

# MAP REPORT: COMBAHEE - COOSAWHATCHIE, SOUTH CAROLINA

**DRAFT**

## I. INTRODUCTION

The U.S. Fish and Wildlife Service's National Wetland Inventory is producing maps showing the location and classification of wetlands and deepwater habitats of the United States. The Classification of Wetlands and Deepwater Habitats of the United States by Cowardin et al is the classification system used to define and classify wetlands. Photointerpretation conventions, hydric soils lists, and wetland plant lists are also available to enhance the use and application of the classification system.

### A. PURPOSE

The purpose of the notes to users is threefold: (1) to provide localized information regarding the production of NWI maps, including specific imagery and interpretation discussion; (2) to provide a descriptive cross-reference from wetland codes on the map to common terminology and representative plant species; and (3) to explain local geography, climate, and wetland communities.

B. The project area consists of USGS 1:24,000K quads selected by the South Carolina Water Resources Commission in four regions: the Edisto River Lower Coastal Zone, the Combahee - Coosawhatchie Lower Coastal Zone, the Combahee - Coosawhatchie Eastern Basin, and the Combahee - Coosawhatchie Western Basin.

## II. FIELD RECONNAISSANCE

### A. PROJECT AREA

<u>1:100,000</u>	<u>Quad Name</u>	<u>1:100,000</u>	<u>Quad Name</u>
<u>Augusta SE</u>	Harleyville Pringletown Maple Cane Swamp Ridgeville Lodge Williams	<u>Augusta SW</u>	Ehrhardt Clear Pond Olar Sycamore Allendale Barnwell Snelling Long Branch

<u>1:100,000</u>	<u>Quad Name</u>	<u>1:100,000</u>	<u>Quad Name</u>
<u>Savannah NE</u>	Cottogeville	<u>Savannah SE</u>	St. Helena Sound
	Clubhouse Crosswoods		Edisto Beach
	Jacksonboro		Fripps Inlet
	Osborn		St. Phillips Island
	Fenwick		Frogmore
	Adams Run		Beaufort
	Wadmalaw Island		Parris Island
	Legareville		Hilton Head
	Bennett's Point		Tybee Island North
	Islandton		Bluffton
	Cummings		Spring Island
	McPhersonville		Laurel Bay
	Coosawhatchie		Ridgeland
	Edisto Island		Casper
	Rockville		Pritchardville
	Wiggins		Fort Pulaski
	Dale		
	Green Pond	<u>Savannah SW</u>	Limehouse
	Neyles		Hardeeville
	Round O		Tillman
	Walterboro		
	Hendersonville	<u>Savannah NW</u>	Calpen Bay
	Whitehall		Grays
	Sheldon		Hampton
	Yemassee		Crocketville
	Black Creek		Fairfax
	Sniders Crossroads		Gifford
			Furman
			Shirley
			Solomons Crossroads
			Barton

**B. PERSONNEL**

Charles Storrs - U.S. Fish and Wildlife Service, Region IV  
James Scurry - South Carolina Water Resources Commission  
Sybil Vosler - Geonex, Inc.  
Deborah Manz - Geonex, Inc.  
Michael Bevilacqua - Geonex, Inc.  
Michael Woods - Geonex, Inc.

**C. DATE OF FIELD TRIP**

September 16-20, 1991

#### **D. AERIAL PHOTOGRAPHY**

Type: Color Infrared Transparencies NAPP  
Scale: 1:40,000

<u>Dates</u>	<u>Percent of Coverage</u>
1/10/90	0.7%
2/11/91	5.8%
2/12/89	6.9%
2/16/89	6.5%
2/25/89	20.4%
3/10/89	29.1%
3/11/89	21.1%
3/12/89	9.4%

#### **E. COLLATERAL DATA**

1. U.S.G.S. 1:24,000 Topographic Quads
2. Soil Surveys of the following counties:

Barnwell	Dorchester
Bamberg	Hampton
Beaufort	Jasper
Charleston	Colleton

3. Gaddy, L.L. The Freshwater Wetlands of Hilton Head Island, South Carolina Coastal Council, Charleston, SC.
4. U.S. Fish and Wildlife Service. National List of Plant Species That Occur in Wetlands: South Carolina, (1988).
5. U.S. Department of Agriculture - Soil Conservation Service. Hydric Soils lists of the following counties:

Barnwell	Dorchester
Bamberg	Hampton
Beaufort	Jasper
Charleston	Colleton

6. Bailey, Robert G. Descriptions of the Ecoregions of the United States. U.S. Department of Agriculture, Forest Service, 1980.

### **III. DESCRIPTION OF PROJECT AREA**

#### **A. GEOGRAPHY**

The project area is on the Atlantic Coastal Plain in Bailey's Southeastern Mixed Forest Province, Subtropical Division (1980). Most of the region is flat with little relief, rising slowly in a series of levels east to west to low rolling sandhills in the northwest section. Streams and rivers are slow and sluggish. The major rivers, the Edisto, the Combahee, and the Coosawhatchie have broad floodplains with braided diffuse streambeds and many meander scars. These rivers empty into the Atlantic through extensive saltmarsh estuaries formed behind an outer rim of barrier islands.

Unique elliptical depressions called Carolina bays are found in the northwest portion of the project area, especially Bamberg County. These landforms are aligned northwest to southeast and have sandy rims around basins that are wet year round.

#### **B. CLIMATE**

The climate is subtropical with long warm humid summers and short mild winters. Precipitation (average 48 - 50 inches) occurs throughout the year, but is heaviest in July and August, and least from October to December.

#### **C. VEGETATION:**

The original vegetation was mixed oak-hickory, hardwood forests and pine forests, but most has been cut over before 1900 and now the dominant vegetation is commercially managed, loblolly, longleaf, slash, and pond pine forest and sweetgum, blackgum, and yellow poplar floodplain forest. The estuarine areas are dominated by *Spartina alterniflora* and *J. roemerianus* in the marshes and loblolly pine on upland islands and shores.

#### **D. SOILS:**

The soils in the project area are derived from marine and fluvial deposits consisting of sand, silt, and clay in various proportions. Most soils are sandy or sandy loam with loamy, clayey or mucky soils in saturated depressional areas and alongside streambeds. The larger rivers and saltmarshes have mineral, alluvial soils.

Human activities have been intensive since the area was settled in the late 17th century. Abandoned rice fields first established in the 18th and 19th centuries can be found along the lower Combahee and Edisto Rivers. Agriculture is still the dominant activity and the major crops are cotton, soybeans, and corn. Silviculture is also an important land use, especially in the northwestern portions of the project area. Recreation and tourism is important on the Atlantic Coast at Hilton Head Island.

#### **IV. DESCRIPTION OF WETLAND HABITATS IN PROJECT AREA**

##### **A. MARINE SYSTEM**

This consists of the subtidal (M1UBL) and intertidal (M2US,M,N,P) zones seaward of the barrier islands.

##### **B. ESTUARINE SYSTEM**

The estuarine system consists of the saltwater brackish habitats from the barrier islands to the inland extent of brackish waters (less than .5% salts). This area contains extensive areas of saltmarsh and open water (E1UBL). The dominant species are smooth cordgrass (Spartina alterniflora, E2EM1N) and blackrush (Juncus roemerianus, E2EM1P). Occasional shrubs appear near the estuarine-palustrine interface.

##### **C. PALUSTRINE SYSTEM**

Freshwater wetlands are extensive in the project area and are primarily forested floodplains, swamps and saturated depressions. Shrub-scrub and emergents occur primarily only where the original forest has been cut and removed.

Temporarily wet forest communities (A) are dominated by a hardwood mixture of sweetgum (Liquidambar styraciflua), laurel oak (Quercus laurifolia), water oak (Quercus nigra), red maple (Acer rubrum), sweet hickory (Arya glabra) and pine plantations, loblolly pine (Pinus Taeda). The temporary hardwood forests have a thick understory of small shrubs and ferns. The pine forests often have a thick understory of sedges, ground wax myrtle (Myrica cerifera), fetterbush and herbaceous plants.

Seasonally flooded forested wetlands are represented by blackgum (Nyssa sylvatica), sweetgum (Liquidambar styraciflua), red maple (Acer rubrum), willow oak (Quercus phellos), and Chinese Tallow. The understory is sparse and includes red bay (Persea borbonia), sweet bay (Magnolia virginiana) and loblolly bay (Gordonia lasianthus) and wax myrtle (Myrica cerifera). Small seasonal gumponds occur throughout the pine forests.

Saturated (B) forested wetlands, in which the water table stays at or near the surface or the soil rarely dries out, are very common. Such areas include the distinctive Carolina bays, seepage slopes and drainages in the sandhill regions, and areas with slowly permeable clay soils. Common species are sweetgum, blackgum, water oak, loblolly and pond pine. Understory plants include red bay, sweetbay, loblolly bay, pepperbush (Clethra alnifolia), wax myrtle, fetterbush, gallberry (Ilex glabra), netted chain fern (Spaghnum sp.) and dog hobble (Leneothrae oxillaris).

The dominant species in the semipermanently flooded (F) forests are blackgum, bald cypress (Taxodium distichum), red maple and tupelo (Nyssa aquatica). These swamps occurred mainly in the lower floodplains of the major rivers and the deeper meander scars.

Palustrine emergent areas were rare and usually occurred in powerline cuts, wet pastures or in impounded wetlands. The most extensive areas of freshwater emergents occur in the old abandoned rice fields along the Combahee River. Maidencane (Panicum hemitomon), bulrush (Scirpus sp.), cattail (Typha sp.), alligator flag (Thalia geniculata) and pickerel weed (Pantederia cordata) are found in semipermanently-flooded wetlands. Sedges and rushes are prevalent in seasonal wetlands as well as smartweed (Polygonum sp.), lizard's tail (Saururus cernuus) and arrowgum (Pellondra virginica). Although not dominant, pitcher plants (Sarracenia minor) are common in saturated emergent wetlands.

Scrub-shrub areas are not common and usually are an early successional stage of the dominant forest type. Natural shrub communities occur in marsh communities near the palustrine estuarine interface. Common species are Baccharis halimifolia, wax myrtle, willow and Atlantic white cedar (Charnaecypris thyroids).

#### **D. RIVERINE SYSTEM**

Permanently flowing rivers and streams are labeled R2UBH or if they receive some influence from the tides, R1UBV. Channelized rivers and ditches are indicated with an "x" modifier.

#### **E. LACUSTRINE SYSTEM**

There are no naturally occurring lakes in the project area. Impounded rivers or streams that cover more than 20 acres are labeled L1UBHh.

TABLE I

WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
E1UB (L)	Estuarine, subtidal, unconsolidated bottom including bays, inlets	Intracoastal waterways,	Sand, mud
E2US (N)	Estuarine, intertidal, unconsolidated shore	Sand bar	Sand, mud
E2US (P)	Estuarine, intertidal, unconsolidated shore	Salt flat	<u>Salicornia</u> sp. <u>Borrchia frutescens</u>
E2SS1 (P)	Estuarine shrubs	Shrubs	<u>Baccharis</u> sp. <u>Iva frutescens</u> (marsh elder) <u>Chamaecyparis</u> <u>thyroides</u> (Atlantic white cedar) <u>Myrica cerifera</u> (wax myrtle)
E2EM1 (N,P)	Estuarine, intertidal,	Salt marsh	<u>S. cynosuroides</u> (big cord grass) <u>Juncus roemerianus</u> (black rush) <u>Distichlis spicata</u> (salt grass) <u>S. alterniflora</u> (smooth cord grass)
R1UB (V)	Riverine, tidal, perennial, unconsolidated bottom	River, canal	Sand, mud
R1US (N)	Riverine, tidal, unconsolidated shore	Sand bar	Sand, gravel
R1AB4 (H)	Riverine, tidal,	River, canal	<u>Lemna</u> sp. (duckweed)

## WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
R2UB (H)	Riverine, lower perennial, unconsolidated bottom	River, canal	Sand, mud
R2AB4 (H)	Riverine, lower perennial, floating aquatic bed	River, canal	<u>Lemna</u> sp. (duckweed)
R2US (A,C)	Riverine, lower perennial, unconsolidated shore	Sand bar	Sand, gravel
R4SB (C,F)	Riverine, intermittent stream bed	Stream, canal	Sand, mud, gravel
L1UB (H,V)	Lacustrine, limnetic, unconsolidated bottom	Lake	Sand, mud
L2AB4 (H,G,V)	Lacustrine, littoral, aquatic bed, floating vascular	Lake	<u>Lemna</u> sp. (duckweed) <u>Azolla caroliniana</u> (mosquito fern)
PUB (G,H,V)	Palustrine, unconsolidated bottom	Pond	Sand, mud
PAB3 (H,G,V)	Palustrine, aquatic bed, rooted vascular	Pond	<u>Nymphaea</u> sp. (water lily)
PAB4 (H,G,V)	Palustrine, aquatic bed, floating vascular	Pond	<u>Lemna</u> sp. (duckweed) <u>Azolla caroliniana</u> (mosquito fern)
PEM1 (A,B)	Palustrine, emergent, persistent, temporarily flooded	Wet prairies	<u>Juncus</u> sp. (rush) <u>Cyperus</u> sp. (flat sedge) <u>Carex</u> sp. (sedges) <u>Setaria</u> sp. (foxtail) <u>Sarracenia minor</u> (hooded pitcher plant) Iris sp. <u>Rhexia</u> sp. (meadow beauty)

## WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PEM1 (C,F,G,H,R,T,V)	Palustrine, emergent, seasonally to permanently flooded	Wet prairies, marshes	<u>Panicum hemitomon</u> (maidencane) <u>Sagittaria latifolia</u> (duck potato) <u>Typha</u> sp. (cattail) <u>Polygonum</u> sp. (smartweed) <u>Zizaniopsis miliaceae</u> (giant cutgrass) <u>Cladium jamaicense</u> (saw grass) Iris sp. (blue flag) <u>Thalia geniculata</u> (alligator flag) <u>Pontederia cordata</u> (pickeralweed) <u>Carex</u> sp. (sedges)
PSS1A PSS1/4A	Palustrine, scrub shrub, broad-leaved deciduous/mixed broad-leaved deciduous and pine	Scrub, shrubby forest	<u>Baccharis</u> sp. (saltbush) <u>Hypericum</u> sp. (St. Johnswort) <u>Salix</u> sp. (willow) <u>Rubus</u> sp. (blackberry) <u>Pinus elliotii</u> (slash pine) <u>Pinus taeda</u> (loblolly pine) <u>Myrica cerifera</u> (wax myrtle) <u>Rhexia</u> sp. (meadow beauty) <u>Liriodendron</u> <u>tulipifera</u> (yellow poplar) <u>Magnolia virginiana</u> (sweet bay) <u>Nyssa sylvatica</u> (blackgum) <u>Acer rubrum</u> (red maple)

## WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PSS1B PSS1/3B PSS3B	Palustrine, scrub shrub, broad-leaved deciduous/mixed broad-leaved deciduous and broad-leaved evergreen	Seeps, bays, bottomland	<u>Nyssa sylvatica</u> (blackgum) <u>Acer rubrum</u> (red maple) <u>Liquidambar styraciflua</u> (sweetgum) <u>Persea borbonia</u> (red bay) <u>Pinus taeda</u> (loblolly pine) <u>Magnolia virginiana</u> (sweet bay) <u>Ilex glabra</u> (Inkberry) <u>Clethra alnifolia</u> (pepperbush) <u>Cyrilla racemiflora</u> (titi) <u>Osmundia cinnamomea</u> (cinnamon fern) <u>Liriodendron tulipifera</u> (yellow poplar) <u>Myrica cerifera</u> (wax myrtle) <u>Arundinaria gigantea</u> (giant cane)
PSS1C (F)	Palustrine, scrub shrub, broad-leaved deciduous, seasonally or semi-permanently flooded	Thicket, swamp	<u>Salix</u> sp. (willow) <u>Myrica cerifera</u> (wax myrtle) <u>Baccharis</u> sp. (saltbush) <u>Acer rubrum</u> (red maple) <u>Nyssa sylvatica</u> (blackgum) <u>Forestiera acuminata</u> (swamp privet) <u>Cephalanthus</u> <u>occidentalis</u> (buttonbush) <u>Taxodium distichum</u> (baldcypress)

## WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO1A	Palustrine, forested,	Bottom-land	<u>Quercus nigra</u> (water oak) <u>Q. phellos</u> (willow oak) <u>Liquidamber</u> <u>styraciflua</u> (sweetgum) <u>Fraxinus</u> <u>pennsylvanicus</u> (green ash) <u>Q. falcata</u> (S. red oak) <u>Salix</u> sp. (willow) <u>Celtus laevigata</u> (sugarberry) <u>Sapium sebiferum</u> (Chinese tallow) <u>Carya glabra</u> (pignut hickory) <u>Acer rubrum</u> (red maple) <u>Ulnus</u> sp. (elm) <u>Ostrya virginiana</u> (ironwood) <u>Serenoa repens</u> (palmetto) <u>Nyssa sylvatica</u> (blackgum) <u>Liriodendron tulipifera</u> (yellow poplar) <u>Q. laurifolia</u> (laurel oak) <u>Vaccinlum</u> sp. (blueberry) <u>Q. michauxi</u> (sw chestnut oak) <u>Q. prinus</u> (chestnut oak) <u>Vitis</u> sp. (grapevine) <u>Ilex opaca</u> (American holly)

## WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO1B PFO1/3B PFO4B PFO3B	Palustrine, forested, saturated	Seeps, Carolina bays, bottomland	<u>Quercus nigra</u> (water oak) <u>Persea borbonia</u> (red bay) <u>Clethera alnifolia</u> (pepperbush) <u>Osmundia cinnomonea</u> (cinnamon fern) <u>Liquidamber</u> <u>styraciflua</u> (sweetgum) <u>Acer rubrum</u> (red maple) <u>Nyssa sylvatica</u> (blackgum) <u>Woodwardia virginica</u> (Virginia chain fern) <u>Leucothoe axillaris</u> (dog hobble) <u>Pinus taeda</u> (loblolly pine) <u>Pinus elliotii</u> (slash pine) <u>Liriodendron tulipifera</u> (yellow poplar) <u>Quercus laurifolia</u> (laurel oak) <u>Spagnum</u> sp. <u>Gordonia lasianthus</u> (loblolly bay) <u>Lyonia lucida</u> (fetterbush) <u>Ostrya virginiana</u> (ironwood) <u>Ilex opaca</u> (American holly)
PFO4A PFO1/4A(S) PFO4/1A(S)	Palustrine, forested, broad-leaved deciduous/broad- leaved deciduous-pine mixed, temporarily flooded	Pine forests, pine plantation	<u>Nyssa sylvatica</u> (blackgum) <u>Pinus taeda</u> (loblolly pine) <u>Pinus elliotii</u> (slash pine) <u>Clethera alnifolia</u> (pepperbush)

## WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO1C (R)	Palustrine, forested, broad-leaved deciduous, seasonally flooded	Swamp	<u>Quercus nigra</u> (water oak) <u>Q. phellos</u> (willow oak) <u>Nyssa sylvatica</u> (blackgum) <u>Persea borbonia</u> (red bay) <u>Q. falcata</u> (S. red oak) <u>Salix sp.</u> (willow) <u>Clethera alnifolia</u> (pepperbush) <u>Sapium sebiferum</u> (Chinese tallow) <u>Acer rubrum</u> (red maple) <u>Taxodium distichum</u> (baldcypress) <u>Quercus laurifolia</u> (laurel oak) <u>Woodwardia areolata</u> (netted chain fern) <u>Saururus cernuus</u> (lizardtail) <u>Peltandra virginica</u> (arrow arum) <u>Myrica cerifera</u> (wax myrtle) <u>Osmunda regalis</u> (royal fern)

## WETLAND CLASSIFICATION CODES

NWI CODE (Water Regime)	NWI DESCRIPTION	COMMON DESCRIPTION	VEGETATION/ SUBSTRATE
PFO2F (C,R,T) PFO2/1F (C,R,T) PFO1/2F (C,R,T) PFO1F	Palustrine, forested, needle-leaved deciduous/needle- leaved-deciduous and broad-leaved deciduous mixed	Cypress swamp, Cypress-tupelo swamp, slough	<u>Taxodium distichum</u> (baldcypress) <u>Nyssa aquatica</u> (water tupelo) <u>Nyssa sylvatica</u> (blackgum) <u>Salix</u> sp. (willow) <u>Acer rubrum</u> (red maple) <u>Liquidamber styraciflua</u> (sweetgum) <u>Cephalanthus occidentalis</u> (buttonbush)
PFO1/3 (A,C) PFO3/1 (A,C)	Palustrine, forested, broad-leaved deciduous/broad- leaved evergreen mixed	Bottomland hardwoods, bayhead	<u>Nyssa sylvatica</u> (blackgum) <u>Persea borbonia</u> (red bay) <u>Cyrilla racemiflora</u> (titi) <u>A. rubrum</u> (red maple) <u>Q. nigra</u> (water oak)

## V. Water Regime Description

### Tidal

#### Salt and Brackish Areas - Marine and Estuarine Systems

- (L) Subtidal - The substrate is permanently flooded with tidal water.
- (M) Irregularly Exposed - Land surface is exposed by tides less often than daily. This corresponds to the area on NOS charts from seaward edge of light green tone (mean low water) to depth contour approximating extreme low water.
- (N) Regularly Flooded - Tidal water alternately floods and exposes the land surface at least once daily.
- (P) Irregularly Flooded - Tidal water floods land surface less often than daily. The area must flood by tide at least once yearly as a result of extreme high spring tide.

#### Freshwater Tidal Areas - Lacustrine, Palustrine and Riverine Systems.

- (N) Regularly Flooded - Fresh tidal water alternately floods and exposes the land surface at least once daily.
- (R) Seasonally Flooded - Tidal
- (S) Temporarily Flooded - Tidal
- (T) Semi-permanently Flooded - Tidal
- (V) Permanently Flooded - Tidal

## Non-Tidal

- (A) Temporarily Flooded - Surface water present for brief periods during growing season, but water table usually lies well below soil surface. Plants that grow both in uplands and wetlands are characteristic of this water regime.
- (B) Saturated - The substrate is saturated to surface for extended periods during the growing season, but surface water is seldom present.
- (C) Seasonally Flooded - Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is extremely variable, extending from saturated to a water table well below the ground surface.
- (F) Semi-permanently Flooded - Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.
- (G) Intermittently Exposed - Surface water is present throughout the year except in years of extreme drought.
- (H) Permanently Flooded - Water covers land surface throughout the year in all years.
- (K) Artificially Flooded - The amount and duration of flooding is controlled by means of pumps or siphons in combination with dikes or dams.

## Special Modifiers

- (x) Excavated - Water lies in or flows through a basin or channel dug by man.
- (h) Impounded - The normal flow of water is impeded by a manmade dike or barrier.
- (s) Spoil - Formed from sediments deposited by dredging operations.

## **VI. IMAGERY**

The color tones on the photography are balanced and allow the differentiation of different vegetation types. Bleaching was not a problem. Spectral reflectance was a minor problem in some of the estuarine areas, but only near the edges of the photographs. The major difficulty with the photography was vignetting which resulted in an exposure difference from one side of the photo to the other. Resolution and clarity on the photography was good.

The photography was flown in late winter so most deciduous vegetation was in leaf-off conditions. An exceptionally high tide was occurring when the estuarine areas were flown resulting in more flooding than normal.

## **VII. MAP PREPARATION**

Field checks of areas found within Combahee-Coosawhatchie, South Carolina photography were made prior to the actual delineation of wetlands. Field check sites were selected to clarify various signatures found on the photography. These photographic signatures were then identified in the field using vegetation and soil types, as well as additional input from field personnel.

Collateral data included USGS topographic maps, SCS soil surveys, local climate, vegetation, and ecological information.

The user of the map is cautioned that, due to the limitation of mapping primarily through aerial photointerpretation, a small percentage of wetlands may have gone unidentified. Since the photography was taken during a particular time and season, there may be discrepancies between the map and current field conditions. Changes in landscape which occurred after the photography was taken would result in such discrepancies.

Aerial photointerpretation and drafting were completed by Geonex, Inc., St. Petersburg, Florida.

## **VIII. SPECIAL MAPPING PROBLEMS**

None.

**IX. MAP ACQUISITION**

To discuss any questions concerning these maps or to place a map order, please contact:

John Hefner  
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R.B. Russell Federal Building  
75 Spring Street S.W.  
Atlanta, GA 30303

To order maps only, contact:

Earth Science Information Center (ESIC)  
National Cartographic Information Center  
U.S. Geological Survey  
507 National Center  
Reston, VA 22092

1-(800)-872-6277

Maps are identified by the name of the corresponding USGS 1:24,000 scale topographic quadrangle name. Topographic map indices are available from the U.S. Geological Survey.

## REFERENCES

Bailey, Robert G. 1980. Description of the Ecoregions of the United States;  
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Gaddy, L.L. The Freshwater Wetlands of Hilton Head Island,  
prepared for the for the South Carolina Coastal Council,  
Charleston, South Carolina.