APPENDIX C

AFFECTED ENVIRONMENT SUPPORTING INFORMATION

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Appendix C is organized into the following sections:

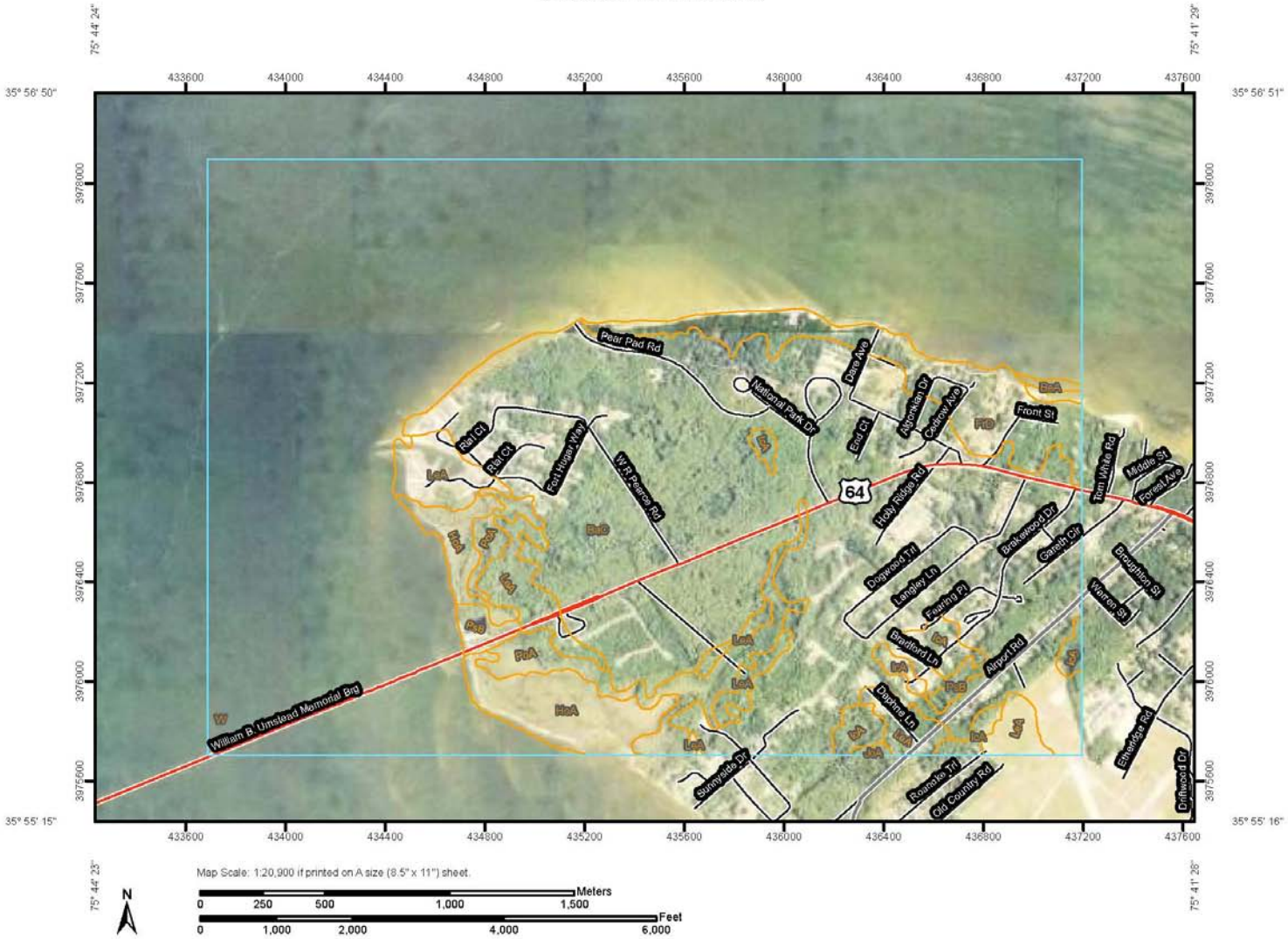
C.1 – Natural Resources Conservation Service, Web Soil Survey, Soil Map – Dare County, North Carolina

C.2 – Federal Emergency Management Agency Digital Flood Insurance Rate Map Panels for Dare County, North Carolina - Fort Raleigh National Historic Site Area

C.3 – Special Status Species Supporting Information

C.1. Natural Resources Conservation Service, Web Soil Survey, Soil Map – Dare County, North Carolina

Soil Map—Dare County, North Carolina
(Fort Raleigh National Historic Site)



USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

8/2/2011
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:20,900 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dare County, North Carolina
Survey Area Data: Version 12, Jul 16, 2009

Date(s) aerial images were photographed: 8/26/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Dare County, North Carolina (NC055)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BaC	Baymeade fine sand, 0 to 10 percent slopes	721.9	34.8%
BeA	Beaches, 0 to 2 percent slopes, storm tidal	2.5	0.1%
FrD	Fripp fine sand, 2 to 30 percent slopes	77.3	3.7%
HoA	Hobonny muck, 0 to 1 percent slopes, frequently flooded	62.9	3.0%
IcA	Icaria loamy fine sand, 0 to 2 percent slopes, rarely flooded	34.8	1.7%
JoA	Johns loamy sand, 0 to 2 percent slopes	1.4	0.1%
LeA	Leon fine sand, 0 to 2 percent slopes, rarely flooded	81.9	3.9%
PoA	Ponzer muck, 0 to 2 percent slopes, rarely flooded	54.7	2.6%
PsB	Psamments, 0 to 6 percent slopes	12.6	0.6%
W	Water	1,025.7	49.4%
Totals for Area of Interest		**2,075.6**	**100.0%**

C.2. Federal Emergency Management Agency Digital Flood Insurance Rate Map Panels for Dare County, North Carolina - Fort Raleigh National Historic Site Area

STATE OF NORTH CAROLINA FIRM PANEL LOCATOR DIAGRAM

DATUM INFORMATION

The **projection** used in the preparation of this map was the North Carolina State Plane (FIPSZONE 3200). The **horizontal datum** was the North American Datum of 1983, GRS80 ellipsoid. Differences in datum, ellipsoid, projection, or Universal Transverse Mercator zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdictional boundaries. These differences do not affect the accuracy of this FIRM. All coordinates on this map are in U.S. Survey Feet, where
1 U.S. Survey Foot = 1200/3937 Meters.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. An average offset between NAVD 88 and the National Geodetic Vertical Datum of 1929 (NGVD 29) has been computed for each North Carolina county. This offset was then applied to the NGVD 29 flood elevations that were not revised during the creation of this statewide format FIRM. The offsets for each county shown on this FIRM panel are shown in the vertical datum offset table below. Where a county boundary and a flooding source with unrevised NGVD 29 flood elevations are coincident, an individual offset has been calculated and applied during the creation of this statewide format FIRM. See Section 6.1 of the accompanying Flood Insurance Study report to obtain further information on the conversion of elevations between NAVD 88 and NGVD 29. To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the North Carolina Geodetic Survey at the address shown below. You may also contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at www.ngs.noaa.gov.

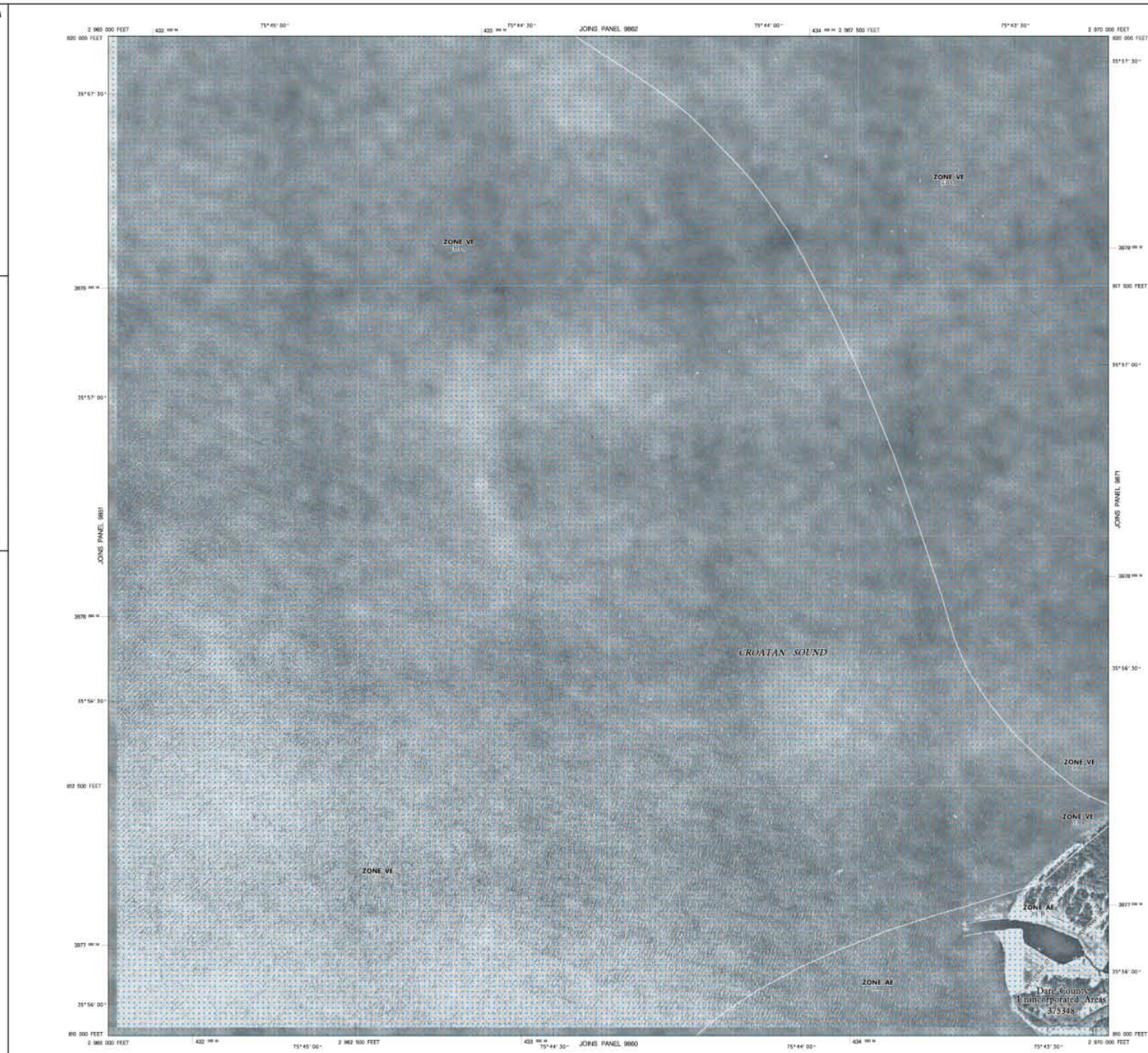
North Carolina Geodetic Survey
121 West Jones Street
Raleigh, NC 27601
(919) 733-3836
www.ncgs.state.nc.us

County Average Vertical Datum Offset Table

County	Vertical Datum Offset (ft)
Dare	- 0.99

Example: NAVD 88 = NGVD 29 + (-0.99)

All streams listed in the **Flood Hazard Data Table** below were studied by detailed methods using field survey. Other flood hazard data shown on this map may have been derived using either a coastal analysis or limited detailed riverine analyses. More information on the flooding sources studied by these analyses is contained in the Flood Insurance Study report.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, A1-A3, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL. 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- 23 — Cross section line
- 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4278000 m — 1000-meter Universal Transverse Mercator grid ticks, zone 18
- 1 477 500 FEET — 2500-foot grid values: North Carolina State Plane coordinate system (FIPSZONE 3200, State Plane NAD 83 feet)
- BM5610 — North Carolina Geodetic Survey bench mark (see explanation in the Datum Information section of this FIRM panel).
- BM5610 — National Geodetic Survey bench mark (see explanation in the Datum Information section of this FIRM panel).
- M1.5 — River Mile

GRID NORTH
MAP SCALE 1" = 500' (1 : 6,000)
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 9851J

FIRM
FLOOD INSURANCE RATE MAP
NORTH CAROLINA

PANEL 9861

(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	CID No.	PANEL	SUFFIX
DARE COUNTY	370348	9861	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

EFFECTIVE DATE
SEPTEMBER 20, 2006

MAP NUMBER
3720986100J

State of North Carolina
Federal Emergency Management Agency

NOTES TO USERS

This digital Flood Insurance Rate Map (FIRM) was produced through a unique cooperative partnership between the State of North Carolina and the Federal Emergency Management Agency (FEMA). The State of North Carolina has implemented a long term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map floodplain areas at the local level. As a part of this effort, the State of North Carolina has joined in a Cooperating Technical State agreement with FEMA to produce and maintain this digital FIRM.

www.ncfloodmaps.com

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data, Limited Detailed Flood Hazard Data, and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of **regulatory floodways** shown on the FIRM for flooding sources studied by detailed methods were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data for flooding sources studied by detailed methods as well as **non-encroachment widths** for flooding sources studied by limited detailed methods are provided in the FIS report for this jurisdiction. The FIS report also provides instructions for determining a floodway using non-encroachment widths for flooding sources studied by limited detailed methods.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 4.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in the jurisdictions.

Base map information and geospatial data used to develop this FIRM were obtained from various organizations, including the participating local community(ies), state and federal agencies, and/or other sources. The primary base for this FIRM is aerial imagery acquired by Dare County. The time period of collection for the imagery is 2002. Information and geospatial data supplied by the local community(ies) that met FEMA base map specifications were considered the preferred source for development of the base map. See geospatial metadata for the associated digital FIRM for additional information about base map preparation.

Base map features shown on this map, such as **corporate limits**, are based on the most up-to-date data available at the time of publication. **Changes in the corporate limits may have occurred since this map was published**. Map users should consult the appropriate community official or website to verify current conditions of jurisdictional boundaries and base map features. This map may contain roads that were not considered in the hydraulic analysis of streams where no new hydraulic model was created during the production of this statewide format FIRM.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each is located.

If you have **questions about this map**, or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

An accompanying Flood Insurance Study report, Letter of Map Revision (LOMR) or Letter of Map Amendment (LOMA) revising portions of this panel, and digital versions of this FIRM may be available. Visit the **North Carolina Floodplain Mapping Program** website at http://www.ncfloodmaps.com, or contact the **FEMA Map Service Center** at 1-800-358-9616 for information on all related products associated with this FIRM. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index or visit http://www.ncfloodmaps.com

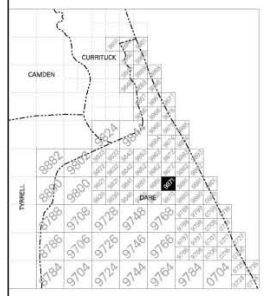
EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL
SEPTEMBER 20, 2006
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to statewide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent, the North Carolina Division of Emergency Management or the National Flood Insurance Program at the following phone numbers or websites:

NC Division of Emergency Management
(919) 715-8000 http://www.ncemnecontrol.org/nfip

National Flood Insurance Program
1-800-638-6620 http://www.fema.gov/nfip

STATE OF NORTH CAROLINA FIRM PANEL LOCATOR DIAGRAM



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North Carolina Geodetic Survey
121 West Jones Street
Raleigh, NC 27601
(919) 733-3836
www.ncgs.state.nc.us

County Average Vertical Datum Offset Table	
County	Vertical Datum Offset (ft)
Dare	- 0.89

Example: NAVD 88 = NGVD 29 + (-0.89)

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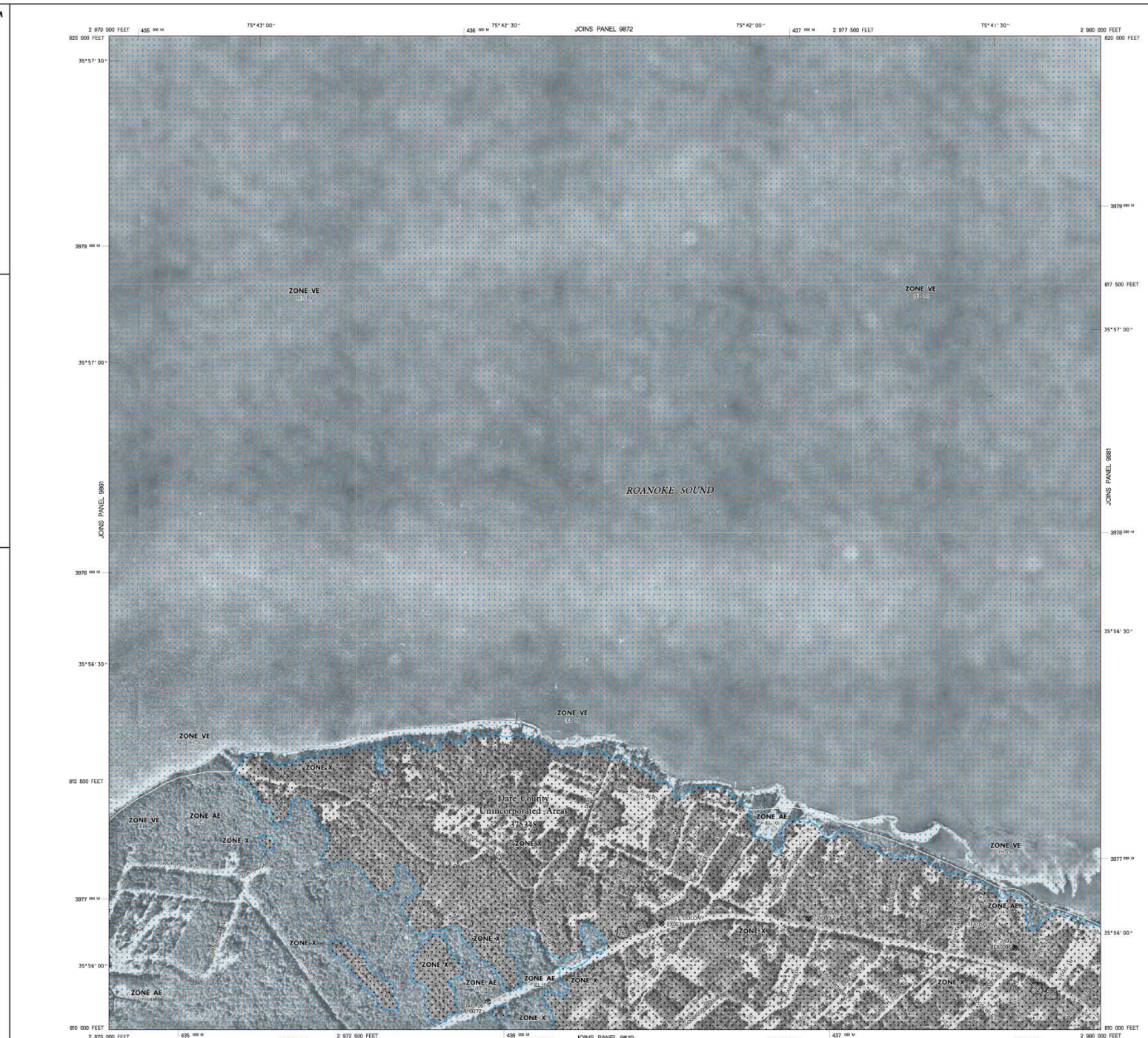

LEGEND

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- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
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- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

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- 0.2% annual chance floodplain boundary
- Floodway boundary
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- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 Base Flood Elevation line and value; elevation in feet*
- (EL. 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- (M) Cross section line
- (33) Transect line
- 97°07' 30", 32°22' 30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
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- 1 477 500 FEET 2500-foot grid values: North Carolina State Plane coordinate system (FIPSZONE 3200, State Plane NAD 83 feet)
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- BM5510 National Geodetic Survey bench mark (see explanation in the Datum Information section of this FIRM panel).
- M1.5 River Mile

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www.ncfloodmaps.com

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An accompanying Flood Insurance Study report, Letter of Map Revision (LOMR) or Letter of Map Amendment (LOMA) revising portions of this panel, and digital versions of this FIRM may be available. Visit the **North Carolina Floodplain Mapping Program** website at http://www.ncfloodmaps.com, or contact the **FEMA Map Service Center** at 1-800-358-9616 for information on all related products associated with this FIRM. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index or visit http://www.ncfloodmaps.com.

EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL
SEPTEMBER 20, 2006

EFFECTIVE DATE(S) OF REVISIONS TO THIS PANEL

For community map revision history prior to statewide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent, the North Carolina Division of Emergency Management or the National Flood Insurance Program at the following phone numbers or websites:

NC Division of Emergency Management (919) 715-8000 http://www.nccrimecontrol.org/hfip
National Flood Insurance Program 1-800-638-6620 http://www.fema.gov/nfip

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 9871J

FIRM
FLOOD INSURANCE RATE MAP
NORTH CAROLINA

PANEL 9871

(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	CID No.	PANEL	SUFFIX
DARE COUNTY	375348	9871	J

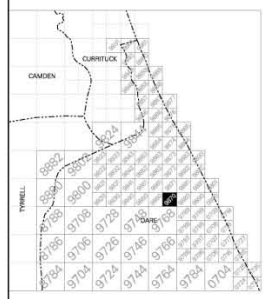
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

EFFECTIVE DATE
SEPTEMBER 20, 2006

MAP NUMBER
3720987100J

State of North Carolina
Federal Emergency Management Agency

STATE OF NORTH CAROLINA FIRM PANEL LOCATOR DIAGRAM



DATUM INFORMATION

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North Carolina Geodetic Survey
121 West Jones Street
Raleigh, NC 27601
(919) 733-3836
www.ncgs.state.nc.us

County Average Vertical Datum Offset Table

County	Vertical Datum Offset (ft)
Dare	– 0.99

Example: NAVD 88 = NGVD 29 + (–0.99)

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 Base Flood Elevation line and value; elevation in feet*
(EL. 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(23) Cross section line
(23) Transect line
97°07' 30", 32°22' 30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4278000 M 1000-meter Universal Transverse Mercator grid ticks, zone 18
1 477 500 FEET 2500-foot grid values; North Carolina State Plane coordinate system (FIPSZONE 3200, State Plane NAD 83 feet)
BM5510 North Carolina Geodetic Survey bench mark (see explanation in the Datum Information section of this FIRM panel).
BM5610 National Geodetic Survey bench mark (see explanation in the Datum Information section of this FIRM panel).
M1.5 River Mile

GRID NORTH

MAP SCALE 1" = 500' (1 : 6,000)
250 0 500 1000 FEET
150 0 150 300 METERS

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www.ncfloodmaps.com

NOTES TO USERS

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Boundaries of **regulatory floodways** shown on the FIRM for flooding sources studied by detailed methods were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data for flooding sources studied by detailed methods as well as **non-encroachment widths** for flooding sources studied by limited detailed methods are provided in the FIS report for this jurisdiction. The FIS report also provides instructions for determining a floodway using non-encroachment widths for flooding sources studied by limited detailed methods.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 4.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in the jurisdictions.

Base map information and geospatial data used to develop this FIRM were obtained from various organizations, including the participating local community(ies), state and federal agencies, and/or other sources. The primary base for this FIRM is aerial imagery acquired by Dare County. The time period of collection for the imagery is 2002. Information and geospatial data supplied by the local community(ies) that met FEMA base map specifications were considered the preferred source for development of the base map. See geospatial metadata for the associated digital FIRM for additional information about base map preparation.

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MAP REPOSITORY
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EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL
SEPTEMBER 20, 2006
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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NC Division of Emergency Management
(919) 715-8000 http://www.nccrimecontrol.org/ndp
National Flood Insurance Program
1-800-638-6620 http://www.fema.gov/nfip

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 9870J

FIRM
FLOOD INSURANCE RATE MAP
NORTH CAROLINA

PANEL 9870

(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	CID No.	PANEL	SUFFIX
DARE COUNTY	370348	9870	J

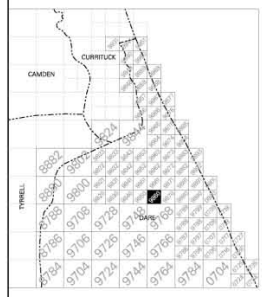
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

EFFECTIVE DATE
SEPTEMBER 20, 2006

MAP NUMBER
37209870 0J

State of North Carolina
Federal Emergency Management Agency

STATE OF NORTH CAROLINA FIRM PANEL LOCATOR DIAGRAM



DATUM INFORMATION

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Raleigh, NC 27601
(919) 733-3836
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County Average Vertical Datum Offset Table

County	Vertical Datum Offset (ft)
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Example: NAVD 88 = NGVD 29 + (-0.99)

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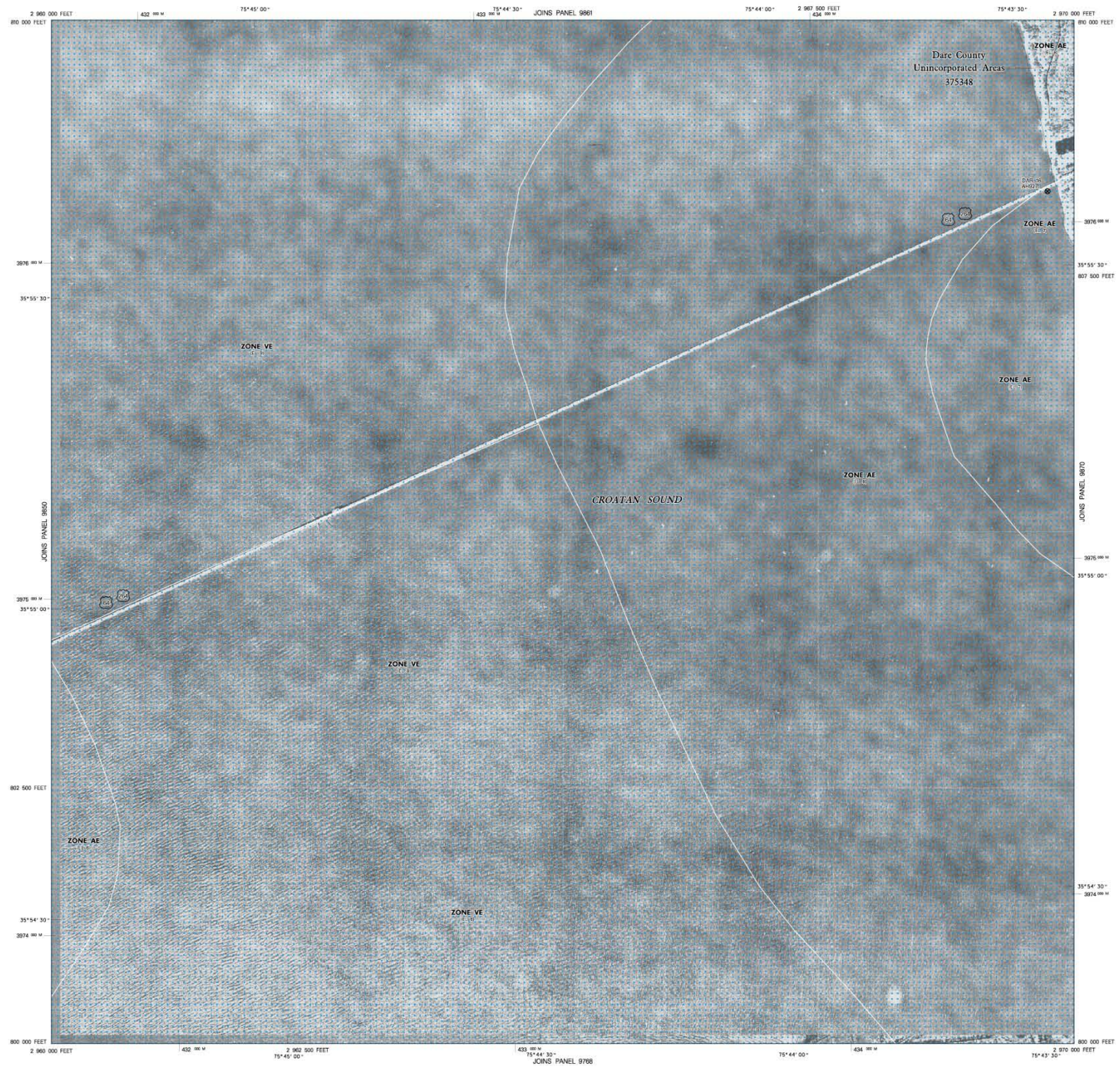

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0.2% annual chance floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 (EL. 997) Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*

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1 417 500 FEET 2500-foot grid values: North Carolina State Plane coordinate system (FIPSZONE 3200, State Plane NAD 83 feet)
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M1.5 River Mile

GRID NORTH
MAP SCALE 1" = 500' (1 : 6,000)
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MAP REPOSITORY
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EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL
SEPTEMBER 20, 2006

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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National Flood Insurance Program 1-800-638-6620 http://www.fema.gov/nfip

NORTH CAROLINA Cooperating Technical State
FEMA'S COOPERATING TECHNICAL PARTNER

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www.ncfloodmaps.com

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 9860J

FIRM
FLOOD INSURANCE RATE MAP
NORTH CAROLINA

PANEL 9860

(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	CID No.	PANEL	SUFFIX
DARE COUNTY	375348	9860	J

Notice to User: The **Map Number** shown below should be used when placing map orders. The **Community Number** shown above should be used on insurance applications for the subject community.

EFFECTIVE DATE
SEPTEMBER 20, 2006

MAP NUMBER
3720986000J

State of North Carolina
Federal Emergency Management Agency

C.3. Special Status Species Supporting Information

Table C.3.1. Information on Listed Species that May Occur Near Fort Raleigh National Historic Site not Affected by Actions Proposed in this General Management Plan

Common Name (*Scientific Name*)	Status	Habitat and Occurrence
West Indian manatee *(Trichechus manatus)*	Federal: Endangered NC: Endangered	West Indian manatees occur in warm shallow waters (near shore, salt water bays, and estuarine habitats) of subtropical regions of the Atlantic coast ranging from coastal North Carolina to the Florida Keys, into the Gulf of Mexico and west to the Louisiana coast. In areas north of Florida, the species is primarily a migrant or irregular visitor and has been recorded in North Carolina waters from June to October. Seasonal migrations along the Atlantic coast range from 125 to 190 miles (O'Shea and Ludlow 1992 in NatureServe 2010). Manatees may overwinter (October to April) in North Carolina in warm water discharges from coastal power plants. Manatees observed along the coast are often in water 3-5 meters deep (prefer a depth of 1-2 meters), usually in areas lacking strong current and are consistently associated with freshwater sources (Lefebvre et al. 1989 in NatureServe 2010). Manatees consume almost exclusively submerged aquatic vegetation and sometimes shoreline vegetation. The North Carolina Natural Heritage Program reports the last manatee sighting in October of 1986 within 2 miles of the national historic site (NCNHP 2011). Threats include habitat loss and degradation, and mortality from boat collisions, hunting, fishing, red tide poisoning, entrapment in water control structures, entanglement in fishing gear, and exposure to cold temperatures (Nature Serve 2010). **Rationale:** The last recorded observation of the west Indian manatee was in 1986 within 2 miles of the national historic site, with a poor chance of persisting for an extended period of time (NCNHP 2011). Actions proposed under this general management plan would not directly or indirectly affect the listed West Indian manatee or adversely modify designated critical habitat. The West Indian manatee would be further addressed under the Outer Banks Group Shoreline Erosion Management Plan and related National Environmental Compliance Act assessment prior to any protection or modification of the national historic site's shoreline. Therefore this species was not further assessed under this General Management Plan/Environmental Impact Statement.
Loggerhead sea turtle *(Caretta caretta)*	Federal: Threatened NC: Threatened	The loggerhead sea turtle is a federally-listed threatened species inhabiting continental shelves, bays, estuaries, and lagoons in temperate, subtropical, and tropical waters. Loggerhead sea turtles have a varied diet but feed mainly on mollusks, crustaceans, and horseshoe crabs (Dodd 1992). In the Atlantic, the range of the Loggerhead sea turtle extends from Newfoundland to as far south as Argentina. During the summer, nesting occurs in the lower latitudes. Mating takes place in late March to early June, and eggs are laid throughout the summer. The primary Atlantic nesting sites are along the east coast of Florida, with additional sites in Georgia, the Carolinas, and the Gulf Coast of Florida. The loggerhead sea turtle was listed as threatened throughout its range in 1978, with the most significant threats to the loggerhead sea turtle populations being coastal development, commercial fisheries, and pollution. Loggerhead sea turtles are the most abundant species in U.S. coastal waters, and are often captured incidentally by shrimp trawling (NMFS 2005). **Rationale:** Actions proposed under this general management plan would not directly or indirectly affect the listed Loggerhead sea turtle or adversely

Table C.3.1. Information on Listed Species that May Occur Near Fort Raleigh National Historic Site not Affected by Actions Proposed in this General Management Plan

Common Name (*Scientific Name*)	Status	Habitat and Occurrence
		modify designated critical habitat. The loggerhead sea turtle would be further addressed under the Outer Banks Group Shoreline Erosion Management Plan and related National Environmental Compliance Act assessment prior to any protection or modification of the national historic site's shoreline. Therefore this species was further assessed under this General Management Plan/Environmental Impact Statement.
Shortnose sturgeon *(Acipenser brevirostrum)*	Federal: Endangered NC: Endangered	The shortnose sturgeon is found along the Atlantic coast from New Brunswick to Florida. Historically, the species was widely reported in North Carolina rivers, however current distribution is not well known. This species occurs sparsely in the Cape Fear River drainage, Albemarle Sound, and Pamlico Sound (unconfirmed report). The species has also been reported in the Cape Fear River, Pee Dee River, and Roanoke River (close proximity to the river's mouth). Shortnose sturgeon migrate from ocean/ estuaries into freshwater rivers between February and May, and spawn April through June. Spawning habitat generally consists of sand to boulder sized substrate of inland freshwater rivers with low to moderate flow (0.2-1.8 meters per second) (NatureServe 2010). Ocean and estuary habitat consists of deep pools, soft substrate and vegetated bottoms. Shortnose sturgeons feed on mollusks, crustaceans, insect larvae, and polychaete worms (NatureServe2010). Threats to the species include overfishing, degradation of habitat by erosion, siltation, toxic pollution, and dams that interfere with upstream migration to spawning areas (NCNHP 2010). The last recorded observation occurred near the national historic site on May 18, 1998 (NCNHP 2011). **Rationale:** The Shortnose sturgeon has recently been verified to still exist within 2 miles of the national historic site, but there is insufficient information to estimate its viability/ecological integrity (NCNHP 2010). Actions proposed under this general management plan would not directly or indirectly affect the listed Shortnose sturgeon or adversely modify designated critical habitat. The West Indian manatee would be further addressed under the Outer Banks Group Shoreline Erosion Management Plan and related National Environmental Compliance Act assessment prior to any protection or modification of the national historic site's shoreline. Therefore this species was not further assessed under this General Management Plan/Environmental Impact Statement.
Sand heather *(Hudsonia tomentosa)*	NC: Significantly Rare	Sand heather occurs in dunes and maritime forest openings, and flowers May-June (Fussell, 1997b). The species was extirpated from the national historic site due to dune erosion and succession of the Maritime Evergreen Forest (pers. comm. NCNHP 2010 in NPS 2011) **Rationale:** Sand heather was extirpated from the national historic site due to dune erosion and succession of the Maritime Evergreen Forest. Therefore this species was not further assessed under this General Management Plan/Environmental Impact Statement.

Table C.3.1. Listed Species of Concern

Common Name	Scientific Name	Federal Status	State Status
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered	Endangered
West Indian manatee	*Trichechus manatus*	Endangered	Endangered
Loggerhead sea turtle	*Caretta caretta*	Threatened	Threatened
Northern diamondback terrapin	*Malaclemys terrapin terrapin*	Species of Concern	Special Concern
Black rail	*Laterallus jamaicensis*	Species of Concern	Special Concern
Blue witch grass	*Dichanthelium caerulescens*		Endangered
Bald eagle	*Haliaeetus leucocephalus*	Bald and Golden Eagle Protection Act	Threatened
Carolina watersnake	*Nerodia sipedon williamengelsi*		Special Concern
Sand heather	*Hudsonia tomentosa*		Significantly Rare
Ringed witch grass	*Dichanthelium annulum*		Significantly Rare
Moundlily yucca	*Yucca gloriosa*		Significantly Rare
Giant swallowtail butterfly	*Papilio cresphontes*		Significantly Rare
Northern oak hairstreak butterfly	*Satyrium favonius ontario*		Significantly Rare

Source: NPS 2011.

Table C.3.2. Government Performance and Results Act, Species Of Management, Fort Raleigh National Historic Site

Common Name	Scientific name	Federal Status	State Status	NPS Desired Condition Details
black-throated green warbler - coastal plain population	*Dendroica virens waynei*		State Listed - Significantly Rare	NPSpecies Present in Park
peregrine falcon	*Falco peregrinus*		State Listed - Endangered	NPSpecies Present in Park; annual nest and fledge chicks
little metalmark	*Calephrys hesseli*		State Listed - Significantly Rare	NPSpecies Present in Park
timber rattlesnake	*Crotalus horridus*		State Listed - Special Concern	NPSpecies Present in Park
northern diamondback terrapin	*Malaclemys terrapin terrapin*		State Listed - Special Concern	NPSpecies Present in Park
Carolina water snake	*Nerodia sipedon williamengelsi*		State Listed - Special Concern	NPSpecies Present in Park
twig-rush	*Cladium mariscoides*		State Listed - Significantly Rare - Other	Fussell 1997 reported observation; species threatened by beach migration
saltmarsh spikerush	*Eleocharis halophila*		State Listed - Threatened	Fussell 1997 reported tentative observation of species; probably present; threatened by common reed and development
winged seedbox	*Ludwigia alata*		State Listed - Significantly Rare - Peripheral	Fussell 1997 reported observation; species threatened by beach migration and common reed in marsh
moundlily yucca	*Yucca gloriosa*		State Listed - Significantly Rare - Peripheral	NPSpecies Probably Present; present on Harriot Nature Trail; need to confirm ID

Source: NPS 2010

Table C.3.3. North Carolina Natural Heritage Program 2-Mile Radius Search Results

Scientific name	EO Nb	Common Name	Date Last Observed	EO Rank	EO Accuracy	State Protected Status	Federal Protection Status	State Rank	Global Rank	Habitat Comments
Acipenser brevirostrum	21	Shortnose Sturgeon	1998-05-18	E	Medium	E	E	S1	G3	Brackish water of larger rivers and estuaries; spawns in freshwater areas.
Dichanthelium annulum	14	Ringed Witch Grass	1958-09-09	H	Low	SR-P		S1	GNR	Dry sandy or rocky open woods and borders of thickets
Dichanthelium caerulescens	4	Blue Witch Grass	1898-06-10	H	Very Low	E		S1S2	G2G3	Wet savannas with a calcareous influence
Hudsonia tomentosa	7	Sand Heather	1936-06-04	X	Low	T		S2	G5	Openings in maritime forest, blowouts, and dunes
Malaclemys terrapin	21	Diamondback Terrapin	1887-PRE	H	Very Low	SC	FSC, in part	S3	G4	Salt or brackish marshes, estuaries [NHP previously tracked records at the subspecies level; as there is uncertainty about identity of turtles in NC at the subspecies level, and as it is listed as State Special Concern by WRC only at the species level, NHP is now tracking only at the species level. NOTE: The northern subspecies (essentially Dare County) – M.t. terrapin – has a U.S. status of FSC; the southern subspecies (essentially the southern half of the coast) –M.t. centrata – has no U.S. status.
Maritime evergreen forest	14		2010-06-28	C	High			S1	G2G3	
Nerodia sipedon	20	Carolina	1992	E	Very Low	SC		S3	G5T3	Salt of brackish marshes (endemic to

Table C.3.3. North Carolina Natural Heritage Program 2-Mile Radius Search Results

Scientific name	EO Nb	Common Name	Date Last Observed	EO Rank	EO Accuracy	State Protected Status	Federal Protection Status	State Rank	Global Rank	Habitat Comments
williamengelsi		Watersnake								North Carolina)
Papilio cresphontes	21	Giant Swallowtail	2007-09-18	C?	Medium	SR		S2S3	G5	Primarily coastal in maritime forests of thickets; also in foothills and mountains near hoptree; host plants – prickly-ash (Zanthoxylum), hoptree (Ptelea)
Satyrium favonius Ontario	2	Northern Oak Hairstreak	1977	H	Low	SR		S2S3	G4T4	Oak-dominated woods, usually in dry sites; host plants – oaks (quercus)
Trichechus manatus	21	West Indian manatee	1986-10	D	Very Low	E	E	S1N	G2	Warm waters of estuaries and river mouths

Source: NCNHP 2011

Element of Natural Diversity (or simply, "Element"): any natural feature. Natural features tracked by the NCNHP include: (1) rare plant and animal species, sub-species, varieties, and populations; (2) rare and high-quality natural communities; and (3) notable animal assemblages, such as heronries and shorebird nesting areas.

Element Occurrence (EO): a specific occurrence of an element of natural diversity. All Eos are mapped as polygons. An EO polygon includes the land and/or water occupied by the element and any locational uncertainty associated with the record.

EO Accuracy: a rough measure of the accuracy the mapped EO. Possible values are: Very High Greater than 95% of the polygon is occupied by the element.

High - Between 80% and 95% of the polygon is occupied by the element.
Medium - Between 20% and 80% of the polygon is occupied by the element.
Low - Between 5% and 20% of the polygon is occupied by the element.
Very Low - Less than 5% of the polygon is occupied by the element.
Unknown - The percentage of the polygon is occupied by the element is unknown.
Blank - An Estimated Representational Accuracy has not been assigned.

EO Number: a number assigned to each occurrence of a specific element. For example, the fourth record for Carex lutea entered into our database would be assigned an EO number of 4.

EO Rank: an assessment of viability (for species or animal assemblages) or ecological integrity (for natural communities). Possible values are:

A - Excellent estimated viability/ecological integrity The EO has an excellent chance of persisting for an extended period of time.
B - Good estimated viability/ecological integrity The EO has a good chance of persisting for an extended period of time.
C - Fair estimated viability/ecological integrity The EO has a fair chance of persisting for an extended period of time.
D - Poor estimated viability/ecological integrity The EO has a poor chance of persisting for an extended period of time.
E - Verified extant (viability/ecological integrity not assessed) The EO has recently been verified to still exist, but there is insufficient information to estimate its viability/ecological integrity.
F - Failed to find Recent surveys failed to relocate an EO previously reported, but there is no evidence occurrence has been destroyed.

H - Historical There is no recent survey information to verify the continued existence of an EO previously reported.

X - Extirpated The EO is known to be destroyed.

U - Unrankable The EO cannot be assigned a rank because of insufficient information.

NR - Not ranked The EO has not yet been assigned a rank.

_? - There is uncertainty about the rank (used as a qualifier of the above ranks).

Note: For occurrences with a mixed rank (e.g., "AC"), the actual rank is uncertain and lies somewhere within the range specified.

Date: Typically, the date an occurrence was last observed is entered as "yyyy-mm-dd", where "yyyy" is the four-digit year, "mm" is the month as a number, and "dd" is the day. Occasionally this date is not precisely known and is entered in an alternate format. Some examples of alternate values are:

2001-08: During August 2001
1953: During 1953
1871-pre: Before 1871
1995-post: After 1995
1975-spr: In the spring of 1975
1992-sum: In the summer of 1992
1975-fall: In the fall of 1975
1960-1961-wi: In the winter of 1960-61
1955-circa: Sometime around 1955
1990s: Sometime during the 1990's
1960s-early: Sometime during the early 1960's
2002-2005: Between 2002 and 2005
1998?: Possibly 1998