SURFACE WATER QUALITY MONITORING PROGRAM IN THE COASTAL COUNTIES OF SOUTH CAROLINA — A Summary Report

South Carolina Department of Health and Environmental Control
Bureau of Water Pollution Control
Division of Water Quality and Shellfish Sanitation
2600 Bull Street
Columbia, South Carolina 29201

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Surface Water Quality Monitoring Programs in the Coastal Counties of South Carolina - A Summary Report

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South Carolina Department of Health and Environmental Control
Bureau of Water Pollution Control
Division of Water Quality and Shellfish Sanitation

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PREFACE

This report was prepared by South Carolina Department of Health and Environmental Control (DHEC) to satisfy a contract agreement of September 1985 between DHEC and South Carolina Coastal Council.

In accordance with the agreement, the following have been provided: the locations of all surface water monitoring stations in each coastal county, the parameters monitored and their frequencies, where the data is stored, and a list of agencies that have monitoring stations located in the coastal counties.

Comments or questions related to this report should be addressed to:

Bureau of Water Pollution Control
Division of Water Quality and Shellfish Sanitation
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I. INTRODUCTION

South Carolina Department of Health and Environmental Control (SCDHEC), United States Geological Survey (USGS), South Carolina Wildlife and Marine Resources Department (SCWMRD), Corps of Engineers and United States Fish and Wildlife Service (USFWS) have routine ambient monitoring programs in the coastal counties. These agencies do not necessarily have stations on the same waterbodies, except for the Cooper River, where all the agencies monitor water quality. The prediversion, partial rediversion, and the full-scale rediversion of the Cooper River to the Santee River, and the subsequent effects on water quality and biological communities are being studied by these agencies.

The locations of all monitoring stations in each coastal county are provided on South Carolina Highway County maps of ½-inch equals a mile scale (maps located in appendices G thru N). The maps reflect the following sampling station configuration:

1. The SCDHEC sampling network is spread throughout all the coastal counties with concentrations in the areas where dischargers or shellfish grounds are located.
2. The USGS sampling network is concentrated in Berkeley, Georgetown, and Horry Counties with one or two stations located in Beaufort, Colleton, Charleston, Dorchester, and Jasper Counties.
3. The Corps of Engineers, SCWMRD, and USFWS each have five monitoring stations located on the Cooper River which were established for a special study.

Staff contacts at the agencies for monitoring data from stations described in this report at this writing are as follows:

Corps of Engineers-Charleston	Mr. Bob Billue Phone: (803) 724-4258

SCWMRD - Charleston	Ms. Jane Settle Mr. Dave Knott Phone: (803) 795-6350
USGS - Columbia	Mr. Richard Hayes Phone: (803) 796-5966
USFWS - Charleston	Mr. Harvey Geitner Phone: (803) 724-4707
SCDHEC - Water Quality Monitoring Section	Mr. Mike Marcus Phone: (803) 734-5401
SCDHEC - Shellfish Sanitation Section	Mr. Ken Moore Phone: (803) 734-5232

II. SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL MONITORING PROGRAM

SCDHEC has a routine water quality trend monitoring program consisting of 73 primary stations and 50 secondary stations throughout the 8 coastal counties.

The primary water quality stations are sampled in a uniform manner (since 1974) to establish an extensive long-term data base. Data from these stations aid in identifying trends as well as providing data for water quality modelling purposes. Water quality models are used in developing wasteload allocations for incorporation into point source discharge permits. Data are also used to indicate conditions relative to achievement of water quality standards and classified uses established in State regulations. Primary stations and location descriptions are listed by counties in Appendix A.

Factors considered in selecting primary stations locations are as follows:

1. Influent to a stream segment (sub-basin)
2. Effluent from a stream segment
3. Major streams at state lines
4. Confluence of major streams
5. Above a major industrial area

6. Below a major industrial area
7. Water quality limited area
8. Major lake
9. Above major municipal area
10. Below major municipal area
11. Mouth of major tributary
12. Major water use area
13. Above major land use area
14. Below major land use area
15. Above a water intake
16. Sites also located as part of Intensive Water Quality Surveys
17. Other

The Environmental Protection Agency's Basic Water Monitoring Program has included 26 of DHEC's 119 primary water quality stations into their monitoring network. There are only 7 of these 26 stations located in the coastal counties. The criteria for selecting the locations for the 26 stations are the same as listed for DHEC's primary stations. Also, these stations are strategically located in major waterbodies to provide a representative picture of water quality throughout the State.

The EPA basic water monitoring program stations are identified by a double asterisk within the listing of primary and secondary stations Appendix A.

Primary stations are sampled monthly, quarterly, and annually for various parameters as described below. The data are computerized within a computer system called STORET and are assigned computer storage and retrieval codes as indicated.

Physical Parameters Sampled Monthly

Flow or Stage Measurement	00061 or 00065	Conductivity*,**	00402
Temperature***	00010	Total Suspended Solids**	00530
Turbidity	00076	Salinity*,***	00480
Color*	00080	Transparency**,*	00078
		Chlorides*	00940

Microbiological Parameters Sampled Monthly

Fecal Coliform	31616 or 31615
Total Coliform*	31506 or 31505

Chemical Parameters Sampled Monthly

Dissolved Oxygen***	00300	Total Phosphorus	00665
pH	00400	Alkalinity	00410
BOD_5	00310 or 80082	Total Organic Carbon**	00680
Ammonia	00610	COD**	00335, 00340
Nitrate-Nitrite	00630		
Total Kjeldahl Nitrogen	00625		

Chemical Parameters Sampled Quarterly

Lead	01051	Manganese	01055
Cadmium	01027	Copper	01042
Chromium	01034	Mercury	71900
Zinc	01092	Phenols*	32730
Nickel	01067	COD*	00335, 00340
Iron	01045	Total Organic Carbon	00680

Chemical Parameters Sampled Annually*,**

DDT	39300, 39305	Toxaphene	39400
DDD	39310, 39315	Lindane	39782
DDE	39320, 39327	Alpha BHC	39337
Aldrin	39330	Beta BHC	39338
Endrin	39390	Ethion	39398
Dieldrin	39380	Heptachlor	39410
PCBs	39516	Heptachlor Epoxide	39420
Parathion	39540	Malathion	39530
Diazinon	39570	Guthion	39580
Phosdrin	39610	Trithion	39786
Acid Extractable Organics	45582	Hardness	00900
Base-Neutral Extractable Organics	45583	Volatile Organics	84085

* Selected Stations Only
** Basic Water Monitoring Program Stations
*** Profiled at one (1) meter intervals at lake and estuary stations collected by boat.

Secondary stations are routinely sampled six (6) times per year, once per month from May through October at locations described in Appendix A. Factors considered in selecting Secondary station locations are as follows:

1. Known water quality problem areas; secondary stations act as a supplement to primary stations where data historically shows poor quality. These stations are usually located in relation to smaller discharges throughout the State.
2. Potential water quality problem areas; stations in these areas are located in high complaint areas, agricultural and domestic non-point source areas, and areas where data have revealed poor conditions.
3. Areas with the same selection criteria as applied to primary stations. In these cases the same problems or potential for problems exist, but with a lesser degree of importance. These areas still require monitoring, but on a less frequent basis.

The parameters sampled at each secondary station are listed below with their corresponding STORET parameter codes:

Physical Parameters Sampled Monthly, May-October

Temperature	00010**	Salinity*,**	00480
Turbidity	00076	Conductivity*	00402
Color*	00080		

Chemical Parameters Sampled Monthly, May-October

Dissolved Oxygen	00300**	Nitrate-Nitrite	00630
pH	00400	Total Phosphorus	00665
BOD_5	00310	Phenols*	32730
Total Kjeldahl Nitrogen*	00625	Ammonia*	00610

Microbiological Parameters Sampled Monthly, May-October

Fecal Coliform Bacteria	31616 or 31615
Total Coliform Bacteria*	31506 or 31505

Chemical Parameters Sampled Annually

Heavy Metals*		Pesticides*	
Hardness	00900	Chlorides*	00940

* Selected Stations Only
** Profiled at one (1) meter intervals at lake stations collected by boat; profiled at top, mid, and bottom depths at estuary stations collected by boat.

All sampling procedures and analyses for the primary and secondary stations samples are performed in accordance with the Standard Operating Procedures Manual and Quality Assurance Procedure Plan (SCDHEC).

Depending upon the location of the stations within the coastal counties, the samples are sent to DHEC Analytical Laboratories either in the EQC Trident District Office in Charleston or the EQC Pee Dee District Office in Florence for analyses. These district laboratories initiate the analyses; however, the EQC laboratory in Columbia provides analyses for metals, nutrients, toxic extraction procedures, and organics. The district and central laboratories analyze samples, record the results, verify the results, and send the data to the Water Quality Monitoring Section in the Bureau of Water Pollution Control.

The Water Quality Monitoring Section reviews and edits the data prior to submittal to automated data processing for storage in STORET. The data base can be accessed by any STORET user. The system was designed and implemented by the United States Environmental Protection Agency.

III. SCDHEC SHELLFISH MONITORING PROGRAM

The Shellfish Monitoring Program seeks to provide data which accurately reflect the worst physical, chemical, and biological conditions of pollution of coastal shellfish growing waters in South Carolina. This is a conservative approach to help insure that the health of shellfish consumers is protected. The State's coastal area is divided into 20 shellfish management areas with a total of 350 monitoring stations. Stations within each area are identified as critical and non-critical.

This sampling network serves two important roles in the shellfish program. It provides a water quality data base which is included in a sanitary survey of each shellfish area. These surveys are conducted every three years with yearly updates and are used to classify shellfish waters for harvesting suitability. The sampling network also serves to provide continuous monitoring of each shellfish area to insure that conditions which existed during the sanitary survey still prevail and that the harvest classification is correct. All shellfish waters receive one of the following harvesting classifications:

Approved: Areas where a sanitary survey indicates that the water is not contaminated with fecal material, radionuclides, industrial wastes, or marine toxins such that the consumption of shellfish might be hazardous. The total coliform MPN (most probable number) median does not exceed 70/100 ml in the water and 10% of the samples do not exceed 230/100 ml.

Conditional: Areas of the same general quality as in the approved areas; however, the quality varies because of impacts from non-point and point sources, runoff, and seasonal activities. Shellfish are not allowed to be marketed when the approved area standards are not met.

Restricted: Areas impacted by known non-point and/or point sources. There may be a limited degree of fecal pollution that makes the shellfish unsafe for direct market harvesting. The shellfish, however, may be marketed after relaying or depuration. The median total coliform levels in water are between 70 and 700/100 ml with not more than 10% of the samples exceeding 2300/100 ml.

Prohibited: Areas where a sanitary survey indicates pollution from radionuclides or industrial wastes or the median total coliform MPN exceeds 700/100 ml in the water or more than 10% of the samples exceed 2300/100 ml. Prohibited areas include designated buffer zones around marinas and wastewater treatment plants. These buffer zones are established as safety factors in case of accidental pollution.

All sampling and analyses are conducted in accordance with approved Food and Drug Administration procedures and those referenced in Interstate Shellfish Sanitation Program guidelines relating to shellfish sanitation.

Shellfish program water quality stations have been designated critical or non-critical depending upon the location of the station.

1. Critical Stations

Critical stations are established at locations which have potential for variable water quality and are important for public health protection. These sites are often located at a harvesting classification boundary to more accurately delineate the classification changes. All stations in conditional harvesting areas are critical stations. There are 219 critical stations where water samples are collected six times per year during shellfish harvesting season (August 15 - May 15).

Shellfish meat samples are collected once per year at all critical stations. Shellfish are filter feeders and can concentrate contaminants and these samples provide a measure of the bacterial quality of the shellfish meats.

2. Non-Critical Stations

Non-critical stations are located within large areas with the same

classification throughout. These stations are strategically located to reveal changes in water quality within shellfish growing areas. There are 119 non-critical stations where water samples are collected four times per year during shellfish harvesting season. Results are used in determining classifications.

Sampling is performed by personnel in the three coastal Environmental Quality Control Districts. Analyses are performed by a DHEC laboratory on Sullivans Island dedicated to the Shellfish sampling program. The following table outlines the number of stations by EQC District and shellfish management area.

District	Areas	Critical Stations	Non-Critical Stations
Waccamaw	01 through 05	39	28
Trident	06 through 13	106	30
Low Country	14 through 20	74	61
		219	119

There are 12 additional stations which are presently inactive but since data are available, they are included as part of the shellfish monitoring network description.

3. Parameters Measured

The following parameters, with STORET codes indicated, are measured at all shellfish program water quality stations:

Physical Parameters

Tide stage	00067
Water Temperature	00010
Air Temperature	00020
Wind Direction	00036
Salinity	00480

Microbiological Parameters	
Fecal Coliform	31615
Total Coliform	31505

Shellfish Meat Parameters (Critical Stations Only)	
Species	75000
Sample Type	01340
Temperature of Sample	00016
Total Plate Count	31749
Total Coliform	31520
Fecal Coliform	31640

Critical, non-critical, and inactive shellfish stations are listed by areas in Appendix B.

IV. SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL INTENSIVE WATER QUALITY SURVEY AND SPECIAL STUDIES PROGRAM

Even though there are primary and secondary trend monitoring stations located throughout the coastal counties, there are cases where special studies are required to get a more in depth picture of the water quality.

Intensive water quality surveys are conducted for gathering field data for calibration or verification of water quality mathematical models and to determine the quality of the State's waters and biological communities. The Department's goal is to calibrate models with measured field data when determining point source wasteload allocations resulting in advanced treatment requirements. Emphasis and priority is also placed on gathering field data for issuance of wasteload allocations for waste treatment projects funded with EPA grants under Section 201 of the Federal Clean Water Act. Special studies are designed and carried out as described in the Basic Water Monitoring Program (SCDHEC publication).

Intensive water quality surveys are generally performed during May through October. Winter months are less desirable for intensive water quality surveys used for model calibration since higher temperatures are best for determining

worst case conditions. This is based on the following factors:

1. Biochemical reaction rates and biological populations are lowered by colder temperatures.
2. Generally, the flow in the streams is higher and much less predictable in the winter.
3. Dissolved oxygen concentrations are higher due to higher saturation levels and oxygen demand lower due to lower temperatures in the winter.
4. For modelling purposes, it is desirable to conduct field studies which result in data closely aligned to the worst-case conditions under which water quality predictions are made. For example, predictions are normally based on low stream flows (7Q10).
5. On those occasions where seasonal wasteload allocations are at issue, studies may be conducted during the winter months.

An additional objective of special studies is to provide immediate and in depth investigations of specific environmental problems and to conduct practical research programs which will lead to a better understanding of the water quality of the State of South Carolina. Each study is documented in a report which discusses the data obtained during the study and conclusions. These reports are available to the public and interested agencies and are listed in chronological order in Appendix C.

V. UNITED STATES GEOLOGICAL SURVEY MONITORING PROGRAM

The United States Geological Survey (USGS) has 37 routine monitoring stations in the coastal counties. The criteria for selecting the locations for the stations are as follows: 1) to provide data on the before and after affects of rediversions on the water quality and aquatic community of the

Cooper River; 2) to gather data at various river flows to better characterize the assimilative capacity of the Waccamaw River and the Intracoastal Waterway, and 3) to provide additional routine monitoring data where information was not available. These stations and location descriptions are listed by counties in Appendix D.

All USGS monitoring stations are sampled every hour using a probe recorder which transmits the results to a spool tape. The stations located on the Cooper River use the spool tapes as well as the Data Collection Platform Satellite, which transmits the data to the USGS office computer in Columbia every 3 hours.

The parameters sampled are listed below with their corresponding STORET parameter codes:

Specific Conductivity	00095
Temperature	00010
pH	00400
Dissolved oxygen	00300

The probe used at each station has the capacity to simultaneously record up to 10 parameters and is calibrated weekly. The data tapes are collected monthly and edited against previous values. Once there is assurance the values recorded fall within an acceptable range, the data is then entered into STORET.

USGS has three ongoing special studies in the coastal counties and are listed below:

1. Determination of flood hydrographs for South Carolina streams.

   This project includes 4 stations in the coastal counties that monitor rainfall and runoff at intervals ranging from 5 to 15 minutes. Data will be available in a published report and in the USGS computer database, WATSTORE.

2. Impact of water withdrawal from the Intracoastal Waterway and Bull Creek in Grand Strand area, South Carolina.

   The objective of this project is to predict the movement of the freshwater-saltwater interfaces in the Intracoastal Waterway under conditions of proposed withdrawal of fresh water from the Waterway near Enterprise Landing and from Bull Creek 7 miles upstream from the waterway. As part of the study, several monitoring stations have been installed.

3. Saltwater encroachment in the upper Floridan aquifer in the Hilton Head Island area, South Carolina.

   While this project is oriented toward groundwater, it is included in this list because of the importance of this issue to the coastal zone. The objective is to determine the rate of encroachment of saltwater into the freshwater aquifer under Hilton Head. As part of the study, groundwater quality is being monitored at several sites in the area.

Also, USGS has completed seven special studies in the coastal counties and are available to the public and interested agencies upon request. These studies are listed in chronological order in Appendix E.

VI. CORPS OF ENGINEERS MONITORING PROGRAM

The Corps of Engineers, Charleston District, has installed five "real time" salinity intrusion sampling stations in the Cooper River near Bushy Park. These stations and location descriptions are listed in Appendix F.

USGS (Columbia office) has been contracted by the Corps of Engineers to collect the samples by telemetry via Data Collection Platform Satellite. The data is collected every hour and transmitted to the USGS Columbia Office every three hours.

The parameters sampled are listed below with their corresponding STORET parameter codes:

Specific Conductivity	00095
Temperature	00010
pH	00400
Dissolved Oxygen	00300

Once the data has been received by the USGS Columbia Office, the data are reviewed against previous values, edited and entered into STORET. STORET is the same water quality data base used by SCDHEC.

During 1985, the Corps of Engineers has been doing prototype testing of the rediversion. This is an ongoing special study and information can be obtained upon request.

VII. SOUTH CAROLINA WILDLIFE AND MARINE RESOURCES MONITORING PROGRAM

South Carolina Wildlife and Marine Resources Department (SCWMRD) has established five routine biological monitoring stations on the Cooper River. These stations are sampled to collect baseline data prior to the full-scale rediversion and the sites were selected to maximize comparison with the data obtained from the prediversion studies and the other monitoring programs being conducted by SCDHEC, USGS and the Corps of Engineers. These stations and location descriptions are listed in Appendix F.

The parameters that are sampled are listed below:

Temperature	bimonthly	surface & bottom
Salinity	bimonthly	surface & bottom
pH	bimonthly	surface & bottom
Nutrients	bimonthly	surface & bottom
Turbidity	bimonthly	surface & bottom

These parameters are analyzed by the Survey II Digital Hydro Lab and values are recorded at the sampling site. The results are not accessible through a interagency computer and can only be obtained upon request.

The SCWMRD has completed a special study and have two ongoing special studies in the coastal counties. These studies are as follows:

1. Coastal Contaminant Survey - Stations are sampled semi-annually for water quality parameters, sediments, and where possible, oysters are collected and analyzed for tracemetals and organics (September 1985; May-June 1986). These stations are located throughout the eight coastal counties, beginning at the Waccamaw River in Horry County and ending with Calibogue Sound in Jasper County.
2. A Study to Monitor Concentrations of the Pesticide Nibrom in Estuarine Habitats around Parris Island, S.C. This study would indicate what effects the spraying of pesticides would have on decapods and water quality in the Parris Island area (October 1985).
3. Cooper River Rediversion Study. The objectives of this study is to collect a baseline data prior to complete rediversion and the effects on the 5 parameters sampled (ongoing project since 1984).

VIII. UNITED STATES FISH AND WILDLIFE SERVICE MONITORING PROGRAM

United States Fish and Wildlife Service (USFWS) is concerned about the potential increase in contaminants in the Cooper River and the affects on fish and birds which feed on aquatic organisms. In 1985, five biological monitoring stations were established on the Cooper River to study contaminants, the effects on the aquatic organisms, and to establish baseline data prior to fullscale rediversion of the Cooper River to the Santee River. These stations and location descriptions are listed in Appendix F.

The USFWS Charleston office uses the Patuxent National Wildlife Research Laboratory in Patuxent, Maryland to analyze whole fish tissue samples from catfish and garfish for heavy metals, PCBs, and pesticides. These parameters would indicate if the discharges from the industrial park facilities on the Cooper River were causing any biological problems downstream. The results of the sampling program can be obtained upon request from the USFWS.

Appendix A

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
PRIMARY AND SECONDARY WATER QUALITY STATIONS LISTED BY COUNTIES

SCDHEC Monitoring Stations
Beaufort County

Type of Station	Station Number	Description
Primary	CSTL-098**	Combahee Rvr. at US 17 10 mi ESE Yemassee
Secondary	MD-001	Beaufort Rvr. AB Beaufort at Channel Marker 231
Secondary	MD-002	Beaufort Rvr. at Drawbridge on US 21
Secondary	MD-003	Beaufort Rvr. BL Beaufort at Channel Marker 244
Secondary	MD-004	Beaufort Rvr. at JCT with Battery CK near Marker 42
Secondary	MD-005	Beaufort Rvr. BL Outfall of Parris Island MB at Buoy 29
Secondary	MD-006	Port Royal between Buoy 25 & 24 W of Bay Pt. Island
Primary	MD-007	Pocotaligo Rvr. at US 17 at Pocotaligo
Secondary	MD-010	Whale Branch at US 21
Secondary	MD-013	Mouth of Skull CK between Channel Markers 3 & 4 near Redbo
Secondary	MD-016	Mouth of May Rvr. 1.0 mi west of Channel Marker 29
Secondary	MD-117	Chechessee Rvr. at SC 170 10.5 mi SW of Beaufort
Primary	MD-118	New Rvr. at SC 170 9 mi west of Bluffton
Secondary	MD-172	Broad Rvr. at Mouth of Archer CK on SW side of USMC
Secondary	MD-175	Calibogue SD at Mouth of Cooper Rvr. near Red Buoy 32
Secondary	MD-194	Whale Branch at JCT with Campbell's CK 3/4 mi W of MD-10

** EPA Basic Water Monitoring Program Station

SCDHEC Monitoring Stations
Berkeley County

Type of Station	Station Number	Description
Primary	CSTL-062	Tail Race Canal at US 52 & 17A below Lake Moultrie
Primary	CSTL-063	Wassamassaw Swp at US 176
Primary	CSTL-079	Diversion Canal at SC 45 12.6 mi west of St. Stephens
Secondary	CSTL-085	Pier in Cooper Rvr. at end of Rice Mill Rd. in Pimlico
Secondary	MD-039	Goose Creek at S-08-136 Bridge
Primary	MD-043	Cooper Rvr. at Channel Marker 72 near USN Ammo Depot
Primary	MD-044	Cooper Rvr. below Mouth of Goose Ck at Channel Buoy 60
Primary	MD-045	Cooper Rvr. above mouth of Shipyard Ck at Channel Buoy 49
Primary	MD-113	Goose Creek Res. at Chtn Wtr Intake
Primary	MD-114	Goose Creek at S-10-52 North CHTN
Primary	MD-152	Cooper Rvr. at S-08-503 6.2 mi ESE of Goose Creek
Primary	MD-217	Durham Creek at S-08-9 Bridge
Primary	ST-001**	Santee Rvr. at SC 41/Us 17A NE of Jamestown
Secondary	ST-007	Walker SW at US 52 2.5 mi south St. Stephens
Primary	ST-016	Santee River at US 52 6.5 mi NNW of St. Stephens

** EPA Basic Water Monitoring Program Station

SCDHEC Monitoring Stations
Charleston County

Type of Station	Station Number	Description
Primary	MD-020	Mouth of Wappoo Creek between channel Markers 3 & 4
Secondary	MD-025	Elliot Cut at Edge water Dr. (S-10-26 off US 17)
Primary	MD-026	Stono Rvr. at SC 700
Primary	MD-034	Right bank of Ashley Rvr. mouth of Wappoo CK & Dills CK
Primary	MD-044	Cooper Rvr. below mouth of Goose CK at Channel Buoy 60
Primary	MD-045	Cooper Rvr. above mouth of Shipyard CK at Channel Buoy 49
Primary	MD-046	Cooper Rvr. under Grace Memorial Bridge
Primary	MD-047	Town CK (W. side of Drum Island) under Grace Memorial Brdg.
Primary	MD-048**	S. Channel Chas. Harbor off Ft. Johnson Quar Sta. Bell Buoy 28
Primary	MD-049	Ashley Rvr. at Magnolia Gardens
Primary	MD-052	Ashley Rvr. at Southern Railroad Bridge
Primary	MD-069	Intracoastal Waterway at SC 703 east Mt. Pleasant
Primary	MD-070	Abandoned Brdg. over the Cove End of Pitt St. Mt. Pleasant
Primary	MD-071	Shem Creek at Bridge on US 17
Primary	MD-114	Goose Creek at S-10-52 north CHTN
Primary	MD-115	Wando Rvr. at SC41
Primary	MD-118	New Rvr. at SC 170 9 mi west of Bluffton
Primary	MD-119	Edisto Rvr. at US 17 12.5 mi northwest of Ravenel
Primary	MD-120	Dawhoo Rvr. at SC 174 9 mi north of Edisto Beach SP
Secondary	MD-135	Ashley Rvr. at SC 7 (north bridge)
Primary	MD-152	Cooper Rvr. at S-08-503 6.2 mi ESE of Goose Creek
Primary	MD-165	Chas. Harbor at Ft. Johnson Pier at Marine Sci. Lab
Primary	MD-195	Bohickett Creek at SC 700 1 mi SW of Cedar Springs
Primary	MD-198	Wando Rvr. between Rathall & Hobcaw Creeks
Primary	MD-199	Unnamed Creek to Cooter Creek at S-10-1032 W Awendaw
Primary	MD-202	Stono Rvr. at S-10-2- 2 mi upstream of Clemson Exp. Sta.
Secondary	MD-206	Stono River at Abbapolla Creek
Secondary	MD-207	Kiawah River Mouth at Stono River
Secondary	MD-208	Stono River Mouth at Buoy 10 off Sandy Pt.
Secondary	MD-209	Bohicket Creek at Fickling Creek
Secondary	MD-210	Bohicket Creek Mouth at N. Edisto River
Secondary	MD-211	N. Edisto River Mouth between Kiawah Is. & Botany Bay Is.

** EPA Basic Water Monitoring Program Station

SCDHEC Monitoring Stations
Colleton County

Type of Station	Station Number	Description
Primary	CSTL-006	Salkehatchie River at 601 9 mi northeast Hampton
Secondary	CSTL-044	Ireland Creek at S-29-116 5.5 mi north of Walterboro
Primary	CSTL-068	Ashepoo River at SC 303 10 mi SSW of Walterboro
Primary	CSTL-069	Ashepoo River at US 17 3.4 mi ESE of Green Pond
Primary	CSTL-098**	Combahee River at US 17 10 mi ESE Yemassee
Secondary	E-014	Edisto River at US 15 south of St. George
Primary	E-015**	Edisto River at SC 61 at Givhans Ferry St. Park
Secondary	MD-119	Edisto River at US 17 12.5 mi northwest Ravenel

** EPA Basic Water Monitoring Program Station

SCDHEC Monitoring Stations
Dorchester County

Type of Station	Station Number	Description
Secondary	CSTL-013	Sawmill Branch at SC 165
Secondary	CSTL-043	Sawmill Branch at SC 78 E. of Summerville
Secondary	CSTL-099	Eagle Creek at 642 5 mi SSE of Summerville
Secondary	CSTL-102	Ashley River at SC 165 4.8 mi SSW of Summerville
Secondary	E-014	Edisto River at US 15 S. of St. George
Primary	E-015	Edisto River at SC 61 at Givhans Ferry St. Park
Secondary	E-016	Polk Swamp at UNIMP Rd. S-18-180 2 mi S. of St. George
Primary	E-100**	Four Hole Swamp at US 78 E. of Dorchester

** EPA Basic Water Monitoring Program Station

SCDHEC Monitoring Stations
Horry County

Type of Station	Station Number	Description
Secondary	MD-085	Intracoastal Wtrway at Pt 3 mi north of Brdg on US 501
Secondary	MD-087	Intracoastal Wtrway just North of Bridge on US 501
Secondary	MD-088	Intracoastal Wtrway 1 mi South of Bridge on US 501
Secondary	MD-089	Intracoastal Wtrway 2 mi South of Bridge on US 501
Secondary	MD-091	Intracoastal Wtrway 4 mi north of bridge on US 501
Secondary	MD-107	Kingston Lake near pump station on Lakeside Dr Conway
Secondary	MD-110	Waccamaw Rvr. at US 501 By-pass around Conway
Secondary	MD-111	Waccamaw Rvr. at Cox's Ferry on Co. Road 110
Primary	MD-124	Waccamaw Rvr. at SC 9 7.0 mi west of Cherry Grove
Secondary	MD-125	Intracoastal Waterway (Little Rvr) on SC 9 (US 17)
Primary	MD-127	Intracoastal Waterway at SC 544 7.5 mi SW of Myrtle Beach
Secondary	MD-136	Waccamaw Rvr. ¼ mi. upstream of JCT with Intracoastal Wtrway
Secondary	MD-137	Waccamaw Rvr. near Mouth of Bull CK at Channel Marker 50
Primary	MD-146	Waccamaw Rvr. & ICWW 1 mi below JCt at Bucksport Landing
Secondary	MD-158	Crabtree CK at Long St. below outfall of Conway #1
Primary	PD-061	Pee Dee Rvr. at US 701 2.75 mi NE Yauhannah
Primary	MD-162	Little Rvr. at S. end of Is. due east of Town (In Rvr)
Secondary	PD-176	Lake Swamp at S-26-99 5.9 mi northwest of Aynor
Secondary	PD-177	Chinners Mill Branch at S-26-24 1.9 mi SSE Aynor
Primary	PD-189	Little Pee Dee River at US 378 12 mi west Conway

SCDHEC Monitoring Stations
Georgetown County

Type of Station	Station Number	Description
Primary	MD-073	Sampit River OPP Amer Cyanamid Chemical Company
Secondary	MD-074	Sampit River at Channel Marker #30
Primary	MD-075	Sampit Rvr. between Mouths of Ports CK & Penny Royal CK
Secondary	MD-076N	Turkey CK S-22-42 SW of Georgetown Marker 94
Primary	MD-077	Sampit River at US 17
Primary	MD-080**	Winyah Bay at Jct. of Pee Dee & Waccamaw AT
Secondary	MD-138	Waccamaw Rvr. AT channel Marker 57
Primary	MD-149	Whites Creek 100 yards upstream of JCT with Sampit Rvr.
Primary	PD-061**	Pee Dee River at US 701 2.75 mi NE Yauhannah
Primary	PD-170	Black Rvr. AT SC 51 11.6 mi NE of Andrews
Primary	PD-325	Black Rvr. AT S-22-489 4 mi NE Georgetown
Primary	ST-001	Santee Rvr. AT SC 41/US 17A NE of Jamestown
Primary	ST-006	S. Santee Rvr. AT US 17

** EPA Basic Water Monitoring Program Station

SCDHEC Monitoring Stations
Jasper County

Type of Station	Station Number	Description
Primary	CSTL-007	Combahee Swamp below Yemassee Sewage outfall
Primary	MD-118	New River at SC 170 9 mi west of Bluffton
Secondary	MD-128	Bee Creek at SC 462 5.9 mi northeast of Ridgeland
Primary	SV-191	Savannah River at US 17 8.9 mi SSW of Hardeeville

APPENDIX B

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL CRITICAL, NON-CRITICAL, AND INACTIVE SHELLFISH STATIONS LISTED BY AREA

SCDHEC Shellfish Stations

AREA 01 - LITTLE RIVER

Type of Station	Station Number	Description
Non-Critical	01-01	Little River Inlet at Can Buoy
Non-Critical	01-02	First Creek on Port Side of Little River (Dunn Sound Creek)
Non-Critical	01-03	Little River and Intracoastal Waterway
Non-Critical	01-04	Little River and Calabash Creek
Non-Critical	01-05	Big Bend up to Dunn Sound (Tilghman Plantation)
Critical	01-06	Bridge to Waites Island (Pollution Line)
Critical	01-07	Hog Inlet (Cherry Grove)
Non-Critical	01-08	N.C. and S.C. State Line Marker #116
Non-Critical	01-09	Intracoastal Waterway Marker #6, South of City of Little River
Non-Critical	01-10	Exxon Marina near Hwy #17 (Nixon's Crossroads)
Non-Critical	01-11	Dock, Ocean Side North Carolina
Non-Critical	01-12	Clayton Creek near Bonaparte, N.C.
Non-Critical	01-13	Bonaparte Landing (North Carolina)
Non-Critical	01-14	Palmetto Shores Marina
Non-Critical	01-15	Ocean Drive Outfall and Intracoastal Waterway
Non-Critical	01-16	50 Yards North of Ocean Drive Outfall in Intracoastal Waterway
Critical	01-17	45th Ave., Cherry Grove
Critical	01-17A	Nixon St., Cherry Grove

SCDHEC Shellfish Stations

AREA 02 - N. MYRTLE BEACH

Type of Station	Station Number	Description
Non-Critical	02-01	White Point Swash
Non-Critical	02-02	Singleton Swash
Non-Critical	02-03	Canepatch Creek

SCDHEC Shellfish Stations

AREA 03 - MYRTLE BEACH

Type of Station	Station Number	Description
Non-Critical	03-01	Withers Swash
Inactive	03-17	50 yards north of Myrtle Beach Outfall
Inactive	03-18	50 yards south of Myrtle Beach Outfall
Inactive	03-21	Myrtle Beach and Conway Highway
Inactive	03-22	50 yards north of Myrtle Beach Air Force Base

SCDHEC Shellfish Stations

AREA 04 - MURRELLS INLET/PAWLEYS ISLAND/LITCHFIELD

Type of Station	Station Number	Description
Critical	04-01	State Picking Grounds, North End of Murrell's Inlet
Critical	04-01A	Behind Dean Bellamy's
Critical	04-02	North End of Murrell's Inlet (Mickey Spillane's Home)
Critical	04-03	Government Dock in Murrell's Inlet
Critical	04-04	Phillips 66 Marina in Murrell's Inlet (Marlin Quay)
Critical	04-05	North Side of Murrell's Inlet (Mouth of Inlet)
Critical	04-06	Mud Flat in Front of Morse and Nance Shellfish Plants
Critical	04-07	Hughes Landing in Murrell's Inlet
Critical	04-08	Nance's Dock in Murrell's Inlet
Critical	04-08A	Oyster Flats in South End of Marsh in Murrell's Inlet
Critical	04-09	Litchfield Bridge (Litchfield Beach)
Critical	04-10	North End of Pawley's Island
Critical	04-11	North Bridge (Pawley's Island)
Critical	04-12	South Bridge (Pawley's Island)
Critical	04-13	South End of Pawley's Island
Critical	04-14	Erick Dock - Litchfield
Critical	04-15	Litchfield Beach
Critical	04-16	Chicken Farm Ditch in Murrell's Inlet
Critical	04-17	Behind Creekside Restaurant in Murrell's Inlet
Critical	04-18	Flats POG, South End of Murrell's Inlet
Critical	04-19	South Litchfield, Sandbar Behind Condominiums
Critical	04-21	South Pawley's Island Boat Landing
Critical	04-22	Huntington State Park Road Outfall

SCDHEC Shellfish Stations

AREA 05 - NORTH INLET/WINYAH BAY

Type of Station	Station Number	Description
Critical	05-01	Jones Creek near Pollution Line
Critical	05-02	Noble Slough
Critical	05-03	North Inlet
Critical	05-04	Town Creek
Non-Critical	05-05	Oyster Bay near Cut-off Creek
Non-Critical	05-06	No Man's Friend and Winyah Bay
Non-Critical	05-07	Jones Creek at Winhay Bay
Critical	05-08	Town Creek at Sixty Bass Creek
Critical	05-09	Clambank Creek at Pollution Line
Critical	05-10	Jones Creek at Mud Creek
Critical	05-11	Town Creek at Bread and Butter Creek
Critical	05-12	Confluence of Old Man Creek, Bass Hole Bay, Sea Creek Bay
Critical	05-13	Northern Portion Debidue Creek - Boat Basin
Critical	05-14	Southwestern Portion of Bly Creek
Non-Critical	05-20	Buoy "19A" - Range E
Critical	05-21	Buoy "17" - Range E
Non-Critical	05-24	Coast Guard Dock, Range C
Non-Critical	05-25	Western Channel - Tip of Western Channel Island

SCDHEC Shellfish Stations

AREA 06 - SANTEE BAY

Type of Station	Station Number	Description
Critical	06-01	South Santee at Alligator Creek
Critical	06-02	South Santee Inlet
Critical	06-03	North Santee at Crow Island and Cane Island
Non-Critical	06-04	North Santee Inlet
Critical	06-05	North Santee and Mosquito Creek
Critical	06-06	Alligator Creek and Ocean Inlet
Critical	06-07	Alligator Creek at Marker 20
Non-Critical	06-08	Casino Creek at Marker 29
Non-Critical	06-09	Dupree Creek at Marker 30
Non-Critical	06-10	Inland Waterway at Marker 32
Non-Critical	06-11	AIWW at Minim Creek
Critical	06-12	Alligator Creek State Shellfish Grounds
Critical	06-13	Alligator Creek nearest South Santee River between Markers 24 and 25

SCDHEC Shellfish Stations

AREA 07 - CAPE ROMAIN - BULLS BAY

Type of Station	Station Number	Description
Critical	07-01	Venning Creek (1st creek on the left past Marker 64 Southbound)
Non-Critical	07-01A	Venning Creek - Bulls Bay
Critical	07-02	Graham Creek at Marker 64
Non-Critical	07-02A	Graham Creek and Bull Bay
Critical	07-03	Awendaw Creek at Marker 57
Critical	07-04	Harbor River at Marker 48
Non-Critical	07-04A	Harbor River - Bull Bay
Critical	07-05	Tibwin Creek at Marker 42
Critical	07-06	Five Fathom Creek
Non-Critical	07-06A	Five Fathom Creek at Bull River
Critical	07-07	Jeremy Creek (opposite fire tower)
Critical	07-08	Clubhouse Creek
Non-Critical	07-08A	Oyster Bay
Critical	07-09	Doehall Creek (100 yards North of Marker 46)
Critical	07-10	AIWW Marker #64 300 yards North of Graham Creek
Non-Critical	07-11	AIWW - 300 yards South of Graham Creek

SCDHEC Shellfish Stations

AREA 08 - CAPERS ISLAND - BULL ISLAND

Type of Station	Station Number	Description
Critical	08-01	Morgan Creek at Northern most Confluence with Intracoastal WW
Critical	08-02	Hamlin Sound
Critical	08-03	Dewees Inlet at Intracoastal WW (Marker 10)
Critical	08-04	Bull Yard Sound (Marker 104)
Critical	08-05	Whiteside Creek (Marker 96)
Critical	08-06	Mark Bay (Marker 90)
Non-Critical	08-07	Price's Inlet
Critical	08-08	Marker 82 - Intracoastal Waterway
Critical	08-09	Moore's Landing
Critical	08-10	Meeting Reech - North of Isle of Palms STP Outfall
Non-Critical	08-11	South of Isle of Palms Sewage Plant Outfall (Opposite airport)
Critical	08-12	Morgan Creek at 41st Street Marina
Critical	08-13	Sewee Bay POG - Sewee Bay at Hickory Bay

SCDHEC Shellfish Stations

AREA 09 - SULLIVANS ISLAND

Type of Station	Station Number	Description
Critical	09-01	Hamlin Creek at Waterway
Critical	09-02	Upper End of Hamlin Creek at POG
Critical	09-03	Upper End of Swinton Creek
Inactive	09-04	Swinton Creek at Ralph's Oyster Bed (inactive)
Critical	09-05	Shortcut - Swinton Creek
Non-Critical	09-06	Inlet Creek and Gentide Creek
Critical	09-07	Inlet Creek and Intracoastal WW
Critical	09-08	Breech Inlet
Critical	09-09	Ben Sawyer Bridge
Non-Critical	09-10	Marker 126 Intracoastal WW - at the Cove STP Outfall
Critical	09-11	End of 10th Street at Hamlin Creek
Critical	09-12	Swinton Creek and Hamlin Creek
Inactive	09-13	Breech Inlet and Sullivan's Island Beach (inactive)
Critical	09-14	Swinton Creek at Intracoastal WW
Non-Critical	09-15	Intracoastal WW between Inlet and Swinton Creek
Critical	09-17	Conch Creek State Shellfish Ground - Mt. Pleasant Side
Critical	09-17A	Conch Creek SSG - Sullivan's Island Side

SCDHEC Shellfish Stations

AREA 09B - WANDO RIVER

Type of Station	Station Number	Description
Critical	09B-01	Wando River at Nowell Creek
Critical	09B-02	Wando River at Horlbeck Creek
Critical	09B-03	Wando River at Hwy. 41 Bridge
Critical	09B-04	Wando River at Guerin Creek
Critical	09B-05	Wando River Opposite Big Paradise Island
Critical	09B-06	Wando River at Paradise Boat Landing
Critical	09B-07	Boone Hall Creek Opposite County Recreation Area
Critical	09B-08	Buoy 23 - Wando River
Critical	09B-09	Guerin Creek - 1 mile up from confluence with Wando River
Critical	09B-10	Alston Creek STP Outfall

SCDHEC Shellfish Stations

AREA 10 - FOLLY BEACH

Type of Station	Station Number	Description
Critical	10-01	Overhead Power Cable - Folly Creek
Critical	10-02	Folly Creek Bridge
Critical	10-03	Bowen Island at Dock
Critical	10-04	Backman Creek at Folly Creek
Criticla	10-05	Singleton House
Non-Critical	10-06	Opposite Little Island in Folly Creek
Critical	10-07	Last Dock South in Folly River
Critical	10-08	Folly River Bridge
Critical	10-09	Last Dock North in Folly River
Critical	10-11	Lighthouse Creek and Folly Creek
Critical	10-13	First Creek on Left in Folly Creek N. of Pollution Line
Critical	10-14	Lighthouse Creek at Pollution Line
Non-Critical	10-15	Secessionville Creek at Private Docks
Non-Critical	10-16	Clark Sound at Ocean View
Inactive	10-17	Middle of Clark Sound (inactive)
Critical	10-18	Mouth of Schooner Creek
Critical	10-18A	Charleston Harbor at Schooner Creek
Non-Critical	10-19	Just inside Clark Sound from Schooner Creek
Critical	10-20	Backman's Dock in Backman Creek
Critical	10-22	Folly River State Shellfish Ground - Opposite Folly Island
Critical	10-23	Folly River SSG - Mouth of First Sister Creek, Opposite Long Island

SCDHEC Shellfish Stations

AREA 11 - STONO - KIAWAH

Type of Station	Station Number	Description
Critical	11-01	Elliott Cut at Stono River
Critical	11-02	Stono Bridge at Hwy 700
Non-Critical	11-03	Windmill
Critical	11-05	Mouth of Abbapoola Creek
Critical	11-06	Up Abbapoola Creek
Critical	11-07	Green Creek at Stono River
Non-Critical	11-08	Mouth of Kiawah River
Inactive	11-09	Kiawah River Behind Old House (inactive)
Critical	11-10	South End of Kiawah River
Non-Critical	11-11	Marker 17 - Intracoastal WW
Non-Critical	11-12	SCL Railroad
Critical	11-15	Stono River at Marker 63
Critical	11-16	Stono River at Marker 54
Critical	11-17	Log Bridge Creek - Marker 51
Non-Critical	11-18	Rantowles Creek at Stono River
Critical	11-19	Stono Inlet
Critical	11-20	Ashley River at Elliott Cut
Critical	11-21	On the flats - South Kiawah
Non-Critical	11-22	Creek by House Trailer
Critical	11-23	Captain Sam's Creek and Kiawah River
Critical	11-25	Cole Creek State Shellfish Ground

SCDHEC Shellfish Stations

AREA 12 - N. EDISTO RIVER

Type of Station	Station Number	Description
Critical	12-01	Mouth of Church Creek at Marker 77
Critical	12-02	Goshen Point - Marker 69
Critical	12-03	Yonges Island Creek - Marker 90
Critical	12-04	Toogoodoo Creek - Marker 106
Critical	12-05	Dawho Creek - Marker 110
Critical	12-06	Steamboat Creek - Marker 2
Critical	12-07	Westbank Creek at N. Edisto River - Opposite Leadenwah Creek
Critical	12-08	Leadenwah Creek at N. Edisto River
Critical	12-09	Adams Creek
Critical	12-10	Rockville Boat Landing
Critical	12-11	Up Adams Creek - Botany Bay Marina
Critical	12-12	Leadenway Creek approximately 1 mi. from confluence with N. Edisto River.
Critical	12-13	Bohicket at Fickling Creek
Critical	12-14	Hwy. 700 Bridge over Bohicket
Critical	12-20	Bohicket Creek opposite Hoopstick Island
Critical	12-21	Opposite Old Dam Behind Rast House Restaurant
Non-Critical	12-22	Oppostie Boy Scout Camp
Inactive	12-23	Hayes Dock (inactive)
Inactive	12-24	Mitchell Dock (inactive)
Inactive	12-25	Bridge by Hoopstick Island (inactive)
Inactive	12-26	Salvo Dock (inactive)
Critical	12-28	State Shellfish Ground - Lower Toogoodoo & Swinton Creeks
Critical	12-29	Raven Point Creek - Pollution Line

SCDHEC Shellfish Stations

AREA 13 - S. EDISTO RIVER

Type of Station	Station Number	Description
Critical	13-01	Up Big Bay Creek
Critical	13-02	Mouth of Big Bay Creek
Non-Critical	13-03	Mouth of St. Pierre Creek
Critical	13-04	St. Pierre Creek at Peters Point
Critical	12-05	Up Fishing Creek opposite first house
Critical	13-06	Confluence of Shingle and Bailey Creeks
Non-Critical	13-07	Up Store Creek
Non-Critical	13-08	Edisto River at Ashepoo River
Critical	13-09	Fishing Creek at Flowers Oyster Plant
Critical	13-10	Pollution Line - Fishing Creek

SCDHEC Shellfish Stations

AREA 14 - ST. HELENA SOUND

Type of Station	Station Number	Description
Critical	14-01	Whale Branch Bridge - Highway 21
Critical	14-02	Campbell Creek at Whale Branch
Non-Critical	14-03	Coosaw Plantation
Non-Critical	14-04	Bull River Inlet and Coosaw River
Non-Critical	14-05	Combahee River Inlet and Coosaw River
Non-Critical	14-06	Intercoastal Waterway and Coosaw River - Marker #6
Non-Critical	14-07	Rock Creek at Ashepoo Coosaw Cutoff
Non-Critical	14-08	Ashepoo River at unnamed Creek from Hutchinson Island
Critical	14-09	St. Helena Sound at Morgan Back Creek
Non-Critical	14-10	Parrot Creek and Coosaw River - Marker #1
Non-Critical	14-11	Sam's Point and Coosaw River
Non-Critical	14-12A	Point at Confluence of Coosaw and Whale Branch
Critical	14-13	Halfmoon Creek at Whale Branch
Critical	14-14	Huspah Creek at Railroad Trestle
Critical	14-16A	Point South of Fish Creek at Coosaw River
Critical	14-17	Confluence of Wimbee Creek and South Wimbee Creek
Critical	14-18	Whale Branch POG - Huspah at Bull Point
Non-Critical	14-19	Ashepoo River POG

SCDHEC Shellfish Stations

AREA 15 - BEAUFORT RIVER

Type of Station	Station Number	Description
Critical	15-01	Brickyard Point at Range Marker
Critical	15-01A	McCalley's Creek at Pawkie Island
Non-Critical	15-02	Mulligan Creek at Brickyard Creek
Non-Critical	15-03	Albergottie Creek and Intracoastal Waterway
Non-Critical	15-04	Pidgeon Point - Broomfield Creek at Beaufort River
Non-Critical	15-05	Woods Memorial Bridge over Beaufort River
Non-Critical	15-06	Beaufort River behind Beaufort Memorial Hospital
Non-Critical	15-07	Beaufort River - McTeer Bridge
Critical	15-08	Battery Creek and Beaufort River
Critical	15-10	Battery Creek at Five (5) Points Creek
Inactive	15-12	Battery Creek - 1st Oyster Flats (inactive)
Inactive	15-13	Battery Creek - Power Lines (inactive)
Critical	15-14	Parris Island Sewage Outfall
Critical	15-15	Ballast Creek at Beaufort River
Non-Critical	15-16	Station Creek at Beaufort River
Non-Critical	15-17	Cat Island Creek at Chowan Creek
Non-Critical	15-18	Second Middle Marsh in Chowan Creek
Critical	15-19	Pollution Line in Battery Creek 1000 ft. below Rabbit Island
Critical	15-20	Capers Creek State Shellfish Ground - Penn Community Services Retreat Center
Critical	15-21	Unnamed Creek in which BC High and Cherry Hill School Discharge
Critical	15-23	Distant Island SSG

SCDHEC Shellfish Stations

AREA 16 - FRIPP ISLAND, HUNTING ISLAND & ST. HELENA SOUND

Type of Station	Station Number	Description
Non-Critical	16-02	Trenchard's Inlet at Mouth of Station Creek
Non-Critical	16-03	Club Bridge Creek at Harbor River Sound
Non-Critical	16-04	Story River at Fripp Inlet
Critical	16-05	Old House Creek at Fripp's Inlet
Non-Critical	16-06	Harbor River at Johnson Creek
Non-Critical	16-07	Harbor River Inlet (North Side of Bridge)
Non-Critical	16-08	Morgan River at Village Creek
Non-Critical	16-09	Edding Creek at Morgan River
Non-Critical	16-10	Parrot Creek at Morgan River
Non-Critical	16-11	Jenkin's Creek at Morgan River
Inactive	16-12	Lucy Point Creek at Morgan River (inactive)
Critical	16-13A	South Edge of Lucy Point Creek Buffer Zone
Critical	16-13B	North Edge of Lucy Point Creek Buffer Zone
Critical	16-14	Doe Creek Behind Coastal Seafood - Doe Creek is behind Datha Island
Non-Critical	16-15	Jenkin's Creek at Confluence of Morgan River at Warsaw Island
Non-Critical	16-17	Station Creek State Shellfish Ground - Beaufort County Landing
Critical	16-18	Eddings Creek at or near Shrimp Dock - Sludge Site

SCDHEC Shellfish Stations

AREA 17 - BROAD RIVER, CHECHESSEE AND COOSAWHATCHIE

Type of Station	Station Number	Description
Non-Critical	17-01	Broad River at S.A.L. Railroad Bridge
Non-Critical	17-02	Boyd Creek at Broad River
Non-Critical	17-03	Broad River at Whale Branch
Inactive	17-04	Laurel Bay at Broad River (inactive)
Critical	17-04E	Laurel Bay Discharge Buffer Zone - Ebb Tide
Critical	17-04F	Laurel Bay Discharge Buffer Zone - Flood Tide
Non-Critical	17-05	Broad River Bridge
Non-Critical	17-06	Colleton River at Chechessee River
Non-Critical	17-07	Mouth of Chechessee Creek and Chechessee River
Critical	17-08	Marina at Chechessee Bridge (Lemon Island)
Non-Critical	17-09	Mouth of Euhaw Creek at Hazard Creek
Critical	17-10	Archers Creek at Broad River
Critical	17-10A	Archers Creek at the Broad River Side of Bridge to Parris Island at Closure Line
Non-Critical	17-11	Broad River at Ribbon Creek
Non-Critical	17-12	Broad River at Ballast Creek
Non-Critical	17-13	Broad River at Creek just below Ballast Creek (General's Landing)
Non-Critical	17-14	Broad River at Parris Island Spit
Non-Critical	17-16	Broad River at Corn Island (Mouth of Creek)
Critical	17-17	Hazzard Creek at Chechessee River
Critical	17-18	Hazzard Creek in Front of Chelsea Plantation Club House
Critical	17-19	Drainage Canal a U.S. 278 at Hazzard Creek
Critical	17-19A	Drainage Ditch by Hickory Hill Landfill
Non-Critical	17-20	Marsh Island State Shellfish Ground South of Whale Branch
Non-Critical	17-21	Confluence of Middle Creek and Whale Branch

SCDHEC Shellfish Stations

AREA 18 - OKATIE AND COLLETON RIVERS

Type of Station	Station Number	Description
Critical	18-01	Okatie River at Camp St. Mary's Dock
Critical	18-02	Okatie River behind T.M. Bailey's Oyster Plant
Critical	18-03	Callawassie Island (Okatie River)
Critical	18-04	Copp Landing in Colleton River (mouth of creek)
Critical	18-05	Victoria Bluff (Colleton River)
Critical	18-06	Sawmill Creek at Colleton River
Critical	18-07	Okatie River at Indigo Plant
Critical	18-08	Okatie River at Dock Without House

SCDHEC Shellfish Stations

AREA 19 - BLUFFTON

Type of Station	Station Number	Description
Non-Critical	19-01	May River South of Palmetto Bluff
Critical	19-02	Mouth of Unnamed Creek at Jack Crow Island in Cooper River
Critical	19-02A	Cooper River before Confluence with New River
Critical	19-03	Rams Horn Cut Creek and Cooper River
Non-Critical	19-04	Cooper River at Marker #41, Daufuskie Island
Non-Critical	19-05	Bloody Point at Mungen Creek
Non-Critical	19-06	Marker #43 (Wright River)
Non-Critical	19-07	Rams Horn Creek and New River
Non-Critical	19-08	First Creek on left up New River (Pollution Line)
Non-Critical	19-09	Bull Creek and Cooper River
Non-Critical	19-10	Bull Creek and Jack Crow Island
Non-Critical	19-11	Bull Creek and Savage Island
Non-Critical	19-12	Bull Creek and May River
Non-Critical	19-13	Old Joy Landing in May River
Inactive	19-14	Myrtle Island and May River (inactive)
Inactive	19-15	Bluffton County Dock (inactive)
Non-Critical	19-16	May River behind Bluffton Oyster Co-op
Critical	19-17E	Cooper River Marina at edge of Buffer Zone - Ebb Tide
Critical	19-17F	Cooper River Marina at edge of Buffer Zone - Flood Tide
Critical	19-18	May River downstream of Drainage Canals (Markers #22 & #23)
Critical	19-19	May River downstream of Drainage Canals (Marker #20)

SCDHEC Shellfish Stations

AREA 20 - HILTON HEAD ISLAND

Type of Station	Station Number	Description
Non-Critical	20-01	Braddock Point, South end of Hilton Head Island
Non-Critical	20-02	Marker #32, Calibogue Sound
Critical	20-03	Shark Bank and Broad Creek (Marker #2) Buffer Zone from Sea Pines STP
Critical	20-04E	Broad Creek at Palmetto Bay Marina Buffer Zone - Ebb Tide
Critical	20-04F	Broad Creek at Palmetto Bay Marina Buffer Zone - Flood Tide
Critical	20-05	May River at Calibogue Sound
Critical	20-06	Jarvis Creek at Calibogue Sound
Critical	20-07	Buckingham Landing at Bridge
Critical	20-09	Mackey's Creek and Chechessee River
Critical	20-10	Skull Creek at Small Creek from Mariner's Cove
Critical	20-11	Skull Creek at Marker #19
Critical	20-12	Skull Creek behind Hilton Head Seafood Company
Critical	20-13	Skull Creek and Port Royal Sound
Critical	20-14	Calibogue at Braddock Cove
Critical	20-14A	Calibogue at Baynard Cove
Critical	20-15A	North end of Sea Pines Buffer Zone
Critical	20-16	Creek behind Lynn Smith's Oyster Plant at Broad Creek
Critical	20-16B	Drainage canal from Palmetto Dunes at Hwy. 278 NE
Critical	20-16C	Drainage canal at Headwater of Broad Creek off Matthews Drive
Critical	20-17A	Drainage canal Entering Broad Creek between Long Cove & Wexford Plantation
Critical	20-17E	Broad Creek at BC Marina Buffer Zone - Ebb Tide
Critical	10-17F	Broad Creek at BC Marina Buffer Zone - Flood Tide
Critical	20-18	Shelter Cove Marina
Critical	20-18A	Drainage Canal from Palmetto Dunes at Hwy. 278 SW
Critical	20-19E	Broad Creek at Harbor Town Marina Buffer Zone - Ebb Tide
Critical	20-19F	Broad Creek at Harbor Town Marina Buffer Zone - Flood Tide
Critical	20-20E	Moss Creek Marina Buffer Zone - Ebb Tide
Critical	20-20F	Moss Creek Marina Buffer Zone - Flood Tide
Non-Critical	20-21	Fish Haul Creek at Port Royal Sound
Critical	20-22	Old House Creek - Calibogue Sound

APPENDIX C

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL INTENSIVE WATER QUALITY SURVEYS AND SPECIAL STUDIES

Report Number	Report Title
003-76	Special Bacteriological Study on the Edisto River above Givhan's Ferry. 20 pp.
025-78	Impact of Controlled Low Flow on the Water Quality of the Cooper River. John Inabinet. 63 pp.
001-79	A Review of the Impacts of Coastal Marina Siting, Construction, and Activities as Related to Water Quality Considerations. Alton Boozer. 30 pp.
013-79	Toxicity Test - Santee River Wool Combing Co., Jamestown, SC. Maxcy Dickson and Richard Renfrow. 3 pp.
002-80	Lumber River/Dead-End Canal Study, Horry County, SC. Glenda Meetze. 14 pp.
003-80	An Intensive Water Quality Survey of Lawsons Fork Creek, Spartanburg County, SC. Mike Marcus. 42 pp.
004-80	Hilton Head Island, SC - Sea Pines Plantation Nonpoint Source Assessment. Alton C. Boozer. 119 pp.
005-80	A Water Quality Assessment of the Receiving Waters of the Port Royal Plantation Wastewater Treatment Facilities, Beaufort, SC. Mike Marcus. 26 pp.
016-80	Biological Assessment of a Estuarine Tidal Creek at the Mount Pleasant Sewage Treatment Plant, Mount Pleasant, SC. Edward M. Younginer and Glenda S. Meetze. 10 pp.
019-80	Acute Toxicity Test on Town of Andrews Wastewater Treatment Facility, Andrews, SC. Maxcy R. Dickson. 17 pp.
020-82	The Environmental Status of South Carolina's Barrier Islands. Dexter Kimsey, Larry Turner and John Knox. 130 pp.
023-82	Assessment of the Macroinvertebrate Communities of Walker Swamp, Russellville, South Carolina in Berkeley County. Paul H. Carlson. 7 pp.
002-83	An Intensive Water Quality Survey of Captain Bills Creek. Jasper County, South Carolina. James M. Marcus. 113 pp.
020-83	Pesticide Analyses at Selected Drainages on St. Helena Island, Beaufort County, to Trenchards Inlet. Sally C. Knowles. 27 pp.
022-83	A Water Quality Assessment of Selected Coastal Marinas, Beaufort County, South Carolina, James M. Marcus and Glenda R. Swearingen. 233 pp.

Report Number	Report Title
022a-83	A Water Quality Assessment of Selected Coastal Marinas, Beaufort County, South Carolina. James M. Marcus and Glenda R. Swearingen. 251 pp.
025-83	Water Quality Analyses of the Beaufort River and Battery Creek, Beaufort County, South Carolina. A Study for Reclassification. Sally Knowles. 77 pp.
027-83	A Water Quality Assessment of Marina Activities at Murrells Inlet, Georgetown County, South Carolina. Glenda R. Swearingen and James M. Marcus.
017-83	An Assessment of the Bacteriological Quality of Selected Surface Waters at Fripp Island. James M. Marcus. 93 pp.
033-83	Biological Assessment of Crawl Creek at Georgia-Pacific Corporation, Berkeley County, South Carolina. Paul H. Carlson and Harry L. Gaymon. 16 pp.
034-83	Biological Water Quality Assessment of Walker Swamp at Georgia-Pacific Corporation in Russellville, Berkeley County, South Carolina. Paul H. Carlson. 15 pp.
037-83	A Water Quality Assessment of Campbell Creek, Beaufort County, South Carolina. James M. Marcus. 210 pp.
003-84	Toxicity Test Wolverine Brass Works, Conway, SC. Richard T. Renfrow. 3 pp.
010-84	Toxicity Test Kimberly Clark Corporation, Beech Island, South Carolina. Richard T. Renfrow, III. 5 pp.
032-84	A Special Water Quality Sampling of Three Crayfish Aquaculture Systems, Sumter and Georgetown Counties, South Carolina. James M. Marcus. 11 pp.
001-85	A Hydrological Reconnaissance of Murrells Inlet, Georgetown County, South Carolina. James M. Marcus. 53 pp.
003-85	A Summary of Water Quality Sampling Activities at Campbell Creek, Beaufort County, South Carolina, November 14-15, 1983 through December 5, 1984. James M. Marcus and Glenda R. Swearingen. 47 pp.
007-85	A Water Quality Assessment of the Sampit River, Georgetown County, South Carolina. Glenda Swearingen 23 pp.
011-85	A Water Quality Assessment of the Stono River, Charleston County, South Carolina. James M. Marcus and David E. Chestnut. 73 pp.

APPENDIX D

UNITED STATES GEOLOGICAL SURVEY
MONITORING STATIONS LISTED BY COUNTIES

USGS Monitoring Stations

Berkeley County

Station Number	Description
02170500	Lake Marion Moultrie Diversion
02171620	Crawl Creek near Pinville
02171650	Santee River below St. Stephens
02172019	W. Branch Cooper River at Mepkin Abbe near Cordesville
02172020	W. Branch Cooper River at Pimplico near Moncks Corner
02172025	Cooper River at Inlet to Back River near Kittredge
02172030	Cooper River at Rice Mill near Kittredge
02172040	Back River at DuPont intake near Kittredge
02172050	Cooper River near Goose Creek
02172051	Cooper River at Cote Bas near N. Charleston
02172053	Cooper River at Mobay near N. Charleston
021720605	Chicken Creek near N. Charleston
02172061	Back River at Cote Bas near N. Charleston
021720615	Back River below Foster Creek Near N. Charleston

USGS Monitoring Stations

Charleston County

Station Number	Description
02171910	South Santee Cooper near McClellanville

USGS Monitoring Stations

Dorchester County

Station Number	Description
0217500	Edisto River near Givhans

USGS Monitoring Stations

Georgetown County

Station Number	Description
02110050	Waccamaw River at Georgetown
02110809	Waccamaw River - Wachesaw Landing
02110815	Waccamaw River Semonsville
02135225	Pee Dee River - Jackson
02136300	Black River near Plantersville
02136352	Pee Dee at Georgetown
02136390	Winyah Bay at Mouth
02171820	Minim Creek

USGS Monitoring Stations

Horry County

Station Number	
02110715	Waccamaw River - Bucksville
02110725	Highway 544
02110730	Vereens Marina
02110739	Tributary to Atlantic Ocean
02110750	Waccamaw River - Conway
02110755	Briarcliff
02110760	AICW Myrtlewood
02110777	Highway 9
02110801	Waccamaw River - Enterprise Landing
02110802	Bucksport
02135200	Pee Dee River at Highway 701

USGS Monitoring Stations

Jasper County

Station Number	Description
02176830	Great Swamp Canal near Ridgeland
0219500	Savannah River near Crye

APPENDIX E

UNITED STATES GEOLOGICAL SURVEY SPECIAL STUDIES

USGS Special Studies

Kilpatrick, F.A., and Cummings, T.R., 1972. A tracer simulation study of potential solute movement in Port Royal Sount, In Port Royal Sound Environmental Study. South Carolina Water Resources Commission. pp. 47-72.

Johnson, F.A. 1977. A reconnaissance of the hydrology of the Edisto and Ashepoo Estuaries, South Carolina. S.C. Water Resources Commission Report. No. 6. 53 pp.

Johnson, F.A. 1978. A tracer study of the flushing time of the Sampit River Estuary, Georgetown, South Carolina. S.C. Water Resources Commission Report No. 10. 40 pp.

Patterson, G.G. 1983. Effect of the proposed Cooper River rediverson on sedimentation in Charleston Harbor, South Carolina. U.S. Geological Survey Water Resources Investigations Report 83-4198, 65 pp.

Patterson, G.G., and Harvey, R.M. 1986. Retention times and flow patterns in Lake Moultrie, South Carolina. U.S. Geological Survey Water Resources Investigations Report 85-4121.

Patterson, G.G., and Cooney, T.W. 1986. Sediment transport and deposition in Lakes Marion and Moultrie, South Carolina. Proceedings of Third International Symposium on River Sedimentation, Jackson, Miss., March-April 1986.

Speiran, G.K., and Belval, D.l. 1986. Potential impacts of discharging tertiary-treated wastewater in Port Royal Sound, South Carolina. U.S. Geological Survey Water Resources Investigations Report 85-4326.

APPENDIX F

CORPS OF ENGINEERS MONITORING STATIONS
SOUTH CAROLINA WILDLIFE AND MARINE RESOURCES DEPARTMENT MONITORING STATIONS
UNITED STATES FISH AND WILDLIFE SERVICE MONITORING STATIONS

Corps of Engineers Monitoring Stations

Station Number	USGA GAGE Number and Description	Parameters Monitored	Samples Per Station	Sampling Frequency
C1	02172020 (Pimlico)	Specific Conductance, Temperature, pH, Dissolved oxygen	Bottom	Continuous
C2	02172040 (DuPont Intake)	Same	Bottom	Continuous
C3	02172050 (Dean Hall)	Same	Surface & Bottom	Continuous
C4	02172051 (Cote Bas)	Same	Surface & Bottom	Continuous
C5	02172053 (Mobay)	Same	Surface & Bottom	Continous
	021720711 (Custom House Tide Gage)	Tidal Stage		Continous

SCWMRD Monitoring Stations

Station Number	Description
C001	DuPont
C002	Bushy Park
C003	Westvaco
C004	Naval Yard
C005	Lower Wando River

USFWS Sampling Stations

Station Number	Description
1	Mouth of Shipyard Creek
2	Westvaco
3	Bushy Park
4	DuPont
5	Just above the confluence of the East and West Branch of the Cooper River.

APPENDICES G-N
IN POCKETS

MAPS SHOWING MONITORING STATIONS IN BEAUFORT, BERKELEY, CHARLESTON, COLLETON, DORCHESTER, GEORGETOWN, HORRY, AND JASPER COUNTIES

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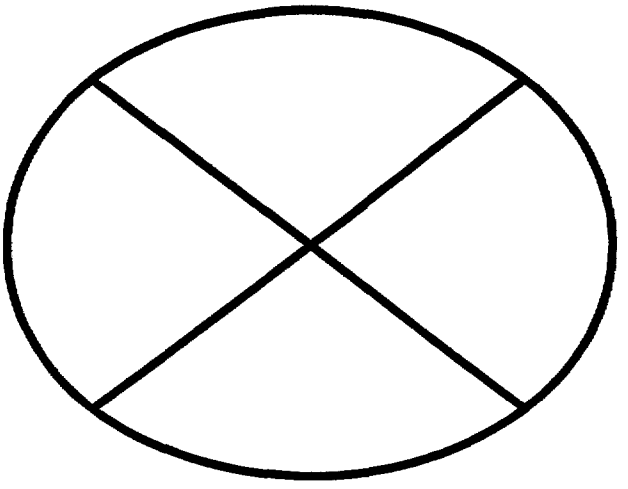

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