitestone soils are deep and very deep, moderately well drained soils on Piedmont uplands, and formed in weathered triassic materials.

Woodington soils are poorly drained, moderately permeable soils that formed in loamy Coastal Plain sediments on stream terraces and upland flats on higher elevations.

Yauhannah soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Yemassee soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Yonges soils are moderately well drained to poorly drained, nearly level soils with a sandy surface layer and a predominantly loamy subsoil.

Slope and Erodibility

The slope values used in this strategy are approximate slopes derived by NRCS field personnel conducting soil surveys (USDA 1963-1990). The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant. The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot (USDA 1978), and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. The K values in this assessment were derived from the Nonpoint Source Pollution Assessment (SCLRCC 1988), where values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments which do erode. The range of K-factor values in the Pee Dee Basin is from 0.10 to 0.38, among the 76 hydrologic units or watersheds.

Factors Assessed in Watershed Evaluations

Water Quality

Monitoring Overview

In an effort to evaluate the State's water quality, the Department operates a permanent Statewide network of primary ambient monitoring stations and flexible, rotating secondary and watershed monitoring stations (SCDHEC 1994a). The ambient monitoring network is directed towards determining long-term water quality trends, assessing attainment of water quality standards, identifying locations in need of additional attention, and providing background data for planning and evaluating stream classifications and standards.

The monitoring data are also used in the process of formulating permit limits for wastewater discharges with the goal of maintaining State and Federal water quality standards and criteria in the receiving streams in accordance with the goals of the Clean Water Act. These standards and criteria define the instream chemical concentrations which provide for protection and reproduction of aquatic flora and fauna, determine support of the classified uses of each waterbody, and serve as instream limits for the regulation of wastewater discharges or other activities. In addition, these data are used in the preparation of the biennial §305(b) report to Congress (SCDHEC 1996a), which summarizes the State's water quality with respect to attainment of classified uses by comparing the ambient monitoring network data to the State Water Quality Standards.

The SCDHEC Water Quality Monitoring Network is comprised of three station types: primary, secondary, and watershed stations. Primary stations are sampled on a monthly basis year round, and are located in high water-use areas or as background stations upstream of high water-use areas. The static primary station network is operated statewide, and receives the most extensive parameter coverage, thus making it best suited for detecting long term trends.

Secondary stations are sampled monthly from May through October, a period critical to aquatic life, characterized by higher water temperatures and lower flows. Secondary stations are located in areas where specific monitoring is warranted due to point source discharges, or areas with a history of water quality problems. Secondary station parameter coverage is less extensive and more flexible than primary or watershed station coverages. The number and locations of secondary stations have greater annual variability than do those in the primary station network, and during a basin's target year may have parameter coverage and sampling frequency duplicating that of primary or watershed stations.

Watershed stations are sampled on a monthly basis, year round, during a basin's target year; additional watershed stations may be sampled monthly from May through October to augment the secondary station network. Watershed stations are located to provide more complete and representative coverage within the larger drainage basin, and to identify additional monitoring needs. The parameter coverage of watershed stations includes the same basic parameters as primary stations.

The ambient monitoring network, as a program, has the capability of sampling a wide range of media and analyzing them for the presence or effects of contaminants. Ambient monitoring data from 47 primary stations, 75 secondary stations, 36 watershed stations, and 4 inactive stations were reviewed for the Pee Dee Basin, along with 14 biological sites and 13 consultant sites to assess macroinvertebrate communities.

Monthly, quarterly, or annual water column grab samples (0.3m) are used to establish representative physical conditions and chemical concentrations in the waterbodies sampled. This information is considered to represent "average" conditions, as opposed to extremes, because of the inability to target individual high or low flow events on a statewide basis. The more extreme instream chemical concentrations resulting from nonpoint source inputs from rain events or from point source inputs of a variable nature are frequently missed because routine monthly sampling rarely coincides with the time of release.

Many pollutants may be components of point source discharges, but may be discharged in a discontinuous manner, or at such low concentrations that water column sampling for them is impractical. Some pollutants are also common in nonpoint source runoff, reaching waterways only after a heavy rainfall; therefore, in these situations, the best media for the detection of these chemicals are sediment and fish tissue where they may accumulate over time. Their impact may also affect the macroinvertebrate community.

Regional ambient trend monitoring is conducted to collect data to indicate general biological conditions of state waters which may be subject to a variety of point and nonpoint source impacts. In 1991, the Department began using ambient macroinvertebrate data to support the development of Watershed Water Quality Management Strategies. Ambient sampling is also used to establish regional reference or "least impacted" sites from which to make comparisons in future monitoring. Additionally, special macroinvertebrate studies, in which stream specific comparisons among stations located upstream and downstream from a known discharge or nonpoint source area, are used to assess impact.

Qualitative sampling of macroinvertebrate communities are the primary bioassessment techniques used in ambient trend monitoring. A habitat assessment of general stream habitat availability and a substrate characterization is conducted at each site. Annual trend monitoring is conducted during low flow "worst case" conditions in July - September. This technique may also be used in special studies for the purpose of determining if, and to what extent, a wastewater discharge or nonpoint source runoff is impacting the receiving stream. A minimum of two sample locations, one upstream and one downstream from a discharge or runoff area, is collected. At least one downstream recovery station is also established when appropriate. Sampling methodology essentially follows procedures described in Standard Operating Procedures, Biological Monitoring (NCDEHNR 1995).

Aquatic sediments represent a historical record of chronic conditions existing in the water column. Pollutants bind to particulate organic matter in the water column and settle to the bottom where they become part of the sediment "record". This process of sedimentation not only reflects the impact of point source discharges, but also incorporates nonpoint source pollution washed into the stream during rain events. As a result, contaminant concentrations originating from irregular and highly variable sources are recorded in the sediment. The sediment concentrations at a particular location do not vary as rapidly with time as do the water column concentrations. Thus, the sediment record may be read at a later time, unrelated to the actual release time. Lakes act as settling basins for materials entering the lake system directly from a discharge or indirectly from the land surface washed into streams. Therefore, it is not unusual for lake sediment concentrations to be higher than sediment concentrations found in streams. This is especially true for chromium, copper, and zinc.

Classified Waters, Standards, and Natural Conditions

The waters of the State have been classified in regulation based on the desired uses of each waterbody. State Standards for various parameters have been established to protect all uses within each classification. The water-use classifications (SCDHEC 1993a) are as follows.

Class ORW, or "outstanding resource waters", are freshwaters or saltwaters which constitute an outstanding recreational or ecological resource, or those freshwaters suitable as a source for drinking water supply purposes, with treatment levels specified by the Department.

Class A were freshwaters which were suitable for primary contact recreation. This class was also suitable for uses listed as Class B. As of April, 1992, Class A and Class B waters were reclassified as Class FW which protects for primary contact recreation.

Class B were freshwaters which were suitable for secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters were suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class was also suitable for industrial and agricultural uses. The main difference between the Class A and B freshwater was the fecal coliform standard. Class A waters were not to exceed a geometric mean of 200/100ml, based on 5 consecutive samples during any 30 day period; nor were more than 10% of the total samples during any 30 day period to exceed 400/100ml. Class B waters were not to exceed a geometric mean of 1000/100ml, based on 5 consecutive samples during any 30 day period; nor were more than 20% of the total samples during any 30 day period to exceed 2000/100ml. As of April, 1992, Class A and Class B waters were reclassified as Class FW, which protects for primary contact recreation.

Class FW, or "freshwaters", are freshwaters which are suitable for primary and secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters are suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class is also suitable for industrial and agricultural uses.

Class Trout Waters is comprised of three types of water:

> **trout natural** waters, which are freshwaters suitable for supporting reproducing trout populations and a cold water balanced indigenous aquatic community of fauna and flora,
>
> **trout put, grow and take** waters, which are freshwaters suitable for supporting the growth of stocked trout populations and a balanced indigenous aquatic community of fauna and flora,
>
> **trout put and take** waters, which are freshwaters protected by the standards of Class FW.

Class SFH, or "shellfish harvesting" waters, are tidal saltwaters protected for shellfish harvesting, and are suitable also for uses listed in Classes SA and SB.

Class SA comprises "tidal saltwaters" suitable for primary and secondary contact recreation, crabbing and fishing. These waters are not protected for harvesting of clams, mussels, or oysters for market purposes or human consumption. The waters are suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

Class SB are "tidal saltwaters" suitable for the same uses listed in SA. The difference between the Class SA and SB saltwater concerns the DO limitations. Class SA waters must maintain daily DO averages not less than 5.0 mg/l, with a minimum of 4.0 mg/l, and Class SB waters maintain DO levels not less than 4.0 mg/l.

The Standards are used as instream water quality goals to maintain and improve water quality and also serve as the foundation of the Bureau of Water's program. They are used to determine permit limits for treated wastewater dischargers and any other activities that may impact water quality. Using mathematical Wasteload Allocation Models, the impact of a wastewater discharge on a receiving stream, where flow is unregulated by dams, is predicted using 7Q10 streamflows. These predictions are then used to set limits for different pollutants on the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The NPDES permit limits are set so that, as long as a permittee (wastewater discharger) meets the established permit limits, the discharge should not cause a standards violation in the receiving stream. All discharges to the waters of the State are required to have an NPDES permit and must abide by those limits, under penalty of law.

Classifications are based on desired uses, not on natural or existing water quality, and are a legal means to obtain the necessary treatment of discharged wastewater to protect designated uses. Actual water quality may not have a bearing on a waterbody's classification. A waterbody may be reclassified if desired or existing public uses justify the reclassification and the water quality necessary to protect these uses is attainable. A classification change is an amendment to a State regulation and requires public participation, SCDHEC Board approval, and General Assembly approval.

Natural conditions may prevent a waterbody from meeting the water quality goals as set forth in the Standards. The fact a waterbody does not meet the Standards for a particular classification does not mean the waterbody is polluted or of poor quality. Certain types of waterbodies (ie. swamps, lakes, tidal creeks) naturally have water quality lower than the numeric standards. A waterbody can have water quality conditions below standards due to natural causes and still meet its use classification. A site specific numeric standard may be established by the Department and subjected to public participation and administrative procedures for adopting regulations. Site specific numeric standards apply only to the stream segment described in the water classification listing (SCDHEC 1993a, Regulation 61-69), not to tributaries or downstream unspecified waters. Several waterbodies in the Pee Dee Basin have been given site specific standards for pH and dissolved oxygen, which reflect natural conditions.

Wetlands

In the Section 401 water quality certification process, applications for wetland alterations may be denied or modified due to the special nature of a wetland or the functions that a wetland provides. Wetland impacts must be compensated through restoration, enhancement, preservation, or creation and protected in perpetuity. Future development would be prohibited in these mitigated and legally protected areas. Knowledge of areas that are restricted from development due to mitigation or special water classification is useful in planning future development in a watershed. The list of outstanding resource waters (ORW) has been refined to include wetlands that qualify for, and should be afforded, the highest level of protection. In addition, wetlands that are not currently classified as ORW, but meet certain criteria (ie. absence of dischargers, endangered species, federal lands) will be noted as potential ORW candidates. In cooperation with the S.C. Department of Natural Resources's Division of Land Resources and Conservation Districts, Landsat Thematic Mapper (TM) satellite image data will provide an inventory of wetlands in the basin and an image-based geographical information system (GIS) for subsequent monitoring and tracking efforts.

Lake Eutrophication Assessment

The trophic condition of South Carolina lakes is monitored through SCDHEC's network of routine sampling stations and through periodic sampling of additional lakes. All lakes of at least 40 acres in area that offer public access are monitored. Large (major) lakes are those greater than 850 acres in surface area. Minor lakes are those less than 850 acres in surface area.

Beginning with the 1989 statewide lake water quality assessment, a multi-parameter percentile index has been used to quantify overall lake trophic state. The index includes the following trophic condition indicators: water clarity, total phosphorus, total inorganic nitrogen, chlorophyll *a*, and dissolved oxygen. The baseline for this relative index is data collected during the 1980-81 statewide lake water quality assessment. Use of a baseline data set permits trend detection in subsequent assessments. Percentiles for major and minor lakes are derived separately. All data, as well as the programs for deriving index values, are maintained in USEPA's STORET database. A high index value indicates a desirable trophic condition, while low values indicate the need for further study or restoration (SCDHEC 1991b).

Recreational Swimming Areas

Although all waters of the State are protected for swimming, some areas are more popular than others and may require closer monitoring. The regional councils of government are cooperating with the Department by identifying additional swimming areas (regularly used beaches and river banks with public access) where water quality monitoring may be needed. Currently monitored and suggested areas are located and discussed in the appropriate watershed evaluations.

Shellfish Harvesting Waters

The Department's Shellfish Sanitation Program ensures that shellfish and the shellfish harvesting areas meet health and environmental quality standards. These standards are defined by State Regulation 61-47 (SCDHEC 1997), and by operational manuals developed by the Interstate Shellfish Sanitation Conference (ISSC) and adopted by the USFDA. Shellfish harvesting season extends from September 15 to May 15 with up to a 15 day variance at the start or conclusion of the season. Sanitary surveys, conducted by the Department, assess the coastal waters and determine shellfish harvesting classifications based on actual water quality as follows:

Approved harvesting status is assigned to waters that are not contaminated with fecal material, pathogenic microorganisms, nor poisonous and deleterious substances in concentrations dangerous to human health. The fecal coliform MPN median or geometric mean should not exceed 14 colonies/100 ml in the water, and 10% of the samples should not exceed 43 colonies/100 ml.

Conditionally Approved harvesting status is assigned to waters that are subject to temporary conditions of actual or potential pollution. Temporary decline in water quality may be caused by activities such as malfunctioning wastewater treatment plants or nonpoint source pollution after rainfall events. Fecal coliform standards in such waters are the same as for the approved classification.

Restricted harvesting status is assigned to waters where a limited degree of pollution renders the shellfish unsafe for direct marketing, but may be marketed after relaying or depuration. The median fecal coliform levels or geometric mean in restricted waters are between 14 and 88 colonies/100 ml, with not more than 10% of the samples exceeding 260 colonies/100 ml.

Prohibited harvesting status is assigned to waters with excessive concentrations of pollutants, or where the potential exists for excessive concentrations. This classification is ascribed to waters where the median fecal coliform MPN or geometric mean exceeds 88 colonies/100 ml, or more than 10% of the samples exceed 260 colonies/100 ml. Shellfish may not be harvested from prohibited areas for human consumption; however, prohibited status does not necessarily indicate lesser water quality, but may indicate a potential for variable water quality due to pollutant sources.

Water Quality Indicators

Macroinvertebrate Community

Macroinvertebrates are aquatic insects and other aquatic invertebrates associated with the substrates of streams, rivers, and lakes. Macroinvertebrates can be useful indicators of water quality because these communities respond to integrated stresses over time which reflect fluctuating environmental conditions. Community responses to various pollutants (e.g. organic, toxic, and sediment) may be assessed through interpretation of diversity, known organism tolerances, and in some cases, relative abundances and feeding types.

Fish Tissue

Many pollutants occur in such low concentrations in the water column that they are usually below analytical detection limits. Over time many of these chemicals may accumulate in fish tissue to levels that are easily measured. By analyzing fish tissue it is possible to see what pollutants may be present in waterbodies at very low levels. This information can also be used to determine if consumption of the fish pose any undue human health concerns and to calculate consumption rates that are safe.

Dissolved Oxygen

Oxygen is essential for the survival and propagation of aquatic organisms. If the amount of oxygen dissolved in water falls below the minimum requirements for survival, aquatic organisms or their eggs and larvae may die. A severe example is a fish kill. Dissolved oxygen (DO) varies greatly due to natural phenomena, resulting in daily and seasonal cycles. Different forms of pollution also can cause declines in DO.

Changes in DO levels can result from temperature changes or the activity of microscopic plants (algae or phytoplankton) present in a waterbody. The natural diurnal (daily) cycle of DO concentration is well documented. Dissolved oxygen concentrations are generally lowest in the morning, climbing throughout the day and peaking near dusk, then steadily declining during the hours of darkness. Photosynthesis by phytoplankton releases oxygen during the day, which results in a rise in DO. In the dark, respiration consumes DO and lowers the concentration.

There is also a seasonal DO cycle in which concentrations are greater in the colder, winter months and lower in the warmer, summer months. Secondary stations are only sampled during summer months when water temperatures are elevated and DO concentrations are depressed, resulting in higher percentages of DO values below Standards, since there are no high winter values. Streamflow (in freshwater) is lower during the summer and greatly affects flushing, reaeration, and the extent of saltwater intrusion, all of which affect dissolved oxygen values.

When comparing the SCDHEC data to DO standards, it is necessary to consider several extenuating circumstances that contribute to apparent noncompliance, such as sampling bias due to season or tide stage. Samples are collected as a single instantaneous grab sample, which is not truly representative of the daily average used as the criterion for most classifications. Secondary stations are sampled only during summer months and generally result in a higher rate of DO excursions as a result. It is essential to examine the data to ascertain such patterns of excursions before summarily concluding that the indicated violations constitute poor water quality. The impact of biased sampling protocols must also be weighed as a factor in instances of nonsupport of classified uses.

Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD_5) is a measure of the amount of dissolved oxygen consumed by the decomposition of carbonaceous and nitrogenous matter in water over a five-day period. The BOD_5 test indicates the amount of biologically oxidizable carbon and nitrogen that is present in wastewater or in natural water. Matter containing carbon or nitrogen uses dissolved oxygen from the water as it decomposes, which can result in a dissolved oxygen decline. The quantity of BOD_5 discharged by point sources is limited through the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The discharge of BOD_5 from a point source is restricted by the permits so as to maintain the applicable dissolved oxygen Standard.

pH

The hydrogen ion concentration in a water sample is defined as "pH", and is used as a measure of the acidity of the water. The pH scale ranges from 0 to 14 standard units (SU). A pH of 7 is considered neutral, with values less than 7 being acidic, and values greater than 7 being basic. pH may vary from the ranges specified in the standards due to a variety of natural causes. Low pH values are found in natural waters rich in dissolved organic matter, especially in Coastal Plain swamps and black water rivers. The tannic acid released from the decomposition of vegetation causes the tea coloration of the water and low pHs.

High pH values in lakes during warmer months may be due to high phytoplankton (algae) levels. Continuous flushing in streams prevents the development of significant phytoplankton populations. Most phytoplankton are dormant during the cold winter months, and populations begin to increase as the water warms in the spring. The relationship between phytoplankton and pH is well established. Daily cycles in pH are common in waters with significant phytoplankton populations. Photosynthesis by phytoplankton consumes carbon dioxide during the day releasing carbonate, which results in a rise in pH. In the dark, respiration releases carbon dioxide and lowers pH. Soft water lakes and ponds may reach a pH of 9-10 SU during periods of intense photosynthesis when large phytoplankton populations are present; hence, excursions of pH beyond Standards may be the result of natural conditions.

Fecal Coliform Bacteria

Coliform bacteria are present in the digestive tract and feces of all warm-blooded animals, including humans, poultry, livestock, and wild game species. Fecal coliform bacteria are themselves generally not harmful, but their presence in surface waters may be serious due to their association with sewage or animal waste which may contain pathogenic microbes. At present, it is difficult to distinguish between waters contaminated by animal waste and those contaminated by human waste.

Diseases that can be transmitted to humans through water contaminated by improperly treated human or animal waste are the primary concern. Fecal coliform bacteria are able to survive in water and are usually more numerous than waterborne disease producing organisms (pathogens). Therefore, it is best to test for fecal coliform bacteria as an indicator of possible fecal contamination rather than to try to isolate the relatively few pathogens which may be present in water.

Public health studies have established a correlation between fecal coliform numbers in recreational and drinking waters, and the risk of adverse health effects. Based on these relationships, the USEPA and SCDHEC have developed enforceable standards for surface waters to protect against adverse health effects from various recreational or drinking water uses. Proper waste disposal or sewage treatment prior to discharge to surface waters minimizes this type of pollution.

Nutrients

'Nutrients', in terms of environmental water quality, usually refer to phosphorus and nitrogen, which are primary requirements for the growth and reproduction of aquatic plants. Oxygen demanding materials and nutrients are the most common constituents discharged to the environment by man's activities, through wastewater facilities and by agricultural, residential, and stormwater runoff. In general, increasing nutrient concentrations are undesirable due to the potential for accelerated growth of aquatic vegetation and algal blooms which may, in turn, deplete dissolved oxygen and result in fish kills.

The forms of nitrogen routinely analyzed at SCDHEC stations are ammonia (NH_3+NH_4/N), total Kjeldahl nitrogen (TKN), and nitrite-nitrate nitrogen (NO_2/NO_3). TKN assays the amount of organic nitrogen and ammonia in a sample. Nitrate is the product of aerobic decomposition of ammonia, and is a primary aquatic plant nutrient. Total phosphorus (TP) is measured to determine the phosphorus concentration of surface waters. This test includes all of the various forms of phosphorus (organic, inorganic, dissolved, and particulate) present in a sample.

There are no official standards or criteria for nutrients in water. However, the USEPA has issued recommendations for total phosphate phosphorus concentrations in order to limit eutrophication. High densities of phytoplankton can cause fluctuations of pH and dissolved oxygen beyond standards. Since these are only recommendations, and not a true criterion for use in evaluating water quality, it is difficult to determine the significance of elevated TP values. Because TP includes all forms of phosphorus, including that incorporated into algal biomass, it would be necessary to consider biological data to properly assess the implications of observed concentrations.

Heavy Metals

The analytical procedures used by the Department measures total metal concentration, which is a relatively conservative approach, since the total metal concentration is always greater than the acid-soluble or dissolved fraction. Most heavy metal criteria for freshwater are calculated from formulas using water hardness. The formulas used to calculate criteria values are constructed to apply to the entire United States, including Alaska and Hawaii. As with all the USEPA criteria, there is also a large margin of safety built into the calculations. The applicability of the hardness based criteria derived from the USEPA formulas to South Carolina waters has been a subject of much discussion. Hardness values vary greatly nationwide (from zero into the hundreds), with South Carolina representing the lower end of the range (statewide average value is approximately 20 mg/l).

Representatives of the USEPA Region IV standards group have stated that no toxicity data for hardness values less than 50 mg/l were used in the development of the formulas. They have expressed reservations about the validity of the formulas when applied to hardness values below 50 mg/l. Based on this opinion, South Carolina's State Standards for metals are based on a hardness of 50 mg/l for waters where hardness is 50 mg/l or less, resulting in several criteria values below the Department's current analytical detection limits. Therefore, any detectable concentration of cadmium, copper, or lead is an excursion beyond recommended criteria.

The SCDHEC monitoring data has historically indicated that zinc and copper levels in South Carolina waters are elevated relative to USEPA criteria, apparently a statewide phenomenon in both fresh and salt waters, and possibly resulting from natural conditions or nonpoint sources. These levels do not appear to adversely affect state fisheries, which suggests that the levels are the result of long-term local conditions to which the fauna have adapted, as opposed to point source pollution events. It is difficult to assess the significance of heavy metal excursions due to the questionable applicability of the formulas at low hardness values and the occurrence of calculated criteria below present detection limits. Atmospheric inputs are recognized as important sources of metals to aquatic systems. Metals are released to the atmosphere from the burning of fossil fuels (coal, oil, gasoline), wastes (medical, industrial, municipal), and organic materials. The metals are then deposited on land and in waterways from the atmosphere via rainfall.

Assessment Methodology

USE SUPPORT DETERMINATION

At the majority of SCDHEC's monitoring stations, water samples for analysis are collected as surface grab samples once per month, quarter, or year, depending on the parameter. Grab samples collected at a depth of 0.3 meters are considered a surface measurement. At most stations sampled by boat, dissolved oxygen and temperature are sampled as a water column profile, with measurements being made at a depth of 0.3 meters below the water surface and at one-meter intervals to the bottom. At stations sampled from bridges, these parameters are measured only at a depth of 0.3 meters. For the purpose of assessment, only surface samples are used in Standards comparisons and trend assessments. All water and sediment samples are collected and analyzed according to standard procedures (SCDHEC 1981, 1994b). Macroinvertebrate community structure is analyzed routinely at selected stations as a means of detecting adverse biological impacts on the aquatic fauna due to water quality conditions which may not be readily detectable in the water column chemistry.

Results from water quality samples can be compared to State Standards and USEPA criteria, with some restrictions due to time of collection and sampling frequency. The monthly sampling frequency employed in the ambient monitoring network may be insufficient for strict interpretation of the Standards. The USEPA does not define the sampling method or frequency other than indicating that it should be "representative". The grab sample method is considered to be representative for the purpose of indicating excursions relative to Standards, within certain considerations. A single grab sample is more representative of a one-hour average than a four-day average, more representative of a one-day average than a one-month average, and so on (see also Screening & Additional Considerations for Water Column Metals below); thus, when inferences are drawn from grab samples relative to Standards, sampling frequency and the intent of the Standards must be weighed. When the sampling method or frequency does not agree with the intent of the particular standard, conclusions about water quality should be considered as only an indication of conditions, not as a proven circumstance.

The time period used to assess Standards compliance is the last complete five years of data, in this case 1990 through 1994. This time period was chosen in light of subsequent basin assessments that will evaluate data collected within the five years prior to the last assessment.

AQUATIC LIFE USE SUPPORT

One important goal of the Clean Water Act and State Standards is to maintain the quality of surface waters in order to provide for the survival and propagation of a balanced indigenous aquatic community of fauna and flora. The degree to which aquatic life is protected (aquatic life use support) is assessed by comparing important water quality characteristics and the concentrations of potentially toxic pollutants with numeric standards.

Support of aquatic life uses is based on the percentage of standards excursions and, where data are available, the composition and functional integrity of the biological community.
A dissolved oxygen (DO) criterion of 4 mg/l is used for Class SB, 6 mg/l for TN and TPGT, and 5 mg/l for all other Classes. An excursion is an occurrence of a DO concentration less than the stated

criterion. For pH, there are several acceptable ranges applied depending on the Class of water: 6-8 SU for TPGT; 6-8.5 SU for FW; 5-8.5 SU for FW*; and 6.5-8.5 for SFH, SA, and SB. For DO and pH, if 10 percent or less of the samples contravene the appropriate standard, then the standards are said to be fully supported. A percentage of standards excursions between 11-25 is considered partial support of the standard, and a percentage greater than 25 is considered to represent nonsupport of the standard, unless excursions are due to natural conditions.

Care must be taken in interpretation of dissolved oxygen data as it relates to aquatic life support. A station for which there are 12 samples could have 3 excursions and be considered to partially meet the standard. This could translate into 3 continuous months where the criteria were not met. Depending on the extent of the excursions, this could be a minor stress for the community or a significant stress that would preclude attainment of the goal of maintaining a balanced indigenous population of native flora and fauna. A single month with extremely low dissolved oxygen concentrations could represent a significant stress, while the criteria would indicate the aquatic life use was fully supported.

If the acute aquatic life standard is exceeded for any individual toxicant (heavy metals, priority pollutants, chlorine, ammonia) in more than 10 percent of the samples, the standard is not supported. If the acute aquatic life standard is exceeded more than once, but in less than or equal to 10 percent of the samples, the standard is partially supported. If the conclusion for any single parameter is that the standard is not supported, then it is concluded that aquatic life uses are not supported. If the conclusion for any single parameter is that the standard is partially supported, then it is concluded that aquatic life uses are partially supported. Biological data is the ultimate deciding factor for aquatic life uses, regardless of chemical conditions. The goal of the standards is the protection of a balanced indigenous aquatic community.

Since most toxicants are collected with less frequency than the physical parameters, some judgement must be used in applying this guidance (see also Screening & Additional Considerations for Water Column Metals below). If the sample size is small, as in the case of something sampled only annually, a single sample above the acute standard constitutes more than 10 percent of the samples. In this instance, it is possible for a single sample to result in a conclusion that aquatic life uses are not supported, despite what other data suggests. In such a circumstance it is noted that aquatic life uses may not be fully supported and the site is prioritized for the collection of biological data, or additional monitoring and investigation, to verify the true situation.

Macroinvertebrate Data Interpretation

Macroinvertebrate community assessments are used, where available, to supplement or verify Aquatic Life Use Support determinations based on water chemistry data and to evaluate potential impacts from the presence of sediment contaminants. Aquatic and semi-aquatic macroinvertebrates are identified to the lowest practical taxonomic level depending on the condition and maturity of specimens collected. The EPT Index and the North Carolina Biotic Index are the main indices used in analyzing macroinvertebrate data (NCDEHNR 1995). To a lesser extent taxa richness and sometimes total abundance may be used to help interpret data.

The EPT Index is a tabulation of taxa richness within the generally pollution sensitive groups. EPT values are used in a relative way (usually compared with least impacted regional sites) for station comparisons (Plafkin *et al.* 1989). A database is currently being developed to establish significant EPT index levels to be used in conjunction with the biotic index to address aquatic life use support. The biotic index for a sample is the average pollution tolerance of all organisms collected, based on assigned taxonomic tolerance values (NCDEHNR 1995).

One method of qualitative data analysis is taxa richness. This is the number of distinct taxa collected and is the simplest measure of diversity. High taxa richness is generally associated with high water quality. Increasing levels of pollution progressively eliminate the more sensitive taxa, resulting in lower taxa richness. Total abundance is the enumeration of all macroinvertebrates collected at a sampling location. This is generally not regarded as a qualitative metric. However, when gross differences in abundance occur between stations, this metric may be considered as a potential indicator.

Recreational Use Support

The degree to which the swimmable goal of the Clean Water Act is attained (recreational use support) is based on the frequency of fecal coliform bacteria excursions and the occurrence of swimming area closures. For fecal coliform bacteria, an excursion is an occurrence of a bacteria concentration greater than 400/100 ml for all Classes. Comparisons to the bacteria geometric mean standard are not considered appropriate based on sampling frequency and the intent of the standard. If 10 percent or less of the samples are greater than 400/100 ml then recreational uses are said to be fully supported. A percentage of standards excursions between 11-25% is considered partial support of recreational uses, and greater than 25% is considered to represent nonsupport of recreational uses.

Fish/Shellfish Consumption Use Support

Fish/shellfish consumption use support is determined by the occurrence of advisories or bans on consumption for a waterbody. For the support of fish consumption uses, a fish consumption advisory or conditionally approved shellfish harvesting status indicates partial use support, a consumption ban or shellfish harvesting closure indicates nonsupport of uses. Class SFH standards for the consumption of shellfish are more strict than the 400/100 ml figure used to evaluate recreational use support. The decision to close an area to harvesting is made by the Department's Shellfish Sanitation Section, based on a different system of monitoring stations and sampling frequency than that of the ambient monitoring network (SCDHEC 1994a).

The Department uses a risk-based approach to evaluate mercury concentrations in fish tissue and to issue consumption advisories in affected waterbodies. This approach contrasts the average daily exposure dose to the reference dose (RfD) (ATSDR 1992). Using these relationships, fish tissue data are interpreted by determining the consumption rates that would not be likely to pose a health threat to adult males and nonpregnant adult females. Because an acceptable RfD for developmental neurotoxicity has not been developed, pregnant women, infants, and children were advised to avoid consumption of fish from any waterbody where an advisory was issued.

Human Health Standards

State Standards for human health are also evaluated in the preparation of the Watershed Water Quality Management Strategy assessments (SCDHEC 1993a). For contaminants with human health standards (ie. heavy metals, pesticides), a potential human health threat is indicated if the median concentration exceeds the standard.

Additional Screening and Prioritization Tools

Long-Term Trend Assessment

As part of the watershed assessments, surface data from each station are analyzed for statistically significant long-term trends using a modification of Kendall's tau, which is a nonparametric test removing seasonal effects (Bauer *et al.* 1984, Hirsch *et al.* 1982, Smith *et al.* 1982, Smith *et al.* 1987). Flows are not available for most stations, and the parametric concentrations are not flow-corrected. Seasonal Kendall's tau analysis is used to test for the presence of a statistically significant trend of a parameter, either increasing or decreasing, usually over a twelve to fifteen year period. It indicates whether the concentration of a given parameter is exhibiting consistent change in one direction over the specified time period. A two sided test at $p=0.1$ is used to determine statistically significant trends, and the direction of trend. An estimate of the magnitude of any statistically significant trend is calculated as in Smith *et al.* (1982).

A rigorous evaluation for trends in time-series data usually includes a test for autocorrelation. The data are not tested for autocorrelation prior to the trend analysis. It is felt that autocorrelation would not seriously compromise a general characterization of water quality trends based on such a long series of deseasonalized monthly samples.

One of the advantages of the seasonal Kendall test is that values reported as being below detection limits (DL) are valid data points in this nonparametric procedure, since they are all considered to be tied at the DL value. When the DL changed during the period of interest, all values are considered to be tied at the highest DL occurring during that period (Hirsch *et al.* 1982). Since it is possible to measure concentrations equal to the value of the DL, values less than DL are reduced by subtraction of a constant so that they remain tied with each other, but are less than the values equal to the DL. Since fecal coliform bacteria detection limits vary with sample dilution, there is no set DL; therefore, for values reported as less than some number, the value of the number is used.

Sediment Screening

There are no sediment standards; therefore, in order to identify sediments with elevated metals concentrations, percentiles are constructed using five years of statewide sediment data (SCDHEC 1995a). Only values greater than the detection limit were used for chromium, copper, nickel, lead, and zinc. Because so few concentrations of cadmium and mercury are measured above the detection limit, all samples were pooled for these metals. A sediment metal concentration is considered to be high if it is in the top 10% of the pooled results, and very high if it is in the top 5%. Any analytical result above detection limits is flagged for pesticides, PCBs, and other priority pollutants. Sites with noted high metals concentrations or the occurrence of other contaminants above detection limits are prioritized for the collection of biological data, or additional monitoring and investigation, to verify the true situation.

Screening & Additional Considerations for Water Column Metals

The USEPA criteria for heavy metals to protect aquatic life are specified as a four-day average and a one-hour average (USEPA 1986), and have been adopted as State Standards (SCDHEC 1993a). Because of the quarterly sampling frequency for heavy metals, the USEPA advises against comparisons to chronic toxicity standards (four-day average concentration); therefore, only the acute standard (one-hour average) for the protection of aquatic life is used in the water quality assessment (Table 1).

Table 1. Metal Standards in Water ($\mu g/l$)

Metal	Present Detection Level	Freshwater 1 Hr Acute Ave.	Saltwater 1 Hr Acute Ave.	Human Health
*Cadmium	10.0	1.79	43.0	5.000
Chromium (VI)	10.0	16.00	1100.0	50.000
*Copper	10.0	9.22	2.9	
*Lead	50.0	33.78	140.0	50.000
Mercury	0.2	2.40	2.1	0.153
*Nickel	20.0	789.00	75.0	4584.000
*Zinc	10.0	65.00	95.0	

* Freshwater Standards based on a hardness of 50 mg/l as $CaCO_3$.

Zinc and copper are elevated statewide and concentrations are frequently measured in excess of the calculated acute aquatic life standards. To identify areas where zinc, copper, and other metals are elevated in the water column above normal background concentrations, concentrations greater than the detection limit from all SCDHEC monitoring sites statewide for a five year period are pooled and the 90th and 95th percentiles are computed (SCDHEC 1995a). This is done separately for each metal for both fresh and saltwaters. The individual measurements from each monitoring station are then compared to these percentiles. As in sediments, a metal concentration is referred to as "high" if it is in the top 10% of the pooled results, and "very high" if it is in the top 5%. All water column values referred to as "high" or "very high" are also in excess of the acute aquatic life standard listed in Table 1. For chromium, because so few concentrations are above the detection limit, all samples collected are used to generate the percentiles. Sites with noted high metals concentrations are prioritized for the collection of biological data, or additional monitoring and investigation, to verify the true situation.

Point Source Contributions

Wasteload Allocation Process

A wasteload allocation (WLA) is the portion of a stream's assimilative capacity for a particular pollutant which is allocated to an existing or proposed point source discharge. Existing WLAs are updated during the basin review process and included in permits during the normal permit expiration and reissuance process. New WLAs are developed for proposed projects seeking a discharge permit or for existing discharges proposing to increase their effluent loading at the time of application. Wasteload allocations for oxygen demanding parameters are developed by the Water Quality Modeling Section, and WLAs for toxic pollutants and metals are developed by the appropriate permitting division.

The ability of a stream to assimilate a particular pollutant is directly related to its physical and chemical characteristics. Various techniques are used to estimate this capacity. Simple mass balance/dilution calculations may be used for a particular conservative (nondecaying) pollutant while complex models may be used to determine the fate of nonconservative pollutants that degrade in the environment. Waste characteristics, available dilution and the number of discharges in an area may, along with existing water quality, dictate the use of a simple or complex method of analysis. Projects which generally do not require complex modeling include: groundwater remediation, noncontact cooling water, mine dewatering, air washers, and filter backwash.

Streams are designated either effluent limited or water quality limited based on the level of treatment required of the dischargers to that particular portion of the stream. In cases where the USEPA published effluent guidelines, the minimum treatment levels required by law are sufficient to maintain instream water quality standards, and the stream is said to be effluent limited. Streams lacking the assimilative capacity for a discharge at minimum treatment levels are said to be water quality limited. In cases where better than technology limits are required, water quality, not minimum requirements controls the permit limits. The Department's Water Quality Modelling Section recommends limits for numerous parameters including ammonia nitrogen (NH_3-N), dissolved oxygen (DO), total residual chlorine (TRC), and five-day biochemical oxygen demand (BOD_5). Limits for other parameters, including metals, toxics, and nutrients are developed by the Water Facilities Permitting Division or the Industrial, Agricultural, and Stormwater Permitting Division in conjunction with support groups within the Department.

TMDL Definition

A Total Maximum Daily Load (TMDL) is the calculated maximum allowable pollutant loading to a waterbody at which water quality standards are maintained. A TMDL is made up of two main components, a load allocation and a wasteload allocation. A load allocation is the portion of the receiving water's loading capacity attributed to existing or future nonpoint sources or to natural background sources. The waste load allocation is the portion of a receiving water's loading capacity allocated to an existing or future point source. A TMDL may also include an unallocated portion of the capacity reserved as a margin of safety or for future development.

TMDLs form links between water quality standards and point and nonpoint source controls. In water quality impaired areas, the TMDL process provides a mechanism to integrate management of point and nonpoint source pollution. Section 303(d) of the Clean Water Act requires states to identify waters that are water quality impaired, whether as a result of nonattainment of point or nonpoint source related water quality standards, or if controls more stringent than minimums set in effluent guidelines are deemed necessary. Where applicable, TMDLs are to be developed by the states in order to achieve nonattained water quality uses, and results are submitted to USEPA for approval. Waterbodies included on the §303(d) list are divided into primary, secondary, and tertiary categories depending on the severity of the water quality degradation; streams are included on the primary and secondary lists due to dissolved oxygen and toxic impairments, while most streams on the tertiary list are impacted by fecal coliform (SCDHEC 1996b). New directives from USEPA instruct TMDLs for all streams to be conducted within a reasonable time period. The 1996 §303(d) list will be updated and published in 1998.

Permitting Strategy

The Water Facilities Permitting Division and the Industrial, Agricultural, and Stormwater Permitting Division are responsible for drafting and issuing NPDES permits. All NPDES permits in the Pee Dee Basin are to be drafted and issued, or revoked and reissued by September 30, 1996, and will all be reissued together in 2001. Pee Dee Basin permits that remain unissued after September 30, 1996 will be issued during the first quarter of Fiscal Year 97. These permits will also be reissued in 2001 to coincide with the basin permitting year. Major NPDES reissued permits will be individually public noticed in a newspaper of general circulation and minor NPDES reissued permits will be individually public noticed by posting in accordance with Regulation 61-9. New NPDES permits and modifications of existing NPDES permits will be issued as the need arises. New permits and modifications of existing permits will be public noticed by newspaper advertisement and site posting. The permitting Divisions will coordinate drafting of permits for reissue and public notices in the Pee Dee Basin by watershed management units in 2001.

The permitting Divisions use general permits with statewide coverage for certain categories of minor NPDES permits. Discharges covered under general permits include utility water, potable surface water treatment plants, potable groundwater treatment plants with iron removal, petroleum contaminated groundwater, and mine dewatering activities. Additional activities proposed for general permits include bulk oil terminals, aquacultural facilities, and ready-mix concrete/concrete products. Land application systems for land disposal and lagoons are also permitted, and the municipal, community (private), and industrial land application systems will be included in this document as well as NPDES point source dischargers.

A completed draft permit is sent to the permittee, the SCDHEC District office, and if it is a major permit, to the USEPA for review. When the permit draft is finalized, a public notice is issued. Comments from the public are considered and, if requested, a public hearing may be arranged. Both oral and written comments are collected at the hearing, and after considering all information, the Department staff makes the decision whether to issue the permit as drafted, issue a modified permit, or to deny the permit. Everyone who participated in the process receives a copy of the final staff decision. It is anticipated that minor permits will be grouped by watershed and publicly noticed together; major permits will individually stand public review. Staff decisions may be appealed according to the procedures in Regulation 61-72.

Nonpoint Source Contributions

Nonpoint source pollutants are generally introduced to a waterbody during a storm event and enter the system from diverse areas. Nonpoint source contributions originate from a variety of activities that include agriculture, silviculture, construction, urban stormwater runoff, hydrologic modification, landfills, mining, and residual wastes.

Section 319 of the 1987 Amendments to the Clean Water Act required states to assess the nonpoint source water pollution associated with surface and groundwater within their borders and then develop and implement a management strategy to control and abate the pollution. The first Assessment of Nonpoint Source Pollution in South Carolina (SCDHEC 1989a) accomplished this purpose. The NPS Management Program developed strategies and targeted waterbodies for priority implementation of management projects. The priority list has been updated several times since then. The current list appears in the State Nonpoint Source Pollution Management Program (SCDHEC 1995b). Comprehensive projects are currently being implemented in a number of these watersheds. Components of the projects vary depending on the particular NPS impacts in the watershed, but all include BMP demonstrations, education, and monitoring.

The conventional §319 NPS Management Program has typically involved SCDHEC program areas or large institutional cooperators such as The Clemson Extension Service and the Department of Natural Resources undertaking large scale projects. In an effort to diversify the participation in the program, the Department has now allocated a portion of §319 funds to institute a new grants program known as Minigrants. In keeping with the Department's vision statement "Local Solutions to Local Problems", this program seeks to gain the involvement of smaller organizations like local governments, nonprofit organizations, and schools in NPS projects that are locally focused and generally smaller in scale.

Section 6217 of the 1990 Coastal Zone Act Reauthorization Amendments (CZARA) requires states with federally approved Coastal Zone Management Programs to develop Coastal Nonpoint Source Pollution Control Programs. At the federal level, the program is administered and funded jointly by the National Oceanic and Atmospheric Administration (NOAA) and EPA. In South Carolina, the Department's Office of Ocean and Coastal Resource Management and the Bureau of Water are responsible for development and implementation of the program. The Department submitted a State Nonpoint Source Pollution Management Program which satisfies the requirements of §6217 and §319, in October 1995.

The purpose of South Carolina's Nonpoint Source Pollution Management Program is to insure the protection and restoration of the state's waters from nonpoint source water pollution impacts. The

Plan document describes programs (both regulatory and voluntary) for NPS abatement, targets watersheds for NPS project implementation, and describes the state's strategy under each of the eight categories of NPS sources identified in South Carolina. In each of the categorical sections, management measures are described. Management measures are defined in §6217 as "economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution". The management measures address the following major categories: agriculture, forestry, urban areas, marinas/recreational boating, hydromodification, mining, land application of wastes, and wetlands. The Nonpoint Source Management Program initiates NPS projects during the implementation phase of a targeted basin.

Landfill Activities

All landfill activities within the State are permitted and regulated by the Department's Bureau of Land and Waste Management. All active and closed industrial and municipal solid waste landfills are identified in the appropriate watershed evaluations.

Mining Activities

Mining activities within the State are permitted by the Mining and Reclamation Division of the Department's Bureau of Land and Waste Management. Soil excavation activities and locations are identified in the appropriate watershed evaluations.

Recreational Camps

The two types of camping facilities permitted by the Department through Regulation 61-39 are Resident Camps and Family Camps. Resident camps are organized camps where one or more buildings are provided for sleeping quarters. These camps are typically operated for educational, recreational, religious, or health purposes. Family camps are organized camps where camp sites are provided for use by the general public or certain groups. The camp sewage is discharged into a public collection, treatment and disposal system if available, or else an onsite wastewater treatment and disposal system (septic tank) is used. Camp locations are identified in the appropriate watershed evaluations.

Groundwater Concerns

Groundwater is an important resource for drinking water use, together with agricultural, industrial and commercial usages. Based on USEPA Drinking Water Standards, the overall quality of South Carolina's groundwater is excellent. Contaminated groundwater is expensive and difficult to restore; therefore, groundwater protection for present and future usage is the management emphasis.

Localized sources of groundwater contamination can include: septic tanks, landfills (municipal and industrial), surface impoundments, oil and gas brine pits, underground storage tanks, above ground storage tanks, injection wells, hazardous waste sites (abandoned and regulated), salt water intrusion, land application or treatment, agricultural activities, road salting, spills and leaks.

For the purposes of this assessment, only groundwater contamination affecting surface waters will be identified. A more detailed accounting of groundwater contamination will be addressed in the Pee Dee Basin update in 2000. The groundwater contamination inventory (SCDHEC 1995c) was used to identify groundwater-related problem areas in the basin. Sites in the inventory are referenced by name and county, and are updated annually.

Water Supply

Water treatment facilities are permitted by the Department for municipal and industrial potable water production. As per the 1983 Water Use Reporting and Coordination Act (Act 282), all water uses over 100,000 gallons per day must report their usage. This includes industrial, agricultural, mining, golf courses, public supply, commercial, recreational, hydro power, thermo power, and nuclear power activities. Intake location and the volume removed from a stream are identified in the watershed evaluations for both municipal (potable) and industrial uses.

Capacity Use Program

As authorized under the Groundwater Use Act, the Department may declare a capacity use area if the resource is threatened by increasing demand or the potential problems of saltwater intrusion. The Capacity Use Program requires large groundwater users to obtain a permit in designated coastal areas. Permits are required for groundwater pumped in excess of 100,000 gallons on any day, 1,000,000 in a month, or 10,000,000 in a year. Permit owners are required to report the amount of groundwater pumped.

As part of the Capacity Use Program, the Department monitors a large number of wells to determine the relationship between water levels and pumpage in order to determine regional impacts and evaluate reserve supply. A reserve supply is maintained to offset drought conditions. Georgetown and Horry Counties and the "neck" of Marion County make up the Waccamaw Capacity Use Area in the Pee Dee Basin.

Stormwater Contributions

Stormwater discharges result from precipitation during rain events. Runoff washes pollutants associated with industrial activities (including construction activity), agricultural operations, and commercial and household sites directly into streams, or indirectly into drainage systems that eventually drain into streams. The SCDHEC Stormwater Permitting Program focuses on pollution prevention to reduce or eliminate stormwater pollution. The Department has general permitting authority for stormwater discharges associated with industrial activity, including construction. General permits SCR000000 and SCR100000 for industrial and construction activities, respectively, require permittees to develop and implement stormwater pollution prevention plans that establish best management practices to effectively reduce or eliminate the discharge of pollutants via stormwater runoff. There are currently a total of 416 industrial stormwater permits (341 active and 75 inactive) and 301 construction stormwater permits (238 active and 63 inactive) in the Pee Dee Basin.

The Stormwater and Agricultural Permitting Section is responsible for issuing NPDES storm water permits to prevent degradation of water quality as well as for issuing sediment and erosion control permits for construction sites. There are no municipally separate storm sewer systems in the watershed at the present time. Three sites permitted under SCR000000 discharge stormwater to Class ORW waters, and one site permitted under both SCR000000 and SCR100000 discharges to Class SFH waters.

In addition to the construction activity sites larger than five acres permitted under SCR100000, there are 197 sites smaller than five acres permitted under the S.C. Stormwater Management and Sediment Reduction Act in areas other than coastal counties. SCDHEC-OCRM manages the State sediment and erosion control in the coastal area.

Growth Potential and Planning

Land use and management can define the impacts to water quality in relation to point and nonpoint sources. Assessing the potential for an area to expand and grow allows for water quality planning to occur and, if appropriate, increased monitoring for potential impairment of water quality. Indicators used to predict growth potential include water and sewer service, road and highway accessibility, and population trends. These indicators and others were used as tools to determine areas within the Pee Dee Basin having the greatest potential for impacts to water quality as a result of development.

The regional Councils of Governments (COGs), located within the three watershed management units (WMU) of the Pee Dee Basin include: the Santee-Lynches Council of Governments in WMU-0401, the Pee Dee Regional Council in WMU-0401 and WMU-0402, and the Waccamaw Regional Planning and Development Council in WMU-0401, 0402, and 0403. The Councils of Governments were requested to identify areas of high growth potential that could adversely impact future water quality (Santee-Lynches Council of Governments 1995; Pee Dee Regional Council 1996; and Waccamaw Regional Planning and Development Council 1996). The COGs also provided locational information on the landfills, recreational waters, and camping facilities in their regions.

Many counties in the Pee Dee Basin lack county wide zoning ordinances; therefore, there is little local regulatory power to influence the direction or magnitude of regional growth. The majority of municipalities have zoning ordinances in place; however, much of the growth takes place just outside the municipal boundaries, where infrastructure is inadequate. The §208 Areawide Water Quality Management Plans were completed in great detail during the 1970's and are outdated. The process of updating the plans is currently underway, and public review and input will be sought as part of the process. If you are interested in participating, call your regional Council of Government or SCDHEC for more information.

Watershed boundaries extend along topographic ridges and drain surrounding surface waters. Roads are commonly built along ridge tops, with the best drainage conditions. Cities often develop in proximity to ridges as a result of their plateau terrain. It is not uncommon, then, to find cites or road corridors located along watershed boundaries, and thus influencing or impacting several watersheds.

Watershed Evaluations and Implementation Strategies Within WMU-0401

Watershed Management Unit (WMU) 0401 consists primarily of the ***Lynches River Basin*** and the ***Black River Basin***. WMU-0401 encompasses the Piedmont, Sandhills, Upper and Lower Coastal Plain, and Coastal Zone regions of the State. There are a total of 36 watersheds in WMU-0401, some 2.2 million acres of which 1.6% is urban land, 29.0% is agricultural land, 17.3% is scrub/shrub land, 0.2% is barren land, 40.8% is forested land, 17.3% is forested wetland, 0.5% is nonforested wetland, and 0.4% is water (SCLRCC 1990). There are a total of 5,467.0 stream miles in WMU-0401 and 995.0 acres of estuarine areas.

The Lynches River originates in North Carolina and is joined by Flat Creek, Fork Creek, the Little Lynches River, Sparrow Swamp, Big Swamp, and Lake Swamp before joining the Pee Dee River. The Black River flows into the Pee Dee River downstream of the Lake Swamp/Pee Dee River confluence. The Black River originates near the Town of Bishopville and accepts drainage from Rocky Bluff Swamp, the Pocotaligo River, Pudding Swamp, Kingstree Swamp Canal, and Black Mingo Creek.

Fish Consumption Advisory

A fish consumption advisory has been issued by the Department for the Lynches River, the Black River, and the Pocotaligo River advising people to limit the amount of some types of fish consumed from these waters and their tributaries due to mercury contamination. Pregnant women, infants, children, and people with neurologic diseases face the greatest risk of mercury related health problems and should not eat any fish from these waters. The fish consumption guidelines are based on diets of one type of fish only. If a person consumes several of the species listed for a river, then the person should cut back even further on the amounts of each species consumed. For example, if a person eats one pound of largemouth bass from the Lynches River, the person should not eat any bowfin or catfish from that river that month. The types of fish with mercury and the acceptable amounts of those fish that can be consumed are as follows: **Lynches River** (Bowfin - 0.75 lb./month, Largemouth Bass - 1 lb./month, Catfish - 1.5 lb./month); **Black River** (Bowfin - 0.5 lb./month, Largemouth bass - 0.75 lb./month); **Pocotaligo River** (Bowfin - 0.75 lb./month, Largemouth bass - 0.75 lb./month).

The source of mercury contamination in fish tested by the Department is uncertain. Mercury occurs naturally and may account for a portion of the levels found in fish tissue. Another source is deposition from the air, a result of the combustion of fossil fuels. The Department continues to monitor for mercury in ambient air and precipitation. A precipitation sampler is located at the Congaree Swamp National Monument as part of the National Air Deposition Program, Mercury Deposition Network. Weekly composite samples are collected for mercury analysis to provide background concentrations for application across the State. The continuous monitoring of mercury concentrations in air is also conducted at the site.

There is no data available linking mercury in wastewater discharges as a major source of mercury in fish, nor can mercury levels be traced to any industries. Naturally occurring low pH, low hardness, low alkalinity, and low dissolved oxygen levels commonly found in coastal plain swamps and blackwater streams are conditions that promote the transformation of inorganic mercury into methylmercury, the form most readily accumulated by fish. South Carolina is one of 40 states that are seeing high mercury levels in fish and have issued advisories. These states are working together and with the U.S. Environmental Protection Agency to try and identify the cause or causes of mercury in fish.

Climate

Normal yearly rainfall in the WMU-0401 area is 47.71 inches, according to the S.C. historic climatological record (SCWRC 1990). Data compiled from National Weather Service stations in Kershaw, Bishopville, Tilghman for Nursery, Sumter, Georgetown, Lake City, and Kingstree were used to determine the general climate information for this portion of the State. The highest level of rainfall occurs in the summer with 15.91 inches; 9.58, 10.74, and 11.48 inches of rain falling in the fall, winter, and spring, respectively. The average annual daily temperature is 63.7°F. Summer temperatures average 79.2°F and fall, winter, and spring temperatures are 64.7°F, 47.2°F, and 63.6°F, respectively.

03040202-030

(Lynches River)

General Description

Watershed 03040202-030 **(incorporating watersheds 03040105-080, 03040202-015, and 03040202-020)** is located in Lancaster and Chesterfield Counties and consists primarily of the ***Lynches River*** and its tributaries from where it enters South Carolina to Fork Creek. The watershed occupies 66,200 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Goldston-Pacolet-Cecil-Tatum-Whitestone series. The erodibility of the soil (K) averages 0.33; the slope of the terrain averages 13%, with a range of 0-45%. Land use/land cover in the watershed includes: 1.53% urban land, 27.34% agricultural land, 7.16% scrub/shrub land, 1.08% barren land, 62.68% forested land, and 0.21% water.

The Lynches River originates in North Carolina, and accepts drainage that also originates in North Carolina including Polecat Creek (Otter Creek, Silver Run), Buffalo Creek (Raccoon Branch Creek), and Dead Pine Creek. Hills Creek originates near the Town of Pageland and accepts the drainage of Mangum Branch, Cow Head Branch, and Conway Branch before flowing into the Lynches River downstream of Dead Pine Creek. Mill Creek originates near the headwaters of Mangum Creek and flows into North Carolina. Downstream of the Hills Creek confluence, the Lynches River accepts drainage from Wildcat Creek (North Branch Wildcat Creek, South Branch Wildcat Creek, Sutton Branch, Long Branch), Turkey Creek, Arant Branch, Shop Branch, Belk Branch (Horton Spring Branch), Cedar Falls Branch, Rocky Branch, and the Flat Creek Watershed. There are several ponds (10-50 acres) in this watershed used for recreation, flood control and municipal purposes, and a total of 178.2 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Lynches River- There are two monitoring sites along this section of the Lynches River, which was Class B until April, 1992. At the upstream site (PD-113), aquatic life uses may not be supported due to copper values in excess of the aquatic life acute standard, together with very high sediment concentrations of lead in 1993 and high concentrations in 1994. In addition, there is a significantly increasing trend in pH. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions, however a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions. Aquatic life uses are fully supported at the downstream site (PD-001) based on macroinvertebrate community data. Recreational uses are also fully supported.

Hills Creek (PD-333) - Aquatic life uses are fully supported, and a significantly decreasing trend in total phosphorus concentration suggests improving conditions. This creek was Class B until April, 1992. Recreational uses are partially supported due to fecal coliform bacteria excursions, however a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

North Branch Wildcat Creek (PD-179) - Aquatic life uses are fully supported, and significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and turbidity suggest improving conditions for these parameters. This creek was Class B until April, 1992. Recreational uses are not supported due to fecal coliform bacteria excursions.

South Branch Wildcat Creek (PD-180) - Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. This creek was Class B until April, 1992. Recreational uses are fully supported at this site, and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
LYNCHES RIVER TRIBUTARY BECKER MINERALS, INC./JEFFERSON PIPE #: 001 FLOW: 1.5	SC0046370 MINOR INDUSTRIAL EFFLUENT
NORTH BRANCH WILDCAT CREEK BUFORD SCHOOL/LANCASTER PIPE #: 001 FLOW: 0.035 WQL FOR DO,TRC,NH3N,BOD5	SC0030210 MINOR DOMESTIC WATER QUALITY
HILLS CREEK TOWN OF PAGELAND/NORTHWEST PLANT PIPE #: 001 FLOW: 0.3 WQL FOR DO,TRC,NH3N,BOD5	SC0021504 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Contributions

Hills Creek, North Branch Wildcat Creek, and the Lynches River within this watershed unit are included on the §319 high priority list of the Nonpoint Source Management Program and the 1996 §303(d) list due to concerns for fecal coliform bacteria. The Lynches River is on the §303(d) secondary list, and Hills Creek and North Branch Wildcat Creek are on the tertiary list due to fecal coliform concerns.

Lynches River/Hills Creek/Fork Creek Watershed Project

This agricultural watershed lies in Chesterfield County, which is the largest turkey producing county in the state. A §319 funded watershed project, completed in 1996, conducted an inventory of current waste management practices for poultry production. Litter spread on 17 farms in the watershed was collected and analyzed for nutrient content. Soil samples were also analyzed. Based on the data, recommendations were made as to application rates to fields. A demonstration of dead bird composting was also implemented.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
BECKER MINERALS, INC. JEFFERSON PLANT	0093-13 GRANITE
BREWER GOLD CO. BREWER MINE	0671-13 GOLD ORE

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
TOWN OF JEFFERSON (M) LYNCHES RIVER	1.70 0.90

Growth Potential

There is a low to moderate potential for growth in this watershed, which includes a portion of the Town of Pageland. The northeast corner of the watershed is the edge of the Charlotte Metroplex and future growth is expected. Pageland and the area immediately outside of the town have water and sewer service. In addition, water service has recently been extended to the Lynches River Industrial Park, which is under development by the electric cooperative along the S.C. 151/U.S. 601 corridor. Wal-Mart is constructing a food distribution center in the park, and spillover development from the park is expected. The section of U.S. 601 north to Charlotte is scheduled for widening in the next five years to four lanes. The remainder of the watershed is predominately rural with forested land and rangeland. The area along S.C. 265, where it crosses at the base of the watershed, has water service extended by the Town of Jefferson, but limited development is expected due to low lying lands.

Implementation Strategy

This portion of the Lynches River is impaired by elevated levels of copper and lead. Department personnel will investigate to determine the source of the metals. The river is also impaired by elevated levels of fecal coliform due to nonpoint sources. Department personnel will evaluate the possibility of naturally high levels of fecal resulting from wildlife populations. Hills

Creek and North Branch Wildcat Creek are impaired by elevated levels of fecal coliform bacteria from nonpoint sources. The Department's Watershed Implementation Staff will work with agriculture specialists from the Department and NRCS to determine, if possible, the source of the bacteria. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-040

(Flat Creek)

General Description

Watershed 03040202-040 is located in Lancaster County and consists primarily of ***Flat Creek*** and its tributaries. The watershed occupies 29,954 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Blanton-Goldston-Badin series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 12%, with a range of 2-45%. Land use/land cover in the watershed includes: 0.18% urban land, 9.48% agricultural land, 6.47% scrub/shrub land, 1.02% barren land, 82.56% forested land, and 0.30% water.

Flat Creek accepts drainage from Baker Creek (Ellis Creek), Childers Creek (Mine Branch), and Big Double Branch (Little Double Branch) in the upper portion of the watershed. Further downstream, Lick Creek flows into Flat Creek followed by Lick Run (Mill Branch) and Dry Creek. The Flat Creek Watershed flows into the Lynches River. There are a total of 79.9 stream miles in this watershed, all classified FW. Due to the absence of point source dischargers and the presence of endangered species and other special characteristics, portions of Flat Creek along with Lick Creek, Lick Run, Mill Branch, and Dry Creek may qualify as potential ORW candidates. An additional natural resource is the Heritage Trust Preserve surrounding Flat Creek and a tributary downstream from Lick Creek.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Flat Creek (PD-342) - Aquatic life uses are fully supported. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. This creek was Class B until April, 1992. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
CHILDERS CREEK	SCG730049
MINERAL MINING CORP.	MINOR INDUSTRIAL
PIPE: 001 FLOW: M/R	EFFLUENT

Growth Potential

There is a low potential for growth in this predominantly rural watershed.

Implementation Strategy

Flat Creek has impaired recreational uses due to elevated levels of fecal coliform from unknown sources, which places it on the 1996 §303(d) tertiary list. The Department's Watershed Implementation Staff will determine, where possible, the sources of the water quality impairments and recommend solutions to correct the problems. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-050

(Fork Creek)

General Description

Watershed 03040202-050 is located in Chesterfield County and consists primarily of ***Fork Creek*** and its tributaries. The watershed occupies 29,573 acres of the Piedmont and Sand Hills regions of South Carolina. The predominant soil types consist of an association of the Blaney-Candor-Vaucluse-Gilead series. The erodibility of the soil (K) averages 0.12; the slope of the terrain averages 7%, with a range of 1-15%. Land use/land cover in the watershed includes: 2.39% urban land, 34.94% agricultural land, 14.56% scrub/shrub land, 4.79% barren land, 42.55% forested land, and 0.77% water.

Fork Creek accepts drainage from Canal Branch (Shady Slash Branch), Gum Branch (Dry Branch, Clark Mill Branch), Mill Branch, Meeting House Branch, and Joes Branch before joining Little Fork Creek at the base of the watershed. Reedy Fork flows into Little Fork Creek to form Plyer Pond. Further downstream, Little Fork Creek flows through Lake Terry and accepts drainage from Mose Branch, Canal Branch, and Brazzell Branch. The Fork Creek Watershed flows into the Lynches River. There are a total of 62.8 stream miles and several recreational ponds (10-12 acres) in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Fork Creek - There are two SCDHEC monitoring sites along Fork Creek, which was Class B until April, 1992. At the upstream site (PD-067), aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. Aquatic life uses are partially supported at the downstream site (PD-068) based on macroinvertebrate data collected by ETT Environmental, Inc. (1995a). In addition, two high concentrations of copper were seen, along with several occurrences of copper in excess of the acute aquatic life standards, and a significantly increasing trend in turbidity. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform excursions.

Little Fork Creek (PD-215) - This creek was Class B until April, 1992. Aquatic life uses are fully supported upstream of the Brewer Gold Mine adit, but are not supported downstream of the adit based on several years of macroinvertebrate data collected by ETT Environmental, Inc. (1995a).

Department data indicate this is compounded by seven very high concentrations of copper, one high concentration of copper, additional occurrences of copper and zinc in excess of the acute aquatic life standards, pH excursions, a significantly declining trend in dissolved oxygen concentration, and a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site, and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
FORK CREEK DIXIE YARNS INC./CARO-KNIT PIPE #: 001 FLOW: 0.720 WQL FOR TRC,NH3N,BOD5	SC0002500 MAJOR INDUSTRIAL WATER QUALITY
BRAZZELL BRANCH TOWN OF JEFFERSON PIPE #: 001 FLOW: 0.15 WQL FOR TRC,NH3N,BOD5	SC0024767 MINOR DOMESTIC WATER QUALITY
BRAZZELL BRANCH TOWN OF JEFFERSON WTP PIPE #: 001 FLOW: 0.076 WQL FOR TRC	SC0041106 MINOR DOMESTIC WATER QUALITY
LITTLE FORK CREEK BREWER GOLD CO. PIPE #: 001 FLOW: 0.864 WQL FOR TRC,NH3N,BOD5	SC0040657 MINOR INDUSTRIAL WATER QUALITY

Nonpoint Source Contributions

Fork Creek and Little Fork Creek are included on the §319 list and the 1996 §303(d) secondary list in relation to toxics, pH, turbidity, and fecal coliform concerns. Fork Creek is included on the §319 high priority list of the Nonpoint Source Management Program.

Lynches River/Hills Creek/Fork Creek Watershed Project

This agricultural watershed lies in Chesterfield County, which is the largest turkey producing county in the state. A §319 funded watershed project, completed in 1996, conducted an inventory of current waste management practices for poultry production. Litter spread on 17 farms in the watershed was collected and analyzed for nutrient content. Soil samples were also analyzed. Based on the data, recommendations were made as to application rates to fields. A demonstration of dead bird composting was also implemented.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MARTIN MARIETTA MATERIALS CHESTERFIELD QUARRY	1062-15 GRANITE
BREWER SAND CO., INC. BREWER SAND PIT #2	0271-13 SAND

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
TOWN OF PAGELAND (M) LAKE TERRY	1.40 0.78

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Town of Jefferson and a portion of the Town of Pageland. The watershed is bisected by S.C. 151, which has recently been widened to four lanes and a bipass around Jefferson is being completed. S.C. 151 is a major travel corridor from Charlotte to Florence and Myrtle Beach, and additional commercial and industrial development is expected along this route. There is no sewer service in the watershed, but water service is provided for Jefferson and the area immediately surrounding it, along with a well water line running from Lake Terry to Pageland. Water service may be extended along S.C. 151 between Pageland and Jefferson, which could encourage growth.

Implementation Strategy

Consultants are continuing to monitor the macroinvertebrates in Fork Creek and Little Fork Creek due to NPDES permit conditions of Dixie Yarns, Inc. and Brewer Gold Mine. Continued review of the consultant data is recommended to document improvement or further degradation of the biological community in these streams. The Brewer Gold Mine is pursuing backfilling of the old pits to eliminate this source of nonpoint source runoff impact to Little Fork Creek. Fork Creek is also impaired by elevated levels of fecal coliform bacteria from nonpoint sources. The Department's Watershed Implementation Staff will work with agriculture specialists from the Department and NRCS to determine, if possible, the source of the bacteria. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-060

(Lynches River)

General Description

Watershed 03040202-060 is located in Kershaw and Chesterfield Counties and consists primarily of the ***Lynches River*** and its tributaries from Fork Creek to the Little Lynches River. The watershed occupies 122,316 acres of the Piedmont, Sand Hills, and Upper Coastal Plains regions of South Carolina. The predominant soil types consist of an association of the Alpin-Lakeland-Candor-Troup-Blanton series. The erodibility of the soil (K) averages 0.10; the slope of the terrain averages 8%, with a range of 0-25%. Land use/land cover in the watershed includes: 0.61% urban land, 21.64% agricultural land, 8.98% scrub/shrub land, 0.97% barren land, 64.77% forested land, 2.6% forested wetland, and 0.43% water.

This section of the Lynches River accepts drainage from an upper reach of the river (03040202-030) together with Rocky Creek (Long Branch, Little Rocky Creek, Fox Branch, Sycamore Pond), Buffalo Creek (Little Buffalo Creek, South Buffalo Creek, Raley Millpond), Big Sandy Creek (Sevenmile Branch, Oxpen Branch), and Little Sandy Creek. Further downstream, Jumping Gully (Horton Pond) enters the river followed by Swift Creek (North Prong, Rocky Prong, South Prong), Red Oak Camp Creek, Cedar Creek (McGee Branch, Park Pond, Sexton Pond), Hammond Branch (Beard Branch), and Blackwell Mill Stream. The Carolina Sandhills National Wildlife Refuge extends across Big Sandy Creek down to McGee Branch. The Sand Hill State Forest extends across the lower portion of the watershed below the wildlife refuge. There are numerous ponds (10-120 acres) in this watershed used for recreation and irrigation purposes, and a total of 241.8 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Lynches River - There are two monitoring sites along this section of the Lynches River, which was Class B until April, 1992. At the upstream site (PD-066), there were several occurrences of copper in excess of the acute aquatic life standards and one high concentration of copper measured by the Department; however, aquatic life uses are fully supported based on macroinvertebrate data collected over several years by ETT Environmental, Inc. (1995a). Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions. Recreational uses are fully supported at this site and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

There were also copper values in excess of the acute aquatic life standard recorded at the downstream site (PD-009), but aquatic life uses are again fully supported based on the consultant macroinvertebrate data. However, aquatic life uses may be threatened due to a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
LYNCHES RIVER	SC0001341
VERATEC	MAJOR INDUSTRIAL
PIPE #: 001 FLOW: 2.451	WATER QUALITY
WQL FOR TRC,BOD5	

Nonpoint Source Contributions

This section of the Lynches River is included on the §319 list and the 1996 §303(d) secondary list in relation to toxics, turbidity, and fecal coliform concerns.

Mining Activities

MINING COMPANY	***PERMIT #***
MINE NAME	***MINERAL***
APAC-CAROLINA, INC.	0082-13
ASPHALT PLANT #10	SAND

Growth Potential

There is a low potential for growth in this watershed, which contains portions of the Towns of Bethune and McBee. S.C. 151 runs between the Towns of Jefferson and McBee, and is currently being upgraded to four lanes. There is no sewer service in the watershed, but the Town of McBee has water service and may extend it along S.C. 151 to the north of town. The remainder of the watershed is rural with agricultural and timberland uses.

Implementation Strategy

The downstream site of the Lynches River is impaired by elevated levels of fecal coliform bacteria. The Department's Watershed Implementation Staff will determine, where possible, the source of the bacteria and recommend solutions to correct the problems. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-080

(Little Lynches River)

General Description

Watershed 03040202-080 **(incorporating 03040202-070)** is located in Lancaster and Kershaw Counties and consists primarily of the ***Little Lynches River*** and its tributaries. The watershed occupies 129,669 acres of the Piedmont and Sand Hills regions of South Carolina. The predominant soil types consist of an association of the Lakeland-Blanton-Wagram-Goldston series. The erodibility of the soil (K) averages 0.11; the slope of the terrain averages 10%, with a range of 0-45%. Land use/land cover in the watershed includes: 0.14% urban land, 16.37% agricultural land, 5.93% scrub/shrub land, 0.11% barren land, 73.74% forested land, 3.45% forested wetland, and 0.26% water.

Baskins Creek (Lyles Branch, Falls Branch, Bend Creek) is joined by Blackmon Branch to form the headwaters of the Little Lynches River. The Little Lynches River accepts drainage from Horton Creek (Little Lynches Creek, Sunrise Lake, Beckham Branch, Mobley Branch), Mill Creek, Camp Branch, Todds Branch, Haile Gold Mine Creek (Ledbetter Reservoir), and Neds Creek. Hanging Rock Creek (Lick Creek) flows past the City of Kershaw to join the Little Lynches River downstream of Neds Creek. Further downstream, the river accepts drainage from Gates Ford Branch, Shirley Creek, Mill Creek (Bakers Millpond), Beaver Dam Creek, and Bell Branch. The Little Lynches River Watershed flows into the Lynches River. There are several ponds (10-30 acres) used for recreation, irrigation, water supply, and municipal purposes in this watershed, and a total of 281.6 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Little Lynches River - There are five monitoring sites along the Little Lynches River (PD-006, PD-632, PD-109, PD-343, PD-344), which was Class B until April, 1992. Aquatic life uses are fully supported for all sites. The upstream (PD-006) and midstream sites (PD-632, PD-109) were supported by macroinvertebrate data collected by SCDHEC and ETT Environmental, Inc. (1995b). A very high concentration of zinc was measured in a 1992 sediment sample at the furthest upstream site, and a high concentration of copper was measured and P,P'DDT was detected in a 1994 sediment sample from the midstream site. Although the use of DDT was banned in 1973, it is very persistent in the environment. The upstream site also displayed significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Recreational uses are partially supported for all sites due to fecal coliform bacteria excursions.

Horton Creek (PD-335) - Aquatic life uses are fully supported, and recreational uses are partially supported due to fecal coliform bacteria excursions. This creek was Class B until April, 1992.

Todds Branch (PD-005) - Aquatic life uses are fully supported, and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions. This creek was Class B until April, 1992. Recreational uses are not supported due to fecal coliform bacteria excursions, but a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Haile Gold Mine Creek (PD-334) - Aquatic life uses are fully supported upstream of Ledbetter Reservoir based on macroinvertebrate data collected by ETT Environmental, Inc. (1995b). Aquatic life uses are partially supported in Ledbetter Reservoir based on the consultant data, however the most recent sampling indicates improvement over past samples. Downstream of the reservoir, aquatic life uses are not supported based on consultant data, pH excursions, occurrences of copper and zinc in excess of the acute aquatic life standards, and one high concentration each of chromium and zinc. Sediment samples revealed a very high concentration of mercury and a high concentration of nickel in 1993. Recreational uses are fully supported at this site, which was Class B until April, 1992.

Hanging Rock Creek (PD-328) - Aquatic life uses are fully supported, and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions. This creek was Class B until April, 1992. Recreational uses are not supported due to fecal coliform bacteria excursions.

Lick Creek (PD-329) - Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions. Recreational uses are not supported due to fecal coliform bacteria excursions. In addition, there is a significantly increasing trend in fecal coliform bacteria concentrations.

Little Lynches Creek (PD-640) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Activities Potentially Affecting Water Quality

Point Source Contributions

Hanging Rock Creek is included on the 1996 §303(d) tertiary list and Lick Creek may be added to the list due to point source related concerns for fecal coliform bacteria.

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION
LITTLE LYNCHES RIVER BREWER GOLD CO./SPRINGS PROJECT PIPE #: 001 FLOW: M/R MINE DRAINAGE; CURRENTLY NO ACTIVITY	SC0045519 MINOR INDUSTRIAL EFFLUENT
BECKHAM BRANCH TOWN OF HEATH SPRINGS/WWTP PIPE #: 001 FLOW: 0.075 WQL FOR DO,TRC,NH3N	SC0040118 MINOR DOMESTIC WATER QUALITY
BECKHAM BRANCH TRIBUTARY HEATH SPRINGS ELEMENTARY PIPE #: 001 FLOW: 0.012 WQL FOR DO,TRC,NH3N	SC0035301 MINOR DOMESTIC WATER QUALITY
HAILE GOLD MINE CREEK HAILE MINING VENTURE PIPE #: 001 FLOW: M/R WQL FOR TRC PIPE #: 002 FLOW: M/R	SC0040479 MINOR INDUSTRIAL WATER QUALITY EFFLUENT
HANGING ROCK CREEK TOWN OF KERSHAW WTP PIPE #: 001 FLOW: M/R WQL FOR TRC	SC0041050 MINOR DOMESTIC WATER QUALITY
HORTON CREEK TRIBUTARY ANDREW JACKSON HIGH SCHOOL PIPE #: 001 FLOW: 0.025 WQL FOR DO,TRC,NH3N	SC0030198 MINOR DOMESTIC WATER QUALITY
LICK CREEK TOWN OF KERSHAW WWTP PIPE #: 001 FLOW: 1.00 WQL FOR DO,TRC,NH3N	SC0025798 MAJOR DOMESTIC WATER QUALITY
LICK CREEK SPRINGS IND./KERSHAW PLT #2 PIPE #: 001 FLOW: M/R	SCG250019 MAJOR DOMESTIC EFFLUENT

Nonpoint Source Contributions

The Little Lynches River, Todds Branch, Horton Creek, Hanging Rock Creek, and Lick Creek are listed on the §319 list and the 1996 §303(d) tertiary list due to concerns for fecal coliform, and a tributary to Hanging Rock Creek is listed for both fecal coliform and turbidity concerns. Haile Gold Mine Creek is included on the §319 list and the 1996 §303(d) secondary list of waters that may require TMDL development in relation to toxics and pH concerns.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
JIM LINEBERG GRADING & PAVING PARKER/BLACKWELL PIT	0440-29 SAND
PIEDMONT MINING CO., INC. HAILE MINE	0601-29 GOLD ORE
MINERAL MINING CORP. HILLTOP MINE	0214-29 SERICITE
BREWER GOLD CO. SPRINGS PROJECT MINE	0933-29 GOLD ORE

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
TOWN OF KERSHAW (M) LICK CREEK	0.800 0.356

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Kershaw, and portions of the Towns of Heath Springs and Bethune. A rail line connects the Town of Kershaw to the Cities of Lancaster and Camden along U.S. 521, and may provide some future growth. The remainder of the watershed is rural with agricultural and timberland uses.

Implementation Strategy

Many of the impacts in Haile Gold Mine Creek are believed to be associated with nonpoint source runoff from old tailings at Haile Gold Mine. Current remedial activities conducted by Haile Mining Venture, including capping and revegetation of the Red Hill waste rock dump area, and revegetation and construction of stormwater holding ponds within the watershed seem to be resulting in marked improvements in water quality. Continued review of the consultant data will show if macroinvertebrate community recovery continues and if site restoration efforts are effective.

The Little Lynches River, Todds Branch, and Lick Creek are impaired by elevated levels of fecal coliform from nonpoint sources. The Department's Watershed Implementation Staff will determine, where possible, the sources of the water quality impairments and recommend solutions to correct the problems. Horton Creek is also impaired due to fecal coliform bacteria, and the Departments's Watershed Implementation Staff will work with agriculture specialists from the Department and NRCS to determine, if possible, the source of the bacteria.

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-090

(Lynches River)

General Description

Watershed 03040202-090 is located in Lee, Darlington, Florence, Sumter, Chesterfield, and Kershaw Counties and consists primarily of the ***Lynches River*** and its tributaries from the Little Lynches River to Sparrow Swamp. The watershed occupies 129,183 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Alpin-Rains-Chastain-Noboco-Lynchburg series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 3%, with a range of 0-15%. Land use/land cover in the watershed includes: 0.95% urban land, 33.13% agricultural land, 22.69% scrub/shrub land, 0.01 barren land, 29.23% forested land, 12.90% forested wetland, 0.31% nonforested wetland, and 0.78% water.

This portion of the Lynches River accepts drainage from the upper reaches (03040202-030, 03040202-060) together with Turkey Creek, Merchants Mill Creek, and Bells Branch. The river then flows past the City of Bishopville and Lee State Park before accepting drainage from Mill Branch, another Mill Branch, Rose Branch, and Back Swamp. Further downstream, another Back Swamp drains into the river followed by Polecat Branch (Mill Bay). The Lynches River State Park is located near the confluence of the Lynches River and Sparrow Swamp. There are several ponds (10-35 acres) used for recreation and irrigation purposes in this watershed and a total of 378.5 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Lynches River - There are six monitoring sites along this section of the Lynches River, portions of which were Class B until April, 1992. Recreational uses are fully supported at all sites, and a significantly decreasing trend in fecal coliform bacteria concentration at the furthest upstream site suggests improving conditions. Aquatic life uses may not be supported at the furthest upstream site (PD-080) due to occurrences of copper in excess of the acute aquatic life standards and a high concentration of zinc. In addition, there is a significantly decreasing trend in dissolved oxygen concentration, and a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. At the next site downstream (PD-071), aquatic life uses are fully supported but may be threatened by significantly increasing trends in pH and five-day biochemical oxygen demand. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Further downstream at PD-106, aquatic life uses are fully supported but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Aquatic life uses are fully supported at the next site downstream (PD-364), but may not be supported further downstream at PD-319 due to occurrences of copper in excess of the acute aquatic life standards and a high concentration of zinc. In addition, there is a significantly increasing trend in five-day biochemical oxygen demand. At the furthest downstream site (PD-093), aquatic life uses are fully supported.

***Cousar Branch (PD-112)* -** This creek was Class B until April, 1992. Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions, but a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

***Lee State Park Lake* -** Aquatic herbicides were used in 1989-1992 and again in 1994 and 1995 to control aquatic plants and provide access for swimming and boating.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
LYNCHES RIVER	LEE STATE PARK
LYNCHES RIVER TRIBUTARY	CAMP DELANO

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
LYNCHES RIVER	SC0035378
CITY OF BISHOPVILLE	MAJOR DOMESTIC
PIPE #: 001 FLOW: 2.5	WATER QUALITY
WQL FOR TRC	
LYNCHES RIVER	SC0042676
TOWN OF LYNCHBURG	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.107	EFFLUENT

LYNCHES RIVER TOWN OF LAMAR PIPE #: 001 FLOW: 0.25 PIPE #: 001 FLOW: 0.65 (PROPOSED)	SC0043702 MINOR DOMESTIC EFFLUENT EFFLUENT
LYNCHES RIVER NATIONAL DYE WORKS PIPE #: 001 FLOW: 0.054	SC0040363 MINOR INDUSTRIAL EFFLUENT
LYNCHES RIVER REEVES BROS./BISHOPVILLE PIPE #: 001 FLOW: 2.5 WQL FOR TRC	SC0001490 MAJOR INDUSTRIAL WATER QUALITY
BACK SWAMP TOWN OF LYNCHBURG WTP PIPE #: 001 FLOW: M/R WQL FOR TRC; WETLAND	SC0025411 MINOR DOMESTIC WATER QUALITY
BACK SWAMP TOWN OF LYNCHBURG WTP PIPE #: 001 FLOW: M/R	SCG655008 MINOR DOMESTIC EFFLUENT

Nonpoint Source Contributions

Cousar Branch is included on the §319 list and the 1996 §303(d) tertiary list due to concerns for fecal coliform.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
LEE COUNTY LANDFILL MUNICIPAL	DWP-038 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
LEE COUNTY MCCASKILL MINE	0423-31 SAND

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains portions of the City of Bishopville and the Town of Lynchburg. U.S. 76 and a rail line cross the watershed south of Lynchburg connecting the Cities of Sumter and Florence. Interstates I-20 and I-95 also cross the watershed and some growth may be seen around the interchanges. An additional source of future growth is the new Lee Correctional Institution. The Darlington County Water and Sewer Authority may extend water lines into the area east of the Lynches River, which could precipitate residential growth, but no significant commercial or industrial growth. The remainder of the watershed is rural with agricultural and timberland uses.

Implementation Strategy

This portion of the Lynches River is impaired by elevated levels of copper and zinc from unknown sources, which places it on the 1996 §303(d) secondary list. Biological community data are needed to determine the ecological significance of the metal excursions and should be acquired where feasible. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-100

(Sparrow Swamp)

General Description

Watershed 03040202-100 **(incorporating 03040202-110)** is located in Darlington, Florence, and Lee Counties and consists primarily of ***Sparrow Swamp*** and its tributaries. The watershed occupies 148,211 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Noboco-Norfolk-Bonneau-Lynchburg series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.53% urban land, 47.81% agricultural land, 21.44% scrub/shrub land, 0.01% barren land, 23.73% forested land, 6.10% forested wetland, 0.03% nonforested wetland, and 0.35% water.

Sparrow Swamp originates near the City of Hartsville, and accepts drainage from Burnt Branch before flowing through Smith Pond (56 acres) and Marco Millpond (150 acres). Gully Run flows through Bell Pond and joins Sparrow Swamp in Marco Millpond. Long Branch enters the swamp downstream, followed by Harris Branch and Screeches Branch. Boggy Gully Swamp (The Bay, Big Cypress Bay, Little Cypress Bay, Boggy Gully Bay, Bees Wax Bay, Dargans Bay) also originates near Hartsville, and flows through Harolds Millpond and Andrews Millpond before draining into Sparrow Swamp. Sparrow Swamp then accepts drainage from McCalls Branch, Newman Swamp, Boyds Pond, Long Branch, Deep Hole Swamp (Camel Branch, Bay Branch, Bay Lake, Poplar Branch), and Magnolia Branch. Lake Swamp (Horse Branch) enters the system next followed by Long Branch (Meadow Prong) at the base of the watershed. The Sparrow Swamp Watershed flows into the Lynches River. There are numerous ponds and lakes in this watershed (10-150 acres) used for recreation and irrigation purposes, and a total of 413.7 stream miles. Sparrow Swamp, Newman Swamp, and Lake Swamp are classified FW* (Dissolved oxygen not less than 4 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Sparrow Swamp - There are two monitoring sites along this stream, which was Class B until April, 1992. At the upstream site (PD-072), aquatic life uses are fully supported but may be threatened due to a significantly decreasing trend in pH. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are fully supported. Aquatic life uses are also fully supported at the downstream site (PD-332), but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. Sediment samples revealed a high concentration of zinc and O,P'DDD (a metabolite of DDT) in 1992, and P,P'DDT in 1994. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported, but may be threatened by a significantly increasing trend in fecal coliform bacteria concentrations.

Newman Swamp (PD-229) - Aquatic life uses are fully supported but may be threatened due to significantly decreasing trends in dissolved oxygen concentration and pH and a significantly increasing trend in turbidity. This creek was Class B until April, 1992. Recreational uses are not supported due to fecal coliform bacteria excursions. In addition, there is a significantly increasing trend in fecal coliform bacteria concentrations.

Lake Swamp (PD-345) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)*** ***COMMENT***	***NPDES#*** ***TYPE*** ***LIMITATION***
SPARROW SWAMP TOWN OF TIMMONSVILLE WWTP PIPE #: 001 FLOW: 2.0 WQL FOR TRC,NH3N; WETLAND	SC0025356 MAJOR DOMESTIC WATER QUALITY
LAKE SWAMP PANTRY #329/TIMMONSVILLE PIPE #: 001 FLOW: M/R WQL FOR TRC,NH3N; WETLAND	SC0041980 MINOR INDUSTRIAL WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
SPRAYFIELD TOWN OF LAMAR	ND0063495 DOMESTIC

Nonpoint Source Contributions

Newman Swamp is included on the §319 list and the 1996 §303(d) tertiary list due to concerns for fecal coliform and turbidity.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
OLD LAMAR ACADEMY SANITARY	--------- CLOSED
TOWN OF LAMAR SANITARY	--------- CLOSED
CROSS SWAMP ROAD SANITARY	--------- CLOSED
ST. PAUL ROAD SANITARY	--------- CLOSED
TOWN OF TIMMONSVILLE LANDFILL CONSTRUCTION ONLY	--------- ACTIVE

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Towns of Lamar and Timmonsville. U.S. 76 and a rail line cross the watershed at the Town of Timmonsville connecting the Cities of Sumter and Florence, and U.S. 401 crosses the watershed at the Town of Lamar. There are no plans to widen highway corridors U.S. 401 or U.S. 76 west of Timmonsville at this time; however, there are plans to widen U.S. 76 east of Timmonsville to I-95, which would bring about commercial growth. Water and sewer services are provided for the Towns of Lamar and Timmonsville and the areas immediately surrounding them. Improved water and sewer systems in these towns holds the potential for future industrial growth in the area. Interstates I-20 and I-95 cross the watershed, and an expansion of the Timmonsville Water and Sewer System along S.C. 403 to I-95 (the only interstate interchange in the watershed) is being planned. The remainder of the watershed is rural with agricultural and timberland uses.

Implementation Strategy

Newman Swamp has impaired recreational uses due to elevated levels of fecal coliform. The suspected sources are associated with stormwater runoff and collection system failures. Department personnel will investigate and evaluate the collection system for enforcement action. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-120

(Lynches River)

General Description

Watershed 03040202-120 is located in Florence County and consists primarily of the ***Lynches River*** and its tributaries from Sparrow Swamp to its confluence with the Pee Dee River. The watershed occupies 103,055 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Cantey-Chastain-Norfolk series. The erodibility of the soil (K) averages 0.22; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.44% urban land, 27.88% agricultural land, 27.52% scrub/shrub land, 0.02% barren land, 30.75% forested land, 13.24% forested wetland, 0.08% nonforested wetland, and 0.09% water.

This segment of the Lynches River accepts drainage from the upstream reaches (03040202-030, 03040202-060, 03040202-090) together with Mill Branch, Carter Creek (Big Branch), Bay Branch (Polecat Branch), McCall Branch (Taylor Branch), and Ward Mill Branch. Further downstream, Cypress Branch enters the river followed by Green Spring Branch (Cox Bay Branch, Horse Branch), Millpond Branch, High Hill Drainage Canal, the Big Swamp Watershed, Deep Creek, and the Lake Swamp Watershed. There are several recreational ponds (12-54 acres) in this watershed and a total of 278.5 stream miles, all classified FW. The Lynches River State Park extends across the upper portion of the watershed.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Lynches River - There are two monitoring sites along this section of the Lynches River. Recreational uses are fully supported at both sites. Aquatic life uses are fully supported at the upstream site (PD-041), but may be threatened by significantly decreasing trends in dissolved oxygen concentration and pH, a significantly increasing trend in turbidity, and a high concentration of zinc. Aquatic life uses are also fully supported at the downstream site (PD-281), but may be threatened by a significantly increasing trend in turbidity. Sediment samples revealed high concentrations of lead and zinc, and a very high concentration of copper in 1994. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions at both sites for these parameters.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *LIMITATION*
LYNCHES RIVER CITY OF JOHNSONVILLE/EAST PLT PIPE #: 001 FLOW: 3.0 WQL FOR TRC,NH3N	SC0025933 MAJOR DOMESTIC WATER QUALITY
LYNCHES RIVER MCCALL FARMS INC. PIPE #: 001 FLOW: 0.10	SC0039284 MINOR INDUSTRIAL EFFLUENT
LYNCHES RIVER WELLMAN INC./JOHNSONVILLE PIPE #: FLOW: 0.13	SC0041718 MINOR INDUSTRIAL EFFLUENT
LYNCHES RIVER CITY OF LAKE CITY/LAKE SWAMP WWTP PIPE #: 001 FLOW: 4.20 IN SUMMER; 6.0 IN WINTER PROPOSED - NEVER CONSTRUCTED; WQL FOR NH3N	SC0046311 MAJOR DOMESTIC WATER QUALITY
HIGH HILL DRAINAGE CANAL CITY OF LAKE CITY/SCRANTON CONVL. CENTER PIPE #: 001 FLOW: 0.04 WQL FOR DO,TRC,NH3N,BOD5; WETLAND	SC0036226 MINOR DOMESTIC WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
TILEFIELD DEWEY CARTER SCHOOL	ND0014583 DOMESTIC
SPRAYFIELD FLORENCE COUNTY/DIST. #6	ND0070424 DOMESTIC

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
FLORENCE COUNTY LANDFILL CONSTRUCTION	--------- CLOSED
WELLMAN INC. LANDFILL INDUSTRIAL	---------- ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
HANCOCK UTILITIES HANCOCK UTILITIES MINE #2	0971-21 SAND/CLAY
CAROLINA SAND, INC. JOHNSONVILLE PLANT	0648-21 SAND
CAROLINA SAND, INC. LYNCHES RIVER MINE	0719-21 SAND

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Coward and a portion of the Town of Scranton. Water service is available in the Towns of Coward and Scranton, but sewer service is available only in Scranton. The watershed is bisected by U.S. 52 and a rail line running north/south and by U.S. 378 running east/west. U.S. 52 is a major highway route from the City of Florence to the City of Charleston. Portions not already widened to four lanes are expected to be within 10-15 years, which could encourage industrial growth.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-130

(Big Swamp)

General Description

Watershed 03040202-130 is located in Florence County and consists primarily of ***Big Swamp*** and its tributaries. The watershed occupies 39,957 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Norfolk-Lynchburg-Wagram series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.19% urban land, 26.41% agricultural land, 35.58% scrub/shrub land, 32.59% forested land, 5.10% forested wetland, 0.01% nonforested wetland, and 0.11% water.

Big Swamp originates near the Town of Pamplico with the confluence of Big Swamp Branch (Gum Branch) and Buck Branch. Further downstream, Cypress Branch and Little Swamp enters the system. There are a total of 75.3 stream miles in this watershed. Big Swamp is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW. The Big Swamp Watershed flows into the Lynches River.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Big Swamp - There are two monitoring sites along this stream, which was Class B until April, 1992. Aquatic life uses are fully supported at the upstream site (PD-168), but may be threatened by a significantly decreasing trend in dissolved oxygen concentration. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are partially supported at the upstream site due to fecal coliform bacteria excursions. In addition, there is a significantly increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are also fully supported at the downstream site (PD-169), but may be threatened by significantly increasing trends in pH and turbidity. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are fully supported at the downstream site. Both sites are secondary monitoring stations and sampling is purposely biased towards periods with the potential for low dissolved oxygen concentrations. This stream frequently does not flow or is dry at the monitoring locations. Although dissolved oxygen excursions occurred, they were typical of values seen in stagnant streams and were considered natural, not standards violations.

Cypress Branch (PD-631) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BIG SWAMP TOWN OF PAMPLICO PIPE #: 001 FLOW: 0.2 WQL FOR DO,TRC,NH3N,BOD5	SC0021351 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Contributions

Big Swamp is included on the §319 list and the 1996 §303(d) tertiary list due to concerns for fecal coliform bacteria. Cypress Branch is also included on the §319 list due to impacted macroinvertebrate communities.

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Pamplico. Water and sewer services are available in and immediately surrounding Pamplico. The remainder of the watershed is rural with agricultural uses.

Implementation Strategy

Big Swamp is impaired by elevated levels of fecal coliform from nonpoint sources. The Department's Watershed Implementation Staff will determine, where possible, the sources of the water quality impairments and recommend solutions to correct the problems. Cypress Branch has an impaired macroinvertebrate community due to nonpoint sources. The macroinvertebrate data for this stream were evaluated after development of the 1996 §303(d) list and Cypress Branch may be added when the list is updated in 1998. The Department will review the results of the biological samples to determine the cause of impairment. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040202-170

(Lake Swamp)

General Description

Watershed 03040202-170 **(incorporating 03040202-140, -150, -160)** is located in Florence and Williamsburg Counties and consists primarily of ***Lake Swamp*** and its tributaries. The watershed occupies 117,791 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Lynchburg-Fuquay-Foreston-Rains-Goldsboro series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 2.18% urban land, 38.32% agricultural land, 17.52% scrub/shrub land, 0.05% barren land, 33.20% forested land, 8.57% forested wetland, 0.12% nonforested wetland, and 0.04% water.

Camp Branch and Twomile Branch (Cypress Branch, Sandy Run Branch, Spring Run) merge near the City of Lake City to form the headwaters of Lake Swamp. Singleton Swamp, formed by the confluence of Smith Swamp (Spring Bay, Graham Branch) and McNamee Swamp, enters Lake Swamp midstream. The Lake Swamp Watershed drains into the Lynches River. There are a few ponds (12-25 acres) in this watershed used for recreation and irrigation purposes and a total of 229.4 stream miles in this watershed. Lake Swamp is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Lake Swamp - There are three SCDHEC monitoring sites along this stream, which was Class B until April, 1992. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported at the upstream site (PD-085). Support of aquatic life uses is corroborated by macroinvertebrate data collected by ETT Environmental, Inc. (1993). A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and turbidity suggest improving conditions for these parameters. The consultant macroinvertebrate data also indicate severe impacts in the vicinity of the Lake City wastewater treatment plant discharge between the Department's upstream and midstream sites, and recovery of the macroinvertebrate community downstream of the discharge.

Aquatic life uses are fully supported at the midstream site (PD-086a), but may be threatened by a significantly increasing trend in turbidity. Support of aquatic life use is corroborated by the consultant data. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions. Aquatic life and recreational uses are fully supported at the downstream site (PD-087). A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions.

Camp Branch (PD-346) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Support of aquatic life uses is corroborated by macroinvertebrate data collected by ETT Environmental, Inc. (1993).

Singleton Swamp (PD-314) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
LAKE SWAMP	SC0038164
CITY OF LAKE CITY/ LAKE SWAMP WWTP	MAJOR DOMESTIC
PIPE #: 001 FLOW: 4.2	WATER QUALITY
WQL FOR DO,TRC,NH3N,BOD5; WETLAND	

Landfill Activities

SOLID WASTE LANDFILL NAME	***PERMIT #***
FACILITY TYPE	***STATUS***
CITY OF LAKE CITY LANDFILL	DWP-911
CONSTRUCTION ONLY	ACTIVE
CITY OF LAKE CITY LANDFILL	----------
SANITARY	CLOSED

Mining Activities

MINING COMPANY	***PERMIT #***
MINE NAME	***MINERAL***
HANCOCK UTILITIES	0910-21
HANCOCK MINE #1	SAND/CLAY

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the City of Lake City and the Town of Scranton. Water and sewer services are limited to the urban areas of Lake City and Scranton. The sewer system in Scranton and the wastewater system in Lake City are currently undergoing an expansion. The watershed is traversed by U.S. 52 (north/south) and U.S. 378 (east/west). U.S. 52 is a four-lane highway, and the main corridor between the Cities of Florence and Charleston. A rail line parallels the road corridor between Lake City and Florence. This highway corridor contains the NanYa Industrial Complex and a surrounding multi-county industrial park, making this a prime industrial growth corridor in the region. The Florence County Industrial Park at Lake City and the recently expanded water and sewer capacity of the City of Lake City should also encourage industrial growth. There are no plans to widen U.S. 378, but it is a major beach access highway. Additional commercial development is possible along U.S. 52 and at the U.S. 52/U.S. 378 intersection.

Implementation Strategy

Lake Swamp is impaired by elevated levels of fecal coliform from a point source; however, the facility is relocating its discharge to the Lynches River and bacterial conditions are expected to improve. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-010

(Black River)

General Description

Watershed 03040205-010 **(incorporating 03040205-020)** is located in Lee and Sumter Counties and consists primarily of the ***Black River*** and its tributaries from its origin to Church Branch. The watershed occupies 67,970 acres of the Sand Hills and Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Noboco-Bonneau-Paxville-Johnston-Lynchburg series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 3%, with a range of 0-10%. Land use/land cover in the watershed includes: 0.66% urban land, 49.60% agricultural land, 22.66% scrub/shrub land, 17.85% forested land, 7.87% forested wetland, 1.22% nonforested wetland, and 0.14% water.

The Black River originates near the City of Bishopville and accepts drainage from Gin Branch (Laws Branch), Broad Branch, Church Branch (Meadow Branch), and Casual Branch. Further downstream, Stony Run Branch (Little Stony Run Branch) enters the river followed by Nancy Branch and Atkins Drainage Canal. The river flows through the Black River Swamp at the base of the watershed. There are several recreational ponds (10-30 acres) and a total of 146.2 stream miles in this watershed. The Black River is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Black River **-** There are two monitoring sites along this section of the Black River, which was Class B until April, 1992. Aquatic life uses are fully supported at the upstream site (PD-186), and a significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. Aquatic life and recreational uses are both fully supported at the downstream site (PD-353). Although dissolved oxygen excursions occurred at both sites, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Canal draining to Atkins Drainage Canal (PD-354) **-** Aquatic life and recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
GIN BRANCH LEE COUNTY REGIONAL RECYCLING PIPE #: 001 FLOW: 1.47 WQL FOR DO,TRC,NH3N,BOD5	SC0044792 MINOR INDUSTRIAL WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
SPRAYFIELD TOWN OF MAYESVILLE	ND0069787 DOMESTIC

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
LEE COUNTY LANDFILL DOMESTIC	-------- CLOSED

Growth Potential

There is a moderate potential for growth in this watershed, which contains a portion of the City of Bishopville and the Towns of Mayesville and Lynchburg, together with portions of I-20, U.S. 15, and U.S. 76. Residential, commercial, and industrial growth is expected surrounding the municipal areas and major road corridors. The remainder of the watershed is rural with agricultural and timberland uses.

Implementation Strategy

The Black River is impaired by elevated levels of fecal coliform from unknown sources, which places it on the 1998 §303(d) tertiary list. The Department's Watershed Implementation Staff will determine, where possible, the sources of the water quality impairments and recommend solutions to correct the problems. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-050

(Rocky Bluff Swamp)

General Description

Watershed 03040205-050 **(incorporating 03040205-030, -040, -060)** is located in Sumter, Lee, and Kershaw Counties and consists primarily of ***Rocky Bluff Swamp*** and its tributaries. The watershed occupies 170,605 acres of the Sand Hills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Wagram-Pelion-Noboco-Norfolk-Rains series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 5%, with a range of 0-15%. Land use/land cover in the watershed includes: 0.62% urban land, 38.83% agricultural land, 17.35% scrub/shrub land, 0.01% barren land, 32.15% forested land, 10.03% forested wetland, 0.38% nonforested wetland, and 0.63% water.

Rocky Bluff Swamp accepts drainage from Lee Swamp (Ardis Pond) and then flows through Whites Millpond near the City of Sumter. Brunson Branch (Mile Branch, Mulberry Branch) flows into the system downstream of Whites Millpond, followed by Cowpen Swamp, Scape Ore Swamp, Alligator Branch, and Concord Branch. Scape Ore Swamp is formed at the top of the watershed by Timber Creek (Grassy Bottom Branch, Maple Branch, Long Branch, Nancy Branch, Pates Mill Branch, Fuzzy Branch) and Black Creek. Downstream of the confluence, Scape Ore Swamp accepts drainage from Cedar Creek, Cedar Creek Pond, Gum Springs Branch, Beaverdam Creek, Mechanicsville Swamp (McGrits Creek, McGrits Millpond, Ashwood Lake), and Long Branch (Little Long Branch). The Rocky Bluff Swamp Watershed flows into the Black River. There are numerous lakes and ponds (10-75 acres) used for recreation and irrigation purposes in this watershed, and a total of 437.0 stream miles. Rocky Bluff Swamp and Lee Swamp are classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.0) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Rocky Bluff Swamp - There are two monitoring sites along Rocky Bluff Swamp (PD-357, PD-201), which was Class B until April, 1992. Aquatic life and recreational uses are fully supported at both sites; however, aquatic life uses may be threatened by a significantly decreasing trend in dissolved oxygen concentration and a significantly increasing trend in turbidity at the upstream site. Although dissolved oxygen excursions occurred at both sites, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Scape Ore Swamp (PD-355) - This creek was Class B until April, 1992. Aquatic life uses are fully supported. Although pH excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Mechanicsville Swamp (PD-356) - This creek was Class B until April, 1992. Aquatic life and recreational uses are fully supported.

Beaverdam Creek (PD-636) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Ashwood Lake - Categorized as a minor lake, Ashwood Lake is a 75-acre impoundment on McGirts Creek, with a maximum depth of approximately 13 feet (4.0 meters) and an average depth of approximately three feet (0.9 meters). Lake Ashwood's watershed comprises 10 square miles (27 km2). Eutrophication assessments indicate that Lake Ashwood is one of the least eutrophic small lakes in South Carolina, characterized by the low nutrient concentrations, low pH, and dark color typical of Sandhills impoundments. Preservation of this lake's desirable trophic condition is recommended. Ashwood lake was stocked with 750 grass carp in 1989 and treated with aquatic herbicides in 1990, 1992, and 1995 to control aquatic plants and provide access for boating and fishing.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
SCAPE ORE SWAMP TRIBUTARY	CAMP IN THE PINES

Activities Potentially Affecting Water Quality

Nonpoint Source Contributions

Scape Ore Swamp is included on the §319 high priority list of the Nonpoint Source Management Program and the 1996 §303(d) tertiary list due to concerns for fecal coliform.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
SUMTER COUNTY LANDFILL MUNICIPAL	DWP-091 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
LEE COUNTY LEE COUNTY BORROW PIT	1042-31 SAND/CLAY

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
CAMP IN THE PINES/RESIDENT SCAPE ORE SWAMP TRIBUTARY	- 31-0201 ACTIVE

Growth Potential

There is a high potential for residential, commercial, and industrial growth in the area fringing the City of Sumter. There is a more moderate growth potential for the corridor along U.S. 76 en route from Sumter to the City of Florence, and I-20 which crosses the watershed south of the City of Bishopville. U.S. 15, 521, and 378 also bisect the watershed, along with two rail lines.

Implementation Strategy

Scape Ore Swamp is impaired by elevated levels of fecal coliform from nonpoint sources. The Department's Watershed Implementation Staff will work with agriculture specialists from the Department and NRCS to determine, if possible, the source of the bacteria. Beaverdam Creek has an impaired macroinvertebrate community due to unknown sources. The macroinvertebrate data for this stream were evaluated after development of the 1996 §303(d) list and Beaverdam Creek may be added when the list is updated in 1998. The Department will review the results of the biological samples to determine the cause of impairment. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-070

(Black River)

General Description

Watershed 03040205-070 is located in Sumter, Clarendon, and Lee Counties and consists primarily of the ***Black River*** and its tributaries from Church Creek to the Pocotaligo River. The watershed occupies 82,149 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Lynchburg-Noboco-Bonneau-Johnston-Rains series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 2%, with a range of 0-10%. Land use/land cover in the watershed includes: 0.08% urban land, 24.87% agricultural land, 26.44% scrub/shrub land, 26.41% forested land, 19.73% forested wetland, 1.65% nonforested wetland, and 0.82% water.

This section of the Black River accepts drainage from an upstream reach (03040205-010), together with Church Creek, the Rocky Bluff Swamp Watershed, and Long Branch. Further downstream, Mill Branch, Tearcoat Branch (Davis Branch, Pen Branch), and Breakfast Branch (Crow Bay) enter the river. The river flows through the Black River Swamp throughout the watershed. There are a few recreational ponds (10-60 acres) and 324.8 stream miles in this watershed. The Black River is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.0) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Black River (PD-116) **-** This stream was Class B until April, 1992. Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Recreational uses are also fully supported.

Growth Potential

There is a moderate potential for growth in this watershed incorporating the interchanges of I-95 and the U.S. 378 corridor. The remainder of the watershed is rural with agricultural and timberland uses.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-080

(Pocotaligo River)

General Description

Watershed 03040205-080 is located in Sumter County and consists primarily of the ***Pocotaligo River*** and its tributaries from its origin to Turkey Creek. The watershed occupies 99,150 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Wagram-Lakeland-Rains series. The erodibility of the soil (K) averages 0.13; the slope of the terrain averages 6%, with a range of 0-25%. Land use/land cover in the watershed includes: 23.27% urban land, 27.79% agricultural land, 12.53 scrub/shrub land, 30.71% forested land, 4.36% forested wetland, 0.21% nonforested wetland, and 1.15% water.

Hatchet Camp Branch (McCray Lake) and Brunson Swamp (Elliott Lake, Burnt Gin Lake) merge to form Cane Savannah Creek (Nasty Branch, Red Oak Branch, Bush Bay, Bush Branch, Bethel Creek, Cain Millpond). Green Swamp accepts drainage from Horsepen Branch, Mush Swamp (Suicide Branch, Frierson Pond, Loring Millpond, Spann Branch, Long Branch, Booths Pond, Sawmill Pond, Cypress Bay, Second Millpond), and Shot Pouch Branch (Swan Lake). Green Swamp and Cane Savannah Creek join to form the headwaters of the Pocotaligo River near the City of Sumter, which then accepts drainage from Pocalla Creek (DesChamps Pond) and Turkey Creek. The headwaters of Brunson Swamp are within the Manchester State Forest, and Shaw Air Force Base lies between Mush Swamp and Long Branch. There are numerous recreational lakes and ponds (12-70 acres), and a total of 185.8 stream miles in this watershed. The Pocotaligo River, Pocalla Creek, Green Swamp, and Turkey Creek are classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.0) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Pocotaligo River (PD-091) - This stream was Class B until April, 1992. Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in dissolved oxygen concentration, and occurrences of zinc in excess of the aquatic life acute standards, including a very high concentration measured in 1990. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. The 1990 sediment sample revealed a high concentration of zinc, along with P,P'DDT, O,P'DDT, P,P'DDD and P,P'DDE (metabolites of DDT). Although the use of DDT was banned in 1973, it is very persistent in the environment. PCB-1260 was detected in the 1994 sediment sample. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Turkey Creek - There are two monitoring sites along Turkey Creek, which was Class B until April, 1992. Aquatic life uses are fully supported at the upstream site (PD-098), and a significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions. Aquatic life uses are also fully supported at the downstream site (PD-040), but may be threatened by a high concentration of zinc measured in 1994. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Recreational uses are not supported at either site due to fecal coliform bacteria excursions.

Green Swamp (PD-039) - Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Recreational uses are partially supported due to fecal coliform bacteria excursions. This creek was Class B until April, 1992.

Nasty Branch (PD-239) - Aquatic life uses are not supported due to dissolved oxygen and pH excursions. In addition, there are significantly decreasing trends in dissolved oxygen concentration and pH and a significantly increasing trend in turbidity. Recreational uses are partially supported due to fecal coliform bacteria excursions. This creek was Class B until April, 1992.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
FRIERSON POND TO MUSH SWAMP	SHAROLYN FAM.CAMPGROUND

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
POCOTALIGO RIVER CWS/POCALLA VILLAGE BELK PIPE #: 001 FLOW: 0.104 WQL FOR DO,TRC,NH3N,BOD5	SC0030724 MINOR DOMESTIC WATER QUALITY
CANE SAVANNAH CREEK CITY OF SUMTER/TWIN LAKES SD PIPE #: 001 FLOW: 0.035 WQL FOR DO,TRC,NH3N,BOD5	SC0023647 MINOR DOMESTIC WATER QUALITY

CANE SAVANNAH CREEK CAROLINA GOLDEN PRODUCTS PIPE #: 002 FLOW: 0.700 PIPE #: 002 FLOW: 0.048 (PROPOSED) WQL FOR DO,TRC,NH3N,BOD5	SC0000795 MAJOR INDUSTRIAL WATER QUALITY WATER QUALITY
MUSH SWAMP USAF/SHAW AIR FORCE BASE PIPE #: 03A FLOW: 0.72 (PROPOSED) PIPE #: 008 FLOW: 0.0864 (PROPOSED) PIPE #: 009 FLOW: 0.0576 (PROPOSED)	SC0024970 MINOR INDUSTRIAL --- --- ---
MUSH SWAMP HARWOOD MHP/HIGH HILLS PIPE #: 001 FLOW: 0.0072 WQL FOR DO,TRC,NH3N,BOD5	SC0031704 MINOR DOMESTIC WATER QUALITY
MUSH SWAMP BURGESS GLEN MHP I PIPE #: 001 FLOW: 0.018 WQL FOR DO,TRC,NH3N,BOD5	SC0031925 MINOR DOMESTIC WATER QUALITY
MUSH SWAMP BURGESS GLEN MHP II PIPE #: 001 FLOW: 0.018 WQL FOR DO,TRC,NH3N,BOD5	SC0032239 MINOR DOMESTIC WATER QUALITY
MUSH SWAMP CAROLINA MOBILE COURT PIPE #: 001 FLOW: 0.030 WQL FOR DO,TRC,NH3N,BOD5	SC0032212 MINOR DOMESTIC WATER QUALITY
MUSH SWAMP GLASSCOCK TRUCKING CO., INC. PIPE #: 001&2 FLOW: M/R	SC0040088 MINOR INDUSTRIAL EFFLUENT
NASTY BRANCH PHIBRO-TECH INC. PIPE #: 001 FLOW: M/R	SC0034860 MINOR INDUSTRIAL EFFLUENT
NASTY BRANCH YUASA-EXIDE INC. PIPE #: 001 FLOW: M/R	SCG250010 MINOR INDUSTRIAL EFFLUENT
POCALLA CREEK CAROLINA GOLDEN PRODUCTS PIPE #: 001 FLOW: 1.50 PIPE #: 001 FLOW: 0.466 (PROPOSED) WQL FOR DO,TRC,NH3N,BOD5	SC0000795 MAJOR INDUSTRIAL WATER QUALITY WATER QUALITY
POCALLA CREEK CRESCENT TOOLS/COOPER IND. PIPE #: 001 FLOW: 0.400	SC0024554 MINOR INDUSTRIAL EFFLUENT

POCALLA CREEK KAYDON CORPORATION PIPE #: 001 FLOW: M/R	SC0035319 MINOR INDUSTRIAL EFFLUENT
SPANN BRANCH BRIARCLIFF MHP PIPE #: 001 FLOW: 0.026 WQL FOR DO,TRC,NH3N,BOD5	SC0031844 MINOR DOMESTIC WATER QUALITY
TURKEY CREEK SOUTHERN COATINGS, INC. PIPE #: 001 FLOW: 0.0806	SCG250134 MINOR INDUSTRIAL EFFLUENT
TURKEY CREEK KORN INDUSTRIES/PLT 2 PIPE #: 001 FLOW: M/R	SCG250096 MINOR INDUSTRIAL EFFLUENT
TURKEY CREEK VB WILLIAMS FURNITURE WWTP PIPE #: 001 FLOW: M/R	SCG250018 MINOR INDUSTRIAL EFFLUENT
TURKEY CREEK SOUTHEASTERN CHEM & SOLVENT CO. PIPE #: 001 FLOW: M/R	SCG250058 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Contributions

Nasty Branch and Turkey Creek are included on the §319 high priority list of the Nonpoint Source Management Program and the 1996 §303(d) tertiary list due to concerns for fecal coliform bacteria, turbidity, dissolved oxygen, and pH. Green Swamp is included on the §319 list and 1996 §303(d) tertiary list for fecal coliform and turbidity concerns.

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
SUMTER COUNTY LANDFILL MUNICIPAL	DWP-053 CLOSED
USAF/SHAW AIR FORCE BASE INDUSTRIAL	-------- CLOSED
USAF/SHAW AIR FORCE BASE INDUSTRIAL	-------- CLOSED

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
GLASSCOCK TRUCKING CO., INC. SMG, INC. PIT	0646-43 SAND

JOE SINGLETON CO. SINGLETON MINE #3	0945-43 SAND/CLAY
JOE SINGLETON CO. SINGLETON MINE #4	1008-43 SAND/CLAY
LEE CONSTRUCTION CO. LEE CONSTRUCTION MINE #1	0878-43 SAND/CLAY
PLOWDEN CONSTRUCTION CO. GRADE RUFFIN PROPERTY	0991-43 SAND/CLAY
BOYKIN LAND SCRAPING CO. SAND PIT	0651-43 SAND/CLAY
APAC-CAROLINA, INC. ASPHALT PLANT #3	0087-43 SAND
BROWN & MARTIN COMPANY BROWN & MARTIN MINE	0418-43 SAND/CLAY

Camping Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
SHAROLYN FAMILY CAMPGROUND/FAMILY FRIERSON POND TO MUSH SWAMP	43-5203 ACTIVE

Growth Potential

There is a high potential for residential, commercial, and industrial growth in this watershed, which contains the City of Sumter and Shaw Air Force Base. Several major U.S. Highways intersect in Sumter and increase the urban sprawl in every direction outside of the city. There are also several industrial parks and three rail lines.

Implementation Strategy

Green Swamp, Turkey Creek, and Nasty Branch are impaired due to elevated levels of fecal coliform bacteria from nonpoint sources. Green Swamp and Turkey Creek both appear to be impacted by urban runoff. The Department's Watershed Implementation Staff will determine, where possible, the source of the water quality impairments and recommend solutions to correct the problem. Nasty Branch also has dissolved oxygen and pH impairments. The Department's Watershed Implementation Staff will also work with agriculture specialists from the Department and NRCS to determine, if possible, the source(s) of the Nasty Branch impairments. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-090

(Pocotaligo River)

General Description

Watershed 03040205-090 is located in Clarendon and Sumter Counties and consists primarily of the ***Pocotaligo River*** and its tributaries from Turkey Creek to its confluence with the Black River. The watershed occupies 173,788 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Noboco-Bonneau-Lynchburg-Paxville-Rains series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 2%, with a range of 0-10%. Land use/land cover in the watershed includes: 1.81% urban land, 32.76% agricultural land, 27.77% scrub/shrub land, 25.94% forested land, 10.68% forested wetland, 0.67% nonforested wetland, and 0.37% water.

This section of the Pocotaligo River accepts drainage from the upper reach together with Briar Branch, Boots Branch, Sammy Swamp (Boggy Swamp, Broadway Branch, Hungary Hall Branch, DesChamps Branch, Home Branch, Guckolds Branch), and Big Branch. Further downstream, another Big Branch enters the river followed by Bell Branch, and Ox Swamp (Hog Branch, Lemon Branch, Fellowship Branch, Davis Branch, Loss Branch) near the City of Manning. Bear Creek enters the river next, followed by Deep Creek (Elwood Bay, Hog Bay, White Pond, Joes Branch), Juneburn Branch (Lightwood Knot Branch), Peddlers Branch, and Lakewood Creek (Lakewood Pond). The Pocotaligo River Watershed drains into the Black River. The western portion of the watershed is within the Manchester State Forest. There are several recreational ponds (11-42 acres) and a total of 428.9 stream miles in this watershed. The Pocotaligo River is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.0) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Pocotaligo River - There are three monitoring sites along this section of the Pocotaligo River, which was Class B until April, 1992. Although dissolved oxygen excursions occurred at all sites, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Aquatic life uses are fully supported at the upstream site (PD-202). Sediment samples revealed a high concentration of lead in 1992, and a very high concentration of lead in 1993. P,P'DDT and O,P'DDT, and P,P'DDD, O,P'DDD, P,P'DDE, and O,P'DDE (metabolites of DDT) were measured in sediment in 1992. Although the use of DDT was banned in 1973, it is very persistent in the environment. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site.

Aquatic life and recreational uses are also fully supported at the midstream site (PD-115), and a significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions. At the downstream site (PD-043), aquatic life uses may not be supported due to occurrences of zinc (including two very high concentrations) in excess of the aquatic life acute standards. There is also a significantly increasing trend in turbidity. P,P'DDT, P,P'DDD, O,P'DDD, and P,P'DDE were measured in sediment numerous times between 1992 and 1994. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Briar Branch (PD-617) - Aquatic life uses are partially supported based on macroinvertebrate community data. Briar Branch is a small, sluggish stream which may dry up periodically.

Big Branch (PD-627) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
BELL BRANCH	CAMPERS PARADISE

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
POCOTALIGO RIVER GA PACIFIC CORP./ALCOLU PLT PIPE #: 001 FLOW: M/R	SC0003212 MINOR INDUSTRIAL EFFLUENT
POCOTALIGO RIVER CITY OF SUMTER/POCOTALIGO PLANT PIPE #: 001 FLOW: 15.0 WQL FOR DO,TRC,NH3N,BOD5	SC0027707 MAJOR DOMESTIC WATER QUALITY
POCOTALIGO RIVER CITY OF MANNING PIPE #: 001 FLOW: 2.50 WQL FOR DO,TRC,NH3N,BOD5	SC0020419 MAJOR DOMESTIC WATER QUALITY
BOOTS BRANCH INTERNATIONAL PAPER, INC. PIPE #: 001 FLOW: M/R	SC0042544 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Contributions

The Pocotaligo River is included on the §319 list for nonpoint source concerns. The Watershed Project described below is ongoing.

Pocotaligo Swamp Watershed Project

During the 1950's, the hydrology of Pocotaligo Swamp between the Cities of Sumter and Manning was altered by the construction of tram roads into the swamp to provide access for logging activities. In 1994, due to a history of low dissolved oxygen thought to be caused by low flow, a §319 grant project was undertaken to restore this area to its natural state. During the summer of 1994, the South Carolina Army National Guard used explosives to create breaches in the tram roads in an attempt to increase the natural flushing of the river. During 1995, the Sumter and Clarendon Soil and Water Conservation Districts began planting bald cypress and water tupelo in an effort to restore the natural forest canopy. Also in 1995, SCDHEC began a monthly special water quality monitoring study at five locations in the swamp to measure changes in dissolved oxygen concentration. Tree growth is also monitored. This study continued in 1996 with expanded parameter coverage and concluded in February 1997.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
GA PACIFIC CORP. INDUSTRIAL	IWP-148 ACTIVE
CLARENDON COUNTY LANDFILL MUNICIPAL	DWP-058 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
J.F. CLECKLEY & CO. CALLOWAY PIT, MINE #2	0831-14 SAND

Camping Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
CAMPERS PARADISE/FAMILY BELL BRANCH	14-0003 ACTIVE

Growth Potential

There is a high potential for growth in this watershed, which includes the City of Manning and a portion of the City of Sumter. I-95 crosses the watershed near Manning, and other major roads running through Manning include U.S. 15, U.S. 521, U.S. 301, S.C. 261, and S.C. 260. Besides the rail line connecting the Cities of Manning and Sumter, the Clarendon County Industrial Park should encourage future industrial growth. The remainder of the watershed is rural with agricultural and timberland uses. There are plans for water to service the Towns of Pinewood and Paxville and the S.C. 261 and U.S. 15 corridors, which should encourage all forms of growth.

Implementation Strategy

The Pocotaligo River is impaired by elevated zinc concentrations from unknown sources, which places it on the 1996 §303(d) secondary list in relation to toxics and turbidity concerns. Biological community data are needed to determine the ecological significance of the metal excursions and should be acquired where feasible. Briar Branch has an impaired macroinvertebrate community due to unknown sources, possibly natural conditions. The macroinvertebrate data for this stream were evaluated after development of the 1996 §303(d) list and Briar Branch may be added when the list is updated in 1998. Department staff will review the results of the biological samples to determine the cause of the impairment. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-110

(Pudding Swamp)

General Description

Watershed 03040205-110 is located in Clarendon, Sumter, and Lee Counties and consists primarily of ***Pudding Swamp*** and its tributaries. The watershed occupies 119,870 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Lynchburg-Fuquay-Rains-Goldsboro-Noboco series. The erodibility of the soil (K) averages 0.14; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.07% urban land, 29.48% agricultural land, 19.69% scrub/shrub land, 35.19% forested land, 13.48% forested wetland, 1.50% nonforested wetland, and 0.59% water.

Pudding Swamp accepts drainage from Hope Swamp (Threemile Branch), Trustless Branch, and Horse Branch (Fuller Bay, Cypress Lake) before merging with Douglas Swamp. Douglas Swamp flows past Woods Bay State Park and accepts drainage from Woods Bay, Cypress Branch (Bushy Branch), Burnt Branch, and Rose Creek. Downstream of the confluence, Newman Branch (Cain Branch) flows into Pudding Swamp. The Pudding Swamp Watershed drains into the Black River. There are a total of 312.7 stream miles in this watershed. Pudding Swamp, Douglas Swamp, and Cypress Branch are classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.0) and the remaining streams in the watershed are classified FW. Due to the absence of point source dischargers and the presence of endangered species and other special characteristics, Woods Bay may qualify as a potential ORW candidate.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Pudding Swamp (PD-203) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
PUDDING SWAMP S.C. HWY. DEPT./REST AREA I-95 PIPE #: 001 FLOW: 0.04 WQL FOR DO,TRC,NH3N	SC0038962 MINOR DOMESTIC WATER QUALITY
PUDDING SWAMP TOWN OF TURBEVILLE PIPE #: 001 FLOW: 0.60 WQL FOR TRC,NH3N,BOD5	SC0025755 MINOR DOMESTIC WATER QUALITY
CYPRESS BRANCH JPS AUTOMOTIVE LP/OLANTA PLT PIPE #: 001 FLOW: M/R	SCG250068 MINOR INDUSTRIAL EFFLUENT
SPRAY FIELD-HORSE BRANCH TOWN OF TURBEVILLE PIPE #: 002 FLOW: 0.45/0.6 WQL FOR TRC	SC0025755 MINOR DOMESTIC WATER QUALITY

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Towns of Turbeville and Olanta, and portions of the I-95 and U.S. 378 corridors. The I-95/U.S. 378 interchange has recently been provided with water and sewer service and is expected to see moderate to high growth. Water and sewer services are available in and around the Towns of Olanta and Turbeville, and should encourage growth. The remainder of the watershed is rural with agricultural and timberland uses.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-130

(Kingstree Swamp Canal)

General Description

Watershed 03040205-130 is located in Williamsburg, Florence, and Clarendon Counties and consists primarily of ***Kingstree Swamp Canal*** and its tributaries. The watershed occupies 49,041 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Lynchburg-Foreston-Fuquay-Rains-Goldsboro series. The erodibility of the soil (K) averages 0.14; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.23% urban land, 41.23% agricultural land, 17.46% scrub/shrub land, 37.40% forested land, and 3.68% forested wetland.

Kingstree Swamp Canal accepts drainage from several bays before draining into the Black River, including Smiths Bay, Findley Bay, and Sandy Bay. There are a total of 75.6 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Kingstree Swamp Canal (PD-358) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
KINGSTREE SWAMP CANAL TRIBUTARY	SCG250059
BURNS PHILP FOOD/ALCOHOL DIV.	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	EFFLUENT
KINGSTREE SWAMP CANAL TRIBUTARY	SC0003123
FERMPRO MANUFACTURING LP	MINOR INDUSTRIAL
PIPE #: 01/02 FLOW: 2.455	EFFLUENT

LAND APPLICATION	**PERMIT #**
FACILITY NAME	**TYPE**
SPRAYFIELD	ND0068713
FERMPRO MANUFACTURING LP	INDUSTRIAL

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
WILLIAMSBURG COUNTY LANDFILL INDUSTRIAL	- ---------- CLOSED
INTERNATIONAL BIOSYNTHETICS LANDFILL INDUSTRIAL	IWP-133 ACTIVE

Growth Potential

There is a moderate potential for growth in this watershed, which contains a portion of the Town of Kingstree. The Kingstree area and the area abutting U.S. 52 contain water and sewer infrastructure. The U.S. 52 corridor has the potential for residential, commercial, and industrial growth in the future due to the combination of a proposed increase in the capacity of the sewage treatment plant, one existing and two new proposed industrial areas, and an existing rail line. Outside of this area, the watershed is rural with predominately agricultural and timberland uses.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-140

(Black River)

General Description

Watershed 03040205-140 **(incorporating 03040205-100, and -120)** is located in Williamsburg and Clarendon Counties and consists primarily of the ***Black River*** and its tributaries from the Pocotaligo River to Jumping Run. The watershed occupies 212,060 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Goldsboro-Lynchburg-Hobcaw-Emporia series. The erodibility of the soil (K) averages 0.18; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.06% urban land, 28.37% agricultural land, 16.12% scrub/shrub land, 39.33% forested land, 15.93% forested wetland, 0.13% nonforested wetland, and 0.06% water.

This section of the Black River accepts drainage from the upper reaches of the river (03040305-010, 03040205-070) together with Broad Branch (Junkyard Bay, Guise Bay, Little Junkyard Bay, Cypress Bay), Mill Branch, the Pudding Swamp Watershed, Clapp Swamp (Long Branch, Bull Branch, Spring Branch), and the Kingstree Swamp Canal Watershed. Rocky Ford Swamp (Chaney Swamp) and Dickey Swamp (Mulberry Branch, Bennett Swamp, Mill Branch, Pushing Branch, Shanty Branch) join to form Laws Swamp, which flows into the river downstream of Kingstree Swamp Canal. Further downstream, the river accepts drainage from Thorntree Swamp, Stony Run Branch, Boggy Swamp, McElroy Branch, Camden Swamp, Ox Swamp (Gumtree Branch), Spring Branch, and Spring Gully. There are a few recreational ponds (12-20 acres) and a total of 361.6 stream miles in this watershed. The Black River is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.0) and the remaining streams in the watershed are classified FW. Due to the absence of point source dischargers and the presence of endangered species and other special characteristics, Junkyard Bay (also known as Bennetts Bay) is a Heritage Trust Preserve and may qualify as a potential ORW candidate.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Black River - There are four monitoring sites (PD-227, PD-044, PD-045, PD-359) along this section of the Black River, and aquatic life and recreational uses are fully supported at all sites. Aquatic life uses may be threatened by a significantly decreasing trend in dissolved oxygen concentration and a significantly increasing trend in turbidity at the furthest upstream site. Sediment samples revealed a very high concentration of zinc in 1990, along with P,P'DDD. Significantly decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration, together with a significantly decreasing trend in fecal coliform bacteria concentration suggest improving conditions for these parameters. Aquatic life uses may also be threatened at PD-044 by a significantly decreasing trend in dissolved oxygen concentration and at PD-045 by a significantly increasing trend in turbidity. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter at both midstream sites.

Ox Swamp (PD-629) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
BLACK RIVER	RIVERBANK OF BLACK RIVER

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BLACK RIVER MILLIKEN & CO./KINGSTREE PIPE #: 001 FLOW: .373 WQL FOR DO,TRC,NH3N,BOD5	SC0023493 MINOR INDUSTRIAL WATER QUALITY
BLACK RIVER TOWN OF KINGSTREE/NEW PLANT PIPE #: 001 FLOW: 2.15 WQL FOR DO,TRC,NH3N,BOD5	SC0035971 MAJOR DOMESTIC WATER QUALITY

Nonpoint Source Contributions

The Black River is included on the §319 list due to nonpoint source concerns for dissolved oxygen, turbidity, and zinc. Ox Swamp has an impaired macroinvertebrate community, possibly related to upstream agricultural activities. The macroinvertebrate data for this stream were evaluated after development of the 1996 §303(d) list and Ox Swamp may be added when the list is updated in 1998. Department staff will review the results of the biological samples to determine the cause of the impairment.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
WILLIAMSBURG COUNTY LANDFILL MUNICIPAL	DWP-133 ACTIVE
WILLIAMSBURG COUNTY LANDFILL MUNICIPAL SHREDDER SITE	DWP-055 CLOSED

TOWN OF KINGSTREE	————
MUNICIPAL	CLOSED
TOWN OF KINGSTREE	————
MUNICIPAL	CLOSED

Mining Activities

MINING COMPANY	*PERMIT #*
MINE NAME	*MINERAL*
WILLIAMSBURG COUNTY	0604-45
JOHN MIXON PIT	SAND/CLAY
WILLIAMSBURG COUNTY	0591-45
REA MIMS PIT	SAND/CLAY
S.C. PRESTRESS CORP.	0838-45
MCKENZIE PIT #2	SAND

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Town of Lane and portions of the Towns of Kingstree and Greeleyville. Water infrastructure is located in and around all three towns, but sewerage infrastructure is located only in and around the Kingstree area. Outside of the towns, the area is predominately rural with mostly agricultural and timberland uses.

Implementation Strategy

Ox Swamp has an impaired macroinvertebrate community due to unknown sources. The macroinvertebrate data for this stream were evaluated after development of the 1996 §303(d) list and Ox Swamp may be added when the list is updated in 1998. Department staff will review the results of the biological samples to determine the cause of the impairment. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-150

(Black River)

General Description

Watershed 03040205-150 is located in Williamsburg and Georgetown Counties and consists primarily of the ***Black River*** and its tributaries from Jumping Gully to Black Mingo Creek. The watershed occupies 116,418 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Yemassee-Yauhannah-Bladen-Wahee series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.94% urban land, 14.02% agricultural land, 9.18% scrub/shrub land, 56.75% forested land, 17.55% forested wetland, 1.02% nonforested wetland, and 0.53% water.

This section of the Black River accepts drainage from upper reaches (03040205-010, 03040205-070, 03040205-140), together with Jumping Gully, Thompson Swamp, Birch Creek (Dobson Branch, Dobson Bay), and Gin Branch. Flat Swamp (Camp Pond Bay, Ricefield Bay, Alligator Bay, Log Branch) flows into Johnsons Swamp (Oakridge Bay, Mill Branch, Murray Swamp, Sportsman Pond), which in turn flows into Horse Pen Swamp before draining into the Black River downstream of Gin Branch. Further downstream, Big Dam Swamp (Roper Branch, Sleeper Branch, Cedar Patch Branch, Brightman Swamp) enters the river followed by Lester Creek, Puncheon Creek, and Indian Hut Swamp. There are a total of 342.3 stream miles in this watershed. The Black River is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.0) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Black River (PD-170) - Aquatic life uses may not be supported due to occurrences of zinc in excess of the aquatic life acute standards. In addition, there is a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are fully supported at this site, but may be threatened by a significantly increasing trend in fecal coliform bacteria concentrations.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
LESTER CREEK TOWN OF ANDREWS PIPE #: 001 FLOW: 2.0 WQL FOR DO,TRC,NH3N,BOD5; WETLAND	SC0025135 MAJOR DOMESTIC WATER QUALITY
INDIAN HUT SWAMP INTERNATIONAL PAPER, INC./SAMPIT LUMBER MILL PIPE #: 001 FLOW: 0.34 WQL FOR TRC,NH3N	SC0046582 MINOR INDUSTRIAL WATER QUALITY
JOHNSONS SWAMP ELF ATOCHEM NORTH AMERICA PIPE #: 001 FLOW: 0.213 WQL FOR DO,TRC,NH3N,BOD5	SC0001619 MINOR INDUSTRIAL WATER QUALITY

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
STONE CONSTRUCTION CO. ANDREWS MINE	0598-45 SAND

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

A section of the Town of Andrews is located in this watershed, and has both water and sewer infrastructure and a rail line which should allow low to moderate growth. Outside of the Andrews area, the watershed is rural with mostly agricultural and timberland uses.

Implementation Strategy

The Black River is impaired by elevated levels of zinc from unknown sources, which places it on the 1996 §303(d) secondary list. Biological community data are needed to determine the ecological significance of the metal excursions and should be acquired where feasible. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-170

(Black Mingo Creek)

General Description

Watershed 03040205-170 **(incorporating 03040205-160)** is located in Williamsburg and Georgetown Counties and consists primarily of ***Black Mingo Creek*** and its tributaries. The watershed occupies 166,875 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Yemassee-Yauhannah-Bladen-Emporia-Ogeechee series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.04% urban land, 23.40% agricultural land, 16.49% scrub/shrub land, 0.05% barren land, 43.72% forested land, 15.89% forested wetland, 0.35% nonforested wetland, and 0.06% water.

Cedar Swamp (Orr Swamp, Home Swamp, Dry Swamp, The Morass, Pine Island Bay) and Parsley Swamp (Whiteoak Swamp, McKnight Swamp) join to form the headwaters of Black Mingo Creek. Downstream of the confluence, Black Mingo Creek accepts drainage from Turkey Creek, Boggy Swamp, Indiantown Swamp (James Branch, Pointer Stump Branch), Wilson Lake, Gully Branch, Headless Creek, Snow Branch, and Campbell Swamp (Hickory Nut Branch). Johnson Branch enters the system next, followed by Walden Branch, Poplar Hill Branch (Caney Branch, Waterman Branch, Hughs Branch), Rome Branch, Burnett Swamp, and Jacks Creek. Further downstream, Browns Branch (Squirrel Run, Church Branch, Pittman Branch) flows into Black Mingo Creek followed by Peters Creek, Smith Swamp (Black Steer Swamp, McGinney Creek), Cold Creek, Mingo Swamp, and Schoolhouse Branch. The Black Mingo Creek Watershed flows into the Black River. There are several lakes and ponds (10-60 acres) used for recreation, irrigation, and water supply purposes in this watershed and a total of 359.4 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Black Mingo Creek - There are three monitoring sites (PD-360, PD-172, PD-361) along Black Mingo Creek. Aquatic life and recreational uses are fully supported at all sites. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Aquatic life uses at the midstream site may be threatened by a significantly decreasing trend in pH; however, even though pH excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters.

Activities Potentially Affecting Water Quality

Point Source Contributions

LAND APPLICATION FACILITY NAME	PERMIT # TYPE
SPRAYFIELD HOUSE OF RAEFORD FARMS, INC.	ND0068161 INDUSTRIAL

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Stuckey. Water infrastructure is available around the Town of Stuckey, but there is no sewerage infrastructure available in the watershed. Agriculture and timberlands are the primary land uses.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040205-180

(Black River)

General Description

Watershed 03040205-180 is located in Georgetown County and consists primarily of ***Black River*** and its tributaries from Black Mingo Creek to its confluence with the Pee Dee River. The watershed occupies 87,613 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Yemassee-Yauhannah-Levy-Bladen-Wahee series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.06% urban land, 2.44% agricultural land, 5.51% scrub/shrub land, 0.01% barren land, 73.60% forested land, 13.05% forested wetland, 2.64% nonforested wetland, and 2.69% water.

This section of the Black River accepts drainage from the upper reaches of the river (03040205-010, 03040205-070, 03040205-140, 03040205-150), together with Mill Grove Creek, Lanes Creek, Choppee Creek (Stony Run Creek, Machine Bay), Boheck Creek, and Post Foot Branch. Carvers Bay drains into Big Branch (Millpond Branch), then flows into Carvers Bay Creek (Fardick Creek), which then becomes Peters Creek (Simmons Creek, Guinea Creek, Black Swamp) and drains into the river downstream of Post Foot Branch. Sixmile Creek (Gapway Bay, Greens Creek, Prince Creek, Crooked Branch, Inland Branch) enters the river next followed by Cottage Creek and Longwater Bay. There are several recreational ponds (12-21 acres) and several ponds managed for wildlife (15-30 acres) in this watershed, and a total of 273.0 stream miles and 995.0 acres of estuarine areas. The Black River upstream of the crossing of U.S.701 (just upstream of Sixmile Creek) is classified FW* (Dissolved Oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and its tributaries are classified FW. Downstream of the crossing, the Black River and its tributaries are classified SA. The Black River Watershed drains into the Pee Dee River.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0401).

Black River (PD-325) - Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH, a significantly increasing trend in turbidity, and the occurrence of a high zinc concentration. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. In sediments, a high concentration of copper was measured in the 1990 sample. Significantly decreasing trends in five-day biochemical oxygen demand, and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported. The Black River was treated with aquatic herbicides from 1992-1995 to remove aquatic plants from boat ramp areas.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BLACK RIVER GCW&SD/WEDGEFIELD PLT PIPE #: 001 FLOW: 0.4 WQL FOR DO	SC0029505 MINOR DOMESTIC WATER QUALITY
LANES CREEK GCSD/BROWNS FERRY SCHOOL PIPE #: 001 FLOW: 0.0028 WQL FOR DO,TRC,NH3N,BOD5	SC0039781 MINOR DOMESTIC WATER QUALITY
CHOPPEE CREEK GCSD/CHOPPEE SCHOOL PIPE #: 001 FLOW: 0.01	SC0033081 MINOR DOMESTIC EFFLUENT
SIXMILE CREEK TRIBUTARY GREEN ACRES MHP PIPE #: 001 FLOW: 0.0261 WQL FOR DO,TRC,NH3N,BOD5	SC0032905 MINOR DOMESTIC WATER QUALITY

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
GEORGETOWN COUNTY LANDFILL MUNICIPAL	DWP-059 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
GROUND IMPROVEMENT TECHNIQUES GEORGETOWN COUNTY LANDFILL SAND/CLAY MINE	1093-22 SAND/CLAY

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a low potential for growth in this watershed. Water is available along most roads in the area, but there is no sewerage infrastructure. Transportation studies are being completed analyzing the possibility of using S.C. 701 as an alternate route to U.S. 17. If this project is approved and completed, the area along S.C. 701 will likely see a significant increase in residential and commercial development.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

Watershed Evaluations and Implementation Strategies Within WMU-0402

Watershed Management Unit (WMU) 0402 consists of the ***Pee Dee River Basin, Little Pee Dee River Basin, and the Lumber River Basin***. WMU-0402 originates in the Sand Hills region of the State, and flows through the Upper and Lower Coastal Plain regions to the Coastal Zone. There are 29 watersheds in WMU-0402, some 2.3 million acres of which 2.5% is urban land, 23.0% is agricultural land, 19.6% is scrub/shrub land, 0.2% is barren land, 36.1% is forested land, 16.4% is forested wetland, 1.0% is nonforested wetland, and 1.3% is water (SCLRCC 1990). There are a total of 6,890.7 stream miles and 3,333.4 acres of estuarine areas.

The Pee Dee River flows across the North Carolina/South Carolina state line and accepts drainage from Thompson Creek, Crooked Creek, Cedar Creek, Three Creeks, and Black Creek. The Pee Dee River then accepts drainage from Jeffries Creek, Catfish Creek, the Lynches River, and the Little Pee Dee River before draining into Winyah Bay. The Little Pee Dee River accepts drainage from Buck Swamp, the Lumber River, Lake Swamp, Brunson Swamp, and Kingston Lake.

Fish Consumption Advisory

A fish consumption advisory has been issued by the Department for the freshwater portions of the Pee Dee River and the Little Pee Dee River, advising people to limit the amount of some types of fish consumed from these rivers and their tributaries due to mercury contamination. Pregnant women, infants, children, and people with neurologic diseases face the greatest risk of mercury related health problems and should not eat any fish from these waters. The fish consumption guidelines are based on diets of one type of fish only. If a person consumes several of the species listed for a river, then the person should cut back even further on the amounts of each species consumed. For example, if a person eats one pound of largemouth bass from the Pee Dee River, the person should not eat any bowfin, catfish, or redear sunfish from that river that month. The types of fish with mercury and the acceptable amounts of those fish that can be consumed are as follows: **Pee Dee River** (Largemouth bass - 1 lb./month, Bowfin - 1.25 lb./month, Catfish - 1.75 lb./month, Redear Sunfish - 2.75 lb./month); **Little Pee Dee River** (Largemouth Bass - 0.5 lb./month, Bowfin - 0.5 lb./month, Catfish - 0.5 lb./month).

The source of mercury contamination in fish tested by the Department is uncertain. Mercury occurs naturally and may account for a portion of the levels found in fish tissue. Another source is deposition from the air, a result of the combustion of fossil fuels. The Department continues to monitor for mercury in ambient air and precipitation. A precipitation sampler is located at the Congaree Swamp National Monument as part of the National Air Deposition Program, Mercury Deposition Network. Weekly composite samples are collected for mercury analysis to provide background concentrations for application across the State. The continuous monitoring of mercury concentrations in air is also conducted at the site.

There is no data available linking mercury in wastewater discharges as a major source of mercury in fish, nor can mercury levels be traced to any industries. Naturally occurring low pH, low hardness, low alkalinity, and low dissolved oxygen levels commonly found in coastal plain swamps and blackwater streams are conditions that promote the transformation of inorganic mercury into methylmercury, the form most readily accumulated by fish. South Carolina is one of 40 states that are seeing high mercury levels in fish and have issued advisories. These states are working together and with the U.S. Environmental Protection Agency to try and identify the cause or causes of mercury in fish.

Climate

Normal yearly rainfall in the WMU-0402 area is 47.14 inches, according to the S.C. historic climatological record (SCWRC 1990). Data compiled from National Weather Service stations in Pee Dee, Cheraw, McColl, Darlington, Florence (City and Airport), Dillon, Marion, and Georgetown were used to determine the general climate information for this portion of the State. The highest level of rainfall occurs in the summer with 15.64 inches; 9.77, 10.60, and 11.13 inches of rain falling in the fall, winter, and spring, respectively. The average annual daily temperature is 62.6°F. Summer temperatures average 78.6°F and fall, winter, and spring temperatures are 63.8°F, 45.7°F, and 62.5°F, respectively.

03040201-050

(Pee Dee River)

General Description

Watershed 03040201-050 **(incorporating 03040201-019, -029, -033, and -041)** is located in Marlboro, Chesterfield, Darlington, and Florence Counties and consists primarily of the ***Pee Dee River*** and its tributaries from the North Carolina/South Carolina state line to Black Creek. The watershed occupies 278,286 acres of the Sand Hills and Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Chastain-Tawcaw-Lakeland-Pelion-Norfolk series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 7%, with a range of 0-45%. Land use/land cover in the watershed includes: 1.39% urban land, 17.55% agricultural land, 22.35% scrub/shrub land, 0.15% barren land, 33.65% forested land, 21.05% forested wetland, 0.01% nonforested wetland, and 3.85% water.

Within South Carolina, this upper reach of the Pee Dee River accepts drainage from Marks Creek, Whites Creek (Wallace Pond, Everett Millpond), Westfield Creek (Little Westfield Creek, Goodmans Creek), Hicks Creek, Husbands Creek, Huckleberry Branch (Wilson Branch), and the Thompson Creek Watershed near the Town of Cheraw. Phils Creek (Wolf Creek, Andersons Millpond, Grants Millpond) enters the river next, followed by Beaverdam Creek, Tarkiln Creek, Naked Creek (Bullards Millpond, McLaurins Millpond, Davids Millpond, Herndon Branch), the Crooked Creek Watershed, Hugh Creek, Reedys Branch, and the Cedar Creek Watershed. Further downstream, near the Town of Society Hill, the river accepts drainage from Buckholtz Creek (Lake Darpo or Spring Lake), Muddy Creek (Machine Branch, Riggins Branch, Henegan Lake, Lake Creek), Flat Creek, and the Three Creeks Watershed. Another Flat Creek enters the system downstream of Three Creeks, followed by Rogers Creek (Mosey Bay), Hurricane Branch, and Back Swamp (Fountain Branch, Alligator Creek). There are numerous lakes and ponds (10-150 acres) used for recreation, irrigation, water supply, and wildlife management in this watershed and a total of 922.2 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Pee Dee River - There are three monitoring sites along this section of the Pee Dee River, which was Class B until April, 1992. Recreational uses are fully supported at all sites, but may be threatened by a significantly increasing trend in fecal coliform bacteria concentrations at the upstream site. Aquatic life uses are fully supported at the upstream site (PD-012), but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Sediment samples revealed PCB-1254 in 1990; a high concentration of lead in 1992; a very high concentration of nickel, PCB-1248, diazinon (an insecticide used against fire ants), and P,P'DDT in 1993; and PCB-1242 and O,P'DDD (a metabolite of DDT) in 1994. Although the use of DDT was banned in 1973, it is very persistent in the environment.

Aquatic life uses are also fully supported at the midstream site (PD-015), but may be threatened by a significantly decreasing trend in pH, a significantly increasing trend in turbidity, a high concentration of zinc measured in water in 1991, and a high concentration of chromium measured in 1992. A significantly decreasing trend in five-day biochemical oxygen demand and a significantly increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. At the downstream site (PD-028), aquatic life uses are fully supported but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, and total nitrogen concentrations suggest improving conditions for these parameters. A high concentration of zinc was measured in sediment in 1993, along with a detectable concentration of PCB-1248.

Westfield Creek (PD-339) - This creek was Class B until April, 1992. Aquatic life and recreational uses are fully supported.

Whites Creek (PD-191) - This creek was Class B until April, 1992. Aquatic life and recreational uses are fully supported. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Buckholtz Creek (PD-637) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Lake Darpo - Aquatic herbicides were used in 1990 to control aquatic plants and provide access for swimming and boating.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
NAKED CREEK	GS SANDY RIDGE CAMP
BUCKHOLTZ CREEK	LAKE DARPO

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	*NPDES#*
FACILITY NAME	*TYPE*
PERMITTED FLOW @ PIPE (MGD)	*LIMITATION*
COMMENT	

PEE DEE RIVER MOHAWK IND./OAK RIVER MILL PIPE #: 001 FLOW: 0.05	SC0001996 MINOR INDUSTRIAL EFFLUENT
PEE DEE RIVER GALEY & LORD, INC. PIPE #: 001 FLOW: 6.5 WQL FOR DO	SC0002704 MAJOR INDUSTRIAL WATER QUALITY
PEE DEE RIVER TOWN OF CHERAW PIPE #: 001 FLOW: 4.0	SC0020249 MAJOR DOMESTIC EFFLUENT
PEE DEE RIVER WILLIAMETTE INDUSTRIES/MARLBORO MILL PIPE #: 001 FLOW: 15.0 WQL FOR DO	SC0042188 MAJOR INDUSTRIAL WATER QUALITY
PEE DEE RIVER DELTA MILLS MKTG PIPE #: 001 FLOW: 4.2	SC0002151 MAJOR INDUSTRIAL EFFLUENT
HICKS CREEK DELTA MILLS MKTG PIPE #: 002 FLOW: M/R	SC0002151 MAJOR INDUSTRIAL EFFLUENT
RIGGINS BRANCH TRIBUTARY BECKER MINERALS INC./BLENHEIM PIPE #: 001 FLOW: M/R	SC0044075 MINOR INDUSTRIAL EFFLUENT
HUCKLEBERRY BRANCH TOWN OF CHERAW/WTP PIPE #: 001 FLOW: M/R	SCG645011 MINOR DOMESTIC EFFLUENT

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
SPRAYFIELD POWELL MANUFACTURING	ND0000639 INDUSTRIAL

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
CASH LANDFILL MUNICIPAL	DWP-017 CLOSED
CITY OF BENNETTSVILLE LANDFILL MUNICIPAL	DWP-075 CLOSED
MARLBORO COUNTY LANDFILL MUNICIPAL	DWP-027 CLOSED

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
PALMETTO BRICK CO. PHILLIPS MINE	0814-13 SHALE
PALMETTO BRICK CO. IRBY MINE	0171-35 CLAY
MARION CERAMICS PAVER MINE	0550-13 SHALE
W.R. BONSAL CO. ESKRIDGE PLANT	0726-35 SAND
BECKER SAND & GRAVEL CO. MARLBORO FIELD PLANT	0096-35 SAND/GRAVEL
BECKER MINERALS, INC. CASH PLANT	0092-13 SAND/GRAVEL
PEE DEE SAND & GRAVEL PEE DEE MINE	0466-13 SAND/GRAVEL
DARLINGTON COUNTY RUSSELL #2	0967-16 SAND/CLAY

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
PINE HILL BAPTIST RETREAT/RESIDENT PHILS CREEK	34-0031 ACTIVE
CAMP PEE DEE/RESIDENT PHILS CREEK	34-0006 ACTIVE

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
TOWN OF CHERAW (M) PEE DEE RIVER	6.000 2.425
DELTA MILLS MKTG (M) PEE DEE RIVER	7.200 6.200

Growth Potential

There is a moderate potential for growth in this watershed, which contains portions of the Towns of Cheraw and Society Hill and is projected to have one of the largest population growth rates in the region. There are numerous industries in the watershed, most in and around the municipal limits of Cheraw. Commercial development is also centered around Cheraw, particularly west of town along S.C. 9, and additional growth is expected. A large portion of the watershed is not served by public water or sewer systems, primarily due to the large expanse of the floodplain associated with the Pee Dee River. These services are provided in and immediately around the Town of Cheraw, and along S.C. 34 east of the City of Darlington. The Town of Cheraw is planning a wastewater treatment plant upgrade that should expand that community's capacity to treat industrial and domestic waste and encourage further growth.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-062

(Thompson Creek)

General Description

Watershed 03040201-062 **(incorporating 03040104-060)** is located in Chesterfield County and consists primarily of ***Thompson Creek*** and its tributaries. The watershed occupies 189,694 acres of the Sand Hills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Alpin-Tatum-Candor-Troup series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 12%, with a range of 0-25%. Land use/land cover in the watershed includes: 1.68% urban land, 22.74% agricultural land, 4.87% scrub/shrub land, 0.45% barren land, 64.28% forested land, 5.24% forested wetland, and 0.74% water.

While Thompson Creek originates in South Carolina, several of its tributaries originate in North Carolina including Deadfall Creek and Cedar Creek. Brown Creek originates near the headwaters of Thompson Creek and flows into North Carolina. Thompson Creek accepts drainage from Stone House Creek (Betties Branch), Clay Creek, Collins Branch, Deadfall Creek, Cedar Creek, Deep Creek (Mill Branch, Jenning Branch, Pitt Branch, Mill Creek, Horsepen Branch, Gulpins Branch, Crews Branch, Sellers Pond), and Tavern Branch. Jimmies Creek (Smarsh Branch) enters the system next, followed by Abrams Creek, Robeson Branch (Reedy Branch), Spencer Mill Creek (Sixmile Creek), and Indian Creek. Bear Creek (Rocky Prong, Teal Millpond) accepts drainage from Big Bear Creek (North Prong, Mill Branch, Cow Branch, Mash Branch, Strickland Branch) and Little Bear Creek (Polecat Branch, Bay Springs Branch, Bay Branch, Twitty Prong, Mount Prong, Mash Branch, Underground Branch, Gully Branch, Cross Branch) before flowing into Thompson Creek downstream of Indian Creek.

Beaver Creek flows into the system further downstream followed by Juniper Creek (Mill Creek, Wilkes Millpond, Cow Branch, Coker Branch, Little Juniper Creek, Campbell Lake, Pats Branch, Juniper Lake). The Cheraw State Park extends across Juniper Creek from Little Juniper Creek to downstream of Juniper Lake (also known as Eureka Lake). The Cheraw National Fish Hatchery is located within the Cheraw State Park. The Sand Hill State Forest extends over the lower portion of the watershed. Thompson Creek Watershed drains into the Pee Dee River. There are numerous recreational lakes and ponds (10-260 acres) and a total of 476.2 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Thompson Creek - There are four monitoring sites along Thompson Creek, which was Class B until April, 1992. Aquatic life uses are fully supported at all sites and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions at the three furthest upstream sites. Recreational uses are partially supported at the furthest upstream site (PD-246) and are not supported at the next site downstream (PD-247) due to fecal coliform bacteria excursions; however, a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions. Recreational uses are also not supported at the other midstream site (PD-152) due to fecal coliform bacteria excursions, and are partially supported at the downstream site (PD-338). Fecal coliform bacteria conditions are expected to improve at all sites as new NPDES permit limits are instituted in the watershed. Sediment samples at the downstream site revealed P,P'DDE (a metabolite of DDT) in 1993. Although the use of DDT was banned in 1973, it is very persistent in the environment.

Juniper Creek (PD-340) - Aquatic life and recreational uses are fully supported for this stream which was Class B until April, 1992. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered to be natural, not standards violations.

Juniper Lake - Categorized as a minor lake, Juniper Lake in Cheraw State Park is a 260-acre impoundment on Juniper Creek, with a maximum depth of approximately 25 feet (7.6 meters) and an average depth of approximately six feet (1.9 meters). Juniper Lake's relatively undeveloped watershed comprises 52 square miles (136 km2), and is almost entirely contained within state park and Sandhill State Forest boundaries. Eutrophication assessments indicate that Juniper Lake is one of the least eutrophic small lakes in South Carolina, characterized by the low nutrient concentrations and dark color typical of Sandhills impoundments. This exceptionally acidic (pH<5 due to natural conditions) lake supports a diverse and robust native aquatic vascular plant community, accompanied by unusually low phytoplankton densities. Preservation of this lake's desirable trophic condition is recommended. Juniper Lake was treated with aquatic herbicides from 1989-1991 to control aquatic plants and provide access for swimming, fishing, and boating.

Recreational Swimming Areas

RECEIVING STREAM	***SWIMMING LOCATION***
JUNIPER LAKE-JUNIPER CREEK	CAMP FOREST
JUNIPER LAKE-JUNIPER CREEK	CAMP JUNIPER
JUNIPER LAKE-JUNIPER CREEK	CHERAW STATE PARK

Activities Potentially Affecting Water Quality

Point Source Contributions

Thompson Creek is listed on the 1996 §303(d) tertiary list due to point source related concerns for fecal coliform.

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
THOMPSON CREEK TOWN OF CHESTERFIELD PIPE #: 001 FLOW: 0.45 WQL FOR DO,TRC,NH3N,BOD52	SC0025232 MINOR DOMESTIC WATER QUALITY

Nonpoint Source Contributions

Thompson Creek is listed on the §319 list and the 1996 §303(d) tertiary list due to concerns for fecal coliform.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
BECKER MINERALS, INC. PAGELAND QUARRY	0797-13 GRANITE
CHESTERFIELD COUNTY COUNTY PIT	0272-13 SAND/CLAY

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
WOODMAN OF WORLD YOUTH CAMP/RESIDENT MOUNT PRONG	13-0172 ACTIVE
CAMP FOREST/RESIDENT JUNIPER LAKE-JUNIPER CREEK	13-0084 ACTIVE
CAMP JUNIPER/RESIDENT JUNIPER LAKE-JUNIPER CREEK	13-0083 ACTIVE
CHERAW STATE PARK/RESIDENT JUNIPER LAKE-JUNIPER CREEK	13-0078 ACTIVE

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
TOWN OF CHESTERFIELD (M) THOMPSON CREEK	1.000 0.231

Growth Potential

There is a low potential for growth in this watershed, which contains the Towns of Chesterfield, Patrick, Ruby, and Mt. Croghan, and a portion of the Town of Cheraw. Water service is available in the above towns, but sewer services are limited to Chesterfield and the Cheraw urban area. The Town of Chesterfield has recently extended water and sewer service east of the community to serve a local industrial park, but few other extensions are planned in the next five years. Commercial and industrial development is likely west of Cheraw and east of Chesterfield. The lower portion of the watershed (near Patrick) is in public ownership as part of the Sandhills State Forest, and development will be limited as a result.

Implementation Strategy

Thompson Creek is impaired by elevated levels of fecal coliform bacteria. The bacterial conditions are expected to improve as new permit limits are implemented in the watershed. In addition, the Department's Watershed Implementation Staff will work with agriculture specialists from the Department and NRCS to determine, if possible, additional sources of bacteria. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-072

(Crooked Creek)

General Description

Watershed 03040201-072 is located in Marlboro County and consists primarily of ***Crooked Creek*** and its tributaries. The watershed occupies 43,411 acres of the Sand Hills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Norfolk-Wagram-Rutledge series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 5%, with a range of 0-10%. Land use/land cover in the watershed includes: 7.67% urban land, 34.18% agricultural land, 31.59% scrub/shrub land, 0.01% barren land, 15.61% forested land, 6.66% forested wetland, 0.01% nonforested wetland, and 4.27% water.

Crooked Creek accepts drainage from Lightwood Knot Creek and Usher Pond before flowing through Goodwins Pond (58 acres) and Burnt Factory Lake (96 acres). Crooked Creek then receives drainage from Beverly Creek and Lily Quick Creek before flowing through Lake Paul Wallace (416 acres) and McCalls Millpond (30 acres) near the City of Bennettsville. The Crooked Creek Watershed drains into the Pee Dee River. There are several lakes and ponds (20-416 acres) used for recreation, irrigation, water supply, and industrial purposes in this watershed and a total of 124.5 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Crooked Creek - There are three monitoring sites (PD-107, PD-014, PD-063) along Crooked Creek, which was Class B until April, 1992. Aquatic life and recreational uses are fully supported at all sites. Although pH excursions occurred at all sites and dissolved oxygen excursions occurred at the midstream site, they were typical of values seen in blackwater systems and were considered natural, not standards violations. A significantly decreasing trend in five-day biochemical oxygen demand concentration suggests improving conditions at the upstream site. The midstream site may be threatened by a significantly increasing trend in turbidity, but significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and fecal coliform bacteria concentrations suggest improving conditions for these parameters.

Lake Paul Wallace - Categorized as a minor lake, Lake Paul Wallace is a 416-acre divided impoundment on Crooked Creek, with a maximum depth of approximately 14 feet (4.3 meters) and an average depth of approximately four feet (1.2 meters). Lake Wallace's watershed comprises 42 square miles (109 km2) in North and South Carolina. An embankment isolates the fishing lake from the swimming lake, which conveys the flow from Crooked Creek. Eutrophication assessments indicate that, overall, Lake Wallace is of intermediate trophic condition among small lakes in South Carolina, and is characterized by low nitrogen concentrations and dark color. The fishing lake exhibits low transparency in response to fisheries management practices. Lake Wallace was treated with aquatic herbicides in 1989, 1992, and 1994 to control aquatic plants and provide access for swimming and boating. In addition, 800 grass carp (26/acre) were stocked in 1994 to decrease the plant population.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
LAKE PAUL WALLACE	BEACH OF LAKE WALLACE
LAKE PAUL WALLACE	CAMP HORIZON

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
CROOKED CREEK CITY OF BENNETTSVILLE PIPE #: 001 FLOW: 3.9 PIPE #: 001 FLOW: 5.0 (PROPOSED) PIPE #: 001 FLOW: 6.0 (PROPOSED) WQL FOR DO,TRC,NH3N,BOD5	SC0025178 MAJOR DOMESTIC WATER QUALITY WATER QUALITY WATER QUALITY
CROOKED CREEK BECKER MINERALS, INC./MARLBORO PIPE #: 001 FLOW: M/R	SC0027219 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Contributions

Although water quality associated problems have not been noted for Crooked Creek and Lake Wallace, the waterbodies are included on the §319 high priority list of the Nonpoint Source Management Program due to the high concentration of animal operations in the watershed.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
WILLIAMETTE INDUSTRIES INDUSTRIAL	IWP-243 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MARLBORO COUNTY MARLBORO COUNTY PIT	0280-35 SAND/CLAY
BECKER SAND & GRAVEL CO. MARLBORO PLANT	0095-35 SAND/GRAVEL

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
CITY OF BENNETTSVILLE (M) LAKE WALLACE	4.000 1.597

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains a portion of the City of Bennettsville. Water and sewer services are available in and around Bennettsville and should encourage growth. S.C. 9 crosses the watershed, and commercial growth is expected along this corridor.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-080

(Cedar Creek)

General Description

Watershed 03040201-080 is located in Chesterfield and Darlington Counties and consists primarily of ***Cedar Creek*** and its tributaries. The watershed occupies 48,845 acres of the Sand Hills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Alpin-Candor-Troup series. The erodibility of the soil (K) averages 0.10; the slope of the terrain averages 6%, with a range of 2-15%. Land use/land cover in the watershed includes: 0.02% urban land, 23.74% agricultural land, 4.51% scrub/shrub land, 66.11% forested land, 5.28% forested wetland, and 0.35% water.

The Cedar Creek Watershed lies within the Sand Hill State Forest and accepts drainage from Little Cedar Creek (Pool Branch), Harris Creek, Coker Pond, and Spot Mill Creek. There are a few recreational ponds (18-40 acres) and a total of 106.4 stream miles in this watershed, all classified FW. The Cedar Creek Watershed drains into the Pee Dee River.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Cedar Creek (PD-151) - Aquatic life and recreational uses are fully supported. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
SPOT MILL CREEK	CAMP COKER

Activities Potentially Affecting Water Quality

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
BURNSITE LANDFILL CONSTRUCTION ONLY	DWP-12B ACTIVE
OUSLEYDALE ROAD LANDFILL SANITARY	--------- CLOSED

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
PALMETTO BRICK CO. WINBURN	0997-13 KAOLIN

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
CAMP COKER/RESIDENT SPOT MILL CREEK	13-00080 ACTIVE

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
GALEY & LORD, INC./SOCIETY HILL PLT. (I) CEDAR CREEK	8.64 ----

Growth Potential

There is a low potential for growth in this predominately rural watershed, which contains a portion of the Town of Society Hill. Water service is available in Society Hill, but there is no sewer service in the watershed. A portion of the watershed is within the Sandhill State Forest, and the remainder is primarily agricultural and timberland uses.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-090

(Three Creeks)

General Description

Watershed 03040201-090 is located in Marlboro County and consists primarily of ***Three Creeks*** and its tributaries. The watershed occupies 78,690 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Norfolk-Wagram-Rutledge series. The erodibility of the soil (K) averages 0.22; the slope of the terrain averages 2%, with a range of 1-10%. Land use/land cover in the watershed includes: 1.67% urban land, 29.98% agricultural land, 30.94% scrub/shrub land, 0.31% barren land, 23.55% forested land, 12.39% forested wetland, and 1.16% water.

Cottingham Creek (Covington Millpond, Sandy Ocean, Carters Branch) originates near the City of Bennettsville and joins with Hagins Prong to form the headwaters of Three Creeks (Monroe Branch, Drakes Millpond, Big Branch). The Three Creeks Watershed flows into the Pee Dee River. There are several ponds (10-50 acres) used for recreation, irrigation, water supply, and industrial purposes in this watershed and a total of 180.6 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury including portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Three Creeks (PD-246) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Hagins Prong (PD-336) - Aquatic life uses are fully supported. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. In addition, this stream frequently does not flow at the monitoring location. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in stagnant streams and were considered natural, not standards violations. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	

HAGINS PRONG	SC0040606
TOWN OF CLIO	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.3	WATER QUALITY
WQL FOR DO,TRC,NH3N	

Nonpoint Source Contributions

Hagins Prong is included on the §319 list and on the 1996 §303(d) tertiary list due to concerns for fecal coliform bacteria and turbidity.

Landfill Activities

SOLID WASTE LANDFILL NAME	*PERMIT #*
FACILITY TYPE	*STATUS*
MARLBORO COUNTY LANDFILL	DWP-132
MUNICIPAL	ACTIVE

Growth Potential

There is a low to moderate potential for growth in this rural watershed, which contains the Towns of Clio and Blenheim, and a portion of the City of Bennettsville. The watershed is bisected by S.C. 9, S.C. 38, and U.S.15/401. S.C. 38 is a four-lane highway and runs from Bennettsville through Blenheim to I-95. S.C. 9 runs from Clio to Bennettsville, and U.S. 15/401 is a bypass around the City of Bennettsville. The bypass area is expected to see increased commercial growth. Several of the small towns have water service, but only Clio and the areas near Bennettsville provide sewer service.

Implementation Strategy

Hagins Prong is impaired due to elevated levels of fecal coliform bacteria. The Department's Watershed Implementation Staff will determine, if possible, the source of the bacteria and recommend solutions to correct the problem. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-100

(Black Creek/Lake Robinson)

General Description

Watershed 03040201-100 is located in Chesterfield and Darlington Counties and consists primarily of ***Black Creek*** and its tributaries from its origin to the Lake Robinson Dam. The watershed occupies 113,516 acres of the Sand Hills region of South Carolina. The predominant soil types consist of an association of the Alpin-Candor-Troup series. The erodibility of the soil (K) averages 0.10; the slope of the terrain averages 7%, with a range of 2-15%. Land use/land cover in the watershed includes: 0.70% urban land, 17.61% agricultural land, 7.69% scrub/shrub land, 1.38% barren land, 69.39% forested land, 0.70% forested wetland, and 2.53% water.

Black Creek originates near the Town of Pageland and accepts drainage from Old Town Pond, Cattail Branch, Mangum Branch, Boggy Branch, Rocky Branch, Big Branch, Panther Branch, Tan Trough Branch, and Cotton Patch Branch. Big Ruddy Branch enters the system next followed by Silver Run, Little Ruddy Branch, Still Branch, Horsepen Branch, Hurricane Branch, Joplin Branch (Stancil Lakes), Big Branch, and Meadow Branch (Joplin Mill Branch). Further downstream, Rattlesnake Branch (Dismal Spring Branch) flows into Black Creek followed by Jessies Branch, Little Black Creek (Graves Millpond, Peddler Branch, Martin Branch, Woodward Millpond), Canal Branch, and Poplar Branch. Black Creek then accepts drainage from Skipper Creek (Peeled Oak Branch, Dead Pine Branch, Little Skipper Creek), Rogers Branch, Pond Branch, Long Branch (Clay Ford Branch, Mays Lake), Ham Creek (Triple Lakes, Lake Bee, Hemp Branch, Lightwood Log Branch, Poplar Branch, Martin Lake, Cow Branch), and Little Alligator Creek before flowing through Lake Robinson. Little Beaverdam Branch and Lower Alligator Creek flow into the headwaters of the lake, Big Beaverdam Creek flows into the midsection, and Pond Hollow Branch enters the lake near the dam.

The Carolina Sandhills National Wildlife Refuge extends across the center of the watershed, and the Sand Hill State Forest lies between the refuge and the lake. Due to the absence of point source dischargers and the presence of endangered species and other special characteristics, all or portions of Rogers Branch, Ham Creek, Cow Creek, Long Branch, and Clay Ford Branch may qualify as potential ORW candidates. There are numerous lakes and ponds (10-2,250 acres) used for recreational, industrial, municipal, power, and wildlife management purposes in this watershed, and a total of 211.8 stream miles. Black Creek and its tributaries upstream of the crossing of S.C. 145 (just upstream of Skipper Creek) are classified FW. Downstream of the highway crossing, Black Creek is classified FW* (Dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and its tributaries are classified FW. Lake Robinson is classified FW*.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Black Creek - There are two monitoring sites along this section of Black Creek, which was Class B until April, 1992. Aquatic life and recreational uses are fully supported at the upstream site (PD-004), but may be threatened by significantly increasing trends in pH and turbidity, and a very high concentration of zinc measured in 1990. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. The pesticide dieldrin was detected in the 1994 sediment sample. Aquatic life and recreational uses are also fully supported at the downstream site (PD-251). Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Lake H. Robinson (PD-327) - Categorized as a major lake, Lake Robinson is a 2250-acre impoundment on Black Creek, with a maximum depth of approximately 31 feet (9.4 meters) and an average depth of approximately 14 feet (4.2 meters). Lake Robinson's watershed comprises 173 square miles (448 km2). Eutrophication assessments indicate that Lake Robinson is one of the least eutrophic large lakes in South Carolina, characterized by the low nutrient concentrations, low pH, and dark color typical of Sandhills impoundments. Preservation of this lake's desirable trophic condition is recommended.

Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in dissolved oxygen. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations, and turbidity suggest improving conditions for these parameters. P,P'DDT was detected in the 1994 sediment sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported.

Skipper Creek (PD-613) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
LAKE ROBINSON	EASTERLING LANDING
LAKE ROBINSON TRIBUTARY	JOHNSONS LANDING

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)*** ***COMMENT***	***NPDES#*** ***TYPE*** ***LIMITATION***
BLACK CREEK TOWN OF PAGELAND/WATER PLANT #2 PIPE #: 001 FLOW: M/R	SCG645012 MINOR INDUSTRIAL EFFLUENT
LITTLE BLACK CREEK HEDRICK SAND & GRAVEL CO. PIPE #: 001 FLOW: M/R	SCG730045 MINOR INDUSTRIAL EFFLUENT
CATTAIL BRANCH TOWN OF PAGELAND/SOUTHEAST WWTP PIPE #: 001 FLOW: 0.6 PIPE #: 001 FLOW: 0.8 (PROPOSED) WQL FOR DO,TRC,NH3N	SC0021539 MINOR DOMESTIC WATER QUALITY WATER QUALITY
LAKE ROBINSON CAROLINA POWER PIPE #: 003 FLOW: 0.0425 PIPE #: 011 FLOW: 0.426	SC0002925 MAJOR INDUSTRIAL EFFLUENT EFFLUENT
LOWER ALLIGATOR CREEK A.O. SMITH WATER PRODUCTS CO. PIPE #: 001 FLOW: 0.003 PIPE #: 002 FLOW: 0.002 PIPE #: 003 FLOW: 0.009	SC0044938 MINOR INDUSTRIAL EFFLUENT EFFLUENT EFFLUENT

Nonpoint Source Contributions

Lake Robinson is included on the §319 high priority list of the Nonpoint Source Management Program in order to preserve/protect the area from nonpoint source related effects.

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
TOWN OF JEFFERSON LANDFILL MUNICIPAL	DWP-036 CLOSED

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
B.V. HEDRICK GRAVEL & SAND CO. PIEDMONT SAND	0665-13 SAND

METROMONT MATERIALS CORP. BOVA MINE #2	0757-13 SAND
METROMONT MATERIALS CORP. PAGELAND SAND PIT #2	0426-13 SAND
PAGELAND SAND CO., INC. PAGELAND SAND MINE #2	0746-13 SAND
FT. WILLIAMS SAND CO., INC. WILLIAMS SAND PIT	0066-13 SAND
FT. WILLIAMS SAND CO., INC. WILLIAMS SAND	0969-13 SAND

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
TOWN OF PAGELAND (M) OLD TOWN POND	0.800 0.041

Growth Potential

There is a low to moderate potential for growth in this rural watershed, which contains portions of the Towns of Pageland and McBee. A sizeable portion of the watershed is publicly owned lands within the Sandhills National Wildlife Refuge or the Sandhills State Forest, limiting development in these areas. S.C. 151 is a four-lane highway connecting the Cities of Florence and Charlotte, and together with its bypass around the Town of Pageland should see additional commercial and industrial development in the northern portion of the watershed. The recent announcement by several industries to locate in this northern portion could also increase growth. Water service is limited to Pageland, McBee, and the southern end of the watershed. Sewer service exists only in the Pageland area. The Town of McBee is the other industrial area in the watershed, and has the potential for growth if sewer service is extended from the City of Hartsville.

Implementation Strategy

Skipper Creek has an impaired macroinvertebrate community due to unknown sources. The macroinvertebrate data for this stream were evaluated after development of the 1996 §303(d) list and Skipper Creek may be added when the list is updated. The Department will review the results of the macroinvertebrate samples to determine, if possible, the cause of the impairment. The Department will also continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-110

(Black Creek)

General Description

Watershed 03040201-110 extends through Darlington, Florence, and Chesterfield Counties and consists primarily of ***Black Creek*** and its tributaries from the Lake Robinson dam to the Pee Dee River. The watershed occupies 205,560 acres of the Sand Hills and Upper Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Noboco-Bonneau-Alpin series. The erodibility of the soil (K) averages 0.14; the slope of the terrain averages 4%, with a range of 0-15%. Land use/land cover in the watershed includes: 8.54% urban land, 42.32% agricultural land, 13.97% scrub/shrub land, 0.03% barren land, 31.04% forested land, 3.48% forested wetland, and 0.61% water.

This section of Black Creek accepts drainage from the upper reach (03040201-100) and Beaverdam Creek (King Millpond, Beaverdam Millpond) before flowing through Prestwood Lake (Dry Branch, Horsepen Branch) in the City of Hartsville. Downstream of the lake, Black Creek accepts drainage from Snake Branch, Spring Branch, Boggy Swamp (Little Boggy Swamp, McIntosh Millpond), Everlasting Branch (Gilbert Lake), Seed Branch (Little Seed Branch, Leavenworth Branch, Chapmans Pond), Horse Creek (Jeffords Millpond), and Lucas Creek. Swift Creek (Indian Creek, Ramsey Pond, Bellyache Creek) enters the system next, flowing through the City of Darlington, followed by High Hill Creek (Star Fork Branch, McCall Branch), Ashby Branch, and Polk Swamp Creek (Adams Branch, Twomile Creek, Polk Swamp Canal). The Black Creek Watershed drains into the Pee Dee River. There are a total of 494.7 stream miles in this watershed, and numerous lakes and ponds (10-300 acres) used for recreation, irrigation, industry, and fish hatchery purposes. Beaverdam Creek and Black Creek are classified FW* (dissolved oxygen not less than 4 mg/l and pH between 5.0 and 8.5) from the Lake Robinson Dam to the U.S. 52 crossing (just upstream of Horse Creek and Lucas Creek). Tributaries to these stream reaches along with the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Black Creek - There are seven monitoring sites along this section of Black Creek, portions of which were Class B until April, 1992. Although pH excursions occurred at several sites, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Aquatic life and recreational uses are fully supported at the site upstream of Prestwood Lake (PD-159), and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Sediment samples revealed a-BHC (an insecticide) well above the detection limit in 1990, and P,P'DDE (a metabolite of DDT) was detected in 1991. Although the use of DDT was banned in 1973, it is very persistent in the environment. Immediately downstream of Prestwood Lake (PD-021), aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. In addition, there is a significantly increasing trend in fecal coliform bacteria concentrations.

At the next site downstream (PD-330), aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and turbidity suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. There is also a significantly increasing trend in fecal coliform bacteria concentrations. Further downstream (PD-023), aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are partially supported at this site, which was Class B until April, 1992, due to fecal coliform bacteria excursions, which are again compounded by a significantly increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are fully supported at PD-025, but may be threatened by a significantly decreasing trend in pH. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site, which was Class B until April, 1992.

Further downstream at PD-027, aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, total nitrogen, and total suspended solids concentrations suggest improving conditions for these parameters. Sediment samples revealed P,P'DDT in 1990 and P,P'DDT and O,P'DDT, P,P'DDD and O,P'DDD (metabolites of DDT) in 1994. Also detected in the 1994 sediment sample was butylbenzyl phthalate (a plasticizer and an intermediate in organic chemical synthesis) at a concentration greatly above the detection limit. Recreational uses are fully supported at this site and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions. Aquatic life and recreational uses are fully supported at the furthest downstream site (PD-078).

Prestwood Lake - There are two monitoring sites on Prestwood Lake. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Aquatic life uses are fully supported at the upstream site (PD-268), but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. In addition, there is a significantly increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are also fully supported at the downstream site (PD-081), but may be threatened by a significantly increasing trend in turbidity. A very high concentration of copper was measured in the 1990 sediment sample. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. In an effort to provide access for recreation and industrial uses of the lake, 3000 grass carp (10/acre) were stocked in 1993.

Snake Branch - There are two monitoring sites along Snake Branch. Aquatic life uses are not supported at the upstream site (PD-258) due to dissolved oxygen and pH excursions. There is also a significantly decreasing trend in pH. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly increasing trend in dissolved oxygen concentration, and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, along with a significantly increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are not supported at the downstream site (PD-137) due to pH excursions. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

High Hill Creek (PD-103) - Aquatic life uses are fully supported, but may be threatened by significantly increasing trends in total phosphorus concentrations and turbidity. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. A significantly decreasing trend in five-day biochemical oxygen demand concentration suggests improving conditions for this parameter. Recreational uses are fully supported at this site, but may be threatened by a significantly increasing trend in fecal coliform bacteria concentrations.

Tilefield discharging to ditch at Old Darlington WWTP to Swift Creek (PD-141) - Aquatic life uses are not supported due to dissolved oxygen excursions, compounded by significantly increasing trends in five-day biochemical oxygen demand, pH, and turbidity. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions. In addition, there is a significantly increasing trend in fecal coliform bacteria concentrations.

Recreational Swimming Areas

RECEIVING STREAM	*SWIMMING LOCATION*
PRESTWOOD LAKE	AMERICAN LEGION HUT
BLACK CREEK TRIBUTARY	LAWTON PARK

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BLACK CREEK SONOCO PRODUCTS/HARTSVILLE PIPE #: 002 FLOW: 0.249 PIPE #: 001 FLOW: 3.79 WQL FOR DO,NH3N,BOD5	SC0003042 MAJOR INDUSTRIAL EFFLUENT WATER QUALITY
BLACK CREEK CITY OF HARTSVILLE PIPE #: 001 FLOW: 2.50 WQL FOR DO,TRC,NH3H	SC0021580 MAJOR DOMESTIC WATER QUALITY
BLACK CREEK WILLIAMS OIL CO./JACKSON OIL DIV. PIPE #: 001 FLOW: M/R	SC0026093 MINOR INDUSTRIAL EFFLUENT
BLACK CREEK CITY OF DARLINGTON/BLACK CREEK WWTP PIPE #: 001 FLOW: 1.60 WQL FOR DO,TRC,NH3N	SC0039624 MAJOR DOMESTIC WATER QUALITY
BLACK CREEK IMC RAINBOW PIPE #: 001 FLOW: M/R	SCG250022 MINOR INDUSTRIAL EFFLUENT
BLACK CREEK WELLMAN INC. PIPE #: 001 FLOW: 0.90 PIPE #: 001 FLOW: 1.016 (PROPOSED) WQL FOR NH3N	SC0004162 MAJOR INDUSTRIAL WATER QUALITY WATER QUALITY
SWIFT CREEK CITY OF DARLINGTON/NORTH MAIN ST WTP PIPE #: 001 FLOW: M/R	SCG651001 MINOR DOMESTIC EFFLUENT
SWIFT CREEK DCW&SA/SWIFT CREEK PIPE #: 001 FLOW: 0.114 WQL FOR DO,TRC,NH3N	SC0043231 MINOR DOMESTIC WATER QUALITY

INDIAN CREEK TRIBUTARY CITY OF DARLINGTON/52 BYPASS WTP PIPE #: 001 FLOW: M/R	SCG655005 MINOR DOMESTIC EFFLUENT
HIGH HILL CREEK DCW&SA/MATOWN PIPE #: 001 FLOW: 0.03 WQL FOR DO,TRC,NH3N,BOD5	SC0029033 MINOR DOMESTIC WATER QUALITY
STAR FORK BRANCH TRIBUTARY DCW&SA/SC BAPTIST HOME PIPE #: 001 FLOW: 0.05 WQL FOR DO,TRC,NH3N,BOD5	SC0040126 MINOR DOMESTIC WATER QUALITY
STAR FORK BRANCH TRIBUTARY MARLOWE MOBILE HOME PARK PIPE #: 001 FLOW: 0.012 WQL FOR DO,TRC,NH3N,BOD5	SC0027669 MINOR DOMESTIC WATER QUALITY
MCCALL BRANCH CITY OF FLORENCE/LUCAS ST. WTP PIPE #: 001 FLOW: M/R	SC0038318 MINOR DOMESTIC EFFLUENT

LAND APPLICATION SYSTEM FACILITY NAME	PERMIT # TYPE
TILEFIELD ODOM'S MHP	ND0067997 DOMESTIC
SPRAYFIELD FLORENCE COUNTY/TV ROAD	ND0068608 DOMESTIC
PERCOLATION BASIN JAMES F. BYRNES ACADEMY	ND0067245 DOMESTIC
PERCOLATION BASIN HENRY TIMROD ELEM. SCHOOL	ND0067954 DOMESTIC
TILEFIELD SWINKS MHP	ND0067636 DOMESTIC
SPRAYFIELD DCW&SA/SWIFT CREEK PLANT	ND0067962 DOMESTIC
SPRAY ON GOLF COURSE FLORENCE COUNTY/DIST. #4	ND0073695 DOMESTIC

Nonpoint Source Contributions

Black Creek, Snake Branch, and the tilefield discharging to Swift Creek are all included on the §319 high priority list of the Nonpoint Source Management Program due to concerns for fecal coliform bacteria and dissolved oxygen. These concerns also place Black Creek, Snake Branch, and Prestwood Lake on the 1996 §303(d) tertiary list, and the tilefield discharging to Swift Creek may be added to these lists for the same reasons. High Hill Creek is included on the §319 list due to concerns for turbidity and phosphorus.

Landfill Activities

There are 12 closed sanitary landfills in this watershed in addition to those listed below.

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
CITY OF FLORENCE MUNICIPAL	DWP-054 CLOSED
GREAT CYPRESS ROAD LANDFILL CONSTRUCTION	---------- ACTIVE
PEE DEE ENVIRONMENTAL CONSTRUCTION	---------- ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
PALMETTO SAND & FILL PALMETTO SAND #2	0912-16 SAND/CLAY
L.H. STOKES & SON, INC. JEFFERS	0961-16 SAND/CLAY
L.H. STOKES & SON, INC. HOFFMEYER PIT	1067-16 SAND/CLAY
L.H. STOKES & SON, INC. DOVESVILLE	0924-16 SAND
PEE DEE ENVIRONMENTAL SERV. LEGGS PIT	0900-21 SAND/CLAY
APAC-CAROLINA, INC. ASPHALT PLANT #8	0084-21 SAND
INDUSTRIAL PAVING, INC. BRUNSEN MINE	0349-16 SAND/CLAY
MCCUTCHEON & SCURRY PIT #1	0192-16 SAND/CLAY

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
KOA CAMPGROUND BLACK CREEK	21-00028 ACTIVE

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
SONOCO PRODUCTS/HARTSVILLE #1 & #3 (I) PRESTWOOD LAKE	8.496 -----
SONOCO PRODUCTS/HARTSVILLE #2 & #4 (I) PRESTWOOD LAKE	8.496 ----

Growth Potential

There is a high potential for growth in this watershed, which contains the Cities of Hartsville and Darlington, and portions of the City of Florence and the Town of McBee. The watershed has several major highways that serve as growth corridors. U.S. 52 connects Florence to Darlington and has been widened to four lanes, with long term plans to continue the widening from Darlington to Cheraw. S.C. 151, already widened to four lanes, is the main Florence to Charlotte travel corridor, and is becoming a magnet for commercial development. The segment of S.C. 151 between Darlington and Hartsville is the primary growth corridor for Darlington County and should see additional commercial and industrial growth.

There is extensive water service coverage in the watershed coming from the Town of McBee, the Cities of Hartsville, Darlington, and Florence, and the Darlington County Water and Sewer Authority. Sewer service is currently limited to the three urban areas. Water and sewer system expansions in the watershed are highly likely. All three domestic systems have aggressive growth plans, especially the City of Florence which has recently constructed a new treatment facility and outfall to the Pee Dee River. The City of Florence also has tentative plans to develop a regional surface water treatment facility along the Pee Dee River to address severe groundwater supply problems being experienced by many Pee Dee municipalities.

Implementation Strategy

Black Creek and Prestwood Lake are impaired by elevated levels of fecal coliform bacteria from nonpoint sources. The Department will investigate whether the widespread increasing trends and excursions in fecal coliform bacteria concentrations are due to point source discharge, nonpoint source runoff, or natural background levels, and try to determine the sources increasing turbidity. The stations with the impairments were Class B waters until April, 1992. The Department will also review the pH data further in order to determine if the widespread decreasing trends in pH are indicative of acid rain or other acidic inputs, or represent a return to natural conditions through implemented point and nonpoint source controls.

Snake Branch and the tilefield draining to Swift Creek are impaired by elevated levels of fecal coliform and low dissolved oxygen concentrations. The Department will investigate whether fecal coliform bacteria concentrations are due to collection system problems and/or other nonpoint source runoff. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-120

(Pee Dee River)

General Description

Watershed 03040201-120 is located in Dillon, Marion, and Florence Counties and consists primarily of the ***Pee Dee River*** and its tributaries from Black Creek to Jeffries Creek. The watershed occupies 90,534 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Cantey-Chastain-Persanti series. The erodibility of the soil (K) averages 0.28; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.25% urban land, 8.50% agricultural land, 24.71% scrub/shrub land, 0.01% barren land, 29.59% forested land, 34.58% forested wetland, and 2.36% water.

This segment of the Pee Dee River accepts drainage from an upper reach (03040201-050), together with Brownsville Swamp, Schoolhouse Branch (Alford Branch, Back Swamp), Mill Creek, Tobys Creek (Poccosin Swamp, Gum Swamp, Cud Swamp, Ellerbe Bay, Agnay Swamp), Muddy Gut (Buckley Creek), and Bachelor Creek. The Pee Dee River flows through the Great Pee Dee River Swamp throughout the watershed. There are a few recreational ponds (12-16 acres) and a total of 328.5 stream miles in this watershed, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Pee Dee River (PD-337) - Aquatic life uses may not be supported due to occurrences of chromium and copper in excess of the aquatic life acute standards. In addition, there is a significantly decreasing trend in dissolved oxygen concentration. Recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
PEE DEE RIVER	SC0045462
CITY OF FLORENCE/PEE DEE RIVER PLANT	MAJOR DOMESTIC
PIPE #: 001 FLOW: 15.0	WATER QUALITY
PIPE #: 001 FLOW: 20.0 (PROPOSED)	WATER QUALITY
WQL FOR DO,NH3N,BOD5	

PEE DEE RIVER CITY OF MARION PIPE #: 001 FLOW: 5.0 PROPOSED; WQL FOR DO	SC0046230 MAJOR DOMESTIC WATER QUALITY
BUCKLEY CREEK E.I. DUPONT/FLORENCE PLANT PIPE #: 001 FLOW: 16.57 WQL FOR DO	SC0002917 MAJOR INDUSTRIAL WATER QUALITY
PEE DEE RIVER STONE CONTAINER CORP. PIPE #: 001 FLOW: 17.1 WQL FOR DO	SC0000876 MAJOR INDUSTRIAL WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
SPRAYFIELD TOWN OF SELLERS	ND0065315 DOMESTIC
SPRAYFIELD INTERNATIONAL PAPER, INC.	ND0002534 INDUSTRIAL

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
E.I. DUPONT LANDFILL INDUSTRIAL	---------- CLOSED
STONE CONTAINER CORP. INDUSTRIAL	IWP-049 ACTIVE

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
WILLIS CONSTRUCTION CO. WILLIS CONSTRUCTION MINE #2	0517-21 SAND/CLAY

Water Supply

WATER USER (TYPE) ***STREAM***	***MAX. PUMPING CAPACITY (MGD)*** ***AVE. PUMPING CAPACITY (MGD)***
E.I. DUPONT (I) PEE DEE RIVER	28.80 ------
STONE CONTAINER CORP. (I) PEE DEE RIVER	14.40 ------

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Sellers and the community of Pee Dee. U.S. 76/301, a four-laned corridor to the Grand Strand, crosses the watershed at Pee Dee and runs from the City of Florence to the City of Marion and on to Myrtle Beach. U.S. 301 is two-laned from Pee Dee north to Sellers, and is not scheduled for widening in the near future. The City of Marion has an interconnection with the City of Mullins which may increase growth along the U.S. 76 corridor between Marion and Mullins. There is rural water service available from the Marion County Rural Water Company to approximately 30% of the watershed. The only sewer service is limited to the Town of Sellers, which is not capable of extending service unless the system is improved. Industrial growth is possible along the Pee Dee River due to the existing industries and the water supply the river provides.

Implementation Strategy

The Pee Dee River is impaired by elevated levels of chromium and copper from unknown sources, which places it on the 1996 §303(d) secondary list. Biological community data are needed to determine the ecological significance of the metal excursions and should be acquired where feasible. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-130

(Jeffries Creek)

General Description

Watershed 03040201-130 is located in Florence and Darlington Counties and consists primarily of ***Jeffries Creek*** and its tributaries. The watershed occupies 144,647 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Rains-Norfolk-Wagram series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 9.78% urban land, 26.00% agricultural land, 39.29% scrub/shrub land, 0.02% barren land, 19.00% forested land, 5.38% forested wetland, and 0.53% water.

Jeffries Creek accepts drainage from Beaverdam Creek, Gulley Branch, Pye Branch, Middle Swamp (Oakdale Lake, Forest Lake, Alligator Branch, Billy Branch), Eastman Branch, and Cane Branch. Polk Swamp Canal (Canal Branch) enters the system downstream, followed by Middle Branch, Long Branch, Boggy Branch, More Branch, and Willow Creek (Little Willow Creek, Cypress Creek, Spring Branch, Claussen Branch). The Jeffries Creek Watershed drains into the Pee Dee River. There are several ponds (12-180 acres) used for recreation and irrigation purposes in this watershed, and a total of 363.4 stream miles. Jeffries Creek and Middle Swamp are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Jeffries Creek - There are five monitoring sites along Jeffries Creek, portions of which were Class B until April, 1992, and recreational uses are fully supported at all sites. Aquatic life uses are partially supported at the furthest upstream station (PD-639) based on macroinvertebrate community data. Further downstream (PD-255), aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH. Although dissolved oxygen excursions occurred at this secondary monitoring station, sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations, and the blackwater creek has naturally low dissolved oxygen concentrations. A significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

At the next site downstream (PD-256), aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. This site is also predisposed naturally to low dissolved oxygen concentrations due to blackwater conditions. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. The 1991 sediment sample revealed P,P'DDD and P,P'DDE (metabolites of DDT) and the insecticide endrin at concentrations greatly exceeding the detection limit, along with very high concentrations of copper and zinc. P,P'DDT and O,P'DDD were detected in the 1992 sediment sample, and P,P'DDD was detected in the 1993 sample, but at much lower concentrations than in the 1991 sample. Although the use of DDT was banned in 1973, it is very persistent in the environment. A very high concentration of copper was measured in the 1994 sample.

Aquatic life uses are fully supported further downstream (PD-035), but may be threatened by a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. At the furthest downstream site (PD-231), aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter.

Gulley Branch (PD-065) - Aquatic life uses may not be supported due to occurrences of copper in excess of the aquatic life acute standard, along with a significantly increasing trend in pH. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

Middle Swamp (PD-230) - Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. Middle Swamp frequently does not flow at the monitoring location, and although dissolved oxygen excursions occurred, they were typical of values seen in stagnant streams and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. This creek was Class B until April, 1992. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. In addition, there is a significantly increasing trend in fecal coliform bacteria concentrations.

Willow Creek - There are two monitoring sites along Willow Creek. Aquatic life uses are partially supported at the upstream site (PD-630) based on macroinvertebrate community data, but are not supported at the downstream site (PD-167) due to pH and dissolved oxygen excursions. Recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BEAVERDAM CREEK G E/FLORENCE PLANT PIPE #: 001 FLOW: 0.084	SC0004171 MINOR INDUSTRIAL EFFLUENT
BEAVERDAM CREEK CITY OF FLORENCE/DARLINGTON WTP PIPE #: 001 FLOW: M/R WQL FOR TRC	SC0032557 MINOR DOMESTIC WATER QUALITY
PYE BRANCH CITY OF FLORENCE/PINE ST. WTP PIPE #: 001 FLOW: M/R	SC0046451 MINOR DOMESTIC EFFLUENT
GULLEY BRANCH TRIBUTARY KOPPERS INDUSTRIES PIPE #: 001 FLOW: 0.146	SC0003018 MINOR INDUSTRIAL EFFLUENT
GULLEY BRANCH TRIBUTARY CSX TRANSPORTATION PIPE #: 001 FLOW: 0.5	SC0001325 MINOR INDUSTRIAL EFFLUENT
POLK SWAMP CANAL CITY OF FLORENCE/EAST FLORENCE WTP PIPE #: 001 FLOW: M/R	SCG655006 MINOR INDUSTRIAL EFFLUENT
LITTLE WILLOW CREEK COMMANDER NURSING CENTER PIPE #: 001 FLOW: 0.025 WQL FOR DO,TRC,NH3N,BOD5	SC0034703 MINOR DOMESTIC WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
PERCOLATION BASIN COLLEGE APTS	ND0063801 DOMESTIC

Nonpoint Source Contributions

Middle Swamp and Gulley Branch are included on the §319 list and the 1996 §303(d) tertiary list due to concerns for fecal coliform bacteria.

Landfill Activities

There are three closed sanitary landfills for the City of Florence and one open and one closed sanitary landfill for Florence County in this watershed in addition to those listed below.

SOLID WASTE LANDFILL NAME	*- PERMIT #*
FACILITY TYPE	*STATUS*
UNION CARBIDE	---------
INDUSTRIAL	ACTIVE

Mining Activities

MINING COMPANY	*PERMIT #*
MINE NAME	*MINERAL*
PALMETTO SAND & FILL, INC.	0911-16
PALMETTO SAND #1	SAND

Camp Facilities

FACILITY NAME/TYPE	*PERMIT #*
RECEIVING STREAM	*STATUS*
SWAMP FOX CAMPING, INC.	21-0239
MIDDLE SWAMP	ACTIVE

Growth Potential

There is a high potential for growth in this watershed, which contains most of the City of Florence. The Florence urban area is the commercial center of the Pee Dee region and is expected to continue to grow, particularly in the I-20/I-95 vicinity on the western edge of Florence, and the major highways leading into the urban area. The watershed is served by U.S. 52, U.S. 76, I-20, and I-95 as well as the interchange between the interstates to the west of Florence. The completion of the southeastern bypass around the Florence urban area should increase growth.

This watershed, including the Florence urban area, the Pee Dee River area, and the Hartsville area is expected to be an area of major industrial expansion over the next twenty years. There are several large public or private industrial parks, located along the western side of the Florence urban area, and should foster additional large-scale development. This watershed has extensive water system coverage, including service from the City of Hartsville, the Darlington County Water and Sewer Authority, the City of Florence, and Florence County. The City of Florence has recently initiated feasibility studies of a surface water treatment facility on the Pee Dee River that could evolve into a regional water treatment plant. Florence has recently expanded its wastewater treatment plant and constructed an outfall to the Pee Dee River, which should increase the availability of sewer service in the watershed and increase the likelihood of additional growth and development.

Implementation Strategy

Jeffries Creek and Willow Creek have impaired macroinvertebrate communities from unknown sources. The macroinvertebrate data for these streams were evaluated after development of the 1996 §303(d) list and Jeffries Creek and Willow Creek may be added when the list is updated in 1998. Willow Creek also has dissolved oxygen and pH impairments. The Department will review the results of the macroinvertebrate samples to determine the source of the Willow Creek impairments. Gulley Branch is impaired from elevated levels of copper from unknown sources and from elevated levels of fecal coliform bacteria; however, improvements in treatment plants in neighboring area's collection system should improve bacteria conditions. Biological community data are needed to determine the ecological significance of the metal excursions on Gulley Branch and should be acquired where feasible. Middle Swamp is impaired by elevated fecal coliform levels, and the Department's Watershed Implementation Staff will determine, where possible, the source of the bacteria and recommend solutions to correct the problems. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-140

(Pee Dee River)

General Description

Watershed 03040201-140 is located in Florence and Marion Counties and consists primarily of the ***Pee Dee River*** and its tributaries from Jeffries Creek to the Lynches River. The watershed occupies 63,702 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Chastain-Tawcaw-Lakeland-Cantey series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.15% urban land, 11.93% agricultural land, 30.67% scrub/shrub land, 28.53% forested land, 27.50% forested wetland, 0.02% nonforested wetland, and 1.20% water.

This section of the Pee Dee River accepts drainage from its upper reaches (03040201-050, 03040201-120), together with Mill Branch, Bigham Branch, Barfield Mill Creek (Barfield Old Mill Creek, Brier Branch), the Catfish Creek Watershed, Bull Swamp (Ford Swamp), and Mulyns Creek. There are several oxbow lakes draining into the river including Dead River, Graves Lake, Dog Lake, and Honey Lake. There are few ponds and lakes (28-160 acres) used for recreation, irrigation, and aquaculture purposes in this watershed and a total of 246.0 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Pee Dee River (PD-076) - Aquatic life uses may not be supported due to occurrences of copper in excess of the aquatic life acute standard. In addition, there are significantly decreasing trends in pH and significantly increasing trends in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported, but may be threatened by a significantly increasing trend in fecal coliform bacteria concentrations.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
MILL BRANCH	SC0002119
DELTA MILLS MKTG/PAMPLICO WWTP	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.0092	WATER QUALITY
WQL FOR DO,TRC,NH3N,BOD5	

BULL SWAMP B & M AQUACULTURE FARMS PIPE #: 001 FLOW: 2.50 WQL FOR DO,TRC,NH3N,BOD5	SC0043281 MINOR INDUSTRIAL WATER QUALITY
LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
SPRAYFIELD DELTA MILLS MKTG/PAMPLICO	ND0004472 INDUSTRIAL

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MARION CERAMICS PEE DEE CERAMICS MINE	0050-34 CLAY
TAW CAW SALES TAW CAW PLANTATION MINE	0889-34 SAND
CAROLINA SAND, INC. NECK SAND MINE #2	0899-34 SAND

Water Supply

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
DELTA MILLS MKTG (I) PEE DEE RIVER	3.85 ——

Growth Potential

There is a low potential for growth in this rural watershed, which extends across the floodplain of the Pee Dee River. Except for a small portion of the Town of Pamplico, no public water or sewer service is available in the watershed.

Implementation Strategy

The Pee Dee River is impaired by elevated levels of copper from unknown sources, which places it on the 1996 §303(d) list. Biological community data are needed to determine the ecological significance of the metal excursions and should be acquired where feasible. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-150

(Catfish Creek)

General Description

Watershed 03040201-150 is located in Marion and Dillon Counties and consists primarily of ***Catfish Creek*** and its tributaries. The watershed occupies 106,152 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Norfolk-Coxville-Rains-Fuquay series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 2.34% urban land, 23.37% agricultural land, 27.33% scrub/shrub land, 27.60% forested land, 19.23% forested wetland, and 0.13% water.

Catfish Canal receives drainage from Stackhouse Creek (Boggy Branch) and flows through Catfish Swamp near the City of Marion. Collins Creek accepts drainage from Smith Swamp (Grassy Bay, Rabbit Bay, Little Horsepen Bay, Big Horsepen Bay, Middle Bay, Wolfpit Bay, Mill Bay) and joins Catfish Canal to form the headwaters of Catfish Creek. Catfish Creek then accepts drainage from Flat Swamp, Pitch Pot Swamp (Millrace Stream, Keedley Swamp, Wiggins Swamp), Mink Creek, and Beverly Swamp. The Catfish Creek Watershed drains into the Pee Dee River. There are a few ponds (15-25 acres) used for recreation and irrigation in this watershed and a total of 370.9 stream miles. Catfish Creek and Smith Swamp are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

Water Quality

Catfish Creek (PD-097) - This creek was Class B until April, 1992. Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH. This stream frequently does not flow at the monitoring location, and although dissolved oxygen excursions occurred, they were typical of values seen in stagnant streams, especially in channelized situations and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Sediment samples revealed P,P'DDD (a metabolite of DDT) and hexachlorobenzene (used in organic synthesis and as a wood preservative and fungicide) in 1990; P,P'DDT, O,P'DDT, and P,P'DDD in 1992; and P,P'DDD and P,P'DDE in 1994. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Smith Swamp - There are two monitoring sites within Smith Swamp, which was Class B until April, 1992. Aquatic life uses are fully supported at the upstream site (PD-320), but may be threatened by a significantly decreasing trend in pH. This is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations. In addition, the dissolved oxygen excursions recorded were typical of values seen in stagnant streams (in this case due in part to beaver dam construction) and were considered natural, not standards violations. The dams are being demolished, and when flow is reestablished conditions should improve. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

At the downstream site (PD-187), aquatic life uses are not supported due to dissolved oxygen excursions. In addition, there is a significantly decreasing trend in dissolved oxygen concentration, a significantly increasing trend in total nitrogen concentration, high concentrations of chromium and zinc measured in 1993, and several copper values in excess of the aquatic life acute standard. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions; however, a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Activities Potentially Affecting Water Quality

Point Source Contributions

Smith Swamp is included on the 1996 §303(d) secondary list in relation to dissolved oxygen, nutrients, toxics, and fecal coliform concerns.

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)*** ***COMMENT***	***NPDES#*** ***TYPE*** ***LIMITATION***
CATFISH CANAL TRICO/FRED HYATT WTP PIPE #: 001 FLOW: MR	SC0039527 MINOR DOMESTIC EFFLUENT
CATFISH CANAL AL WILLIAMS INDUSTRY PIPE #: 001 FLOW: 4.00 WQL FOR DO,TRC,NH3N,BOD5	SC0045888 MINOR INDUSTRIAL WATER QUALITY
SMITH SWAMP CITY OF MARION/ S. MAIN STREET PIPE #: 001 FLOW: 2.84 PIPE #: 001 FLOW: 3.2 (PROPOSED) WQL FOR DO,TRC,NH3N,BOD5	SC0020257 MAJOR DOMESTIC WATER QUALITY WATER QUALITY

Nonpoint Source Contributions

Smith Swamp and Catfish Canal are included on the §319 high priority list of the Nonpoint Source Management Program due to concerns for fecal coliform bacteria. These concerns also place Smith Swamp and Catfish Canal on the 1996 §303(d) secondary and tertiary lists, respectively.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
OAK GROVE SITE MANNED COLLECTION SITE	- ——— ACTIVE
MARION COUNTY SANITARY	——— CLOSED

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MARION COUNTY BOBBY MACE BORROW PIT	0298-34 SAND/CLAY

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the City of Marion and a portion of the Town of Latta. Commercial development is limited to the City of Marion and portions of U.S. 76, particularly east of Marion at the U.S. 501 Bypass. Industrial development occurs along U.S. 76 and U.S. 501 Bypass near Marion. This watershed also contains the Marion Industrial Park and the Latta Industrial Park. U.S. 76 and U.S. 501 Bypass are four-lane major highways that serve as major access corridors to the Grand Strand and will increase in traffic and development. Water service is provided from the City of Marion and the Marion County Rural Water Company and covers most of the watershed. Sewer service is available to the areas in and around the City of Marion and the Town of Latta.

Implementation Strategy

Catfish Canal is impaired by elevated levels of fecal coliform bacteria. The Department's Watershed Implementation Staff will work with agriculture specialists from the Department and NRCS to determine, if possible, the source of the bacteria. The downstream site of Smith Swamp is impaired by low dissolved oxygen levels and elevated levels of fecal coliform bacteria. The City of Marion is relocating its discharge, which may have been aggravating the dissolved oxygen situation, and conditions are expected to improve. The Department's Watershed Implementation Staff will determine, where possible, additional sources of bacteria to Smith Swamp and recommend solutions to correct the problem. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-160

(Pee Dee River)

General Description

Watershed 03040201-160 is located in Marion, Georgetown, Williamsburg, and Florence Counties and consists primarily of the ***Pee Dee River*** and its tributaries from the Lynches River to the Little Pee Dee River. The watershed occupies 101,862 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Yemassee-Yauhannah-Chastain-Tawcaw series. The erodibility of the soil (K) averages 0.18; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 0.06% urban land, 19.04% agricultural land, 10.69% scrub/shrub land, 0.01% barren land, 42.60% forested land, 25.47% forested wetland, 1.35% nonforested wetland, and 0.78% water.

This section of the Pee Dee River accepts drainage from its upper reaches (03040201-050, 03040201-120, 03040201-140), together with Crooked Lake, Negro Lake Run (Maple Swamp), and Clark Creek (Muddy Creek, Mill Creek, Soccee Swamp, Island Branch, Cedar Branch). Apple Orchard Slough and Staple Lake connect Clark Creek to the river. Further downstream, the river accepts drainage from Jacobs Creek, Port Creek (Flat Run Swamp, Boser Swamp, Squirrel Run Bay, Pennyroyal Swamp, Bells Swamp, Tyler Creek), Larrimore Gully, Gravel Gully Branch, and Jordan Lake (Jordan Creek). There are a total of 294.7 stream miles in this watershed, all classified FW with the exception of Clark Creek and Muddy Creek, which are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Pee Dee River (PD-060) - Aquatic life and recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BOSER SWAMP GCSD/DEEP CREEK ELEM SCHOOL PIPE #: 001 FLOW: 0.009 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0039195 MINOR DOMESTIC WATER QUALITY

FLAT RUN SWAMP GCSD/PLEASANT HILL HIGH SCHOOL PIPE #: 001 FLOW: 0.018 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0039101 MINOR DOMESTIC WATER QUALITY
CLARK CREEK TOWN OF HEMINGWAY/WWTP PIPE #: 001 FLOW: 0.45 WQL FOR DO,TRC,NH3N,BOD5	SC0039934 MINOR DOMESTIC WATER QUALITY

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
CAROLINA SAND, INC. BRITTON'S NECK MINE	0725-34 SAND

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
INTERNATIONAL PAPER, INC. (I) PEE DEE RIVER	30.00 -------
CITY OF GEORGETOWN (M) PEE DEE RIVER	6.00 1.65

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Hemingway and the City of Johnsonville. Both municipalities contain water and sewer infrastructure, but outside of the area, the watershed is rural with primarily agricultural uses and timberlands.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040201-170

(Pee Dee River)

General Description

Watershed 03040201-170 is located in Georgetown and Horry Counties and consists primarily of the ***Pee Dee River*** and its tributaries from the Little Pee Dee River to Winyah Bay. The watershed occupies 79,965 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Levy-Chastain-Yemassee-Yauhannah-Tawcaw series. The erodibility of the soil (K) averages 0.25; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 1.17% urban land, 2.49% agricultural land, 5.50% scrub/shrub land, 0.02% barren land, 48.06% forested land, 24.76% forested wetland, 13.93% nonforested wetland, and 4.07% water.

This section of the Pee Dee River accepts drainage from its upper reaches (03040201-050, 03040201-120, 03040201-140, 03040201-160), together with Conch Creek (Sally Branch), Bradley Branch (Sheep Pen Branch), and Bull Creek (Cowford Swamp, Horsepen Branch). Also draining into Pee Dee River are Vandross Bay, Yauhannah Creek (Carvers Bay, Tupelo Bay), Pole Castle Branch, St. Pauls Branch, Cypress Creek, and Chapel Creek. Little Bull Creek connects Bull Creek to the Pee Dee River and Cooter Creek (Joe Bay) connects Little Bull Creek to Thoroughfare Creek. Streams that connect the Pee Dee River to the Waccamaw River include Bull Creek, Thoroughfare Creek, Guendalose Creek/Bullins Creek, Squirrel Creek, Butler Creek, Schooner Creek, Jericho Creek, and Middleton Cut. Carr Creek and Little Carr Creek connect the Pee Dee River to Jericho Creek. Due to the absence of point source dischargers and the presence of endangered species and other special characteristics, several streams (or portions of streams) may qualify as potential ORW candidates including Cypress Creek, St. Pauls Branch, Pole Castle Creek, Yauhannah Creek, Tupelo Bay, and Vandross Bay. There are a total of 339.3 stream miles in this watershed and 3,333.4 acres of estuarine areas. The streams are classified FW from the beginning of the watershed to the Pee Dee River's confluence with Thoroughfare Creek. Downstream of the confluence, the river is classified SB* (dissolved oxygen not less than daily average of 5.0 mg/l with a minimum of 4.0 mg/l) and its tributaries are classified SB.

The U.S. Fish and Wildlife Service has proposed the establishment of **Waccamaw National Wildlife Refuge**, which would extend over portions of the Pee Dee River and the Waccamaw River incorporating this watershed along with portions of watersheds 03040206-140 and 03040206-150. The purpose of the proposed refuge would be to protect and manage an important coastal river ecosystem, which includes a significant number of rare and endangered species, and large contiguous blocks of riverine wetlands and bottomland hardwood forests that provide habitat for wetland-dependent wildlife. The refuge would also provide compatible wildlife-dependent recreational activities, such as hunting, fishing, wildlife observation, and environmental education.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Pee Dee River (PD-061) - Aquatic life uses are fully supported, but may be threatened by a high concentration of zinc measured in water in 1994 and a very high concentration of lead measured in sediment in 1994. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus, total nitrogen, and total suspended solids concentrations suggest improving conditions for these parameters. Recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION***
COMMENT	
PEE DEE RIVER	SC0045985
FAST FARE S.C.-667	MINOR INDUSTRIAL
PIPE #: 001 FLOW: 0.028	EFFLUENT
NEVER CONSTRUCTED	
CHAPEL CREEK	SC0047660
GCW&SD/PLANTERSVILLE WTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.001	WATER QUALITY
WQL FOR TRC; NEVER CONSTRUCTED	

LAND APPLICATION SYSTEM	**PERMIT#**
FACILITY NAME	**TYPE**
SLUDGE APPLICATION SITE	ND0069892
GSW&SA/BULL CREEK REGIONAL WTP	DOMESTIC

Mining Activities

MINING COMPANY	***PERMIT #***
MINE NAME	***MINERAL***
JAMES M. MILL, JR.	1073-22
INGLESIDE MINE	SAND/CLAY

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
GSW&SA/BULL CREEK REGIONAL WTP (M) BULL CREEK	22.00 8.75

Growth Potential

There is a moderate potential for growth in this watershed, except for the area surrounding the City of Georgetown. There is a regional proposal in the Georgetown County area to evaluate a connection of the Cities of Andrews and Georgetown along with an expansion of the Georgetown treatment facility. Water infrastructure is located in the Plantersville community and areas closer to the City of Georgetown. Sewer infrastructure is only located in and immediately surrounding Georgetown. The portion of the Georgetown area within this watershed should see primarily commercial and residential growth. Outside of this area, the watershed is predominately rural with some agricultural uses and timberlands.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040203-220

(Lumber River)

General Description

Watershed 03040203-220 **(incorporating 03040203-215)** is located in Dillon, Horry, and Marion Counties and consists primarily of the ***Lumber River*** and its tributaries from the South Carolina/North Carolina state line to its confluence with the Little Pee Dee River. The watershed occupies 91,597 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Woodington-Norfolk-Yonges-Coxville-Goldsboro series. The erodibility of the soil (K) averages 0.19; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.24% urban land, 26.93% agricultural land, 17.46% scrub/shrub land, 0.01% barren land, 28.14% forested land, 26.90% forested wetland, and 0.32% water.

The Lumber River originates in North Carolina and accepts drainage within South Carolina from Ashpole Swamp, Gapway Swamp, and Boggy Branch (Pew Branch) before draining into the Little Pee Dee River. Ashpole Swamp also originates in North Carolina and flows across the border to receive drainage from Bear Swamp (Roundabout Swamp, Canaan Branch, Gully Branch, Beaverdam Creek, Gaddys Millpond, Pages Millpond, Cowpen Swamp) before flowing into the Lumber River. Gapway Swamp accepts drainage from Jordan Creek (Granger Pond, Feathery Bay) and Hook Branch. There are several ponds (10-200 acres) used for recreation and irrigation purposes in this watershed, and a total of 233.9 stream miles. The streams in this watershed are classified FW with the exception of Ashpole Swamp and Bear Swamp, which are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Lumber River (PD-038) - Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. Although pH excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Sediment samples revealed 1,1,1-trichloroethane in 1992, and butylbenzyl phthalate well above the detection limit in 1994. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total suspended solids suggest improving conditions for these parameters. Recreational uses are fully supported, but may be threatened by a significantly increasing trend in fecal coliform bacteria concentrations.

Ashpole Swamp (PD-347) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT	NPDES# TYPE LIMITATION
LUMBER RIVER TOWN OF NICHOLS WWTP PIPE #: 001 FLOW: 0.135	SC0041327 MINOR DOMESTIC EFFLUENT
BEAR SWAMP TOWN OF LAKE VIEW PIPE #: 001 FLOW: 0.20 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0022284 MINOR DOMESTIC WATER QUALITY

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a low potential for growth in this watershed, which contains the Towns of Lake View and Nichols. An extensive rural water system serves the majority of the watershed, but sewer services are limited to the Towns of Lake View and Nichols. U.S. 76 crosses the watershed (through the Town of Nichols), but it is a two-lane road with no plans for improvement. S.C. 9 runs from Nichols to the City of Dillon, and is scheduled to be widened to four lanes.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040204-030

(Little Pee Dee River)

General Description

Watershed 03040204-030 **(incorporating 03040204-015, -029, -049, and -060)** is located in Marlboro, Dillon, and Marion Counties and consists primarily of the ***Little Pee Dee River*** and its tributaries from its origin to the Lumber River. The watershed occupies 136,488 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Lakeland-Norfolk-Johnston-Wagram-Coxville series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 4%, with a range of 0-15%. Land use/land cover in the watershed includes: 3.17% urban land, 35.99% agricultural land, 23.12% scrub/shrub land, 0.01% barren land, 22.10% forested land, 15.02% forested wetland, and 0.59% water.

This upper reach of the Little Pee Dee River accepts drainage from several tributaries that originate in North Carolina. Beaverdam Creek (Marsnip Branch, McNairs Millpond, McLaurins Millpond, Parker Branch, Panther Creek, Bear Creek) and Gum Swamp join to form Red Bluff Lake and the headwaters of the Little Pee Dee River. Downstream of the confluence, Reedy Branch enters the river followed by Leith Creek, Carolina Branch, Shoe Heel Creek, and Martins Branch. Sweat Swamp (Wash Branch, Donohoe Bay, Beaverdam Creek) enters the river next, followed by Hayes Swamp (Persimmon Swamp), Ropers Mill Branch, Manning Bay, and Maple Swamp near the City of Dillon. Contrary Swamp originates in South Carolina and drains into North Carolina near Hayes Swamp. Cypress Branch drains into the Little Pee Dee River downstream of Maple Swamp, together with Kelly Bay, Cane Branch (Boggy Branch), Bell Swamp Branch (Butler Branch, Long Branch, Indian Pot Branch, Poplar Branch, Little Pee Dee River State Park Pond), Hayes Branch, Mile Branch, Hards Branch, and the Buck Swamp Watershed. Little Pee Dee State Park is located on the river near the confluence with Cane Branch and extends over to Bell Branch Swamp. There are numerous lakes and ponds (10-65 acres) used for recreation, irrigation, and industrial purposes in this watershed and a total of 419.5 stream miles, all classified FW with the exception of Maple Swamp, which is classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Little Pee Dee River **-** There are seven monitoring sites along this section of the Little Pee Dee River, which was Class B until April, 1992. Although pH excursions occurred at all sites, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Recreational uses are fully supported at all sites and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions at the furthest downstream site.

Aquatic life uses are fully supported at the furthest upstream site (PD-365). At the next site downstream (PD-069), aquatic life uses are also fully supported, but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity and a high concentration of chromium measured in 1993. Sediment samples revealed P,P'DDT in 1990, and P,P'DDT and P,P'DDE (a metabolite of DDT) in 1994. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters.

Further downstream (PD-029E), aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. Aquatic life uses are also fully supported at the next site downstream (PD-055), but may be threatened by significantly increasing trends in turbidity and total phosphorus concentration, and a high concentration of copper and zinc measured in 1994. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter.

Further downstream (PD-030A), aquatic life uses are again fully supported, but may be threatened by a significantly decreasing trend in pH and significantly increasing trends in turbidity and total phosphorus concentration. Sediment samples revealed a very high concentration of zinc in 1991 and a high concentration of zinc in 1992. P,P'DDT and O,P'DDT, and P,P'DDD, O,P'DDD, P,P'DDE, and O,P'DDE (metabolites of DDT) were measured in sediment numerous times between 1990 and 1994. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Aquatic life use is fully supported at the next site downstream (PD-348).

At the furthest downstream site (PD-052), aquatic life uses may not be supported due to occurrences of zinc and copper in excess of the aquatic life acute standards, including two high concentrations of zinc. In addition, there is a significantly increasing trend in pH. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter.

Panther Creek - There are two monitoring sites along this stream, which was Class B until April, 1992. Although dissolved oxygen and pH excursions occurred at both sites, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Aquatic life uses are fully supported at the upstream site (PD-016), but may be threatened by a significantly declining trend in dissolved oxygen concentration and significantly increasing trends in pH and turbidity. Recreational uses are fully supported.

Aquatic life uses are also fully supported at the downstream site (PD-016) and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Maple Swamp (PD-030) - This creek was Class B until April, 1992. Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in pH and a significantly increasing trend in turbidity. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are not supported at this site due to fecal coliform bacteria excursions.

McLaurins Mill Pond (PD-017A) - Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity, possibly a result of aquatic plant removal from the pond. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are fully supported.

Little Pee Dee State Park Pond - The pond has been treated with aquatic herbicides from 1989-1992 and again from 1994-1996 in order to control aquatic plants and provide access for swimming and boating.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
LITTLE PEE DEE RIVER CITY OF DILLON PIPE #: 001 FLOW: 5-10 WQL FOR DO,TRC,NH3N,BOD5	SC0021776 MAJOR DOMESTIC WATER QUALITY
LITTLE PEE DEE RIVER TRICO/HAMER WTP PIPE #: 001 FLOW: 0.0468 WQL FOR TRC	SC0047121 MINOR DOMESTIC WATER QUALITY
LITTLE PEE DEE RIVER ANVIL KNITWEAR/DILLON DISTR CTR PIPE #:001 FLOW: M/R	SC0047511 MINOR INDUSTRIAL EFFLUENT
HAYES SWAMP SOUTH OF THE BORDER PIPE #: 001 FLOW: 0.155 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0031801 MINOR DOMESTIC WATER QUALITY

GUM SWAMP TOWN OF MCCOLL/WWTP PIPE #: 001 FLOW: 0.400	SC0041963 MINOR DOMESTIC EFFLUENT
ROPERS MILL BRANCH TRICO/BOBBY BYRD WTP PIPE #: 001 FLOW: 0.0764 WQL FOR TRC	SC0046361 MINOR DOMESTIC WATER QUALITY
LONG BRANCH TRICO/BERMUDA WTP PIPE #: 001 FLOW: 0.0346 WQL FOR TRC; NEVER CONSTRUCTED	SC0047112 MINOR DOMESTIC WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
SPRAYFIELD CITY OF DILLON	ND0072826 DOMESTIC

Nonpoint Source Contributions

Panther Creek and Maple Swamp are listed on the §319 list and the 1996 §303(d) tertiary list due to concerns for fecal coliform.

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
DILLON COUNTY LANDFILL MANNED COLLECTION SITE	DWP-118 ACTIVE
LITTLE ROCK SITE MANNED COLLECTION SITE	---------- ACTIVE
HAMER SITE MANNED COLLECTION SITE	---------- ACTIVE
RIVERDALE SITE MANNED COLLECTION SITE	---------- ACTIVE
HIGHWAY 34 SITE MANNED COLLECTION SITE	---------- ACTIVE

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
BAKER BROTHERS OF GRESHAM, INC. GRESHAM	0959-17 SAND/CLAY
WILLARD BARKER, JR. MILLER	0955-17 SAND/CLAY

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
LITTLE PEE DEE STATE PARK/FAMILY CAMP BELL SWAMP BRANCH	17-0004 ACTIVE
PEDROS CAMPGROUND/FAMILY CAMP HAYES SWAMP	17-0005 ACTIVE

Growth Potential

There is a moderate potential for growth in this watershed, which contains the Town of McColl and the City of Dillon. The Town of McColl has water and sewer service in and immediately surrounding the town, which could encourage growth. The main growth area for the watershed is the City of Dillon, with development concentrated in the downtown area, the area south of Dillon, and at two interstate interchanges (I-95/S.C. 34 and I-95/S.C. 9). Industrial development is extensive, mostly in the urban fringe area north of Dillon. Due to water and sewer improvements in the past five years, additional growth in this industrial corridor is likely. Water service includes a moderately extensive rural system associated with the Trico Water Company and the City of Dillon. Public sewer service is more limited, serving only Dillon and the urban fringe surrounding it. The City of Dillon has recently undergone a wastewater treatment plant upgrade, and an expansion of sewer service is now likely.

Implementation Strategy

The furthest downstream site of Little Pee Dee River is impaired from elevated levels of copper and zinc from unknown sources, which places it on the 1996 §303(d) secondary list. Biological community data are needed to determine the ecological significance of the metal excursions and should be acquired where feasible. Panther Creek and Maple Swamp are impaired from fecal coliform bacteria from point and nonpoint sources. The point source dischargers to these streams have been removed and the bacterial conditions of both streams should improve. Agricultural Best Management Practices (BMPs) have been recently implemented in Panther Creek and should also improve bacterial conditions. The Department's Watershed Implementation Staff will continue to investigate and work with agricultural specialists from the Department and NRCS to determine additional sources of bacteria. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040204-050

(Buck Swamp)

General Description

Watershed 03040204-050 is located in Dillon, Marlboro, and Marion Counties and consists primarily of ***Buck Swamp*** and its tributaries. The watershed occupies 105,621 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Smithboro-Persanti-Norfolk-Aycock series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 1.69% urban land, 33.58% agricultural land, 20.67% scrub/shrub land, 26.61% forested land, 17.28% forested wetland, and 0.15% water.

Reedy Creek (Indigo Bay, Eli Branch, Old Mill Creek, Betsy Jackson Bay) and Little Reedy Creek (Hilson Bay) join to form the headwaters of Buck Swamp near the Town of Latta. Downstream of the confluence, Mill Creek enters the system followed by The Gully and Maidendown Swamp (Piney Bay, Maidendown Bay, Tenmile Bay). The Buck Swamp Watershed drains into the Little Pee Dee River. There are a few ponds (15-23 acres) used for recreation, irrigation, and waste water purposes in this watershed, and a total of 306.0 stream miles. Buck Swamp and Maidendown Swamp are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Buck Swamp - There are two monitoring sites within Buck Swamp, which was Class B until April, 1992. Aquatic life uses are not supported at the upstream site (PD-031) due to dissolved oxygen excursions. In addition, there is a significantly decreasing trend in pH. Although this is a secondary monitoring station and sampling is purposely biased towards periods with potentially low dissolved oxygen concentrations, the concentrations are inordinately low. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and turbidity suggest improving conditions for these parameters. Recreational uses are partially supported at this site, but a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions. Aquatic life and recreational uses are fully supported at the downstream site (PD-349) and dissolved oxygen concentrations looked much improved over the upstream monitoring site. Although dissolved oxygen excursions occurred at this site, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Activities Potentially Affecting Water Quality

Point Source Contributions

Buck Swamp is included on the 1996 §303(d) secondary list in relation to dissolved oxygen and fecal coliform concerns.

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
BUCK SWAMP TOWN OF LATTA PIPE #: 001 FLOW: 0.60 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0025402 MINOR DOMESTIC WATER QUALITY
MAIDENDOWN SWAMP AVM, INC. PIPE #: 001 FLOW: 0.210 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0001872 MINOR INDUSTRIAL WATER QUALITY
MAIDENDOWN SWAMP FAST FARE S.C.-657 PIPE #: 001 FLOW: 0.0274 WETLAND; WQL FOR DO,TRC,NH3N,BOD5; NEVER CONSTRUCTED	SC0046281 MINOR INDUSTRIAL WATER QUALITY

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
RURAL SANITATION, INC. CONSTRUCTION	--------- ACTIVE
LATTA SITE MANNED COLLECTION SITE	--------- ACTIVE
FLOYDALE SITE MANNED COLLECTION SITE	--------- ACTIVE

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
BASS LAKE RV CAMPGROUND, INC./FAMILY OLD MILL CREEK	17-0009 ACTIVE

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Latta and a portion of the City of Mullins. Commercial development is confined to the two municipalities and the interchange of I-95 and S.C. 34. Public water service exists in and around the Town of Latta and in Mullins and the rural area north of Mullins. Public sewer is more limited, and includes only the municipal limits of Latta and Mullins and their very immediate surroundings. No major expansion of water or sewer coverage is anticipated.

Implementation Strategy

Buck Swamp is impaired by elevated levels of fecal coliform bacteria and low dissolved oxygen concentrations due to point source contributions. The facility affecting the stream has upgraded its plant and dissolved oxygen concentrations and bacterial conditions should improve. Department personnel will continue to evaluate the situation. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040204-070

(Little Pee Dee River)

General Description

Watershed 03040204-070 is located in Marion and Horry Counties and consists primarily of the ***Little Pee Dee River*** and its tributaries from the Lumber River to its confluence with the Pee Dee River. The watershed occupies 206,486 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Johnston-Meggett-Dorovan-Norfolk series. The erodibility of the soil (K) averages 0.20; the slope of the terrain averages 2%, with a range of 0-3%. Land use/land cover in the watershed includes: 0.44% urban land, 15.52% agricultural land, 18.12% scrub/shrub land, 0.01% barren land, 35.52% forested land, 25.44% forested wetland, 4.52% nonforested wetland, and 0.42% water.

This section of the Little Pee Dee River accepts drainage from its upper reach (03040204-030) together with Cedar Creek (Cow Bog, Juniper Bay, Spring Bay, Mossy Bay, Back Swamp, Cartwheel Branch, Cartwheel Bay, Fifteenmile Bay, Jet Branch), Brown Swamp (White Oak Creek, Fowler Branch), Black Creek (Flat Bay), and Turkey Pen Swamp (Gunter Bay, Hannah Bay, Wolf Pit Bay, Mill Bay) before flowing through Gerald Lake. Cartwheel Bay is a Heritage Trust Preserve. Downstream of Gerald Lake, the Lake Swamp Watershed enters the river followed by Dawsey Swamp, Tredwell Swamp (Mill Swamp), The Falls, Back Swamp (Fox Bay), and Sandy Slough. Little Reedy Creek (Cane Bay) merges with Reedy Creek (Big Sister Bay, Little Sister Bay, Reedy Creek Bay) in Smith Millpond and then flows through Leggett Millpond before draining into the Little Pee Dee River downstream of Sandy Slough. Further downstream, Cypress Creek enters the river, followed by Marsh Creek, Alligator Run, the Brunson Swamp Watershed, Palmetto Swamp (Little Palmetto Swamp, Ratan Branch), and Giles Bay.

Singleton Creek (Dwight Creek, Red Hill Branch, Alfred Creek, Bunker Hill Creek, Church Branch, Running Branch) drains into Brown Swamp as does Brown Bay, Knotty Branch, Cooper Branch, Davis Branch, Juniper Bay, Calhoun Branch, Todd Mill Branch, Lewis Mill Branch, and Alkinson Branch. Brown Swamp then flows through Jordan Lake and Old River Lake before entering the river. Hunting Swamp (Boyd Canal, Jenkins Swamp, Cedar Grove Branch, Cates Bay, Forney Branch, Brownway Branch, Big Cypress Swamp, Sarah Branch, Pawley Swamp) enters the system at the base of the watershed followed by Russ Creek (Jiles Creek, Russ Lake) near the Brittons Neck area. Several oxbow lakes drain into the Little Pee Dee River including Cox Lake, Gerald Lake, Newfound Lake, Gunter Lake, Johnson Big Lake, Cannon Lake, Jordan Lake, Old River Lake, Richard Lake, Sampson Lakes, and Dead River. There are several lakes and ponds (12-100 acres) used for recreation and irrigation purposes in this watershed, and a total of 876.3 stream miles. All streams in the watershed are classified ORW with the following exceptions: Brown Swamp in the upper portion of the watershed and another Brown Swamp further downstream are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and their tributaries are classified FW; and Palmetto Swamp and Hunting Swamp and their tributaries are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Little Pee Dee River - There are three monitoring sites along this section of the Little Pee Dee River. Although pH excursions occurred at all sites and dissolved oxygen excursions occurred at the downstream site, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Aquatic life uses are fully supported at the upstream site (PD-042), but may be threatened by a significantly increasing trend in pH. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Aquatic life uses are also fully supported at the midstream (PD-189) and downstream sites (PD-350), but may be threatened at the midstream site by significantly decreasing trends in dissolved oxygen concentrations and pH. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at all sites, but are threatened at the midstream site by a significantly increasing trend in fecal coliform bacteria concentrations. The Little Pee Dee River has been treated with aquatic herbicides in 1989, 1990, and 1992-1994 in order to control aquatic plants and provide access to the main river, tributaries, and lakes.

White Oak Creek (PD-037) - This creek was Class B until April, 1992. Aquatic life uses are fully supported, but may be threatened by a significantly decreasing trend in dissolved oxygen concentration. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, together with a significantly increasing trend in fecal coliform bacteria concentrations.

Cedar Creek (PD-351) - Aquatic life uses are fully supported based on macroinvertebrate community data. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

White Oak Creek is listed on the 1996 §303(d) tertiary list due to concerns for fecal coliform.

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
LITTLE PEE DEE RIVER TRIBUTARY LOCUST TREE DEV./PAMPLICO PIPE #: 001 FLOW: 0.0292 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0035203 MINOR DOMESTIC WATER QUALITY
WHITE OAK CREEK CITY OF MULLINS PIPE #: 001 FLOW: 2.75 WQL FOR DO,TRC,NH3N,BOD5	SC0029408 MAJOR DOMESTIC WATER QUALITY
LITTLE REEDY CREEK APAC-CAROLINA/RAINES PLT PIPE #: 001 FLOW: M/R	SCG730025 MINOR DOMESTIC WATER QUALITY
GILES BAY BECKER MINERAL/BRITTONS PIPE #: 001 FLOW: M/R	SC0041408 MINOR DOMESTIC WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT #** **TYPE**
SPRAYFIELD TOWN OF CENTENARY	ND0069631 DOMESTIC

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
MARION COUNTY MANNED COLLECTION SITE	---------- ACTIVE
MARION COUNTY MANNED COLLECTION SITE	---------- ACTIVE
CITY OF MULLINS CONSTRUCTION	---------- ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
BAKER BROTHERS OF GRESHAM, INC. HARRELSON	0963-34 SAND/CLAY
BLACK CREEK MINING CO. BLACK CREEK MINE	1003-26 SAND
APAC-CAROLINA, INC. RAINS	0977-34 SAND

CAROLINA SAND, INC. PEE DEE MINE	0707-34 SAND
WEAVER CO., INC. CANNON SPRING MINE	0467-26 LIMESTONE
WEAVER CO., INC. JOHNSTON MINE	1077-36 SAND/CLAY
G & C, INC. G & C PIT	0222-26 LIMESTONE
CAVU, INC. BUCK MINE	1046-26 SAND

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Centenary, and portions of the City of Mullins and the Town of Aynor. A portion of the U.S. 501 corridor running from the City of Marion to the City of Conway crosses this watershed. Water infrastructure is located in and around the Town of Aynor, but only the U.S. 501 corridor in the Town of Aynor is sewered. There are plans to construct sewerage infrastructure along U.S. 501 from Aynor to Conway. It is likely that additional residential, commercial, and industrial development will occur along this corridor in the future. Another highway corridor that may encourage commercial and industrial growth in the watershed is U.S. 76 between the Cities of Marion and Mullins. This corridor has both water and sewer services and contains prime industrial properties. There is a relatively extensive rural water system serving the watershed, and an extension of this system into the Britton's Neck area is scheduled over the next several years. Sewer service is limited to the Mullins urban area and a small rural system in the Centenary area.

Implementation Strategy

White Oak Creek is impaired by elevated levels of fecal coliform bacteria due to point source contributions. Bacterial conditions are expected to improve as permit limits are revised. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040204-080

(Lake Swamp)

General Description

Watershed 03040204-080 is located in Horry County and consists primarily of the ***Lake Swamp*** and its tributaries. The watershed occupies 133,901 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Woodington-Goldsboro-Nansemond-Yonges-Norfolk series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.56% urban land, 17.18% agricultural land, 25.93% scrub/shrub land, 0.03% barren land, 32.58% forested land, 23.53% forested wetland, 0.08% nonforested wetland, and 0.11% water.

Mitchell Swamp accepts drainage from Haggins Creek (Calf Ford Branch), Savannah Branch, Mill Branch, Seed Tick Branch, Iron Springs Swamp (Iron Springs Bay, Bobs Branch, Pinelog Branch), and Long Branch. Mitchell Swamp joins with Pleasant Meadow Swamp (Gaskins Branch, Holmes Branch, Spring Branch, Big Branch, Fifth Branch, Rooty Branch) to form the headwaters of Lake Swamp. Downstream of the confluence, Playcard Swamp (Zeeks Branch, Pasture Branch, Chickencoop Branch, Daniel Hole Branch, Leather String Branch) enters the system followed by Breakfast Swamp, Prince Mill Swamp (Little Mill Branch, Big Mill Branch, Limerick Branch), Honey Camp Branch, Rattlesnake Branch, and Reedy Branch. Joiner Swamp (Long Branch, Joiner Bay, Bogue Bay) enters Lake Swamp next followed by Loosing Swamp (Watery Bay, Turf Camp Bay, Mose Swamp, Horsepen Bay). Loosing Swamp enters the system through Johnny Lake located on Lake Swamp downstream of Joiner Swamp. Skeebo Branch originates in South Carolina within this watershed and drains into Grissett Swamp in North Carolina. The Lake Swamp Watershed drains into the Little Pee Dee River. There are several lakes and ponds (11-25 acres) used for recreation, irrigation, and waste water purposes in this watershed, and a total of 428.6 stream miles. Lake Swamp and Pleasant Meadow Swamp are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5), and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Lake Swamp (PD-176) - Aquatic life and recreational uses are fully supported. Although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
PLEASANT MEADOWS SWAMP CITY OF LORIS WWTP PIPE #: 001 FLOW: 0.70 WETLAND; WQL FOR DO,TRC.NH3N,BOD5	SC0025348 MINOR DOMESTIC WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT#** **TYPE**
SPRAYFIELD GSW&SA/GREEN SEA FLOYDS HIGH SCHOOL	ND0066516 DOMESTIC

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a low potential for growth in this watershed, which contains a portion of the City of Loris. Water and sewer infrastructure are located in the City of Loris, and water service is available along the U.S. 701 corridor to the City of Conway. Outside of Loris, the area is predominately rural with agricultural uses and timberlands.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040204-090

(Brunson Swamp)

General Description

Watershed 03040204-090 is located in Horry County and consists primarily of ***Brunson Swamp*** and its tributaries. The watershed occupies 49,736 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Lynchburg-Yonges-Goldsboro-Nansemond series. The erodibility of the soil (K) averages 0.17; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 0.10% urban land, 19.71% agricultural land, 24.31% scrub/shrub land, 35.64% forested land, 20.18% forested wetland, 0.03% nonforested wetland, and 0.04% water.

Brunson Swamp accepts drainage from Chinners Swamp (Rabon Branch, Mill Branch, Savannah Creek, Big Swamp, Schoolhouse Branch, Evans Branch) and Spring Swamp (Holly Hill Branch). The Brunson Swamp Watershed drains into the Little Pee Dee River. There are a total of 167.2 stream miles in this watershed, all classified FW with the exception of Chinners Swamp, which is classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5).

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0402).

Chinners Swamp - There are two monitoring stations (PD-177, PD-352) along Chinners Swamp, and although dissolved oxygen excursions occurred, they were typical of values seen in swamps and blackwater systems and were considered natural, not standards violations. Aquatic life uses are fully supported at both sites, but may be threatened by a significantly increasing trend in turbidity at the upstream site. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at both sites.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)*** ***COMMENT***	***NPDES#*** ***TYPE*** ***LIMITATION***
MILL BRANCH TRIBUTARY GSW&SA/AYNOR WWTP PIPE #: 001 FLOW: 0.3 WETLAND; WQL FOR DO,TRC,NH3N,BOD5; NOT PRESENTLY IN USE	SC0045403 MINOR DOMESTIC WATER QUALITY

MILL BRANCH TRIBUTARY
CORNER CUPBOARD
PIPE #: 001 FLOW: 0.108
WETLAND

SC0042871
MINOR INDUSTRIAL
EFFLUENT

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
TOWN OF AYNOR MUNICIPAL	---------- CLOSED

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a low potential for growth for most of this watershed. An exception is the U.S. 501 corridor that bisects the watershed. This heavily traveled road connects I-95 with Myrtle Beach, and an increase in residential and commercial growth is likely. The Town of Aynor has been connected to the Grand Strand Water and Sewer Authority Conway wastewater plant which should encourage growth. The northeastern edge of the watershed contains water infrastructure and should see a moderate increase in development. The remainder of the watershed is rural with agricultural, timberlands, and residential areas.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

Watershed Evaluations and Implementation Strategies Within WMU-0403

Watershed Management Unit 0403 consists primarily of the ***Waccamaw River Basin*** and the ***Atlantic Intracoastal Waterway (AIWW)/Sampit River/Winyah Bay Basin***. This Management Unit originates in the Lower Coastal Plain and flows through the Coastal Zone region. There are a total of 11 watersheds and some 636,628 acres of which 9.3% is urban land, 4.1% is agricultural land, 13.9% is scrub/shrub land, 0.1% is barren land, 44.7% is forested land, 20.2% is forested wetland, 4.6% is nonforested wetland, and 3.1% is water (SCLRCC 1990). The urban land percentage is comprised chiefly of the Cities of Georgetown and Myrtle Beach and the Grand Strand area. There are a total of 1,196.9 stream miles in WMU-0403 and 21,618.3 acres of estuarine areas.

The Waccamaw River flows across the South Carolina state line from North Carolina and accepts drainage from Kingston Lake and the AIWW via Socastee Creek. The Waccamaw River then joins the Sampit and Pee Dee Rivers to form Winyah Bay, which drains into the Atlantic Ocean.

Fish Consumption Advisory

A fish consumption advisory has been issued by the Department for the freshwater portions of the Waccamaw River and the Atlantic Intracoastal Waterway, advising people to limit the amount of some types of fish consumed from these rivers and their tributaries due to mercury contamination. Pregnant women, infants, children, and people with neurologic diseases face the greatest risk of mercury related health problems and should not eat any fish from these waters. The fish consumption guidelines are based on diets of one type of fish only. If a person consumes several of the species listed for a river, then the person should cut back even further on the amounts of each species consumed. For example, if a person eats three-quarters of a pound of largemouth bass from the Waccamaw River, the person should not eat any bowfin, bluegill sunfish, or redear sunfish from that river that month. The types of fish with mercury and the acceptable amounts of those fish that can be consumed are as follows: **Waccamaw River** (Largemouth bass - 0.75 lb./month, Bowfin - 1.25 lb./month, Bluegill Sunfish - 3.5 lb./month, Redear Sunfish - 3.25 lb./month); **Atlantic Intracoastal Waterway** (Largemouth Bass - 1 lb./month, Bowfin - 2 lb./month, Bluegill Sunfish - 3.75 lb./month).

The source of mercury contamination in fish tested by the Department is uncertain. Mercury occurs naturally and may account for a portion of the levels found in fish tissue. Another source is deposition from the air, a result of the combustion of fossil fuels. The Department continues to monitor for mercury in ambient air and precipitation. A precipitation sampler is located at the Congaree Swamp National Monument as part of the National Air Deposition Program, Mercury Deposition Network. Weekly composite samples are collected for mercury analysis to provide background concentrations for application across the State. The continuous monitoring of mercury concentrations in air is also conducted at the site.

There is no data available linking mercury in wastewater discharges as a major source of mercury in fish, nor can mercury levels be traced to any industries. Naturally occurring low pH, low hardness, low alkalinity, and low dissolved oxygen levels commonly found in coastal plain swamps and blackwater streams are conditions that promote the transformation of inorganic mercury into methylmercury, the form most readily accumulated by fish. South Carolina is one of 40 states that are seeing high mercury levels in fish and have issued advisories. These states are working together and with the U.S. Environmental Protection Agency to try and identify the cause or causes of mercury in fish.

Climate

Normal yearly rainfall in the WMU-0403 area is 50.32 inches, according to the S.C. historic climatological record (SCWRC 1990). Data compiled from National Weather Service stations in Loris, Conway, and Georgetown were used to determine the general climate information for this portion of the State. The highest level of rainfall occurs in the summer with 17.48 inches; 11.16, 10.42, and 11.26 inches of rain falling in the fall, winter, and spring, respectively. The average annual daily temperature is 63.4°F. Summer temperatures average 78.8°F and fall, winter, and spring temperatures are 64.9°F, 47.0°F, and 63.0°F, respectively.

03040206-120

(Kingston Lake)

General Description

Watershed 03040206-120 is located in Horry County and consists primarily of ***Kingston Lake*** and its tributaries. The watershed occupies 84,080 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Yonges-Nansemond-Bladen-Wahee-Pocomoke series. The erodibility of the soil (K) averages 0.19; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 2.87% urban land, 13.40% agricultural land, 25.56% scrub/shrub land, 0.08% barren land, 31.56% forested land, 26.28% forested wetland, 0.11% nonforested wetland, and 0.14% water.

Kingston Lake accepts drainage from Jacks Bay, Alligator Swamp, and White Oak Swamp. White Oak Swamp receives drainage from Little White Oak Swamp (Cane Branch), Horsepen Branch, Huckleberry Branch, Bug Swamp (Bay Gully Branch, Bayboro Branch, Hellhole Swamp), and Fox Branch. Camp Swamp enters the system next followed by Horsepen Creek, Maple Swamp (Big Baxter Swamp, Little Baxter Swamp, Horse Creek, Cross Branch, Poplar Swamp, Booth Branch, Smith Branch, Boggy Swamp), Grier Swamp (Priver Branch, Mill Branch, Long Swamp, St. Paul Branch, Brown Swamp, Mary Branch), and Crab Tree Swamp (Ned Creek, Thompson Swamp, Oakey Swamp, Beaver Hole Swamp, Altman Branch). The Kingston Lake Watershed drains into the Waccamaw River. There are several ponds (15-28 acres) used for recreation and waste water purposes in this watershed and a total of 227.5 stream miles, all classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0403).

Kingston Lake Swamp (PD-107) - Aquatic life uses are not supported due to dissolved oxygen excursions. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions, but a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Crab Tree Swamp (PD-158) - Aquatic life uses are not supported due to dissolved oxygen excursions. There was also an occurrence of a very high concentration of zinc. The 1994 sediment sample revealed the pesticide chlordane. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
MAPLE SWAMP UNIBLEND SPINNERS/CONWAY PIPE #: 002 FLOW: 0.065 PIPE #: 001 FLOW: 0.020 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0022454 MINOR INDUSTRIAL EFFLUENT WATER QUALITY

Nonpoint Source Contributions

Kingston Lake and Crab Tree Swamp are included on the §319 high priority list of the Nonpoint Source Management Program and the 1996 §303(d) tertiary list due to concerns for fecal coliform bacteria and dissolved oxygen.

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
THOMPKINS & ASSOCIATES, INC. WEST MINE	0638-26 LIMESTONE

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a moderate potential for residential and commercial growth in this watershed, which contains a portion of the City of Conway. Water and sewerage infrastructure is located in and around Conway, and water is available along the U.S. 701 corridor. An industrial area is located along U.S. 701 and should see growth due to an existing rail line and highways that make the area accessible from all directions.

Implementation Strategy

Kingston Lake and Crab Tree Swamp are both impaired by elevated levels of fecal coliform bacteria and low dissolved oxygen concentrations. The collection system affecting Kingston Lake has been repaired and bacterial conditions are expected to improve. Department personnel will investigate the lift station on Crab Tree Swamp for sources of bacteria, and the Watershed Implementation Staff will determine, where possible, sources of the impairments and recommend solutions to correct the problems. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040206-130

(Waccamaw River)

General Description

Watershed 03040206-130 **(incorporating 03040206-066, -091, -100, and -110)** is located in Horry County and consists primarily of the ***Waccamaw River*** and its tributaries from where it crosses the South Carolina/North Carolina state line to Kingston Lake. The watershed occupies 173,970 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Leon-Yauhannah-Lynnhaven-Yonges-Woodington series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 2.51% urban land, 6.15% agricultural land, 17.05% scrub/shrub land, 0.03% barren land, 42.78% forested land, 30.84% forested wetland, 0.03% nonforested wetland, and 0.61% water.

This portion of the Waccamaw River accepts drainage within South Carolina from Indigo Branch, Bellamy Branch, Buck Creek (Round Swamp, Sheepbridge Branch, Camp Swamp, Little Cedar Branch, Cedar Branch, Big Cedar Branch, Deep Branch), Cold Water Branch, Meetinghouse Branch (Mill Swamp), and Simpson Creek (Mill Branch, Bear Branch, Neal Branch, West Bear Branch, another Mill Branch, Cowpen Swamp, Little Cowpen Swamp, Flat Bay, Floyd Bay, Thoroughfare Bay, Frank Branch, Todo Swamp, Big Swamp). The river then flows through Jones Big Swamp (Boggy Swamp, Horse Savannah, Watts Bay), and accepts drainage from Stanley Creek (Beaverdam Swamp, Big Swamp), Tilly Swamp (Tiger Bay, Cane Bay, Buck Bay, Long Branch), Round Swamp, Dam Swamp, and Skeritt Swamp (Skinners Swamp, East Prong, South Prong). Tools Fork and Juniper Swamp in the upper portion of the watershed originate in South Carolina and drain into North Carolina. There are a few ponds (10-20 acres) used for recreation, irrigation, and wildlife management purposes in this watershed, and a total of 139.3 stream miles. The Waccamaw River is classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0403).

Waccamaw River (MD-124) **-** Aquatic life uses are fully supported, and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions. Sediment samples revealed a high concentration of lead in 1993, and P,P'DDT, and P,P'DDD, O,P'DDD, and P,P'DDE (metabolites of DDT) in 1990. Although the use of DDT was banned in 1973, it is very persistent in the environment. Recreational uses are fully supported, but may be threatened by a significantly increasing trend in fecal coliform bacteria concentrations.

Buck Creek (PD-362) - Aquatic life and recreational uses are fully supported.

Simpson Creek (PD-363) - Aquatic life and recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
WACCAMAW RIVER GSW&SA/LONGS WWTP PIPE #: 001 FLOW: 0.20 WQL FOR DO,TRC,NH3N,BOD5	SC0040878 MINOR DOMESTIC WATER QUALITY
WACCAMAW RIVER TRIBUTARY EMBERS CHARCOAL WWTP PIPE #: 001 FLOW: 0.001	SC0042889 MINOR INDUSTRIAL EFFLUENT

Nonpoint Source Contributions

Skeritt Swamp is included on the §319 high priority list of the Nonpoint Source Management Program due to development pressure and its potential stormwater runoff.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
HORRY COUNTY LANDFILL MUNICIPAL	DWP-089 ACTIVE
HORRY COUNTY LANDFILL MUNICIPAL	DWP-114 ACTIVE
HORRY COUNTY LANDFILL MUNICIPAL	DWP-064 CLOSED
HORRY COUNTY LANDFILL MUNICIPAL	--------- CLOSED
CITY OF LORIS MUNICIPAL	--------- CLOSED
CRE INVESTMENT CO. MUNICIPAL	--------- CLOSED

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*

LISTON T. HARDEE HARDEE	1055-26 SAND/CLAY
SOUTHERN AGGREGATES CO., INC. MYRTLE BEACH QUARRY	0654-26 LIMESTONE
FOX BROTHERS, INC. PIT #4	0790-26 SAND/CLAY
FOX BROTHERS, INC. RED HILL #1	0783-26 SAND/CLAY
FOX BROTHERS, INC. RED HILL #2	0980-26 SAND
MATERIAL HANDLERS PIT #3	1030-26 SAND
BRATCHER MINING CO. DIXON LEE MINE	0713-26 LIMESTONE

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a moderate to high potential for growth in this watershed due to its close proximity to the Cities of Myrtle Beach and North Myrtle Beach. The highest growth, in the form of residential and commercial development, will occur in the area east of the Waccamaw River, which has water infrastructure. The S.C. 90 corridor, which runs east of the river, also has water available. The U.S. 501 corridor, from the City of Conway to Myrtle Beach, has sewerage infrastructure and should see residential, commercial, and industrial growth. The Buist Tract, the largest undeveloped tract of land in Horry County, is expected to be developed in the future with 10,000 new residences and 11 new golf courses.

Moderate growth is seen for the S.C. 9 corridor, which crosses the watershed and the Waccamaw River. The S.C. 9 corridor has both water and sewerage infrastructure as does the unincorporated community of Longs. An increase in commercial development in particular is predicted for the S.C. 9 corridor. Moderate growth is predicted for the area west of the Waccamaw River. A portion of the City of Loris is in the portion of the watershed west of the river, and has both water and sewer services available in and around the town. Outside of the municipal areas, the watershed is primarily agricultural, timberland, and residential uses.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040206-140

(Waccamaw River)

General Description

Watershed 03040206-140 is located in Horry County and consists primarily of the ***Waccamaw River*** and its tributaries from Kingston Lake to Bull Creek. The watershed occupies 103,010 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Hobonny-Yauhannah-Ogeechee-Mouzon-Leon series. The erodibility of the soil (K) averages 0.14; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 13.00% urban land, 1.81% agricultural land, 10.30% scrub/shrub land, 0.33% barren land, 42.51% forested land, 27.66% forested wetland, 1.78% nonforested wetland, and 2.60% water.

This section of the Waccamaw River flows past the City of Conway and accepts drainage from its upper reach (03040206-130), Bear Swamp (Butler Swamp, Willow Springs Branch, Busbee Lake, Wadus Lake), Pitch Lodge Lake, Cox Ferry Lake, and Thorofare Creek. Gravely Gully and Halfway Swamp (Big Branch) enter the river next, followed by Old Womans Lake, Big Buckskin Creek, Peachtree Lake, and Enterprise Creek. Socastee Swamp and the AIWW (Folly Swamp) merge near the Town of Socastee to form Socastee Creek, which flows into the Waccamaw River downstream of Enterprise Creek. Oatbed Creek enters the river next followed by Seven Prongs, Peach Creek, Old River (Nimrod Creek), Clark Creek, Big Swamp, Old Dock Creek (Righthand Creek), and Silvers Creek. There are several lakes and ponds (10-400 acres) used for recreation, power generation, waste water, and wildlife management purposes in this watershed, and a total of 343.4 stream miles. This portion of the Waccamaw River is classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified FW.

The U.S. Fish and Wildlife Service has proposed the establishment of **Waccamaw National Wildlife Refuge**, which would extend over portions of the Pee Dee River and the Waccamaw River incorporating this watershed along with portions of watersheds 03040201-170 and 03040206-150. The purpose of the proposed refuge would be to protect and manage an important coastal river ecosystem, which includes a significant number of rare and endangered species, and large contiguous blocks of riverine wetlands and bottomland hardwood forests that provide habitat for wetland-dependent wildlife. The refuge would also provide compatible wildlife-dependent recreational activities, such as hunting, fishing, wildlife observation, and environmental education.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0403).

Waccamaw River - Intensive sampling for wasteload allocation model development has been conducted on this portion of the Waccamaw River. While routine monthly monitoring indicates that dissolved oxygen concentrations meet standards for most of the year, the intensive monitoring results document a period in late summer during which dissolved oxygen concentrations fail to meet standards. This critical period can last for weeks. Although low dissolved oxygen concentrations are typical occurrences in swamps and blackwater systems, predictive modeling indicates that naturally occurring low dissolved oxygen concentrations are being further impacted by existing point source discharges.

There are five monitoring sites along this section of the Waccamaw River, three are north of the confluence with the Atlantic Intracoastal Waterway. Recreational uses are fully supported at all sites. Aquatic life uses are partially supported at the furthest upstream site (MD-110) and may not be supported at the next site downstream (MD-111) due to dissolved oxygen concentrations. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters at both upstream sites. Aquatic life uses are also partially supported at the midstream site (MD-136) due to dissolved oxygen excursions. A significantly decreasing trend in total phosphorus concentration suggests improving conditions for this parameter.

Aquatic life uses may not be supported at the next site downstream (MD-146) below the confluence with the AIWW, due to the occurrence of low dissolved oxygen concentrations. In addition, there is a significantly decreasing trend in pH, a significantly increasing trend in turbidity, and a very high concentration of zinc measured in 1990. Significantly decreasing trends in five-day biochemical oxygen demand, and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Aquatic life uses again may not be supported at the furthest downstream site (MD-137) at Bull Creek, due to the occurrence of low dissolved oxygen concentrations, compounded by a significantly decreasing trend in pH. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter.

Atlantic Intracoastal Waterway (AIWW)- Intensive sampling for wasteload allocation model development has been conducted on this portion of the intracoastal waterway. The intensive monitoring results document a period in late summer during which dissolved oxygen concentrations fail to meet standards. This critical period can last for weeks. Although low dissolved oxygen concentrations are typical occurrences in swamps and blackwater systems, predictive modeling indicates that naturally occurring low dissolved oxygen concentrations are being further impacted by existing point source discharges.

There are five monitoring sites along this section of the AIWW, all north of the confluence with the Waccamaw River. The net flow of the AIWW is northward. Aquatic life uses are not supported at the northernmost site (MD-85) due to dissolved oxygen and pH excursions. Aquatic life uses are also not supported at the next site upstream (MD-87) due to dissolved oxygen and pH excursions and occurrences of zinc in excess of the acute aquatic life standard. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters at both northernmost sites. Recreational uses are not supported at either site due to fecal coliform bacteria excursions, together with a significantly increasing trend in fecal coliform bacteria concentrations.

Aquatic life uses are not supported at the middle site (MD-88) due to dissolved oxygen and pH excursions; however, significantly decreasing trends in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, together with a significantly increasing trend in fecal coliform bacteria concentrations. Aquatic life uses are also not supported further upstream (MD-89) due to dissolved oxygen and pH excursions. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions.

Aquatic life uses are not supported at the southernmost site (MD-127) due to dissolved oxygen and pH excursions, and a high concentration of zinc measured in water in 1992. Sediment samples revealed P,P'DDT, and O,P'DDD and P,P'DDE (metabolites of DDT) in 1990. Although the use of DDT was banned in 1973, it is very persistent in the environment. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported.

Bear Swamp (PD-638) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Activities Potentially Affecting Water Quality

Point Source Contributions

The Waccamaw River and the Atlantic Intracoastal Waterway are included on the 1996 §303(d) primary list of waters that are targeted for TMDL development due to dissolved oxygen concerns. The portion of the AIWW in this watershed is also included on the primary list due to dissolved oxygen, pH, and fecal coliform concerns. The Department is currently developing total maximum daily loads (TMDLs) for portions of the Waccamaw River and the AIWW in watersheds 03040206-140, 03040206-150, and 03040207-030. Utilizing a water quality model developed by the U.S. Geological Survey for the Waccamaw Regional Planning and Development Council, TMDLs are scheduled to be developed for the Waccamaw River in the Conway, Bucksport, and Hagley Landing areas and the AIWW in the Myrtle Beach/North Myrtle Beach area. Upon completion of the TMDL process, approved loadings will be provided to the Waccamaw Regional Planning and Development

Council for allocation to the different dischargers. Dischargers affected by the TMDLs will be: North Myrtle Beach (Ocean Drive and Crescent Beach Plants), Myrtle Beach, Grand Strand Water & Sewer Authority (Schwartz, Central, Bucksport, Conway, Vereen, and Murrells Inlet Plants), and Georgetown County (Pawleys Island Plant). Expiration dates have been extended for GSW&SA's Central wetland and river discharges until February 28, 1997, and for the other plants until October 31, 1997. This may allow completion of the TMDL process which provides for public input, USEPA review and approval, and the regional planning council's allocation of the allowable loads.

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
WACCAMAW RIVER S.C. PUBLIC SERV. AUTH./GRAINGER PIPE #: FLOW: 112.89 WQL FOR TRC	SC0001104 MAJOR INDUSTRIAL WATER QUALITY
WACCAMAW RIVER GSW&SA/BULL CREEK WTP PIPE #: 001 FLOW: 1.1 WQL FOR TRC	SC0043699 MINOR DOMESTIC WATER QUALITY
WACCAMAW RIVER GSW&SA/BUCKSPORT WWTP PIPE #: 001 FLOW: 0.2	SC0040886 MINOR DOMESTIC EFFLUENT
WACCAMAW RIVER WETLAND GSW&SA/CENTRAL WETLAND WWTP PIPE #: 001 FLOW: 1.2 WETLAND; WQL FOR TRC, NH3N	SC0039900 MAJOR DOMESTIC WATER QUALITY
WACCAMAW RIVER TRIBUTARY TO RIVER GSW&SA/CENTRAL RIVER WWTP PIPE #: 001 FLOW: 1.2 WQL FOR TRC	SC0040410 MAJOR DOMESTIC WATER QUALITY
ATLANTIC INTRACOASTAL WATERWAY CITY OF MYRTLE BEACH/WTP PIPE #: 001 FLOW: M/R	SCG641012 MINOR DOMESTIC EFFLUENT
ATLANTIC INTRACOASTAL WATERWAY TRIBUTARY USAF/MYRTLE BEACH AIR FORCE BASE PIPE #: 001 FLOW: 0.144 PIPE #: 002,003,004 FLOW: M/R	SC0002097 MINOR INDUSTRIAL EFFLUENT
SOCASTEE CREEK TRIBUTARY FLORENCE BARNHILL MINE PIPE #: 001 FLOW: M/R	SCG730016 MINOR INDUSTRIAL EFFLUENT
SOCASTEE SWAMP AVX CORPORATION PIPE #: 001 FLOW: 0.023	SC0043737 MINOR INDUSTRIAL EFFLUENT

SOCASTEE SWAMP ALLIED-SIGNAL, INC./CONWAY PIPE #: 001 FLOW: M/R	SCG250069 MINOR INDUSTRIAL EFFLUENT
CLARK CREEK INTEGRAL FARM MINE PIPE #: 001 FLOW: M/R	SCG730023 MINOR INDUSTRIAL EFFLUENT
WADUS LAKE GSW&SA/CONWAY WWTP PIPE #: 001 FLOW: 3.2 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0021733 MAJOR DOMESTIC WATER QUALITY
WILLOW SPRINGS BRANCH ERC, INC. PIPE #: 001 FLOW: M/R	SCG730015 MAJOR DOMESTIC WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT#** **TYPE**
SPRAYFIELD GSW&SA BULL CREEK WTP	ND0069892 DOMESTIC
SLUDGE SITE GSW&SA/SCHWARTZ SLUDGE APPL. SITE & SOD FARM	SC0037753 DOMESTIC

Nonpoint Source Contributions

The AIWW is included on the §319 high priority list of the Nonpoint Source Management Program and 1996 §303(d) primary list due to nonpoint source concerns for dissolved oxygen, pH, and fecal coliform bacteria. Socastee Creek is included on the §319 high priority list of the Nonpoint Source Management Program due to development pressure and its potential stormwater runoff.

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
UNNAMED LANDFILL MUNICIPAL	--------- CLOSED

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
ERC, INC. SANDRIDGE MINE	1032-26 SAND/CLAY
GROUND IMPROVEMENT TECHNIQUES LEES LANDING CIRCLE MINE	1056-26 SAND/CLAY
FOX BROTHERS, INC. PIT #2	0784-26 SAND/CLAY

FOX BROTHERS, INC. DEFENDER MINING, MINE #1	0636-26 SAND
EDGE REALTY COMPANY J&B SAND & FILL	0782-26 SAND
INTEGRAL FARM & GARDEN SERVICE INTEGRAL FARM	1051-26 SAND/CLAY
ROBERT O. COLLINS CO., INC. SOCASTEE PIT	1083-26 SAND
C. OWENS & SON, INC. OWENS PIT	0951-26 SAND/CLAY
FLORENCE D. BARNHILL FLORENCE BARNHILL MINE	1015-26 SAND/CLAY
WACCAMAW CLAY PRODUCTS CO. WACCAMAW CLAY PIT	0065-26 CLAY
INTERNATIONAL PAPER REALTY CORP. MINE 13A	1043-26 SAND/CLAY
INTERNATIONAL PAPER REALTY CORP. MINE 13B	1044-26 SAND/CLAY

Groundwater Concerns

The groundwater in the vicinity of the canal discharging to Socastee Swamp is contaminated with volatile organic compounds (VOCs). The VOC detections in the canal and ditch are the result of groundwater discharge of plumes from AVX and/or Wolverine Brass. The situation is currently in the assessment phase.

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

WATER USER (TYPE) *STREAM*	*MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
CITY OF MYRTLE BEACH (M) AIWW	30.00 13.15

Growth Potential

There is a high potential for residential, commercial, and industrial growth in this watershed, which contains a portion of the City of Conway and the outskirts of the City of Myrtle Beach. A high increase of growth is expected east of the Waccamaw River in particular, and a moderate increase west of the river. All but the northern most corner of the watershed contain water infrastructure. Sewer infrastructure is located in much of the watershed, including the S.C. 544 corridor, east of S.C. 544 (excluding the area north of U.S. 501), and in the Bucksport community.

Commercial and residential development is the predominate land use in the City of Conway and along sections of U.S. 501, U.S. 17 Bypass, and S.C. 544. Two industrial parks are located along the U.S. 501 corridor as well as an existing rail line. A section of the former Myrtle Beach Air Force Base is located in the watershed and is being developed for industrial and commercial use. Most of the land use outside of these areas consist of residential development and timberland. Several major highway improvement projects are planned for this area in the future including the widening of U.S. 501, S.C. 544, and U.S. 17.

Implementation Strategy

The Atlantic Intracoastal Waterway is impaired by low dissolved oxygen and pH levels and elevated levels of fecal coliform bacteria. An underwater sewer line near the Myrtle Beach Air Force Base was broken, but has since been repaired. Current data show improved bacterial conditions in this area. In addition, there are several known areas with failing septic tanks along the AIWW; sewer service is being extended to some of those areas, which may improve conditions. The Department is developing dissolved oxygen TMDLs for the Waccamaw River and AIWW, and permit limits are expected to be revised, again improving conditions. The Department's Watershed Implementation Staff will determine, where possible, the nonpoint source related water quality impairments and recommend solutions to correct the problems. Bear Swamp has an impaired macroinvertebrate community due to unknown sources. Bear Swamp has a braided channel and may dry up during dry periods. Department personnel will review the results of the biological data to determine, if possible, the source of the impairment. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040206-150

(Waccamaw River)

General Description

Watershed 03040206-150 is located in Georgetown and Horry Counties and consists primarily of the ***Waccamaw River*** and its tributaries from Bull Creek to Winyah Bay. The watershed occupies 39,860 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Leon-Bohicket-Lynnhaven-Hobonny-Chipley series. The erodibility of the soil (K) averages 0.10; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 12.57% urban land, 0.62% agricultural land, 13.33% scrub/shrub land, 0.19% barren land, 28.09% forested land, 23.31% forested wetland, 11.20% nonforested wetland, and 10.68% water.

This section of the Waccamaw River accepts drainage from its upper reaches (03040206-130, 03040206-140), together with Prince Creek, Vaux Creek, Silver Creek, Collins Creek, Cow House Creek, and Black Creek (White Creek). Sandhole Creek (Ruinsville Creek, Crane Creek) enters the river next followed by Springfield Creek, Brookgreen Creek, Pawleys Creek, Oatland Creek, Waverly Creek, and Caledonia Creek (Duncan Creek). There are a total of 117.0 stream miles in this watershed and 1,939.1 acres of estuarine areas. The Waccamaw River is classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8.5) from the top of the watershed to the river's confluence with Thoroughfare Creek. The tributaries along this portion of the river are classified FW. Downstream of the confluence, the river is classified SA* (dissolved oxygen not less than 4.0 mg/l) and its tributaries are classified SA.

The U.S. Fish and Wildlife Service has proposed the establishment of **Waccamaw National Wildlife Refuge**, which would extend over portions of the Pee Dee River and the Waccamaw River incorporating this watershed, along with portions of watersheds 03040201-170 and 03040206-140. The purpose of the proposed refuge would be to protect and manage an important coastal river ecosystem, which includes a significant number of rare and endangered species, and large contiguous blocks of riverine wetlands and bottomland hardwood forests that provide habitat for wetland-dependent wildlife. The refuge would also provide compatible wildlife-dependent recreational activities, such as hunting, fishing, wildlife observation, and environmental education.

Water Quality

Waccamaw River (MD-138) - Intensive sampling for wasteload allocation model development has been conducted on this portion of the Waccamaw River. While routine monthly monitoring indicates that dissolved oxygen concentrations meet standards for most of the year, the intensive monitoring results document a period in late summer during which dissolved oxygen concentrations fail to meet standards. This critical period can last for weeks. Although low dissolved oxygen concentrations are typical occurrences in swamps and blackwater systems, predictive modeling indicates that naturally occurring low dissolved oxygen concentrations are being further impacted by existing point source discharges.

Aquatic life uses may not be supported, due to the occurrence of low dissolved oxygen concentrations. In addition, there is a significantly decreasing trend in pH, a high concentration of chromium measured in 1993, and a very high concentration of zinc measured in 1992. A significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported.

Activities Potentially Affecting Water Quality

Point Source Contributions

The Waccamaw River is included on the 1996 §303(d) primary list of waters that are targeted for TMDL development in relation to dissolved oxygen concerns. The Department is currently developing total maximum daily loads (TMDLs) for portions of the Waccamaw River and the Atlantic Intracoastal Waterway in watersheds 03040206-140, 03040206-150, and 03040207-030. Utilizing a water quality model developed by the U.S. Geological Survey for the Waccamaw Regional Planning and Development Council, TMDLs are scheduled to be developed for the Waccamaw River in the Conway, Bucksport, and Hagley Landing areas and the AIWW in the Myrtle Beach/North Myrtle Beach area. Upon completion of the TMDL process, approved loadings will be provided to the Waccamaw Regional Planning and Development Council for allocation to the different dischargers. Dischargers affected by the TMDLs will be: North Myrtle Beach (Ocean Drive and Crescent Beach Plants), Myrtle Beach, Grand Strand Water & Sewer Authority (Schwartz, Central, Bucksport, Conway, Vereen, and Murrells Inlet Plants), and Georgetown County (Pawleys Island Plant). Expiration dates have been extended for GSW&SA's Central wetland and river discharges until February 28, 1997, and for the other plants until October 31, 1997. This may allow completion of the TMDL process which provides for public input, USEPA review and approval, and the regional planning council's allocation of the allowable loads.

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)* *COMMENT*	*NPDES#* *TYPE* *LIMITATION*
WACCAMAW RIVER GSW&SA/SCHWARTZ PLANT PIPE #: 001 FLOW: 9.5 WQL FOR DO,NH3N,BOD5	SC0037753 MAJOR DOMESTIC WATER QUALITY
WACCAMAW RIVER CITY OF MYRTLE BEACH WWTP PIPE #: 001 FLOW: 17.0 WQL FOR DO,NH3N	SC0039039 MAJOR DOMESTIC WATER QUALITY

WACCAMAW RIVER GCW&SD/MURRELLS INLET PIPE #: 001 FLOW: 1.0 WQL FOR NH3N,BOD5	SC0040959 MAJOR DOMESTIC WATER QUALITY
WACCAMAW RIVER GEORGETOWN COUNTY PIPE #: 001 FLOW: 9.0-12.0 WQL FOR DO	PROPOSED MAJOR DOMESTIC WATER QUALITY
WAVERLY CREEK GCW&SD/PAWLEYS AREA WWTP PIPE #: 001 FLOW: 2.75 WQL FOR NH3N,BOD5	SC0039951 MAJOR DOMESTIC WATER QUALITY
BROOKGREEN CREEK GCW&SD/WACCAMAW REGIONAL WTP PIPE #: 001 FLOW: 0.35 WQL FOR TRC	SC0046876 MINOR DOMESTIC WATER QUALITY

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT#** **TYPE**
SPRAYFIELD BROOKGREEN GARDENS	ND0066991 DOMESTIC

Nonpoint Source Contributions

Waverly Creek and Collins Creek are included on the §319 high priority list of the Nonpoint Source Management Program due to increasing development pressures which may pose potential degradation from stormwater runoff.

Landfill Activities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
MURRELLS INLET DISPOSAL SITE MUNICIPAL	---------- CLOSED
PAWLEYS ISLAND DISPOSAL SITE MUNICIPAL	---------- CLOSED

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
R.L. CAUSEY LANDSCAPING VEREEN PIT	1053-26 SAND/CLAY
HAGLEY LAKE CO, INC. HAGLEY MINE	0728-22 SAND

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

WATER USER (TYPE) *STREAM*	*- MAX. PUMPING CAPACITY (MGD)* *AVE. PUMPING CAPACITY (MGD)*
WACCAMAW REGIONAL WTP (M) WACCAMAW RIVER	4.0 ------

Growth Potential

There is a high potential for residential and commercial growth in this watershed. There are no incorporated municipalities, but the area is developed with many residential and resort communities. The area west of the AIWW is accessible only by boat and is not expecting significant growth. Water infrastructure is located throughout most of the watershed, and sewer is currently located in the northern tip as well as in many of the newer developments throughout the region. All areas on the Waccamaw Neck will have sewer services in the near future. Along with resort and residential development, commercial growth and development of two large tracts of semi-public land located along the U.S. 17 corridor are expected.

Implementation Strategy

The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040207-030

(Atlantic Intracoastal Waterway)

General Description

Watershed 03040207-030 is located in Horry and Georgetown Counties and consists primarily of the ***Atlantic Intracoastal Waterway*** (AIWW) and its tributaries from Withers Swash northward, and includes the "Grand Strand" beaches. The watershed occupies 60,976 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Lakeland-Newhan-Bohicket series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 3%, with a range of 0-6%. Land use/land cover in the watershed includes: 45.64% urban land, 0.97% agricultural land, 6.15% scrub/shrub land, 0.03% barren land, 26.62% forested land, 9.82% forested wetland, 6.46% nonforested wetland, and 4.30% water.

The Little River is a tidal river and flows in both directions, from Little River Inlet to the AIWW, according to the tides. The Little River accepts drainage from Mullet Creek, Calabash Creek, Milliken Cove, and Horseford Creek. Dunn Sound Creek connects Little River Inlet to Dunn Sound, as does Sheephead Creek. Eden Saltworks Creek connects Dunn Sound to Hog Inlet, and House Creek connects Hog Inlet to Cherry Grove Inlet. Also draining into Cherry Grove Inlet are Williams Creek, Salt Flat Creek, and Nixon Creek.

The portion of the Atlantic Intracoastal Waterway in this watershed accepts drainage from Little River Swamp, Prices Swamp, Camp Branch Run, White Point Creek (Long Pond), Long Branch, Canepatch Swamp, and Black Creek before flowing through Little River. Withers Swamp drains off of the AIWW in Myrtle Beach. Singleton Swash, Bear Creek, Canepatch Swash, Withers Swash, and Pebble Beach or Midway Swash drain directly into the Atlantic Ocean. Whale Creek, Main Creek, Woodland Creek, Parsonage Creek, Flagg Creek, Allston Creek, Oaks Creek, and Oyster Cove all drain to the ocean through Murrells Inlet. Further south, Clubhouse Creek and Pawleys Island Creek drain to the ocean through Midway Inlet. Due to the absence of point source dischargers and the presence of endangered species and other special characteristics, portions of Oaks Creek and Allston Creek may qualify as potential ORW candidates. There are a total of 13.3 stream miles and 2,371.5 acres of estuarine areas. All streams in the watershed are classified SFH with the exception of the AIWW. The AIWW and its tributaries from the crossing of S.C. Hwy 9 to the North Carolina state line are classified SA, and southward from the S.C. Hwy 9 crossing the Waccamaw River are classified FW.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0403).

Atlantic Intracoastal Waterway - Intensive sampling for wasteload allocation model development has been conducted on this portion of the AIWW. While routine monthly monitoring indicates that dissolved oxygen concentrations meet standards for most of the year, the intensive monitoring results document a period in late summer during which dissolved oxygen concentrations fail to meet standards. This critical period can last for weeks. Although low dissolved oxygen concentrations are typical occurrences in swamps and blackwater systems, predictive modeling indicates that naturally occurring low dissolved oxygen concentrations are being further impacted by existing point source discharges.

There are two monitoring sites along this section of the Atlantic Intracoastal Waterway. The net flow direction of the AIWW is northward. Aquatic life uses are partially supported at the northernmost site (MD-125) due to dissolved oxygen excursions. In addition, there is a significantly increasing trend in turbidity. A significantly increasing trend in dissolved oxygen concentration suggest improving conditions for this parameter. Aquatic life uses are also partially supported at the southernmost site (MD-091) due to dissolved oxygen excursions. Significantly decreasing trends in five-day biochemical oxygen demand and total phosphorus concentrations at both sites suggest improving conditions for these parameters. Recreational uses are not supported at either site due to fecal coliform bacteria excursions, together with a significantly increasing trend in fecal coliform bacteria concentrations.

Little River (MD-162) - Aquatic life uses are not supported due to pH excursions, a significantly increasing trend in pH, and occurrences of zinc in excess of the acute aquatic life standard, including a high concentration measured in 1994. Sediment samples revealed P,P'DDT in 1990, and the pesticide guthion in 1994. A significantly increasing trend in dissolved oxygen concentration and significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions, together with a significantly increasing trend in fecal coliform bacteria concentrations.

Surf Monitoring - The Department ceased collection of water samples in the surf zone in 1980 due to resource limitations. There were no ocean discharges of treated wastewater and other sources of ocean pollution were limited. Prior to 1980, data did not show violations of the water quality standards in the surf zone related to stormwater discharge. A Beach Monitoring Workgroup was initiated in response to concerns of stormwater inputs in South Carolina's surf zone. Although South Carolina has limited sources of pollution to the surf, an update of surf water quality conditions was considered useful. The workgroup consists of Department personnel and coastal municipal and county leaders. The consensus of the workgroup was that a voluntary baseline surf water quality project should be conducted in order to evaluate whether South Carolina needs to implement an ocean beach bacteria sampling program.

During the summer of 1997, coastal governments will collect and analyze surf water samples during "dry" (3 or more days post rain event) and "wet" (within 3 hours of the first rain of 0.1 inches or more following a dry period) weather at both low and high tides. Samples will be collected at stormwater discharges to the ocean and 100 feet above and below the discharge, along with a sample every 2-3 miles of beach. The data will then be submitted to the Department for evaluation in order to characterize the water quality of South Carolina beaches. The Beach Monitoring Workgroup will reconvene in the fall of 1997 to discuss the findings. The data will determine whether South Carolina needs to implement an ocean beach bacteria sampling program or if posting of swimming advisories in the vicinity of storm drains is necessary.

Shellfish Harvesting Status

Waters approved for shellfish harvesting in the southeastern portion of the watershed include: those portions of Main Creek extending from Flagg Creek to the Range Marker in Murrells Inlet, excluding the marina closure zones; those portions of State Shellfish Ground 358 within Main Creek, as well as portions extraneous to Main Creek north of “The Horseshoe”; Culture Permit Area 356; those portions of Oaks Creek and areas adjacent to Drunken Jack Island from the North Boundary of Clambank Flats POG to the Range Marker in Murrells Inlet; those portions of Culture Permit 352 eastward to the western limits of Oaks Creek; and those portions of State Shellfish Ground 357 comprising Oaks Creek.

Waters conditionally approved in the Murrells Inlet area include: all portions of Flagg Creek and adjacent flats not included in the Marina Colony closure zone; the Garden City Canal between the “Old Boat Wreck” and the Marlin Quay Marina closure zone; Oaks Creek and adjacent flats, from the North Boundary of the Clambank Flats POG to within 1000 feet of the Huntington Beach State Park pond outfall; those central portions of the estuary (excluding Main Creek) southwest of a line extending between opposite the entrance to Mt. Gilead canal and the “Old Boat Wreck” on the Garden City Canal, including portions of Culture Permit Areas 371, 372, 359, 367, and all of 370; portions of State Shellfish Ground 357 north of Oaks Creek and west of Oaks Creek; undesignated bottom 362; portions of State Shellfish Ground 358 extraneous to Main Creek, including “The Horseshoe” and “Charlie Cut”; those portions of Culture Permit Area 352 west of Oaks Creek; Allston Creek, from Oaks Creek to Weston Flat; and all waters of Oyster Cove.

Those waters restricted for shellfish harvesting in the southeastern portion of the watershed include: all waters south of Main Creek at Atlantic Avenue Bridge which are north of a line extending from the old boat wreck on the Garden City Canal to Main Creek at Stanley Drive; all waters between the Litchfield Building Bridge on Clubhouse Creek to the dock at the end of Sportsman Boulevard; the waters from Pawley’s Island Creek at Shell Avenue to within 1000 feet of the South Causeway Bridge at Pawley’s Island Creek; all waters of Parsonage Creek between Woodland Landing and the Voyager’s View Marina closure boundary; all waters of Main Creek between the opposite entrance to Mt Gilead Canal to Flagg Creek; all small feeder creeks and marsh adjacent to the mainland extending from the northern end of Allison Creek to a point 200 meters south of Hughes Landing; and those waters within 1000 feet of the Huntington Beach State Park pond outfall. All other waters in the Pawleys Island area not mentioned elsewhere are restricted.

Those waters in the Murrells Inlet/Garden City/Midway Inlet area prohibited for shellfish harvesting include: the waters within approximately 1000 ft of Captain Dick's/Voyager View/Flying Fisher Marinas; those waters within approximately 1000 ft of the multiple docking facilities of Drunken Jack's and Anchor Inn Restaurants; the waters within approximately 1000 feet of the Marina Colony facilities; those waters within approximately 1000 feet of the Marlin Quay Marina; those waters north of Shell Avenue and Pawley's Island Creek, those waters between Parsonage Creek and Nance's Dock and the Woodland Landing; and, finally, those waters adjacent to the South Causeway Bridge at Pawley's Island Creek.

In the northeastern portion of the watershed, waters restricted for shellfish harvesting include all waters of the Hog Inlet estuary, and all waters of Dunn Sound and all waters of Little River Inlet south and east of the southeastern point of Little River Neck (Tighlman Point). Those waters prohibited for shellfish harvesting in the northeastern area include all waters of the AIWW, all waters of the Little River, all waters of Calabash Creek, all waters of Milliken Cove, all waters of Little River Inlet north of the southeastern point of Little River Neck (Tighlman Point), all waters of White Point Swash, all waters of Singleton Swash, and all waters of Cane Patch Swash. Withers Swash and Pebble Beach (Midway) Swash are classified as Prohibited-Grossly Polluted for Shellfish harvesting. These areas have become major drainage canals for the City of Myrtle Beach.

Stormwater runoff is a substantial contributor in the northeastern section of the watershed through to the Myrtle Beach area due to dense development. Large portions of the Little River Neck and residences along the AIWW are serviced by individual sewage treatment and disposal systems. These systems are being phased out as municipal wastewater collection and treatment facilities become available. The northeast section of the watershed receives appreciable freshwater drainage from the Waccamaw River, and has numerous marinas. In the southwestern portion of the watershed NPS pollution is the major contributor to water quality problems. Brookgreen Gardens southwest of Murrells Inlet and Huntington Beach State Park support substantial populations of wildlife. Bacteria in the runoff from these wildlife areas also potentially impact water quality in the area. The source of the above information is the Department's Sanitary Surveys for Shellfish Growing Areas 1-4 (SCDHEC 1996c, SCDHEC 1993b, SCDHEC 1989b, SCDHEC 1994c).

Activities Potentially Affecting Water Quality

Point Source Contributions

This section of the Atlantic Intracoastal Waterway is included on the 1996 §303(d) primary list of waters that are targeted for TMDL development in relation to dissolved oxygen, pH, toxics, turbidity, and fecal coliform concerns. The Department is currently developing total maximum daily loads (TMDLs) for portions of the Waccamaw River and the AIWW in watersheds 03040206-140, 03040206-150, and 03040207-030. Utilizing a water quality model developed by the U.S. Geological

Survey for the Waccamaw Regional Planning and Development Council, TMDLs are scheduled to be developed for the Waccamaw River in the Conway, Bucksport, and Hagley Landing areas and the AIWW in the Myrtle Beach/North Myrtle Beach area. Upon completion of the TMDL process, approved loadings will be provided to the Waccamaw Regional Planning and Development Council for allocation to the different dischargers. Dischargers affected by the TMDLs will be: North Myrtle Beach (Ocean Drive and Crescent Beach Plants), Myrtle Beach, Grand Strand Water & Sewer Authority (Schwartz, Central, Bucksport, Conway, Vereen, and Murrells Inlet Plants), and Georgetown County (Pawleys Island Plant). Expiration dates have been extended for GSW&SA's Central wetland and river discharges until February 28, 1997, and for the other plants until October 31, 1997. This may allow completion of the TMDL process which provides for public input, USEPA review and approval, and the regional planning council's allocation of the allowable loads.

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)*** ***COMMENT***	***NPDES#*** ***TYPE*** ***LIMITATION***
LITTLE RIVER LITTLE RIVER W&S WTP PIPES #: 001 FLOW:M/R	SCG655007 MINOR DOMESTIC EFFLUENT
CAROLINA BAYS GSW&SA/VEREEN WWTP PIPES #: 001-005 FLOW:M/R WQL FOR NH3N,BOD5	SC0041696 MAJOR DOMESTIC WATER QUALITY
ATLANTIC INTRACOASTAL WATERWAY CITY OF N. MYRTLE BEACH/OCEAN DRIVE PIPE #: 001 FLOW: 3.4 WQL FOR DO,NH3N,BOD5	SC0022152 MAJOR DOMESTIC WATER QUALITY
ATLANTIC INTRACOASTAL WATERWAY CITY OF N. MYRTLE BEACH/CRESCENT BEACH PIPE #: 001 FLOW: 2.1 WQL FOR DO,NH3N,BOD5	SC0022161 MAJOR DOMESTIC WATER QUALITY
ATLANTIC INTRACOASTAL WATERWAY SUNOCO/MIDSTATE OIL PIPE #: 001 FLOW: 0.0216 NEVER CONSTRUCTED	SC0045527 MINOR INDUSTRIAL EFFLUENT
WHITE POINT SWASH BAREFOOT ZOOLOGICAL GARDENS PIPE #: 001 FLOW: 0.07 PROPOSED; WQL FOR DO,NH3N	SC0047449 MINOR INDUSTRIAL WATER QUALITY

LAND APPLICATION **FACILITY NAME**	**PERMIT#** **TYPE**
SPRAYFIELD INLET POINT SOUTH, PHASE 3	ND0074616 DOMESTIC

Nonpoint Source Contributions

The Little River, the Cherry Grove/Hog Inlet area, the AIWW, White Point Swash, Singleton Swash, Withers Swash, and the Murrells Inlet area are included on the §319 high priority list of the Nonpoint Source Management Program. Concerns for dissolved oxygen, fecal coliform, and pH from commercial and recreational uses place this section of the AIWW on the §319 list and the 1996 §303(d) primary list. The Little River is included on the §319 list and the §303(d) secondary list due to concerns for pH and fecal coliform. The Swashes are included on the list because they are a heavily developed area used for recreational purposes which may be impacted by stormwater runoff. Impacted shellfish harvesting due to nonpoint sources places the Cherry Grove and Murrells Inlet areas on the §319 list and brought about the watershed project below.

Development of Coastal Stormwater Programs with Local Governments in the Coastal Zone

A §319 funded watershed project was implemented in the Murrells Inlet area in 1989, with an objective to develop a model for coastal stormwater management and conduct a nonpoint source education/information program. The Department's Office of Ocean and Coastal Resource Management (then S.C. Coastal Council) cooperated in the project. They inventoried stormwater outfalls along the beaches in the watershed and identified best management practices for control, and made recommendations to local governments toward implementing solutions. In addition, a slide show was produced and given to residents and local governments in the watershed.

Camp Facilities

FACILITY NAME/TYPE *RECEIVING STREAM*	*PERMIT #* *STATUS*
BAREFOOT LANDING CAMPGROUND/FAMILY ATLANTIC OCEAN	26-1017 ACTIVE
MYRTLE BEACH TRAVEL PARK/FAMILY ATLANTIC OCEAN	26-1021 ACTIVE
APPACHE CAMPGROUND/FAMILY ATLANTIC OCEAN	26-1001 ACTIVE
MYRTLE BEACH KOA CAMPGROUND/FAMILY ATLANTIC OCEAN	27-0342 ACTIVE
SPRING MAID BEACH/FAMILY ATLANTIC OCEAN	26-1018 ACTIVE
MYRTLE BEACH STATE PARK/FAMILY ATLANTIC OCEAN	26-1012 ACTIVE
PIRATELAND CAMPGROUND/FAMILY ATLANTIC OCEAN	26-1014 ACTIVE
LAKEWOOD CAMPGROUND/FAMILY ATLANTIC OCEAN	26-1009 ACTIVE

OCEAN LAKES CAMPGROUND/FAMILY ATLANTIC OCEAN	26-1013 ACTIVE
HUNTINGTON STATE PARK ATLANTIC OCEAN	22-0002 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
P MINING CO. P MINING PIT	0776-26 LIMESTONE
STEVENS CONSTRUCTION COMPANY STEVENS PIT	0922-26 SAND
A.O. HARDEE & SONS, INC. SAND RIDGE	0928-26 SAND
WATERWAY ASSOC. C/O JGT, INC. WATERWAY BASIN #1	0822-26 SAND
WATERWAY ASSOC. C/O JGT, INC. WATERWAY BASIN #2	0815-26 SAND
GCO MINERALS CO. WATERWAY MINE	0666-26 SAND
C.L. BENTON & SONS, INC. 79TH AVE. NORTH BORROW PIT	0362-26 SAND/CLAY

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a high potential for residential/resort and commercial growth in this watershed, which contains the Cities of North Myrtle and Myrtle Beach as well as the Towns of Atlantic Beach, Briarcliffe Acres, Surfside Beach, and Pawleys Island. This "Grand Strand" area is expected to experience a significant increase in population as the popular tourist destination lures year-round residents. Water infrastructure is located throughout the watershed, and sewerage is available in the northern tip as well as in many of the residential/resort developments on the Waccamaw Neck. All developed areas on the Waccamaw Neck will have sewer services in the near future. The closing of the Myrtle Beach Air Force Base has opened the door for additional growth in industry and commerce in the Myrtle Beach area. The City of North Myrtle Beach has an interconnection with Grand Strand Water and Sewer Authority/Wetlands projects to handle additional wastewater flows in the North Myrtle Beach area, which should encourage additional growth.

Implementation Strategy

This portion of the Atlantic Intracoastal Waterway is impaired by low dissolved oxygen and elevated levels of fecal coliform bacteria. An underwater sewer line near the Air Force Base was broken, but has since been repaired. Current data show improved bacterial conditions in this area. In addition, there are several known areas with failing septic tanks along the AIWW. Sewer service is being extended to some of those areas, which should also improve conditions. The Department is developing dissolved oxygen TMDLs for the Waccamaw River and AIWW, and permit limits are expected to be revised, again improving conditions. The Little River is impaired by low pH levels and elevated zinc concentrations from unknown sources, and elevated levels of fecal coliform bacteria. The Department's Watershed Implementation Staff will determine, where possible, the nonpoint source related water quality impairments and recommend solutions to correct the problems. The Department will continue to monitor fish, water, and sediment levels of mercury and will add and/or revise consumption advisories to reflect current conditions.

03040207-040

(Sampit River)

General Description

Watershed 03040207-040 is located in Georgetown County and consists primarily of the ***Sampit River*** and its tributaries. The watershed occupies 108,703 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bladen-Wahee-Cape Fear-Eulonia series. The erodibility of the soil (K) averages 0.16; the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 4.13% urban land, 1.30% agricultural land, 12.76% scrub/shrub land, 0.17% barren land, 72.20% forested land, 4.21% forested wetland, 3.57% nonforested wetland, and 1.67% water.

Bond Swamp (Boety Bay, Mackey Bay, Bind Bay, Canaan Bay, Ditch Branch, Canaan Branch, Summons Swamp) flows into Boggy Swamp (Cherryhill Swamp, Machine Branch, Britt Branch) which forms the Sampit River. The Sampit River accepts drainage from Spring Gully, Little Kilsock Bay, Ports Creek, Canaan Branch, Pennyroyal Creek (Big Kilsock Bay, Flat Bay, Turkey Creek), and Whites Creek before draining into Winyah Bay. There are a few ponds (10-30 acres) used for waste water and industrial purposes in this watershed, and a total of 356.4 stream miles. The upper reaches of the watershed including Boggy Swamp and its tributaries are classified FW* (dissolved oxygen not less than 4.0 mg/l and pH between 5.0 and 8/5). The Sampit River is classified FW*/SB dependent on the freshwater inflow from its neighboring rivers (the Pee Dee and Waccamaw Rivers), and the remaining streams in the watershed are classified FW. There are also a total of 952.9 acres of estuarine areas.

Water Quality

A fish consumption advisory has been issued by the Department for mercury and includes the freshwater portions of this watershed (see Watershed Evaluations and Implementation Strategies Within WMU-0403).

Sampit River - There are four monitoring sites along the Sampit River. Aquatic life uses are fully supported at the upstream site (MD-075), but may be threatened by a significantly increasing trend in turbidity. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in blackwater systems and tidally influenced systems with significant marsh drainage and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported.

At the next site downstream (MD-077), aquatic life uses are also fully supported, but may be threatened by a significantly increasing trend in turbidity and the occurrence of a very high concentration of zinc measured in 1990. Although pH excursions occurred, they were typical of values seen in blackwater systems with significant marsh drainage and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Further downstream (MD-073), aquatic life uses are again fully supported, but may be threatened by a significantly increasing trend in turbidity and the occurrence of a very high concentration of zinc measured in 1994. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions. Recreational uses are fully supported at this site and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions. At the furthest downstream site (MD-074), aquatic life and recreational uses are fully supported, and a significantly decreasing trend in five-day biochemical oxygen demand suggests improving conditions.

Turkey Creek (MD-076N) - This creek was Class B until April, 1992. Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. A significantly decreasing trend in total phosphorus concentrations suggest improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, together with a significantly increasing trend in fecal coliform bacteria concentrations.

Whites Creek (MD-149) - Aquatic life uses are fully supported, but may be threatened by a significantly increasing trend in turbidity. Although dissolved oxygen and pH excursions occurred, they were typical of values seen in blackwater systems and tidally influenced systems with significant marsh drainage and were considered natural, not standards violations. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported at this site, and a significantly decreasing trend in fecal coliform bacteria concentration suggests improving conditions.

Activities Potentially Affecting Water Quality

Point Source Contributions

The Sampit River is included on the 1996 §303(d) primary list due to permit conditions requiring a reduction in loading or establishment of a site specific standard for dissolved oxygen.

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***LIMITATION (EL/WQL)***
COMMENT	
SAMPIT RIVER	SC0000868
INTERNATIONAL PAPER INC./GEORGETOWN MILL	MAJOR INDUSTRIAL
PIPE #: 001 FLOW: 27.4	WATER QUALITY
WQL FOR BOD5	

SAMPIT RIVER GEORGETOWN STEEL CORP. PIPE #: 002 FLOW: M/R PIPE #: 001 FLOW: 1.20 WQL FOR BOD5	SC0001431 MAJOR INDUSTRIAL EFFLUENT WATER QUALITY
SAMPIT RIVER VVV CORPORATION PIPE #: 001 FLOW: 7.0 PIPE #: 001 FLOW: 9.7 (PHASE 2) PIPE #: 001 FLOW: 15.0 (PHASE 3) WQL FOR NH3N,BOD5	SC0036111 MAJOR INDUSTRIAL WATER QUALITY WATER QUALITY WATER QUALITY
SAMPIT RIVER CITY OF GEORGETOWN PIPE #: 001 FLOW: 4.5 PIPE #: 001 FLOW: 8.0; PROPOSED PIPE #: 001 FLOW: 12.0; PROPOSED	SC0040029 MAJOR DOMESTIC EFFLUENT EFFLUENT EFFLUENT
TURKEY CREEK GCW&SD/HARMONY HILLS MHP PIPE #: 001 FLOW: 0.0360 WQL FOR DO,NH3N,BOD5	SC0028711 MINOR DOMESTIC WATER QUALITY
TURKEY CREEK S.C. PUBLIC SERV. AUTH./WINYAH BAY PIPE #: 001 FLOW: M/R	SC0022471 MAJOR INDUSTRIAL EFFLUENT
TURKEY CREEK INTERNATIONAL PAPER, INC./SANTEE WOODYARD PIPE #: 001 FLOW: M/R	SC0042960 MINOR INDUSTRIAL EFFLUENT
WHITES CREEK CWSC/LINCOLNSHIRE SD PIPE #: 001 FLOW: 0.125 WQL FOR DO,TRC,NH3N,BOD5	SC0030732 MINOR DOMESTIC WATER QUALITY
WHITES CREEK CITY OF GEORGETOWN/WTP PIPE #: 001 FLOW: 0.15 WQL FOR TRC	SC0040916 MINOR DOMESTIC WATER QUALITY
LITTLE KILSOCK BAY GCSD/SAMPIT ELEMENTARY SCHOOL PIPE #: 001 FLOW: 0.015 WETLAND; WQL FOR DO,TRC,NH3N,BOD5	SC0039110 MINOR DOMESTIC WATER QUALITY
PENNYROYAL CREEK SANTEE COOPER/HARRELSON MINE PIPE #: 001 FLOW: M/R	SCG730014 MAJOR INDUSTRIAL EFFLUENT

LAND APPLICATION SYSTEM **FACILITY NAME**	**PERMIT#** **TYPE**
ALUM STORAGE POND AMERICAN CYANAMID CO.	ND0001821 INDUSTRIAL

Nonpoint Source Contributions

Turkey Creek is included on the §319 high priority list of the Nonpoint Source Management Program and the 1996 §303(d) tertiary list due to concerns for fecal coliform and turbidity.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
INTERNATIONAL PAPER, INC. LANDFILL INDUSTRIAL	IWP-190 ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
SC PUBLIC SERVICE AUTH. HARRELSON PROPERTY	1033-22 SAND/CLAY

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is a moderate to high potential for growth in this watershed due to the City of Georgetown and the Town of Andrews. Water and sewer infrastructure are located in and immediately around these municipalities, and also southeast of Georgetown which supports an industrial area. There are currently five industrial areas in the watershed, one south of Andrews and four located in or near the City of Georgetown. Based on the location of facilities and infrastructure required by many industries (a shipping port, rail lines, commercial air service, highway access, and water and sewer infrastructure), the eastern edge of the watershed has the potential for significant industrial growth. Outside these areas, the watershed is rural with agricultural uses and timberlands.

Implementation Strategy

Turkey Creek is impaired due to elevated levels of fecal coliform bacteria from nonpoint sources. The Department's Watershed Implementation Staff will determine, where possible, the source of the bacteria and recommend solutions to correct the problem.

03040207-050

(Winyah Bay)

General Description

Watershed 03040207-050 is located in Georgetown County and consists primarily of ***Winyah Bay*** and its tributaries. The watershed occupies 66,029 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Leon-Lynnhaven series. The erodibility of the soil (K) averages 0.10; the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 2.48% urban land, 0.18% agricultural land, 6.18% scrub/shrub land, 0.27% barren land, 51.27% forested land, 6.67% forested wetland, 22.37% nonforested wetland, and 10.59% water.

The Sampit River Watershed, the Pee Dee River Watershed, and the Waccamaw River Watershed all join to form Winyah Bay, which is classified SB and drains into the Atlantic Ocean. White Oak Bay drains into the upper portion of Winyah Bay, and Kinloch Creek and Mosquito Creek (Lagoon Creek) drain into both Winyah Bay and North Santee Bay, all classified SB. Esterville Minim Creek Canal (SA) runs along Cat Island and connects the North Santee Bay to Winyah Bay through the Western Channel (SB). Mud Bay (SB) drains into Winyah Bay and accepts drainage from No Mans Friend Creek (SB), Sign Creek (SB), Oyster Bay (SB), Jones Creek (Dividing Creek-SB, Nancy Creek-SB, Little Jones Creek-SFH, Haulover Creek-SB, Boor Creek-ORW, Noble Slough-SB), and Cotton Patch Creek (SB). Jones Creek (SB,SFH,ORW) connects Mud Bay to North Inlet (ORW). Streams draining into Jones Creek above Oyster Bay include Wood Creek (Double Prong Creek, Little Wood Creek), Duck Creek, Perry Creek, and Bobs Garden Creek, all classified ORW. Town Creek (SA,SFH,ORW) drains to Mud Bay through Oyster Bay and to North Inlet. Town Creek accepts drainage from Sawmill Creek (SB), Cutoff Creek (SFH), and Mud Creek (SFH), together with Clambank Creek, Bread and Butter Creek, and Old Man Creek (Bly Creek, Sea Creek Bay, Bass Hole Creek, Bass Hole Bay), which are all classified ORW. Sixty Bass Creek (SFH,ORW) connects Town Creek to North Inlet, and Debidue Creek (SFH,ORW) accepts drainage from Cooks Creek (ORW) and joins Town Creek in North Inlet. Pawleys Island Creek (SFH) drains out of Pawleys Inlet (SFH) and also to Midway Inlet in the Atlantic Intracoastal Waterway Watershed. There are a total of 16,354.8 acres of estuarine areas in this watershed.

Water Quality

Winyah Bay (MD-080) - Aquatic life uses may not be supported due to occurrences of copper and zinc in excess of the aquatic life acute standards, including a very high concentration of copper measured in 1992 and a very high concentration of zinc measured in 1991. In addition, there is a significantly decreasing trend in pH and a significantly increasing trend in turbidity. Toluene was measured in the 1992 sediment sample. Significantly decreasing trends in five-day biochemical oxygen demand, total phosphorus and total nitrogen concentrations, and total suspended solids suggest improving conditions for these parameters. Recreational uses are fully supported.

Yawkey Wildlife Center - The rice fields of the wildlife center were treated in 1994 and 1995 with aquatic herbicides to reduce the spread of *Phragmites* and improve access for waterfowl management and hunting activities.

Shellfish Harvesting Status

Waters approved for shellfish harvesting include Winyah Bay seaward of Coast Guard Dock Range C; the waters of North Inlet estuary north of a line extending from Goat Island through the southern entrance of Clambank Creek, continuing southeastward through Town Creek and intersecting Sixty Bass Creek at its confluence with Town Creek; the waters of North Inlet estuary east of a line extending southward to the southeastern end of Oyster Bay; the waters of the North Inlet estuary north and east of a line extending southeastward from the southeastern end of Oyster Bay and continuing through Noble Slough, Haulover Creek, and Jones Creek at its confluence with Nancy Creek; and those portions of the North Inlet estuary south of a line extending from a point on the Waccamaw Neck due west of the northern extent of Bass Hole Bay and Debidue Creek to Debidue Island. There were no waters conditionally approved for shellfish harvesting.

Waters restricted to shellfish harvesting include all waters from the South Pawleys Island boat landing to within 1000 feet of the South Causeway Bridge at Pawleys Island Creek; all other waters in the Pawleys Island/Litchfield area; all waters of Winyah Bay and Mud Bay south and east of a line extending from the Esterville/Minum Creek Canal and continuing northeastward along the northwestern shore of Big Marsh Island to the lands of the Waccamaw Neck until the Coast Guard Dock Range C in the middle channel of Winyah Bay; all waters of Oyster Bay, No Mans Friend Creek, Cutoff Creek, Mud Creek, Nancy Creek, Dividing Creek, Sign Creek, and Cotton Patch Creek; portions of Noble Slough and Haulover Creek; all waters of Jones Creek south of its confluence with Little Jones Creek; and all waters northward of the confluence of Bass Hole Bay and Debidue Creek.

Waters prohibited for shellfish harvesting include the waters of Winyah Bay northwestward of a line extending from the Esterville/Minum Creek Canal and continuing northeast along the northwestern shore of Big Marsh Island to the Waccamaw Neck. Nonpoint sources (NPS) of pollution are the major contributors to the restriction and closure of shellfish harvesting areas in this watershed. The main contributors to the NPS problems include stormwater runoff in the Pawleys Island/Litchfield area, the riverine flow into Winyah Bay and southern portions of the North Inlet, as well as flows from lands draining substantial wildlife populations. Industrial and domestic wastewater discharges contribute to the pollution loading in the upper Winyah Bay area. The source of the above information is the Department's Sanitary Surveys for Shellfish Growing Areas 4 (SCDHEC 1994c) and 5 (SCDHEC 1995d).

Activities Potentially Affecting Water Quality

Point Source Contributions

LAND APPLICATION SYSTEM FACILITY NAME	PERMIT# TYPE
SPRAYFIELD GCW&SA/DEBORDIEU COLONY	ND0065668 DOMESTIC

Nonpoint Source Contributions

The Pawleys Island/Litchfield area is included on the §319 high priority list of the Nonpoint Source Management Program due to shellfish beds impacted from nonpoint sources.

Landfill Activities

SOLID WASTE LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
AIRPORT DISPOSAL SITE DOMESTIC	---------- CLOSED

Water Supply

Portions of this watershed fall within the Waccamaw Capacity Use Area and large groundwater uses must be reported (see Capacity Use Program p.28).

Growth Potential

There is an overall low potential for growth in this watershed. The northern most area is expected to experience a high population increase, a medium increase is expected along the south side of Winyah Bay and the remaining area is only expected to experience a low increase due to lands protected from development by land trusts. Water and sewer infrastructure is located in the Georgetown area and in several large developments on the Waccamaw Neck. The watershed is largely rural with residential uses, timberlands, and large tracts of protected land.

Implementation Strategy

Winyah Bay is impaired due to elevated levels of copper and zinc from unknown sources, which places it on the 1996 §303(d) tertiary list. The Department's monitoring station is located at the confluence of the Pee Dee, Waccamaw, and Sampit Rivers and collects the stormwater draining from those rivers. Determining the source of the metals at this site will be difficult, but the Department will continue to evaluate the situation.

Summary of Water Quality and Implementation Strategies

This summary details both impaired and unimpaired waters. Waters are considered impaired if they are unable to meet classified uses for aquatic life, recreation or fish consumption based on the corresponding standards (see Methodology section for interpretation). Noteworthy long-term trends are identified for unimpaired waters. The actions indicated should occur prior to updating this assessment in 2000. (* See text for additional information.)

IMPAIRED STREAMS

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03040202-030 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Lynches River* (2 Sites)	Aquatic Life	NS-Copper,Lead (Upstream Site)	Nonpoint Source (Possibly Gold Mine Related Activities)	Further Evaluation
	Recreation	PS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation
Hills Creek	Recreation	PS-Fecal Coliform	Point Source	Facility Upgraded
			Nonpoint Source (Agriculture)	Further Evaluation
North Branch Wildcat Creek	Recreation	NS- Fecal Coliform	Nonpoint Source (Agriculture)	Further Evaluation
0340202-040 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Flat Creek	Recreation	PS-Fecal Coliform	Unknown	Further Evaluation
03040202-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Fork Creek* (2 Sites)	Aquatic Life	PS-Impaired Macroinvertebrate Community,Copper (Downstream Site)	Unknown	Further Evaluation
	Recreation	PS,NS-Fecal Coliform (Both Sites)	Nonpoint Source (Possibly Agriculture)	Further Evaluation
Little Fork Creek* (2 Sites)	Aquatic Life	NS-Impaired Macroinvertebrate Community (Downstream Site)	Point Source	Evaluate Facility for Enforcement Action
			Nonpoint Source (Gold Mine Activity)	Evaluate Facility Stormwater Management Plan

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03040202-060 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Lynches River* (2 Sites)	Recreation	PS-Fecal Coliform (Downstream Site)	Nonpoint Source	Further Evaluation
03040202-080 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Little Lynches River* (5 Sites)	Recreation	PS-Fecal Coliform (All Sites)	Nonpoint Source (Urban Runoff)	Further Evaluation
Horton Creek	Recreation	PS-Fecal Coliform	Nonpoint Source (Agriculture-Pastureland)	Further Evaluation
Todds Branch	Recreation	NS-Fecal Coliform	Nonpoint Source (Urban Runoff)	Further Evaluation
Haile Gold Mine Creek* (3 Sites)	Aquatic Life	PS-Impaired Macroinvertebrate Community (Reservoir Site); NS-Impaired Macro Community,Zinc, Copper, pH, Chromium (Downstream of Reservoir)	Nonpoint Source (Runoff from Gold Mine)	Follow up on Stormwater Management Plan & Remedial Actions
Hanging Rock Creek	Recreation	NS-Fecal Coliform	Point Source	Facility Upgraded; Conditions Expected to Improve
			Nonpoint Source	Further Evaluation
Lick Creek*	Recreation	NS-Fecal Coliform	Point Source	Facility Upgraded; Conditions Expected to Improve
			Nonpoint Source	Further Evaluation
03040202-090 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Lynches River* (6 Sites)	Aquatic Life	NS-Copper,Zinc (Furthest Upstream & Midstream Sites)	Unknown	Assess Impacts on Biological Community
Cousar Branch	Recreation	PS-Fecal Coliform	Nonpoint Source (Urban Runoff)	Further Evaluation
03040202-100 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Newman Swamp*	Recreation	NS-Fecal Coliform	Nonpoint Source (Collection System)	Evaluate for Enforcement Action
03040202-110 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03040202-130 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Big Swamp* (2 Sites)	Recreation	PS-Fecal Coliform (Upstream Site)	Nonpoint Source	Further Evaluation
Cypress Branch	Aquatic Life	PS-Impaired Macroinvertebrate Community	Nonpoint Source	Further Evaluation
03040202-170 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Lake Swamp (3 Sites)	Recreation	PS-Fecal Coliform (Midstream Site)	Point Source	Discharge To Be Relocated
03040205-010 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Black River (2 Sites)	Recreation	NS-Fecal Coliform (Upstream Site)	Unknown	Further Evaluation
03040205-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Scape Ore Swamp	Recreation	PS-Fecal Coliform	Nonpoint Source (Agriculture-Poultry Operations)	Further Evaluation
Beaverdam Creek	Aquatic Life	PS-Impaired Macroinvertebrate Community	Unknown	Further Evaluation
03040205-070 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040205-080 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Green Swamp*	Recreation	PS-Fecal Coliform	Nonpoint Source (Urban Runoff)	Further Evaluation
Turkey Creek* (2 Sites)	Recreation	NS-Fecal Coliform (Both Sites)	Nonpoint Source (Urban Runoff)	Further Evaluation
Nasty Branch*	Aquatic Life	NS-Dissolved Oxygen, pH	Nonpoint Source (Possibly Agriculture)	Further Evaluation
	Recreation	PS-Fecal Coliform		
03040205-090 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Pocotaligo River* (3 Sites)	Aquatic Life	NS-Zinc (Downstream Site)	Unknown	Assess Impacts on Biological Community
Briar Branch	Aquatic Life	PS-Impaired Macroinvertebrate Community	Unknown	Further Evaluation
03040205-110 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03040205-130 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040205-140 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Ox Swamp	Aquatic Life	PS-Impaired Macroinvertebrate Community	Nonpoint Sources	Further Evaluation
03040205-150 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Black River*	Aquatic Life	NS-Zinc	Unknown	Assess Impacts on Biological Community
03040205-170 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040205-180 All Freshwater Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040201-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040201-062 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Thompson Creek* (4 Sites)	Recreation	PS-Fecal Coliform (Up-& Downstream Sites); NS-Fecal Coliform (Midstream Sites)	Point Source	Revise Permit Limits
			Nonpoint Source (Agriculture)	Further Evaluation
03040201-072 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040201-080 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040201-090 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Hagins Prong	Recreation	PS-Fecal Coliform	Nonpoint Source (Stormwater Runoff)	Further Evaluation
03040201-100 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Skipper Creek	Aquatic Life	PS-Impaired Macroinvertebrate Community	Unknown	Further Evaluation
03040201-110 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Black Creek* (7 Sites)	Recreation	PS,NS-Fecal Coliform (Upper Midstream Sites)	Nonpoint Source	Further Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
Prestwood Lake* (2 Sites)	Recreation	NS,PS-Fecal Coliform (Both Sites)	Nonpoint Source	Further Evaluation
Snake Branch* (2 Sites)	Aquatic Life	NS-Dissolved Oxygen, pH (Upstream Site); NS-pH (Downstream Site)	Nonpoint Source	Further Evaluation
	Recreation	NS-Fecal Coliform (Both Sites)	Nonpoint Source (Collection System)	Evaluate For Enforcement Action
Tilefield to Swift Creek*	Aquatic Life	NS-Dissolved Oxygen	Nonpoint Source (Collection System)	Facility Under Enforcement Action
	Recreation	NS-Fecal Coliform		
03040201-120 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Pee Dee River	Aquatic Life	NS-Chromium, Copper	Unknown	Assess Impacts on Biological Community
03040201-130 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Jeffries Creek* (5 Sites)	Aquatic Life	PS-Impaired Macroinvertebrate Community (Furthest Upstream Site)	Unknown	Further Evaluation
Gulley Branch*	Aquatic Life	NS-Copper	Unknown	District Personnel Investigating
	Recreation	NS-Fecal Coliform	Nonpoint Source (Collection System)	Facility Repairing System
			Nonpoint Source (Urban Runoff)	Further Evaluation
Middle Swamp*	Recreation	PS-Fecal Coliform	Nonpoint Source (Urban Runoff)	Further Evaluation
Willow Creek (2 Sites)	Aquatic Life	PS-Impaired Macroinvertebrate Community (Upstream Site); NS-Dissolved Oxygen, pH (Downstream Site)	Unknown	Further Evaluation
03040201-140 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Pee Dee River*	Aquatic Life	NS-Copper	Unknown	Assess Impacts to Biological Community

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03040201-150 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Catfish Canal*	Recreation	PS-Fecal Coliform	Nonpoint Source (Urban & Agricultural Runoff)	Further Evaluation
Smith Swamp* (2 Sites)	Aquatic Life	NS-Dissolved Oxygen (Downstream Site)	Point Source	Facility Planning to Relocate Discharge
	Recreation	NS-Fecal Coliform (Both Sites)	Nonpoint Source (Urban Runoff)	Further Evaluation
03040201-160 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040201-170 All Freshwater Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040203-220 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040204-030 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Little Pee Dee River* (7 Sites)	Aquatic Life	NS-Copper & Zinc (Furthest Downstream Site)	Unknown	Assess Impacts on Biological Community
Panther Creek* (2 Sites)	Recreation	PS-Fecal Coliform (Downstream Site)	Point Source	Discharger Removed
			Nonpoint Source (Agriculture)	Further Evaluation
Maple Swamp*	Recreation	NS-Fecal Coliform	Point Source	Discharger Removed
			Nonpoint Source	Further Evaluation
03040204-050 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Buck Swamp* (2 Sites)	Aquatic Life	NS-Dissolved Oxygen (Upstream Site)	Point Source	Facility Upgrade
	Recreation	PS-Fecal Coliform (Upstream Site)	Point Source	Facility Upgrade
03040204-070 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
White Oak Creek*	Recreation	NS-Fecal Coliform	Point Source	Revise Permit Limits
03040204-080 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040204-090 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
03040206-120 All Streams	Fish Consumption	PS-Mercury	Unknown -	Continue Evaluation
Kingston Lake	Aquatic Life	NS-Dissolved Oxygen	Nonpoint Source (Collection System; Urban Runoff)	Repairs Made to Collection System; Further Evaluate Urban Runoff
	Recreation	PS-Fecal Coliform		
Crab Tree Swamp*	Aquatic Life	NS-Dissolved Oxygen	Nonpoint Source (Collection System; Urban Runoff)	Evaluate System for Enforcement Action; Further Evaluate Urban Runoff
	Recreation	PS-Fecal Coliform		
03040206-130 All Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
03040206-140 All Freshwater Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Waccamaw River* (5 Sites)	Aquatic Life	PS,NS,PS,NS,NS,-Dissolved Oxygen	Point Source (Waccamaw River Dischargers)	Modeling Area for TMDL Determination
Atlantic Intracoastal Waterway* (5 Sites)	Aquatic Life	NS-Dissolved Oxygen, pH (All Sites); Zinc (Sta. MD-87, MD-127)	Point Source (Waccamaw River Dischargers)	Modeling Area for TMDL Determination
			Nonpoint Source (Collection System; Urban Runoff)	Sewer Line Repaired; Further Evaluation
	Recreation	NS,PS-Fecal Coliform (Four Northernmost Sites)	Nonpoint Source (Collection System; Urban Runoff; Septic Tank Failure)	Sewer Line Repaired; Extending Sewer Service
Socastee Swamp	----	Groundwater	Nonpoint Source	In Assessment Phase
Bear Swamp	Aquatic Life	PS-Impaired Macroinvertebrate Community	Unknown	Further Evaluation
03040206-150 All Freshwater Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation
Waccamaw River*	Aquatic Life	NS-Dissolved Oxygen	Point Source (Waccamaw River Dischargers)	Modeling Area for TMDL Determination
03040207-030 All Freshwater Streams	Fish Consumption	PS-Mercury	Unknown	Continue Evaluation

PS=Partially Supported; NS=Not Supported

WATERSHED WATERBODY	IMPAIRED USE	CAUSE	POSSIBLE SOURCE	RECOMMENDED ACTION
Atlantic Intracoastal Waterway* (2 Sites)	Aquatic Life	PS-Dissolved Oxygen (Both Sites)	Point Source (Waccamaw River Dischargers)	Modeling Area for TMDL Determination
			Nonpoint Source (Urban Runoff)	Further Evaluation
	Recreation	NS-Fecal Coliform (Both Sites)	Nonpoint Source (Urban Runoff; Septic Tank Failures)	Extending Sewer Services
Little River*	Aquatic Life	NS-pH, Zinc	Unknown	Further Evaluation
	Recreation	NS-Fecal Coliform	Nonpoint Source (Urban Runoff)	Further Evaluation
03040207-040 Turkey Creek*	Recreation	NS-Fecal Coliform	Nonpoint Source	Further Evaluation
03040207-050 Winyah Bay*	Aquatic Life	NS-Copper, Zinc	Unknown	Further Evaluation

UNIMPAIRED WATERS WITH NOTABLE TRENDS

The waters listed in this table are not impaired, but rather display long-term trends that bear following, primarily with continued monitoring.

WATERSHED WATERBODY	CONCERN	POSSIBLE SOURCE	RECOMMENDED ACTION
03040202-030 South Branch	Increasing Trend in Turbidity	Unknown	Continue Evaluation
03040202-120 Lynches River	Declining Trends in Dissolved Oxygen & pH; Increasing Trend in Turbidity & Zinc	Unknown	Continue Evaluation
03040205-050 Rocky Bluff Swamp	Declining Trend in Dissolved Oxygen; Increasing Trend in Turbidity	Unknown	Continued Evaluation
03040205-070 Black River	Increasing Trend in Turbidity	Unknown	Continue Evaluation
03040205-080 Pocotaligo River	Declining Trend in Dissolved Oxygen; Elevated Levels of Zinc	Nonpoint Source (Urban Runoff)	Continue Evaluation
03040205-140 Black River	Declining Trend in Dissolved Oxygen; Increasing Trend in Turbidity; Elevated Levels of Zinc	Nonpoint Source (Construction; Agricultural Runoff)	Continue Evaluation
03040205-170 Black Mingo Creek	Decreasing Trend in pH	Unknown	Continue Evaluation
03040205-180 Black River	Declining Trend in pH; Increasing Trend in Turbidity; Elevated Levels of Zinc	Unknown	Continue Evaluation
03040201-050 Pee Dee River	Decreasing Trend in pH; Increasing Trend in Turbidity; Elevated Levels of Zinc & Chromium	Unknown	Continue Evaluation; Work in Conjunction with N.C.'s Nonpoint Source Task Force
03040201-072 Crooked Creek	Increasing Trend in Turbidity	Unknown	Continue Evaluation
03040201-100 Black Creek	Increasing Trends in pH & Turbidity; Elevated Levels of Zinc	Unknown	Continue Evaluation
Lake Robinson	Declining Trend in Dissolved Oxygen	Unknown	Continue Evaluation

WATERSHED WATERBODY	CONCERN	POSSIBLE SOURCE	RECOMMENDED ACTION
3040201-110 High Hill Creek	Increasing Trends in Turbidity & Total Phosphorus	Nonpoint Source (Development Has Increased)	Continue Evaluation
03040201-170 Pee Dee River	Elevated Levels of Zinc & Lead	Unknown	Continue Evaluation
03040203-220 Lumber River	Increasing Trends in Turbidity & Fecal Coliform	Unknown	Continue Evaluation
03040204-030 McLaurins Millpond	Increasing Trend in Turbidity	Millpond Cleaned Out of Vegetation	Continue Evaluation
03040204-070 Little Pee Dee River	Increasing Trend in Fecal Coliform; Decreasing Trends in Dissolved Oxygen & pH	Unknown	Continue Evaluation
03040204-090 Mill Branch	Increasing Trend in Turbidity	Unknown	Continue Evaluation
03040206-130 Waccamaw River	Increasing Trend in Fecal Coliform	North Carolina Related Nonpoint Source	Continue Evaluation; Work in Conjunction with N.C.'s Nonpoint Source Task Force
03040207-040 Whites Creek	Increasing Trend in Turbidity	Nonpoint Source	Continue Evaluation
Sampit River	Increasing Trend in Turbidity	Nonpoint Source	Continue Evaluation
	Elevated Levels of Zinc	Unknown	Continue Evaluation

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APPENDIX A. WMU-0401

Monitoring Station Descriptions

STATION TYPES (P=PRIMARY, S=SECONDARY, W=WATERSHED, BIO=BIOLOGICAL, I=INACTIVE)
CLASS (FW=FRESHWATER, SA=SALTWATER)

03040202-030

PD-333	S	FW	HILLS CREEK AT S-13-105
PD-113	P	FW	LYNCHES RIVER AT SC 9 W OF PAGELAND
PD-179	S	FW	NORTH BRANCH WILDCAT CREEK AT S-29-39 1 MILE S OF TRADESVILLE
PD-180	S	FW	SOUTH BRANCH WILDCAT CREEK AT S-29-39 2 MILES S OF TRADESVILLE
PD-001	W/BIO	FW	LYNCHES RIVER AT SC 265

03040202-040

PD-342	W	FW	FLAT CREEK AT S-29-123

03040202-050

PD-215	S	FW	LITTLE FORK CREEK AT S-13-265 1.5 MILES SW JEFFERSON
PD-067	S	FW	FORK CREEK AT SC 151
PD-068	S	FW	FORK CREEK AT UNNUMBERED ROAD 1.5 MILES SW JEFFERSON

03040202-060

PD-066	S	FW	LYNCHES RIVER AT S-28-42
PD-009	S	FW	LYNCHES RIVER AT US 1

03040202-080

PD-640	BIO	FW	LITTLE LYNCHES CREEK AT S-29-88
PD-335	S	FW	HORTON CREEK AT S-29-95
PD-005	S	FW	TODDS BRANCH AT S-29-564 1.5 MILES NE OF KERSHAW
PD-006	P	FW	LITTLE LYNCHES RIVER AT US 601 2 MILES NE KERSHAW
PD-334	S	FW	HAILE GOLD MINE CREEK AT S-29-188
PD-632	BIO	FW	LITTLE LYNCHES RIVER AT SC 157
PD-109	P	FW	LITTLE LYNCHES RIVER AT SC 341, 4 MILES SE OF KERSHAW
PD-329	S	FW	LICK CREEK AT S-29-13 ABOVE KERSHAW PLANT
PD-328	S	FW	HANGING ROCK CREEK OFF S-29-84 1.6 MILES S OF KERSHAW
PD-343	W	FW	LITTLE LYNCHES RIVER AT S-28-42
PD-344	W	FW	LITTLE LYNCHES RIVER AT SC 341, 3.5 MILES SE OF BETHUNE

03040202-090

PD-080	P	FW	LYNCHES RIVER AT S-28-15 4.5 MILES SE BETHUNE
PD-071	P	FW	LYNCHES RIVER AT US 15/SC 34
PD-112	S	FW	COUSAR BRANCH 1/4 MILES BELOW BISHOPVILLE FINISHING CO
PD-106	S(I)	FW	LYNCHES RIVER ON I-20 4 OR 5 MILES BELOW BISHOPVILLE SEPTIC
PD-364	P	FW	LYNCHES RIVER AT US 401
PD-319	P	FW	LYNCHES RIVER AT SC 403
PD-093	P	FW	LYNCHES RIVER AT S-21-55

03040202-100

PD-229	S	FW*	NEWMAN SWAMP AT S-16-449 0.9 MILES NE OF LAMAR
PD-072	S	FW*	SPARROW SWAMP AT S-16-697 2.5 MILES E OF LAMAR

PD-345	W	FW*	LAKE SWAMP AT S-21-38
PD-332	P	FW*	SPARROW SWAMP AT S-21-55 NEAR JOHNSONS CROSSROADS
03040202-120			
PD-041	P	FW	LYNCHES RIVER AT US 52 NEAR EFFINGHAM
PD-281	P	FW	LYNCHES RIVER AT S-21-49 5 MILES NW JOHNSONVILLE
03040202-130			
PD-168	S	FW*	BIG SWAMP AT S-21-360 1.1 MILES W OF PAMPLICO
PD-631	BIO	FW*	CYPRESS BRANCH AT S-21-164
PD-169	S	FW*	BIG SWAMP AT US 378 & SC 51 0.9 MILES W OF SALEM
03040202-170			
PD-346	W	FW	CAMP BRANCH AT S-21-278
PD-085	S	FW*	LAKE SWAMP AT US 378
PD-086A	S	FW*	LAKE SWAMP ON SC 341
PD-314	W	FW	SINGLETON SWAMP AT S-21-67
PD-087	S	FW*	LAKE SWAMP (TIE LAKE) AT SC 341 2.6 MILES W OF JOHNSONVILLE
03040205-010			
PD-354	W	FW	UNNAMED CANAL TO ATKINS DRAINAGE CANAL AT SC 527 (.75 MI N OF US 76)
PD-186	S(I)	FW*	BLACK RIVER AT US 76 1.5 MILES NE OF MAYESVILLE
PD-353	S	FW*	BLACK RIVER AT S-43-57
03040205-050			
PD-357	W	FW*	ROCKY BLUFF SWAMP AT US 76
PD-636	BIO	FW	BEAVERDAM CREEK AT S-31-313
PD-355	W	FW	SCAPE ORE SWAMP AT S-31-108
PD-356	W	FW	MECHANICSVILLE SWAMP AT S-31-500
PD-201	W	FW*	ROCKY BLUFF SWAMP AT S-43-41
03040205-070			
PD-116	S	FW*	BLACK RIVER AT S-14-40 E OF MANNING
03040205-080			
PD-239	S	FW	NASTY BRANCH AT S-43-251 7.5 MILES SW OF SUMTER
PD-039	S	FW*	GREEN SWAMP AT S-43-33
PD-091	P	FW*	POCOTALIGO RIVER AT US 15 3.5 MILES S SUMTER
PD-098	S	FW*	TURKEY CREEK AT LIBERTY STREET IN SUMTER ABOVE SANTEE PRINT WORKS
PD-040	W	FW*	TURKEY CREEK AT US 521
03040205-090			
PD-617	BIO	FW	BRIAR BRANCH AT S-43-459
PD-202	P	FW*	POCOTALIGO RIVER AT S-43-32 9 MILES SSE OF SUMTER
PD-627	BIO	FW	BIG BRANCH AT SC 261
PD-115	S	FW*	POCOTALIGO RIVER AT THIRD BRIDGE N OF MANNING ON US 301
PD-043	P	FW*	POCOTALIGO RIVER AT S-14-50 9.5 MILES NE MANNING

03040205-110

PD-203	S	FW*	PUDDING SWAMP AT SC 527 8.1 MILES NW OF KINGSTREE

03040205-130

PD-358	W	FW	KINGSTREE SWAMP CANAL AT SC 527

03040205-140

PD-227	P	FW*	BLACK RIVER AT S-45-35 8.6 MILES NW OF KINGSTREE
PD-044	S	FW*	BLACK RIVER AT US 52 AT KINGSTREE
PD-045	S	FW*	BLACK RIVER AT SC 377 AT BRYAN'S CROSS ROADS
PD-629	BIO	FW	OX SWAMP AT US 521
PD-359	W	FW*	BLACK RIVER AT S-45-30

03040205-150

PD-170	P	FW*	BLACK RIVER AT SC 51 11.6 MILES NE OF ANDREWS

03040205-170

PD-360	W	FW	BLACK MINGO CREEK AT S-45-121
PD-172	S(I)	FW	BLACK MINGO CREEK AT SC 41 14 MILES NE OF ANDREWS
PD-361	S	FW	BLACK MINGO CREEK AT COWHEAD LANDING OFF SC 51

03040205-180

PD-325	P	SA	BLACK RIVER AT S-22-489 4 MILES NE GEORGETOWN

Water Quality Trends and Status by Station

Spreadsheet Legend

STATION INFORMATION:

Station Number	Station ID
Type	SCDHEC station type code
	P = Primary station, sampled monthly all year round
	S = Secondary station, sampled monthly May - October
	P* = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study
	PD = Special station added for the Pee Dee basin study
	I* = Currently inactive station which had some data within the period reviewed
Waterbody Name	Stream or Lake Name
Class	Stream classification at the point where monitoring station is located

PARAMETER ABBREVIATIONS:

DO	Dissolved Oxygen	NH3	Ammonia
BOD	Five-Day Biochemical Oxygen Demand	CD	Cadmium
pH	pH	CR	Chromium
TP	Total Phosphorus	CU	Copper
TN	Total Nitrogen	PB	Lead
TURB	Turbidity	HG	Mercury
TSS	Total Suspended Solids	NI	Nickel
BACT	Fecal Coliform Bacteria	ZN	Zinc

STATISTICAL ABBREVIATIONS:

N	For standards compliance, No. of surface samples collected betw. January 1990 and December 1994 For trends, No. of surface samples collected between January 1980 and December 1994
EXC.	Number of samples contravening the appropriate standard
%	Percentage of samples contravening the appropriate standard
MEAN EXC.	Mean of samples which contravened the applied standard
MED	For heavy metals with a human health criterion, this is the median of all surface samples between January 1990 and December 1994. DL indicates that the median was the detection limit.
MAG	Magnitude of any statistically significant trend, average change in concentration per year

KEY TO TRENDS:

D	Statistically significant decreasing trend in parameter concentration
I	Statistically significant increasing trend in parameter concentration
*	No statistically significant trend
Blank	Insufficient data to test for long term trends

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION			FIRST	DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	PH	N	MAG
03040202030																				
PD-333	P*	HILLS CK	FW	35	1	3	2.3	*	35		*	35		34	0	0		*	34	
PD-113	P	LYNCHES RVR	FW	58	0	0		*	127		D	168	-0.15	58	1	2	5.9	I	167	0.038
PD-179	S	N BRANCH WILDCAT CK	FW	29	0	0		*	63		D	68	-0.133	28	1	4	5.8	*	68	
PD-180	S	S BRANCH WILDCAT CK	FW	29	0	0		*	63		D	67	-0.15	28	0	0		*	68	
PD-001	PD/BIO	LYNCHES RVR	FW	17	0	0								17	0	0				
03040202040																				
PD-342	PD	FLAT CK	FW	12	0	0								12	2	17	5.65			
03040202050																				
PD-215	P*	LITTLE FORK CK	FW	41	0	0		D	79	-0.033	D	76	-0.063	41	9	22	4.722	*	87	
PD-067	S	FORK CK	FW	35	1	3	4.8	*	73		*	68		35	1	3	5.9	*	78	
PD-068	P*	FORK CK	FW	41	0	0		*	79		D	76	-0.05	41	1	2	5.8	*	87	
03040202060																				
PD-066	S	LYNCHES RVR	FW	35	0	0		*	67		D	71	-0.078	35	0	0		*	74	
PD-009	P*	LYNCHES RVR	FW	33	0	0		*	71		D	74	-0.1	33	1	3	5.6	*	81	
03040202080																				
PD-640	BIO	LYNCHES CK	FW																	
PD-335	S	HORTON CK	FW	28	0	0								27	0	0				
PD-005	S	TODDS BRANCH	FW	29	0	0		*	63		D	68	-0.15	29	1	4	5.9	*	68	
PD-006	P	LITTLE LYNCHES RVR	FW	58	0	0		*	132		D	174	-0.15	57	2	4	5.76	*	175	
PD-334	S	HAILE GOLD MINE CK	FW	30	0	0		*	30					28	25	89	4.014			
PD-632	BIO	LITTLE LYNCHES RVR	FW																	
PD-109	P	LITTLE LYNCHES RVR	FW	41	1	2	4.1	I	41	0.4333	*	41		41	3	7	5.767	*	41	
PD-329	S	LICK CK	FW	28	2	7	2.6	*	61		D	66	-0.096	27	0	0		*	66	
PD-328	S	HANGING ROCK CK	FW	28	0	0		*	61		D	66	-0.14	27	0	0		*	66	
PD-343	PD	LITTLE LYNCHES RVR	FW	12	0	0								12	1	8	5.8			
PD-344	PD	LITTLE LYNCHES RVR	FW	12	1	8	2.5							12	3	25	5.5333			
03040202090																				
PD-080	P	LYNCHES RVR	FW	59	1	2	4.3	D	138	-0.04	D	177	-0.1333	59	2	3	5.325	*	183	
PD-071	P	LYNCHES RVR	FW	52	2	4	4.625	*	51		I	51	0.1	54	14	26	5.679	I	55	0.2
PD-112	S	COUSAR BRANCH	FW	24	0	0		I	63	0.0917	D	70	-0.274	24	10	42	5.9	D	71	-0.19
PD-106	I*	LYNCHES RVR	FW	12	2	17	4.7	*	50		D	59	-0.144	12	1	8	5.9	D	59	-0.058
PD-364	P	LYNCHES RVR	FW	14	0	0								14	0	0				
PD-319	P	LYNCHES RVR	FW	44	0	0		*	45		I	46	0.05	44	2	5	5.7	*	47	
PD-093	P	LYNCHES RVR	FW	14	0	0								14	1	7	5.9			

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION			FIRST	TRENDS											
NUMBER	TYPE	WATERBODY NAME	CLASS	TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03040202030															
PD-333	P*	HILLS CK	FW	D	35	-0.01				*	35				
PD-113	P	LYNCHES RVR	FW	D	166	-0.005	*	124		*	164				
PD-179	S	N BRANCH WILDCAT CK	FW	D	63	-0.00014				D	69	-0.217			
PD-180	S	S BRANCH WILDCAT CK	FW	D	62	-0.0003				I	68	0.264			
PD-001	PD/BIO	LYNCHES RVR	FW												
03040202040															
PD-342	PD	FLAT CK	FW												
03040202050															
PD-215	P*	LITTLE FORK CK	FW	D	77	-0.01				I	76	0.375			
PD-067	S	FORK CK	FW	D	67	-0.001				I	68	0.468			
PD-068	P*	FORK CK	FW	*	75					I	74	0.571			
03040202060															
PD-066	S	LYNCHES RVR	FW	D	65	-0.012				*	70				
PD-009	P*	LYNCHES RVR	FW	D	67	-0.003				I	74	0.413			
03040202080															
PD-640	BIO	LYNCHES CK	FW												
PD-335	S	HORTON CK	FW												
PD-005	S	TODDS BRANCH	FW	D	64	-0.01				*	69				
PD-006	P	LITTLE LYNCHES RVR	FW	D	178	-0.004	D	122	-0.027	*	172				
PD-334	S	HAILE GOLD MINE CK	FW												
PD-632	BIO	LITTLE LYNCHES RVR	FW												
PD-109	P	LITTLE LYNCHES RVR	FW	*	40		*	34		*	39				
PD-329	S	LICK CK	FW	*	61					I	65	0.364			
PD-328	S	HANGING ROCK CK	FW	D	61	-0.012				*	66				
PD-343	PD	LITTLE LYNCHES RVR	FW												
PD-344	PD	LITTLE LYNCHES RVR	FW												
03040202090															
PD-080	P	LYNCHES RVR	FW	D	178	-0.005	*	121		I	172	0.189			
PD-071	P	LYNCHES RVR	FW	*	54		*	49		*	53				
PD-112	S	COUSAR BRANCH	FW	D	70	-0.089				*	71				
PD-106	I*	LYNCHES RVR	FW	D	58	-0.003				I	59	0.414			
PD-364	P	LYNCHES RVR	FW												
PD-319	P	LYNCHES RVR	FW	*	46		*	30		*	45				
PD-093	P	LYNCHES RVR	FW												

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.
03040202030													
PD-333	P*	HILLS CK	FW	185	35	7	20	1604	D	35	-67.5	11	0
PD-113	P	LYNCHES RVR	FW	154	59	10	17	1728	D	169	-12.5	56	0
PD-179	S	N BRANCH WILDCAT CK	FW	429	29	14	48	1367	*	69			
PD-180	S	S BRANCH WILDCAT CK	FW	153	29	2	7	625	D	69	-39.58	0	0
PD-001	PD/BIO	LYNCHES RVR	FW	97	12	0	0					12	0
03040202040													
PD-342	PD	FLAT CK	FW	191	12	2	17	805				12	0
03040202050													
PD-215	P*	LITTLE FORK CK	FW	25	36	0	0		D	82	-22.45	13	0
PD-067	S	FORK CK	FW	216	30	4	13	870	*	73			
PD-068	P*	FORK CK	FW	273	36	12	33	838	*	82		12	0
03040202060													
PD-066	S	LYNCHES RVR	FW	113	30	2	7	1180	D	71	-10		
PD-009	P*	LYNCHES RVR	FW	104	28	3	11	1337	*	75		10	0
03040202080													
PD-640	BIO	LYNCHES CK	FW										
PD-335	S	HORTON CK	FW	229	28	4	14	2305					
PD-005	S	TODDS BRANCH	FW	385	29	14	48	1187	D	69	-23.166		
PD-006	P	LITTLE LYNCHES RVR	FW	250	58	13	22	1665	D	177	-15.866	55	0
PD-334	S	HAILE GOLD MINE CK	FW	8	29	2	7	445				1	0
PD-632	BIO	LITTLE LYNCHES RVR	FW										
PD-109	P	LITTLE LYNCHES RVR	FW	135	41	6	15	1342	*	41		37	0
PD-329	S	LICK CK	FW	953	28	20	71	2562	I	67	31.28		
PD-328	S	HANGING ROCK CK	FW	211	28	8	29	1664	*	67			
PD-343	PD	LITTLE LYNCHES RVR	FW	111	12	2	17	540				12	0
PD-344	PD	LITTLE LYNCHES RVR	FW	81	12	3	25	570				11	0
03040202090													
PD-080	P	LYNCHES RVR	FW	77	59	3	5	1063	D	177	-5	55	0
PD-071	P	LYNCHES RVR	FW	87	53	1	2	670	*	54		51	0
PD-112	S	COUSAR BRANCH	FW	161	24	4	17	600	D	72	-14		
PD-106	I*	LYNCHES RVR	FW	76	12	0	0		*	61			
PD-364	P	LYNCHES RVR	FW	104	13	1	8	410				13	0
PD-319	P	LYNCHES RVR	FW	73	44	0	0		*	46		31	0
PD-093	P	LYNCHES RVR	FW	83	14	0	0					12	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	CD N	CD EXC.	CD MED.	CR N	CR EXC.	CR MED.	CU N	CU EXC.	PB N	PB EXC.	PB MED.	HG N	HG EXC.	HG MED.	NI N	NI EXC.	ZN N	ZN EXC.
03040202030																					
PD-333	P*	HILLS CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-113	P	LYNCHES RVR	FW	18	0	DL	19	0	DL	18	2	19	0	DL	19	0	DL	19	0	19	0
PD-179	S	N BRANCH WILDCAT CK	FW																		
PD-180	S	S BRANCH WILDCAT CK	FW	1	0	DL	1	0	DL	1	0	1	0	DL	1	0	DL	1	0	1	0
PD-001	PD/BIO	LYNCHES RVR	FW	9	0	DL	9	0	DL	9	0	9	0	DL	8	0	DL	9	0	9	0
03040202040																					
PD-342	PD	FLAT CK	FW	4	0	DL	3	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040202050																					
PD-215	P*	LITTLE FORK CK	FW	10	0	DL	10	0	DL	10	9	10	0	DL	9	0	DL	10	0	10	2
PD-067	S	FORK CK	FW	5	0	DL	5	0	DL	6	0	5	0	DL	4	0	DL	5	0	5	0
PD-068	P*	FORK CK	FW	8	0	DL	8	0	DL	9	4	8	0	DL	7	0	DL	8	0	8	0
03040202060																					
PD-066	S	LYNCHES RVR	FW	5	0	DL	5	0	DL	5	5	5	0	DL	4	0	DL	4	0	5	0
PD-009	P*	LYNCHES RVR	FW	8	0	DL	8	0	DL	8	2	8	0	DL	7	0	DL	8	0	8	0
03040202080																					
PD-640	BIO	LYNCHES CK	FW																		
PD-335	S	HORTON CK	FW																		
PD-005	S	TODDS BRANCH	FW																		
PD-006	P	LITTLE LYNCHES RVR	FW	20	0	DL	20	0	DL	20	2	20	0	DL	19	0	DL	20	0	20	1
PD-334	S	HAILE GOLD MINE CK	FW	11	0	DL	11	1	DL	11	6	11	0	DL	9	0	DL	11	0	11	2
PD-632	BIO	LITTLE LYNCHES RVR	FW																		
PD-109	P	LITTLE LYNCHES RVR	FW	14	0	DL	14	0	DL	14	0	14	0	DL	14	0	DL	14	0	14	0
PD-329	S	LICK CK	FW																		
PD-328	S	HANGING ROCK CK	FW																		
PD-343	PD	LITTLE LYNCHES RVR	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-344	PD	LITTLE LYNCHES RVR	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	1
03040202090																					
PD-080	P	LYNCHES RVR	FW	19	0	DL	19	0	DL	19	2	19	0	DL	19	0	DL	19	0	19	1
PD-071	P	LYNCHES RVR	FW	16	0	DL	16	0	DL	18	0	16	0	DL	16	0	DL	16	0	16	0
PD-112	S	COUSAR BRANCH	FW																		
PD-106	I*	LYNCHES RVR	FW																		
PD-364	P	LYNCHES RVR	FW	5	0	DL	5	0	DL	5	0	5	0	DL	5	0	DL	5	0	5	0
PD-319	P	LYNCHES RVR	FW	11	0	DL	11	0	DL	11	2	11	0	DL	10	0	DL	11	0	11	1
PD-093	P	LYNCHES RVR	FW	5	0	DL	5	0	DL	5	1	5	0	DL	4	0	DL	5	0	5	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION			FIRST	DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	PH	N	MAG
03040202100																				
PD-229	S	NEWMAN SWAMP	FW*	24	22	92	1.048	D	62	-0.547	*	69		24	0	0		D	70	-0.025
PD-072	S	SPARROW SWAMP	FW*	30	27	90	1.954	*	68		D	77	-0.086	30	0	0		D	101	-0.022
PD-345	PD	LAKE SWAMP	FW*	12	2	17	2.5							12	0	0				
PD-332	P	SPARROW SWAMP	FW*	61	4	7	2.95	*	133		D	172	-0.068	61	0	0		D	197	-0.017
03040202120																				
PD-041	P	LYNCHES RVR	FW	60	2	3	4.625	D	150	-0.039	D	176	-0.1	60	7	12	5.714	D	192	-0.033
PD-281	P	LYNCHES RVR	FW	60	3	5	4.767	*	131		D	168	-0.0852	60	6	10	5.575	*	169	
03040202130																				
PD-168	S	BIG SWAMP	FW*	24	19	79	1.826	D	62	-0.0823	D	71	-0.1	24	0	0		*	70	
PD-631	BIO	TRIB TO BIG SWAMP	FW*																	
PD-169	P*	BIG SWAMP	FW*	36	24	67	1.817	*	74		D	84	-0.125	36	0	0		I	83	0.025
03040202150																				
PD-346	PD	CAMP BRANCH	FW	12	11	92	2.241							12	4	33	5.437			
PD-085	S	LAKE SWAMP	FW*	24	19	79	2.755	I	62	0.193	D	72	-0.238	24	0	0		*	96	
PD-086A	P*	LAKE SWAMP	FW*	36	31	86	1.513	*	74		D	82	-0.1	36	0	0		*	81	
PD-314	PD	SINGLETON SWAMP	FW	12	11	92	2.705							12	5	42	5.72			
PD-087	P*	LAKE SWAMP	FW*	36	20	56	2.68	*	74		D	85	-0.1	36	0	0		*	108	
03040205010																				
PD-354	PD	UNNAMED DRAINAGE CANAL	FW	12	0	0								12	1	8	5.8			
PD-186	I*	BLACK RVR	FW*	23	6	26	3.392	*	60		D	70	-0.111	24	0	0		*	71	
PD-353	P*	BLACK RVR	FW*	12	3	25	3.1							12	0	0				
03040205050																				
PD-357	PD	ROCKY BLUFF SWAMP	FW*	12	4	33	1.875							12	0	0		'		
PD-636	BIO	BEAVER DAM CK	FW																	
PD-355	PD	SCAPE ORE SWAMP	FW	12	1	8	4							12	4	33	5.175			
PD-356	PD	MECHANICSVILLE SWAMP	FW	11	0	0								11	1	9	5.8			
PD-201	PD	ROCKY BLUFF SWAMP	FW*	14	7	50	3.4	D	51	-0.175	*	61		14	0	0		*	61	
03040205070																				
PD-116	P*	BLACK RVR	FW*	36	5	14	2.61	*	73		*	84		35	0	0		*	82	
03040205080																				
PD-239	S	NASTY BRANCH	FW	23	7	30	4.093	D	60	-0.117	D	73	-0.064	24	11	46	5.395	D	74	-0.029
PD-039	S	GREEN SWAMP	FW*	23	7	30	2.514	*	57		D	72	-0.1	24	0	0		*	72	
PD-091	P	POCOTALIGO RVR	FW*	60	28	47	2.504	D	133	-0.092	D	175	-0.1	61	1	2	4.7	*	174	
PD-098	S	TURKEY CK	FW*	23	0	0		I	60	0.108	D	71	-0.15	24	0	0		*	69	
PD-040	PD	TURKEY CK	FW*	12	3	25	3							12	0	0				

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	TRENDS TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03040202100															
PD-229	S	NEWMAN SWAMP	FW*	*	69					I	69	0.667			
PD-072	S	SPARROW SWAMP	FW*	D	75	-0.002				*	77				
PD-345	PD	LAKE SWAMP	FW*												
PD-332	P	SPARROW SWAMP	FW*	D	168	-0.003	*	124		I	168	0.15			
03040202120															
PD-041	P	LYNCHES RVR	FW	D	173	-0.003	*	126		I	173	0.211			
PD-281	P	LYNCHES RVR	FW	D	168	-0.003	*	125		I	164	0.309			
03040202130															
PD-168	S	BIG SWAMP	FW*	*	67					*	70				
PD-631	BIO	TRIB TO BIG SWAMP	FW*												
PD-169	P*	BIG SWAMP	FW*	D	81	-0.005				I	81	0.224			
03040202150															
PD-346	PD	CAMP BRANCH	FW												
PD-085	S	LAKE SWAMP	FW*	D	69	-0.013				D	71	-0.24			
PD-086A	P*	LAKE SWAMP	FW*	D	78	-0.03				I	81	0.3			
PD-314	PD	SINGLETON SWAMP	FW												
PD-087	P*	LAKE SWAMP	FW*	*	83					*	81				
03040205010															
PD-354	PD	UNNAMED DRAINAGE CANAL	FW												
PD-186	I*	BLACK RVR	FW*	*	69					*	71				
PD-353	P*	BLACK RVR	FW*												
03040205050															
PD-357	PD	ROCKY BLUFF SWAMP	FW*												
PD-636	BIO	BEAVER DAM CK	FW												
PD-355	PD	SCAPE ORE SWAMP	FW												
PD-356	PD	MECHANICSVILLE SWAMP	FW												
PD-201	PD	ROCKY BLUFF SWAMP	FW*	*	59					I	61	0.2			
03040205070															
PD-116	P*	BLACK RVR	FW*	*	82					I	83	0.145			
03040205080															
PD-239	S	NASTY BRANCH	FW	*	71					I	70	0.179			
PD-039	S	GREEN SWAMP	FW*	D	69	0				I	69	0.2			
PD-091	P	POCOTALIGO RVR	FW*	D	172	-0.006	D	125	-0.0992	*	164				
PD-098	S	TURKEY CK	FW*	D	67	-0.037				*	69				
PD-040	PD	TURKEY CK	FW*												

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION			FIRST	GEO	BACT	BACT	BACT	MEAN	TRENDS			NH3	NH3
NUMBER	TYPE	WATERBODY NAME	CLASS	MEAN	N	EXC.	%	EXC.	BACT	N	MAG	N	EXC.
03040202100													
PD-229	S	NEWMAN SWAMP	FW*	262	24	9	38	597	I	70	15	1	0
PD-072	S	SPARROW SWAMP	FW*	106	30	2	7	640	*	78			
PD-345	PD	LAKE SWAMP	FW*	113	12	0	0					12	0
PD-332	P	SPARROW SWAMP	FW*	104	61	2	3	460	I	173	3.33333	54	0
03040202120													
PD-041	P	LYNCHES RVR	FW	60	60	0	0		*	180		58	0
PD-281	P	LYNCHES RVR	FW	63	60	0	0		*	171		59	0
03040202130													
PD-168	S	BIG SWAMP	FW*	168	24	4	17	728	I	72	8.5		
PD-631	BIO	TRIB TO BIG SWAMP	FW*										
PD-169	P*	BIG SWAMP	FW*	143	36	3	8	603	*	85		12	0
03040202150													
PD-346	PD	CAMP BRANCH	FW	89	12	1	8	2000				11	0
PD-085	S	LAKE SWAMP	FW*	148	24	2	8	520	*	73			
PD-086A	P*	LAKE SWAMP	FW*	178	36	6	17	718	*	82		12	0
PD-314	PD	SINGLETON SWAMP	FW	78	12	0	0					11	0
PD-087	P*	LAKE SWAMP	FW*	75	36	0	0		*	84		12	0
03040205010													
PD-354	PD	UNNAMED DRAINAGE CANAL	FW	124	12	1	8	420				11	0
PD-186	I*	BLACK RVR	FW*	336	24	10	42	868	*	72			
PD-353	P*	BLACK RVR	FW*	151	12	1	8	560				11	0
03040205050													
PD-357	PD	ROCKY BLUFF SWAMP	FW*	123	12	1	8	500				12	0
PD-636	BIO	BEAVER DAM CK	FW										
PD-355	PD	SCAPE ORE SWAMP	FW	127	11	2	18	625				11	0
PD-356	PD	MECHANICSVILLE SWAMP	FW	80	10	1	10	600				10	0
PD-201	PD	ROCKY BLUFF SWAMP	FW*	76	14	0	0		*	59		11	0
03040205070													
PD-116	P*	BLACK RVR	FW*	72	36	0	0		*	85		11	0
03040205080													
PD-239	S	NASTY BRANCH	FW	158	23	4	17	990	*	79			
PD-039	S	GREEN SWAMP	FW*	215	24	5	21	902	*	71			
PD-091	P	POCOTALIGO RVR	FW*	66	61	2	3	520	D	175	-2.5	56	0
PD-098	S	TURKEY CK	FW*	2467	23	22	96	3677	*	68			
PD-040	PD	TURKEY CK	FW*	174	12	4	33	748				10	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	CD N	CD EXC.	CD MED.	CR N	CR EXC.	CR MED.	CU N	CU EXC.	PB N	PB EXC.	PB MED.	HG N	HG EXC.	HG MED.	NI N	NI EXC.	ZN N	ZN EXC.
03040202100																					
PD-229	S	NEWMAN SWAMP	FW*																		
PD-072	S	SPARROW SWAMP	FW*																		
PD-345	PD	LAKE SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	1
PD-332	P	SPARROW SWAMP	FW*	20	0	DL	20	0	DL	20	0	20	0	DL	18	0	DL	20	1	20	0
03040202120																					
PD-041	P	LYNCHES RVR	FW	19	0	DL	19	0	DL	19	1	19	0	DL	18	0	DL	19	0	19	1
PD-281	P	LYNCHES RVR	FW	20	0	DL	20	0	DL	20	1	20	0	DL	19	0	DL	20	0	20	0
03040202130																					
PD-168	S	BIG SWAMP	FW*																		
PD-631	BIO	TRIB TO BIG SWAMP	FW*																		
PD-169	P*	BIG SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040202150																					
PD-346	PD	CAMP BRANCH	FW	4	0	DL	4	0	DL	4	0	4	0	DL	3	0	DL	4	0	4	1
PD-085	S	LAKE SWAMP	FW*																		
PD-086A	P*	LAKE SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	3	0	DL	4	0	4	0
PD-314	PD	SINGLETON SWAMP	FW	4	0	DL	4	0	DL	4	0	4	0	DL	3	0	DL	4	0	4	0
PD-087	P*	LAKE SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040205010																					
PD-354	PD	UNNAMED DRAINAGE CANAL	FW	3	0	DL	3	0	DL	3	0	3	0	DL	3	0	DL	3	0	3	0
PD-186	I*	BLACK RVR	FW*																		
PD-353	P*	BLACK RVR	FW*	11	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040205050																					
PD-357	PD	ROCKY BLUFF SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4'	0	4	0
PD-636	BIO	BEAVER DAM CK	FW																		
PD-355	PD	SCAPE ORE SWAMP	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-356	PD	MECHANICSVILLE SWAMP	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-201	PD	ROCKY BLUFF SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040205070																					
PD-116	P*	BLACK RVR	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040205080																					
PD-239	S	NASTY BRANCH	FW																		
PD-039	S	GREEN SWAMP	FW*																		
PD-091	P	POCOTALIGO RVR	FW*	20	0	DL	20	0	DL	20	1	20	0	DL	19	0	DL	20	0	20	2
PD-098	S	TURKEY CK	FW*																		
PD-040	PD	TURKEY CK	FW*	3	0	DL	3	0	DL	3	0	3	0	DL	3	0	DL	3	0	3	1

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION			FIRST	DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	PH	N	MAG
03040205090																				
PD-617	BIO	BRIAR BRANCH	FW																	
PD-202	P	POCOTALIGO RVR	FW*	61	43	70	1.553	I	149	0.056	D	178	-0.086	61	0	0		*	190	
PD-627	BIO	BIG BRANCH	FW																	
PD-115	S	POCOTALIGO RVR	FW*	24	17	71	2.879	*	61		D	70	-0.1	24	0	0		*	70	
PD-043	P	POCOTALIGO RVR	FW*	59	9	15	3.594	*	135		D	175	-0.089	58	0	0		*	172	
03040205110																				
PD-203	P*	PUDDING SWAMP	FW*	36	8	22	2.987	*	73		D	83	-0.09	36	0	0		*	83	
03040205130																				
PD-358	PD	KINGSTREE SWAMP CANAL	FW	11	6	55	4							11	1	9	5.7			
03040205140																				
PD-227	P	BLACK RVR	FW*	59	6	10	3.542	D	145	-0.057	D	176	-0.076	59	0	0		*	185	
PD-044	P*	BLACK RVR	FW*	36	2	6	3.6	D	73	-0.063	D	86	-0.05	36	0	0		*	85	
PD-045	S	BLACK RVR	FW*	30	1	3	3.1	*	67		D	80	-0.033	30	0	0		*	79	
PD-629	BIO	OX SWAMP	FW																	
PD-359	PD	BLACK RVR	FW*	12	0	0								12	0	0				
03040205150																				
PD-170	P	BLACK RVR	FW*	60	2	3	3.75	*	135		D	174	-0.057	60	0	0		*	174	
03040205170																				
PD-360	PD	BLACK MINGO CK	FW	12	6	50	1.958							12	1	8	5.9			
PD-172	I*	BLACK MINGO CK	FW	24	23	96	3.232	*	98		D	137	-0.08	24	9	38	5.794	D	138	-0.025
PD-361	P*	BLACK MINGO CK	FW	12	4	33	3.85							12	1	8	5.8			
03040205180																				
PD-325	P	BLACK RVR	SA	59	10	17	4.31	*	133		D	176	-0.086	59	22	37	6.111	D	176	-0.019

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION			FIRST	TRENDS											
NUMBER	TYPE	WATERBODY NAME	CLASS	TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03040205090															
PD-617	BIO	BRIAR BRANCH	FW												
PD-202	P	POCOTALIGO RVR	FW*	D	173	-0.004	D	122	-0.023	*	167			*	163
PD-627	BIO	BIG BRANCH	FW												
PD-115	S	POCOTALIGO RVR	FW*	*	71					*	69				
PD-043	P	POCOTALIGO RVR	FW*	*	175		*	130		I	169	0.1			
03040205110															
PD-203	P*	PUDDING SWAMP	FW*	*	80					*	203				
03040205130															
PD-358	PD	KINGSTREE SWAMP CANAL	FW												
03040205140															
PD-227	P	BLACK RVR	FW*	*	176		D	128	-0.025	I	172	0.071			
PD-044	P*	BLACK RVR	FW*	*	85					*	84				
PD-045	S	BLACK RVR	FW*	*	78					I	79	0.067			
PD-629	BIO	OX SWAMP	FW												
PD-359	PD	BLACK RVR	FW*												
03040205150															
PD-170	P	BLACK RVR	FW*	*	175		D	125	-0.016	I	167	0.085			
03040205170															
PD-360	PD	BLACK MINGO CK	FW												
PD-172	I*	BLACK MINGO CK	FW	D	138	-0.003	D	67	-0.053	*	134				
PD-361	P*	BLACK MINGO CK	FW												
03040205180															
PD-325	P	BLACK RVR	SA	D	175	-0.002	D	119	-0.0443	I	168	0.5			

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION			FIRST	GEO	BACT	BACT	BACT	MEAN	TRENDS			NH3	NH3
NUMBER	TYPE	WATERBODY NAME	CLASS	MEAN	N	EXC.	%	EXC.	BACT	N	MAG	N	EXC.
03040205090													
PD-617	BIO	BRIAR BRANCH	FW										
PD-202	P	POCOTALIGO RVR	FW*	49	61	1	2	660	*	178		56	0
PD-627	BIO	BIG BRANCH	FW										
PD-115	S	POCOTALIGO RVR	FW*	60	24	0	0		*	71			
PD-043	P	POCOTALIGO RVR	FW*	53	59	0	0		D	175	-5	59	0
03040205110													
PD-203	P*	PUDDING SWAMP	FW*	113	36	1	3	600	*	84		10	0
03040205130													
PD-358	PD	KINGSTREE SWAMP CANAL	FW	104	11	0	0					11	0
03040205140													
PD-227	P	BLACK RVR	FW*	53	59	0	0		D	177	-3.24	57	0
PD-044	P*	BLACK RVR	FW*	36	36	0	0		*	86		36	0
PD-045	S	BLACK RVR	FW*	50	30	1	3	62000	*	80		2	0
PD-629	BIO	OX SWAMP	FW										
PD-359	PD	BLACK RVR	FW*	36	12	0	0					11	0
03040205150													
PD-170	P	BLACK RVR	FW*	39	60	0	0		I	176	1.286	55	0
03040205170													
PD-360	PD	BLACK MINGO CK	FW	114	12	0	0					12	0
PD-172	I*	BLACK MINGO CK	FW	81	24	1	4	480	*	140			
PD-361	P*	BLACK MINGO CK	FW	54	12	0	0					10	0
03040205180													
PD-325	P	BLACK RVR	SA	51	59	0	0		*	177		54	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0401

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	CD N	CD EXC.	CD MED.	CR N	CR EXC.	CR MED.	CU N	CU EXC.	PB N	PB EXC.	PB MED.	HG N	HG EXC.	HG MED.	NI N	NI EXC.	ZN N	ZN EXC.
03040205090																					
PD-617	BIO	BRIAR BRANCH	FW																		
PD-202	P	POCOTALIGO RVR	FW*	21	0	DL	21	0	DL	21	0	21	0	DL	20	0	DL	21	0	21	0
PD-627	BIO	BIG BRANCH	FW																		
PD-115	S	POCOTALIGO RVR	FW*																		
PD-043	P	POCOTALIGO RVR	FW*	20	0	DL	20	0	DL	20	0	20	0	DL	20	0	DL	20	0	20	3
03040205110																					
PD-203	P*	PUDDING SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040205130																					
PD-358	PD	KINGSTREE SWAMP CANAL	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040205140																					
PD-227	P	BLACK RVR	FW*	20	0	DL	20	0	DL	20	0	20	0	DL	20	0	DL	20	0	20	0
PD-044	P*	BLACK RVR	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-045	S	BLACK RVR	FW*	1	0	DL	1	0	DL	1	0	1	0	DL	1	0	DL	1	0	1	0
PD-629	BIO	OX SWAMP	FW																		
PD-359	PD	BLACK RVR	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040205150																					
PD-170	P	BLACK RVR	FW*	20	0	DL	20	0	DL	20	1	20	0	DL	20	0	DL	20	0	20	3
03040205170																					
PD-360	PD	BLACK MINGO CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-172	I*	BLACK MINGO CK	FW																		
PD-361	P*	BLACK MINGO CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	1
03040205180																					
PD-325	P	BLACK RVR	SA	19	0	DL	19	0	DL	19	0	19	0	DL	18	0	DL	19	0	19	1

Mean Seasonal Water Quality Values

PEE DEE WMU-0401

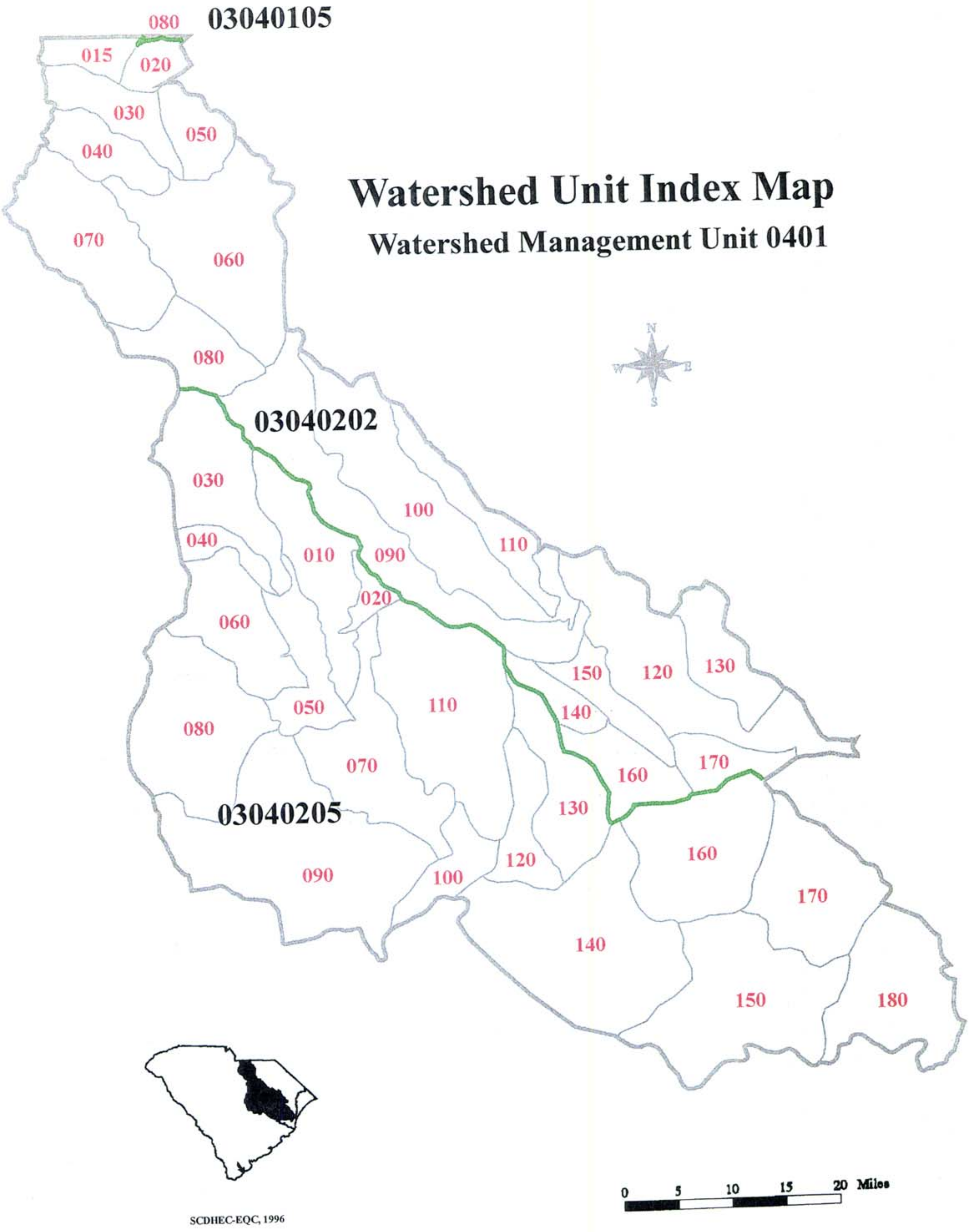
PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
TEMPERATURE (°C)	Mean	18.5	23.8	15.5	9.2
	Max	25.0	31.0	23.0	17.5
	Min	6.0	15.5	5.5	1.0
	Med	19.0	24.0	16.0	9.0
	95%	23.0	28.0	20.0	15.0
	N	449	947	335	322
DISSOLVED OXYGEN (mg/l)	Mean	6.6	5.3	6.8	9.2
	Max	10.8	9.8	11.6	13.4
	Min	0.0	0.0	0.0	0.0
	Med	7.0	5.7	7.1	9.4
	5%	1.8	0.9	2.1	5.2
	N	445	945	335	320
pH (SU)	Mean	6.4	6.4	6.4	6.5
	Max	8.0	9.0	8.2	8.3
	Min	4.1	2.7	3.7	5.4
	Med	6.4	6.4	6.5	6.5
	95%	7.2	7.6	7.5	7.3
	N	438	947	335	320
BOD_5 (mg/l)	Mean	1.7	1.8	1.5	1.3
	Max	22.0	19.0	7.0	4.4
	Min	0.6	0.4	0.3	0.4
	Med	1.4	1.4	1.4	1.2
	95%	3.3	4.3	2.9	2.5
	N	432	935	333	299
TURBIDITY (NTU)	Mean	9.9	10.9	9.1	9.5
	Max	94.0	150.0	400.0	220.0
	Min	0.6	0.4	0.9	0.5
	Med	7.9	7.6	5.2	5.9
	95%	22.0	31.0	22.0	23.0
	N	428	943	335	298

PEE DEE WMU-0401

PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
AMMONIA (mg/l)	Mean	0.12	0.12	0.37	0.14
	Max	1.45	1.57	5.50	2.05
	Min	0.05	0.05	0.05	0.05
	Med	0.08	0.07	0.10	0.10
	95%	0.18	0.37	0.74	0.25
	N	76	73	28	61
TKN (mg/l)	Mean	0.75	0.89	0.72	0.60
	Max	3.49	5.40	3.26	7.50
	Min	0.02	0.11	0.13	0.10
	Med	0.68	0.82	0.70	0.54
	95%	1.43	1.65	1.22	1.06
	N	284	384	186	277
NITRITE-NITRATE (mg/l)	Mean	0.29	0.39	0.34	0.32
	Max	14.40	13.00	8.20	18.40
	Min	0.02	0.02	0.02	0.01
	Med	0.14	0.17	0.11	0.14
	95%	0.87	1.43	1.41	0.69
	N	371	808	254	234
TOTAL PHOSPHORUS (mg/l)	Mean	0.18	0.21	0.15	0.20
	Max	4.50	10.00	7.10	6.20
	Min	0.02	0.02	0.02	0.02
	Med	0.08	0.09	0.06	0.05
	95%	0.50	0.56	0.40	0.78
	N	407	862	269	248
TOTAL ORGANIC CARBON (mg/l)	Mean	14.4	17.3	17.2	10.0
	Max	40.0	108.0	87.0	20.6
	Min	3.0	2.2	1.0	3.4
	Med	13.4	14.3	14.7	9.3
	95%	33.0	41.0	66.0	17.3
	N	103	140	73	108

PEE DEE WMU-0401

PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
FECAL COLIFORM BACTERIA (#/100ml)	Mean	83	125	105	82
	Max	6,000	10,000	62,000	3,500
	Min	2	1	1	5
	Med	75	120	98	80
	95%	880	1,300	600	360
	N	436	935	332	303


Watershed Unit Index Map
Watershed Management Unit 0401
03040105
080
015
020
030
050
040
070
060
080
03040202
030
100
110
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010
090
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170
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090
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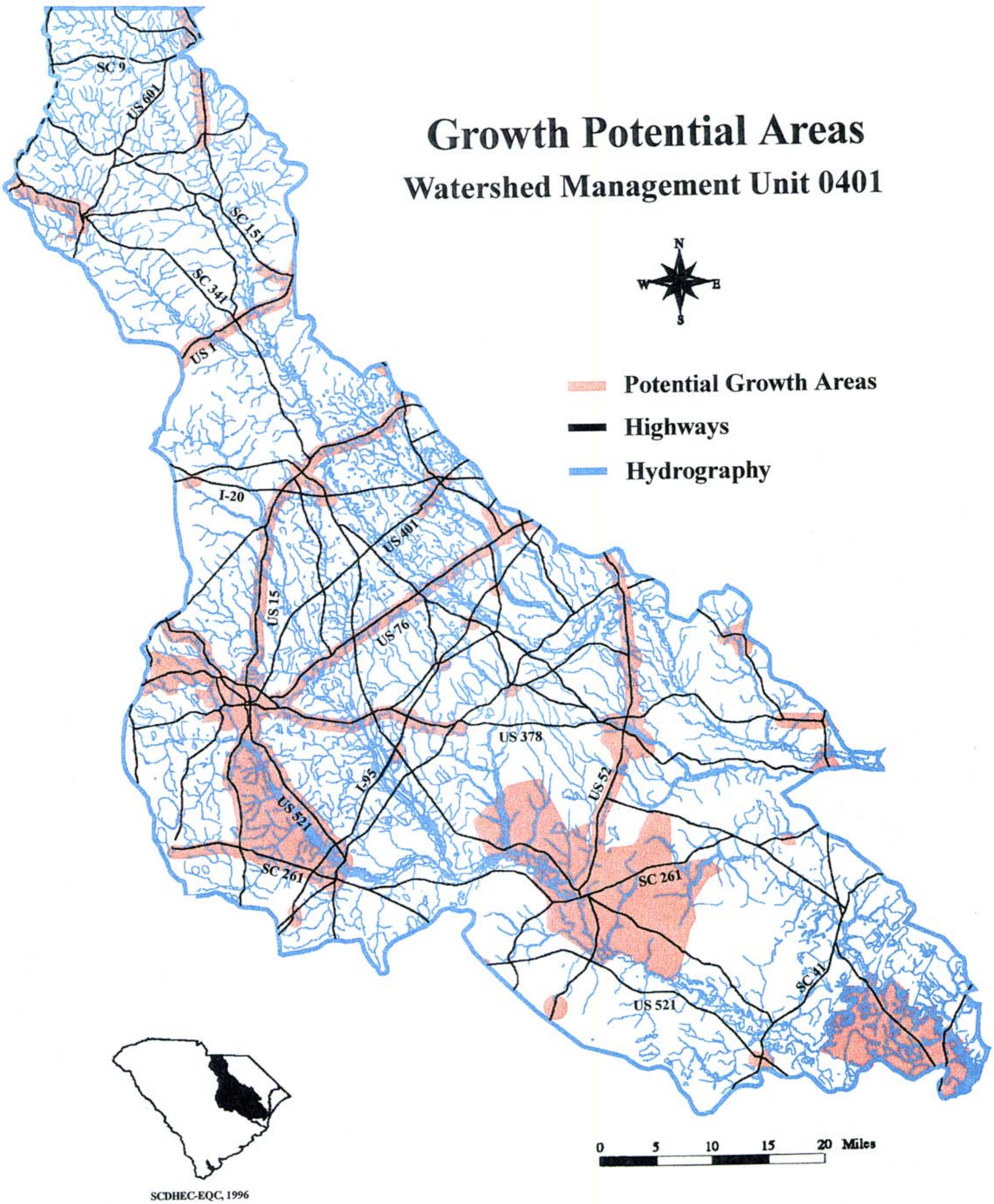
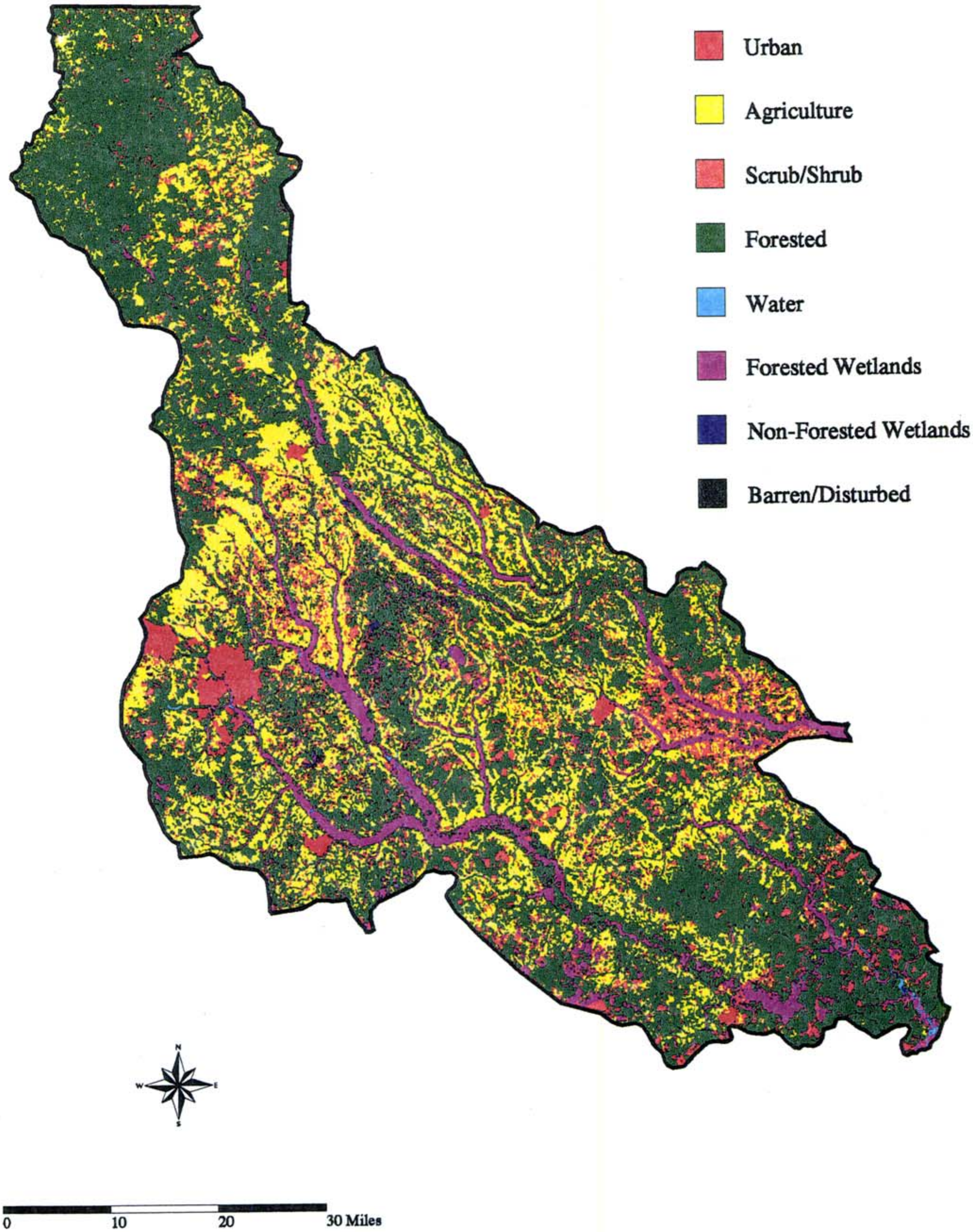
15
20 Miles
SCDHEC-EQC, 1996

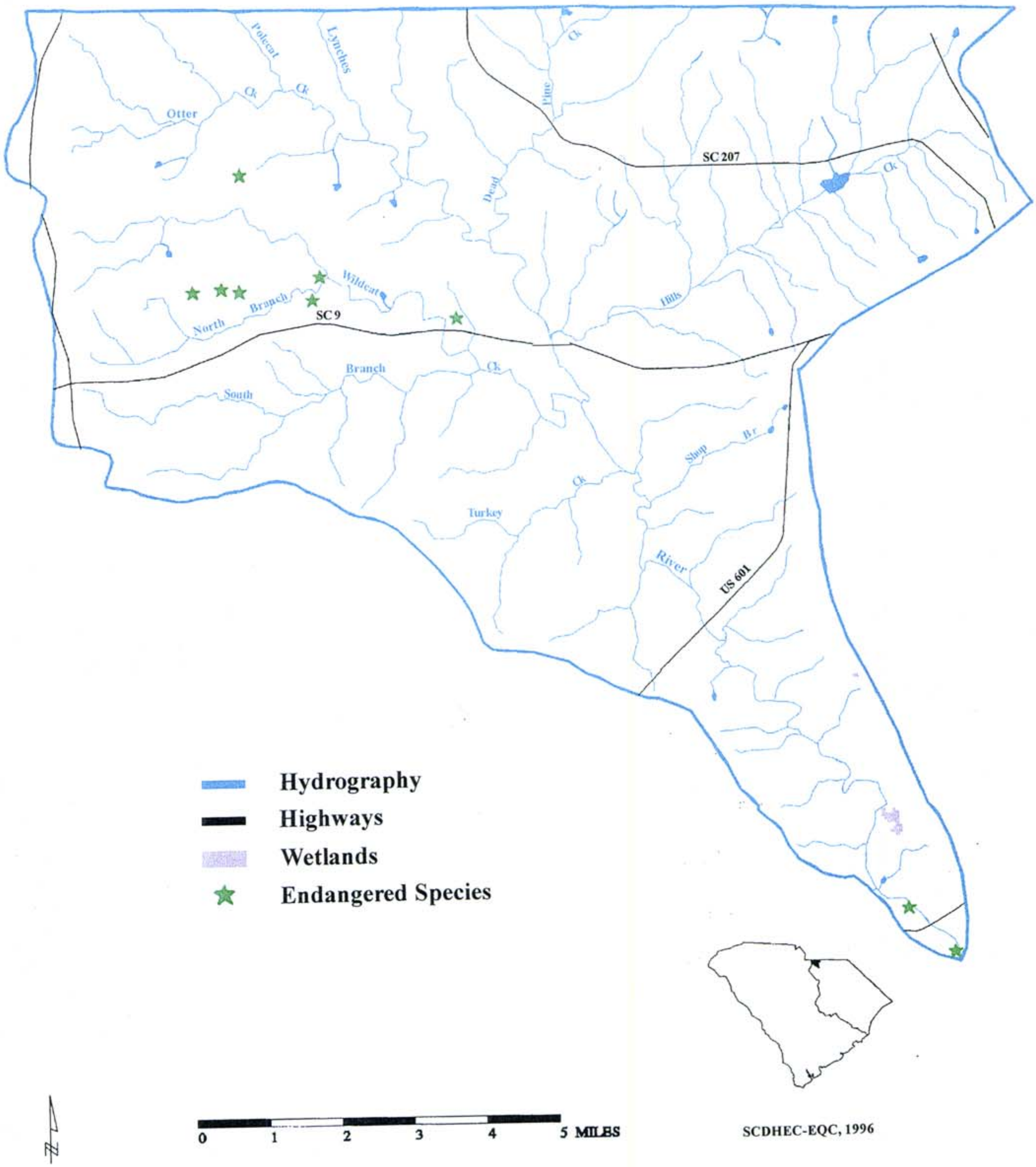

Growth Potential Areas
Watershed Management Unit 0401
N
W
E
S
Potential Growth Areas
Highways
Hydrography
SC 9
US 601
SC 151
SC 341
US 1
I-20
US 401
US 15
US 76
US 378
US 52
I-95
US 521
SC 261
SC 261
SC 41
US 521
0 5 10 15 20 Miles
SCDHEC-EQC, 1996

LAND USE/LAND COVER
WMU-0401



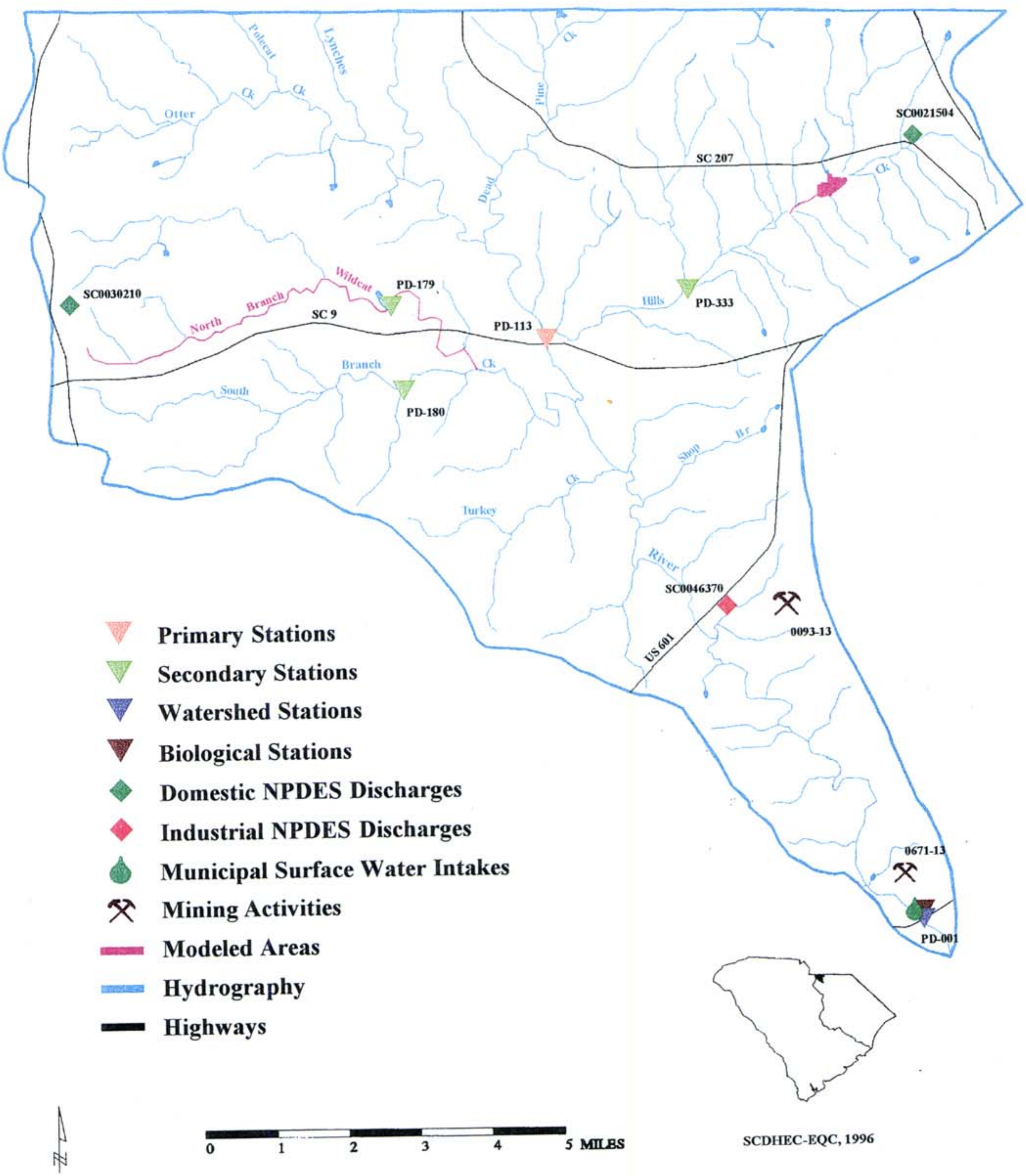
Source: Spot Satellite Imagery 89-90
SCDNR - LRC

Natural Resources
Lynches River Watershed
(03040202-030)



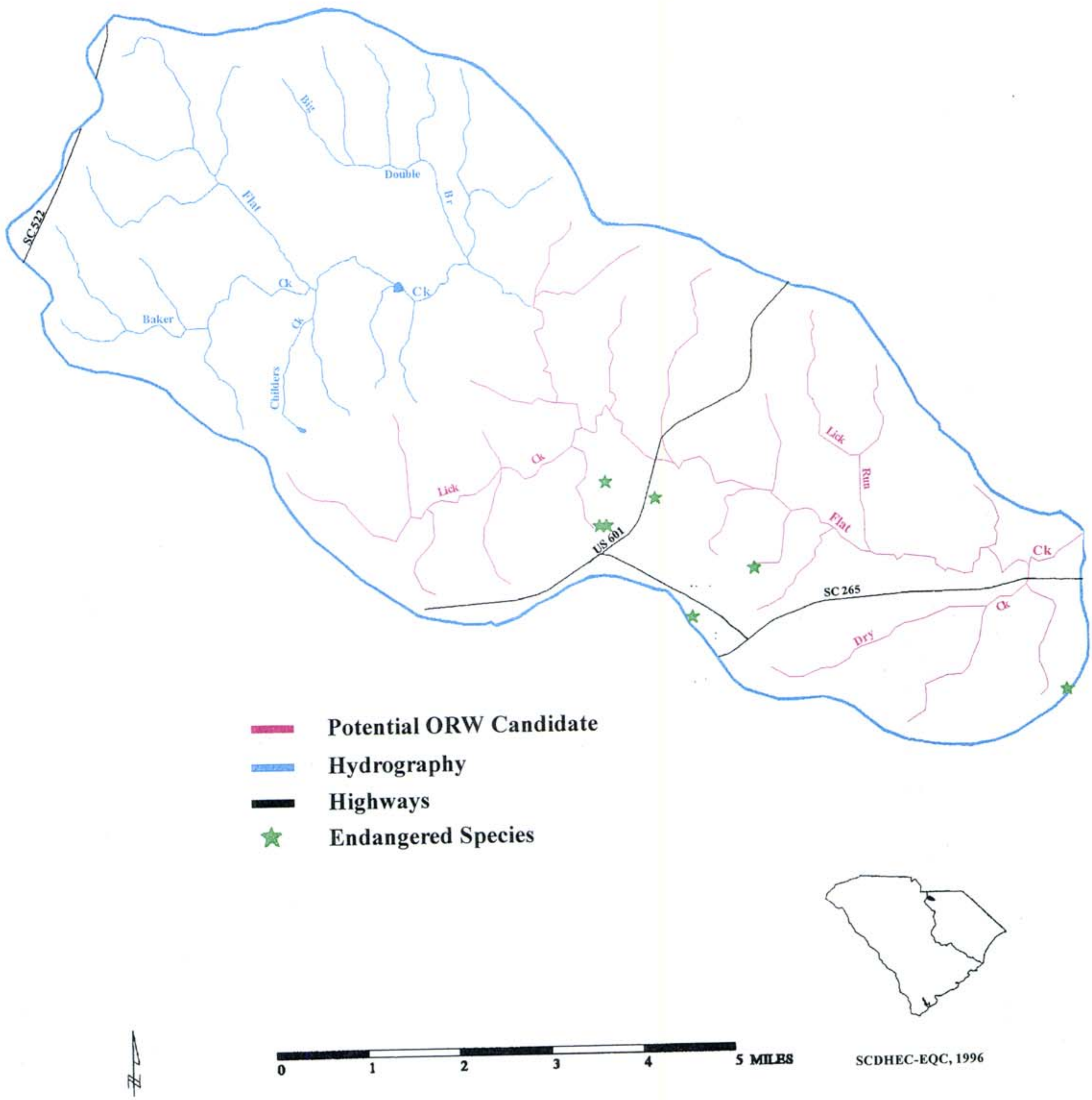
Monitoring Sites, Modeled Streams, and Permitted Areas

Lynches River Watershed (03040202-030)



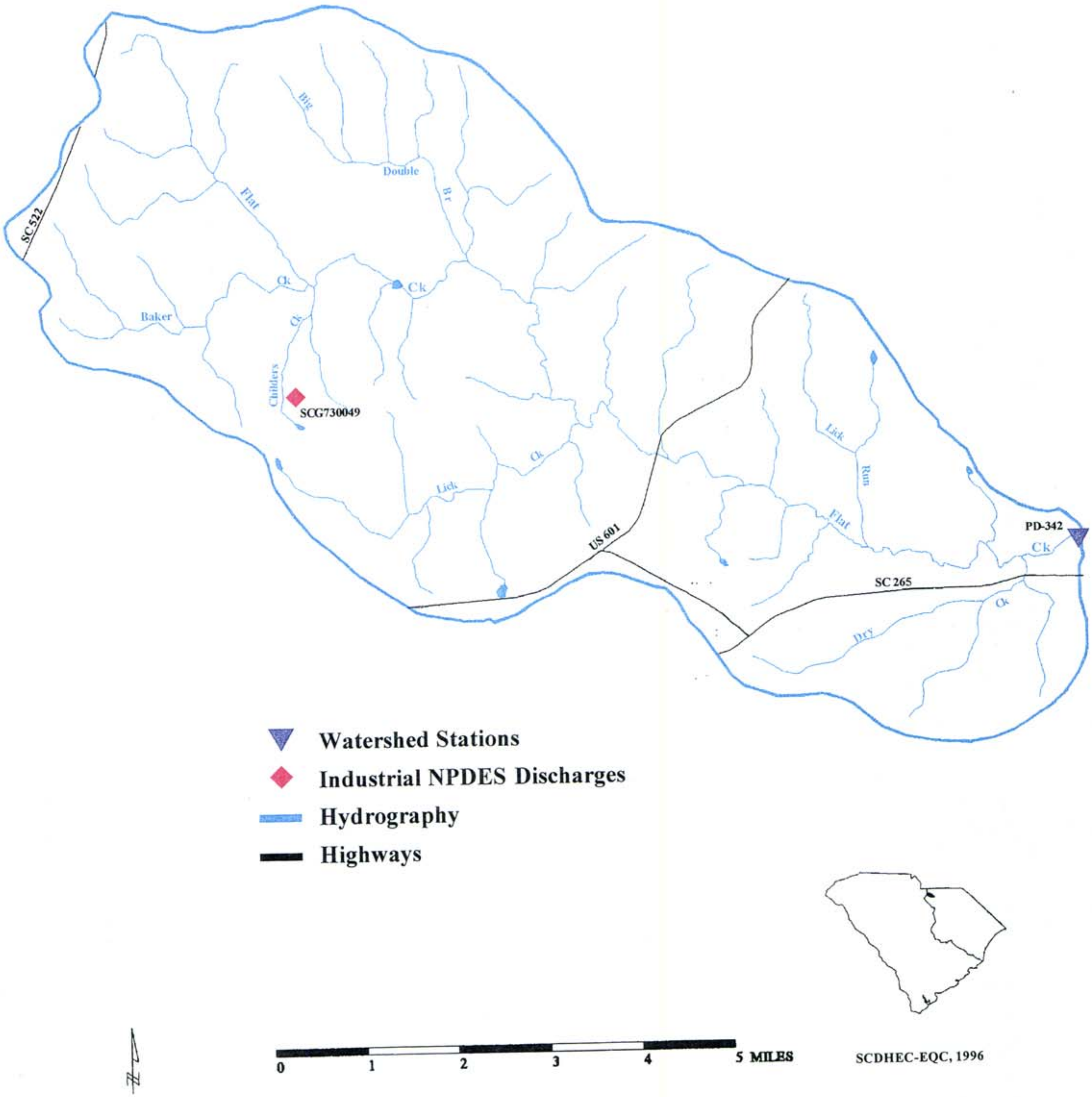
Natural Resources

Flat Creek Watershed
(03040202-040)



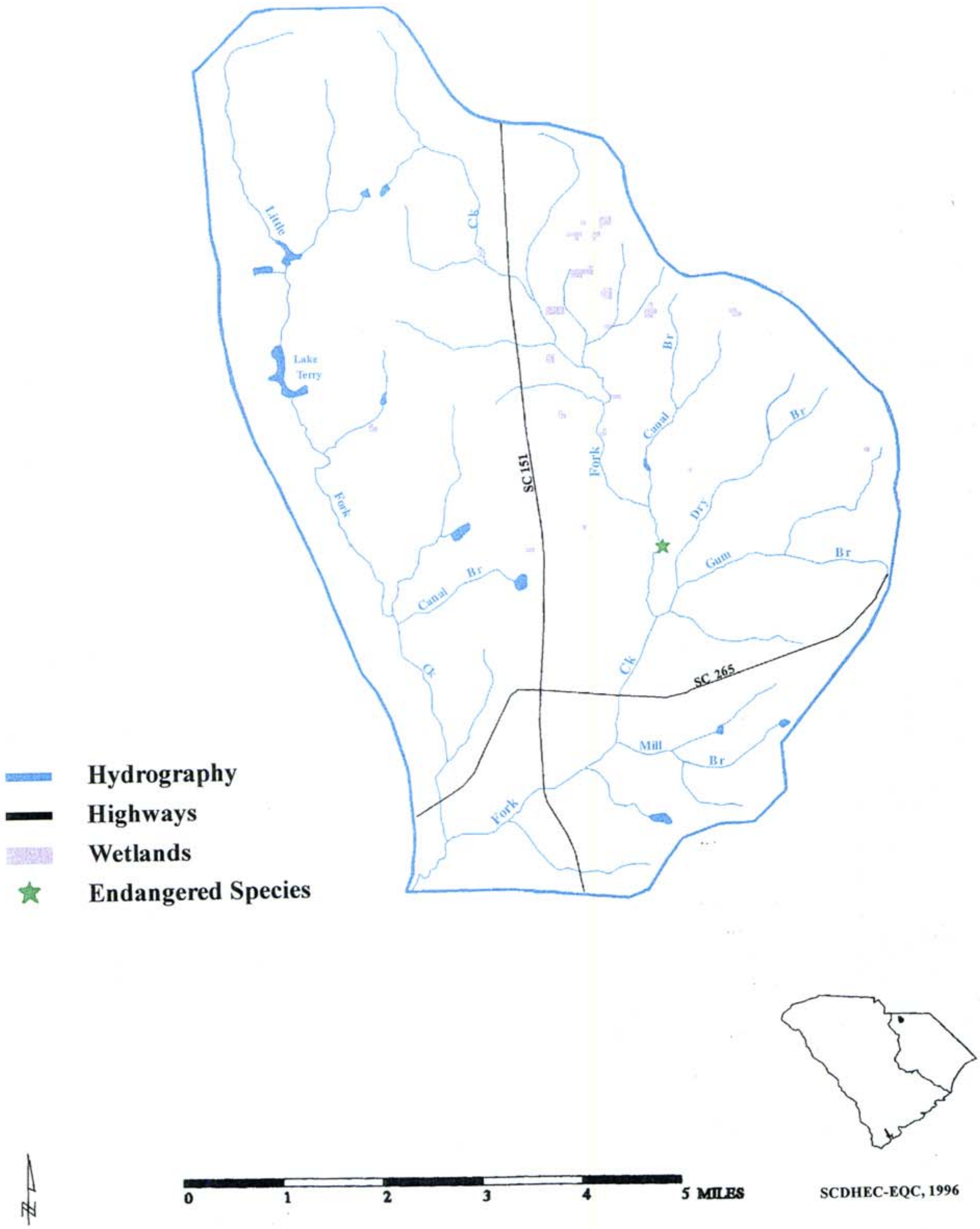
Monitoring Sites and Permitted Activities

Flat Creek Watershed (03040202-040)



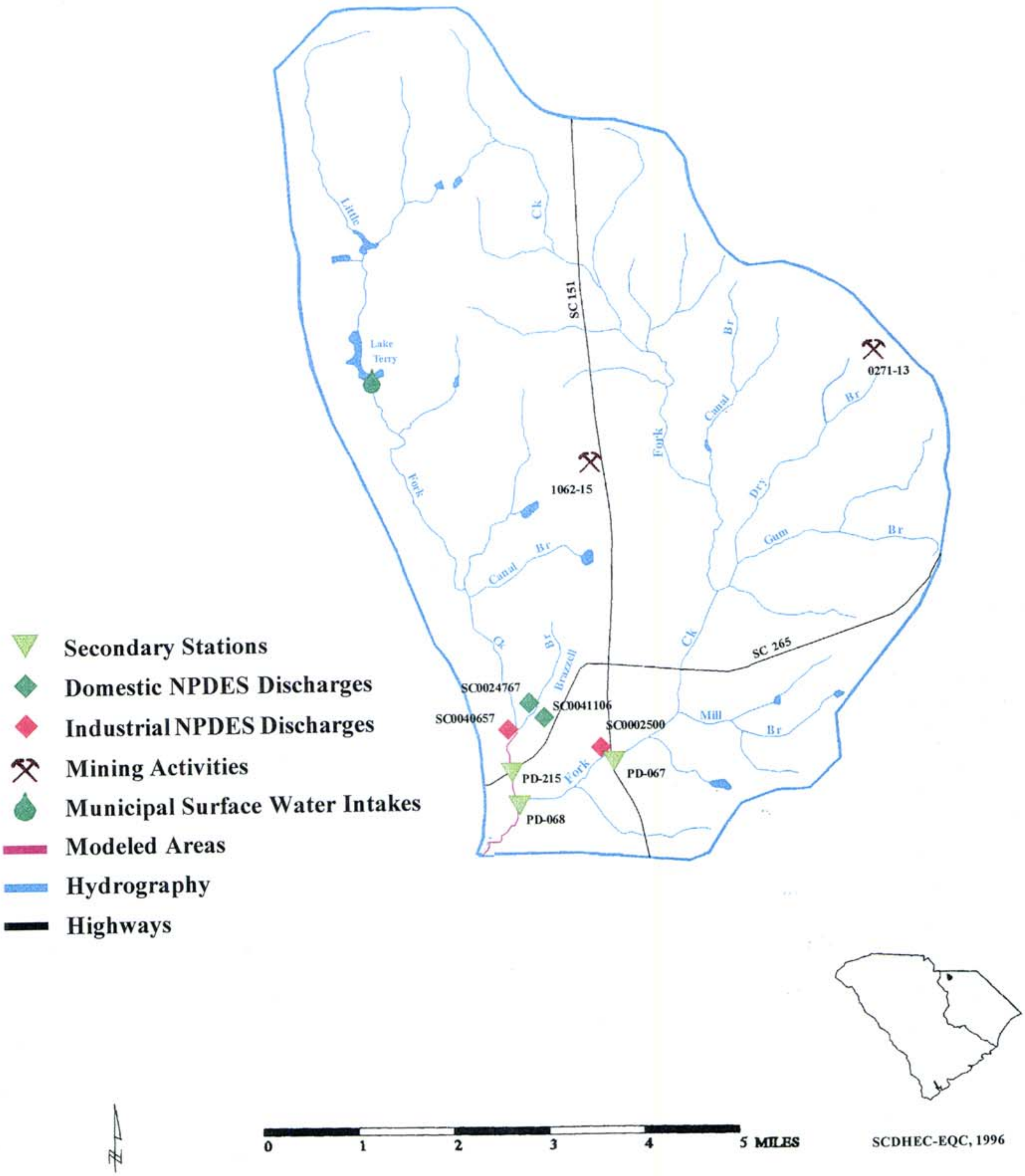
Natural Resources

Fork Creek Watershed
(03040202-050)

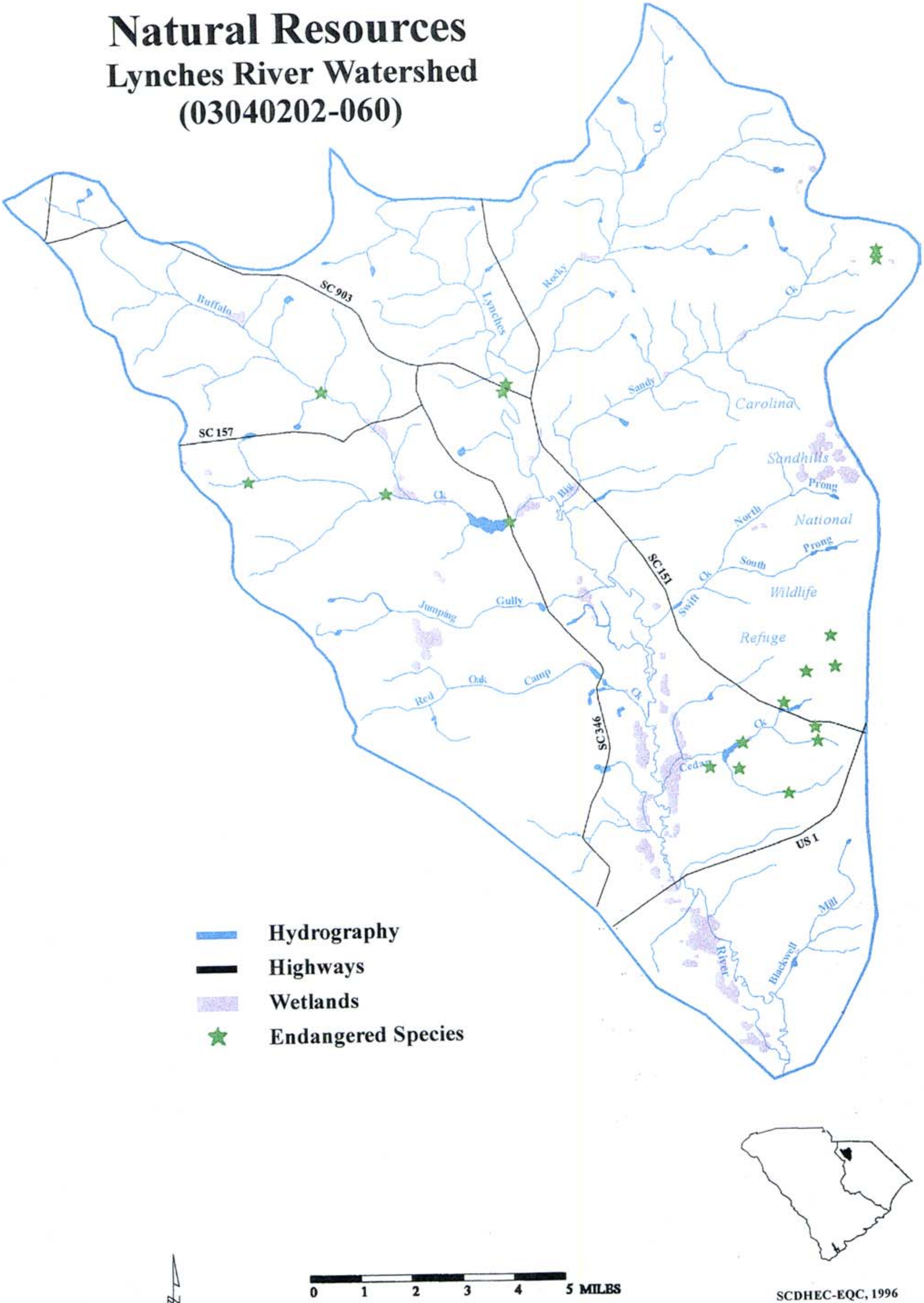


Monitoring Sites, Modeled Streams, and Permitted Areas

Fork Creek Watershed (03040202-050)



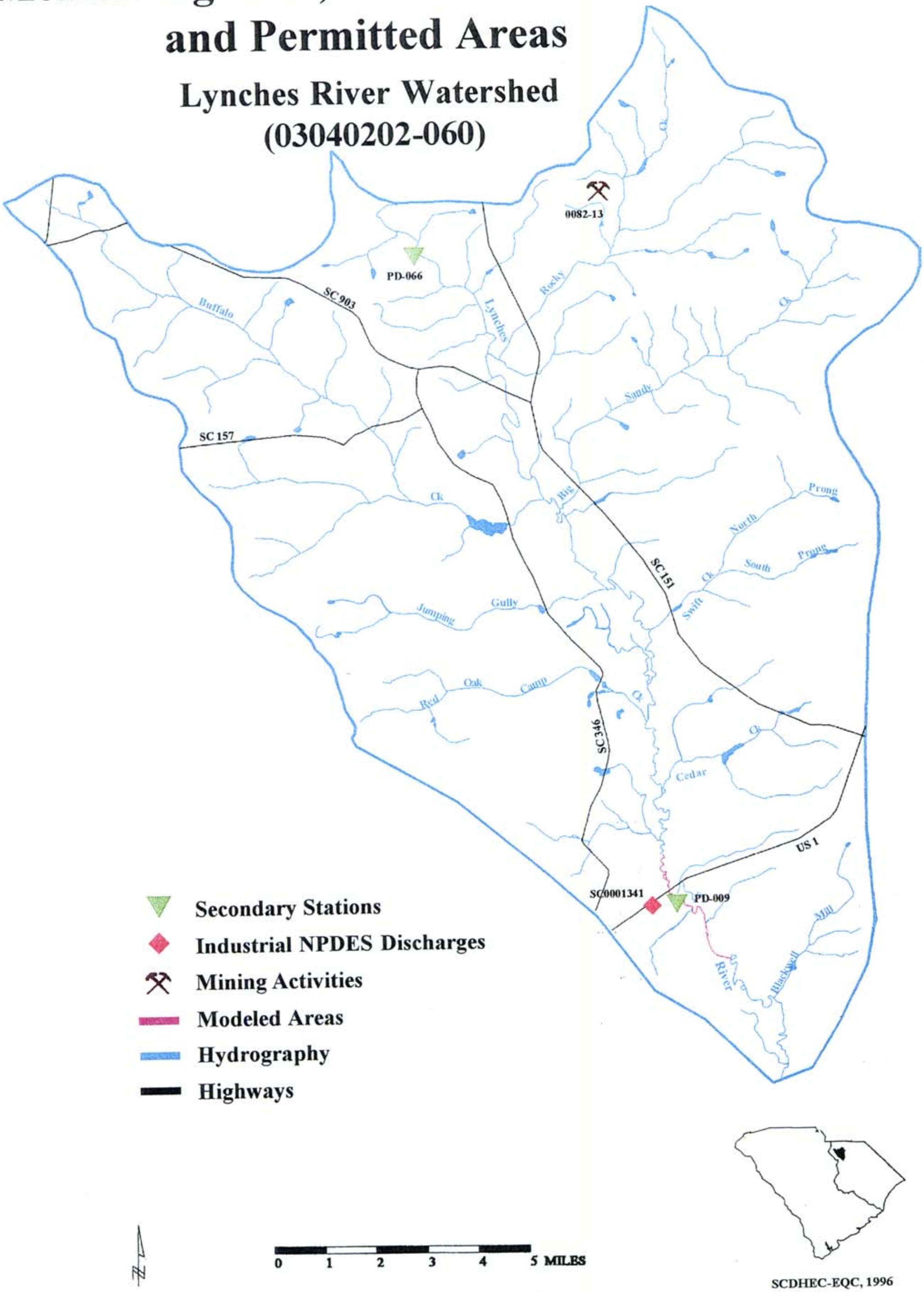
Natural Resources
Lynches River Watershed
(03040202-060)



SCDHEC-EQC, 1996

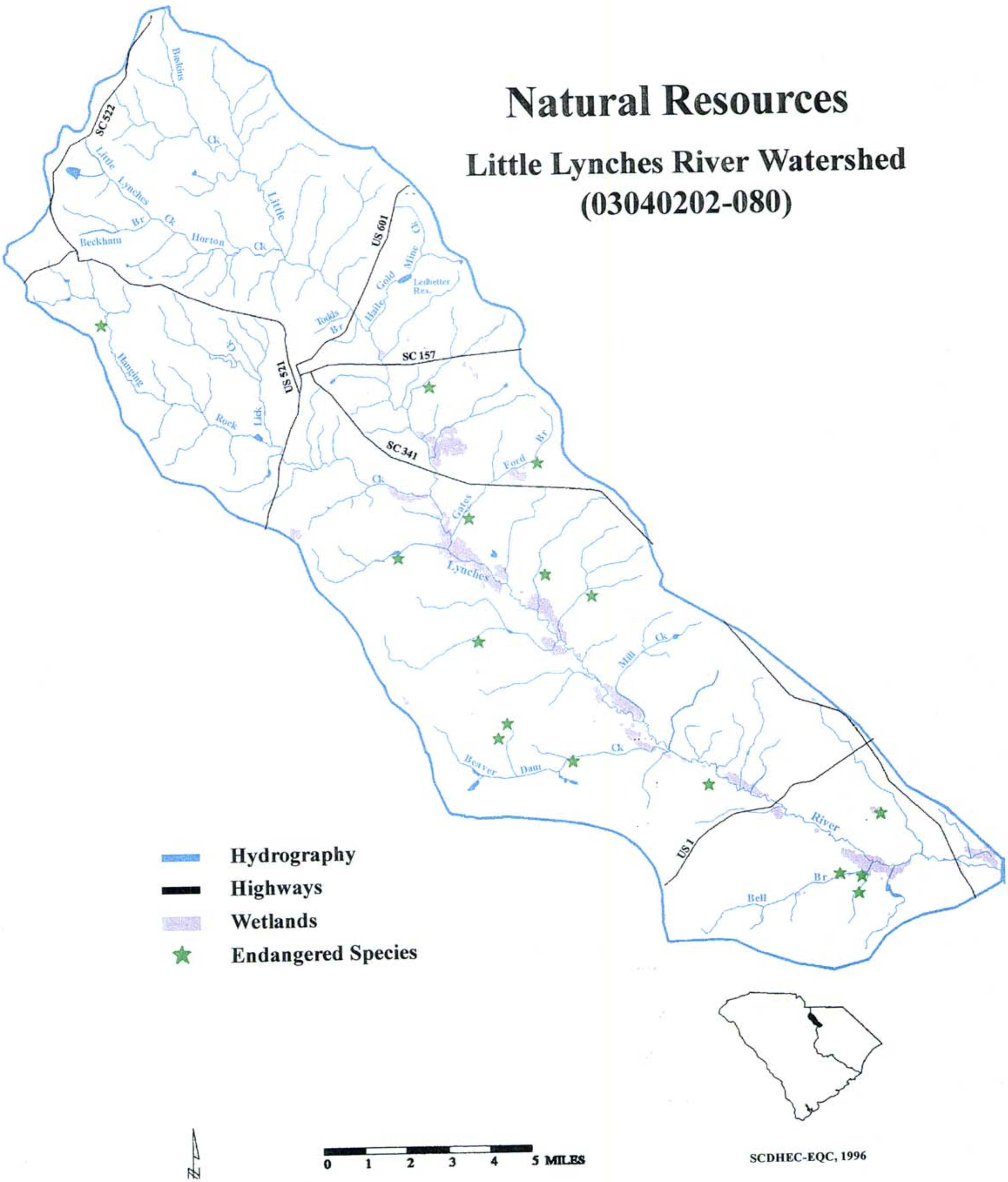
Monitoring Sites, Modeled Streams, and Permitted Areas

Lynches River Watershed (03040202-060)



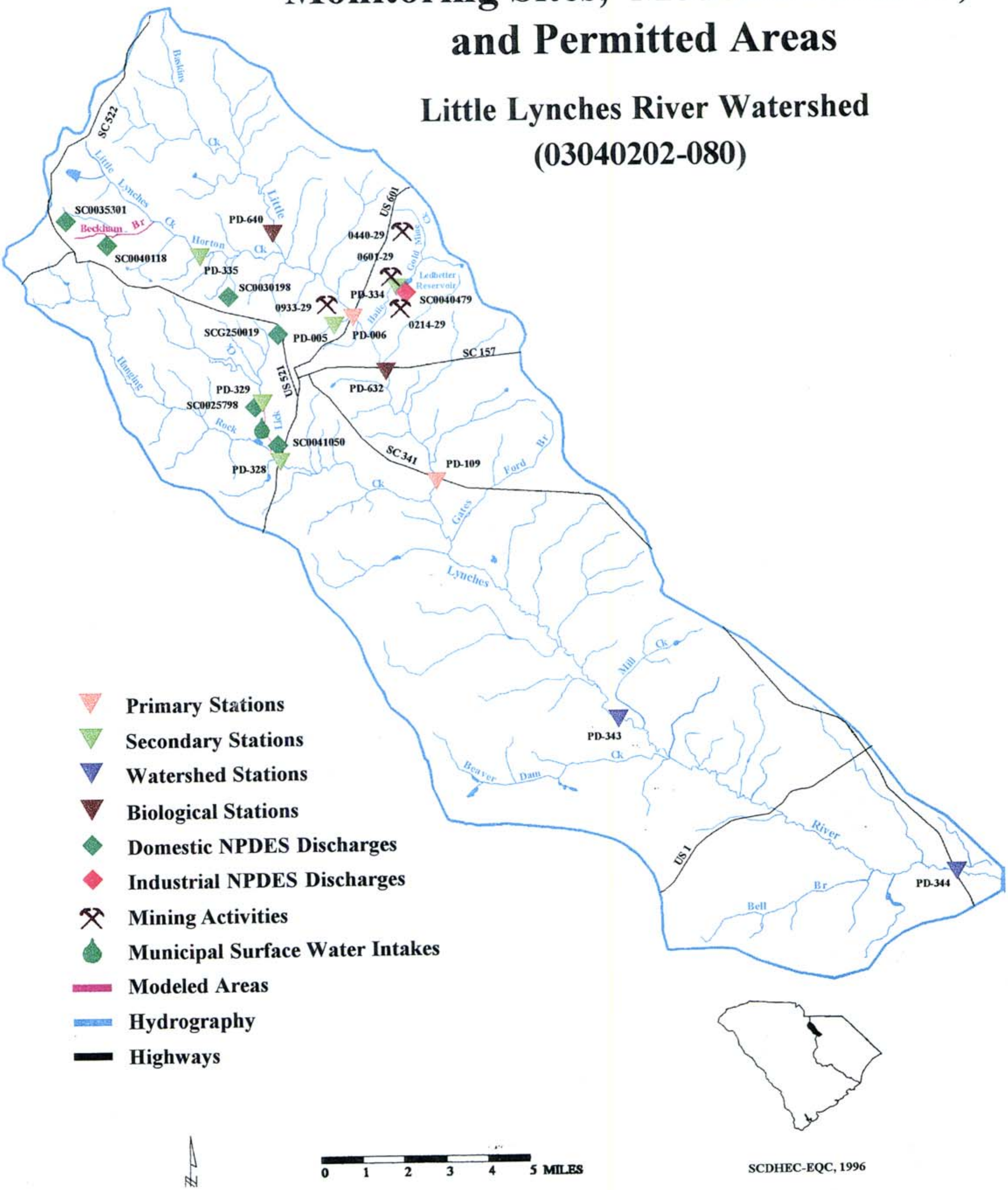
Natural Resources

Little Lynches River Watershed (03040202-080)



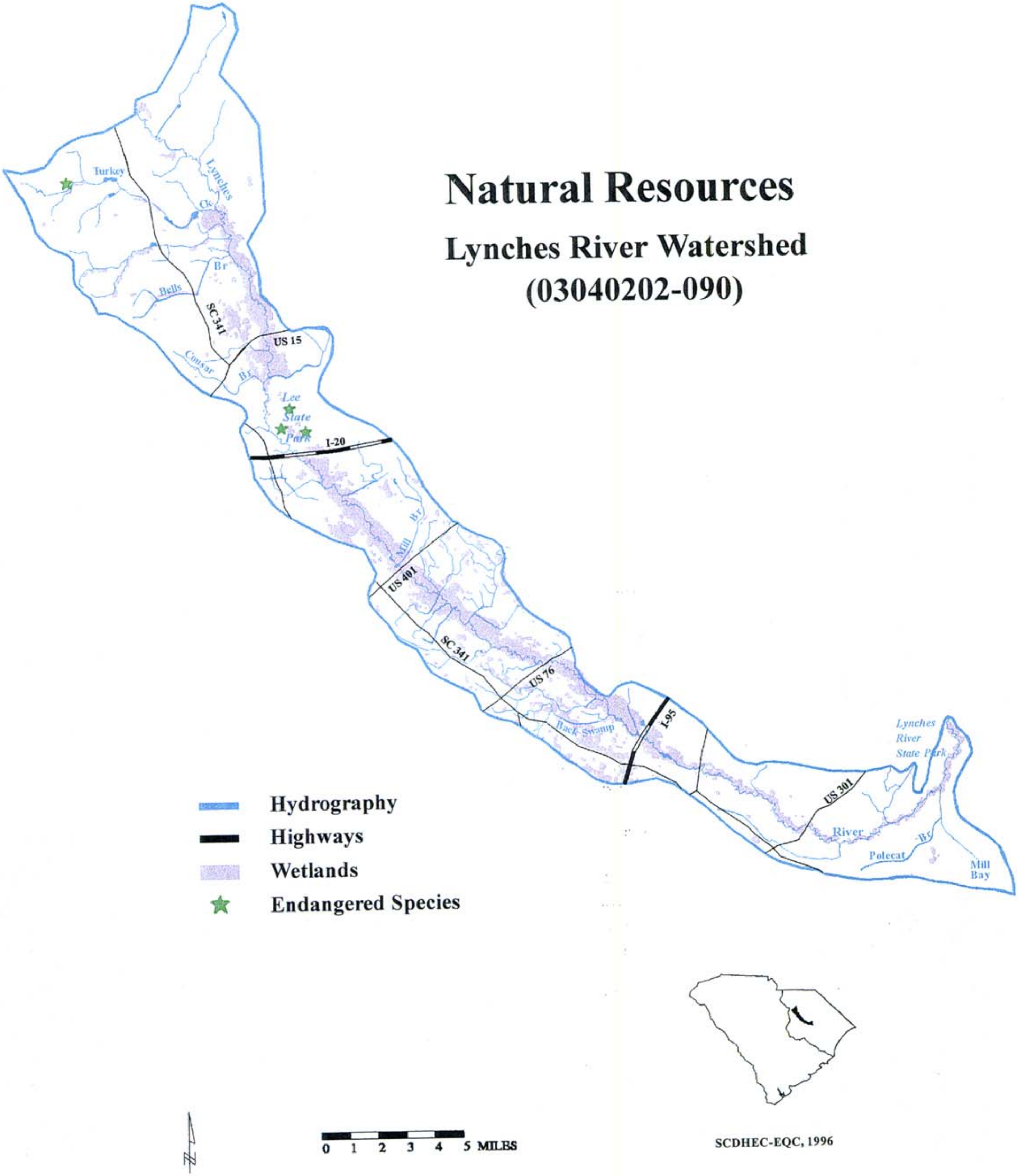
Monitoring Sites, Modeled Streams, and Permitted Areas

Little Lynches River Watershed (03040202-080)



Natural Resources

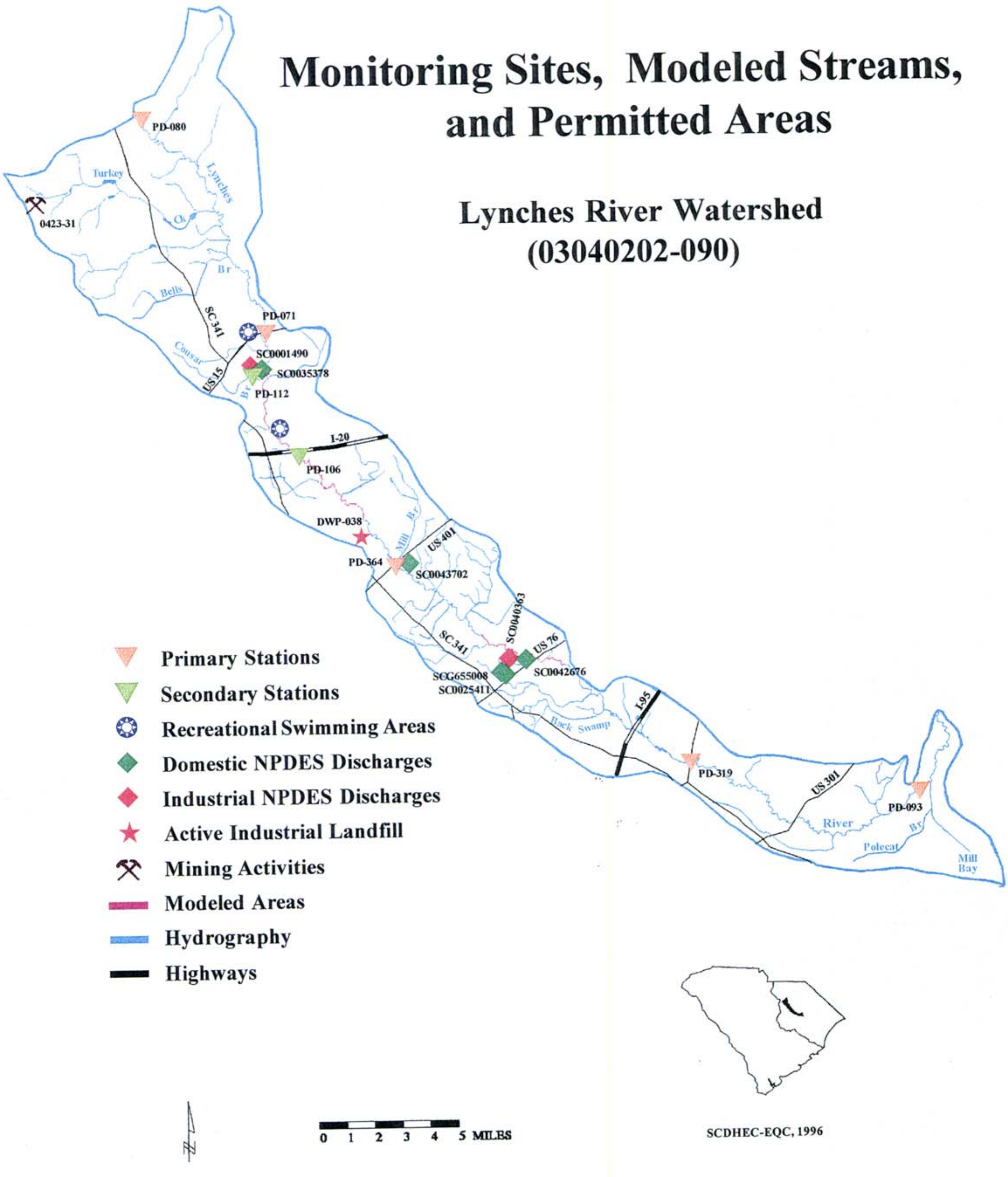
Lynches River Watershed
(03040202-090)



SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas

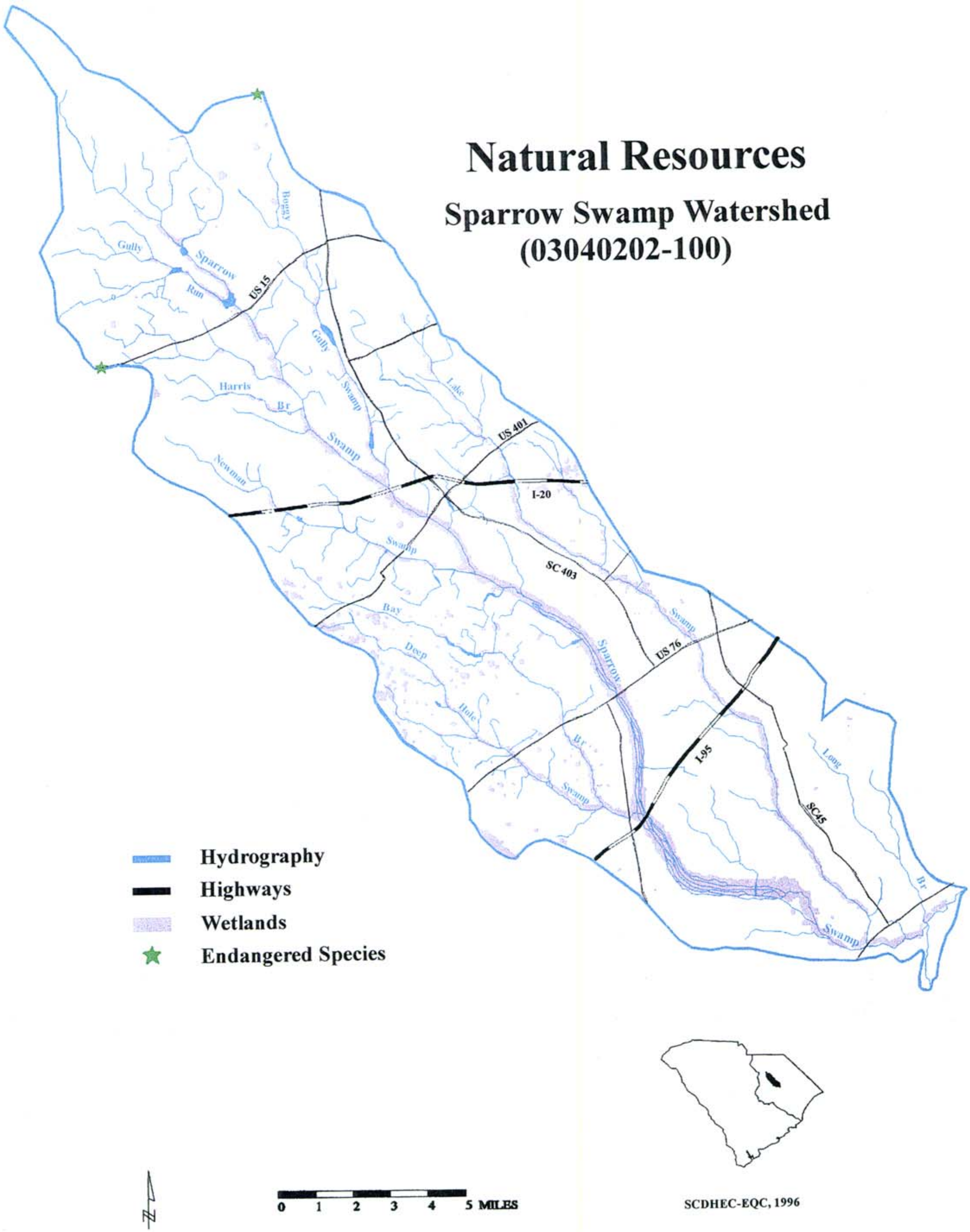
Lynches River Watershed (03040202-090)



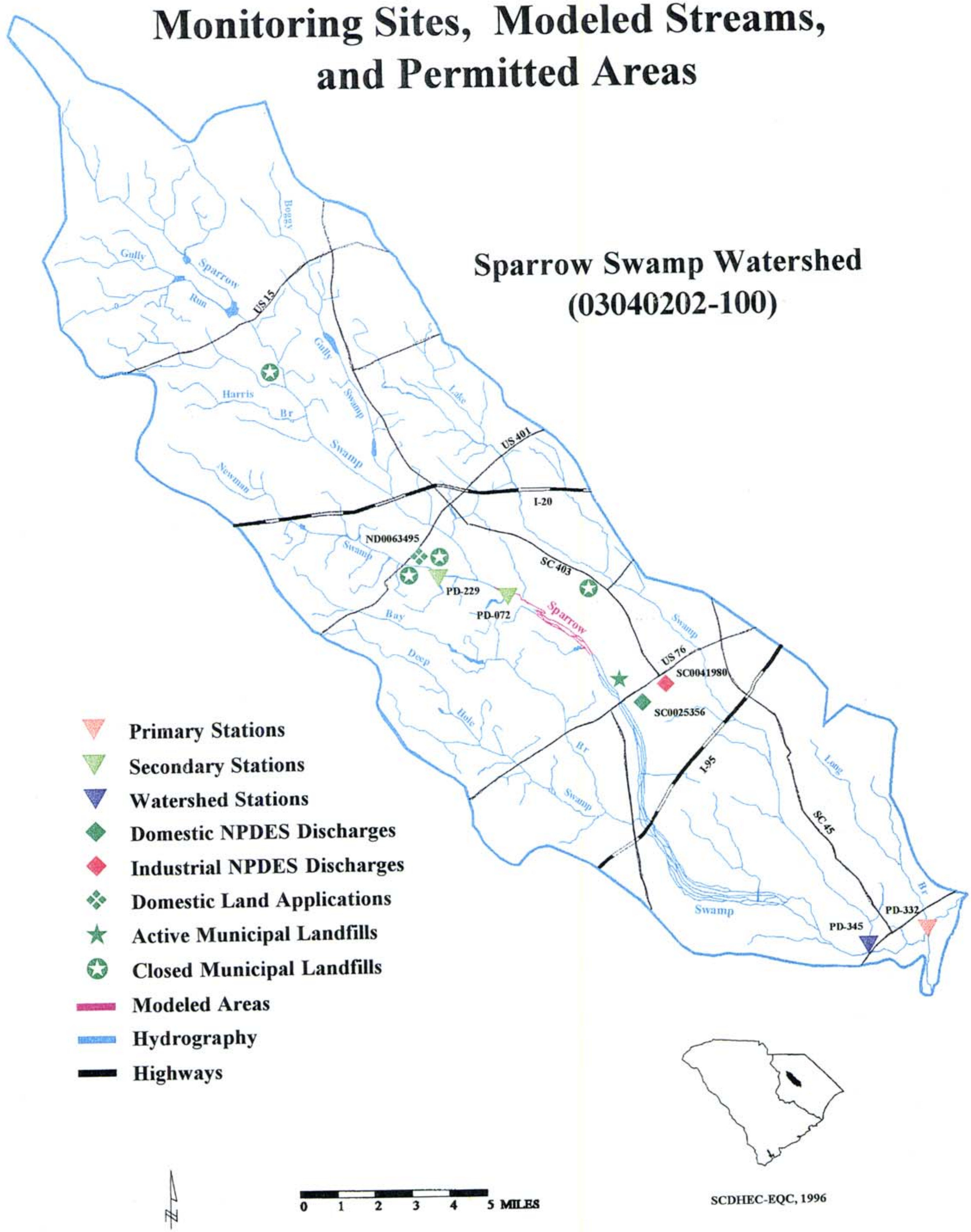
SCDHEC-EQC, 1996

Natural Resources

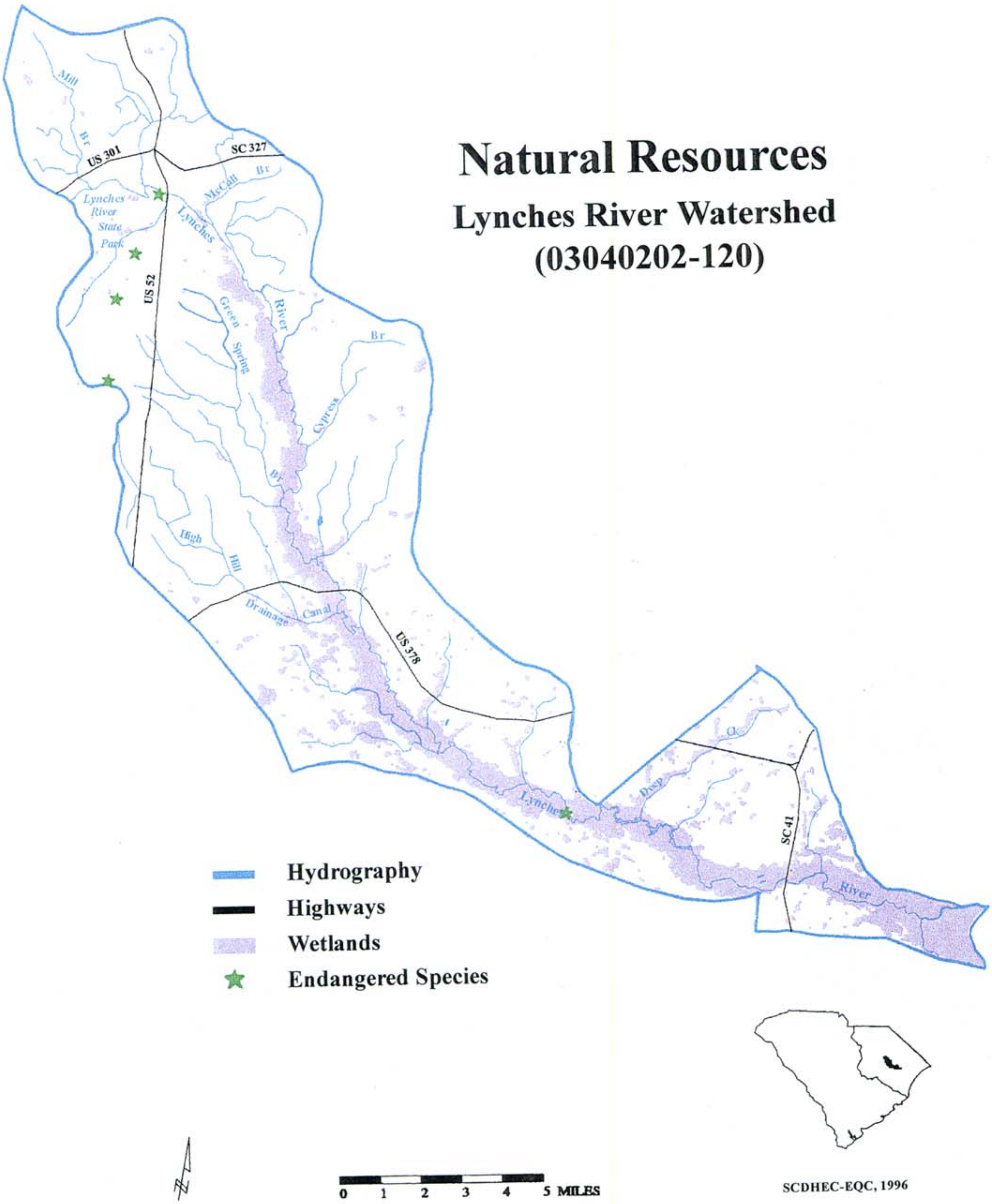
Sparrow Swamp Watershed (03040202-100)



Monitoring Sites, Modeled Streams, and Permitted Areas

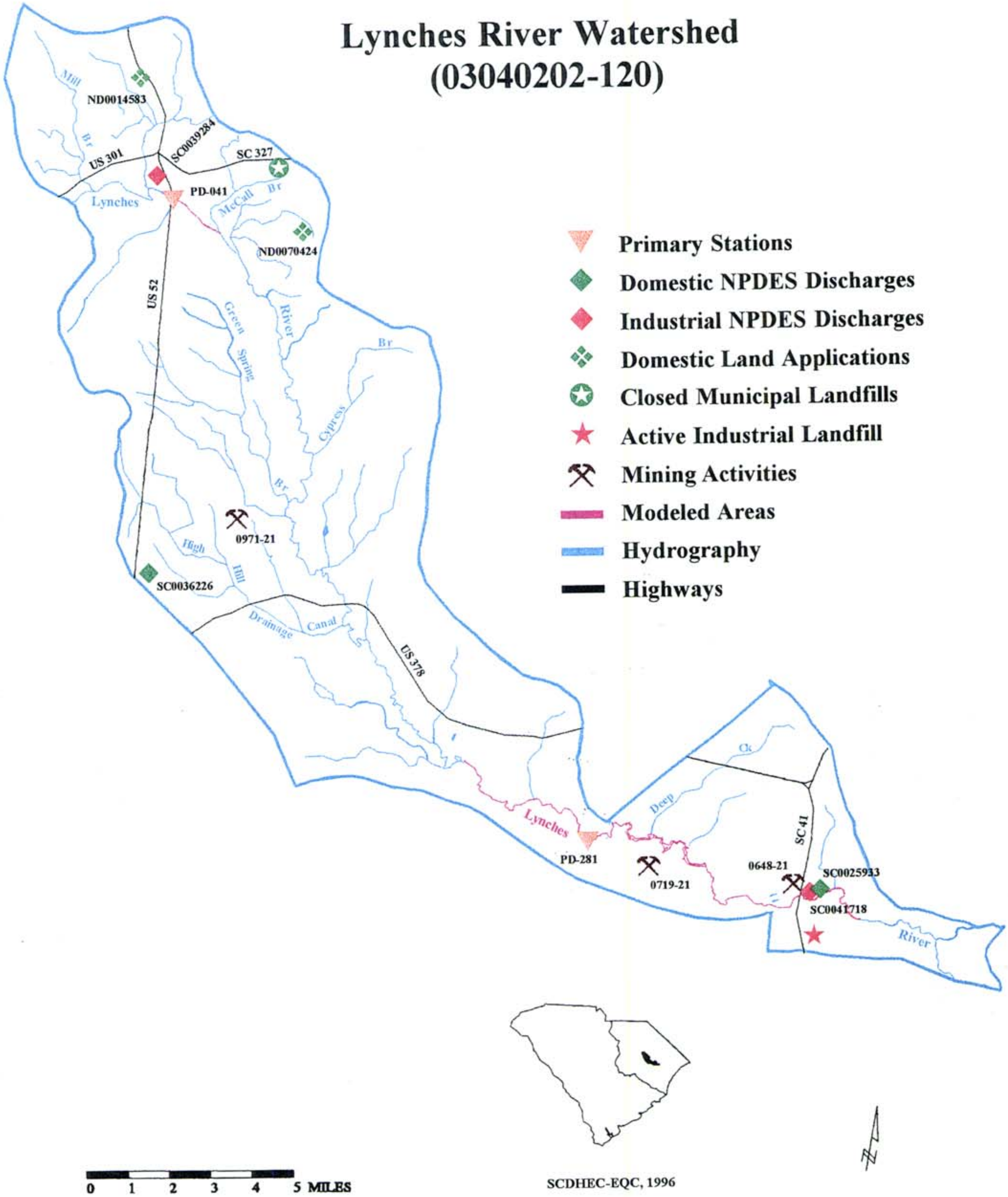


Natural Resources
Lynches River Watershed
(03040202-120)



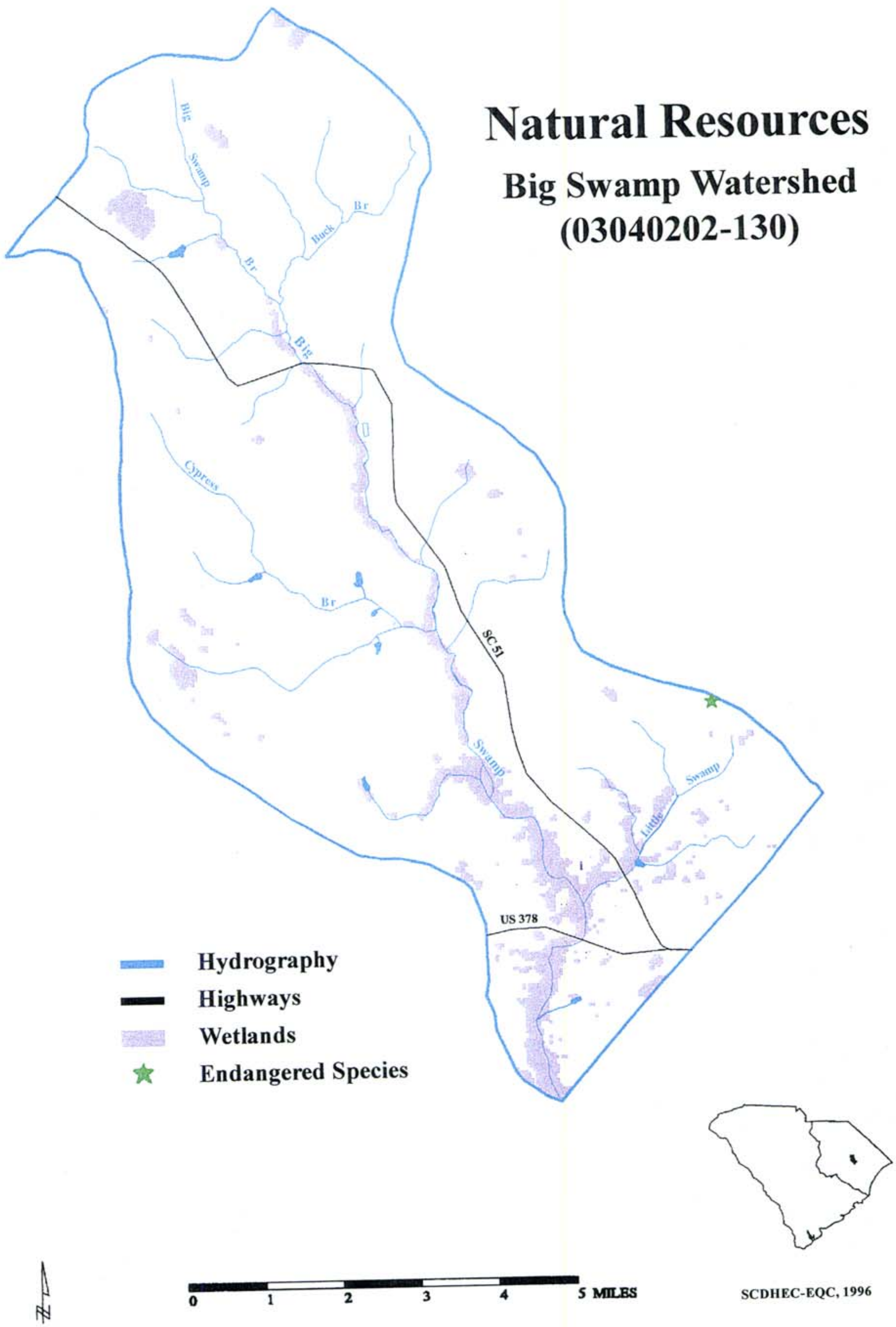
Monitoring Sites, Modeled Streams, and Permitted Areas

Lynches River Watershed (03040202-120)



Natural Resources

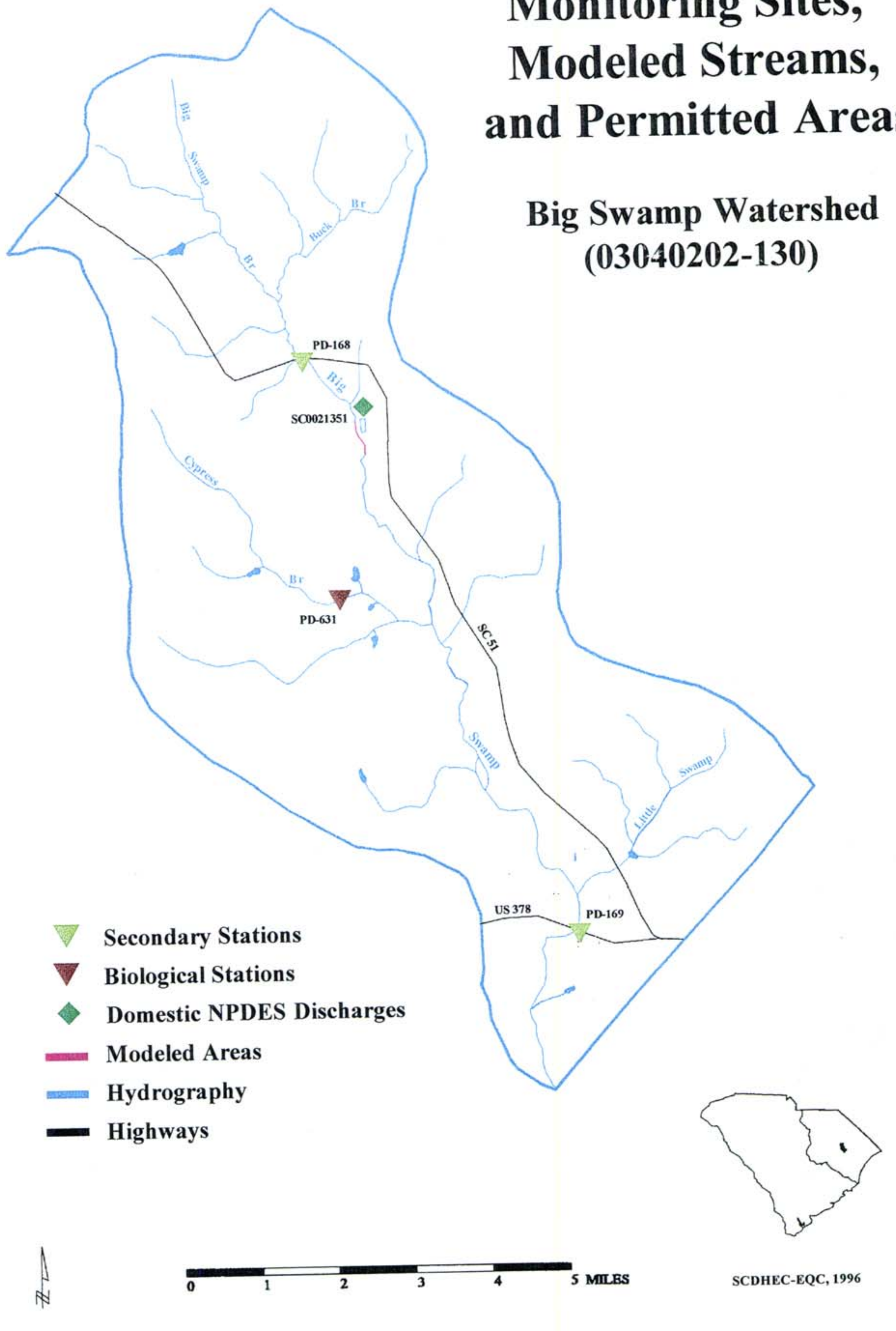
Big Swamp Watershed
(03040202-130)



SCDHEC-EQC, 1996

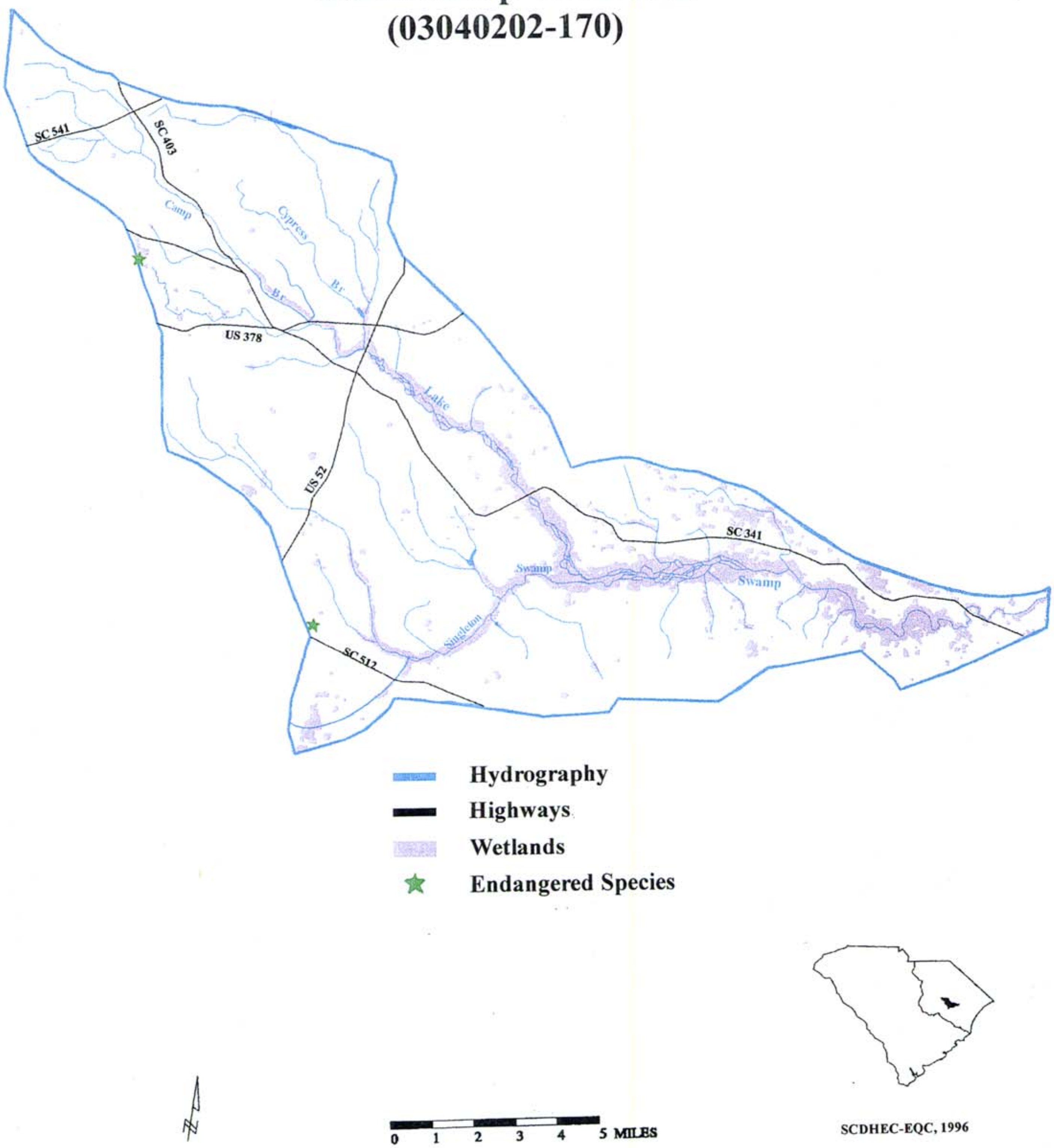
Monitoring Sites, Modeled Streams, and Permitted Areas

Big Swamp Watershed (03040202-130)



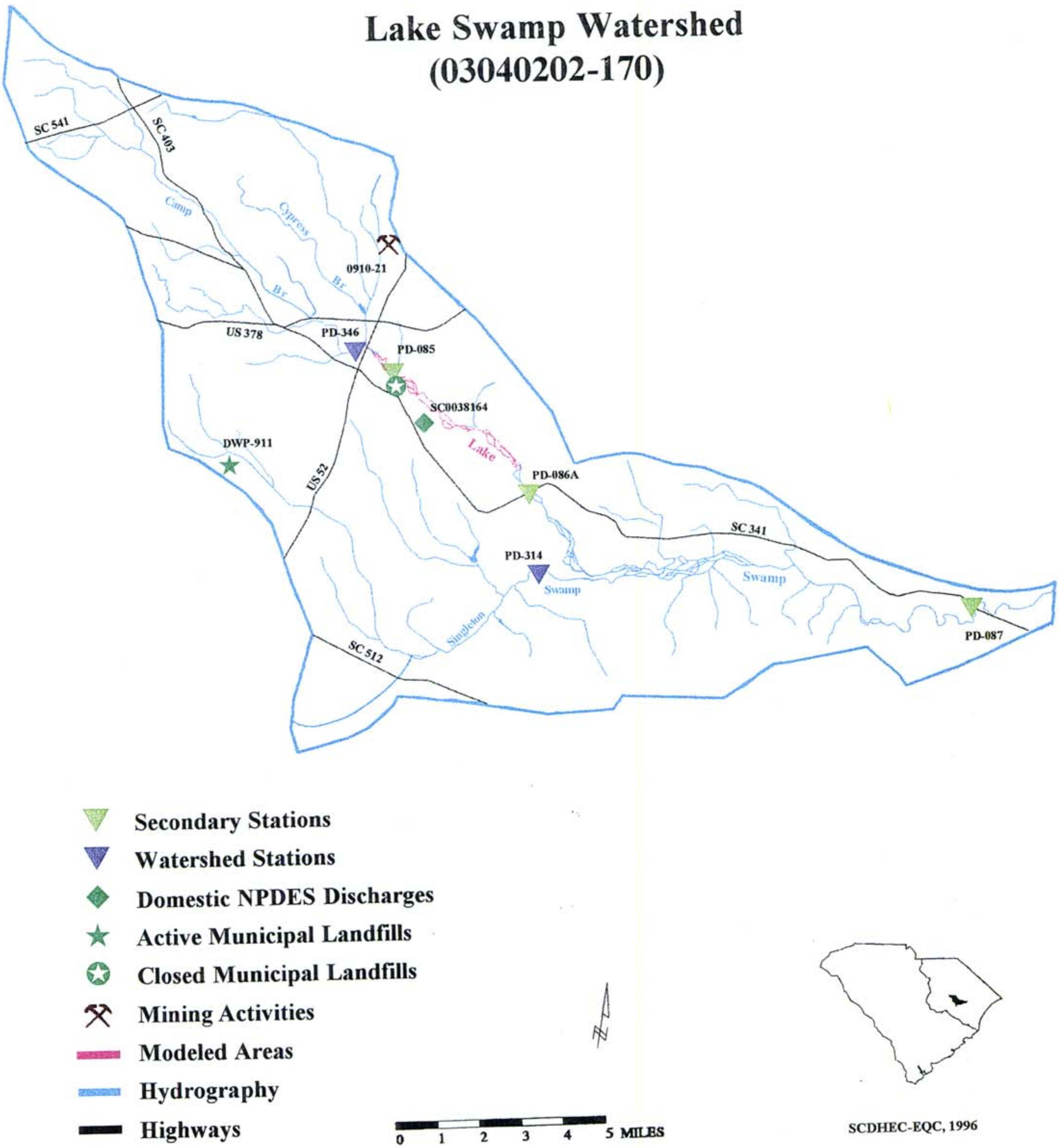
Natural Resources

Lake Swamp Watershed
(03040202-170)



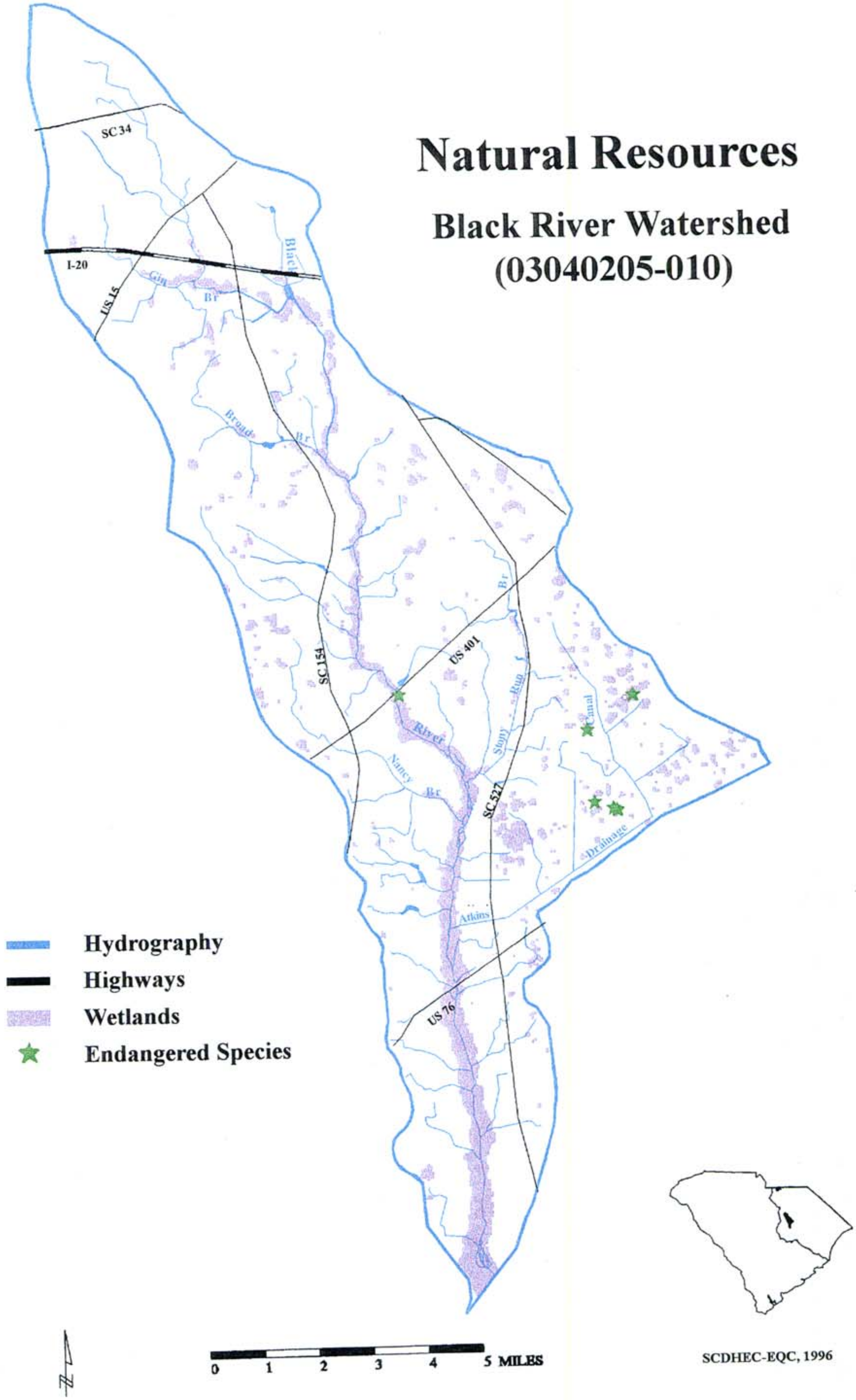
Monitoring Sites, Modeled Streams, and Permitted Areas

Lake Swamp Watershed (03040202-170)



Natural Resources

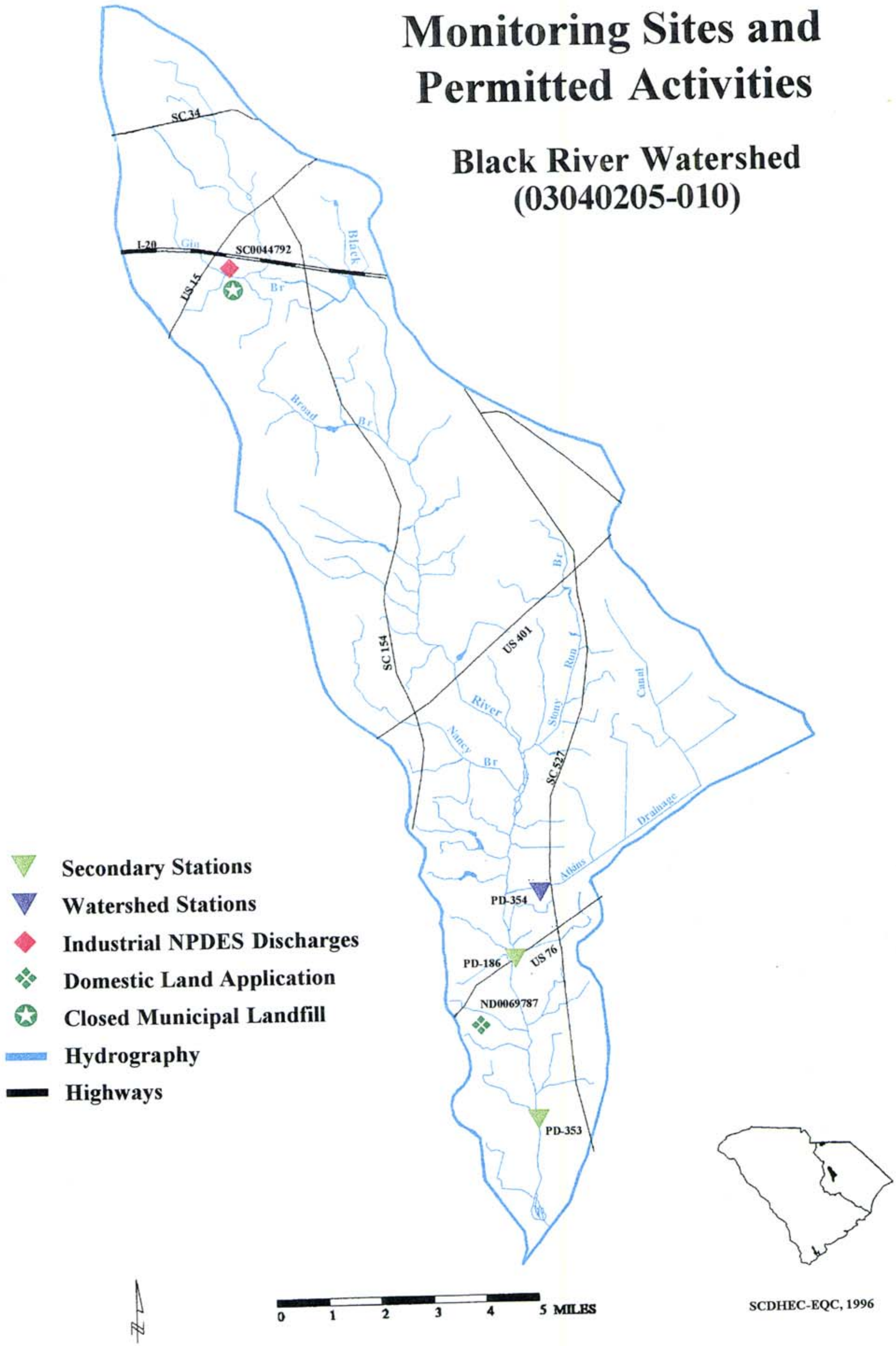
Black River Watershed
(03040205-010)



SCDHEC-EQC, 1996

Monitoring Sites and Permitted Activities

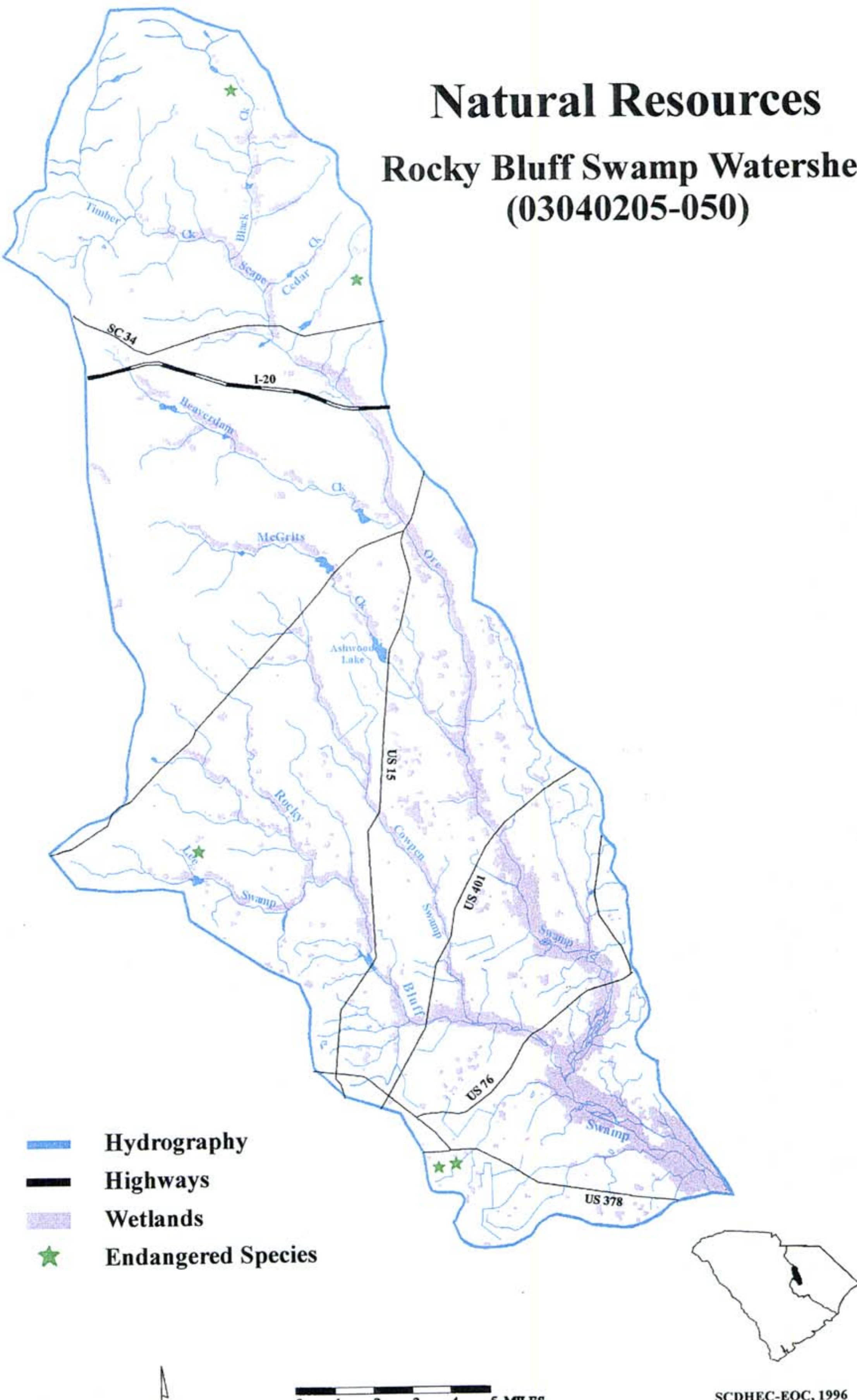
Black River Watershed (03040205-010)



SCDHEC-EQC, 1996

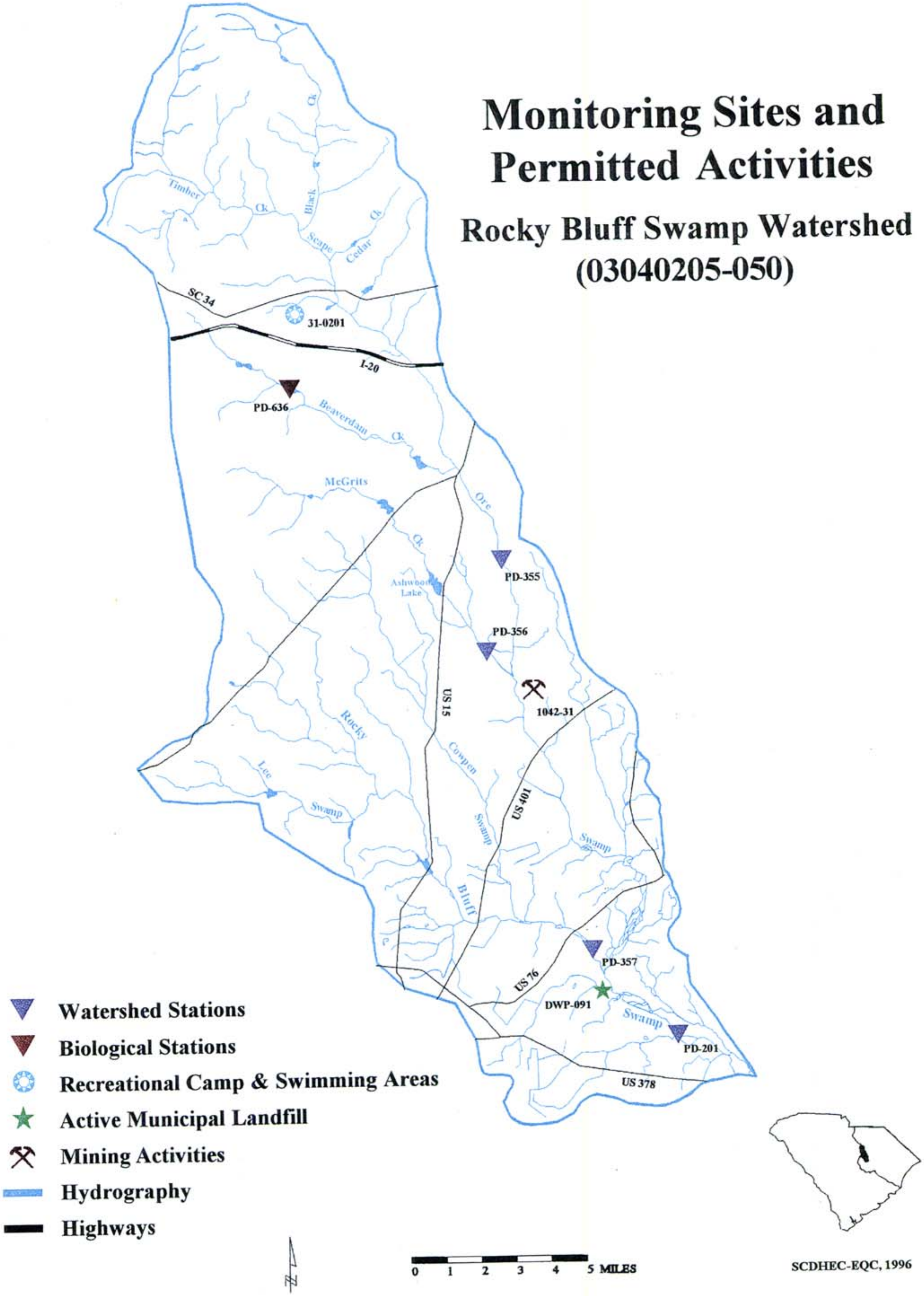
Natural Resources

Rocky Bluff Swamp Watershed (03040205-050)



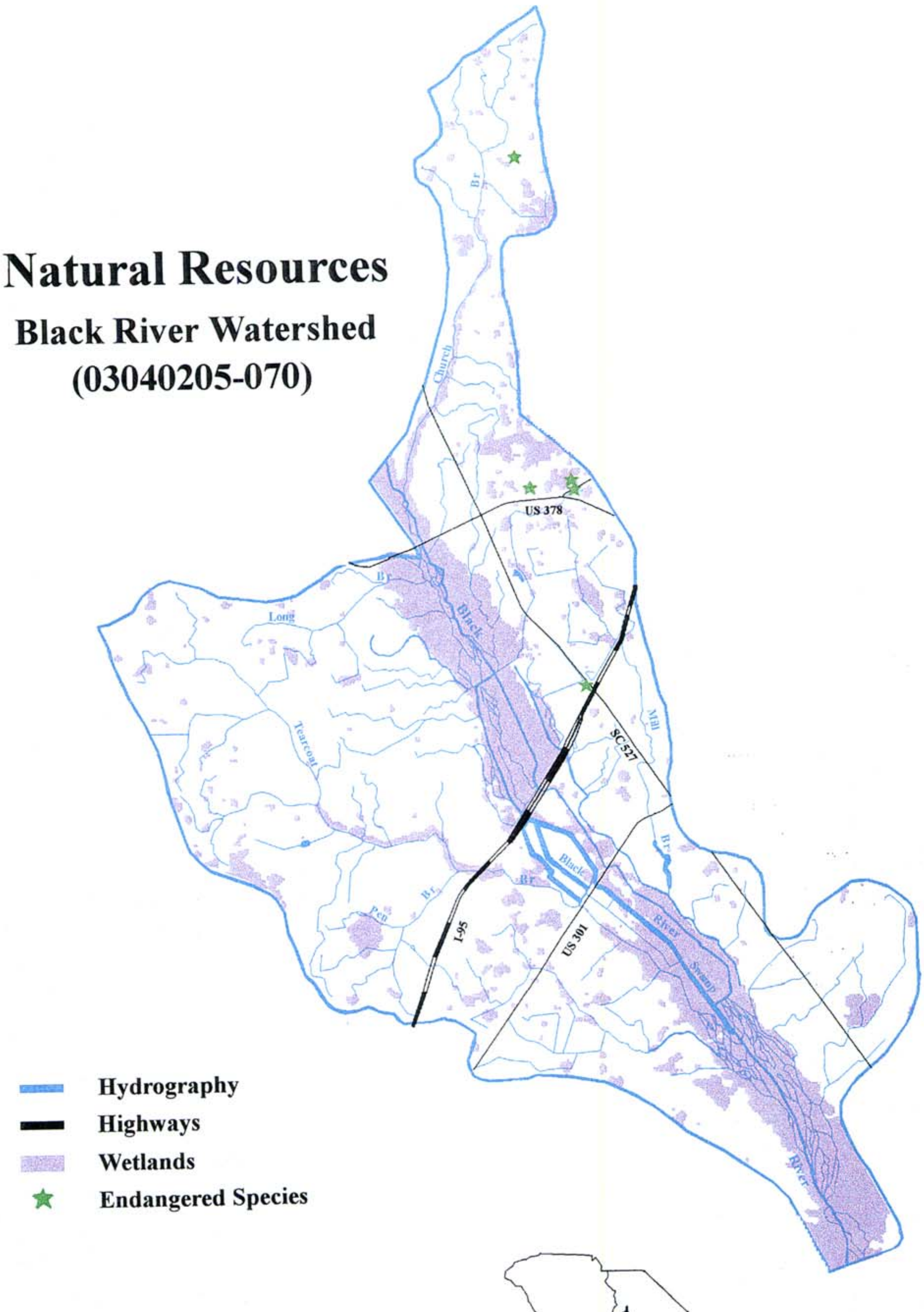
Monitoring Sites and Permitted Activities

Rocky Bluff Swamp Watershed (03040205-050)



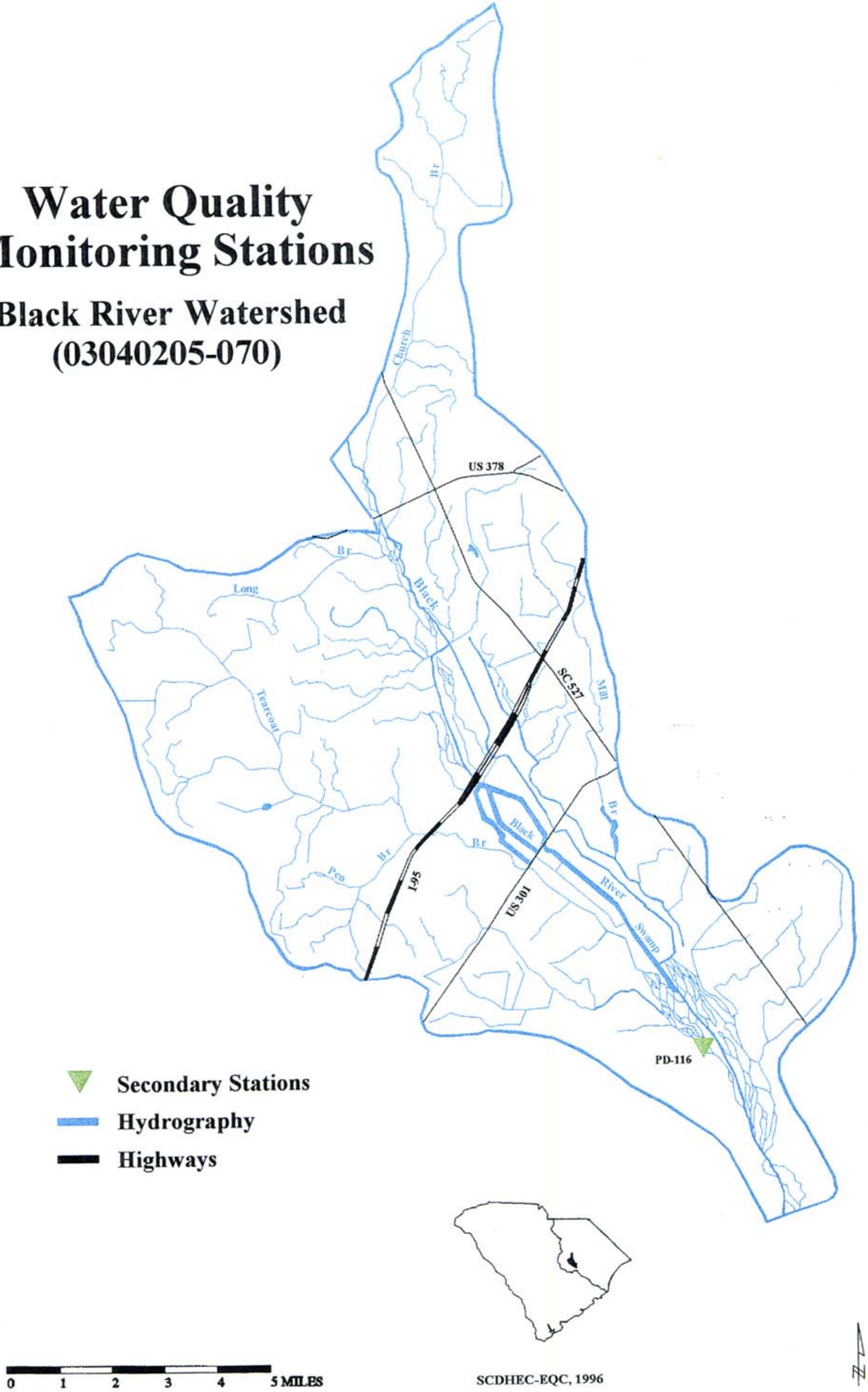
Natural Resources

Black River Watershed (03040205-070)



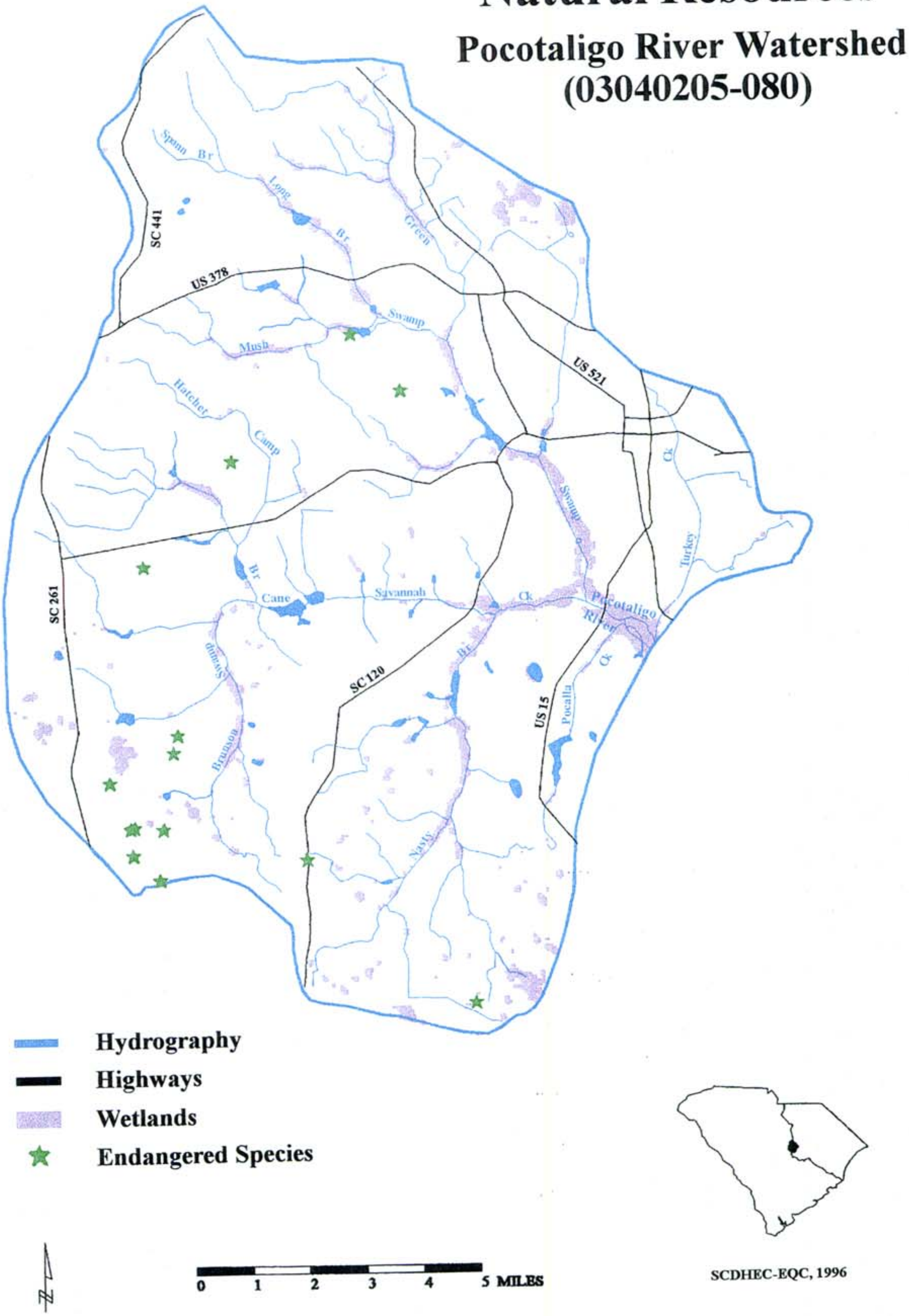
Water Quality Monitoring Stations

Black River Watershed (03040205-070)

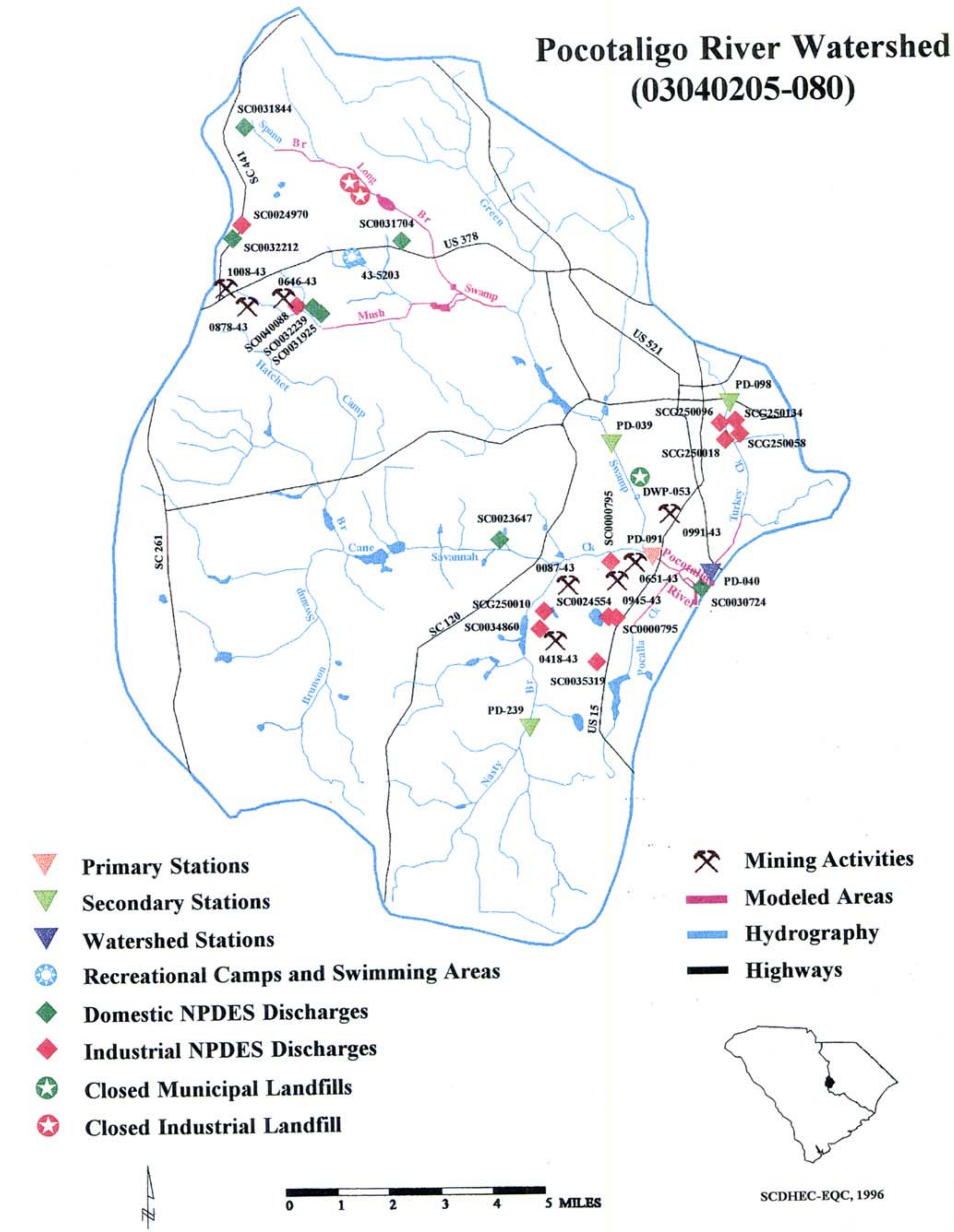


Natural Resources

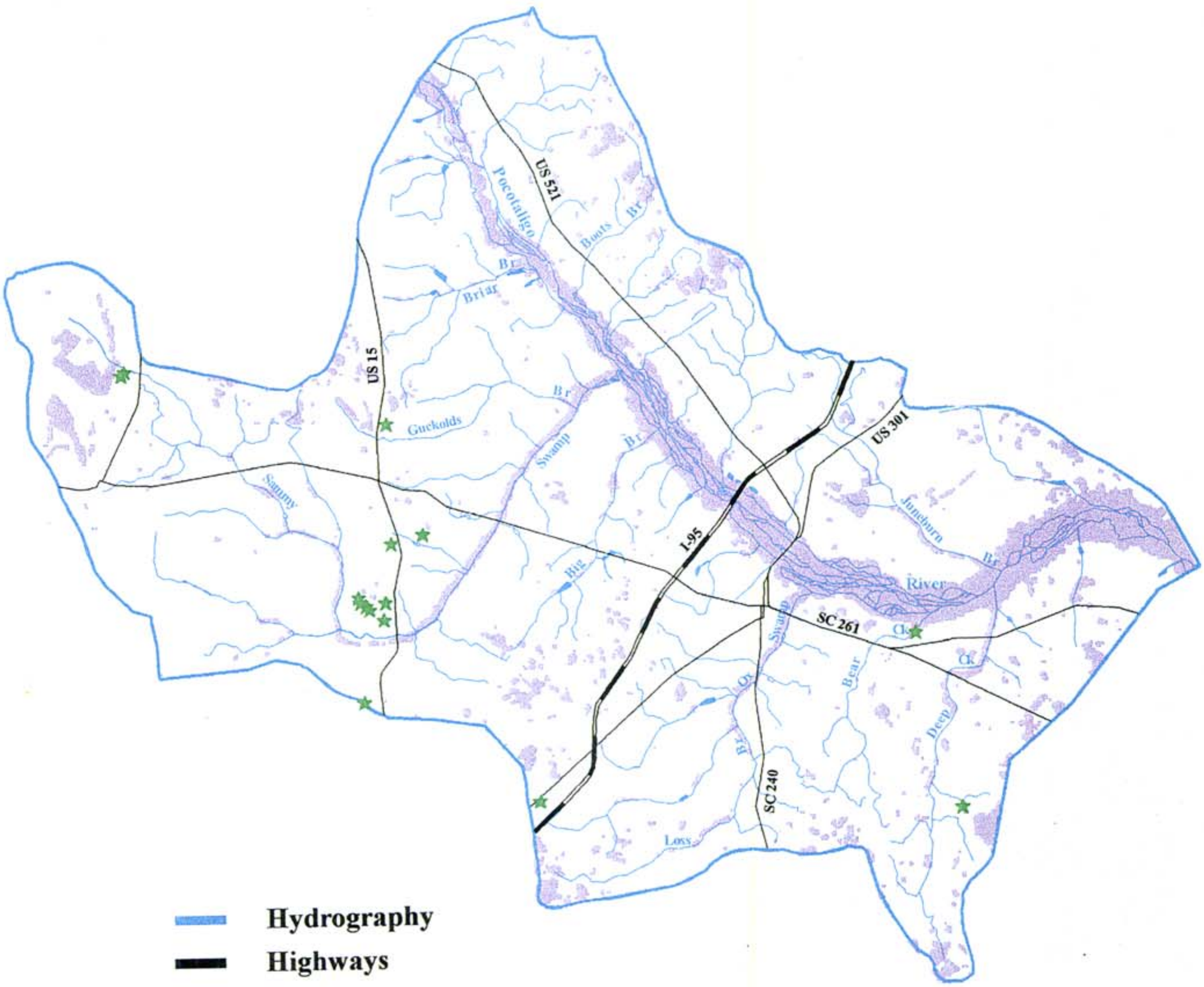
Pocotaligo River Watershed (03040205-080)



Monitoring Sites, Modeled Streams, and Permitted Areas



Natural Resources
Pocotaligo River Watershed
(03040205-090)

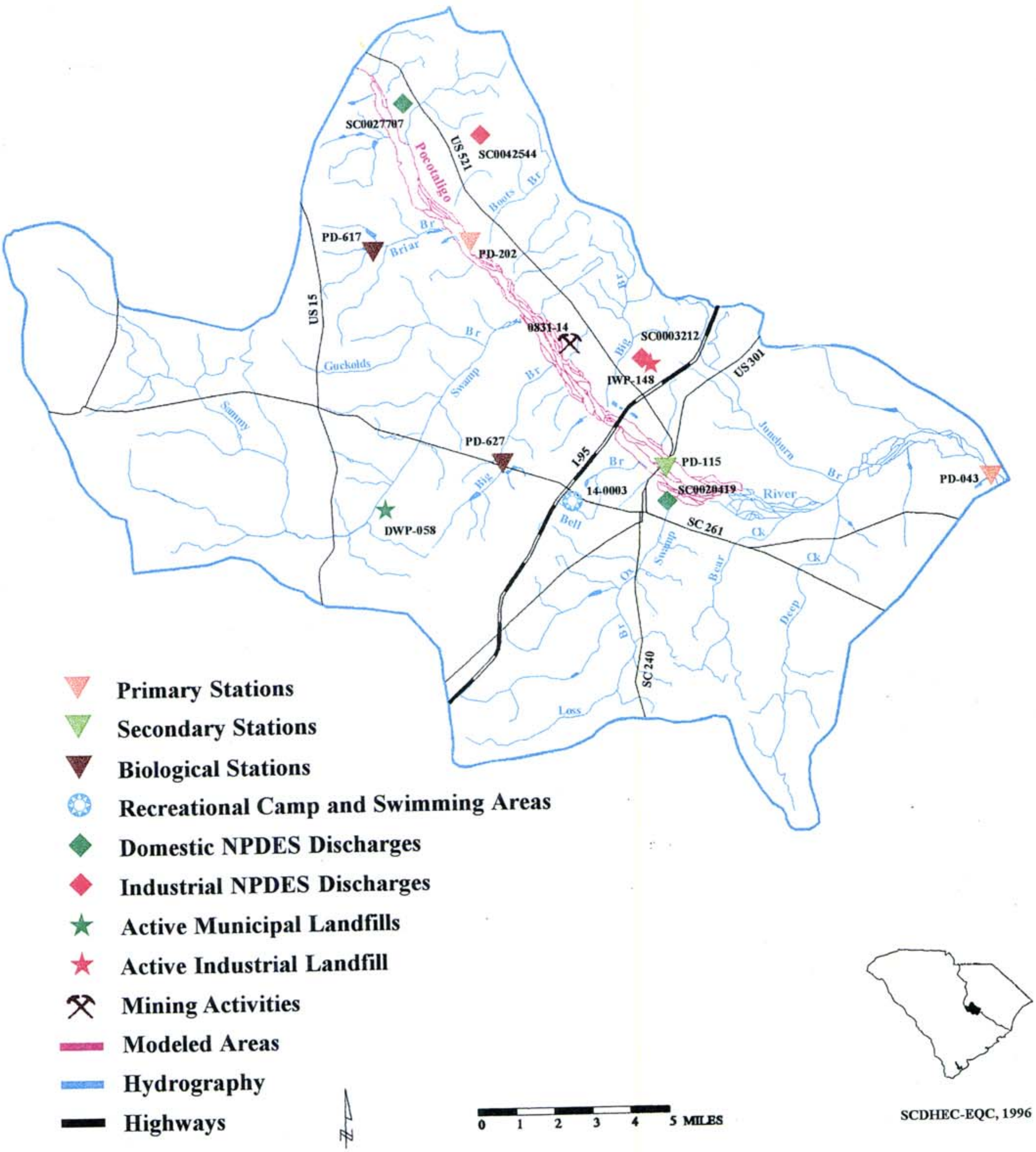


Hydrography
Highways
Wetlands
Endangered Species

SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas

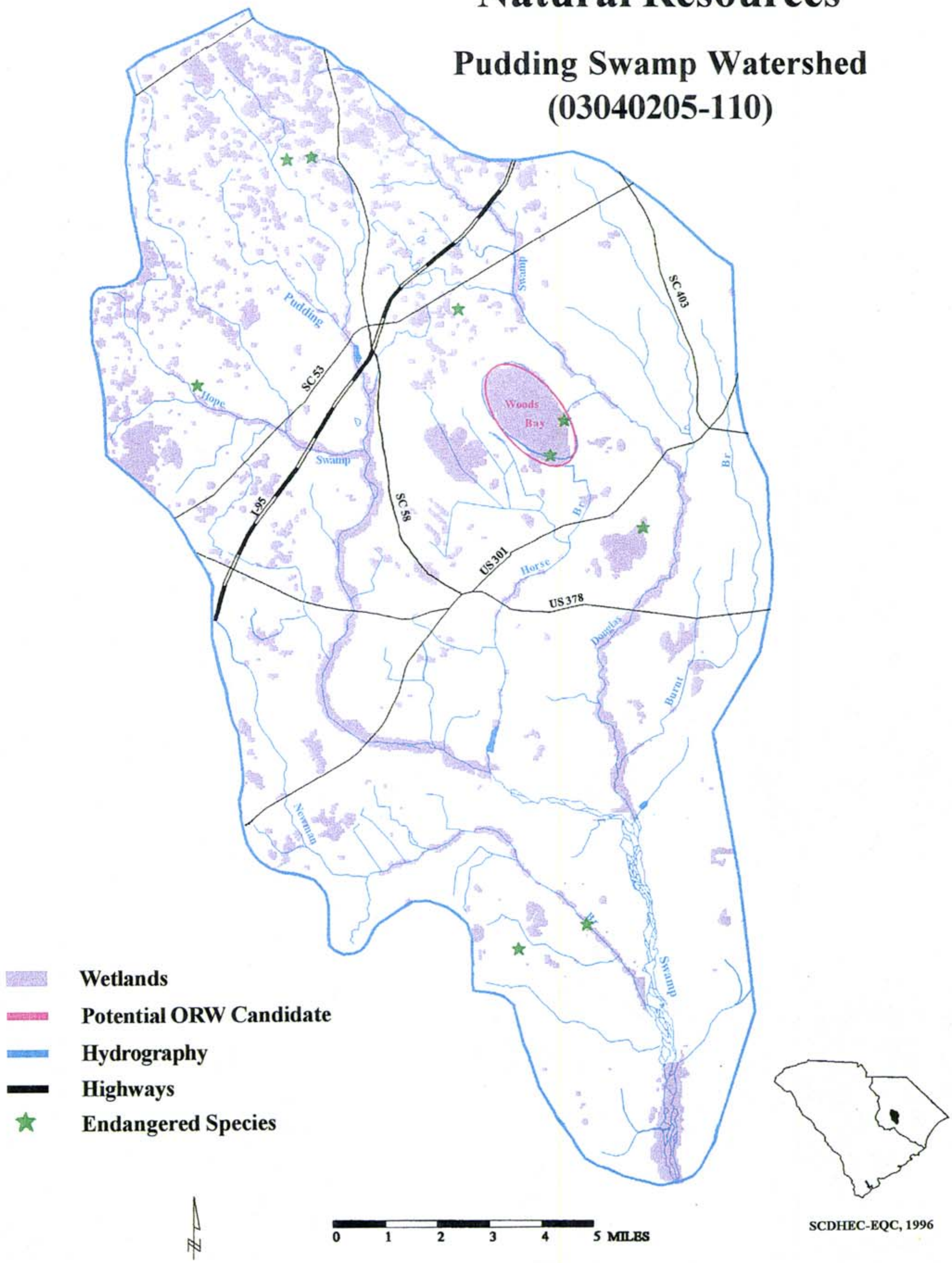
Pocotaligo River Watershed
(03040205-090)



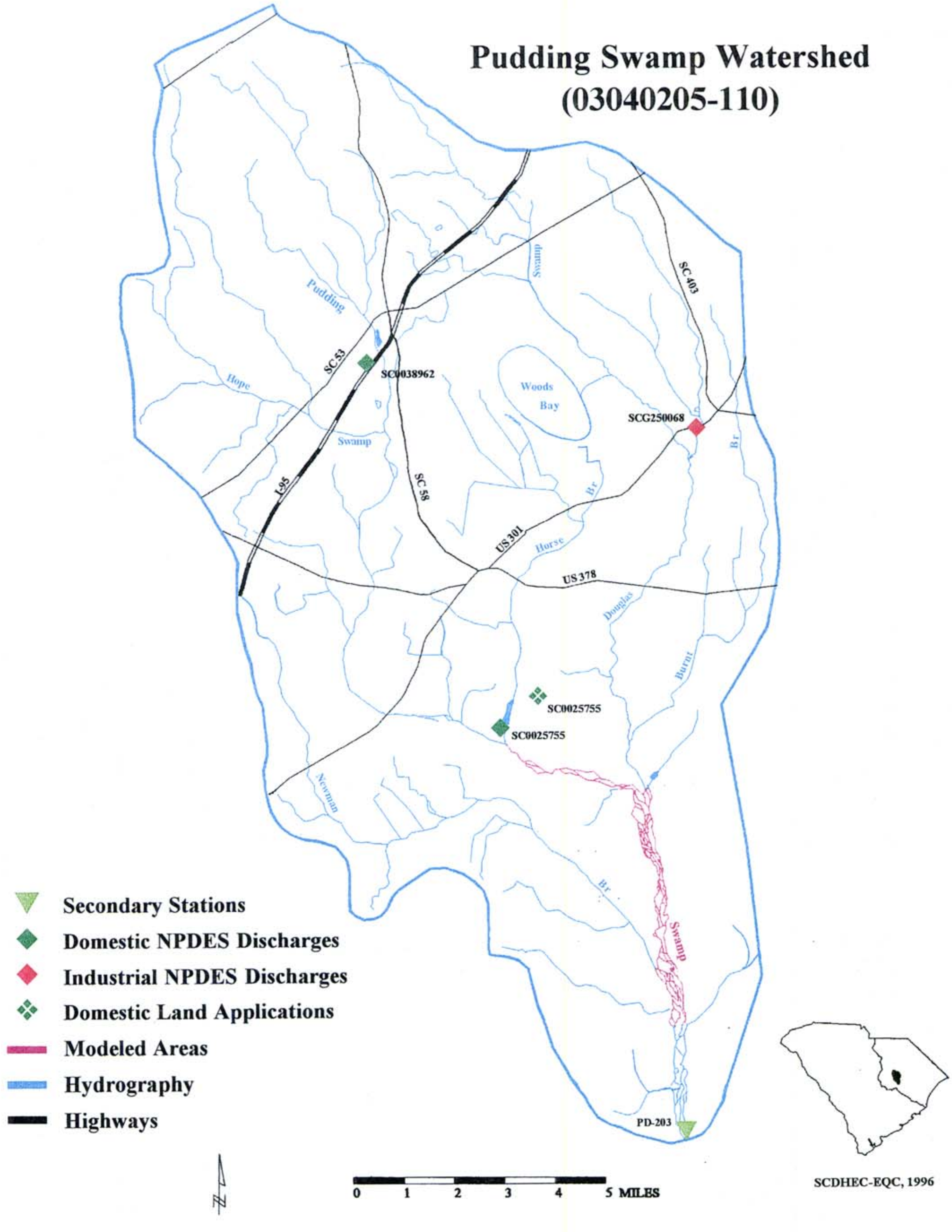
SCDHEC-EQC, 1996

Natural Resources

Pudding Swamp Watershed
(03040205-110)

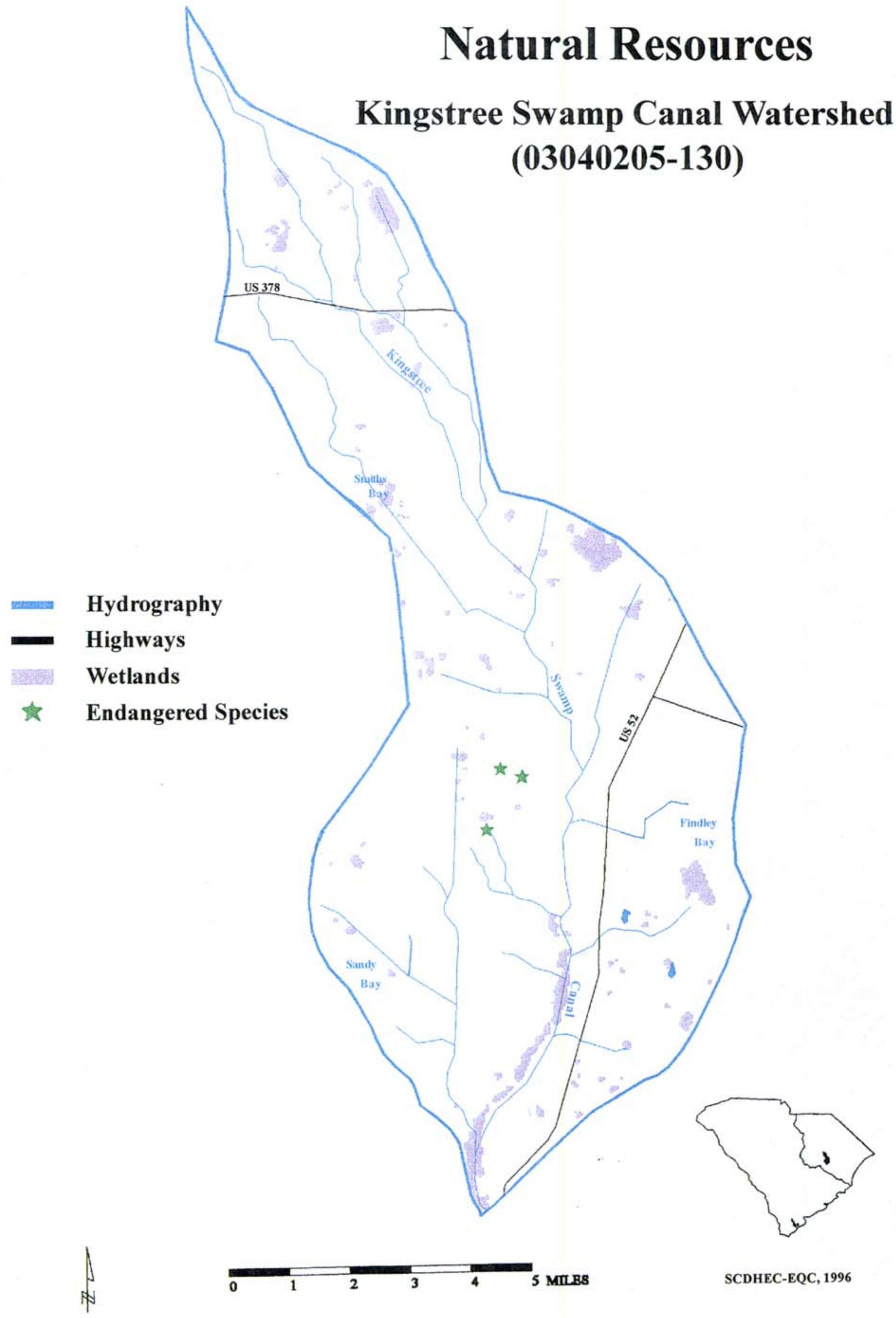


Monitoring Sites, Modeled Streams, and Permitted Areas



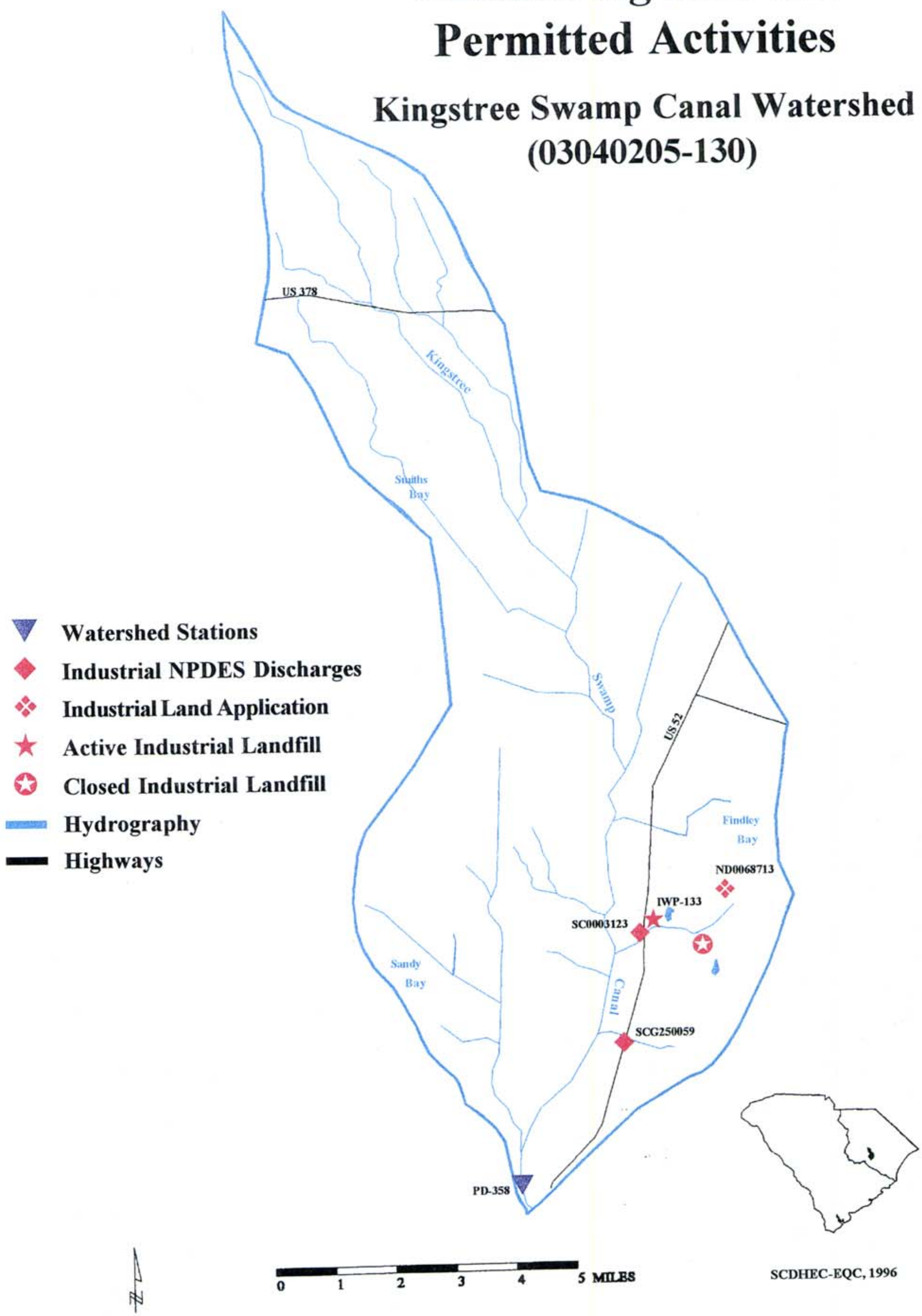
Natural Resources

Kingstree Swamp Canal Watershed (03040205-130)



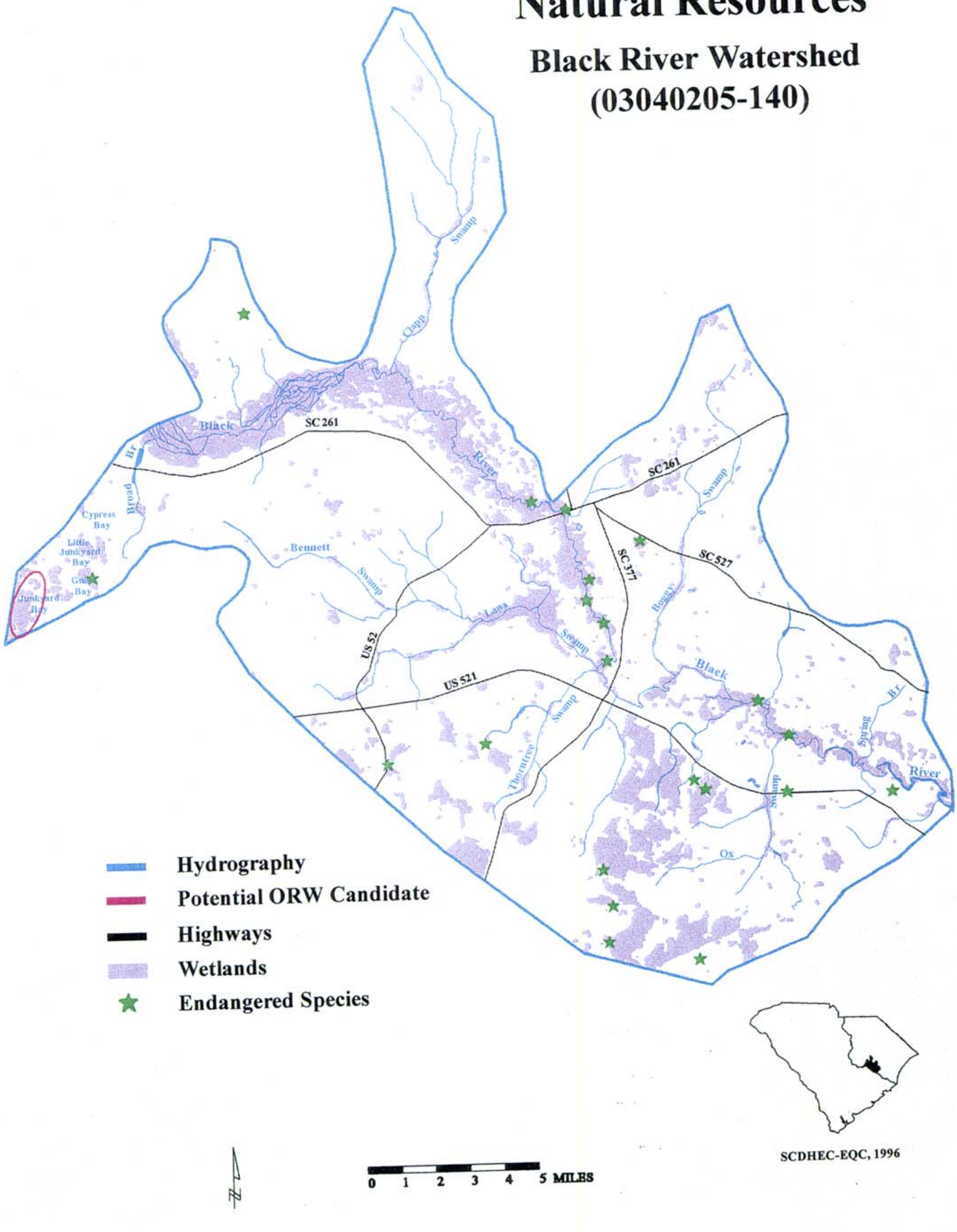
Monitoring Sites and Permitted Activities

Kingstree Swamp Canal Watershed (03040205-130)



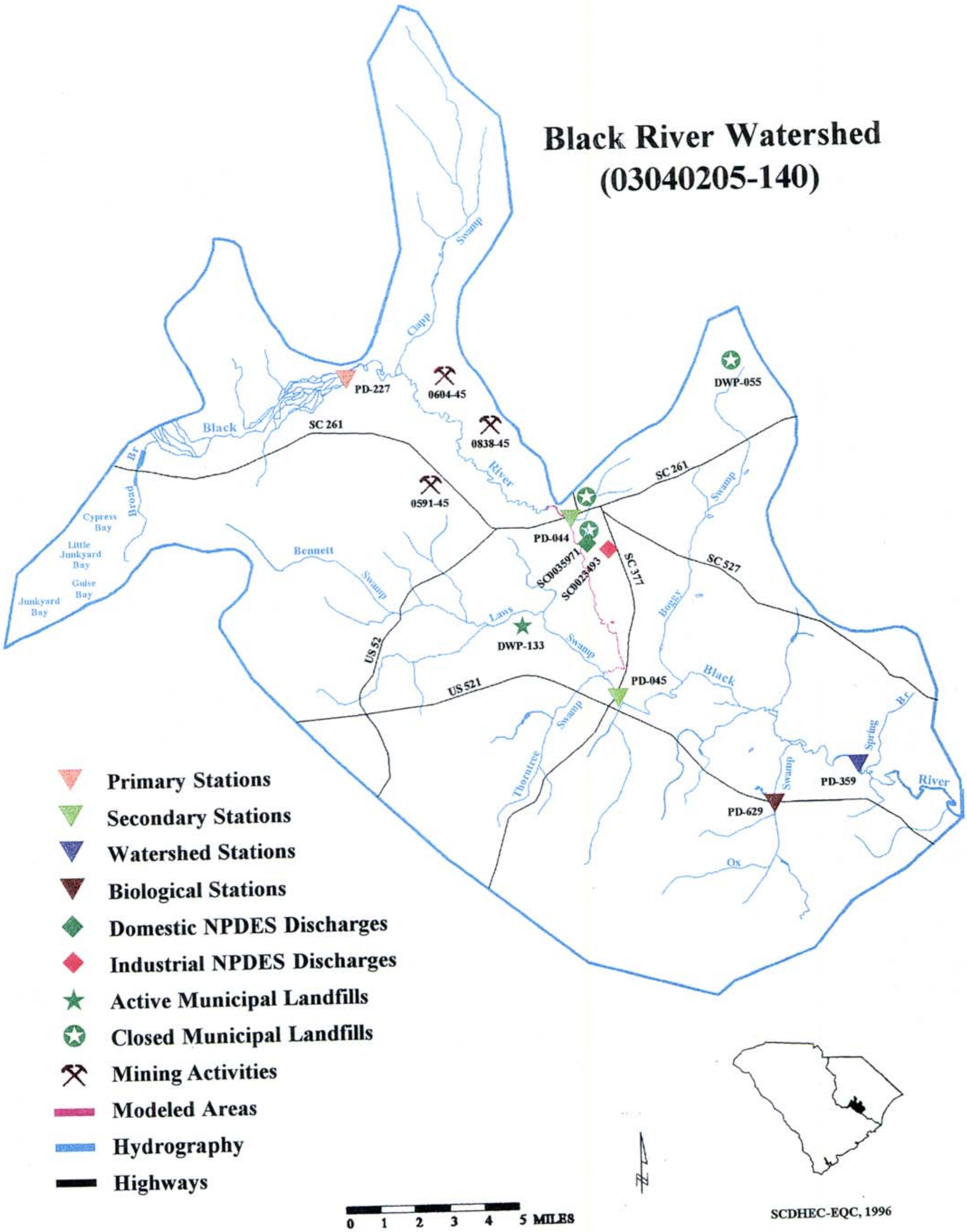
Natural Resources

Black River Watershed
(03040205-140)



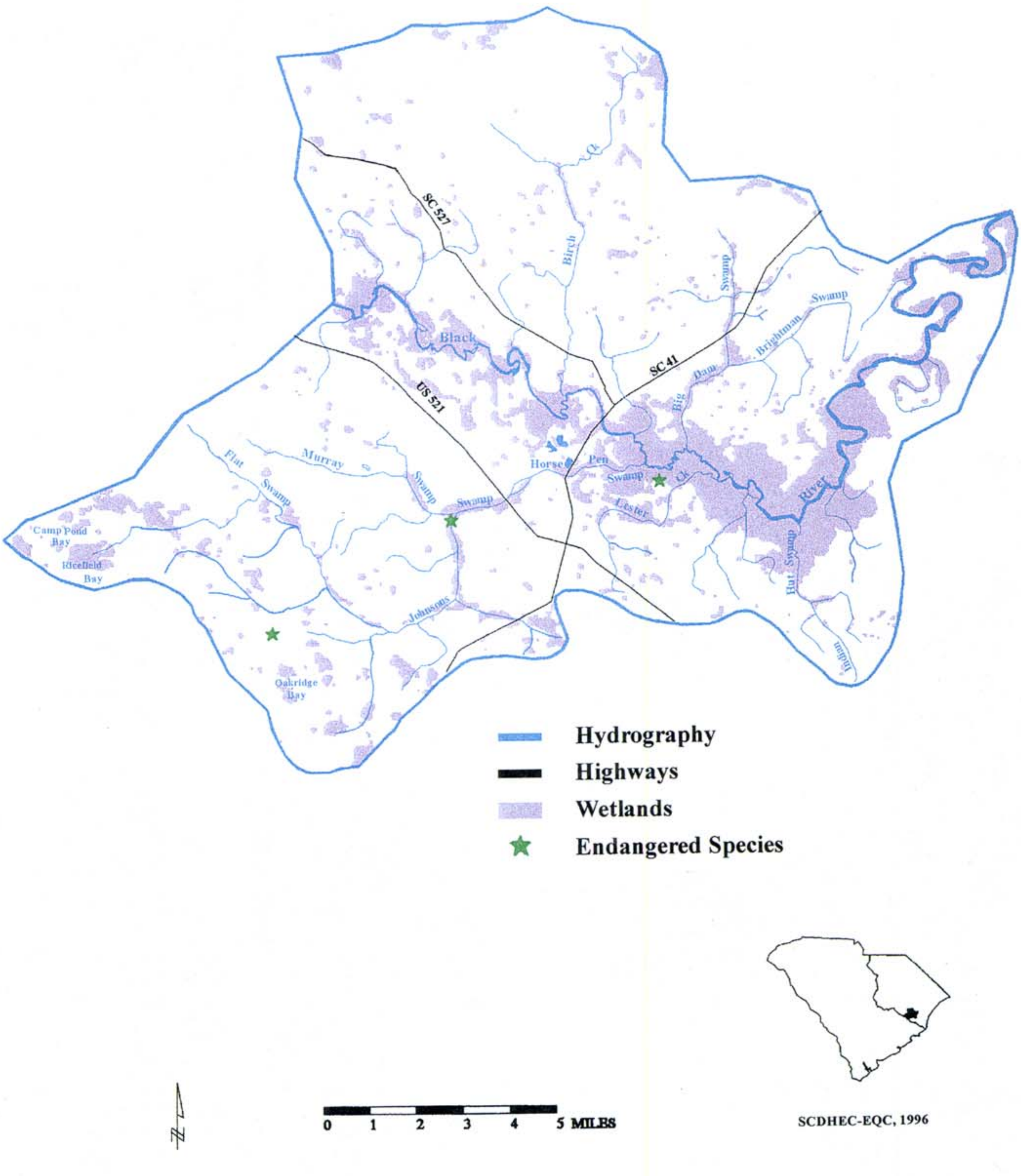
SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas



Natural Resources

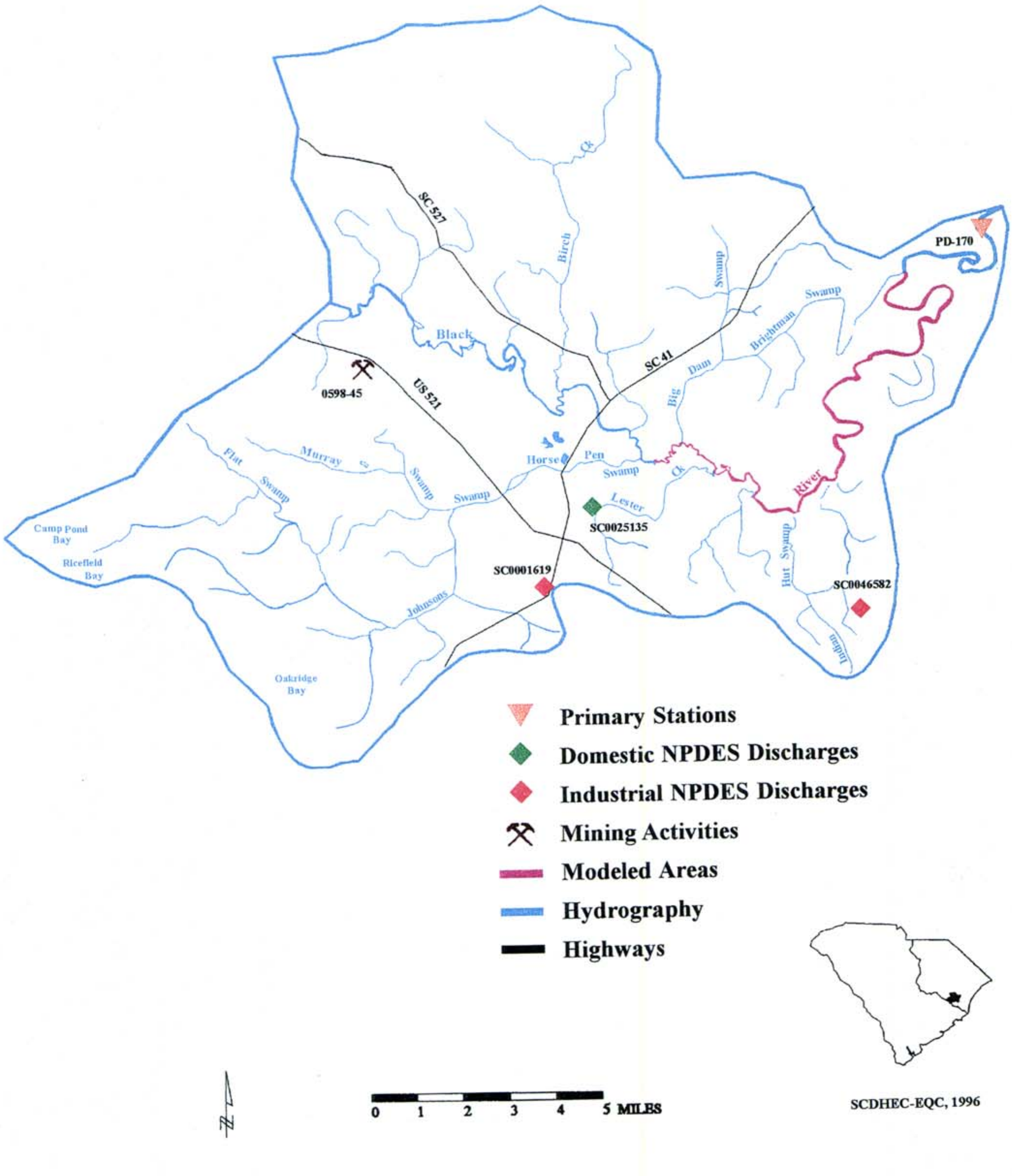
Black River Watershed
(03040205-150)



SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas

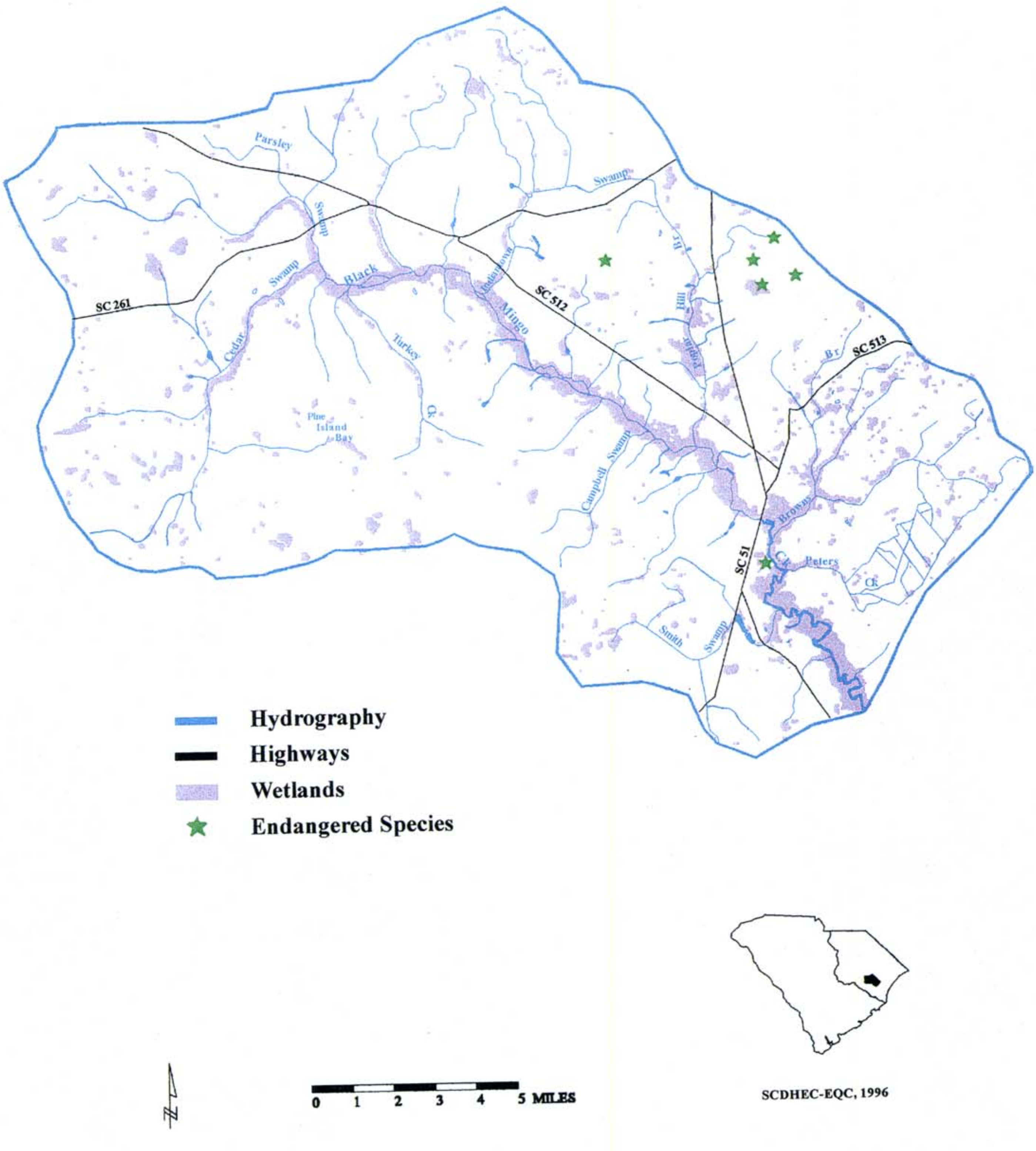
Black River Watershed
(03040205-150)



SCDHEC-EQC, 1996

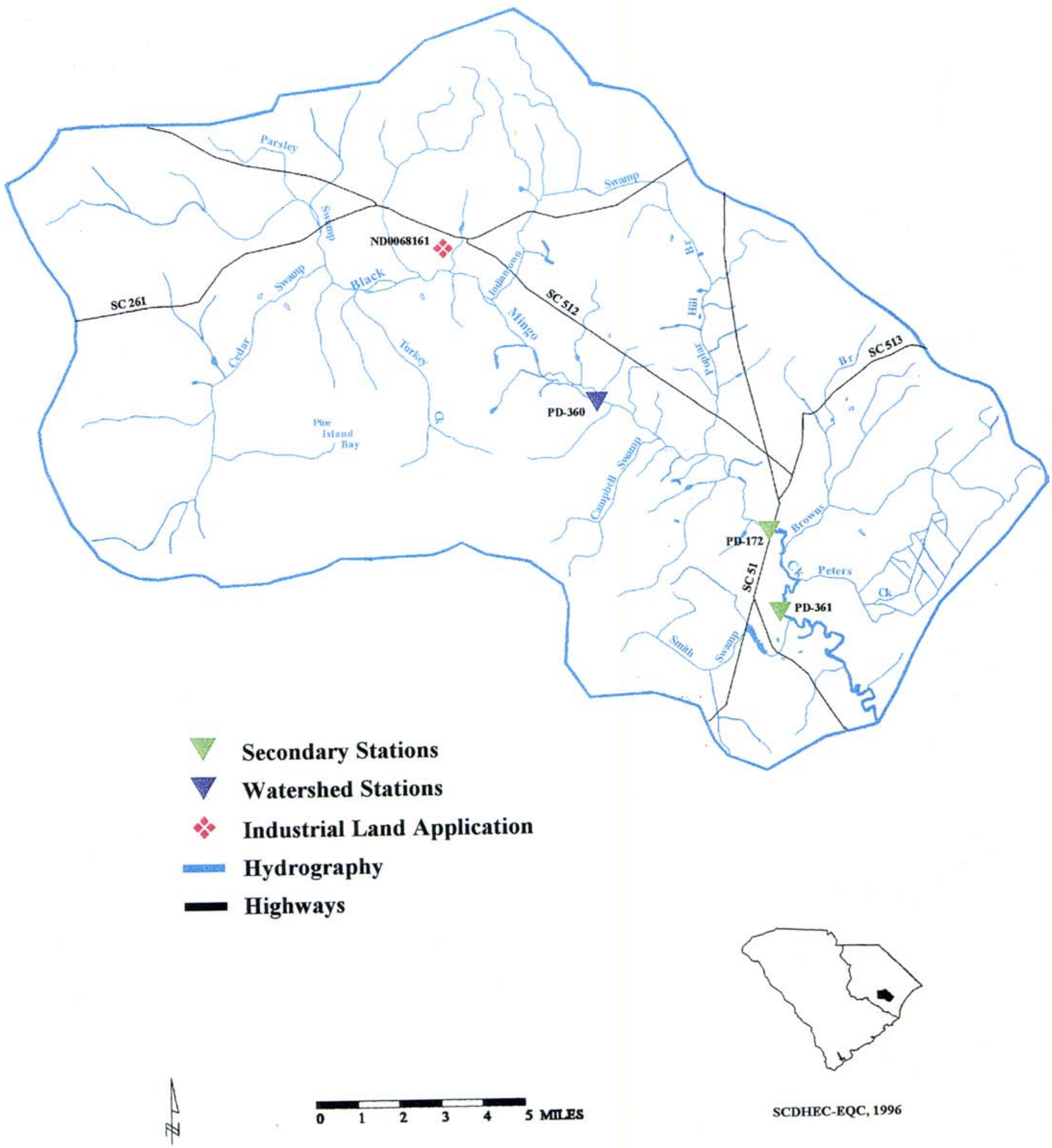
Natural Resources

Black Mingo Creek Watershed
(03040205-170)



Monitoring Sites and Permitted Activities

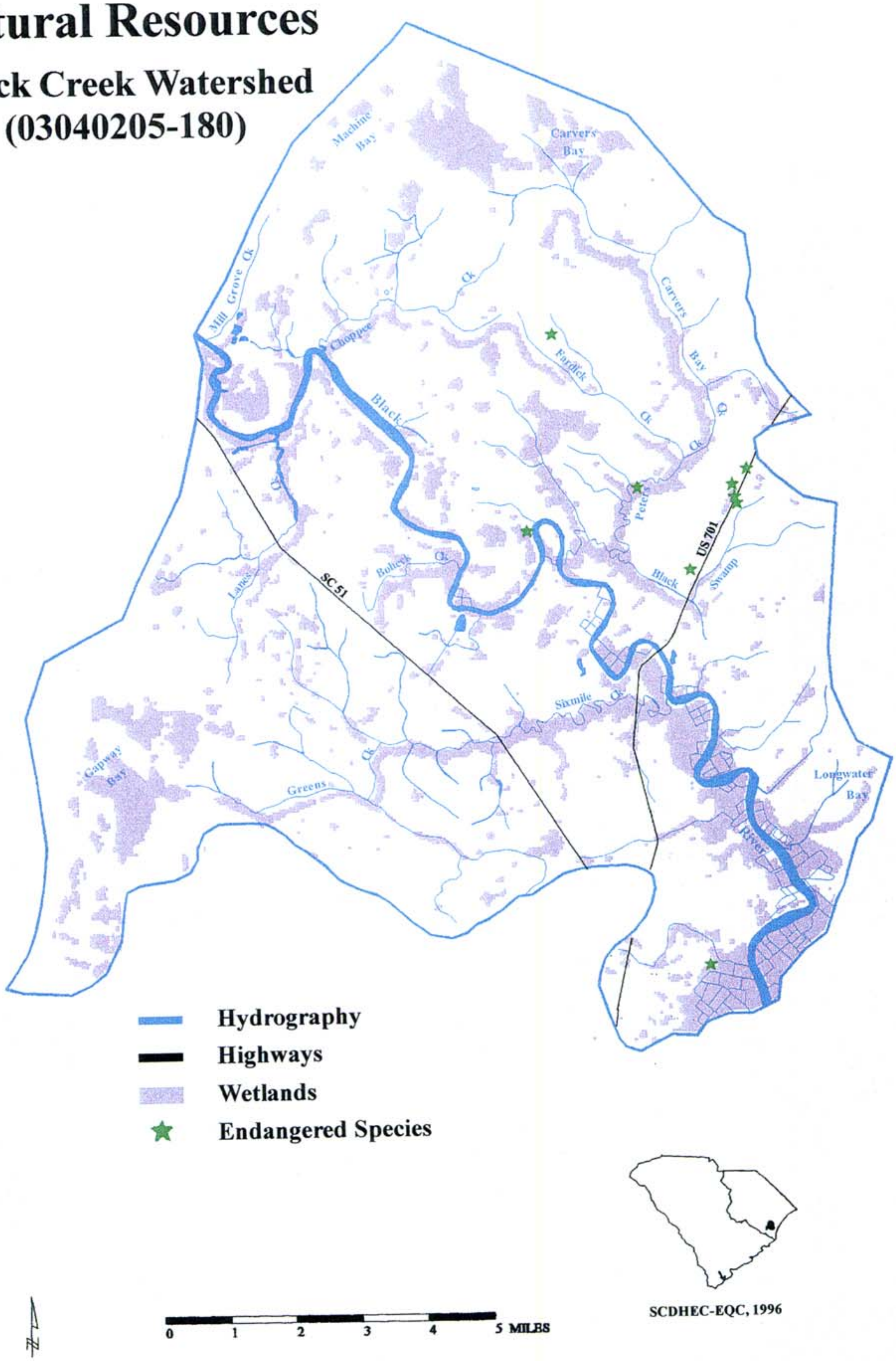
Black Mingo Creek Watershed (03040205-170)



SCDHEC-EQC, 1996

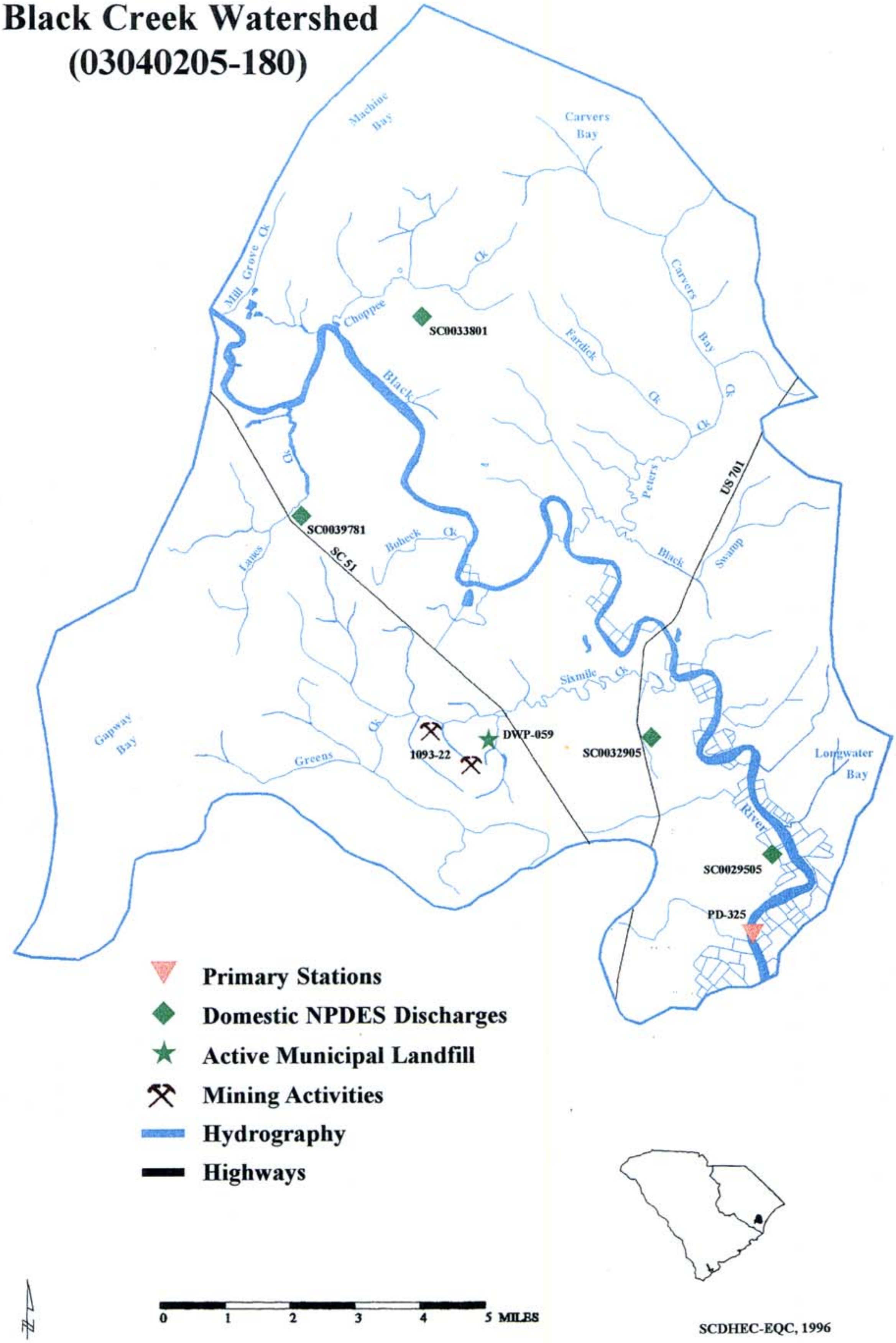
Natural Resources

Black Creek Watershed
(03040205-180)



Monitoring Sites and Permitted Activities

Black Creek Watershed (03040205-180)



SCDHEC-EQC, 1996

APPENDIX B. WMU-0402

Monitoring Station Descriptions

STATION TYPES (P=PRIMARY, S=SECONDARY, W=WATERSHED, BIO=BIOLOGICAL, I=INACTIVE)
CLASS (FW=FRESHWATER, ORW=OUTSTANDING RESOURCE WATERS)

03040201-050			
PD-339	W	FW	WESTFIELD CREEK AT US 52
PD-191	W	FW	WHITES CREEK AT US 1
PD-012	P	FW	PEE DEE RIVER AT US 1 NE CHERAW
PD-015	P	FW	PEE DEE RIVER AT US 15 & 401
PD-637	BIO	FW	BUCKHOLTZ CREEK, DIRT ROAD OFF S-16-656 & S-16-41
PD-028	P	FW	PEE DEE RIVER AT SC 34 11 MILES NE DARLINGTON
03040201-062			
PD-246	S	FW	THOMPSON CREEK AT S-13-243 0.8 MILES NE OF CHESTERFIELD
PD-247	S	FW	THOMPSON CREEK AT SC 9 1.5 MILES ESE OF CHESTERFIELD
PD-152	S(I)	FW	THOMPSON CREEK AT US 1 2.2 MILES SW OF CHERAW
PD-338	S	FW	THOMPSON CREEK AT S-13-148 S OF CHERAW
PD-340	W	FW	JUNIPER CREEK AT S-13-494
03040201-072			
PD-107	S	FW	CROOKED CREEK AT SC 9 IN BENNETTSVILLE
PD-014	S	FW	CROOKED CREEK AT S-35-43
PD-063	W	FW	CROOKED CREEK AT SC 912
03040201-080			
PD-151	W	FW	CEDAR CREEK AT US 52
03040201-090			
PD-336	S	FW	HAGINS PRONG AT SC ROUTE 381
PD-341	W	FW	THREE CREEKS AT SC 381 AT BLENHEIM
03040201-100			
PD-004	P	FW	BLACK CREEK AT S-13-43 1 MILES NE NICEY GROVE
PD-613	BIO	FW	SKIPPER CREEK AT SC 145
PD-251	W	FW*	BLACK CREEK AT US 1
PD-327	P	FW*	LAKE ROBINSON AT S-13-346 5 MILES E MCBEE
03040201-110			
PD-159	S	FW*	BLACK CREEK AT S-16-23 4.7 MILES NW OF HARTSVILLE
PD-268	S	FW*	SONOVISTA CLUB HARTSVILLE OFF DOCK OF PRESTWOOD LAKE
PD-081	S	FW*	PRESTWOOD LAKE AT US 15
PD-258	S	FW	SNAKE BRANCH AT RAILROAD AVENUE IN HARTSVILLE
PD-137	S	FW	SNAKE BRANCH AT WOODMILL STREET IN HARTSVILLE
PD-021	P	FW*	BLACK CREEK AT S-16-18 1 MILES NNE HARTSVILLE
PD-330	S	FW*	BLACK CREEK AT HIGHWAY 15 BYPASS
PD-023	P	FW*	BLACK CREEK AT S-16-13 5.5 MILES NE HARTSVILLE
PD-025	P	FW	BLACK CREEK AT S-16-133 2.25 MILES NE OF DARLINGTON
PD-141	S	FW	60 TILE DISCHARGING TO DITCH ACROSS ROAD AT DARLINGTON WWTP
PD-027	P	FW	BLACK CREEK AT S-16-35 5.5 MILES SE DARLINGTON

PD-103	S	FW	HIGH HILL CREEK AT US 52 ON COUNTY LINE
PD-078	W	FW	BLACK CREEK AT SC 327
03040201-120			
PD-337	P	FW	PEE DEE RIVER AT US 301/76
03040201-130			
PD-639	BIO	FW*	JEFFRIES CREEK AT S-16-13
PD-255	S	FW*	JEFFRIES CREEK AT SC 340 6.8 MILES SSW OF DARLINGTON
PD-256	S	FW*	JEFFRIES CREEK AT S-21-112 4.8 MILES W OF FLORENCE
PD-065	P	FW	GULLEY BRANCH AT S-21-13, TIMROD PARK
PD-230	S	FW*	MIDDLE SWAMP AT SC 51 3.5 MILES SSE OF FLORENCE
PD-035	S	FW*	JEFFRIES CREEK AT SC 327 AT CLAUSSEN
PD-231	S	FW*	JEFFRIES CREEK AT UNNUMBERED ROAD 3.3 MILES ESE OF CLAUSSEN
PD-630	BIO	FW	WILLOW CREEK AT SC 327
PD-167	W	FW	WILLOW CREEK AT S-21-57
03040201-140			
PD-076	P	FW	PEE DEE RIVER AT US 378
03040201-150			
PD-320	S	FW*	SMITH SWAMP AT S-34-19 1 MILES E OF MARION
PD-187	P	FW*	SMITH SWAMP AT US 501 1.9 MILES SSE OF MARION
PD-097	S	FW*	CATFISH CREEK AT S-34-34 6 MILES SW OF MARION
03040201-160			
PD-060	W	FW	PEE DEE R. AT PETERS FIELD LANDING OFF S-22-36
03040201-170			
PD-061	P	FW	PEE DEE RIVER AT US 701 2.75 MILES NE YAUHANNAH
03040203-220			
PD-347	W	FW*	ASHPOLE SWAMP AT PRIVATE ROAD
PD-038	P	FW	LUMBER RIVER AT US 76 AT NICHOLS
03040204-030			
PD-306	S	FW	PANTHER CREEK AT US 15 OUTSIDE MCCOLL
PD-016	S	FW	PANTHER CREEK AT S-35-27
PD-017A	S	FW	MCLAURINS MILL POND SC 381
PD-365	W	FW	LITTLE PEE DEE RIVER AT S-17-363
PD-069	P	FW	LITTLE PEE DEE RIVER AT SC 57 11.5 MILES NW DILLON
PD-029E	S	FW	LITTLE PEE DEE RIVER AT S-17-23
PD-055	S	FW	LITTLE PEE DEE RIVER AT SC 9
PD-030	S	FW*	MAPLE SWAMP AT SC 57
PD-030A	S	FW	LITTLE PEE DEE RIVER BELOW JUNCTION WITH MAPLE SWAMP
PD-348	W	FW	LITTLE PEE DEE RIVER AT S-17-72
PD-052	P	FW	LITTLE PEE DEE AT S-34-60

03040204-050

PD-031	S	FW*	BUCK SWAMP AT S-17-33
PD-349	W	FW*	BUCK SWAMP AT S-17-42

03040204-070

PD-351	W/BIO	ORW	CEDAR CREEK AT S-26-23
PD-037	S	FW*	WHITE OAK CREEK AT S-34-31
PD-042	P	ORW	LITTLE PEE DEE RIVER AT US 501, GALIVANT'S FERRY
PD-189	P	ORW	LITTLE PEE DEE RIVER AT US 378 12 MILES W CONWAY
PD-350	W	ORW	LITTLE PEE DEE RIVER OFF END OF S-26-135 AT PUNCHBOWL LANDING

03040204-080

PD-176	W	FW*	LAKE SWAMP AT S-26-99

03040204-090

PD-177	S	FW*	CHINNERS SWAMP AT S-26-24 1.9 MILES SSE AYNOR
PD-352	W	FW*	CHINNERS SWAMP AT GUNTERS ISLAND ROAD OFF S-26-99

Water Quality Trends and Status by Station

Spreadsheet Legend

STATION INFORMATION:

Station Number	Station ID
Type	SCDHEC station type code
	P = Primary station, sampled monthly all year round
	S = Secondary station, sampled monthly May - October
	P* = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study
	PD = Special station added for the Pee Dee basin study
	I* = Currently inactive station which had some data within the period reviewed
Waterbody Name	Stream or Lake Name
Class	Stream classification at the point where monitoring station is located

PARAMETER ABBREVIATIONS:

DO	Dissolved Oxygen	NH3	Ammonia
BOD	Five-Day Biochemical Oxygen Demand	CD	Cadmium
pH	pH	CR	Chromium
TP	Total Phosphorus	CU	Copper
TN	Total Nitrogen	PB	Lead
TURB	Turbidity	HG	Mercury
TSS	Total Suspended Solids	NI	Nickel
BACT	Fecal Coliform Bacteria	ZN	Zinc

STATISTICAL ABBREVIATIONS:

N	For standards compliance, No. of surface samples collected betw. January 1990 and December 1994 For trends, No. of surface samples collected between January 1980 and December 1994
EXC.	Number of samples contravening the appropriate standard
%	Percentage of samples contravening the appropriate standard
MEAN EXC.	Mean of samples which contravened the applied standard
MED	For heavy metals with a human health criterion, this is the median of all surface samples between January 1990 and December 1994. DL indicates that the median was the detection limit.
MAG	Magnitude of any statistically significant trend, average change in concentration per year

KEY TO TRENDS:

D	Statistically significant decreasing trend in parameter concentration
I	Statistically significant increasing trend in parameter concentration
*	No statistically significant trend
Blank	Insufficient data to test for long term trends

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	DO N	DO EXC.	DO %	MEAN EXC.	TRENDS DO	N	MAG	BOD	N	MAG	pH N	pH EXC.	pH %	MEAN EXC.	TRENDS PH	N	MAG
03040201050																				
PD-339	PD	WESTFIELD CK	FW	12	0	0								12	0	0				
PD-191	PD	WHITES CK	FW	12	1	8	1							12	8	67	5.294			
PD-012	P	PEE DEE RVR	FW	60	0	0		*	134		D	176	-0.075	60	0	0		D	174	-0.014
PD-015	P	PEE DEE RVR	FW	56	0	0		I	92	0.05	D	104	-0.06	56	1	2	5.9	D	104	-0.025
PD-637	BIO	BUCKHOTZ CK	FW																	
PD-028	P	PEE DEE RVR	FW	44	0	0		*	136		D	158	-0.1	44	0	0		D	175	-0.02
03040201062																				
PD-246	S	THOMPSON CK	FW	30	0	0		*	64		D	70	-0.05	30	2	7	5.65	*	69	
PD-247	S	THOMPSON CK	FW	30	1	3	4.5	*	63		D	69	-0.1	30	0	0		*	67	
PD-152	I*	THOMPSON CK	FW	8	0	0		*	42		D	48	-0.114	8	0	0		*	46	
PD-338	P*	THOMPSON CK	FW	28	1	4	4.5							28	2	7	5.875			
PD-340	PD	JUNIPER CK	FW	12	0	0								12	6	50	5.167			
03040201072																				
PD-107	S	CROOKED CK	FW	23	2	9	4.475	*	59		D	71	-0.067	23	9	39	5.794	*	70	
PD-014	S	CROOKED CK	FW	24	12	50	4.467	*	61		D	72	-0.089	24	9	38	5.789	*	71	
PD-063	PD	CROOKED CK	FW	12	1	8	4							12	4	33	5.75			
03040201080																				
PD-151	PD	CEDAR CK	FW	12	0	0								12	7	58	5.257			
03040201090																				
PD-336	S	HAGINS PRONG	FW	22	22	100	1.916							21	13	62	5.769			
PD-341	PD	THREE CKS	FW	12	5	42	3.4							12	2	17	5.7			
03040201100																				
PD-004	P	BLACK CK	FW	58	1	2	3.9	*	134		D	176	-0.089	58	4	7	5.78	'I	174	0.014
PD-613	BIO	SKIPPER CK	FW																	
PD-251	PD	BLACK CK	FW*	11	0	0								11	2	18	4.65			
PD-327	P	LAKE ROBINSON	FW*	60	0	0		D	153	-0.09	D	179	-0.113	60	3	5	4.65	*	194	

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION			FIRST	TRENDS											
NUMBER	TYPE	WATERBODY NAME	CLASS	TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03040201050															
PD-339	PD	WESTFIELD CK	FW												
PD-191	PD	WHITES CK	FW												
PD-012	P	PEE DEE RVR	FW	D	170	-0.001	*	130		I	172	0.8			
PD-015	P	PEE DEE RVR	FW	*	103		*	51		I	102	0.863			
PD-637	BIO	BUCKHOTZ CK	FW												
PD-028	P	PEE DEE RVR	FW	D	158	-0.003	D	113	-0.018	I	158	1.075	*	153	
03040201062															
PD-246	S	THOMPSON CK	FW	D	63	-0.003				*	69				
PD-247	S	THOMPSON CK	FW	D	63	-0.003				*	68				
PD-152	I*	THOMPSON CK	FW	D	41	-0.0003				*	47				
PD-338	P*	THOMPSON CK	FW												
PD-340	PD	JUNIPER CK	FW												
03040201072															
PD-107	S	CROOKED CK	FW	*	70					*	70				
PD-014	S	CROOKED CK	FW	D	72	-0.023				I	71	0.075			
PD-063	PD	CROOKED CK	FW												
03040201080															
PD-151	PD	CEDAR CK	FW												
03040201090															
PD-336	S	HAGINS PRONG	FW												
PD-341	PD	THREE CKS	FW												
03040201100															
PD-004	P	BLACK CK	FW	D	172	-0.005	*	123		I	170	0.125			
PD-613	BIO	SKIPPER CK	FW												
PD-251	PD	BLACK CK	FW*												
PD-327	P	LAKE ROBINSON	FW*	D	179	-0.002	D	119	-0.017	D	175	-0.02			

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.
03040201050													
PD-339	PD	WESTFIELD CK	FW	290	12	0	0					12	0
PD-191	PD	WHITES CK	FW	8	12	0	0					11	0
PD-012	P	PEE DEE RVR	FW	95	60	5	8	1000	I	175	4	58	0
PD-015	P	PEE DEE RVR	FW	95	56	2	4	680	*	104		52	0
PD-637	BIO	BUCKHOTZ CK	FW										
PD-028	P	PEE DEE RVR	FW	53	43	0	0		*	159		41	0
03040201062													
PD-246	S	THOMPSON CK	FW	318	29	7	24	2420	*	69		1	0
PD-247	S	THOMPSON CK	FW	371	27	9	31	1627	D	67	-44.44		
PD-152	I*	THOMPSON CK	FW	359	8	4	50	728	*	48			
PD-338	P*	THOMPSON CK	FW	92	28	3	11	963				12	0
PD-340	PD	JUNIPER CK	FW	13	12	0	0					12	0
03040201072													
PD-107	S	CROOKED CK	FW	112	23	2	9	460	*	70			
PD-014	S	CROOKED CK	FW	71	24	0	0		D	71	-15		
PD-063	PD	CROOKED CK	FW	53	12	0	0					10	0
03040201080													
PD-151	PD	CEDAR CK	FW	61	12	1	8	470				12	0
03040201090													
PD-336	S	HAGINS PRONG	FW	156	22	4	18	540					
PD-341	PD	THREE CKS	FW	59	12	0	0					12	0
03040201100													
PD-004	P	BLACK CK	FW	31	58	0	0		*	175		56	0
PD-613	BIO	SKIPPER CK	FW										
PD-251	PD	BLACK CK	FW*	105	11	1	9	2400				11	0
PD-327	P	LAKE ROBINSON	FW*	9	60	0	0		*	179		55	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	CD N	CD EXC.	CD MED.	CR N	CR EXC.	CR MED.	CU N	CU EXC.	PB N	PB EXC.	PB MED.	HG N	HG EXC.	HG MED.	NI N	NI EXC.	ZN N	ZN EXC.
03040201050																					
PD-339	PD	WESTFIELD CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-191	PD	WHITES CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-012	P	PEE DEE RVR	FW	20	0	DL	20	0	DL	20	1	20	0	DL	19	0	DL	20	0	20	0
PD-015	P	PEE DEE RVR	FW	18	0	DL	18	1	DL	18	1	18	0	DL	18	0	DL	18	0	18	1
PD-637	BIO	BUCKHOTZ CK	FW																		
PD-028	P	PEE DEE RVR	FW	14	0	DL	14	0	DL	14	1	14	0	DL	14	0	DL	13	0	14	1
03040201062																					
PD-246	S	THOMPSON CK	FW																		
PD-247	S	THOMPSON CK	FW																		
PD-152	I*	THOMPSON CK	FW																		
PD-338	P*	THOMPSON CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-340	PD	JUNIPER CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040201072																					
PD-107	S	CROOKED CK	FW																		
PD-014	S	CROOKED CK	FW																		
PD-063	PD	CROOKED CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040201080																					
PD-151	PD	CEDAR CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040201090																					
PD-336	S	HAGINS PRONG	FW																		
PD-341	PD	THREE CKS	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040201100																					
PD-004	P	BLACK CK	FW	18	0	DL	18	0	DL	18	0	18	0	DL	18	0	DL	18	0	18	1
PD-613	BIO	SKIPPER CK	FW																		
PD-251	PD	BLACK CK	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-327	P	LAKE ROBINSON	FW*	18	0	DL	18	0	DL	18	1	17	0	DL	18	0	DL	18	0	18	1

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	DO N	DO EXC.	DO %	MEAN EXC.	TRENDS DO	N	MAG	BOD	N	MAG	pH N	pH EXC.	pH %	MEAN EXC.	TRENDS PH	N	MAG
03040201110																				
PD-159	S	BLACK CK	FW*	24	0	0		*	62		D	70	-0.025	24	1	4	4.3	*	72	
PD-268	S	PRESTWOOD LAKE	FW*	24	0	0		*	62		*	70		24	3	13	4.767	D	70	-0.033
PD-081	S	PRESTWOOD LAKE	FW*	24	0	0		*	62		*	72		24	2	8	4.7	*	72	
PD-258	S	SNAKE BRANCH	FW	29	11	38	3.268	I	66	0.325	D	71	-0.473	29	6	21	5.775	D	73	-0.025
PD-137	S	SNAKE BRANCH	FW	24	2	8	2.75	*	62		D	70	-0.05	24	9	38	5.778	*	70	
PD-021	P	BLACK CK	FW*	59	0	0		I	135	0.05	D	171	-0.07	60	7	12	4.621	D	175	-0.025
PD-330	S	BLACK CK	FW*	24	0	0		I	62	0.117	D	72	-0.22	24	0	0		D	73	-0.025
PD-023	P	BLACK CK	FW*	59	0	0		I	135	0.1	D	171	-0.16	60	1	2	4.9	D	176	-0.017
PD-025	P	BLACK CK	FW	60	0	0		I	143	0.05	D	177	-0.144	60	18	30	5.756	D	183	-0.022
PD-141	S	PIPE	FW	23	11	48	3.818	*	60		I	71	0.5	23	0	0		I	71	0.025
PD-027	P	BLACK CK	FW	60	0	0		*	163		D	179	-0.129	60	20	33	5.705	D	201	-0.029
PD-103	S	HIGH HILL CK	FW	30	22	73	3.477	*	68		D	75	-0.133	30	3	10	5.783	*	76	
PD-078	PD	BLACK CK	FW	12	0	0								12	2	17	5.65			
03040201120																				
PD-337	P	PEE DEE RVR	FW	54	0	0		D	53	-0.2	*	53		54	0	0		*	53	
03040201130																				
PD-639	BIO	JEFFERIES CK	FW*																	
PD-255	S	JEFFERIES CK	FW*	30	19	63	1.366	*	69		*	77		30	0	0		D	101	-0.015
PD-256	S	JEFFERIES CK	FW*	24	23	96	1.711	*	62		D	71	-0.073	24	0	0		D	70	-0.033
PD-065	P	GULLEY BR	FW	32	1	3	3.1	*	32		*	31		32	1	3	5.5	I	32	0.3
PD-230	S	MIDDLE SWAMP	FW*	24	17	71	2.574	*	62		D	71	-0.1	24	0	0		D	70	-0.032
PD-035	S	JEFFERIES CK	FW*	24	0	0		*	62		D	71	-0.1	24	0	0		*	71	
PD-231	P*	JEFFERIES CK	FW*	37	0	0		*	78		D	86	-0.05	37	0	0		*	109	
PD-630	BIO	WILLOW CK	FW																	
PD-167	PD	WILLOW CK	FW	13	6	46	3.367							13	3	23	5.7			
03040201140																				
PD-076	P	PEE DEE RVR	FW	60	0	0		*	129		D	146	-0.086	60	0	0		D	146	-0.029
03040201150																				
PD-320	S	SMITH SWAMP	FW*	23	20	87	1.04	*	60		*	71		23	0	0		D	70	-0.033
PD-187	P	SMITH SWAMP	FW*	44	28	64	2.264	D	80	-0.1	*	92		44	0	0		*	90	
PD-097	P*	CATFISH CANAL	FW*	36	21	58	2.674	*	73		D	85	-0.086	36	0	0		D	83	-0.026
03040201160																				
PD-060	PD	PEE DEE RVR	FW	12	0	0								12	1	8	5.6			
03040201170																				
PD-061	P	PEE DEE RVR	FW	60	3	5	4.617	*	153		D	175	-0.083	60	1	2	5.75	*	192	

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STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	TRENDS TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03040201110															
PD-159	S	BLACK CK	FW*	D	72	-0.00025				*	72				
PD-268	S	PRESTWOOD LAKE	FW*	D	70	-0.0003				I	70	0.088			
PD-081	S	PRESTWOOD LAKE	FW*	*	72					I	73	0.08			
PD-258	S	SNAKE BRANCH	FW	D	74	-0.062				*	73				
PD-137	S	SNAKE BRANCH	FW	D	70	-0.006				*	69				
PD-021	P	BLACK CK	FW*	D	176	-0.002	*	129		I	169	0.029			
PD-330	S	BLACK CK	FW*	D	75	-0.008				D	73	-0.167			
PD-023	P	BLACK CK	FW*	D	176	-0.0122	D	129	-0.036	*	171				
PD-025	P	BLACK CK	FW	D	179	-0.011	D	127	-0.046	*	171				
PD-141	S	PIPE	FW	D	71	-0.0413				I	71	0.567			
PD-027	P	BLACK CK	FW	D	178	-0.01	D	133	-0.036	*	176		D	170	-0.333
PD-103	S	HIGH HILL CK	FW	I	74	0.005				I	74	0.6			
PD-078	PD	BLACK CK	FW												
03040201120															
PD-337	P	PEE DEE RVR	FW	*	51		*	50		*	53				
03040201130															
PD-639	BIO	JEFFERIES CK	FW*												
PD-255	S	JEFFERIES CK	FW*	*	75					*	76				
PD-256	S	JEFFERIES CK	FW*	*	70					I	70	0.292			
PD-065	P	GULLEY BR	FW							*	32				
PD-230	S	MIDDLE SWAMP	FW*	D	67	-0.012				*	70				
PD-035	S	JEFFERIES CK	FW*	D	71	-0.071				I	70	0.243			
PD-231	P*	JEFFERIES CK	FW*	*	83					I	84	0.183			
PD-630	BIO	WILLOW CK	FW												
PD-167	PD	WILLOW CK	FW												
03040201140															
PD-076	P	PEE DEE RVR	FW	D	146	-0.004	D	124	-0.018	I	147	0.75			
03040201150															
PD-320	S	SMITH SWAMP	FW*	*	73					*	68				
PD-187	P	SMITH SWAMP	FW*	D	89	-0.106	I	31	0.21	*	89				
PD-097	P*	CATFISH CANAL	FW*	D	83	-0.01				*	82				
03040201160															
PD-060	PD	PEE DEE RVR	FW												
03040201170															
PD-061	P	PEE DEE RVR	FW	D	178	-0.003	D	128	-0.025	*	173		D	166	-0.291

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.
03040201110													
PD-159	S	BLACK CK	FW*	6	23	0	0		*	72			
PD-268	S	PRESTWOOD LAKE	FW*	160	24	7	29	616	I	72	14		
PD-081	S	PRESTWOOD LAKE	FW*	151	24	5	21	1828	*	74			
PD-258	S	SNAKE BRANCH	FW	3606	29	29	100	12348	I	75	177.33		
PD-137	S	SNAKE BRANCH	FW	610	24	14	58	6247	*	71			
PD-021	P	BLACK CK	FW*	106	60	10	17	867	I	174	6	59	0
PD-330	S	BLACK CK	FW*	383	24	10	42	976	I	73	24.66		
PD-023	P	BLACK CK	FW*	149	59	13	22	470	I	174	5	59	0
PD-025	P	BLACK CK	FW	70	60	0	0		*	184		57	0
PD-141	S	PIPE	FW	24342	23	23	100	49474	I	72	1533		
PD-027	P	BLACK CK	FW	89	59	3	5	570	D	186	-6.417	59	0
PD-103	S	HIGH HILL CK	FW	181	30	1	3	430	I	77	7.583		
PD-078	PD	BLACK CK	FW	197	12	1	8	2000				12	0
03040201120													
PD-337	P	PEE DEE RVR	FW	87	54	3	6	557	*	53		52	0
03040201130													
PD-639	BIO	JEFFERIES CK	FW*										
PD-255	S	JEFFERIES CK	FW*	156	30	3	10	500	D	78	-12		
PD-256	S	JEFFERIES CK	FW*	108	24	1	4	470	*	73		0	0
PD-065	P	GULLEY BR	FW	3001	32	29	91	16624	*	32		31	0
PD-230	S	MIDDLE SWAMP	FW*	191	24	4	17	543	I	72	11.589		
PD-035	S	JEFFERIES CK	FW*	127	24	1	4	600	*	71			
PD-231	P*	JEFFERIES CK	FW*	113	37	0	0		*	88		11	0
PD-630	BIO	WILLOW CK	FW										
PD-167	PD	WILLOW CK	FW	109	13	1	8	410				13	0
03040201140													
PD-076	P	PEE DEE RVR	FW	45	60	1	2	600	I	148	2.25	57	0
03040201150													
PD-320	S	SMITH SWAMP	FW*	424	23	10	43	1198	*	72			
PD-187	P	SMITH SWAMP	FW*	250	44	14	32	1313	D	92	-42	31	0
PD-097	P*	CATFISH CANAL	FW*	123	36	4	11	910	*	85		12	0
03040201160													
PD-060	PD	PEE DEE RVR	FW	33	12	0	0					12	0
03040201170													
PD-061	P	PEE DEE RVR	FW	26	59	0	0		*	172		57	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	CD N	CD EXC.	CD MED.	CR N	CR EXC.	CR MED.	CU N	CU EXC.	PB N	PB EXC.	PB MED.	HG N	HG EXC.	HG MED.	NI N	NI EXC.	ZN N	ZN EXC.
03040201110																					
PD-159	S	BLACK CK	FW*																		
PD-268	S	PRESTWOOD LAKE	FW*																		
PD-081	S	PRESTWOOD LAKE	FW*																		
PD-258	S	SNAKE BRANCH	FW																		
PD-137	S	SNAKE BRANCH	FW																		
PD-021	P	BLACK CK	FW*	20	0	DL	20	0	DL	20	0	20	0	DL	19	0	DL	20	0	20	0
PD-330	S	BLACK CK	FW*																		
PD-023	P	BLACK CK	FW*	20	0	DL	20	0	DL	20	0	20	0	DL	19	0	DL	20	0	20	1
PD-025	P	BLACK CK	FW	19	0	DL	19	0	DL	19	1	19	0	DL	19	0	DL	19	0	19	1
PD-141	S	PIPE	FW																		
PD-027	P	BLACK CK	FW	19	0	DL	19	0	DL	19	0	19	0	DL	19	0	DL	19	0	19	0
PD-103	S	HIGH HILL CK	FW																		
PD-078	PD	BLACK CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040201120																					
PD-337	P	PEE DEE RVR	FW	17	0	DL	17	1	DL	17	3	17	0	DL	17	0	DL	16	0	17	1
03040201130																					
PD-639	BIO	JEFFERIES CK	FW*																		
PD-255	S	JEFFERIES CK	FW*																		
PD-256	S	JEFFERIES CK	FW*	1	0	DL	1	0	DL	1	0	1	0	DL	1	0	DL	1	0	1	0
PD-065	P	GULLEY BR	FW	11	0	DL	11	0	DL	11	3	11	0	DL	11	0	DL	11	1	11	1
PD-230	S	MIDDLE SWAMP	FW*																		
PD-035	S	JEFFERIES CK	FW*																		
PD-231	P*	JEFFERIES CK	FW*	3	0	DL	3	0	DL	3	0	3	0	DL	3	0	DL	3'	0	3	0
PD-630	BIO	WILLOW CK	FW																		
PD-167	PD	WILLOW CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040201140																					
PD-076	P	PEE DEE RVR	FW	20	0	DL	20	0	DL	20	3	20	0	DL	19	0	DL	20	0	20	0
03040201150																					
PD-320	S	SMITH SWAMP	FW*																		
PD-187	P	SMITH SWAMP	FW*	10	0	DL	10	1	DL	10	3	10	0	DL	9	0	DL	10	0	10	1
PD-097	P*	CATFISH CANAL	FW*	6	0	DL	6	0	DL	6	0	6	0	DL	6	0	DL	6	0	6	0
03040201160																					
PD-060	PD	PEE DEE RVR	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040201170																					
PD-061	P	PEE DEE RVR	FW	20	0	DL	20	0	DL	20	1	20	0	DL	19	0	DL	21	0	20	2

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION			FIRST	DO	DO	DO	MEAN	TRENDS						pH	pH	pH	MEAN	TRENDS		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG	N	EXC.	%	EXC.	PH	N	MAG
03040203220																				
PD-347	PD	ASHPOLE SWAMP	FW*	12	6	50	2.65							12	0	0				
PD-038	P	LUMBER RVR	FW	59	0	0		*	151		D	180	-0.067	59	23	39	5.674	*	192	
03040204030																				
PD-306	S	PANTHER CK	FW	23	23	100	2.178	D	61	-0.117	*	74		23	13	57	5.762	I	73	0.02
PD-016	S	PANTHER CK	FW	24	23	96	2.743	*	61		D	74	-0.069	24	12	50	5.829	*	73	
PD-017A	S	MCLAURINS MILL POND	FW	24	24	100	2.44	*	61		*	73		24	19	79	5.745	*	72	
PD-365	PD	LITTLE PEE DEE RVR	FW	14	0	0								14	4	29	5.775			
PD-069	P	LITTLE PEE DEE RVR	FW	60	0	0		*	135		D	177	-0.05	60	35	58	5.767	D	177	-0.014
PD-029E	S	LITTLE PEE DEE RVR	FW	23	1	4	4.6	*	61		D	72	-0.044	23	14	74	5.738	*	72	
PD-055	P*	LITTLE PEE DEE RVR	FW	35	2	6	4.5	*	72		D	83	-0.033	35	20	57	5.747	*	84	
PD-030	P*	MAPLE SWAMP	FW*	35	24	69	1.892	*	72		D	83	-0.07	35	1	3	3.1	D	82	-0.037
PD-030A	S	LITTLE PEE DEE RVR	FW	23	2	9	4.85	*	60		D	72	-0.084	23	17	74	5.706	D	71	-0.025
PD-348	PD	LITTLE PEE DEE RVR	FW	9	0	0								9	3	33	5.25			
PD-052	P	LITTLE PEE DEE RVR	FW	60	0	0		*	62		*	62		60	27	45	5.691	I	62	0.1
03040204050																				
PD-031	S	BUCK SWAMP	FW*	24	21	88	1.762	*	61		D	68	-0.5	24	0	0		D	70	-0.05
PD-349	PD	BUCK SWAMP	FW*	12	3	25	2.733							12	0	0				
03040204070																				
PD-351	PD/BIO	CEDAR CK	ORW	12	7	58	3.836							12	8	67	5.731			
PD-037	S	WHITE OAK CK	FW*	30	1	3	2.6	D	66	-0.18	*	77		30	0	0		*	76	
PD-042	P	LITTLE PEE DEE RVR	ORW	56	4	7	4.762	*	61		*	60		56	13	23	5.738	I	61	0.1
PD-189	P	LITTLE PEE DEE RVR	ORW	60	15	25	4.253	D	133	-0.057	D	176	-0.1	60	23	38	5.728	D	174	-0.023
PD-350	PD	LITTLE PEE DEE RVR	ORW	12	5	42	3.82							12	4	33	5.656			
03040204080																				
PD-176	PD	LAKE SWAMP	FW*	14	4	29	2.4	*	52		D	60	-0.14	14	0	0		*	60	
03040204090																				
PD-177	S	CHINNERS SWAMP	FW*	23	17	74	2.024	*	61		D	69	-0.08	23	0	0		*	69	
PD-352	PD	CHINNERS SWAMP	FW*	12	5	42	2.21							12	0	0				

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STATION			FIRST	TRENDS											
NUMBER	TYPE	WATERBODY NAME	CLASS	TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03040203220															
PD-347	PD	ASHPOLE SWAMP	FW*												
PD-038	P	LUMBER RVR	FW	D	175	-0.005	*	127		I	170	0.029	D	165	-0.111
03040204030															
PD-306	S	PANTHER CK	FW	*	71					I	71	0.144			
PD-016	S	PANTHER CK	FW	D	72	-0.015				*	71				
PD-017A	S	MCLAURINS MILL POND	FW	D	70	-0.003				I	71	0.16			
PD-365	PD	LITTLE PEE DEE RVR	FW												
PD-069	P	LITTLE PEE DEE RVR	FW	D	177	-0.006	D	126	-0.032	I	173	0.075			
PD-029E	S	LITTLE PEE DEE RVR	FW	D	69	-0.006				I	70	0.1			
PD-055	P*	LITTLE PEE DEE RVR	FW	I	82	0.011				I	81	0.139			
PD-030	P*	MAPLE SWAMP	FW*	D	81	-0.025				I	82	0.5			
PD-030A	S	LITTLE PEE DEE RVR	FW	I	70	0.016				I	70	0.125			
PD-348	PD	LITTLE PEE DEE RVR	FW												
PD-052	P	LITTLE PEE DEE RVR	FW	D	61	-0.038	*	59		*	62				
03040204050															
PD-031	S	BUCK SWAMP	FW*	D	68	-0.089				D	71	-1.727			
PD-349	PD	BUCK SWAMP	FW*												
03040204070															
PD-351	PD/BIO	CEDAR CK	ORW												
PD-037	S	WHITE OAK CK	FW*	D	76	-0.0112				*	75				
PD-042	P	LITTLE PEE DEE RVR	ORW	D	60	-0.01	*	52		*	61				
PD-189	P	LITTLE PEE DEE RVR	ORW	D	176	-0.002	D	124	-0.03	*	168				
PD-350	PD	LITTLE PEE DEE RVR	ORW												
03040204080															
PD-176	PD	LAKE SWAMP	FW*	*	61					*	60				
03040204090															
PD-177	S	CHINNERS SWAMP	FW*	*	70					I	69	0.2			
PD-352	PD	CHINNERS SWAMP	FW*												

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.
03040203220													
PD-347	PD	ASHPOLE SWAMP	FW*	82	12	1	8	450				12	0
PD-038	P	LUMBER RVR	FW	66	59	1	2	600	I	179	2.375	56	0
03040204030													
PD-306	S	PANTHER CK	FW	184	23	2	9	900	*	72			
PD-016	S	PANTHER CK	FW	171	24	4	17	898	*	73			
PD-017A	S	MCLAURINS MILL POND	FW	77	24	1	4	800	*	72			
PD-365	PD	LITTLE PEE DEE RVR	FW	82	14	0	0					12	0
PD-069	P	LITTLE PEE DEE RVR	FW	76	60	1	2	840	*	179		58	0
PD-029E	S	LITTLE PEE DEE RVR	FW	84	23	0	0		*	74			
PD-055	P*	LITTLE PEE DEE RVR	FW	93	35	1	3	500	*	85		12	0
PD-030	P*	MAPLE SWAMP	FW*	192	35	9	26	626	*	82		12	0
PD-030A	S	LITTLE PEE DEE RVR	FW	115	23	0	0		*	72			
PD-348	PD	LITTLE PEE DEE RVR	FW	76	9	1	11	670				8	0
PD-052	P	LITTLE PEE DEE RVR	FW	96	59	2	3	600	D	61	-14.75	58	0
03040204050													
PD-031	S	BUCK SWAMP	FW*	125	24	3	13	743	D	71	-85.454		
PD-349	PD	BUCK SWAMP	FW*	44	12	1	8	670				11	0
03040204070													
PD-351	PD/BIO	CEDAR CK	ORW	110	12	1	8	2000				12	0
PD-037	S	WHITE OAK CK	FW*	468	30	14	47	2229	I	77	25.38		
PD-042	P	LITTLE PEE DEE RVR	ORW	52	55	1	2	670	*	60		54	0
PD-189	P	LITTLE PEE DEE RVR	ORW	52	60	1	2		I	174	1	55	0
PD-350	PD	LITTLE PEE DEE RVR	ORW	56	12	0	0					12	0
03040204080													
PD-176	PD	LAKE SWAMP	FW*	100	12	1	8	570	*	58		11	0
03040204090													
PD-177	S	CHINNERS SWAMP	FW*	130	23	0	0		*	69			
PD-352	PD	CHINNERS SWAMP	FW*	96	12	1	8	780				11	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0402

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	CD N	CD EXC.	CD MED.	CR N	CR EXC.	CR MED.	CU N	CU EXC.	PB N	PB EXC.	PB MED.	HG N	HG EXC.	HG MED.	NI N	NI EXC.	ZN N	ZN EXC.
03040203220																					
PD-347	PD	ASHPOLE SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-038	P	LUMBER RVR	FW	19	0	DL	19	0	DL	19	1	19	0	DL	19	0	DL	19	0	19	0
03040204030																					
PD-306	S	PANTHER CK	FW																		
PD-016	S	PANTHER CK	FW																		
PD-017A	S	MCLAURINS MILL POND	FW																		
PD-365	PD	LITTLE PEE DEE RVR	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-069	P	LITTLE PEE DEE RVR	FW	19	0	DL	19	1	DL	19	1	19	0	DL	19	0	DL	19	0	19	1
PD-029E	S	LITTLE PEE DEE RVR	FW																		
PD-055	P*	LITTLE PEE DEE RVR	FW	4	0	DL	4	0	DL	4	1	4	0	DL	4	0	DL	4	0	4	1
PD-030	P*	MAPLE SWAMP	FW*	4	0	DL	4	0	DL	4	1	4	0	DL	4	0	DL	4	0	4	0
PD-030A	S	LITTLE PEE DEE RVR	FW	3	0	DL	3	0	DL	3	1	3	0	DL	3	0	DL	3	0	3	0
PD-348	PD	LITTLE PEE DEE RVR	FW	3	0	DL	3	0	DL	3	0	3	0	DL	2	0	DL	3	0	3	0
PD-052	P	LITTLE PEE DEE RVR	FW	19	0	DL	18	0	DL	19	2	19	0	DL	18	0	DL	19	0	18	4
03040204050																					
PD-031	S	BUCK SWAMP	FW*																		
PD-349	PD	BUCK SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	3	0	DL	4	0	4	0
03040204070																					
PD-351	PD/BIO	CEDAR CK	ORW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	1
PD-037	S	WHITE OAK CK	FW*							1	0									1	1
PD-042	P	LITTLE PEE DEE RVR	ORW	18	0	DL	18	0	DL	18	1	18	0	DL	18	0	DL	18	0	18	1
PD-189	P	LITTLE PEE DEE RVR	ORW	20	0	DL	20	0	DL	20	0	20	0	DL	19	0	DL	20	0	20	0
PD-350	PD	LITTLE PEE DEE RVR	ORW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040204080																					
PD-176	PD	LAKE SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040204090																					
PD-177	S	CHINNERS SWAMP	FW*																		
PD-352	PD	CHINNERS SWAMP	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0

Mean Seasonal Water Quality Values

PEE DEE WMU-0402

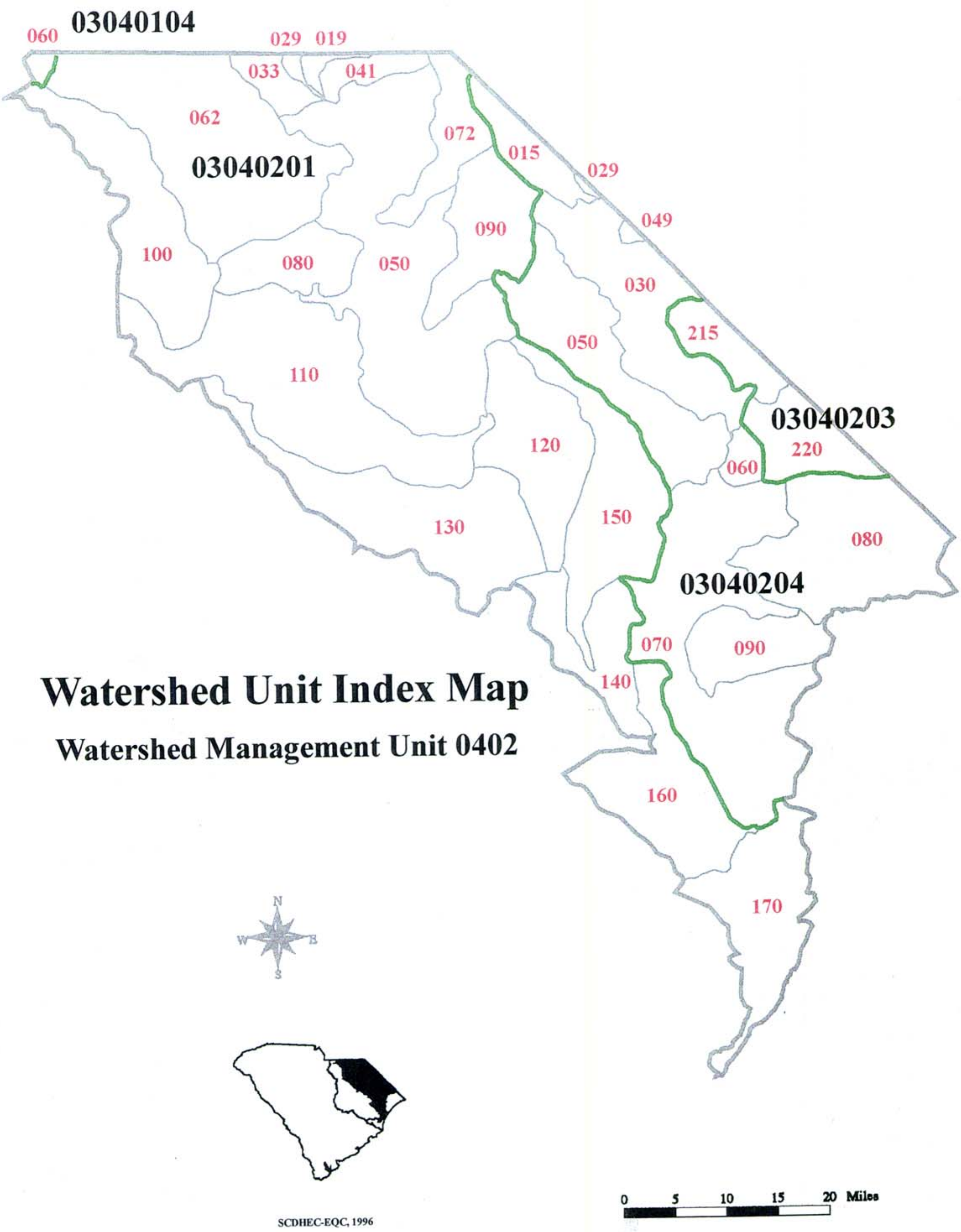
PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
TEMPERATURE (°C)	Mean	18.5	24.6	16.6	9.7
	Max	32.5	37.0	29.0	27.0
	Min	8.0	2.6	9.0	2.0
	Med	19.0	24.6	16.5	9.0
	95%	24.5	29.5	22.0	16.0
	N	460	968	351	328
DISSOLVED OXYGEN (mg/l)	Mean	6.9	5.2	6.9	9.5
	Max	11.6	11.6	11.0	13.2
	Min	0.5	0.0	0.8	1.0
	Med	7.2	5.7	7.4	9.8
	5%	2.2	1.0	1.8	6.3
	N	460	968	352	327
pH (SU)	Mean	6.2	6.2	6.3	6.3
	Max	7.8	7.7	7.7	8.1
	Min	4.0	3.1	4.5	4.5
	Med	6.2	6.2	6.2	6.4
	95%	7.0	7.1	7.2	7.1
	N	459	968	352	329
BOD_5 (mg/l)	Mean	1.7	2.3	2.7	1.4
	Max	23.0	42.0	100.0	56.0
	Min	0.6	0.4	0.3	0.2
	Med	1.4	1.6	1.5	1.2
	95%	3.6	5.6	5.8	2.0
	N	457	955	350	323
TURBIDITY (NTU)	Mean	12.7	11.5	8.6	9.5
	Max	110.0	200.0	95.0	70.0
	Min	1.5	1.0	1.1	0.9
	Med	5.3	6.1	4.2	4.1
	95%	50.0	36.0	31.0	35.0
	N	457	967	352	329

PEE DEE WMU-0402

PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
AMMONIA (mg/l)	Mean	0.12	0.24	0.17	0.18
	Max	1.10	5.20	1.28	2.33
	Min	0.05	0.05	0.05	0.05
	Med	0.08	0.07	0.11	0.12
	95%	0.33	0.82	0.54	0.47
	N	101	101	42	75
TKN (mg/l)	Mean	0.73	0.93	0.69	0.57
	Max	7.20	43.00	6.40	5.70
	Min	0.08	0.16	0.12	0.11
	Med	0.64	0.70	0.60	0.50
	95%	1.31	1.64	1.22	1.13
	N	302	429	211	316
NITRITE-NITRATE (mg/l)	Mean	0.39	0.44	0.33	0.35
	Max	9.60	15.50	5.20	1.78
	Min	0.01	0.02	0.02	0.01
	Med	0.22	0.19	0.18	0.35
	95%	0.94	1.57	1.26	0.75
	N	396	798	290	282
TOTAL PHOSPHORUS (mg/l)	Mean	0.18	0.26	0.15	0.09
	Max	5.20	4.61	2.60	0.90
	Min	0.02	0.02	0.02	0.02
	Med	0.10	0.11	0.08	0.06
	95%	0.54	0.96	0.56	0.25
	N	426	884	299	278
TOTAL ORGANIC CARBON (mg/l)	Mean	12.7	15.1	11.6	10.2
	Max	48.0	52.0	34.0	66.0
	Min	3.4	3.2	2.0	3.4
	Med	9.6	11.8	9.7	7.9
	95%	31.0	37.0	25.0	17.2
	N	142	168	102	144

PEE DEE WMU-0402

PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
FECAL COLIFORM BACTERIA (#/100ml)	Mean	70	148	109	68
	Max	60,000	120,000	260,000	60,000
	Min	1	1	1	1
	Med	65	140	110	66
	95%	820	2,000	1,000	440
	N	458	957	349	328

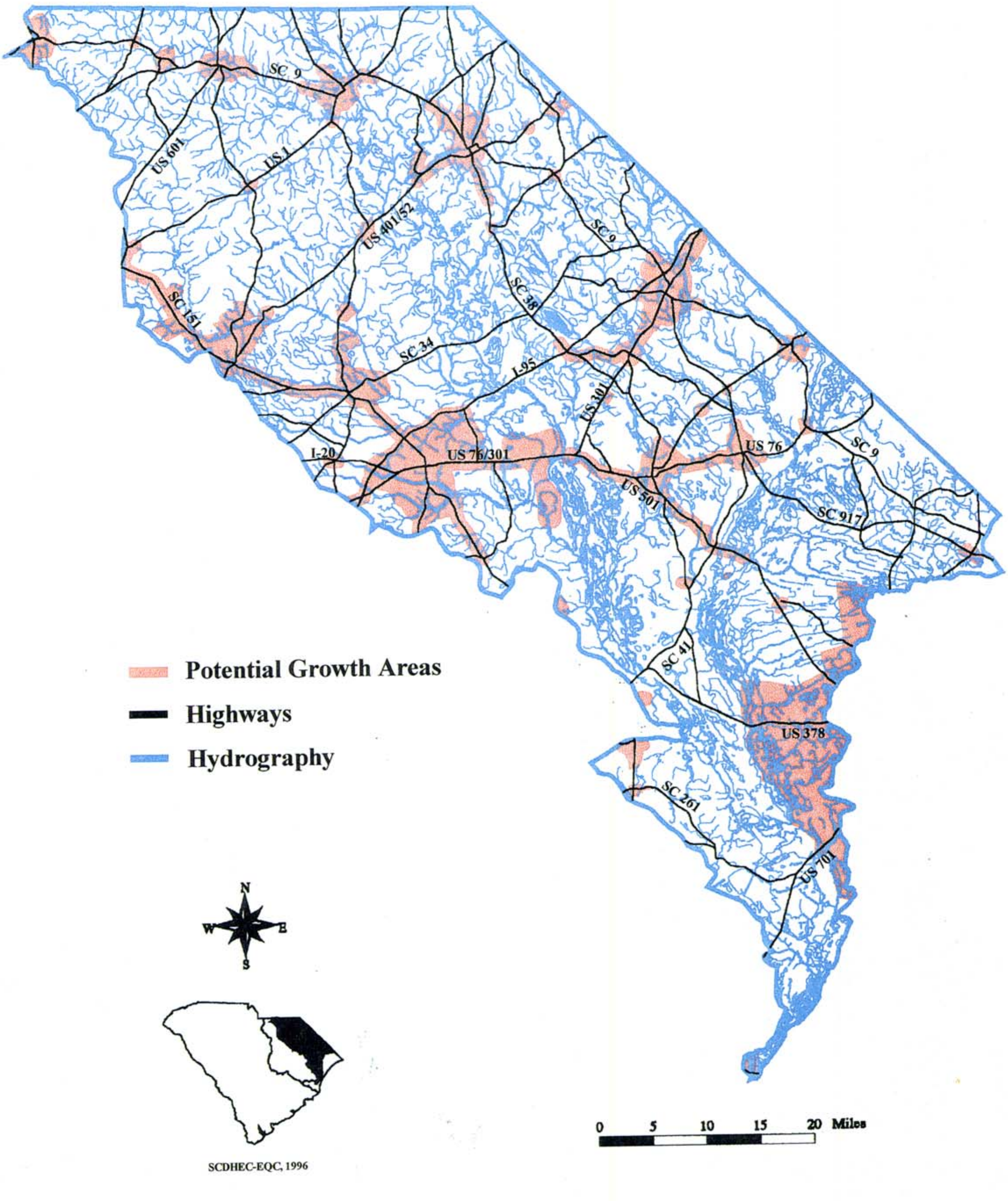


Watershed Unit Index Map

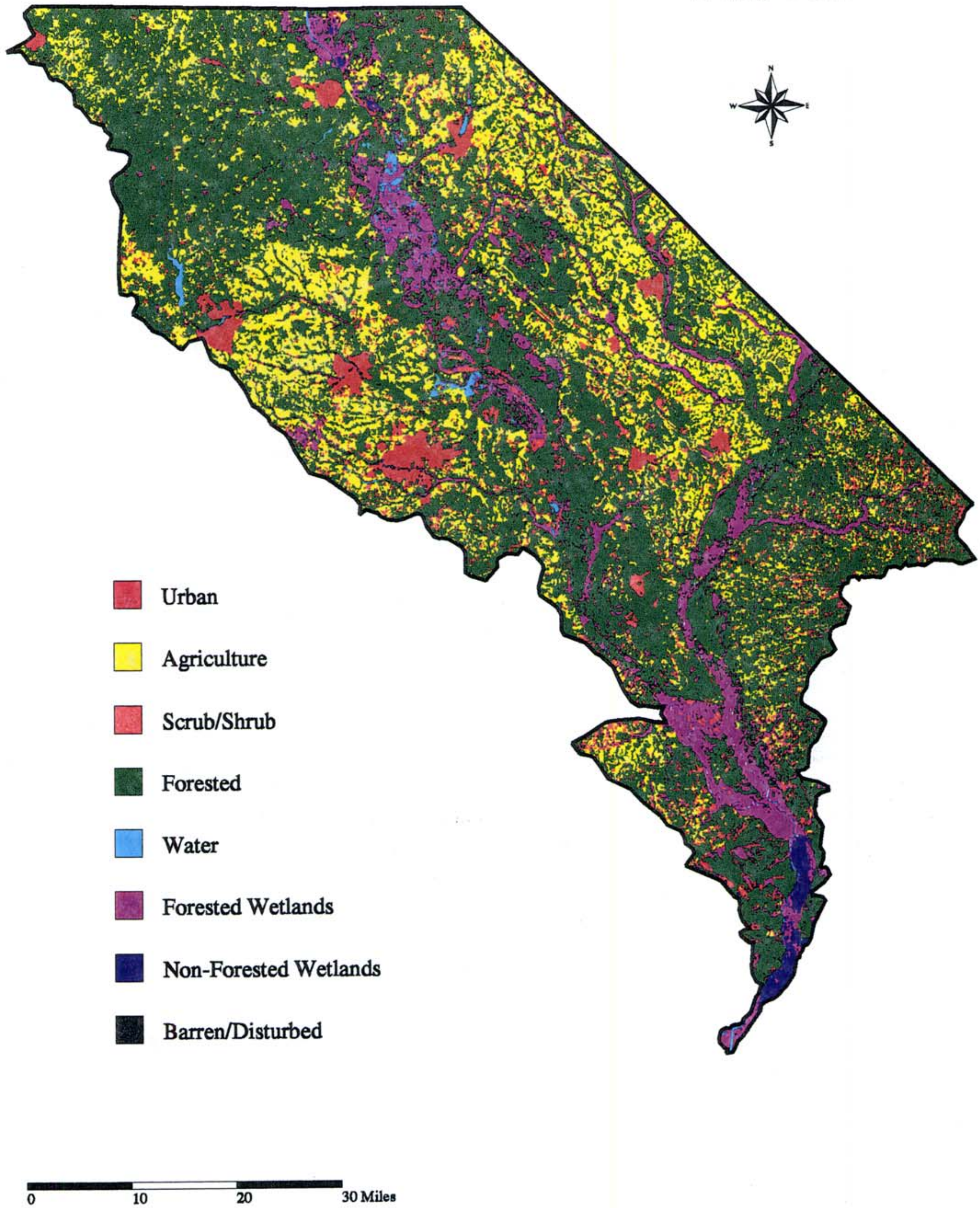
Watershed Management Unit 0402

Potential Growth Areas

Watershed Management Unit 0402



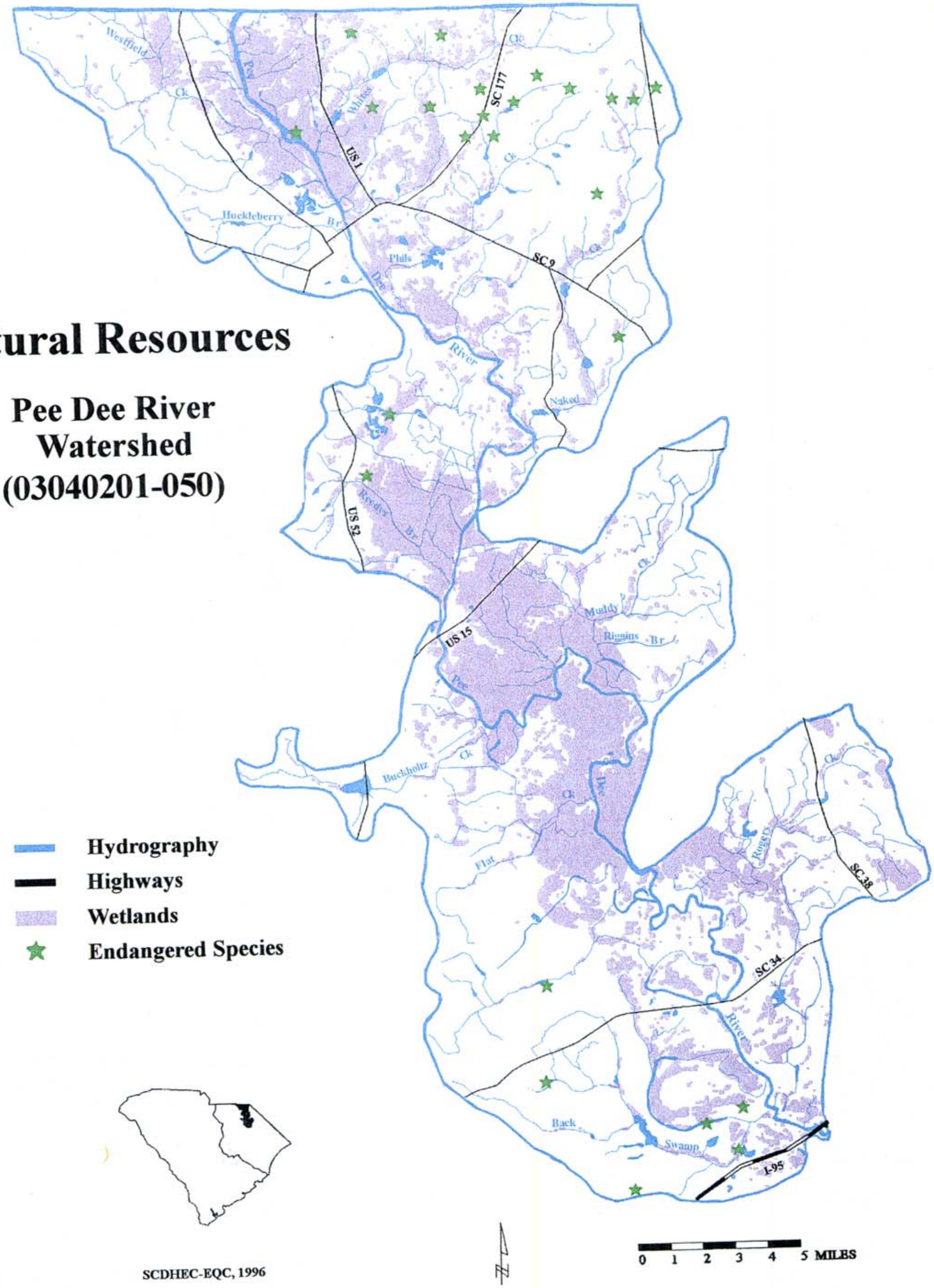
LAND USE/LAND COVER
WMU-0402



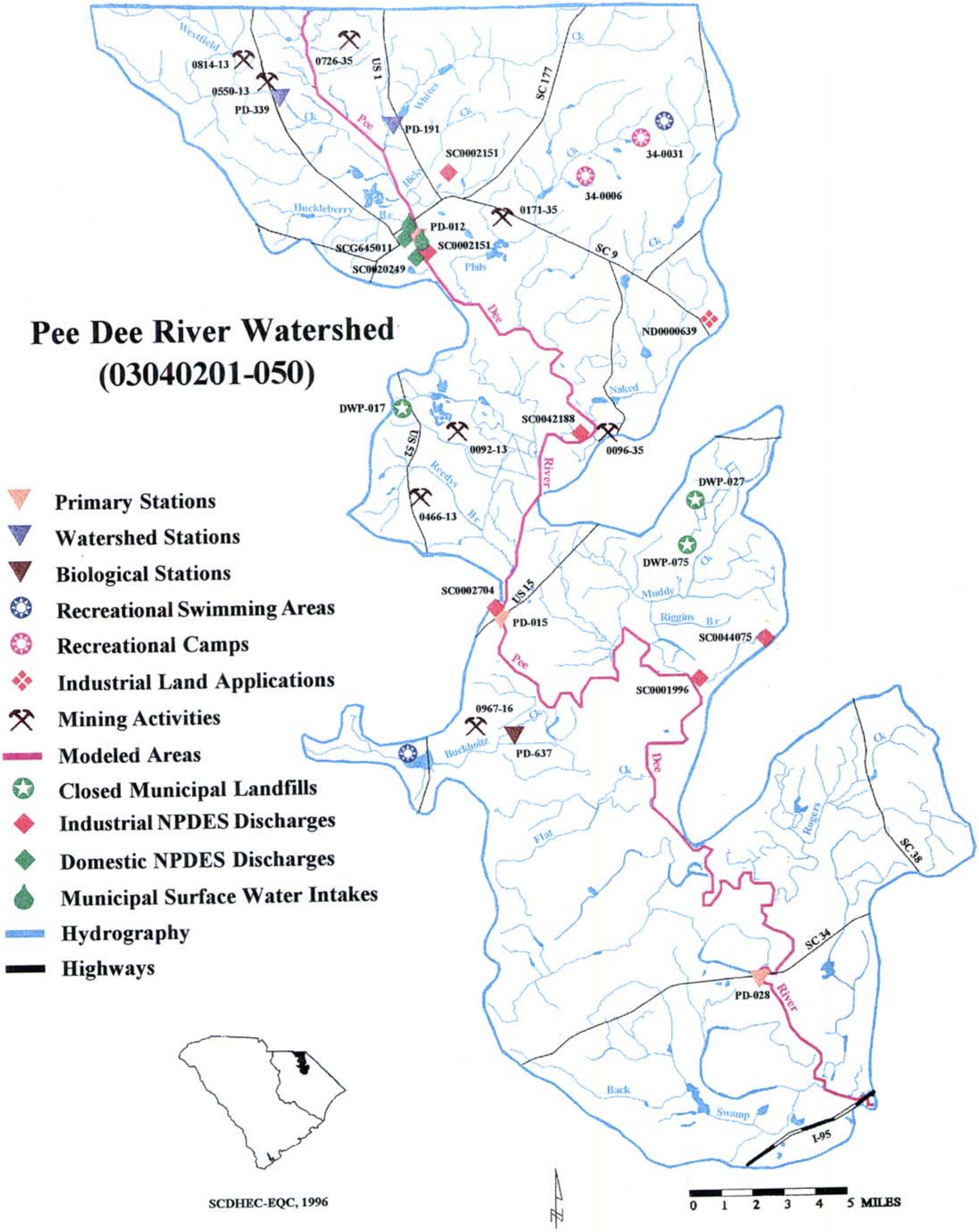
Source: Spot Satellite Imagery 89-90
SCDNR - LRC

Natural Resources

Pee Dee River Watershed (03040201-050)

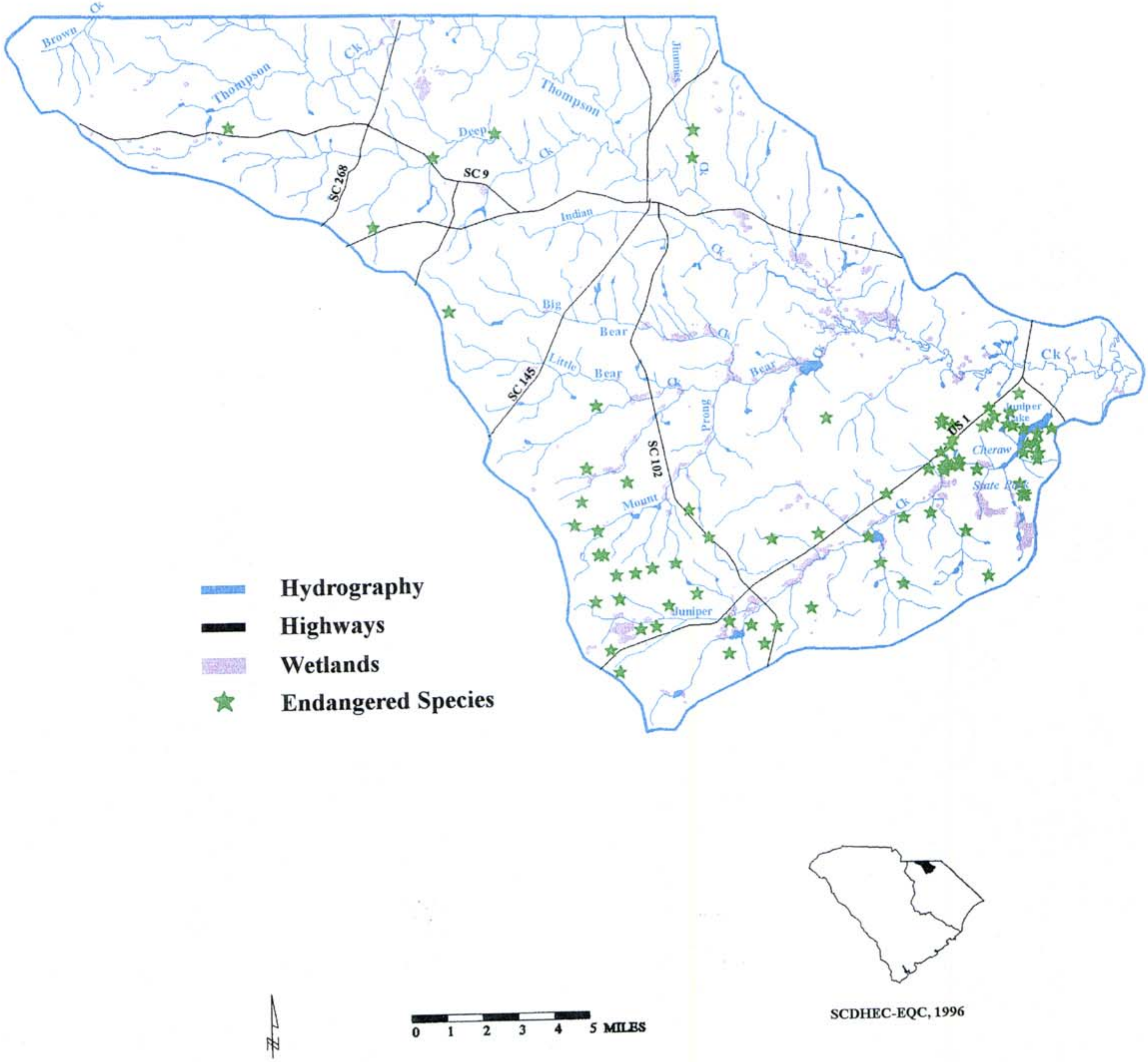


Monitoring Sites, Modeled Streams, and Permitted Areas



Natural Resources

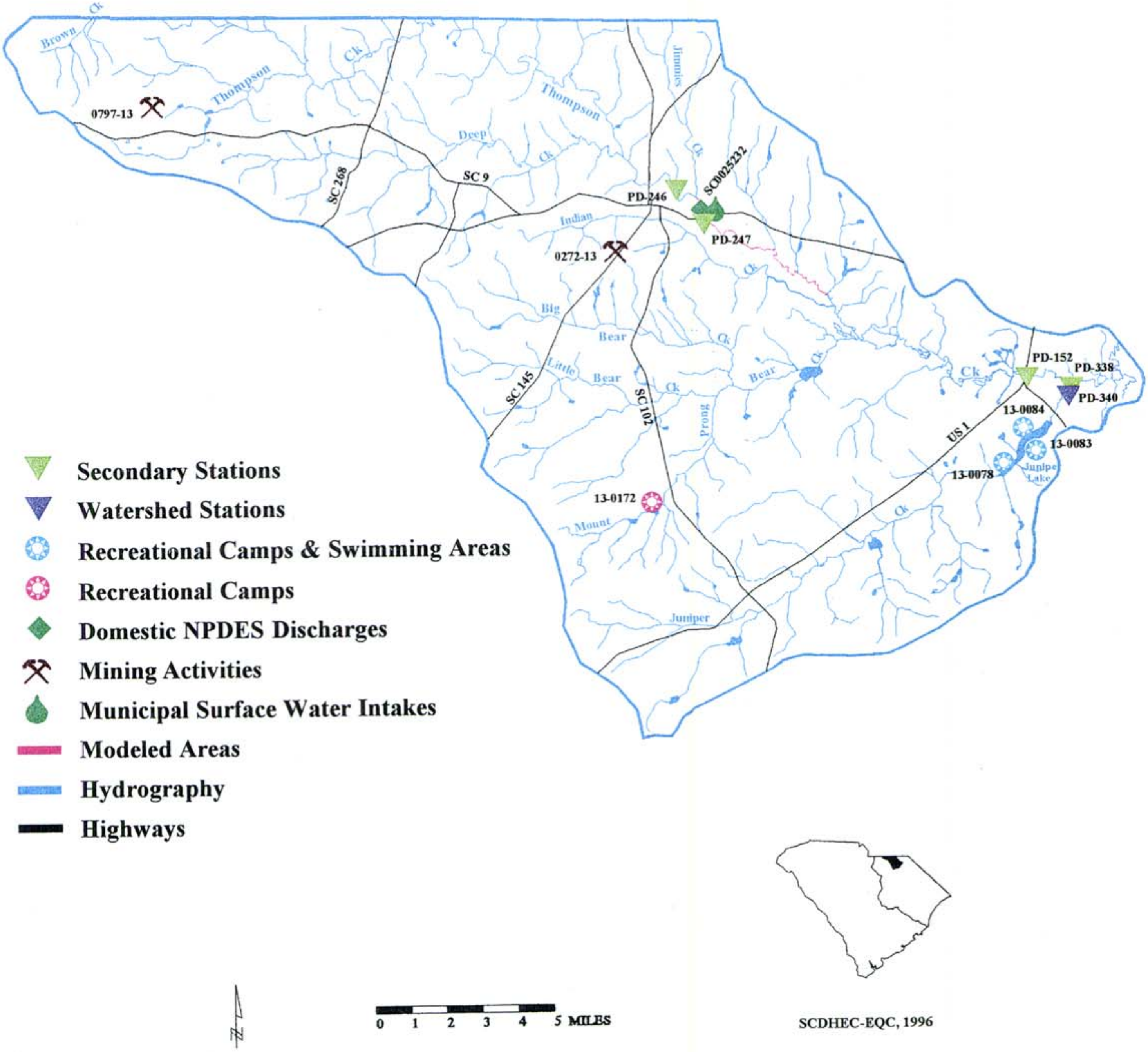
Thompson Creek Watershed
(03040201-062)



SCDHEC-EQC, 1996

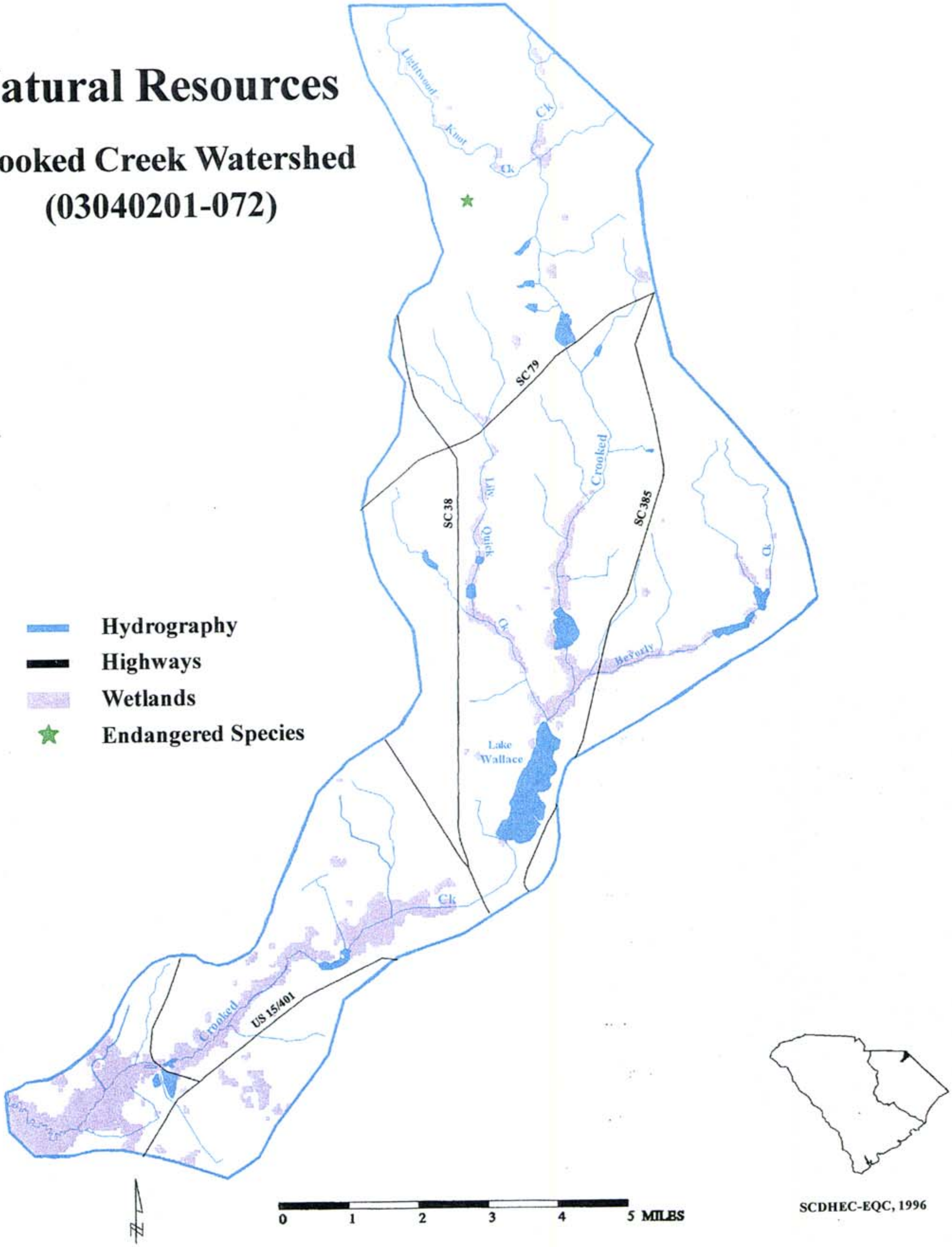
Monitoring Sites, Modeled Streams, and Permitted Areas

Thompson Creek Watershed (03040201-062)

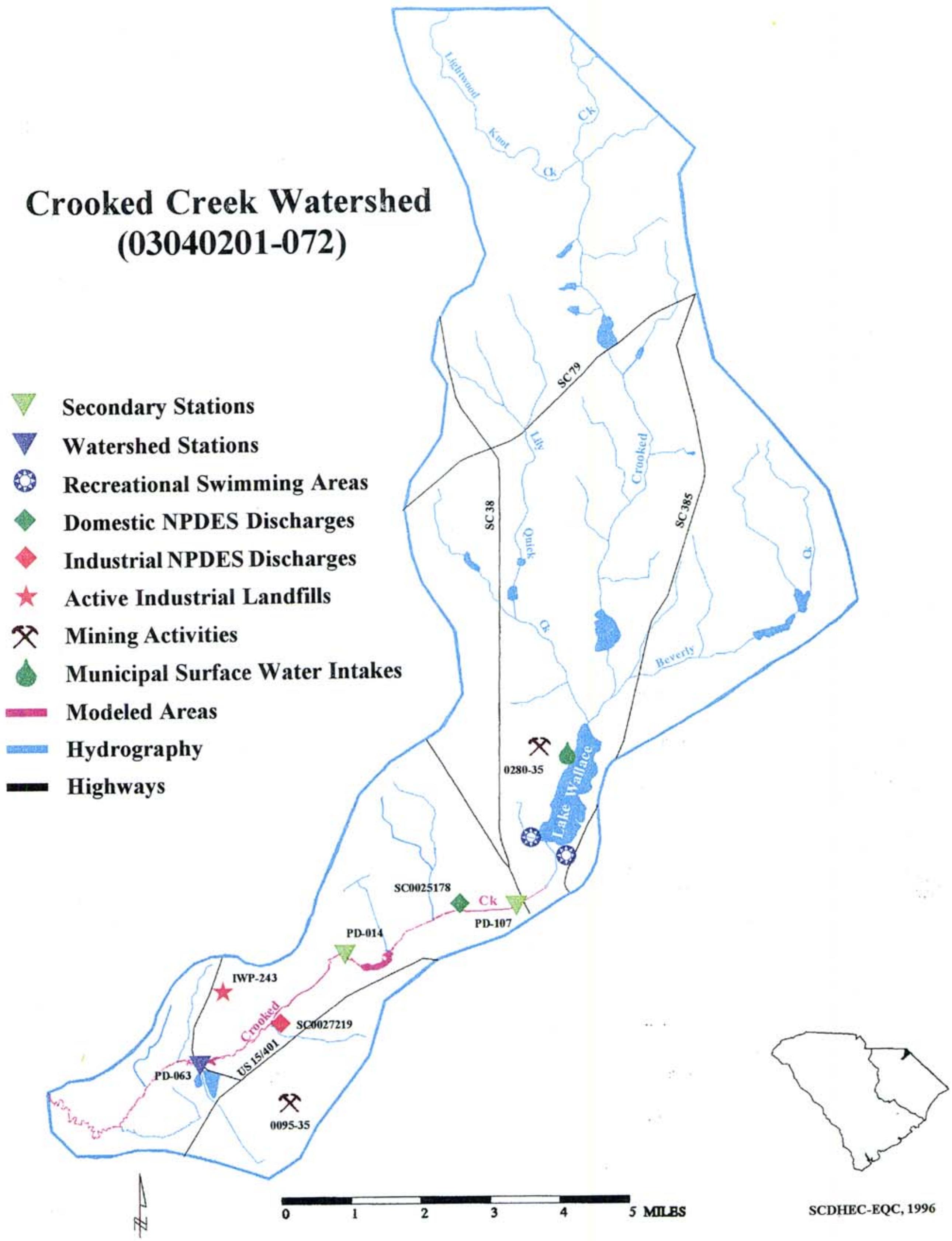


Natural Resources

Crooked Creek Watershed
(03040201-072)

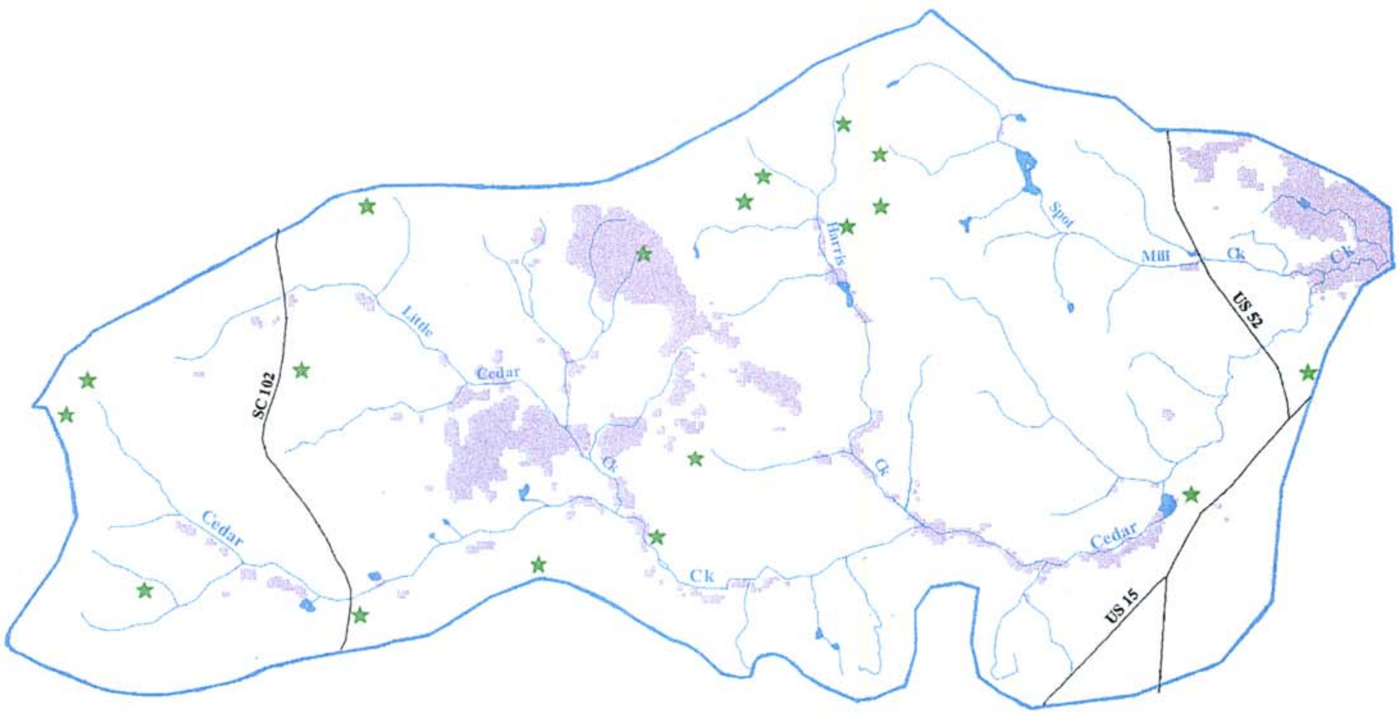


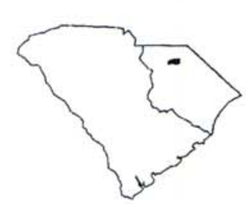
Monitoring Sites, Modeled Streams, and Permitted Areas



Natural Resources

Cedar Creek Watershed
(03040201-080)





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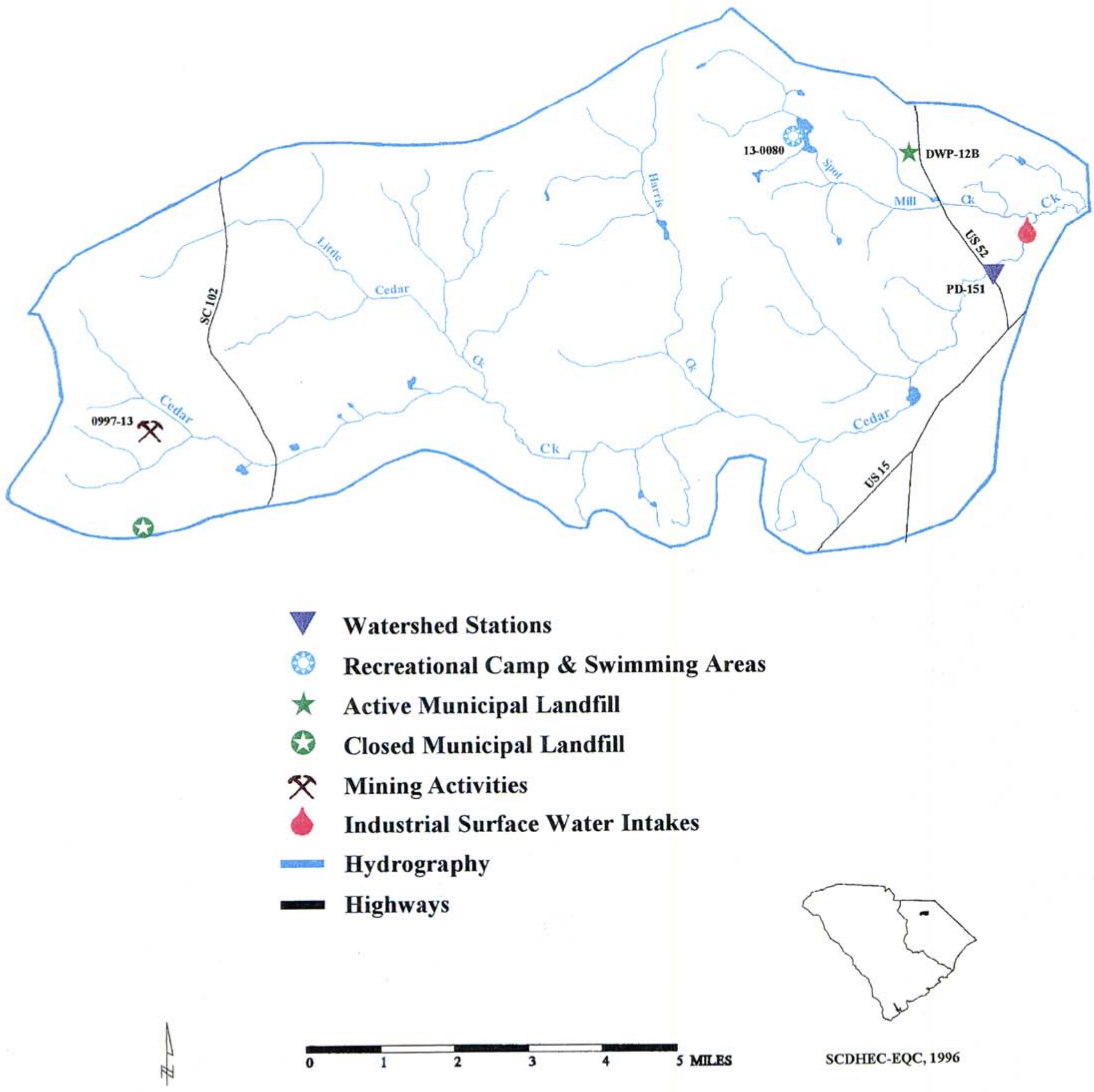
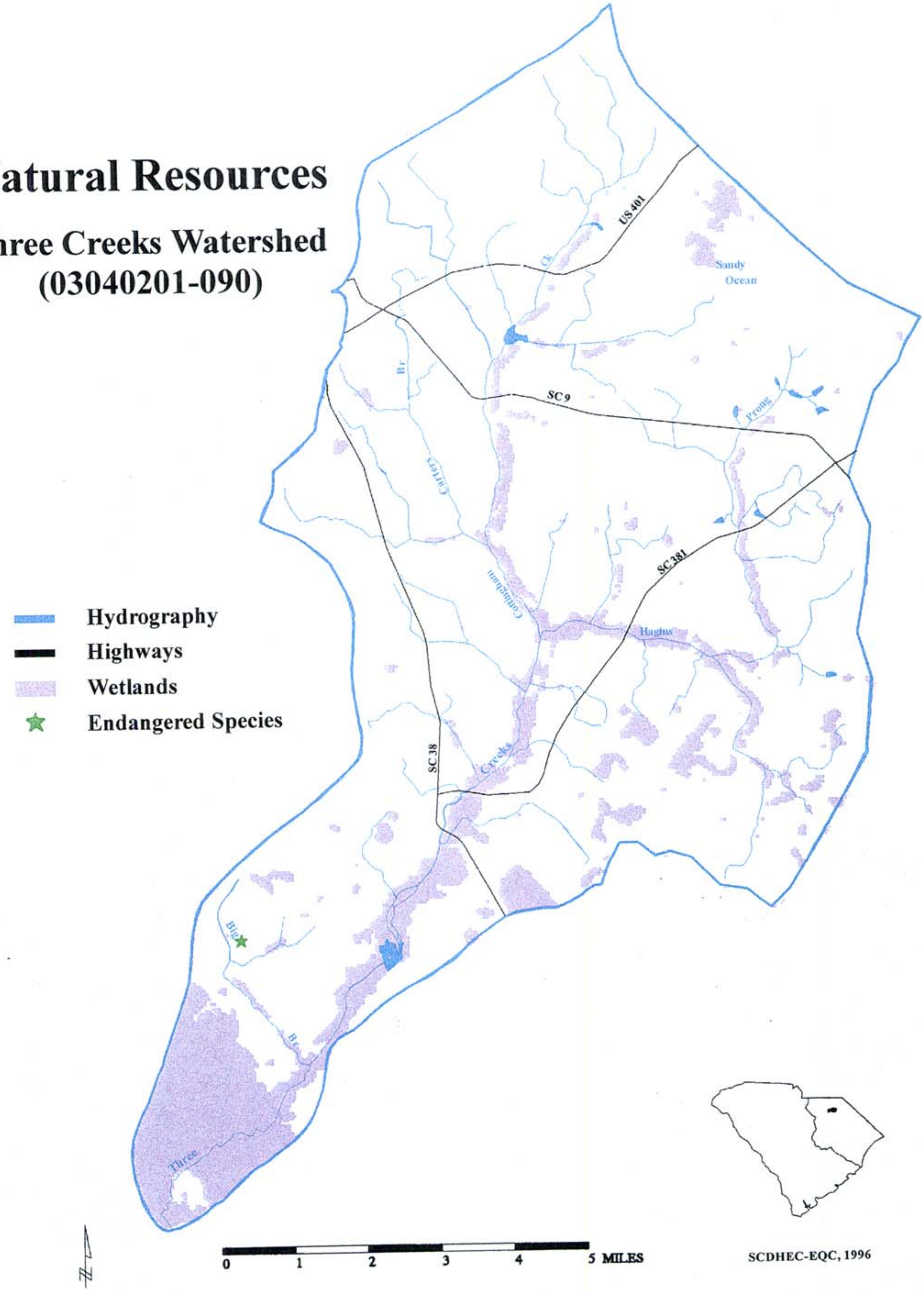
Monitoring Sites and Permitted Activities

Cedar Creek Watershed (03040201-080)



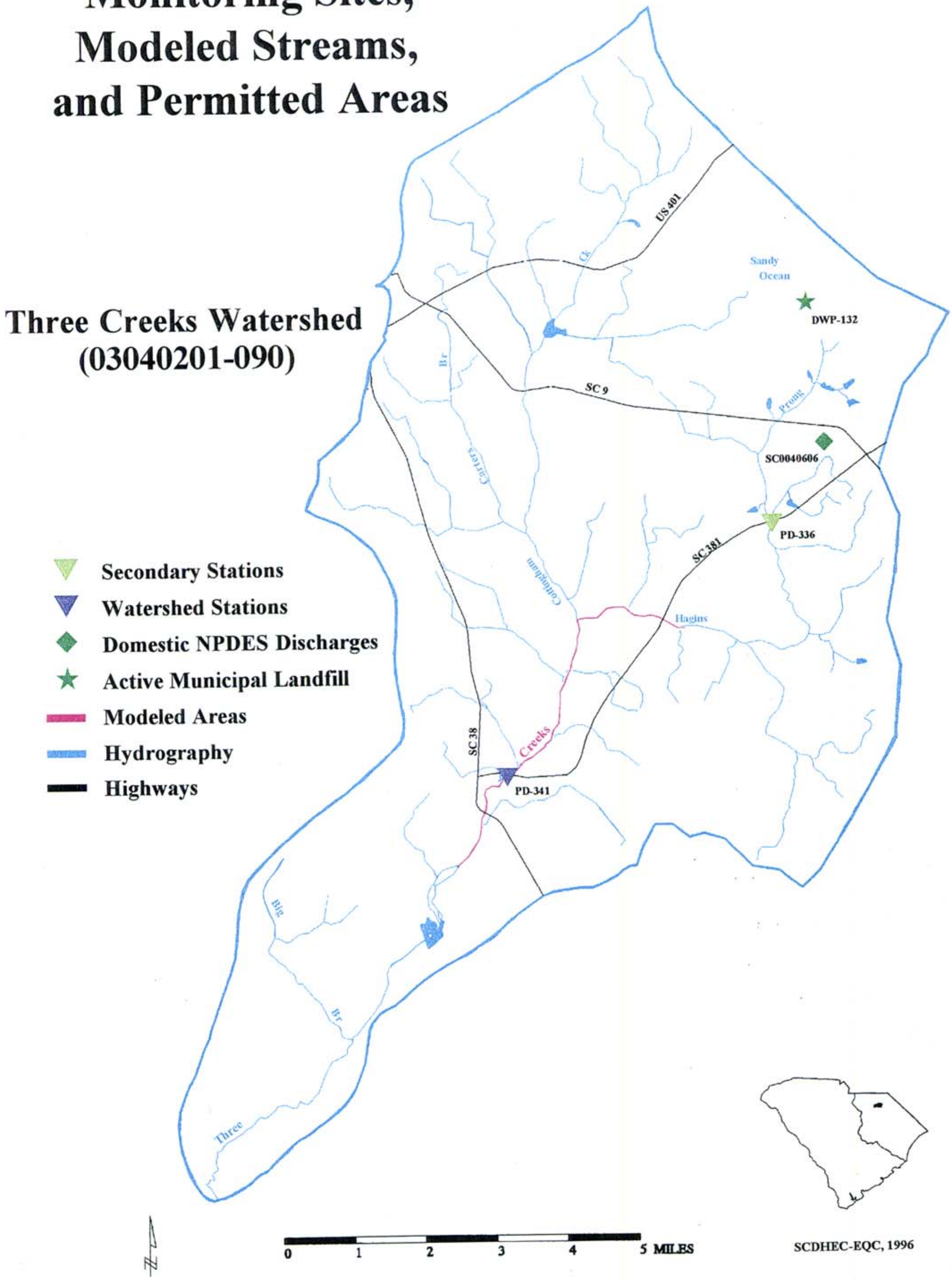
Natural Resources

Three Creeks Watershed
(03040201-090)



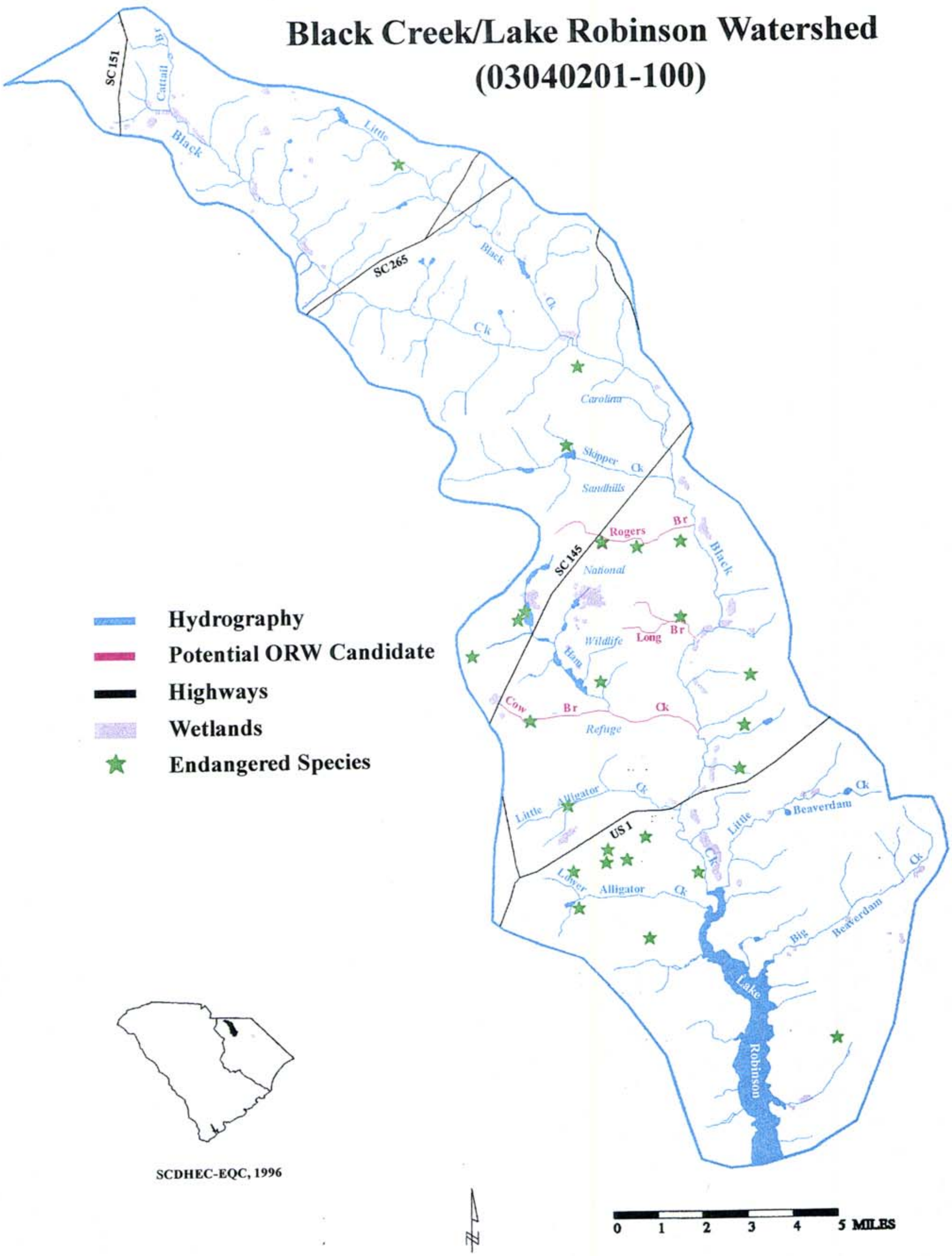
Monitoring Sites, Modeled Streams, and Permitted Areas

Three Creeks Watershed (03040201-090)



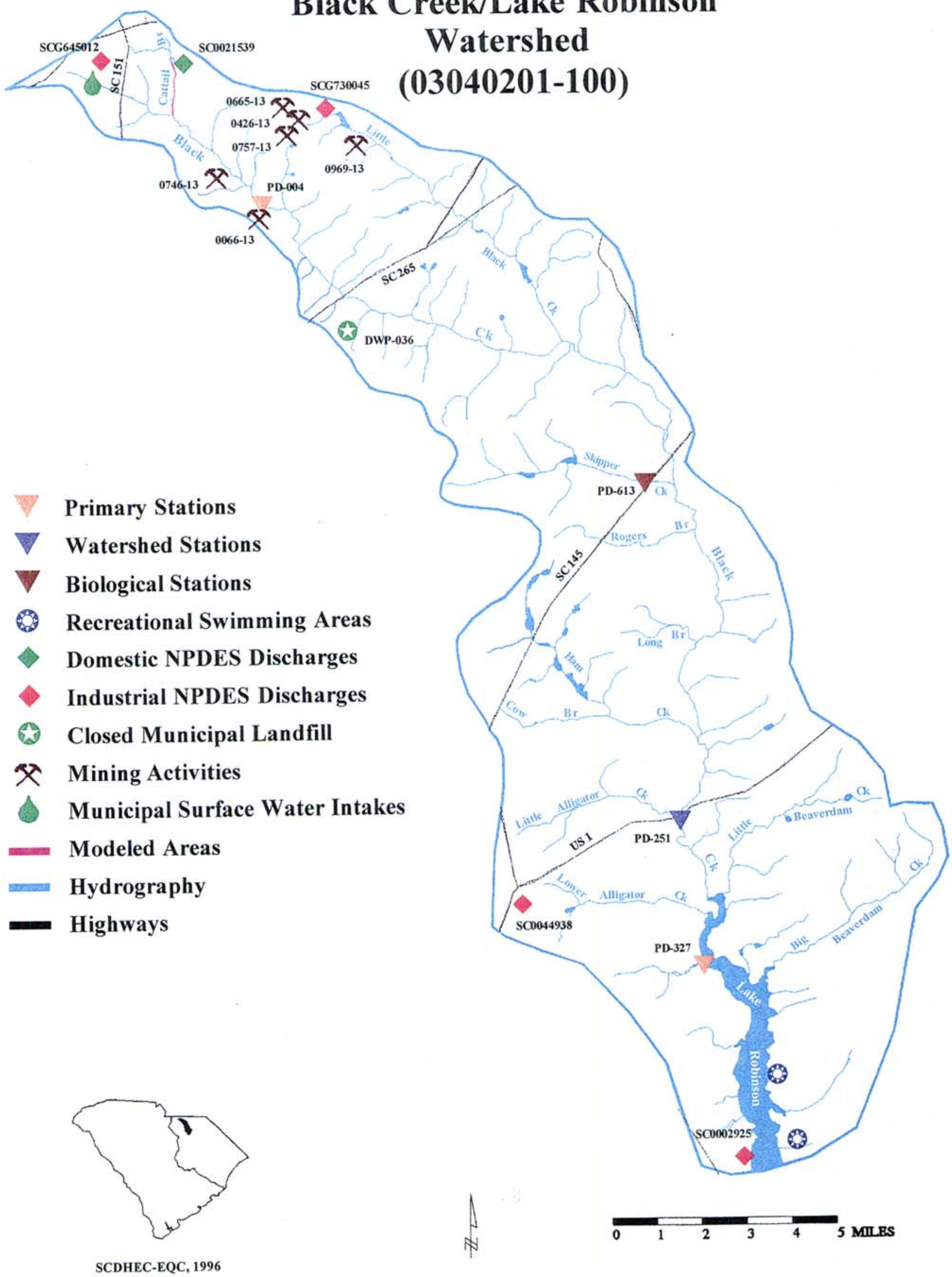
Natural Resources

Black Creek/Lake Robinson Watershed (03040201-100)



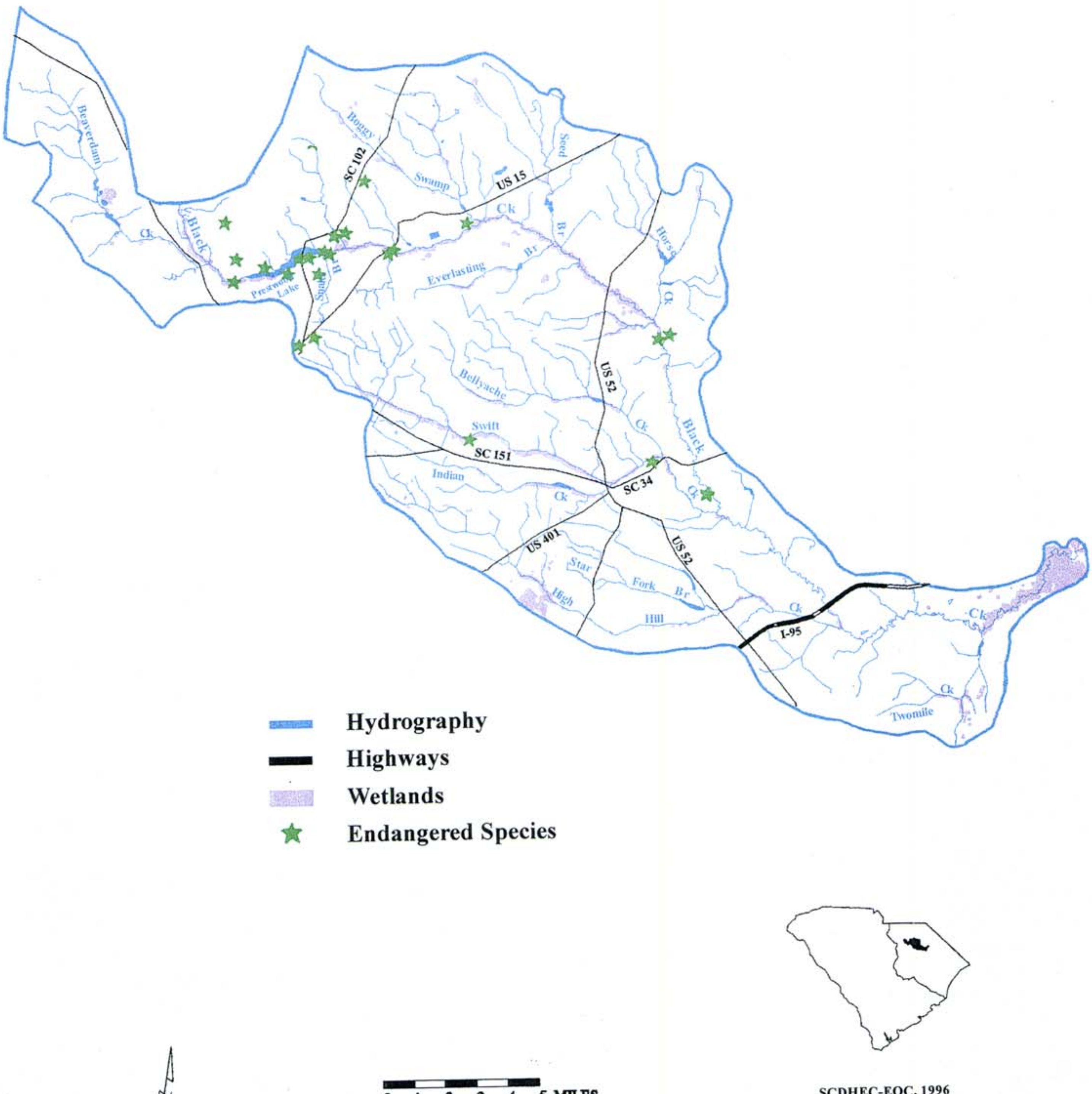
Monitoring Sites, Modeled Streams, and Permitted Areas

Black Creek/Lake Robinson Watershed (03040201-100)



Natural Resources

Black Creek Watershed
(03040201-110)



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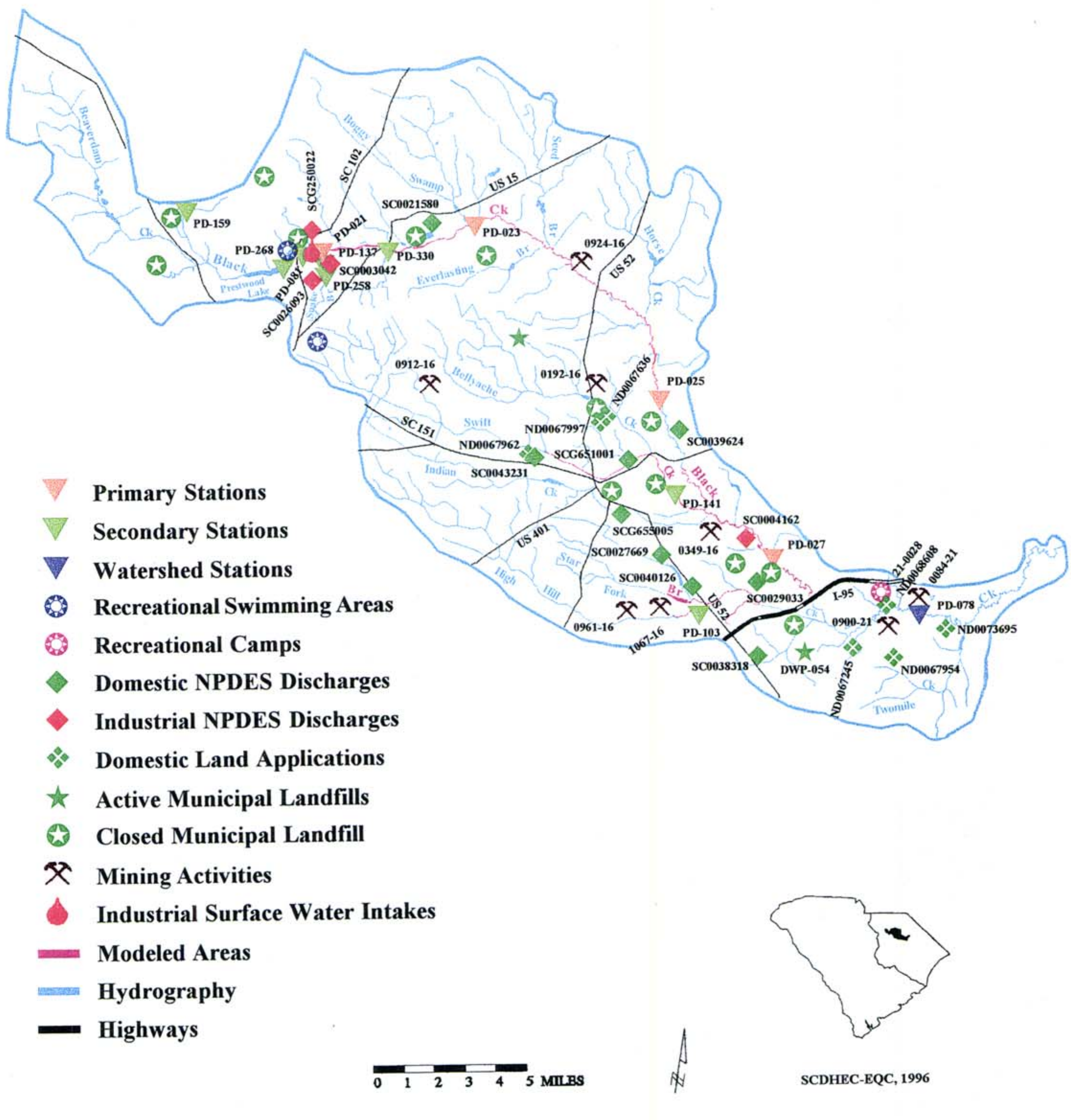
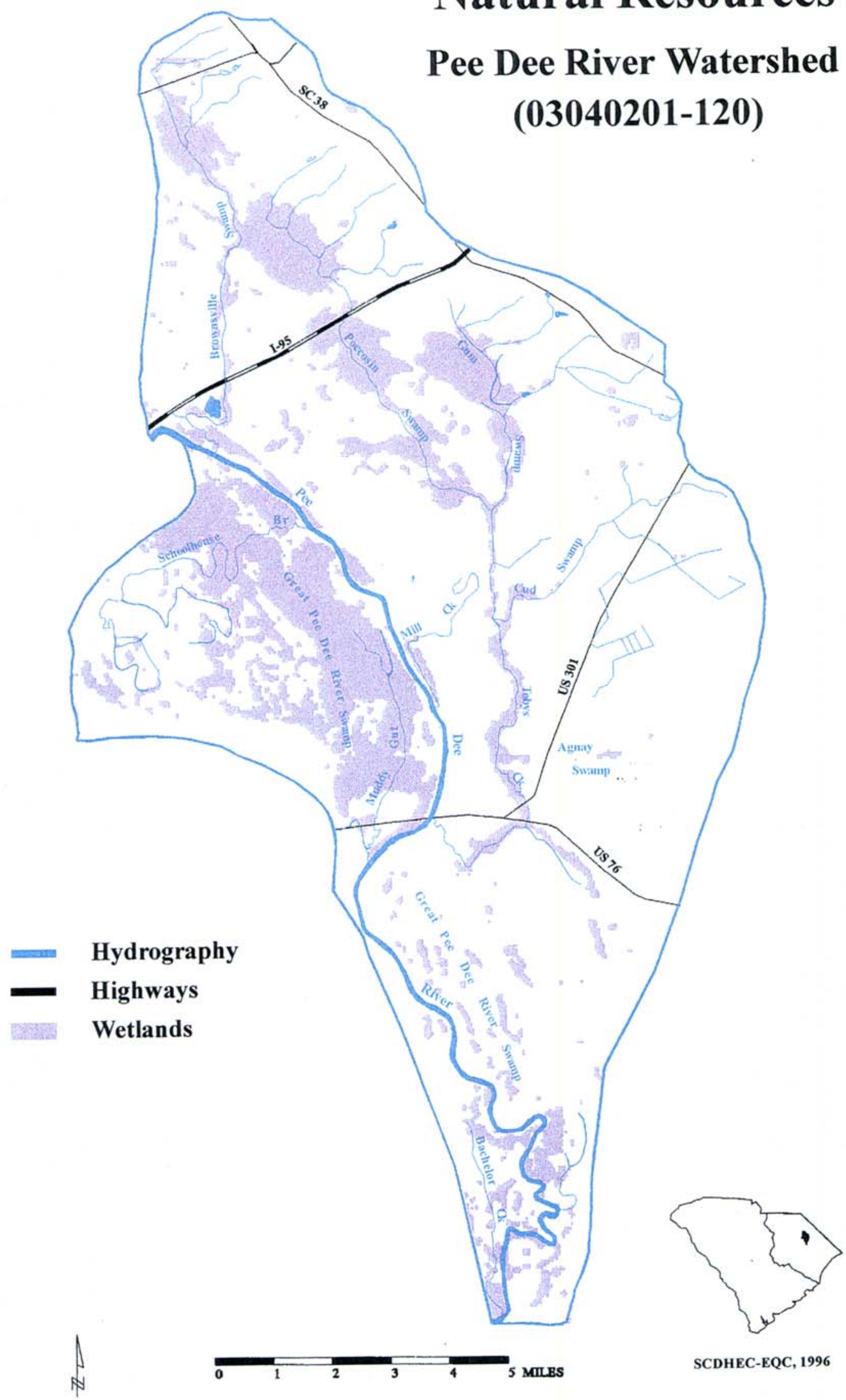
Monitoring Sites, Modeled Streams, and Permitted Areas

Black Creek Watershed (03040201-110)



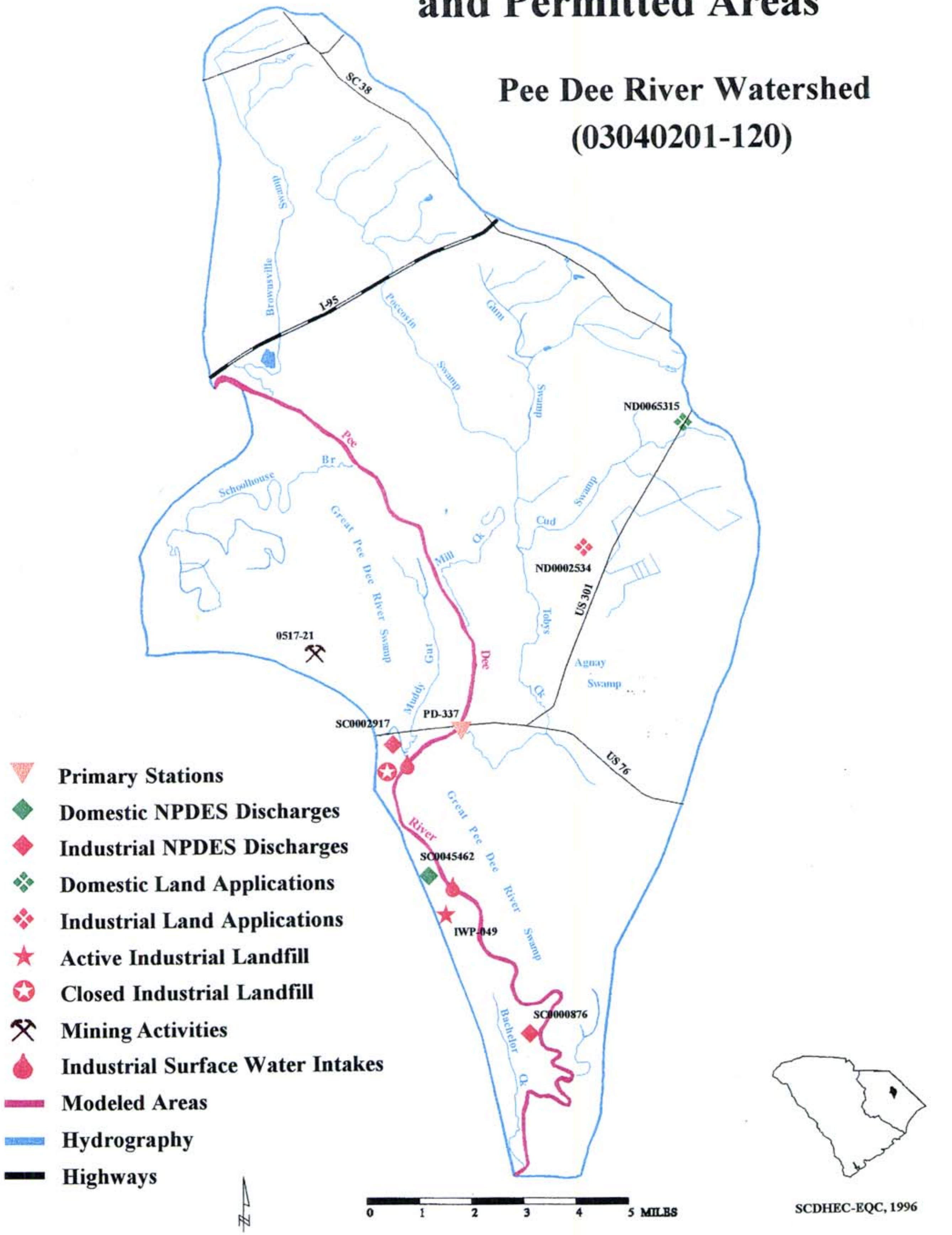
Natural Resources

Pee Dee River Watershed
(03040201-120)



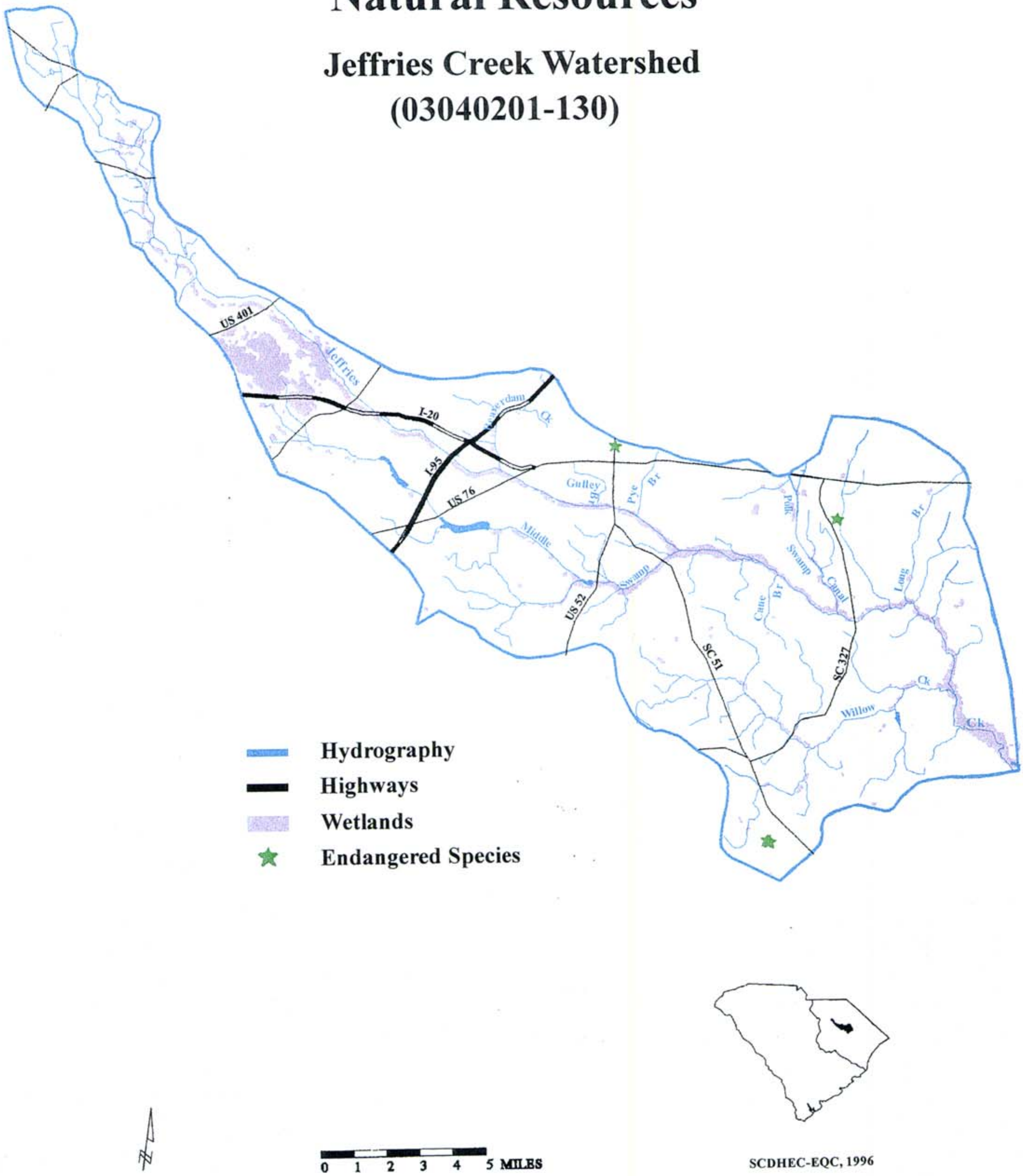
SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas



Natural Resources

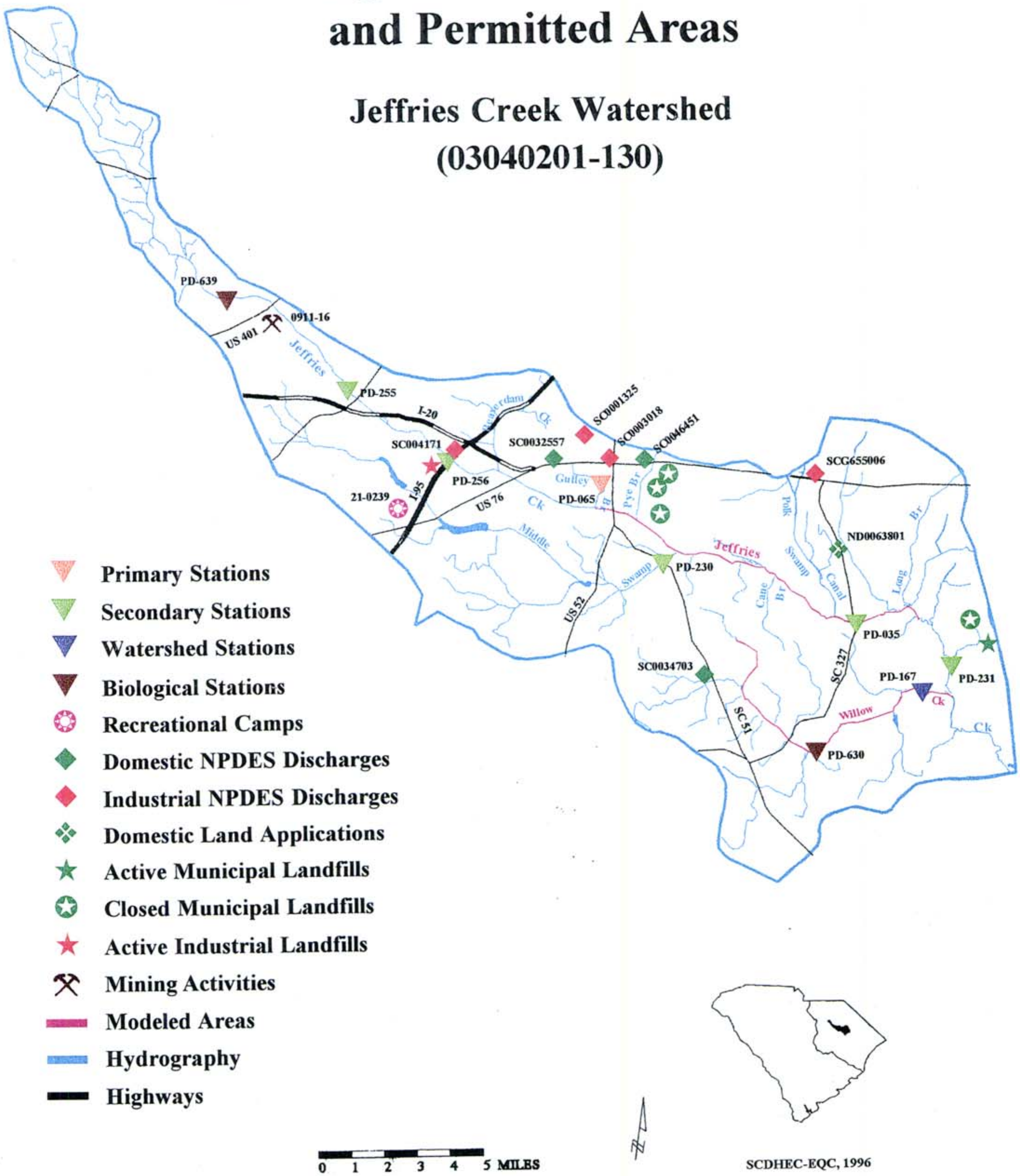
Jeffries Creek Watershed
(03040201-130)



SCDHEC-EQC, 1996

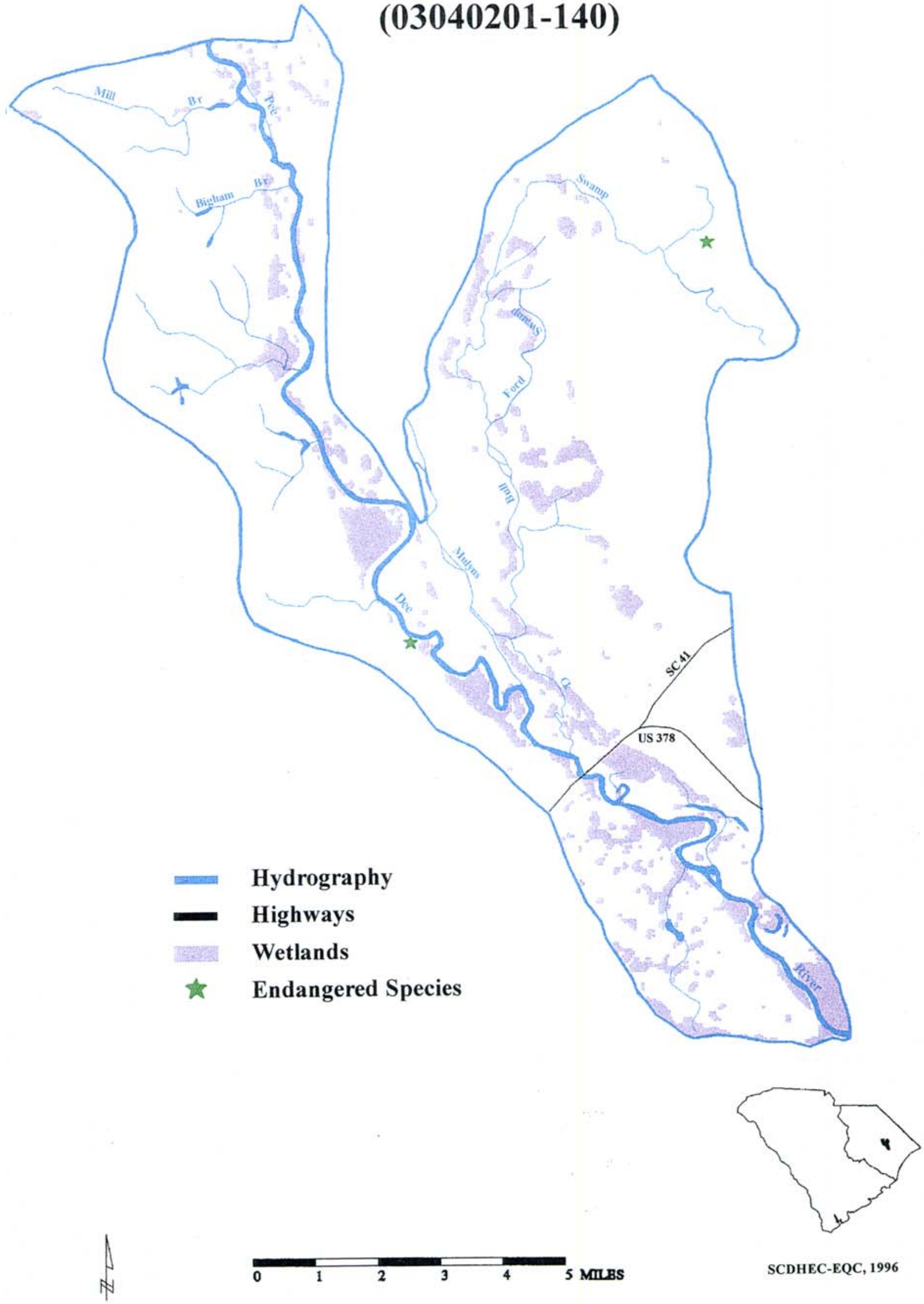
Monitoring Sites, Modeled Streams, and Permitted Areas

Jeffries Creek Watershed (03040201-130)



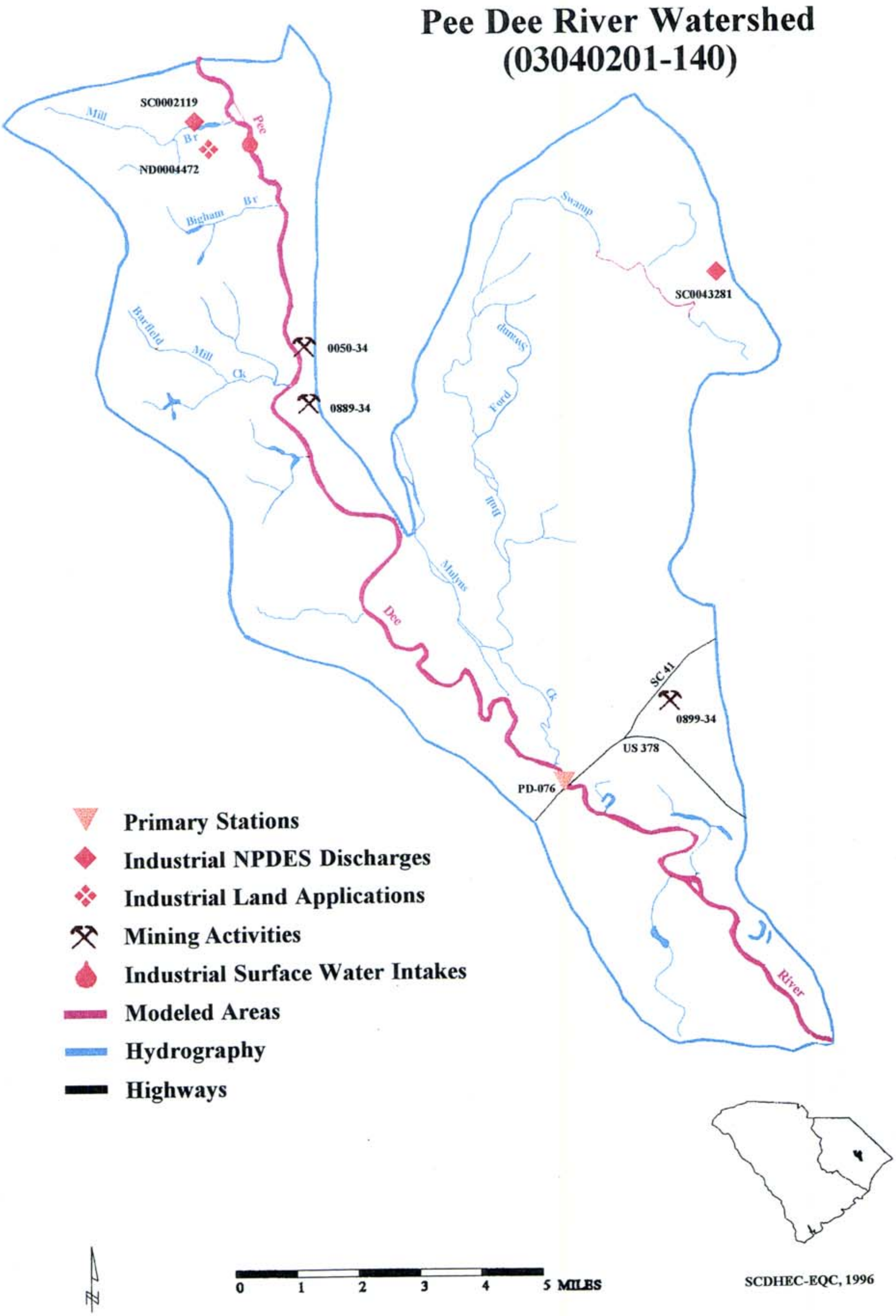
Natural Resources

Pee Dee River Watershed
(03040201-140)



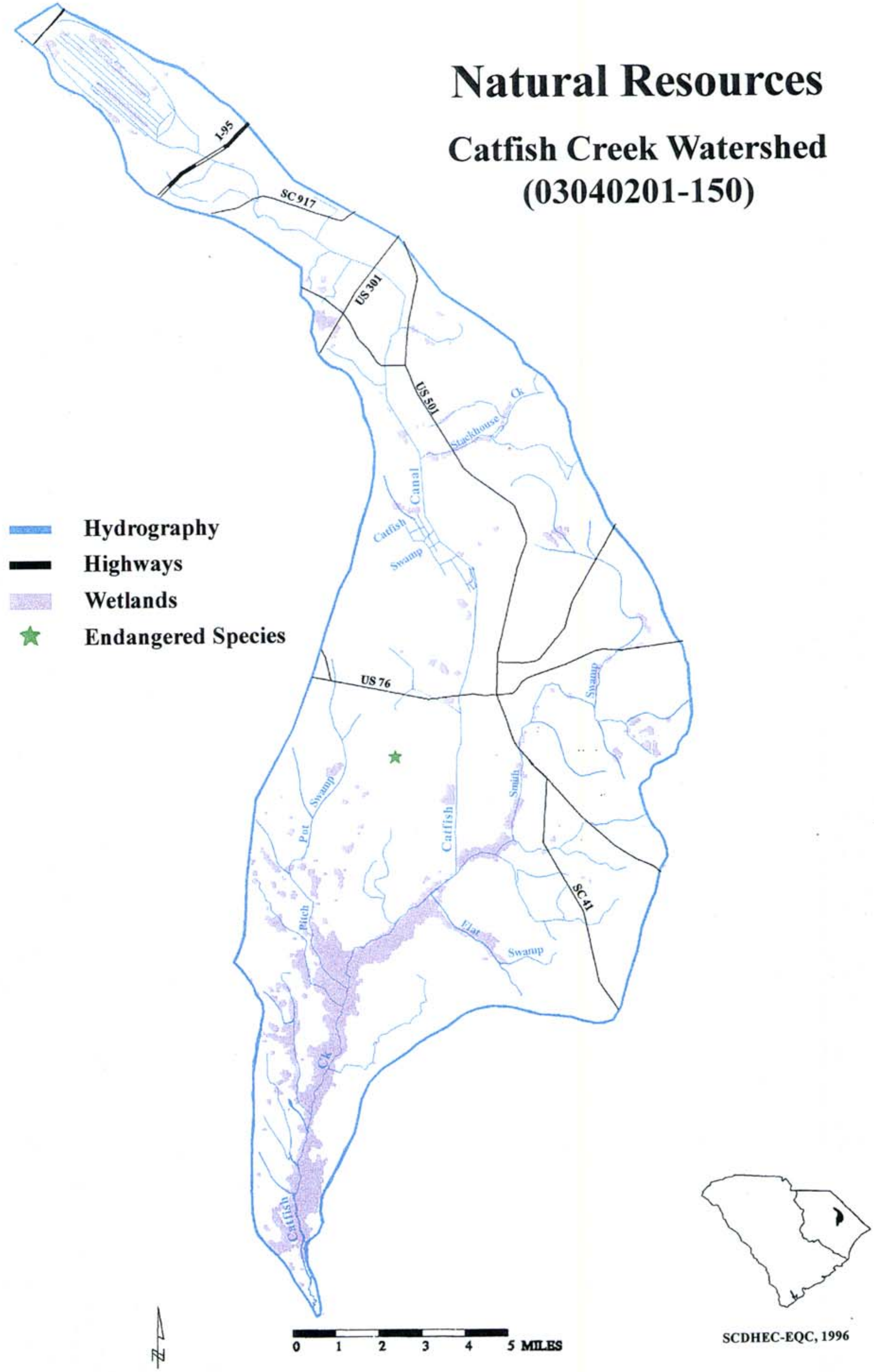
Monitoring Sites, Modeled Streams, and Permitted Areas

Pee Dee River Watershed (03040201-140)



Natural Resources

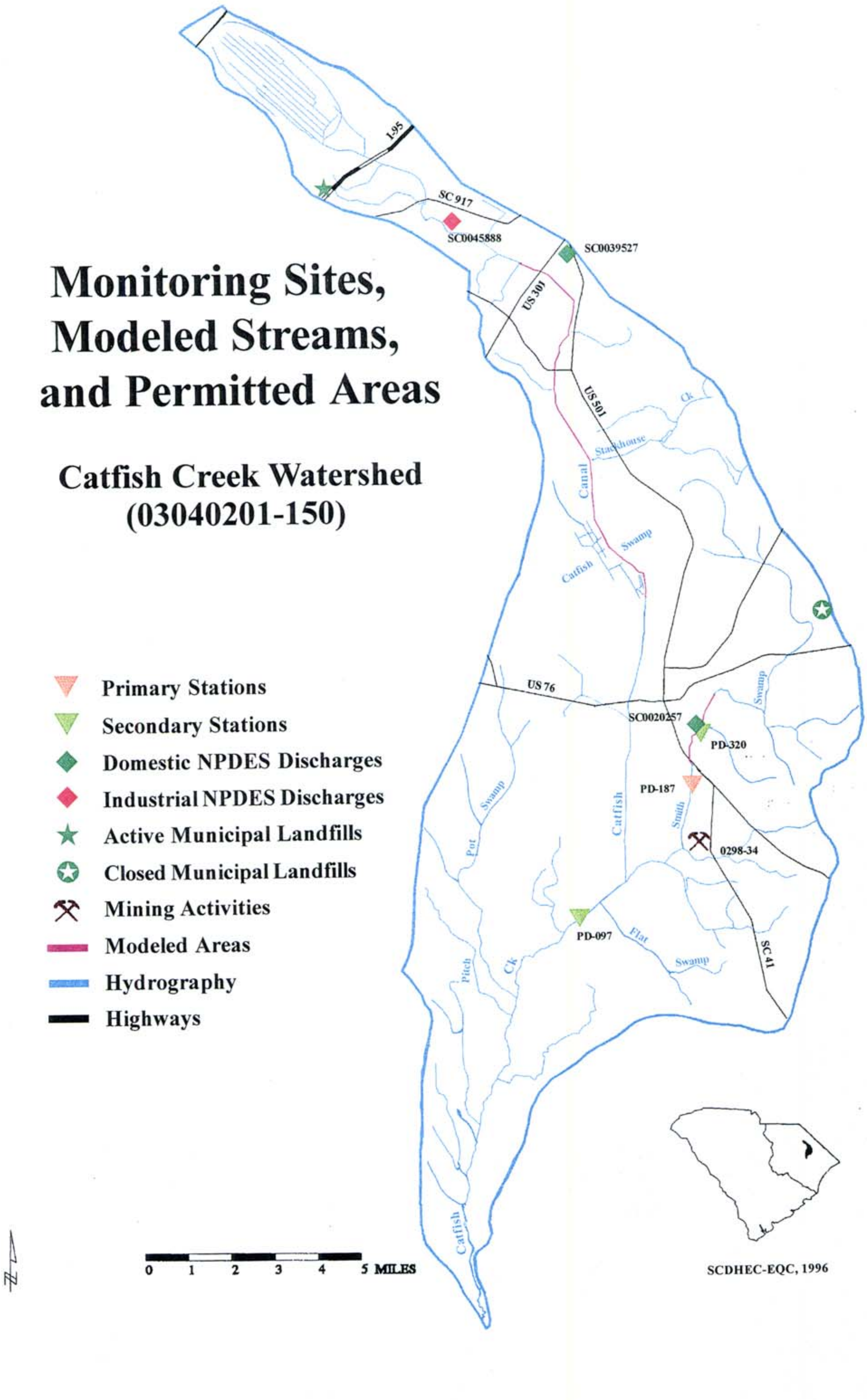
Catfish Creek Watershed
(03040201-150)



SCDHEC-EQC, 1996

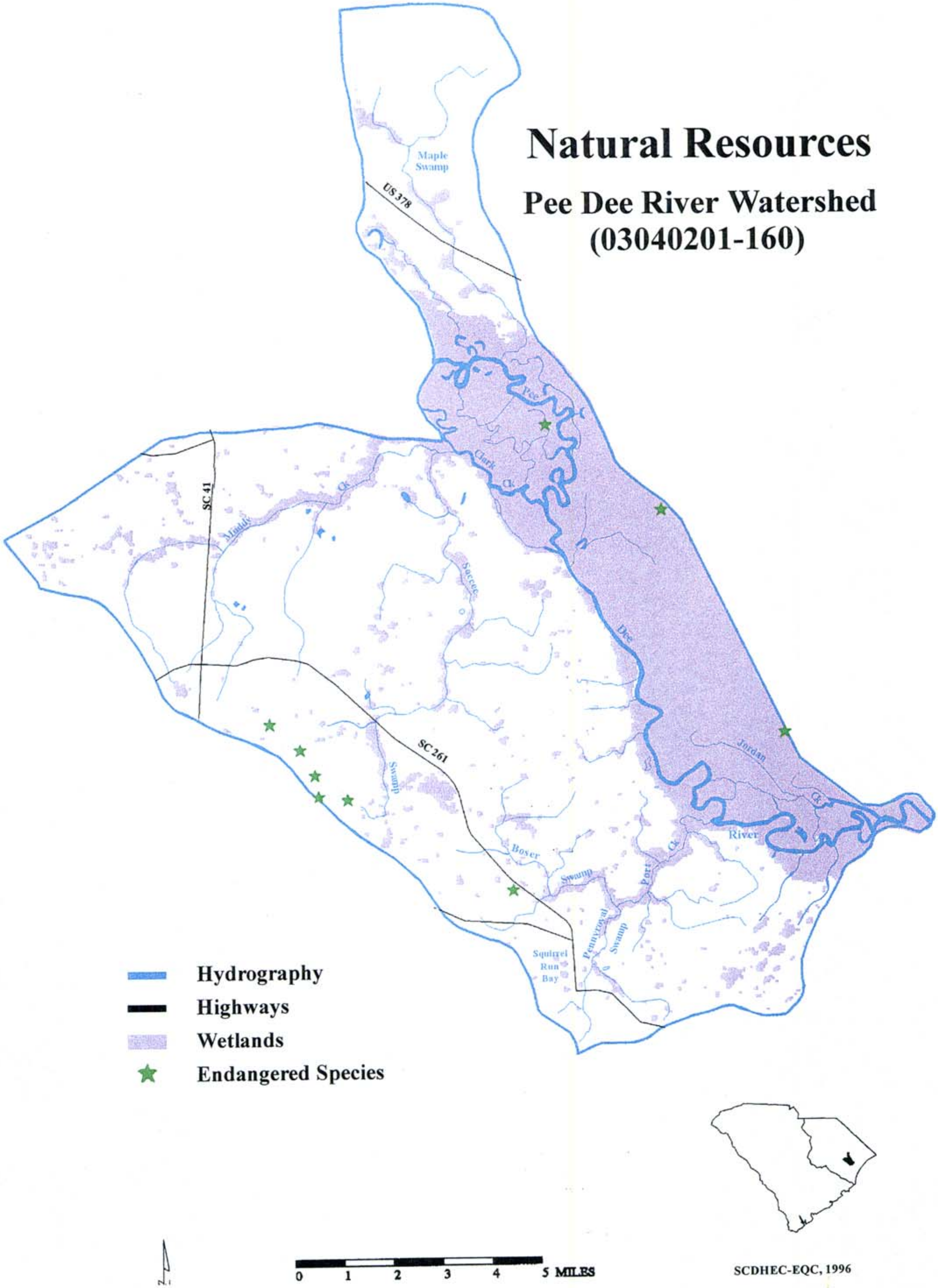
Monitoring Sites, Modeled Streams, and Permitted Areas

Catfish Creek Watershed (03040201-150)

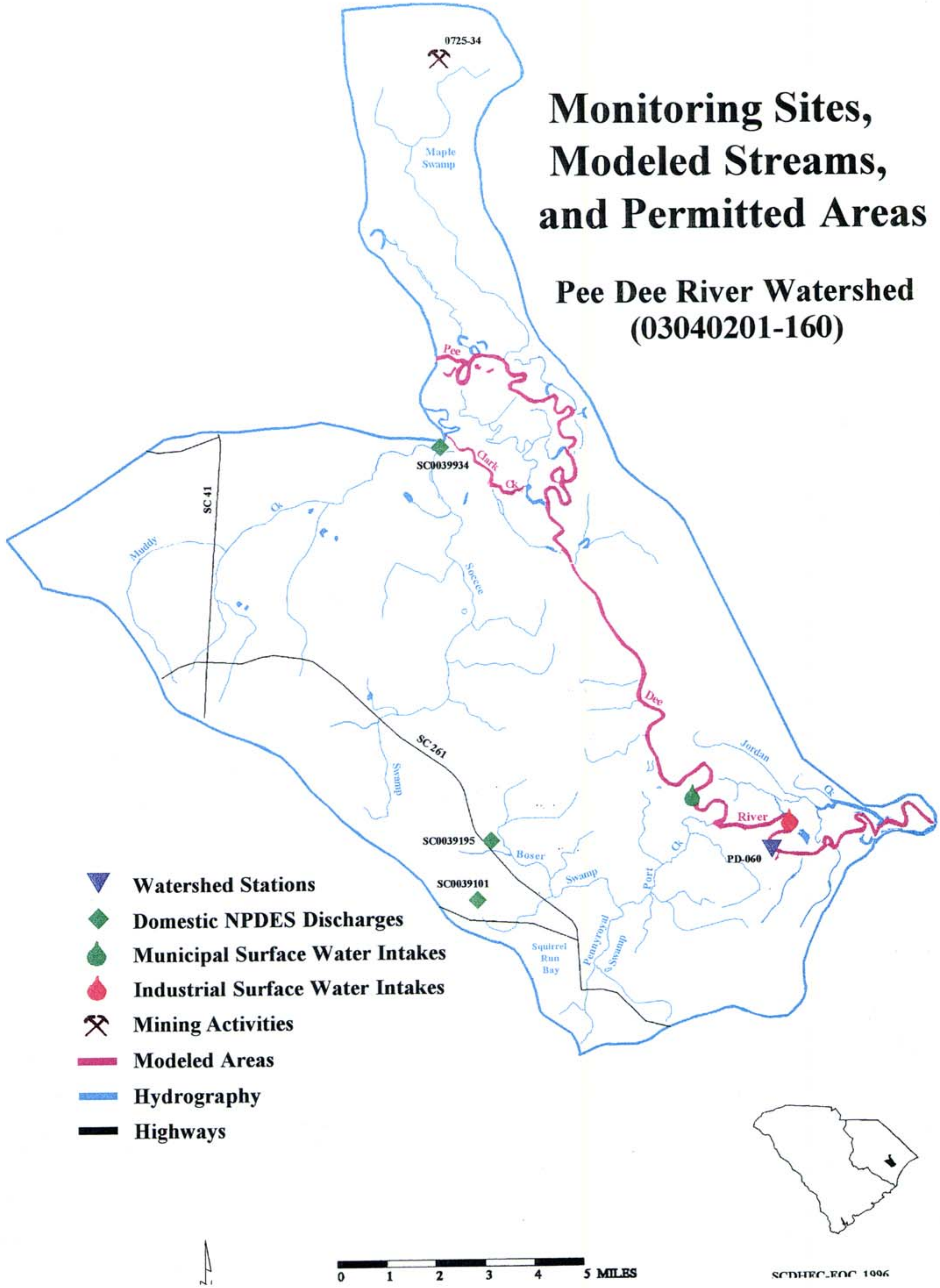


Natural Resources

Pee Dee River Watershed (03040201-160)



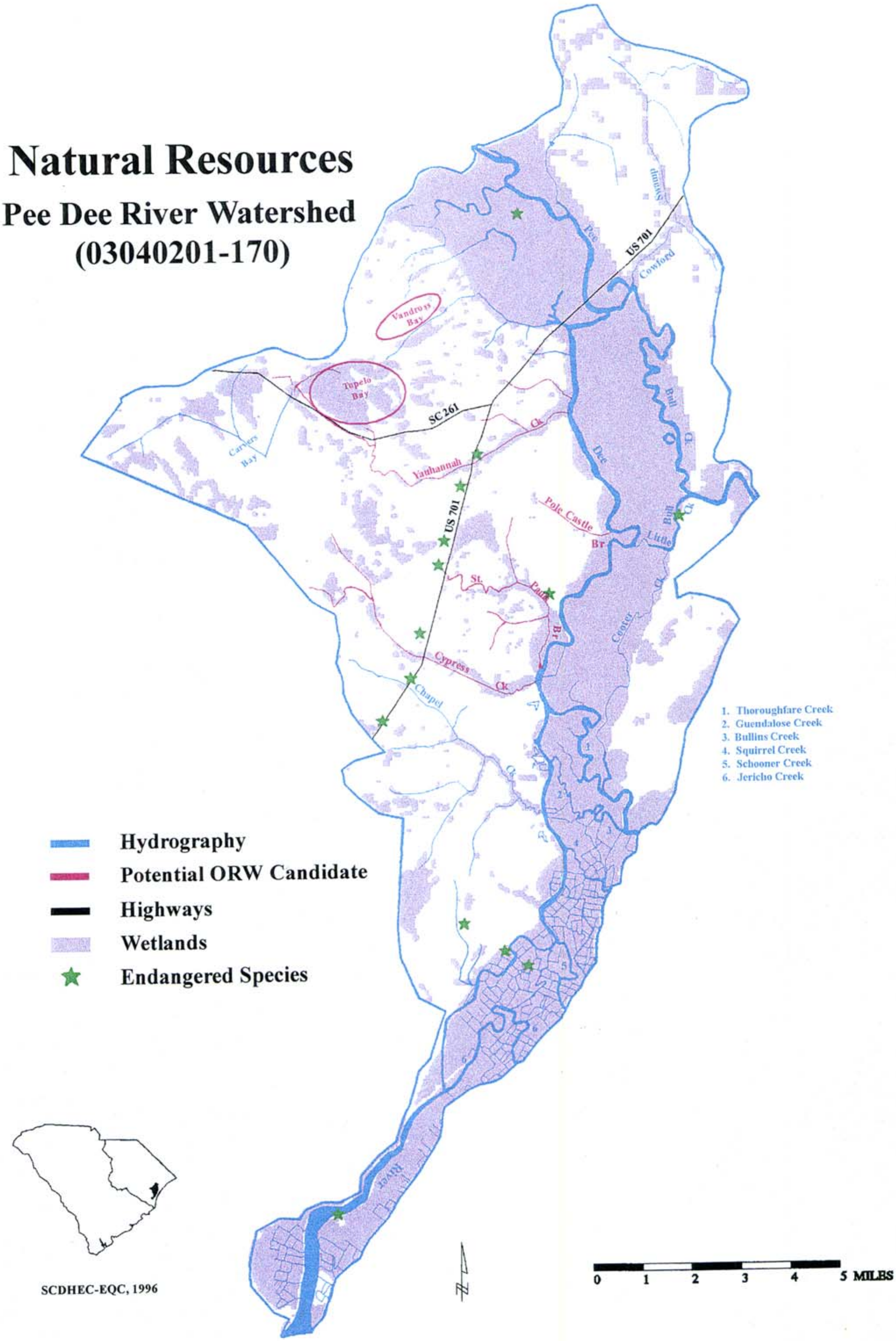
SCDHEC-EQC, 1996



Monitoring Sites, Modeled Streams, and Permitted Areas
Pee Dee River Watershed (03040201-160)
0725-34
Maple Swamp
Pee
Clark Ck
SC0039934
SC 41
Muddy Ck
Soccee
Dee
SC 261
Swamp
Jordan Ck
River
PD-060
SC0039195
Boser Swamp
SC0039101
Port Ck
Squirrel Run Bay
Pennyroyal Swamp
Watershed Stations
Domestic NPDES Discharges
Municipal Surface Water Intakes
Industrial Surface Water Intakes
Mining Activities
Modeled Areas
Hydrography
Highways
0 1 2 3 4 5 MILES
SCDHEC-EQC 1996

Natural Resources

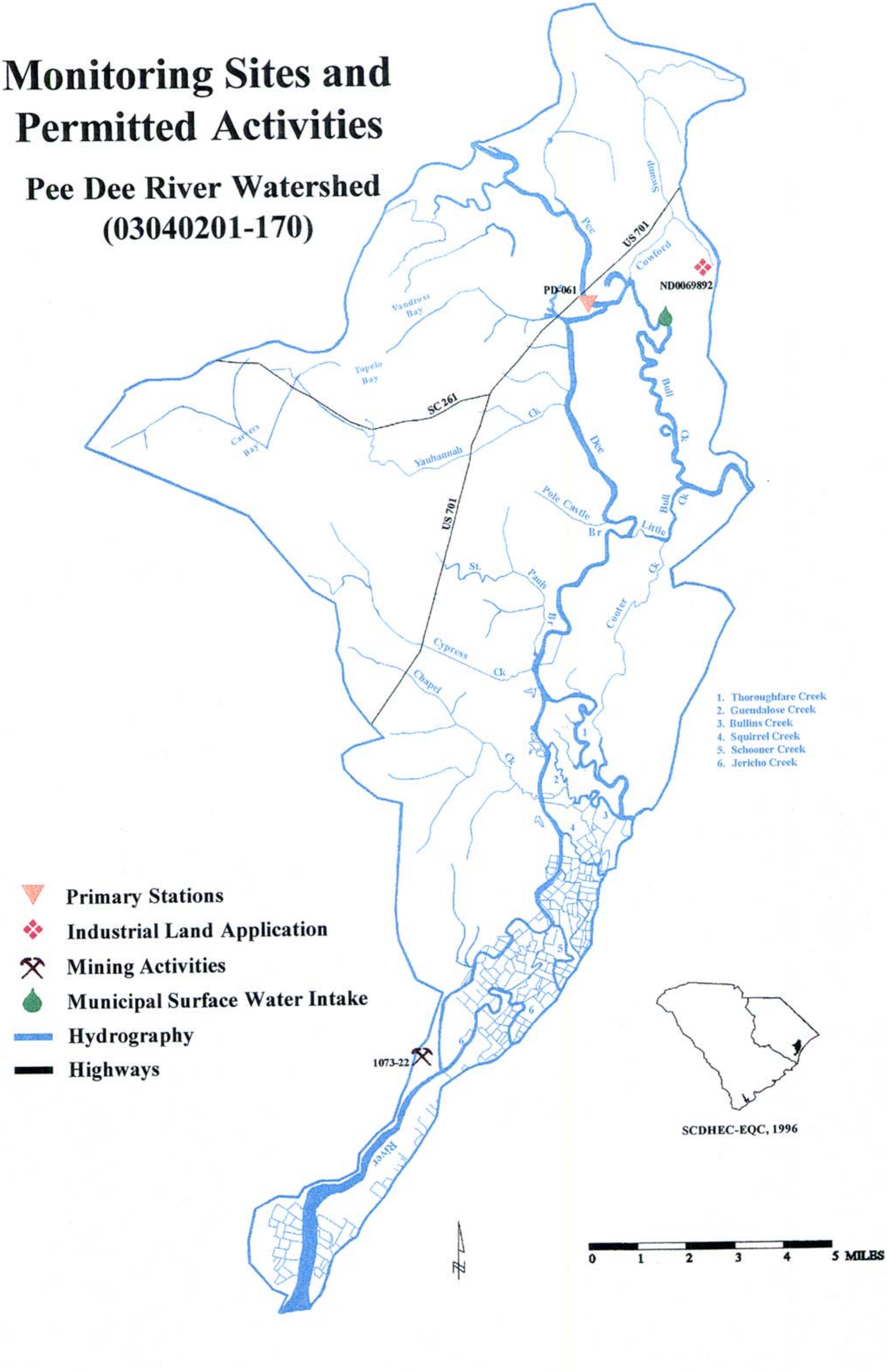
Pee Dee River Watershed (03040201-170)



SCDHEC-EQC, 1996

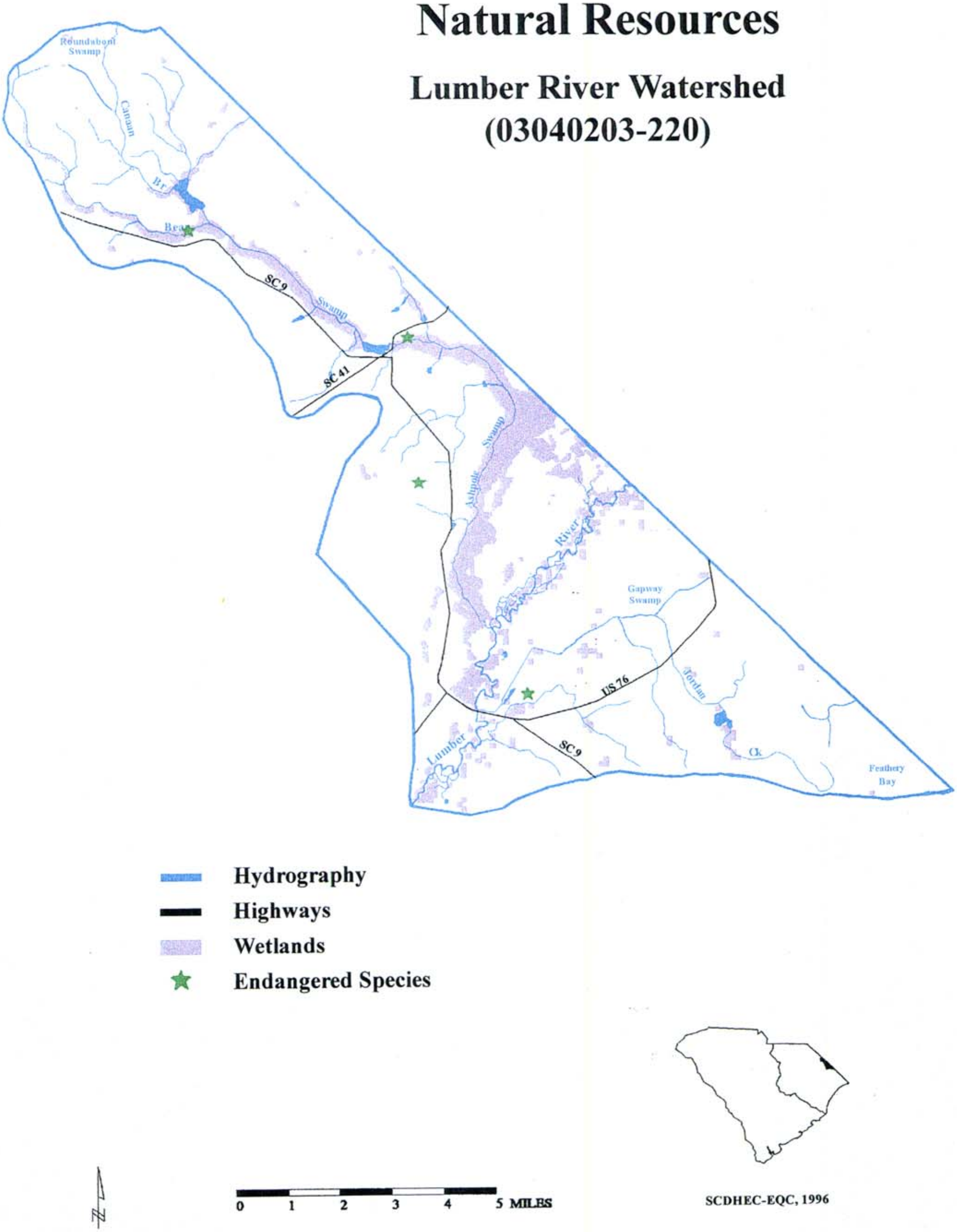
Monitoring Sites and Permitted Activities

Pee Dee River Watershed (03040201-170)



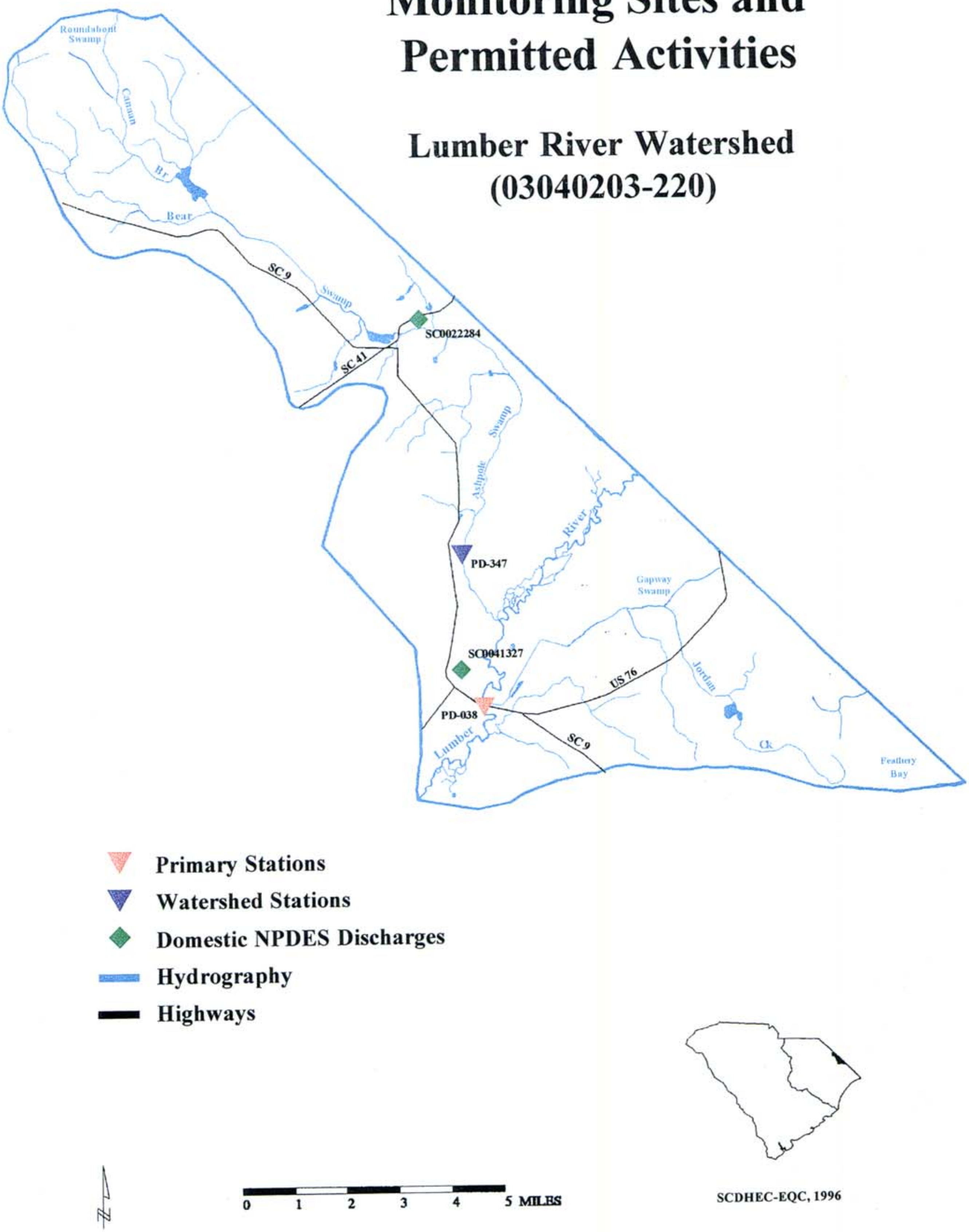
Natural Resources

Lumber River Watershed
(03040203-220)



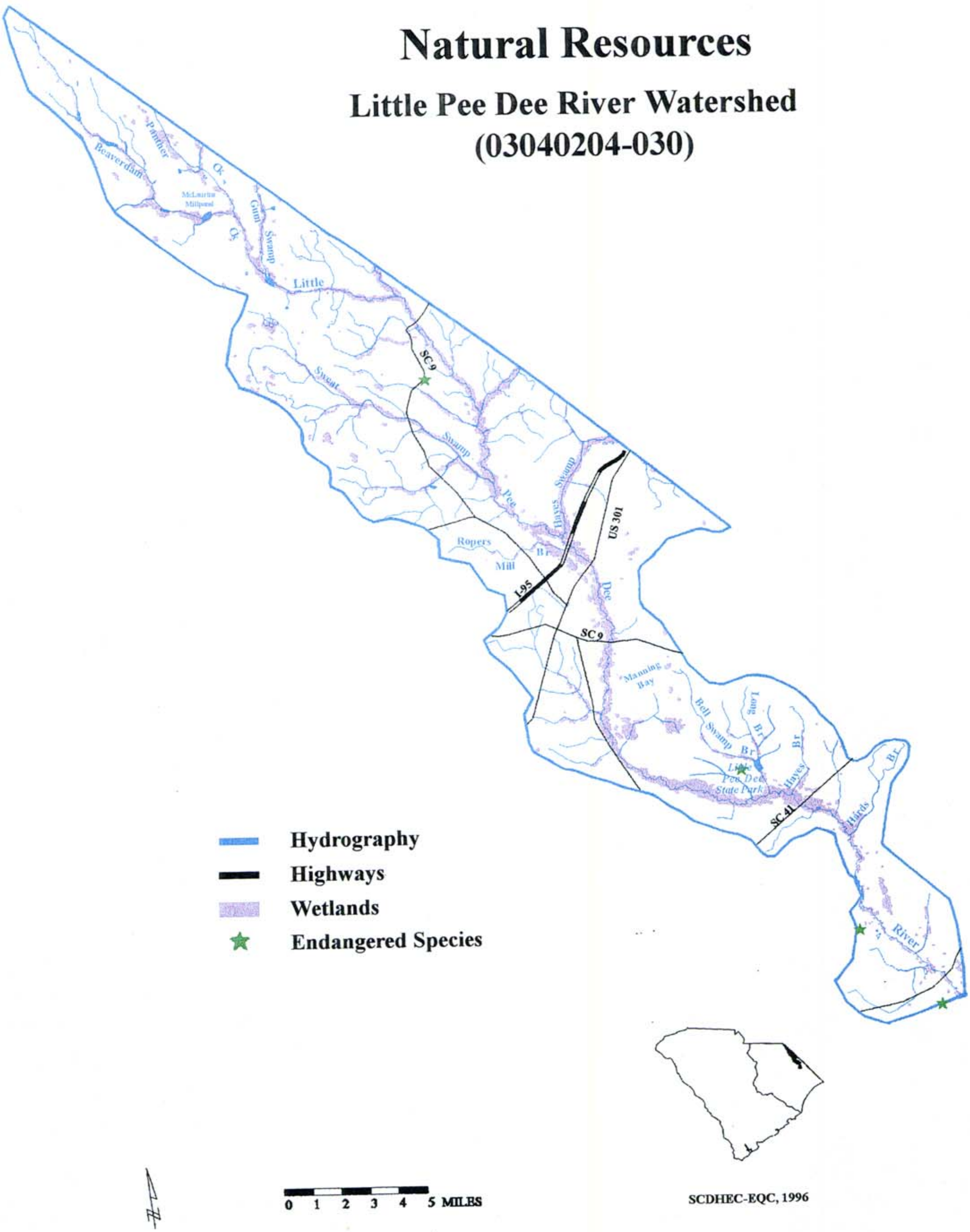
Monitoring Sites and Permitted Activities

Lumber River Watershed (03040203-220)



Natural Resources

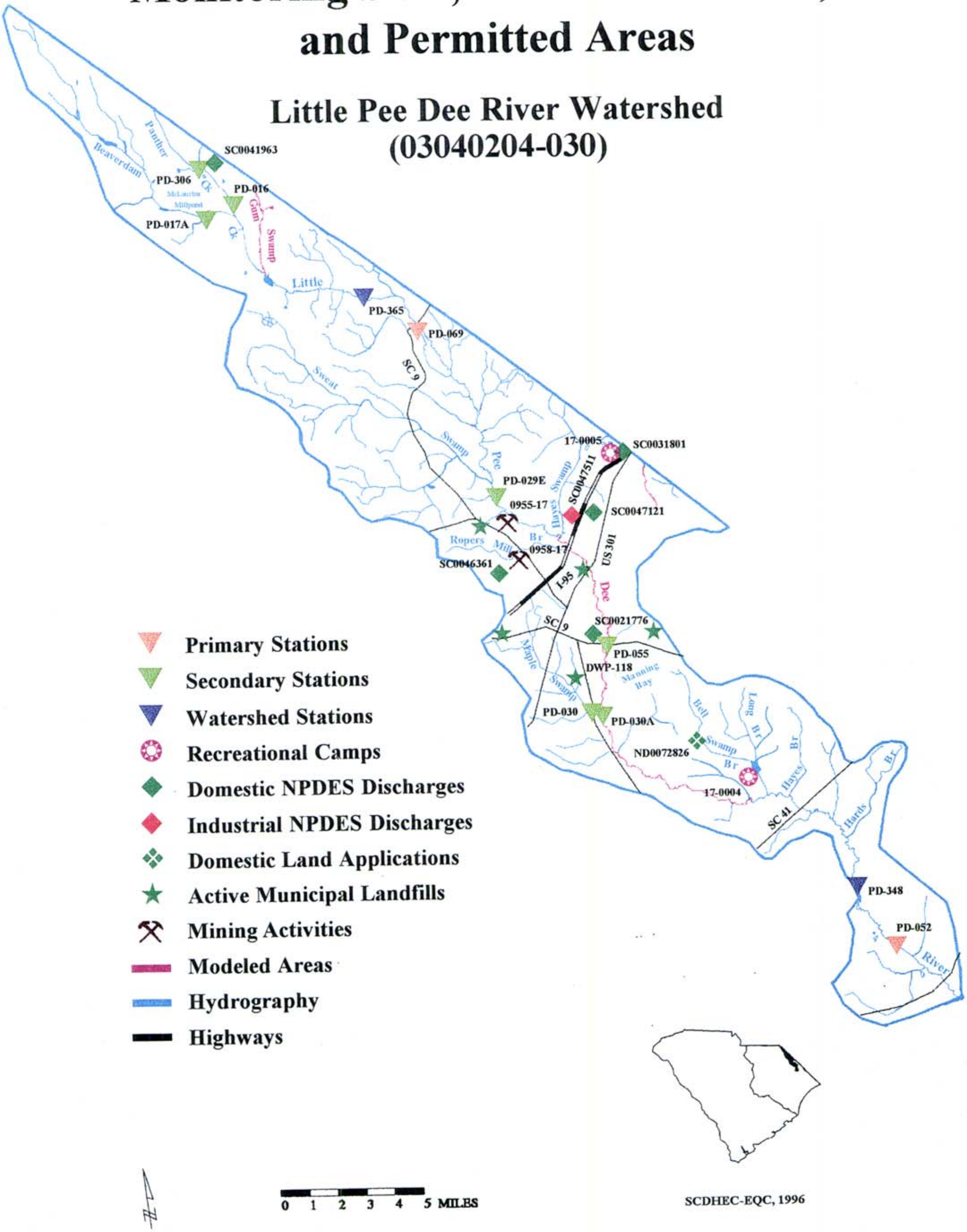
Little Pee Dee River Watershed (03040204-030)



SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas

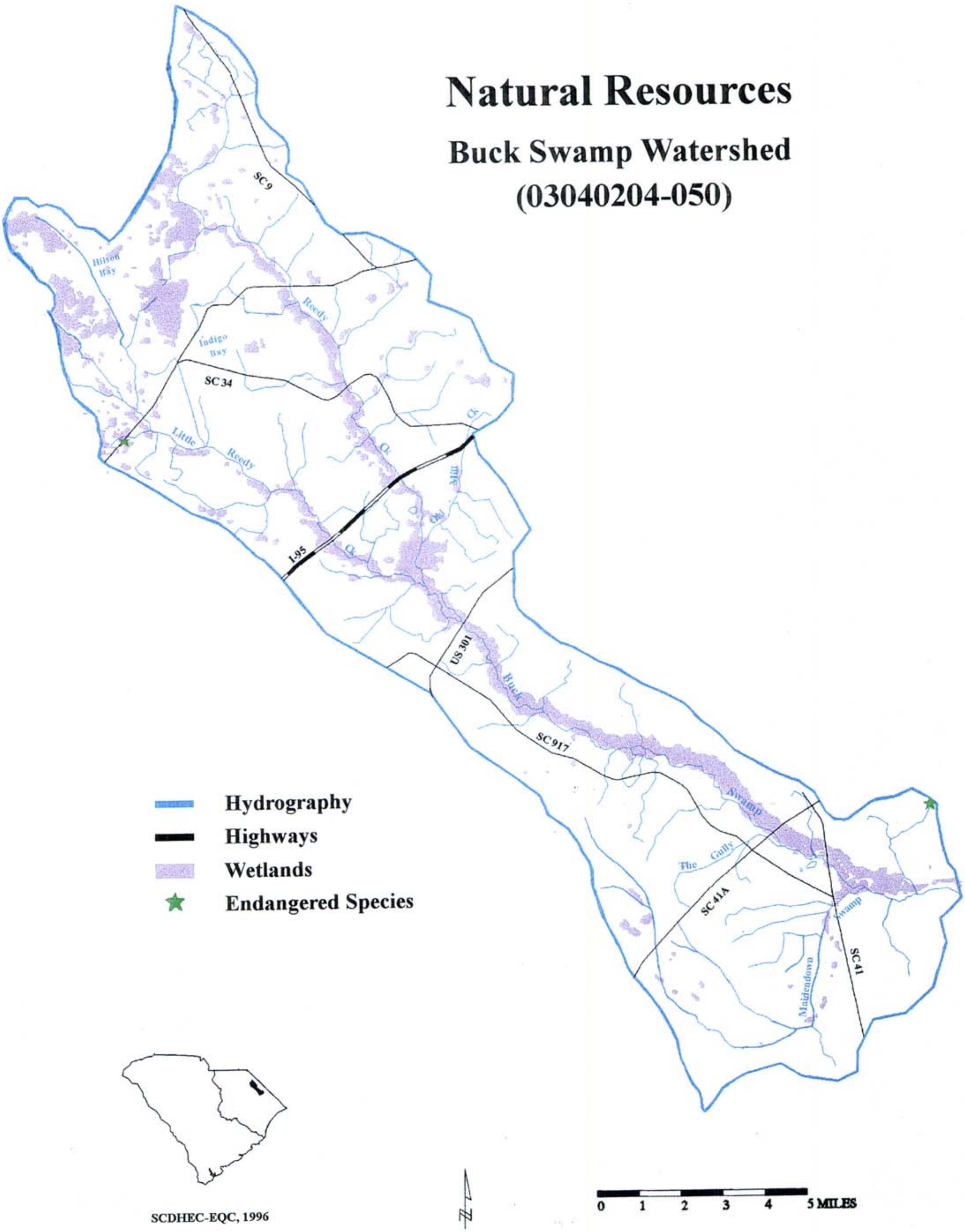
Little Pee Dee River Watershed (03040204-030)



SCDHEC-EQC, 1996

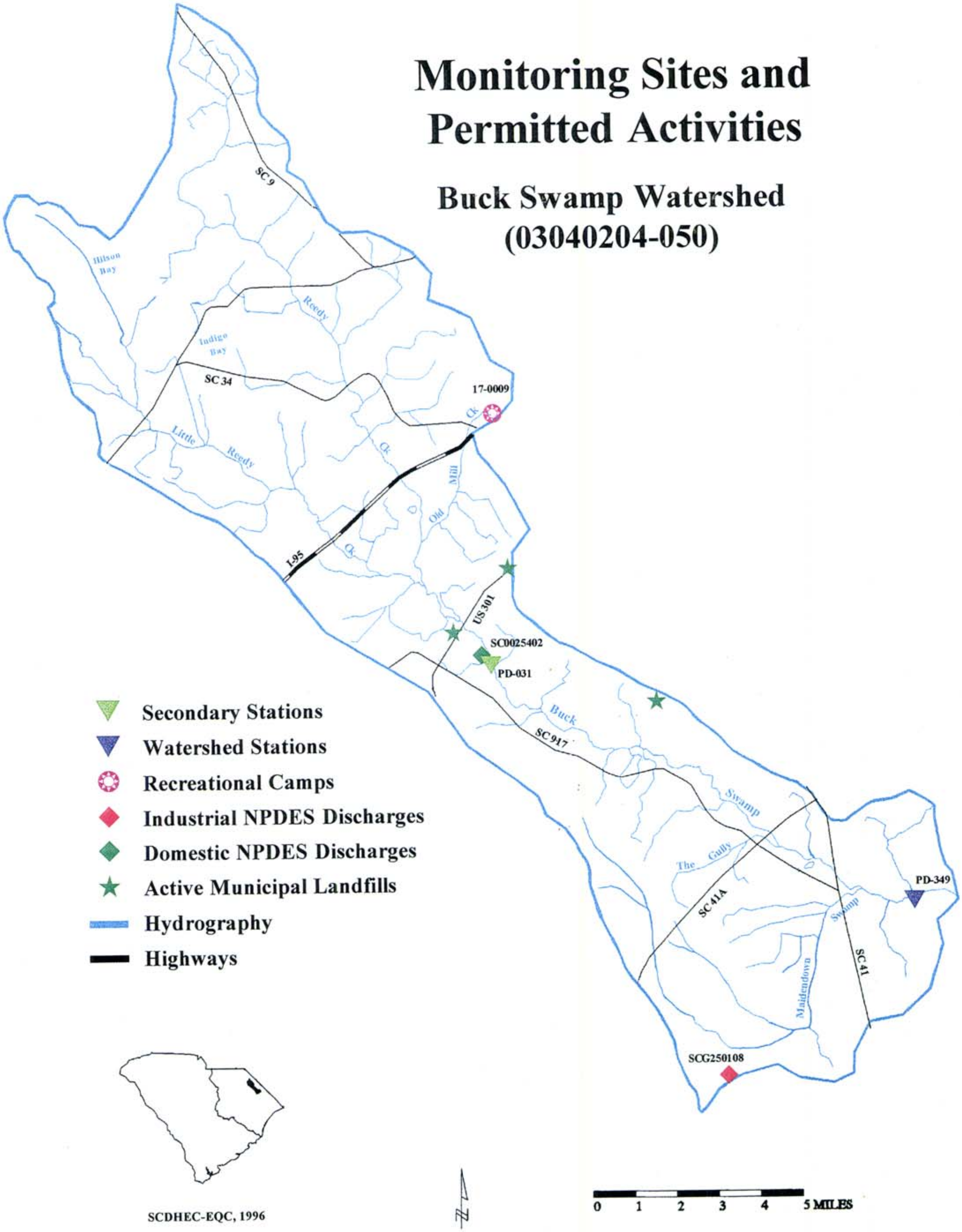
Natural Resources

Buck Swamp Watershed (03040204-050)

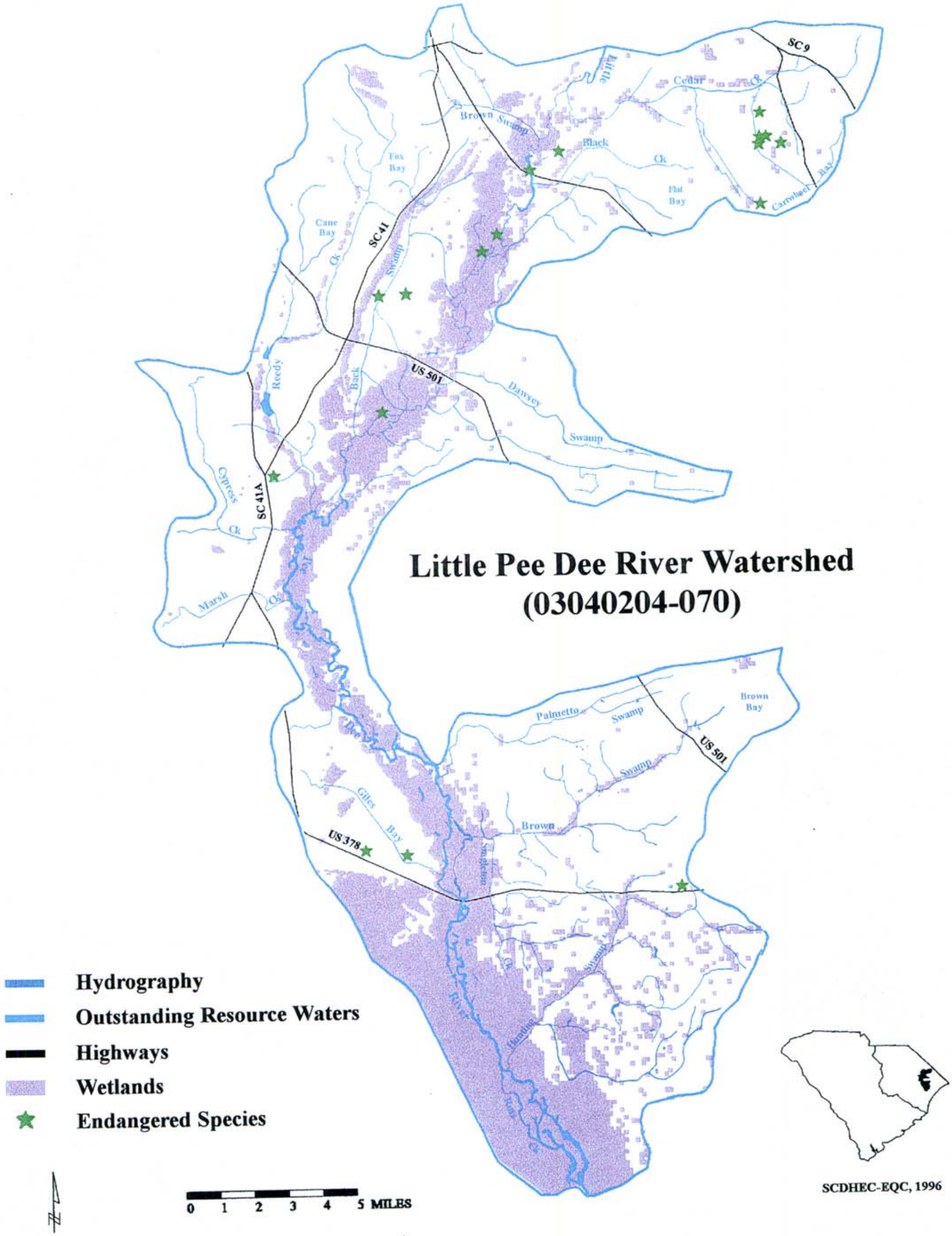


Monitoring Sites and Permitted Activities

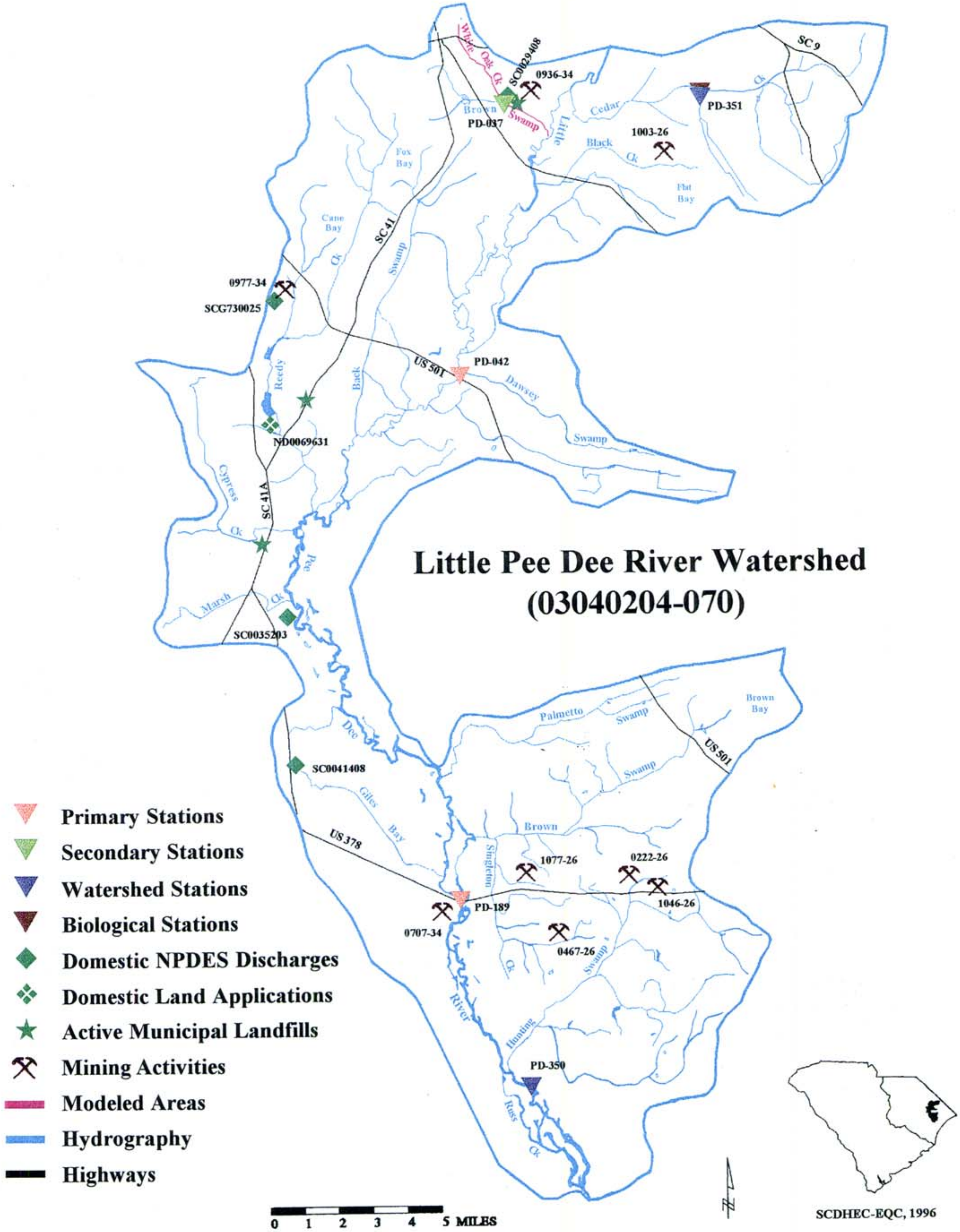
Buck Swamp Watershed (03040204-050)



Natural Resources

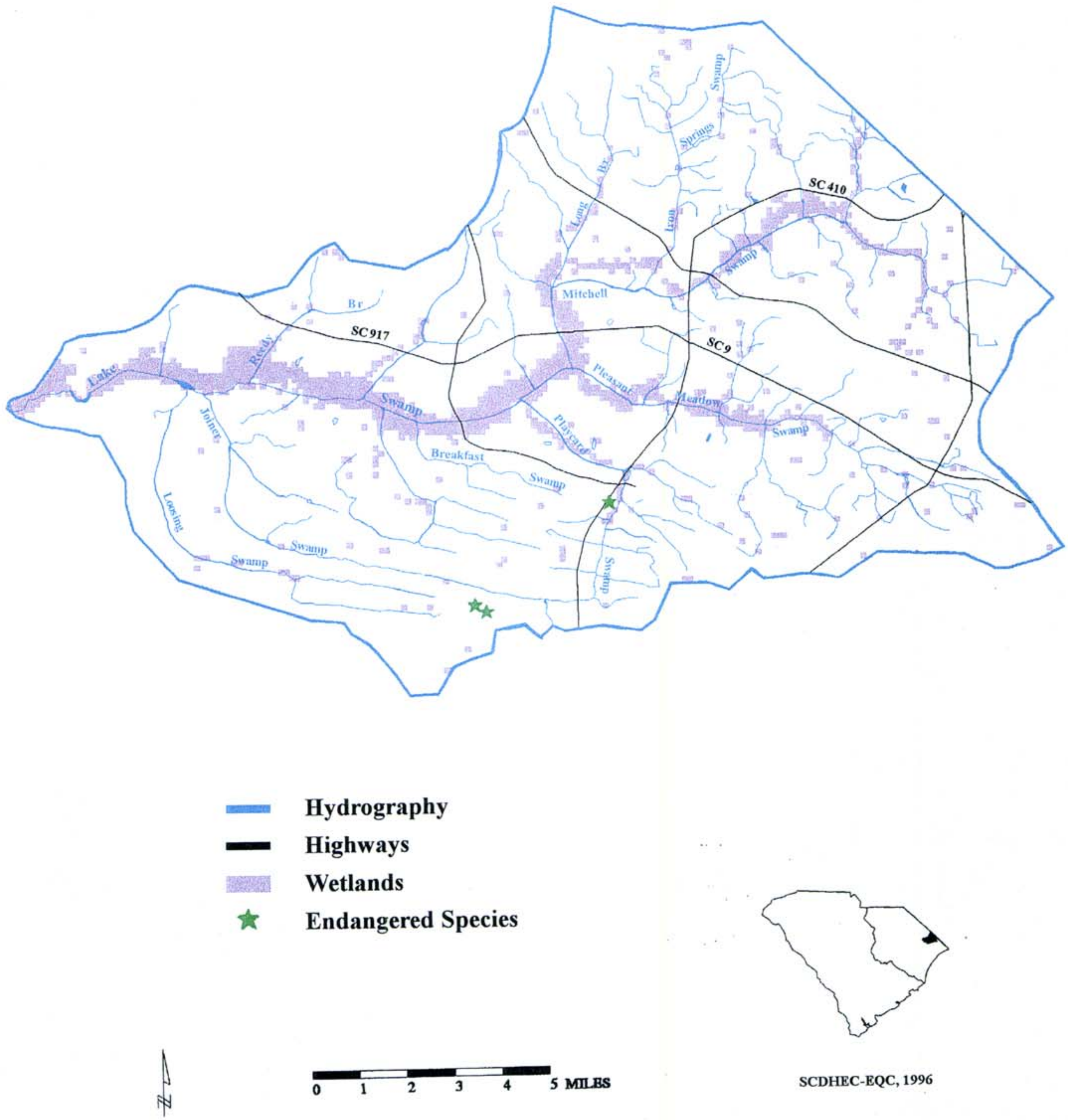


Monitoring Sites, Modeled Streams, and Permitted Areas



Natural Resources

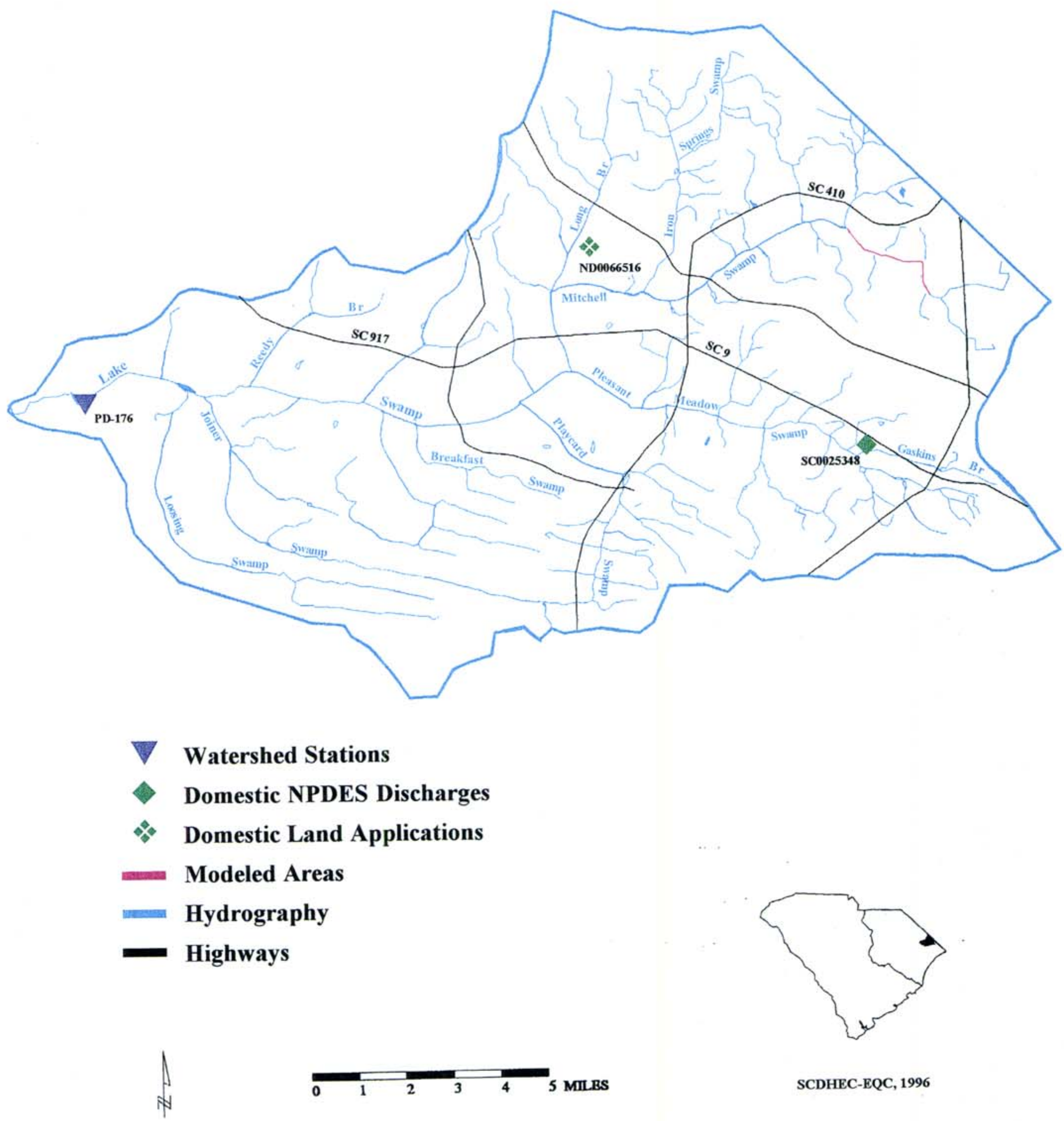
Lake Swamp Watershed
(03040204-080)



SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas

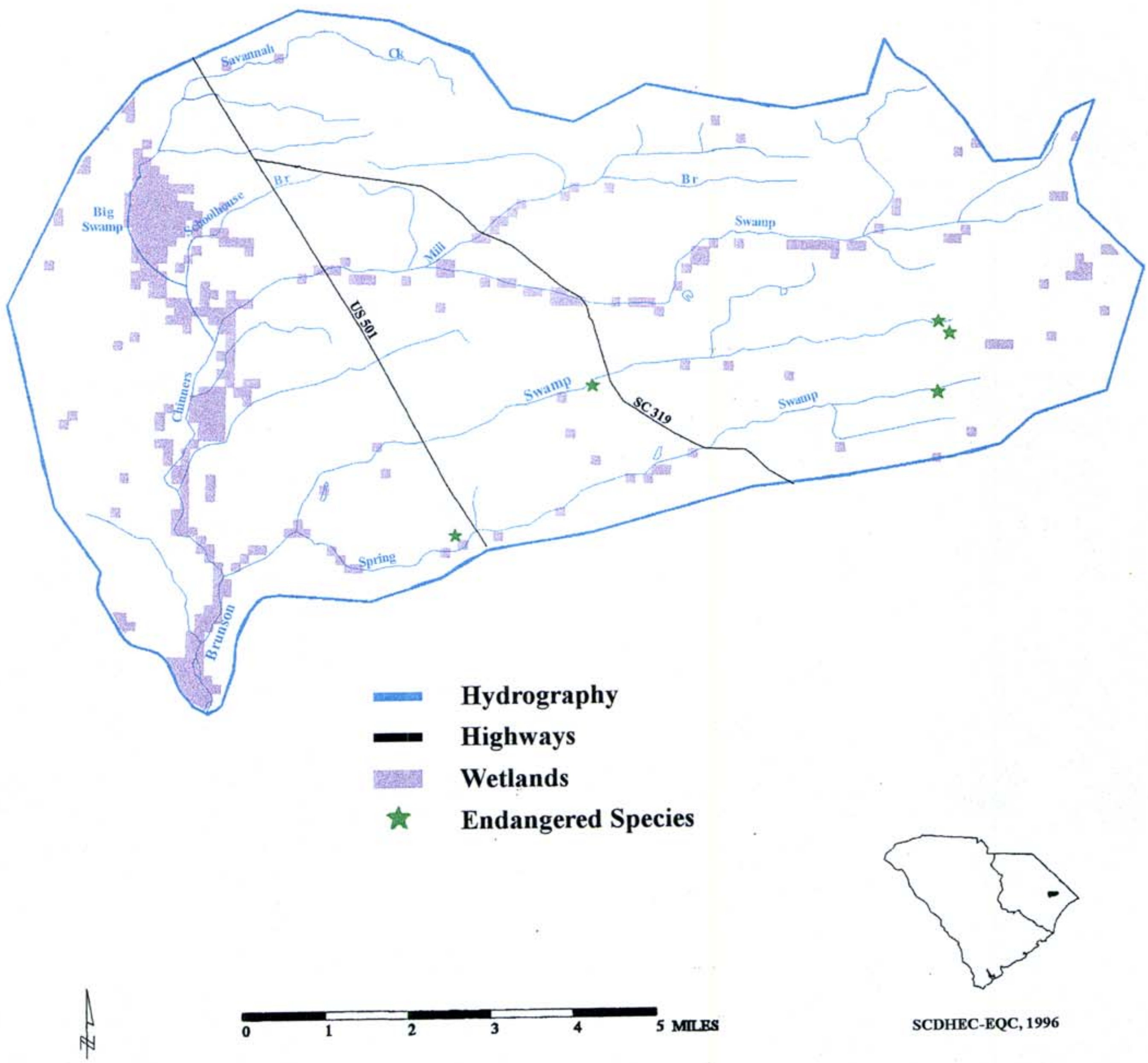
Lake Swamp Watershed
(03040204-080)



SCDHEC-EQC, 1996

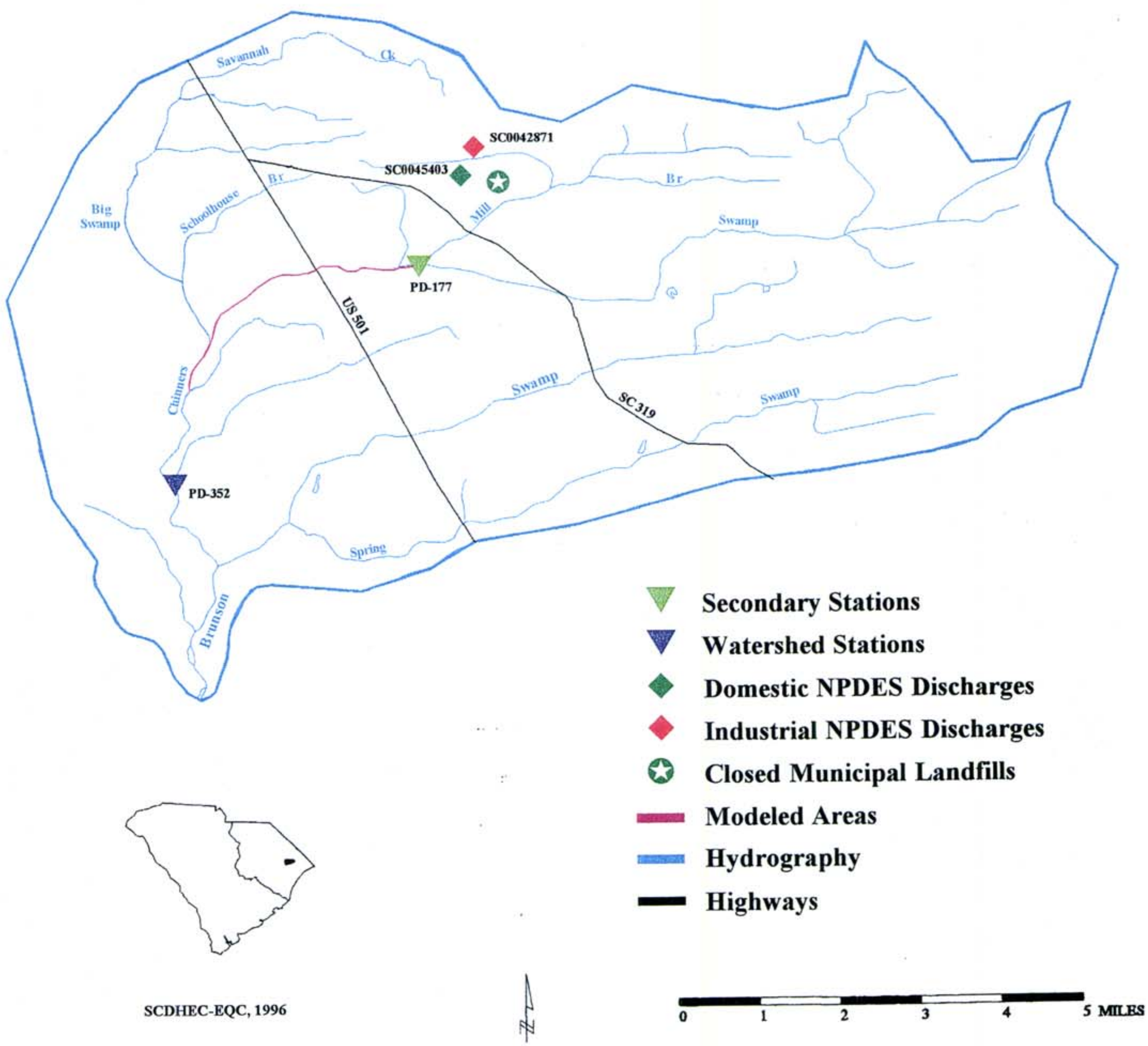
Natural Resources

Brunson Swamp Watershed
(03040204-090)



Monitoring Sites, Modeled Streams, and Permitted Areas

Brunson Swamp Watershed
(03040204-090)



SCDHEC-EQC, 1996

APPENDIX C. WMU-0403

Monitoring Station Descriptions

STATION TYPES (P=PRIMARY, S=SECONDARY, W=WATERSHED, BIO=BIOLOGICAL, I=INACTIVE)
CLASS (FW=FRESHWATER, SA,SB=SALTWATER)

03040206-120

MD-158	S	FW	CRAB TREE SWAMP AT LONG STREET BELOW OUTFALL OF CONWAY #1 POND
MD-107	S	FW	KINGSTON LAKE NEAR PUMP STATION ON LAKESIDE DRIVE, CONWAY

03040206-130

PD-362	W	FW	BUCK CREEK AT SC 905
MD-124	P	FW*	WACCAMAW RIVER AT SC 9 7.0 MILES W OF CHERRY GROVE
PD-363	W	FW	SIMPSON CREEK AT SC 905

03040206-140

MD-110	S	FW*	WACCAMAW RIVER AT US 501 BY-PASS AROUND CONWAY
PD-638	BIO	FW	BEAR SWAMP AT S-26-110
MD-111	S	FW*	WACCAMAW RIVER AT COX'S FERRY ON COUNTY ROAD 110
MD-136	S	FW*	WACCAMAW RIVER .25 MILES UPSTREAM OF JUNCTION WITH AIWW
MD-146	P	FW*	WACCAMAW RIVER & AIWW 1 MILE BELOW JCT, AT BUCKSPORT LANDING
MD-137	S	FW*	WACCAMAW RIVER NEAR MOUTH OF BULL CREEK AT CHANNEL MARKER 50
MD-085	S	FW	AIWW AT POINT 3 MILES N OF BRIDGE ON US 501
MD-087	P	FW	AIWW JUST N OF BRIDGE ON US 501
MD-088	S	FW	AIWW 1 MILE S OF BRIDGE ON US 501
MD-089	S	FW	AIWW 2 MILES S OF BRIDGE ON US 501
MD-127	P	FW	AIWW AT SC 544 7.5 MILES SW OF MYRTLE BEACH

03040206-150

MD-138	P	FW*	WACCAMAW RIVER AT CHANNEL MARKER 57

03040207-030

MD-162	P	SA	LITTLE RIVER AT S END OF ISLAND DUE E OF TOWN
MD-125	S	FW/SA	AIWW (LITTLE RIVER) ON SC 9 (US 17)
MD-091	S	FW	AIWW 4 MILES N OF BRIDGE ON US 501

03040207-040

MD-075	P	SB/FW*	SAMPIT R. BETWEEN MOUTHS OF PORTS CREEK & PENNYROYAL CREEK
MD-076N	S	FW	TURKEY CREEK S-22-42 SW OF GEORGETOWN
MD-149	P	FW	WHITES CREEK 100 YDS UPSTREAM OF JUNCTION WITH SAMPIT RIVER
MD-077	P	SB/FW*	SAMPIT RIVER AT US 17
MD-073	P	SB/FW*	SAMPIT RIVER OPPOSITE AMERICAN CYANAMID CHEMICAL CO
MD-074	S	SB/FW*	SAMPIT RIVER AT CHANNEL MARKER #30

03040207-050

MD-080	P	SB	WINYAH BAY AT JUNCTION OF PEE DEE & WACCAMAW RIVERS AT MARKER 92

Water Quality Trends and Status by Station

Spreadsheet Legend

STATION INFORMATION:

Station Number	Station ID
Type	SCDHEC station type code
	P = Primary station, sampled monthly all year round
	S = Secondary station, sampled monthly May - October
	P* = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study
	PD = Special station added for the Pee Dee basin study
	I* = Currently inactive station which had some data within the period reviewed
Waterbody Name	Stream or Lake Name
Class	Stream classification at the point where monitoring station is located

PARAMETER ABBREVIATIONS:

DO	Dissolved Oxygen	NH3	Ammonia
BOD	Five-Day Biochemical Oxygen Demand	CD	Cadmium
pH	pH	CR	Chromium
TP	Total Phosphorus	CU	Copper
TN	Total Nitrogen	PB	Lead
TURB	Turbidity	HG	Mercury
TSS	Total Suspended Solids	NI	Nickel
BACT	Fecal Coliform Bacteria	ZN	Zinc

STATISTICAL ABBREVIATIONS:

N	For standards compliance, No. of surface samples collected betw. January 1990 and December 1994 For trends, No. of surface samples collected between January 1980 and December 1994
EXC.	Number of samples contravening the appropriate standard
%	Percentage of samples contravening the appropriate standard
MEAN EXC.	Mean of samples which contravened the applied standard
MED	For heavy metals with a human health criterion, this is the median of all surface samples between January 1990 and December 1994. DL indicates that the median was the detection limit.
MAG	Magnitude of any statistically significant trend, average change in concentration per year

KEY TO TRENDS:

D	Statistically significant decreasing trend in parameter concentration
I	Statistically significant increasing trend in parameter concentration
*	No statistically significant trend
Blank	Insufficient data to test for long term trends

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0403

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	DO N	DO EXC.	DO %	MEAN EXC.	TRENDS DO	N	MAG	BOD	N	MAG	pH N	pH EXC.	pH %	MEAN EXC.	TRENDS PH	N	MAG
03040206120																				
MD-158	S	CRAB TREE SWAMP	FW	24	20	83	3.692	*	62		D	69	-0.2	24	0	0		*	71	
MD-107	P*	KINGSTON LAKE	FW	36	26	72	4.217	*	74		D	83	-0.1	36	3	8	5.9	*	83	
03040206130																				
PD-362	PD	BUCK CK	FW	12	0	0								12	1	8	5.8			
MD-124	P	WACCAMAW RVR	FW*	60	4	7	3.575	*	135		D	172	-0.061	60	0	0		*	174	
PD-363	PD	SIMPSON CK	FW	12	0	0								12	0	0				
03040206140																				
MD-085	S	ICWW	FW	29	10	34	4.36	*	72		D	74	-0.05	30	4	13	5.75	*	77	
MD-087	P	ICWW	FW	44	18	41	4.275	*	85		D	88	-0.039	45	8	18	5.681	*	90	
MD-088	S	ICWW	FW	29	17	59	4.203	*	74		D	74	-0.033	30	4	13	5.675	*	79	
MD-089	S	ICWW	FW	30	20	67	4.21	*	73		D	75	-0.028	31	6	19	5.617	*	80	
MD-127	P	ICWW	FW	61	23	38	4.13	*	144		D	170	-0.069	62	19	31	5.647	*	176	
MD-110	P*	WACCAMAW RVR	FW*	36	4	11	3.275	I	74	0.064	D	83	-0.089	36	0	0		*	83	
PD-638	BIO	BEAR SWAMP	FW																	
MD-111	S	WACCAMAW RVR	FW*	23	2	9	2.85	I	61	0.075	D	70	-0.05	23	0	0		*	70	
MD-136	S	WACCAMAW RVR	FW*	32	4	13	3.5	*	75		*	73		33	0	0		*	79	
MD-146	P	WACCAMAW RVR, ICWW	FW*	61	3	5	3.3	*	145		D	175	-0.05	61	0	0		D	180	-0.02
MD-137	S	WACCAMAW RVR	FW*	31	0	0		*	80		D	74	-0.025	32	0	0		D	84	-0.025
03040206150																				
MD-138	P	WACCAMAW RVR	FW*	42	0	0		*	90		D	89	-0.02	44	0	0		D	94	-0.05
03040207030																				
MD-162	P	LITTLE RVR	SA	59	3	5	4.533	I	136	0.08	D	173	-0.071	59	13	22	6.188	I	174	0.017
MD-125	S	ICWW *	FW	24	4	17	4.5	I	63	0.12	D	73	-0.1	24	0	0		*	73	
MD-125	S	ICWW	SA	24	4	17	4.5	I	63	0.12	D	73	-0.1	24	3	13	6.2	*	73	
MD-091	S	ICWW	FW	30	7	23	4.3	*	73		D	74	-0.046	31	3	10	5.8	*	79	
03040207040																				
MD-075	P	SAMPIT RVR	SB	63	9	14	3.433	*	142		D	171	-0.025	64	8	13	6.344	*	176	
MD-076N	S	TURKEY CK	FW	24	1	4	4.3	*	60		*	70		24	1	4	5.95	*	71	
MD-149	P	WHITES CK	FW	66	19	29	3.623	*	145		D	170	-0.038	66	0	0		*	181	
MD-149	P	WHITES CK	SB	66	10	15	3.024	*	145		D	170	-0.038	66	8	12	6.25	*	181	
MD-077	P	SAMPIT RVR	SB	63	5	8	3.56	*	143		D	172	-0.033	63	8	13	5.794	*	178	
MD-073	P	SAMPIT RVR	SB	60	2	3	3.75	*	141		D	171	-0.042	60	2	3	3.75	*	177	
MD-074	P*	SAMPIT RVR	SB	36	1	3	3.9	*	76		D	82	-0.0333	37	2	5	6.4	*	83	
03040207050																				
MD-080	P	WINYAH BAY	SB	62	0	0		*	152		D	172	-0.033	62	20	32	6.29	D	194	-0.022

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0403

STATION			FIRST	TRENDS											
NUMBER	TYPE	WATERBODY NAME	CLASS	TP	N	MAG	TN	N	MAG	TURB	N	MAG	TSS	N	MAG
03040206120															
MD-158	S	CRAB TREE SWAMP	FW	D	72	-0.008				*	69				
MD-107	P*	KINGSTON LAKE	FW	D	85	-0.004				*	82				
03040206130															
PD-362	PD	BUCK CK	FW												
MD-124	P	WACCAMAW RVR	FW*	D	174	-0.003	*	127		*	168				
PD-363	PD	SIMPSON CK	FW												
03040206140															
MD-085	S	ICWW	FW	D	78	-0.004				*	74				
MD-087	P	ICWW	FW	D	89	-0.002	*	35		*	87				
MD-088	S	ICWW	FW	*	77					*	75				
MD-089	S	ICWW	FW	D	76	-0.002				*	73				
MD-127	P	ICWW	FW	D	176	-0.003	D	134	-0.014	*	169				
MD-110	P*	WACCAMAW RVR	FW*	D	85	-0.001				*	82				
PD-638	BIO	BEAR SWAMP	FW												
MD-111	S	WACCAMAW RVR	FW*	D	71	-0.002				*	68				
MD-136	S	WACCAMAW RVR	FW*	D	75	-0.001				*	72				
MD-146	P	WACCAMAW RVR, ICWW	FW*	D	178	-0.003	D	135	-0.015	I	172	0.118			
MD-137	S	WACCAMAW RVR	FW*	*	81					*	76				
03040206150															
MD-138	P	WACCAMAW RVR	FW*	*	95		*	37		*	91				
03040207030															
MD-162	P	LITTLE RVR	SA	D	176	-0.006	D	124	-0.046	*	168				
MD-125	S	ICWW *	FW	D	73	-0.007				I	70	0.5			
MD-125	S	ICWW	SA	D	73	-0.007				I	70	0.5			
MD-091	S	ICWW	FW	D	78	-0.003				*	73				
03040207040															
MD-075	P	SAMPIT RVR	SB	D	175	-0.002	D	131	-0.02	I	166	0.625			
MD-076N	S	TURKEY CK	FW	D	68	0				I	70	0.259			
MD-149	P	WHITES CK	FW	D	170	-0.005	D	127	-0.02	I	165	0.623			
MD-149	P	WHITES CK	SB	D	170	-0.005	D	127	-0.02	I	165	0.623			
MD-077	P	SAMPIT RVR	SB	D	172	-0.003	D	130	-0.018	I	167	0.583			
MD-073	P	SAMPIT RVR	SB	D	172	-0.002	D	132	-0.026	I	166	0.2			
MD-074	P*	SAMPIT RVR	SB	*	81					*	82				
03040207050															
MD-080	P	WINYAH BAY	SB	D	171	-0.003	D	131	-0.02	I	166	0.4	D	163	-0.308

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0403

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS BACT	TRENDS N	TRENDS MAG	NH3 N	NH3 EXC.
03040206120													
MD-158	S	CRAB TREE SWAMP	FW	157	23	5	22	900	*	71		0	0
MD-107	P*	KINGSTON LAKE	FW	186	34	6	18	1830	D	82	-16.667	12	0
03040206130													
PD-362	PD	BUCK CK	FW	28	12	0	0					11	0
MD-124	P	WACCAMAW RVR	FW*	54	60	1	2	1200	I	175	2.268	58	0
PD-363	PD	SIMPSON CK	FW	75	12	0	0					11	0
03040206140													
MD-085	S	ICWW	FW	913	28	22	79	1818	I	73	71.347		
MD-087	P	ICWW	FW	1274	43	35	81	2644	I	89	160	31	0
MD-088	S	ICWW	FW	2939	29	29	100	3465	I	77	226.667		
MD-089	S	ICWW	FW	118	28	4	14	1200	*	76			
MD-127	P	ICWW	FW	44	59	2	3	1550	*	178		58	0
MD-110	P*	WACCAMAW RVR	FW*	43	35	0	0		*	84		12	0
PD-638	BIO	BEAR SWAMP	FW										
MD-111	S	WACCAMAW RVR	FW*	63	22	0	0		*	71			
MD-136	S	WACCAMAW RVR	FW*	28	29	0	0		*	76			
MD-146	P	WACCAMAW RVR, ICWW	FW*	32	59	0	0		*	177		58	0
MD-137	S	WACCAMAW RVR	FW*	20	29	0	0		*	80			
03040206150													
MD-138	P	WACCAMAW RVR	FW*	30	42	0	0		*	94		28	0
03040207030													
MD-162	P	LITTLE RVR	SA	256	59	22	37	1440	I	176	10	55	0
MD-125	S	ICWW *	FW	228	24	11	46	796	I	72	9.531		
MD-125	S	ICWW	SA	228	24	11	46	796	I	72	9.531		
MD-091	S	ICWW	FW	965	27	21	78	2160	I	74	80.538		
03040207040													
MD-075	P	SAMPIT RVR	SB	46	60	1	2	500	*	171		57	0
MD-076N	S	TURKEY CK	FW	225	24	8	33	900	I	70	6.896		
MD-149	P	WHITES CK	FW	52	57	2	4	1150	D	169	-2.111	58	0
MD-149	P	WHITES CK	SB	52	57	2	4	1150	D	169	-2.111	58	0
MD-077	P	SAMPIT RVR	SB	41	59	0	0		D	169	-1.125	58	0
MD-073	P	SAMPIT RVR	SB	40	59	0	0		D	171	-1.618	58	0
MD-074	P*	SAMPIT RVR	SB	49	36	1	3	1400	*	83		11	0
03040207050													
MD-080	P	WINYAH BAY	SB	38	60	0	0		*	172		58	0

WATER QUALITY SUMMARY - MANAGEMENT UNIT 0403

STATION NUMBER	TYPE	WATERBODY NAME	FIRST CLASS	CD N	CD EXC.	CD MED.	CR N	CR EXC.	CR MED.	CU N	CU EXC.	PB N	PB EXC.	PB MED.	HG N	HG EXC.	HG MED.	NI N	NI EXC.	ZN N	ZN EXC.
03040206120																					
MD-158	S	CRAB TREE SWAMP	FW	1	0	DL	1	0	DL	1	0	1	0	DL	1	0	DL	1	0	1	1
MD-107	P*	KINGSTON LAKE	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	1
03040206130																					
PD-362	PD	BUCK CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
MD-124	P	WACCAMAW RVR	FW*	20	0	DL	19	0	DL	20	0	20	0	DL	19	0	DL	20	0	20	1
PD-363	PD	SIMPSON CK	FW	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
03040206140																					
MD-085	S	ICWW	FW																		
MD-087	P	ICWW	FW	11	0	DL	11	0	DL	11	0	11	0	DL	9	0	DL	11	0	11	2
MD-088	S	ICWW	FW																		
MD-089	S	ICWW	FW																		
MD-127	P	ICWW	FW	20	0	DL	20	0	DL	20	0	20	0	DL	18	0	DL	20	0	20	1
MD-110	P*	WACCAMAW RVR	FW*	4	0	DL	4	0	DL	4	0	4	0	DL	4	0	DL	4	0	4	0
PD-638	BIO	BEAR SWAMP	FW																		
MD-111	S	WACCAMAW RVR	FW*																		
MD-136	S	WACCAMAW RVR	FW*																		
MD-146	P	WACCAMAW RVR, ICWW	FW*	20	0	DL	20	0	DL	20	0	20	0	DL	18	0	DL	20	0	20	1
MD-137	S	WACCAMAW RVR	FW*																		
03040206150																					
MD-138	P	WACCAMAW RVR	FW*	10	0	DL	10	1	DL	9	0	10	0	DL	9	0	DL	10	0	10	1
03040207030																					
MD-162	P	LITTLE RVR	SA	19	0	DL	19	0	DL	19	1	19	0	DL	19	0	DL	19	0	19	2
MD-125	S	ICWW *	FW																		
MD-125	S	ICWW	SA																		
MD-091	S	ICWW	FW																		
03040207040																					
MD-075	P	SAMPIT RVR	SB	18	0	DL	18	0	DL	18	1	18	0	DL	18	0	DL	18	0	18	0
MD-076N	S	TURKEY CK	FW																		
MD-149	P	WHITES CK	FW	20	0	DL	20	0	DL	20	0	20	0	DL	20	0	DL	19	0	20	0
MD-149	P	WHITES CK	SB	20	0	DL	20	0	DL	20	0	20	0	DL	20	0	DL	19	0	20	0
MD-077	P	SAMPIT RVR	SB	20	0	DL	20	0	DL	20	0	20	0	DL	20	0	DL	20	0	20	1
MD-073	P	SAMPIT RVR	SB	18	0	DL	18	0	DL	18	0	18	0	DL	18	0	DL	18	0	18	1
MD-074	P*	SAMPIT RVR	SB	3	0	DL	3	0	DL	3	0	3	0	DL	3	0	DL	3	0	3	0
03040207050																					
MD-080	P	WINYAH BAY	SB	19	0	DL	19	0	DL	19	1	19	0	DL	19	0	DL	19	0	19	3

Mean Seasonal Water Quality Values

PEE DEE WMU-0403

PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
TEMPERATURE (°C)	Mean	20.0	26.3	18.2	10.7
	Max	26.0	32.0	24.5	18.0
	Min	2.1	6.0	0.5	4.0
	Med	21.0	26.5	18.5	10.0
	95%	25.0	30.0	22.5	16.0
	N	228	486	178	172
DISSOLVED OXYGEN (mg/l)	Mean	6.3	5.0	6.4	8.9
	Max	9.7	24.0	16.0	11.8
	Min	3.0	1.3	0.1	5.5
	Med	6.1	4.9	6.3	9.0
	5%	4.2	3.2	4.1	6.6
	N	224	476	178	171
pH (SU)	Mean	6.5	6.5	6.6	6.5
	Max	7.7	7.8	8.0	7.4
	Min	5.0	5.2	5.3	1.9
	Med	6.5	6.5	6.6	6.6
	95%	7.1	7.4	7.4	7.2
	N	229	484	177	172
BOD_5 (mg/l)	Mean	1.3	1.4	1.3	1.3
	Max	3.7	8.4	4.4	2.6
	Min	0.4	0.5	0.2	0.6
	Med	1.3	1.2	1.2	1.2
	95%	2.1	2.5	2.2	1.8
	N	221	464	173	163
TURBIDITY (NTU)	Mean	12.9	10.5	11.2	13.3
	Max	100.0	120.0	60.0	61.0
	Min	1.0	1.0	0.8	2.2
	Med	12.0	9.2	8.7	12.0
	95%	25.0	22.0	28.0	29.0
	N	219	466	173	163

PEE DEE WMU-0403

PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
AMMONIA (mg/l)	Mean	0.09	0.08	0.11	0.10
	Max	0.19	0.18	0.31	0.42
	Min	0.05	0.05	0.05	0.05
	Med	0.08	0.07	0.09	0.09
	95%	0.14	0.14	0.20	0.19
	N	57	62	32	57
TKN (mg/l)	Mean	0.77	0.85	0.81	0.69
	Max	3.08	1.90	1.65	1.85
	Min	0.22	0.25	0.25	0.25
	Med	0.75	0.80	0.77	0.69
	95%	1.15	1.43	1.26	1.04
	N	159	214	109	153
NITRITE-NITRATE (mg/l)	Mean	0.19	0.17	0.11	0.20
	Max	0.50	0.53	0.44	4.40
	Min	0.02	0.01	0.02	0.02
	Med	0.18	0.16	0.10	0.14
	95%	0.42	0.34	0.25	0.41
	N	205	433	161	148
TOTAL PHOSPHORUS (mg/l)	Mean	0.07	0.07	0.07	0.07
	Max	0.50	0.57	0.36	0.67
	Min	0.02	0.02	0.02	0.02
	Med	0.06	0.06	0.05	0.05
	95%	0.11	0.12	0.13	0.15
	N	209	438	150	139
TOTAL ORGANIC CARBON (mg/l)	Mean	16.6	20.4	17.9	14.0
	Max	49.0	156.0	68.0	45.0
	Min	2.9	3.1	1.6	1.8
	Med	12.6	13.3	14.8	13.5
	95%	41.0	52.0	36.0	20.0
	N	62	70	54	61

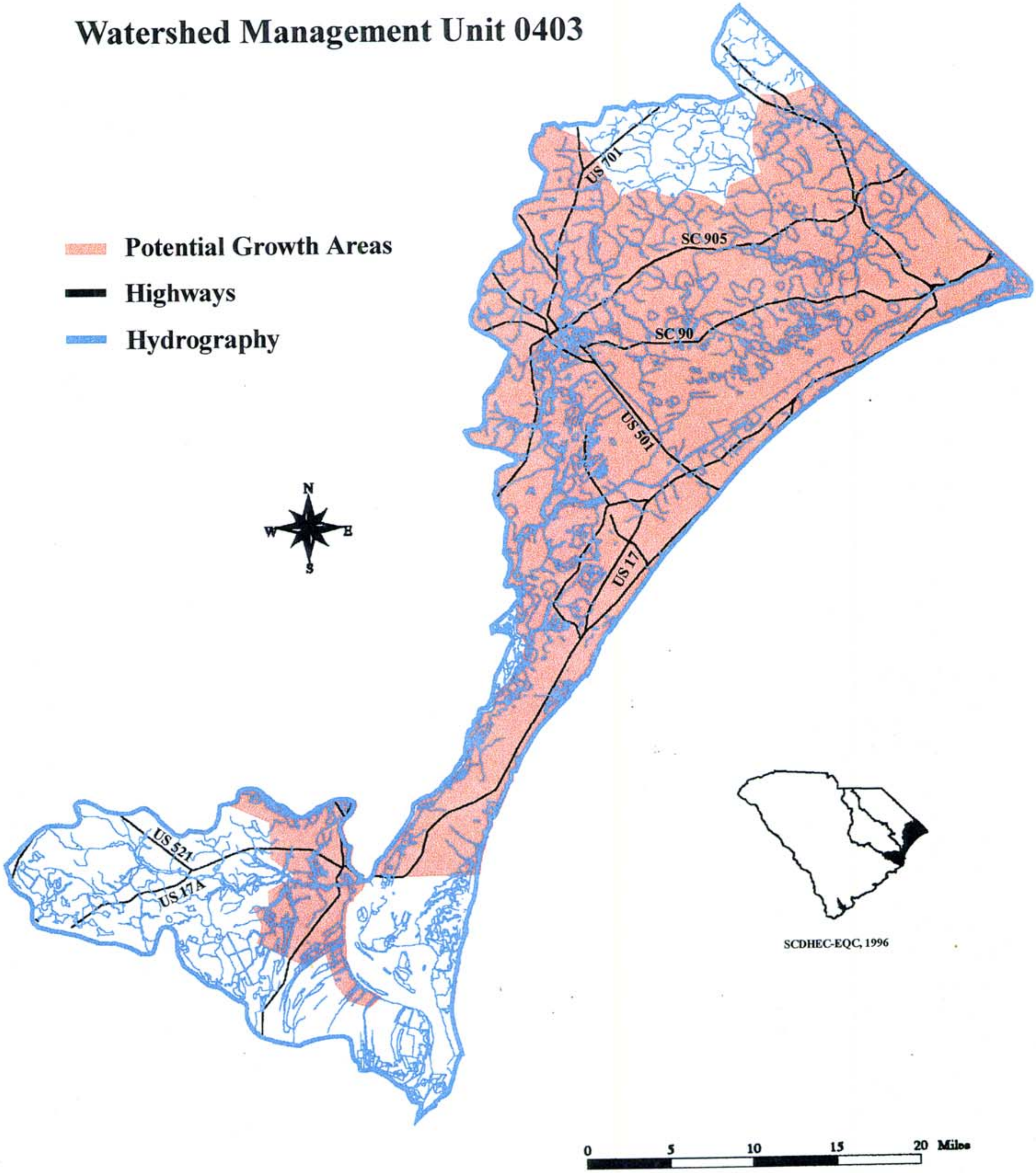
PEE DEE WMU-0403

PARAMETER	STAT	SPRING (Mar-May)	SUMMER (Jun-Sep)	FALL (Oct-Nov)	WINTER (Dec-Feb)
SALINITY (PPT)	Mean	0.6	2.2	1.9	0.9
	Max	8.0	27.0	13.0	13.0
	Min	0.0	0.0	0.0	0.0
	Med	0.0	0.0	0.0	0.0
	95%	4.0	12.0	8.0	9.0
	N	192	410	150	122
FECAL COLIFORM BACTERIA (#/100ml)	Mean	72	100	100	69
	Max	7,300	6,400	9,000	3,000
	Min	2	2	2	1
	Med	46	70	72	60
	95%	2,900	3,000	2,400	700
	N	217	446	170	161

Watershed Unit Index Map

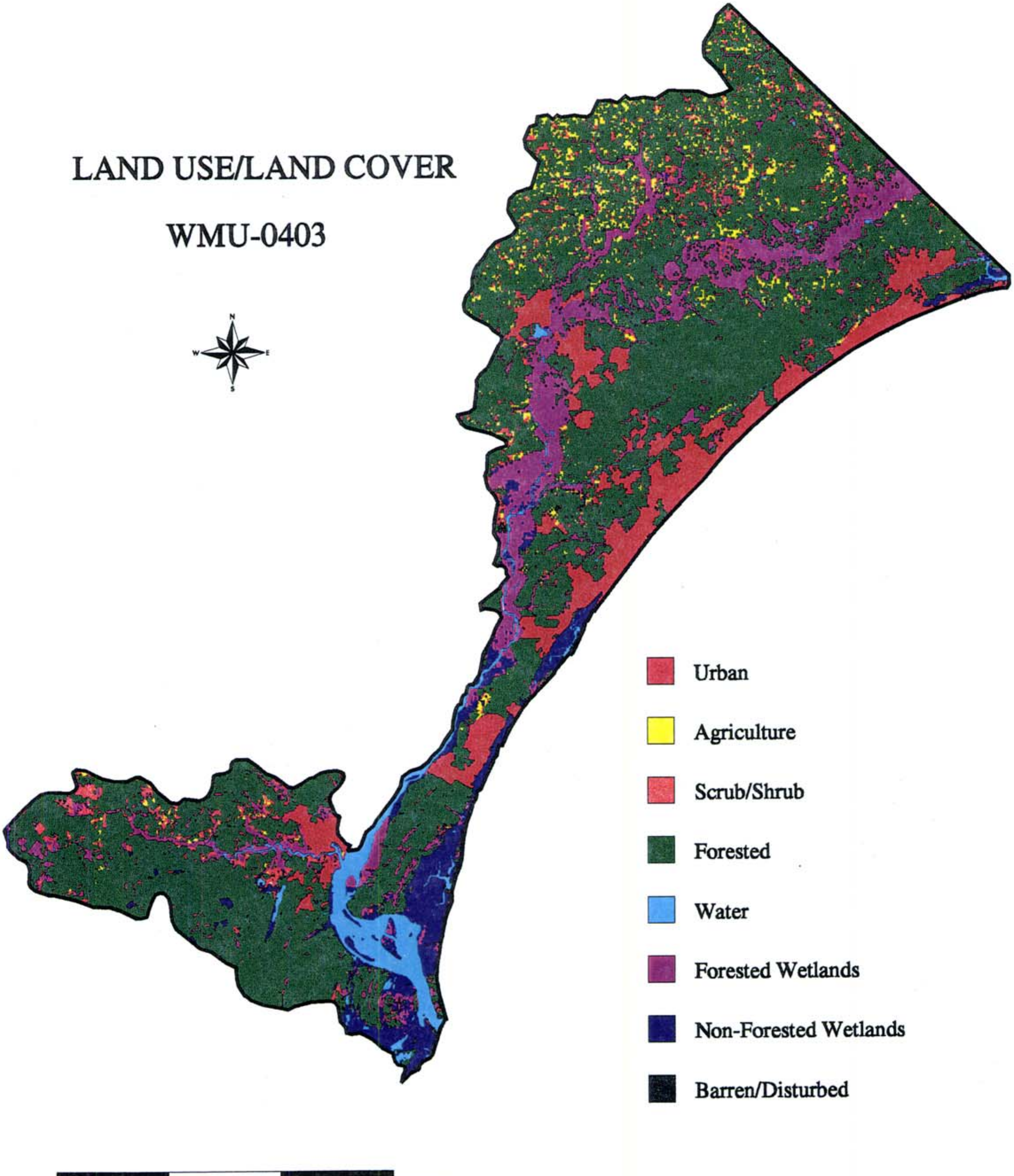
Watershed Management Unit 0403

Growth Potential Areas
Watershed Management Unit 0403



LAND USE/LAND COVER

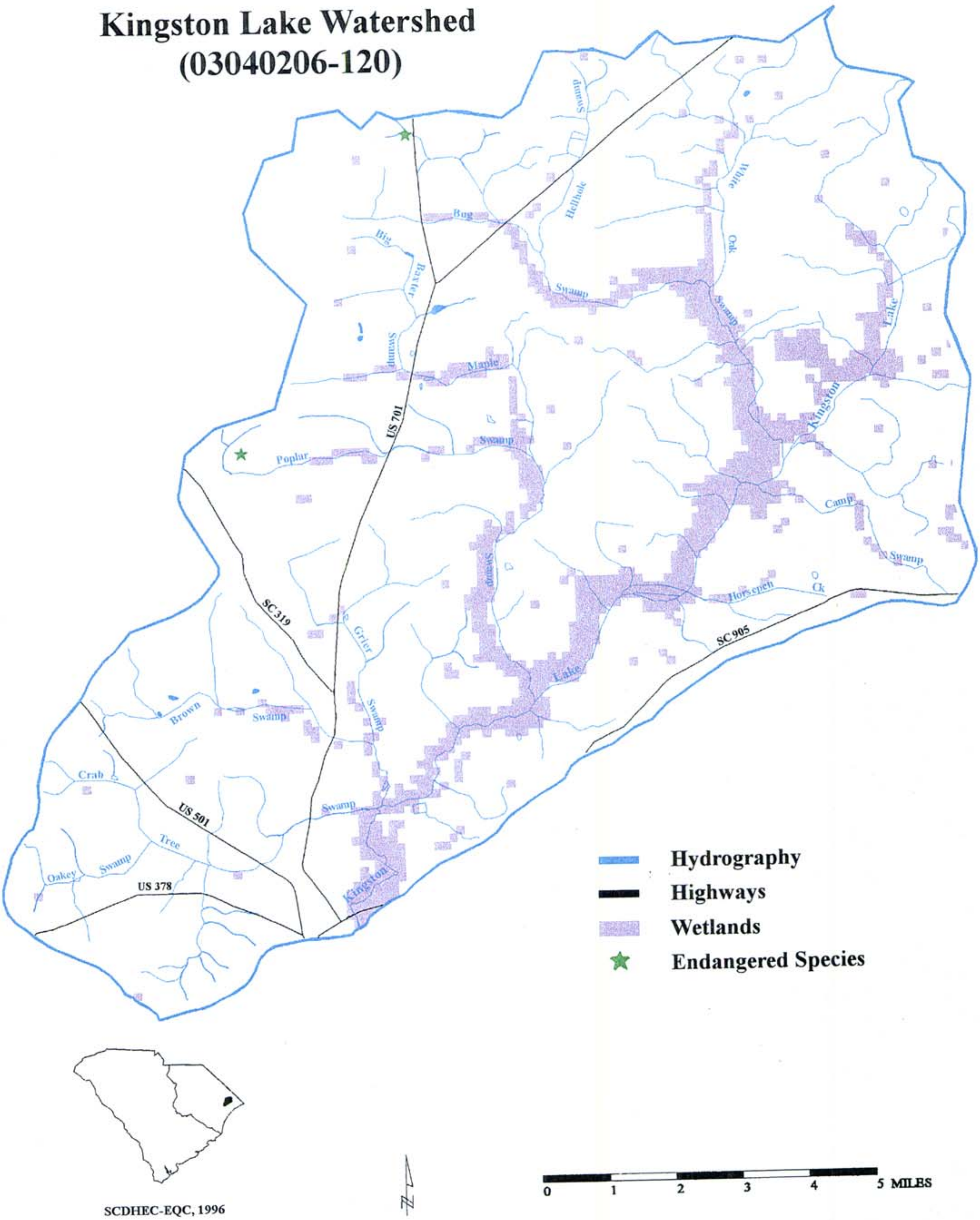
WMU-0403



Source: Spot Satellite Imagery 89-90
SCDNR - LRC

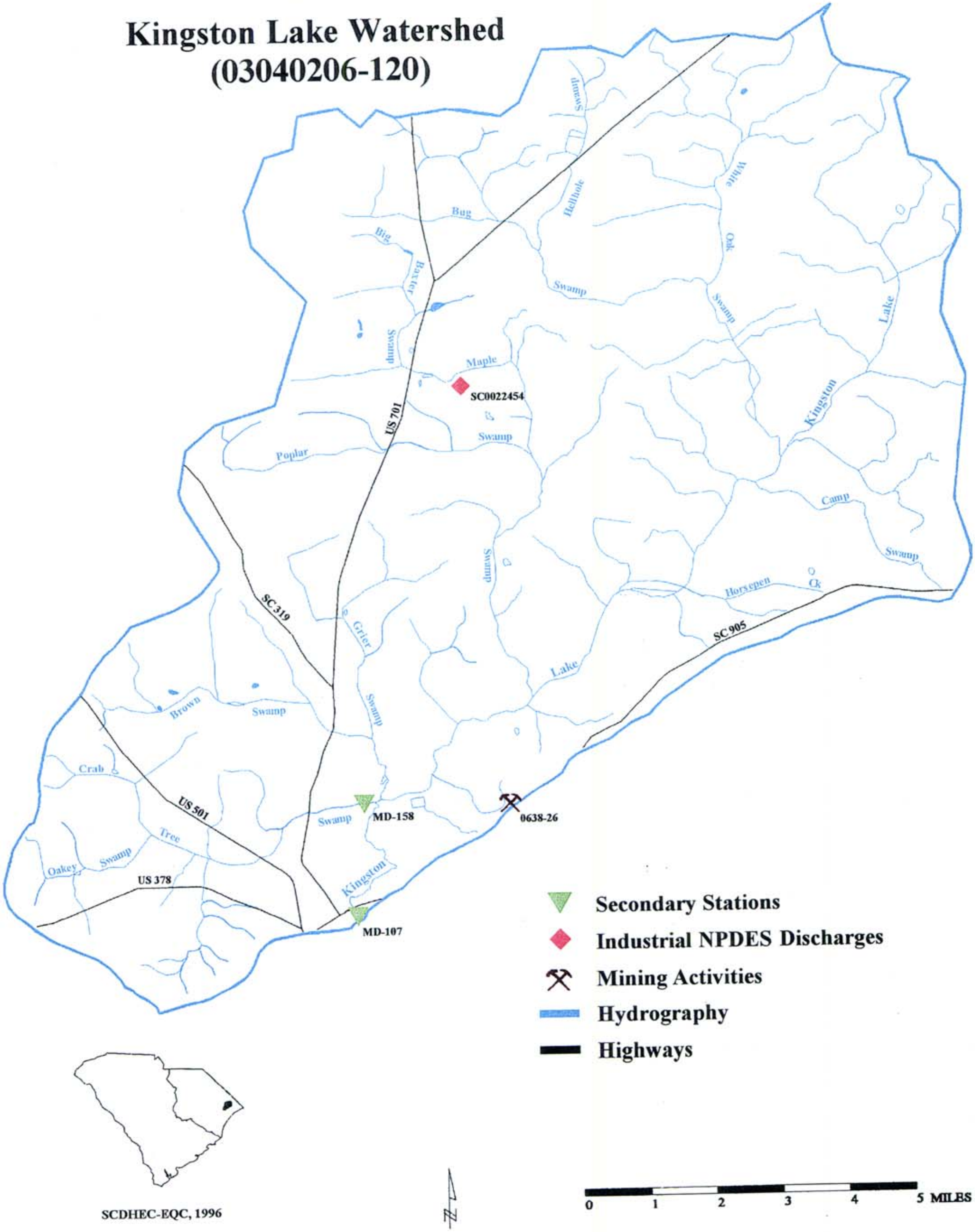
Natural Resources

Kingston Lake Watershed
(03040206-120)



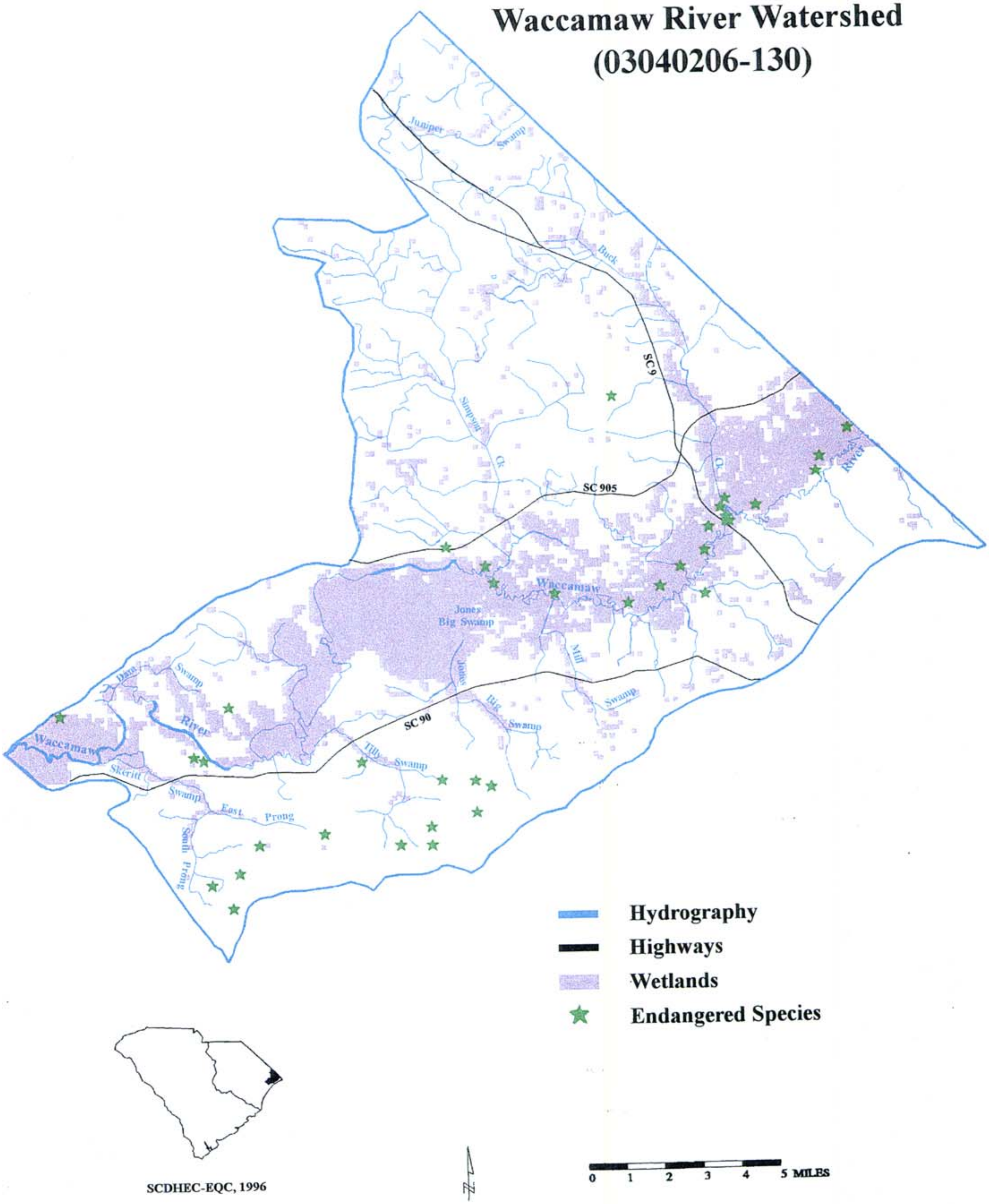
SCDHEC-EQC, 1996

Monitoring Sites and Permitted Activities



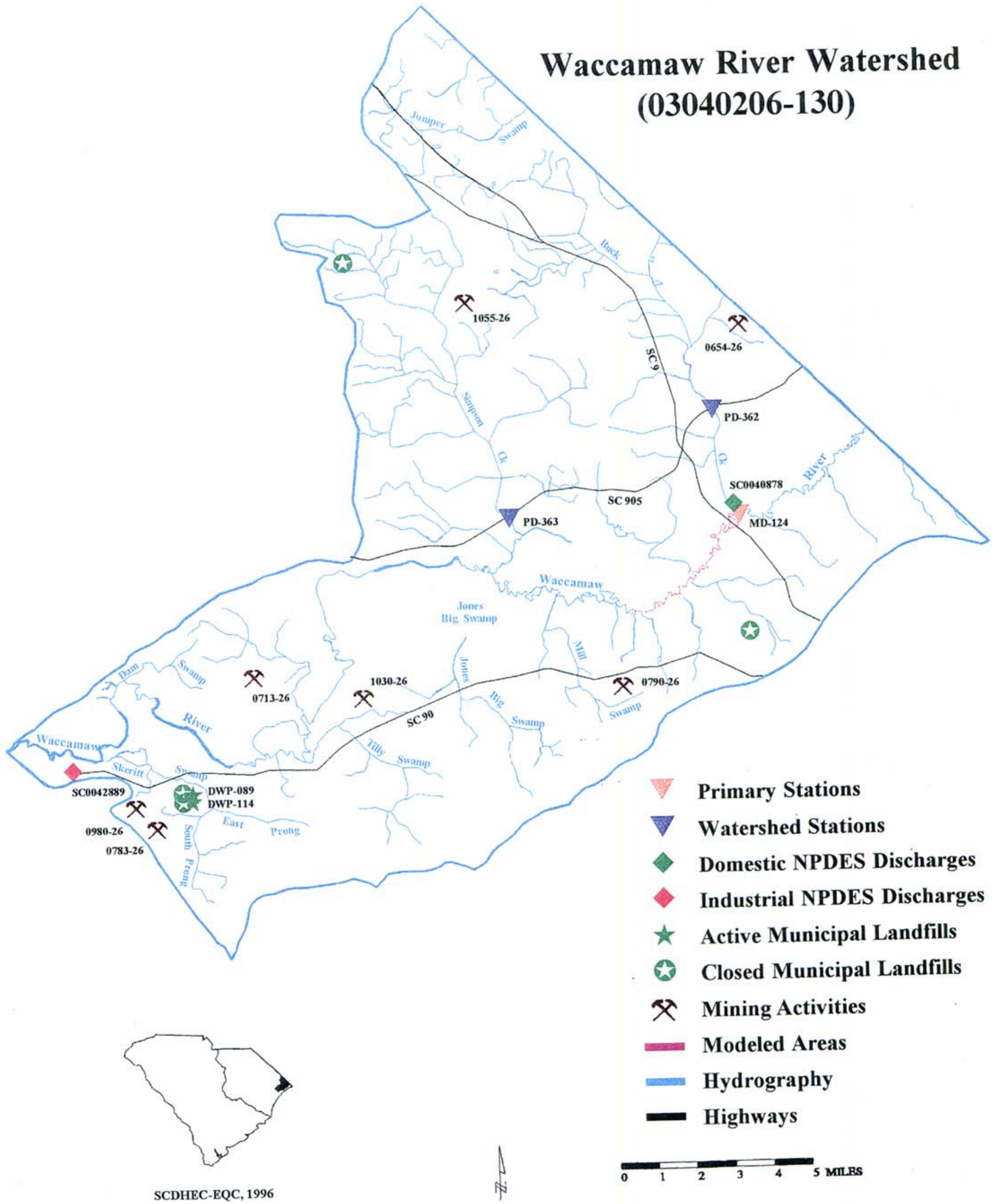
Natural Resources

Waccamaw River Watershed (03040206-130)



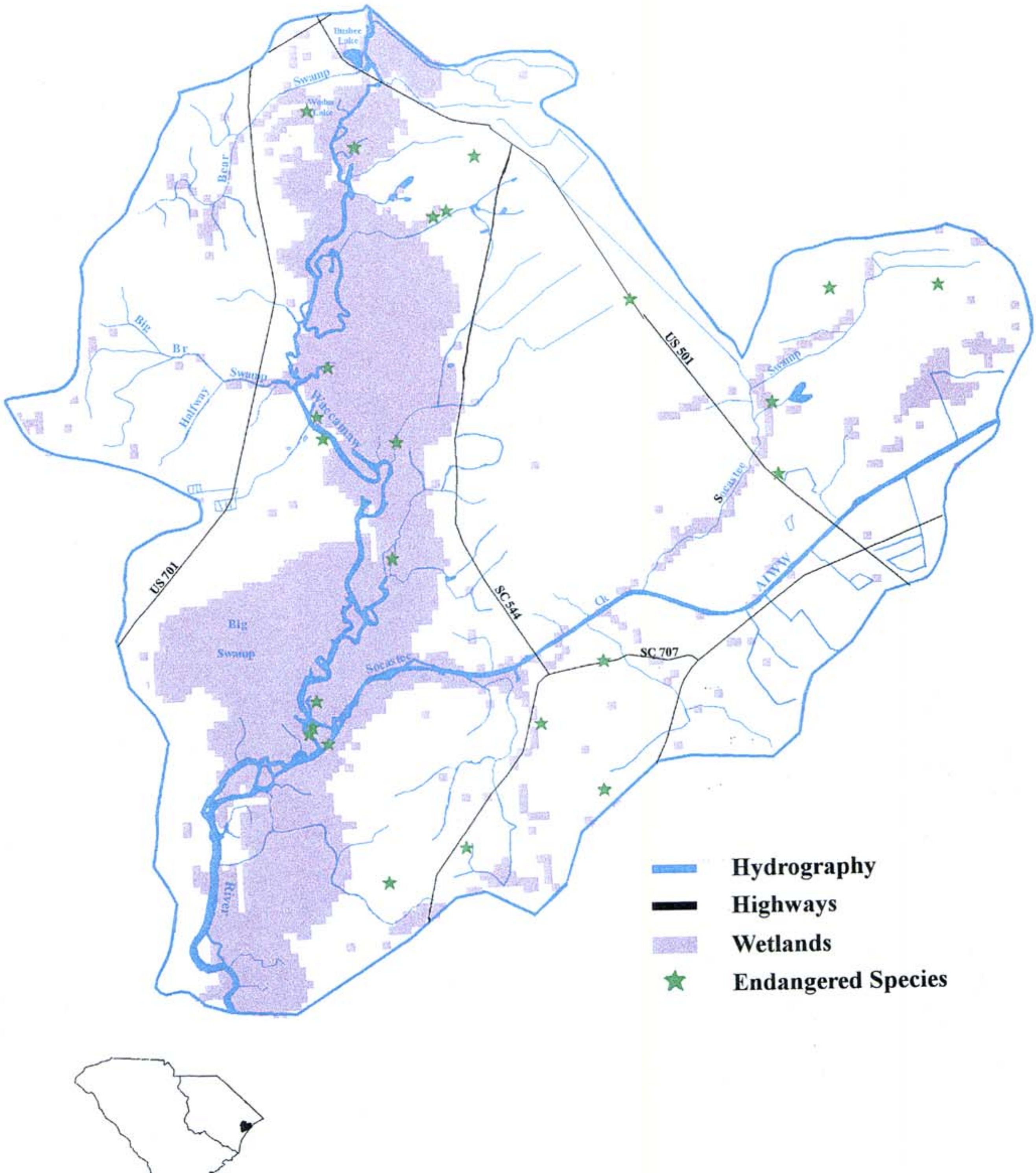
SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas



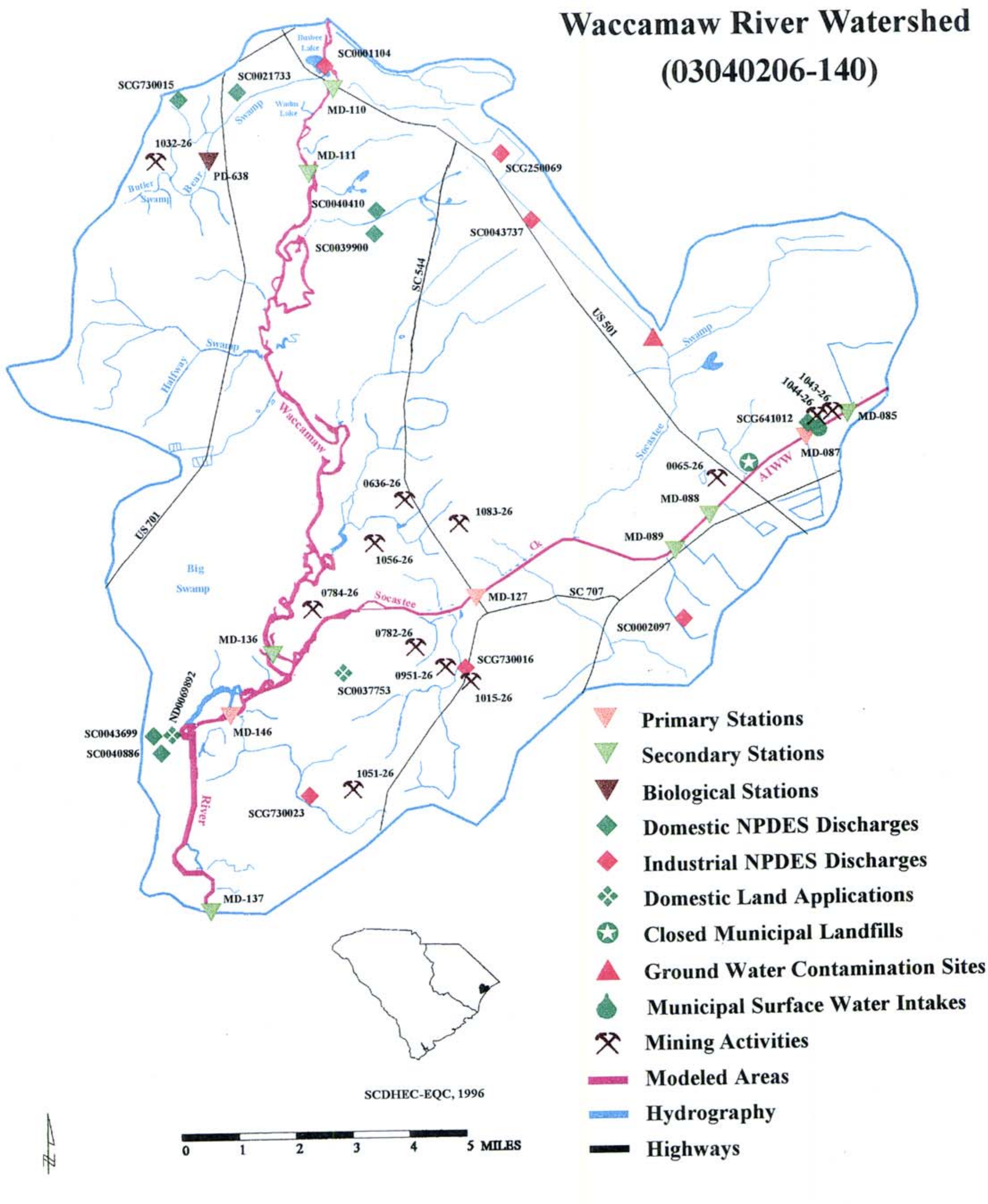
Natural Resources

Waccamaw River Watershed
(03040206-140)

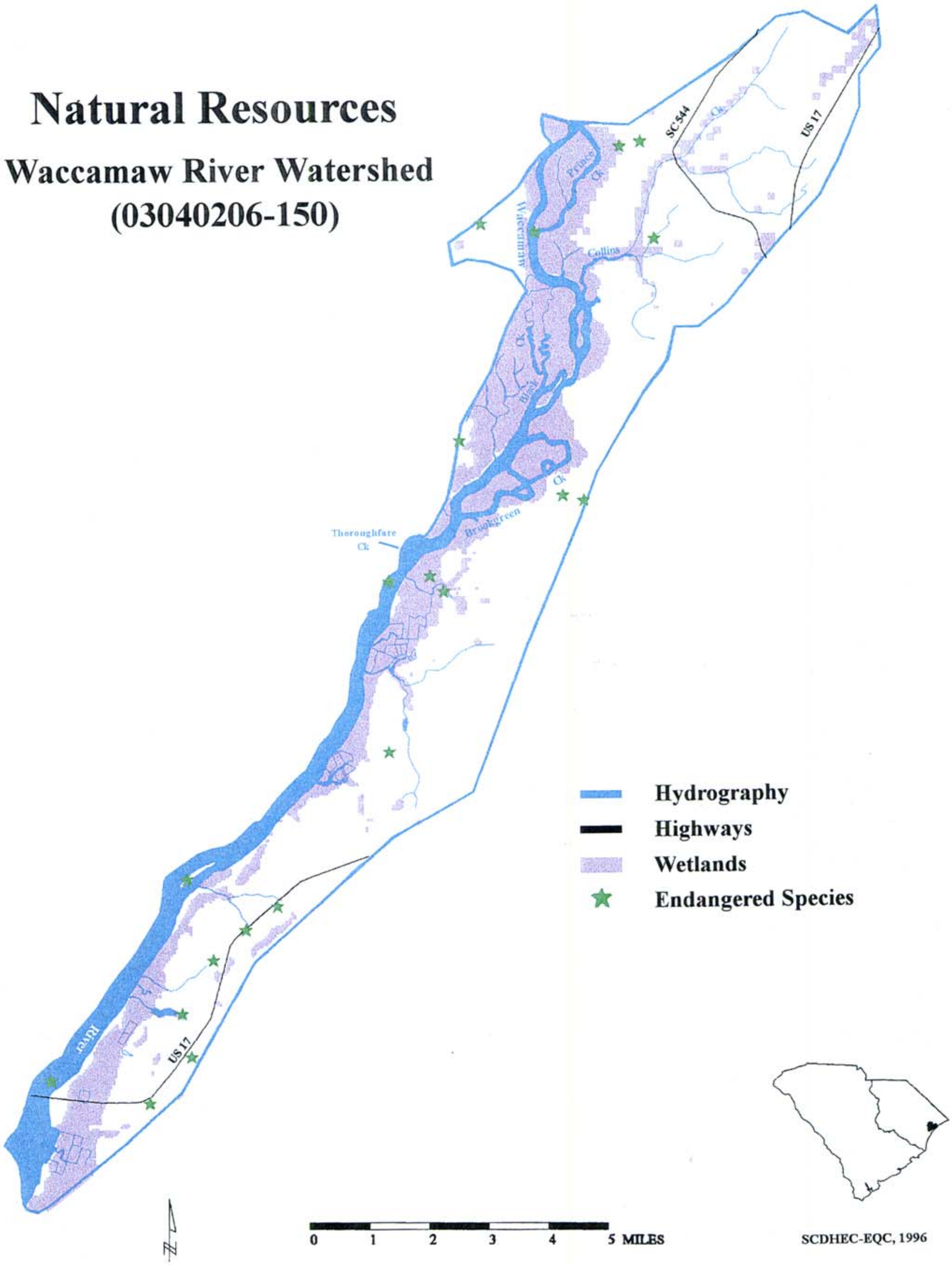


SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas

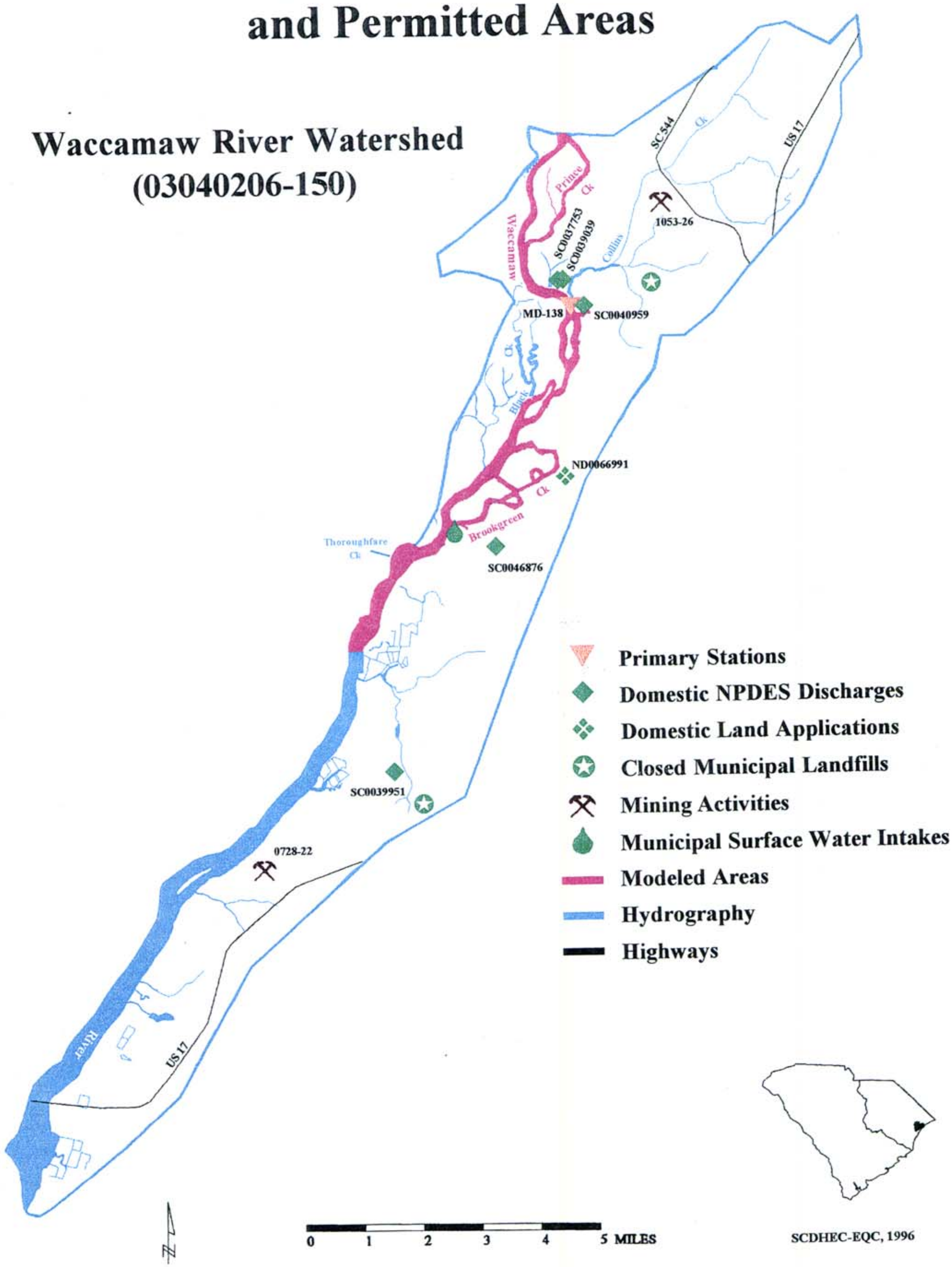


Natural Resources
Waccamaw River Watershed (03040206-150)



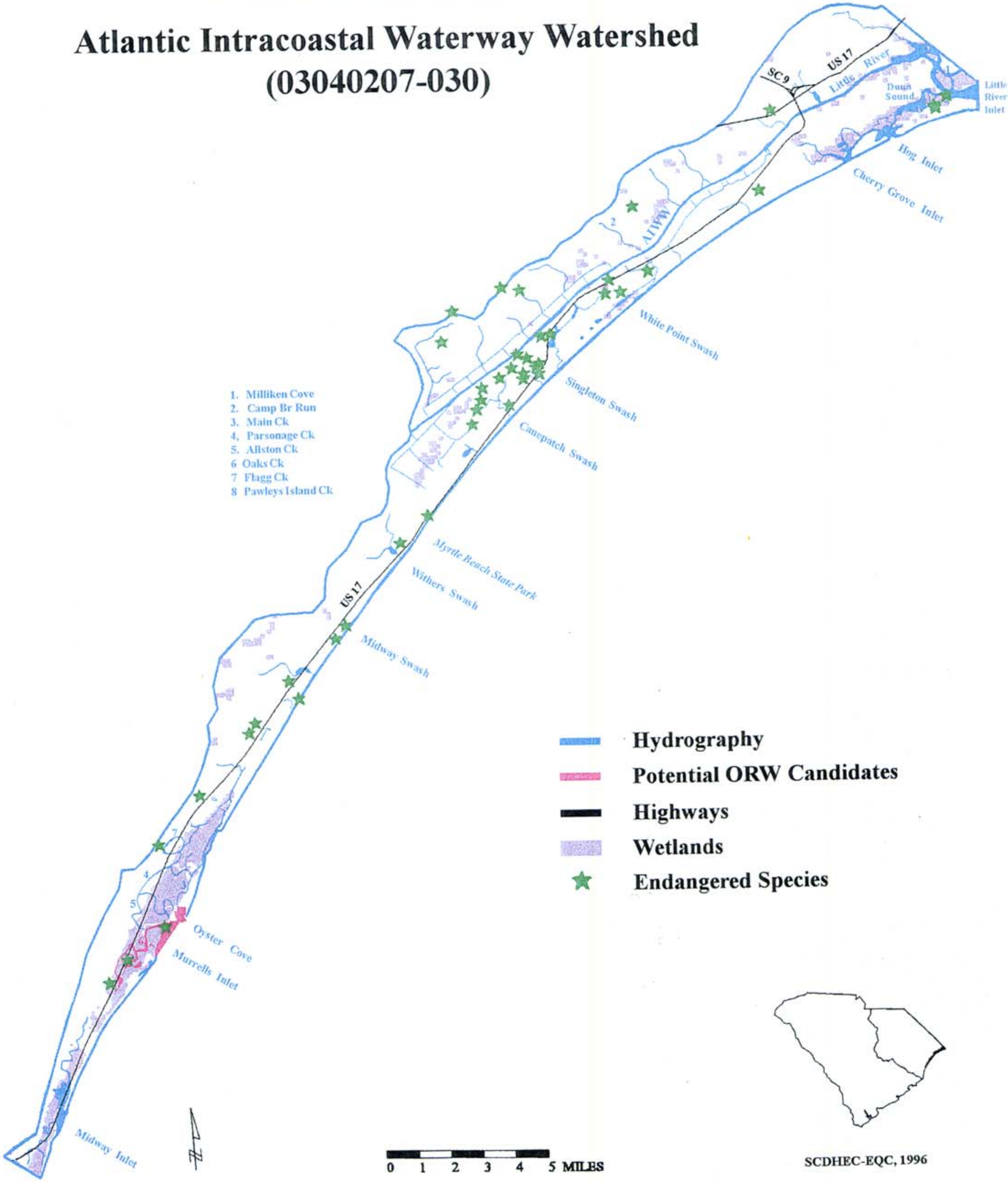
SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas



Natural Resources

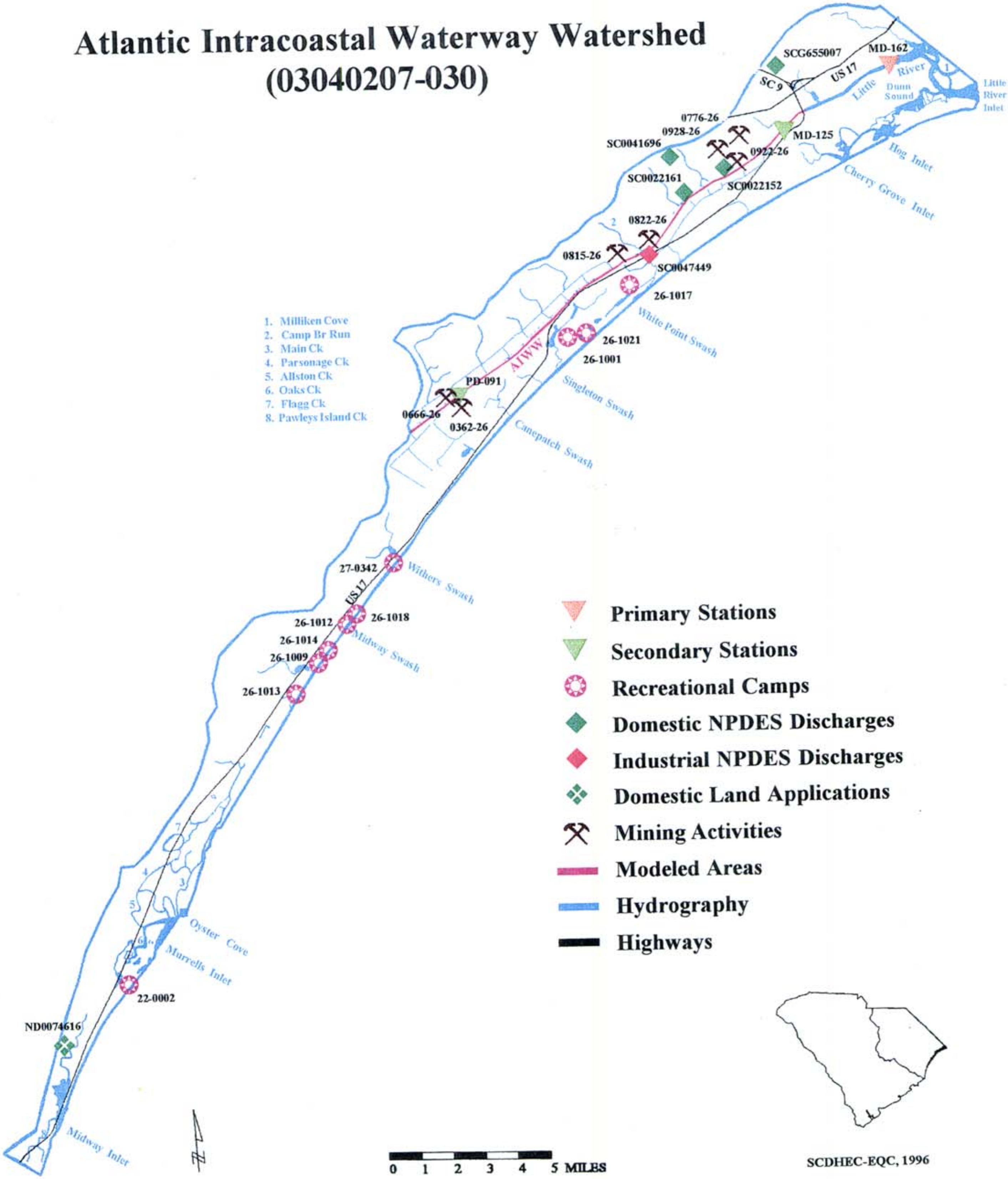
Atlantic Intracoastal Waterway Watershed (03040207-030)



SCDHEC-EQC, 1996

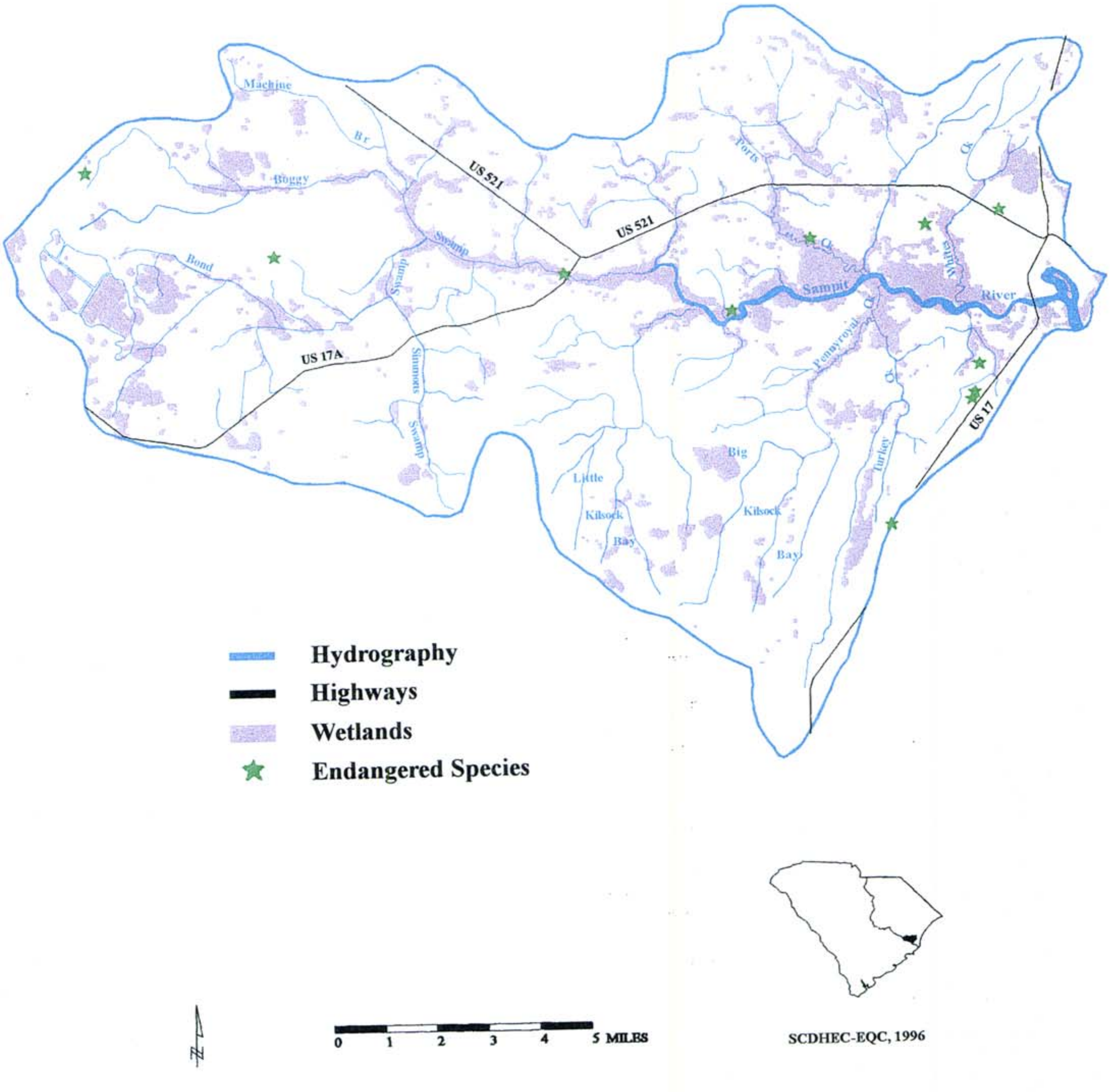
Monitoring Sites, Modeled Streams, and Permitted Areas

Atlantic Intracoastal Waterway Watershed (03040207-030)



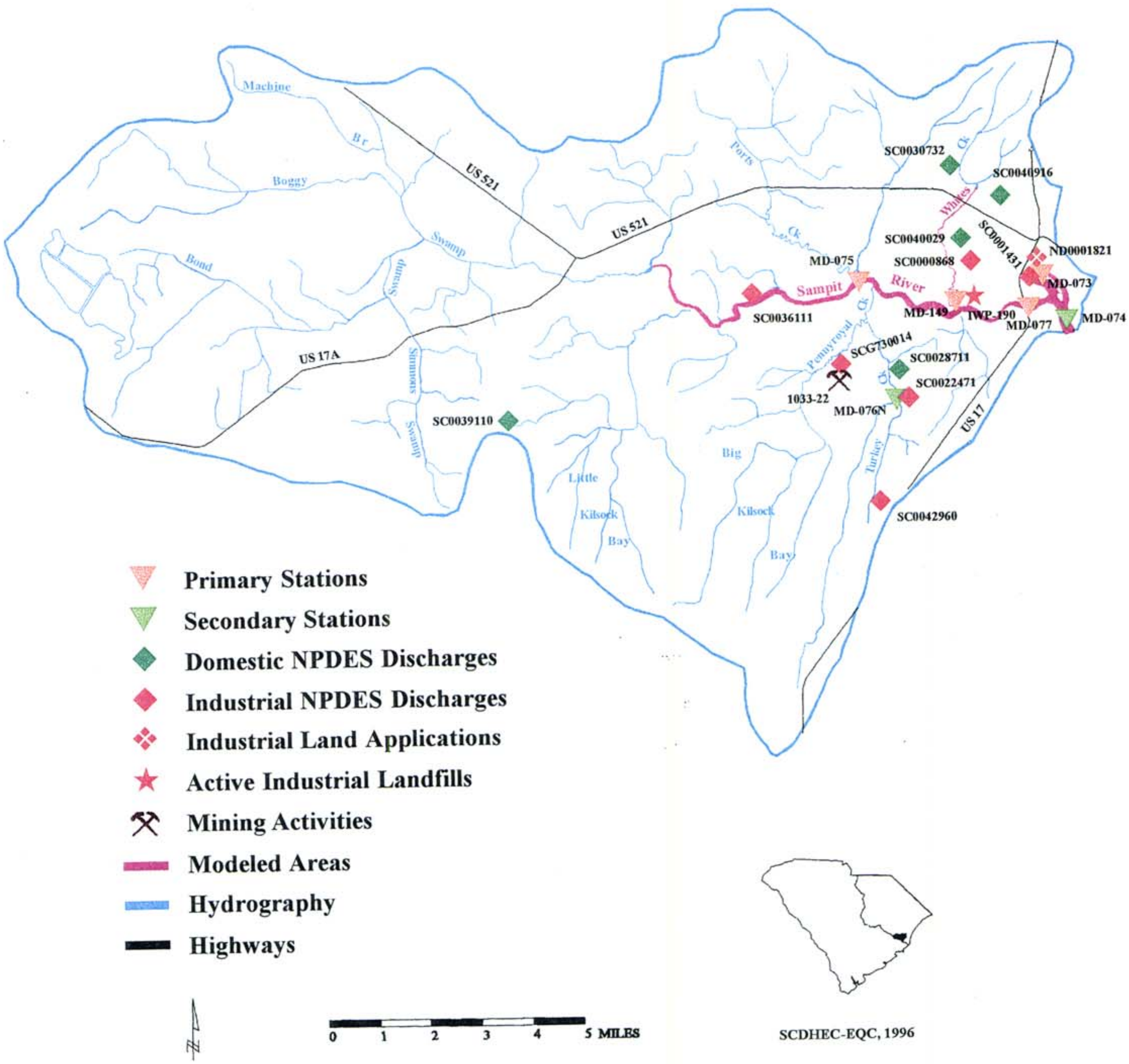
Natural Resources

Sampit River Watershed
(03040207-040)



Monitoring Sites, Modeled Streams, and Permitted Areas

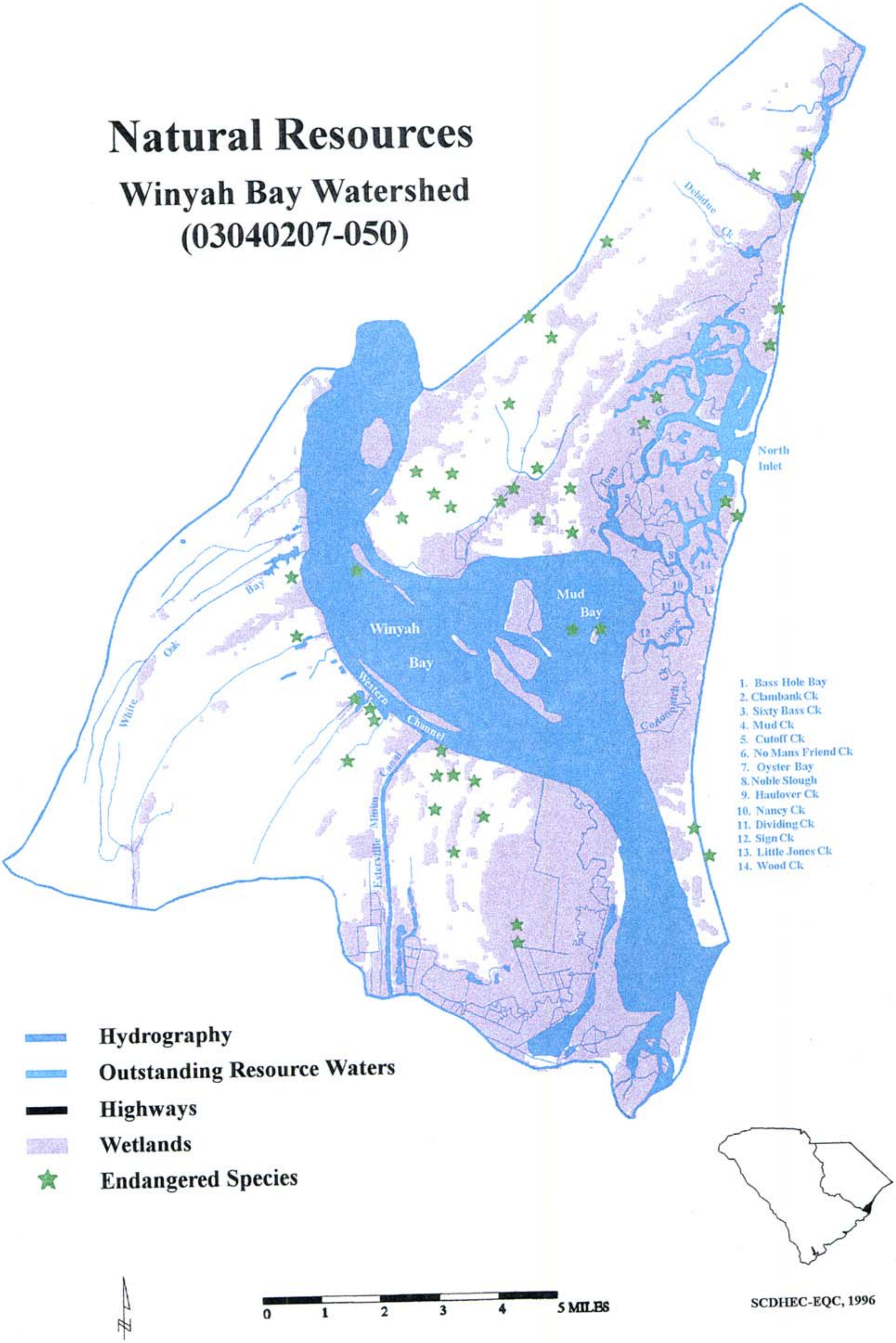
Sampit River Watershed (03040207-040)



SCDHEC-EQC, 1996

Natural Resources

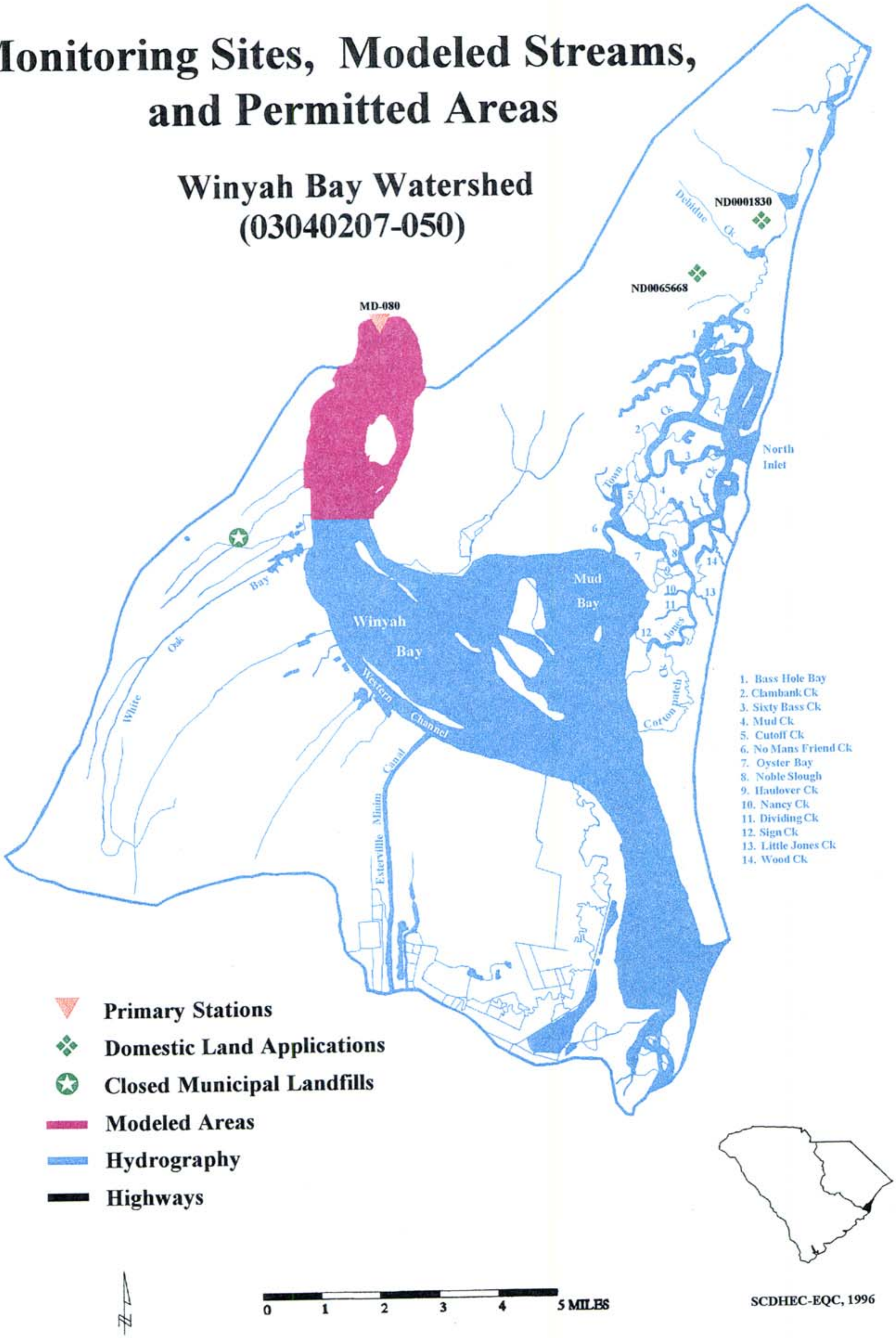
Winyah Bay Watershed (03040207-050)



SCDHEC-EQC, 1996

Monitoring Sites, Modeled Streams, and Permitted Areas

Winyah Bay Watershed
(03040207-050)



SCDHEC-EQC, 1996

Waterbody Index

Facility Index