FIRE ISLAND TO MONTAUK POINT
LONG ISLAND, NEW YORK

BREACH CONTINGENCY PLAN

EXECUTIVE SUMMARY

AND

ENVIRONMENTAL ASSESSMENT

An evaluation of the benefit of rapid response to breaches along the Federally authorized project shoreline

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NORTH ATLANTIC DIVISION

AUGUST 1995
REVISED JAN 1996

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REFORMULATION STUDY

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BREACH CONTINGENCY PLAN

EXECUTIVE SUMMARY

Introduction

The US Army Corps of Engineers, New York District (NAN), is conducting a 10 year, comprehensive reformulation study to reevaluate storm-damage reduction measures for approximately 83 miles of authorized project shoreline of the south shore of Long Island from Fire Island Inlet to Montauk Point. Severely eroded conditions at several locations along the project area have prompted development of interim measures to reduce the threat of storm damage until the reformulation study is completed. These interim plans are expected to be approved within the next four to five years. A series of severe northeasters (i.e., October 1991, December 1992, March 1993) caused heavy coastal damage to the mainland shores and barrier island of Long Island. This eroded the major dune system to the point where any significant noreaster could cause a breach similar to that which occurred at Westhampton Beach in the vicinity of Pikes Beach in December 1992. Experience suggests a contingency plan must be developed to respond more quickly to any barrier island breaches that may occur before improvement plans are developed under either the reformulation study or the short-term interim plans. The hazardous condition of the shoreline prompted the New York State Department of Environmental Conservation, along with various congressional representatives and municipal officials, to request the District's assistance. In response, in May 1994, Headquarters, U.S. Army Corps of Engineers directed the District to evaluate previous response actions, specifically for Westhampton, and determine how similar actions could be undertaken quicker, using innovative ideas. To determine the feasibility of rapid reaction to close a breach, a study identified an approach as well as areas for which specific authority is needed. This executive summary presents the recommended Breach Contingency Plan (BCP).

Project Authority

The overall Fire Island Inlet to Montauk Point, New York, Combined Beach Erosion Control and Hurricane Protection Project was authorized by the River and Harbor Act of 14 July 1960 (PL. 86-645) in accordance with House Document 425, 85th Congress, 2nd Session, dated 21 June 1960. The authorization was subsequently modified to provide for cost sharing of the beach erosion portion of the project in accordance with Section 103 of the River and Harbor Act of 23 October 1962 (PL. 87-874). The cost-sharing was modified again by Sections 103 and 502 of the Water Resources Development Act of 1986 (PL.

99-662). Section 502 of WRDA 1986 directed the Secretary of the Army to apply the cost sharing provisions of Section 31(1) of the Water Resources Development Act of 1974 (PL. 93-251) to include periodic nourishment of the continuing construction project at Westhampton Beach, New York for a period of 20 years after the date of enactment of PL. 99-662. Section 102(u) of the Water Resources Development Act of 1992 (PL. 102-580) subsequently extended the period of periodic nourishment to 30 years from the date of the project's completion at Westhampton Beach, with the non-Federal share not to exceed 35 percent of the total project cost.

Under the above described legislation, the project cost sharing for Westhampton Beach will be 70 percent Federal and 30 percent non-Federal. This cost-sharing formula will apply to the entire reach from Moriches Inlet to Shinnecock Inlet. Work not underway (physical construction) before April 30, 1986, is subject to the cost-sharing and policy provisions of Section 103 of the WRDA 1986, which, for the reaches from Fire Island Inlet to Moriches Inlet, and Shinnecock Inlet to Montauk Point, shall be cost-shared at the rate of 65 percent Federal and 35 percent non-Federal.

The authorized project, as described in House Document 425 (1960), provides for beach erosion control and hurricane protection along five reaches of the Atlantic Coast of New York from Fire Island Inlet to Montauk Point by: widening beaches along developed areas between Kismet and Mecox Bay to a minimum width of 100 feet at an elevation of 14 feet above Mean Sea Level (MSL), raising dunes to an elevation of 20 feet above MSL from Fire Island Inlet to Hither Hills State Park, and at Montauk and opposite Lake Montauk Harbor by artificial placement of suitable sand, grass planting on the dunes, and interior drainage structures at Mecox Bay, Sagaponack Lake, and Georgica Pond. The authorized project includes the provision of construction of up to 50 groins subject to the actual need based on experience. Twenty-three of the groins were authorized for the Moriches Inlet to Shinnecock Inlet Reach. Federal participation was recommended in the cost of periodic beach nourishment for a period not to exceed 10 years from the year initial work was completed in any section which may be considered a nourishment unit. The five reaches of the Authorized Project are as follows:

A. Reach 1 - Fire Island Inlet to Moriches Inlet
B. Reach 2 - Moriches Inlet to Shinnecock Inlet
C. Reach 3 - Shinnecock Inlet to Southampton
D. Reach 4 - Southampton to Beach Hampton.
E. Reach 5 - Beach Hampton to Montauk Point

Construction of the remaining, uncompleted portions of the authorized Fire Island Inlet to Montauk project will be subject to economic analysis, coastal processes and environmental considerations. Funding for construction of any uncompleted element of the authorized project, including breach closure work within the

limits of the authorized project, will be accomplished as continuation of construction, subject to the availability of Construction General funds and matching non-Federal share of project costs.

Project Area

The authorized project area includes the barrier island and affected mainland communities from Fire Island Inlet to Montauk Point. The study area for the BCP is located entirely in Suffolk County, Long Island, New York, along the Atlantic shore (see Figure 1) and includes the barrier islands from Fire Island Inlet to Southampton, the bay shorelines and adjacent bay areas. This study area was selected due to its vulnerability to storm damage and the likelihood of barrier island breaching. Great South Bay, Moriches Bay and Shinnecock Bay are connected to the Atlantic Ocean through Fire Island Inlet, Moriches Inlet and Shinnecock Inlet, respectively, which are all Federal navigation channels.

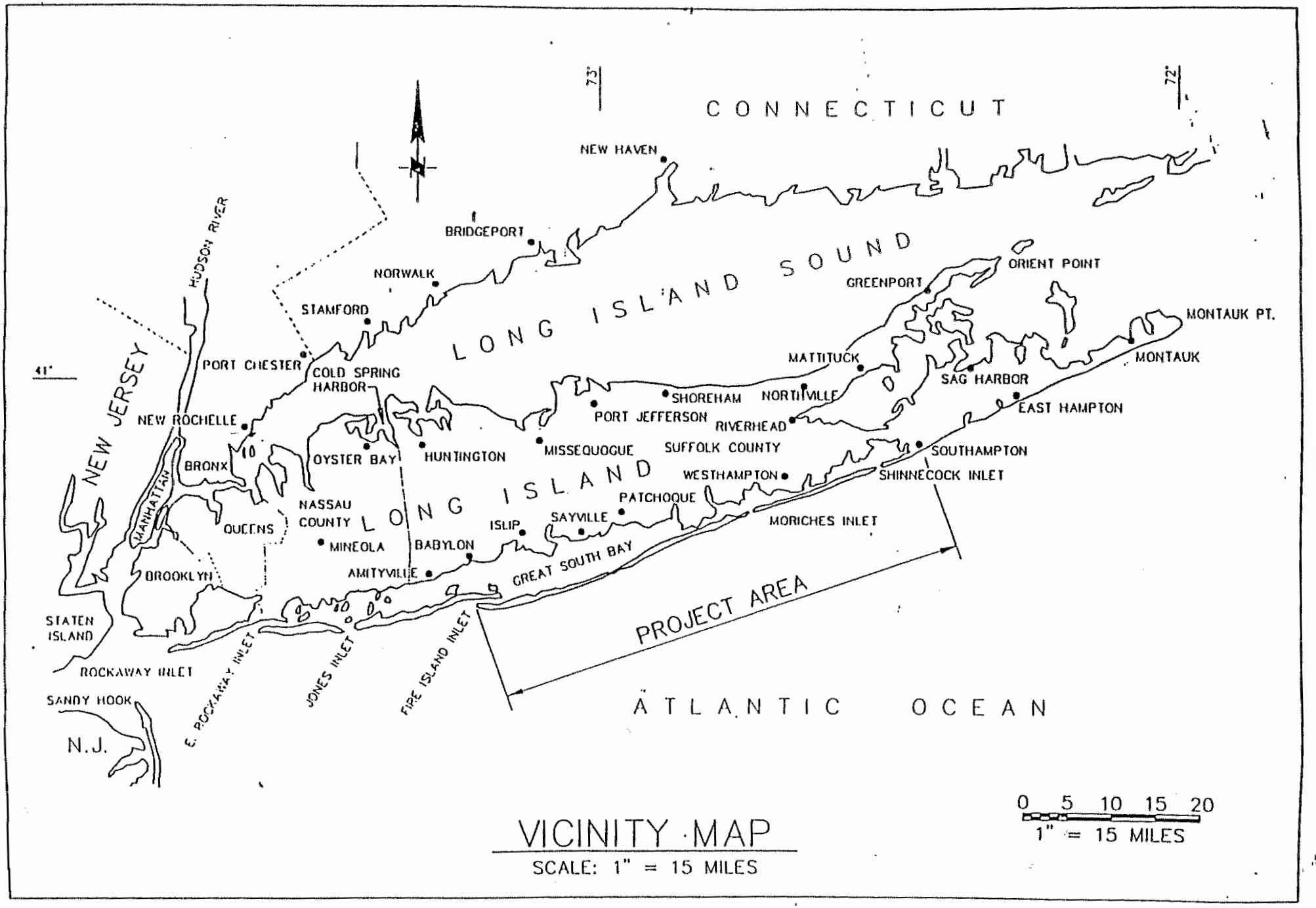
The barrier island chain in the study area includes Fire Island which extends about 30 miles from Fire Island Inlet to Moriches Inlet, the 15 mile barrier island which contains Westhampton and Tiana Beaches and extends from Moriches Inlet to Shinnecock Inlet, and the 4 mile barrier island segment which extends east of Shinnecock Inlet to Southampton.

Project History

Construction of the authorized project was initiated in 1965 with the construction of two groins in East Hampton. This was followed by construction of eleven groins between Moriches and Shinnecock Inlets in 1966. Beachfill and four additional groins were added in 1970. Work on the Fire Island to Montauk Point project was halted twice, both due to funding problems. Upon resolution of the funding problems, work on the Fire Island to Montauk Point Reformulation was continued. The New York District is currently developing interim plans while the extensive reformulation effort is undertaken. In addition to this breach contingency plan, which proposes to close breaches within the authorized project area, specific areas are being considered for interim actions including: The Village of Westhampton Dunes from the vicinity of the existing groin field to a point within Cupsogue County Park, Fire Island from Robert Moses State Park to Smith Point Park, a potential breach area west of Moriches Inlet, and a potential breach area just west of Shinnecock Inlet near the commercial fishing docks.

Breach History

Historically, numerous breaches resulting from major storm events have occurred along the project shoreline. The hurricane of 1938 created several openings to Moriches and Shinnecock Bays. These openings included four breaches to Moriches Bay, a new inlet and two breaches to Quantack Bay, and a breach and inlet opening to Shinnecock Bay. With the exception of the Shinnecock Inlet opening, these



VICINITY MAP

SCALE: 1" = 15 MILES

Figure 1: Vicinity Map

breaches were short-lived lasting no more than one year before being closed by littoral drift and/or mechanical means. During the period from 14 to 16 January 1980 a breach formed about 1,000 feet east of the eastern Moriches Inlet jetty This breach grew to a width of about 2,500 feet by June 1980. Breach closure construction began in October 1980 after a period of ten months, and construction was completed in March 1981.

Four recent significant storm events have severely impacted the barrier island chain extending from Fire Island Inlet to Southampton, namely: (1) Hurricane Bob in 1991, (2) the 1991 Halloween Northeaster, (3) the December 1992 Northeaster, and (4) the March 1993 Northeaster. These storms caused erosion to beach berms and dunes at various locations along the study area and reduced the barrier island's capacity to withstand future storms at critical locations.

The most severe case involved the creation of two breaches east of Moriches Inlet in the vicinity of Pikes Beach during the December 1992 storm. One of the Pikes Beach breaches was repaired within one month from breach occurrence, using dredge material from the Intracoastal Waterway. This material was obtained from an ongoing scheduled maintenance dredging project which called for disposal of the dredged material on the barrier island. This closure was temporary due to the marginally suitable nature of the fine dredge material and later required construction of a more permanent closure design cross-section.

The easternmost breach, at Westhampton, was not filled immediately however, and remained open to continuous tidal flow for nearly ten months following the storm. The initial breach was 200-300 feet wide and 2-5 foot deep, but in the 10 months it took to initiate construction, the breach had widened to 2,500 feet and to depths of 12-20 feet. The growth of this inlet led to the loss of numerous structures and allowed for increased water levels (tidal & storm) in Moriches Bay causing backbay damage to the towns of East Moriches, Remsenberg, and Mastic Beach. For example during the March 1993 storm, residents along the mainland shoreline opposite the inlet reported flood depths two feet greater than those caused by the December 1992 storm (approximately a 25-year event), which resulted in a Federal disaster declaration. Additionally, the breach resulted in loss of navigation in the Intracoastal waterway (due to increased sediment shoaling), and harm to the shellfish industry (due to increased salinities, circulation changes, and increased shoaling).

Design of the emergency breach closure, and determination of feasibility for Westhampton, was developed in March 1993 with project completion in October 1993. This design plan initially considered structural or hard solutions, but deemed such measures too costly and inappropriate as temporary measures. Closure dimensions were determined through analysis of coastal processes, including storm-induced erosion, long-term erosion, and wave runup. To match adjacent topography, a berm width of 150 feet at an elevation

of 8 feet NGVD was selected as appropriate. Design slopes, both oceanside and bayside, were taken as 1 (vertical) to 20 (horizontal) which approximates beach slopes at the Westhampton beaches. An additional one foot tolerance was added to the design elevation. The breach was closed using an ocean dredge. Additionally, a row of sheet-piling was required for construction, resulting in a final closure cost of approximately $7,000,000.

As a result of these storms, a Task Force was commissioned by the Governor to address the impact of chronic flooding and erosion along the coast of New York. One of its recommendations was to "...maintain barrier landform integrity by filling highly vulnerable washover fans and new inlet breaches, and maintaining alongshore sand transport." Based on recommendations of the Governor's Coastal Engineering Task Force, the Fire Island National Seashore (FINS) convened a working group which includes the Corps of Engineers (COE), the US Fish & Wildlife Service (USFWS), and other interested State and local agencies. This group, convinced that it is technically feasible and economically prudent to close a breach as soon as it is reasonably possible, developed a plan for closing breaches that occur on Fire Island.

In accordance with the Governor's task force, the State participated with local municipalities in the cost of a sand stockpile (after the Corps and State filled the Westhampton breach) located just west of the westernmost groin in the Moriches to Shinnecock Reach. This stockpile has provided protective fill for overwashes and sand as a foundation to pave a road that provides vehicular access to isolated, yet functional homes at the western end of the barrier island, and Cupsogue County Park.

The State has also developed the first stockpile on Fire Island at Democrat Point, as a key component of the Corps' breach closure strategy. This stockpile will be available for use in the western limits of the project area. Additionally, non-Federal efforts are currently underway to create additional stockpiles at other points using available material.

Various communities along Fire Island also have spent in excess of $8 million in 1994 for placement of beachfill on Federal property to prevent overwashes and breaches.

Purpose

As a result of recent storm damages which have greatly increased the potential for future damage to the mainland shores of Long Island, particularly due to breaching of the barrier islands, the New York State Department of Environmental Conservation, along with various congressional representatives and municipal officials have requested the NAN's assistance. The State of NY and Congressional interests have reiterated their concerns and expressed support of the authorized Fire Island Inlet to Montauk Point project currently being reformulated. The State has participated with local municipalities in the cost of sand stockpiling just

west of the westernmost groin in the Moriches to Shinnecock Reach, and on Fire Island at Democrat Point. Property owners west of the westernmost groin have united to form the Village of Westhampton Dunes, and are prepared to work with the Federal, State and local governments to ensure that breaches that occur are closed rapidly. The Fire Island National Seashore (FINS) has prepared an Interim Breach Management Plan with the cooperation of the New York District Corps of Engineers, which is being coordinated with other Federal, State and local agencies. Information contained in the FINS Breach Plan has been incorporated into the Corps Breach Contingency Plan, which proposes to obtain the necessary approvals and permits to execute breach closures. The various communities on Fire Island are in the process of creating a self taxing erosion control district to help pay for costs associated with future emergencies. The efforts of State and local interests show the commitment to maintain the barrier islands by preparing for quick response to potential breach conditions.

The purpose of this effort is to determine what measures can be taken by Federal, State and local governments to react quickly to a breach condition along the Fire Island to Montauk Point project area, and to demonstrate an approach for Federal participation in rapidly closing breaches. This report presents NAN's evaluation, coordination, and planning in this effort in conjunction with other government agencies.

Objective

The 1992 breach at Westhampton and the 1980 breach east of Moriches Inlet demonstrated that a protracted delay in closing breaches can result in significant damages and additional costs for closure. The objective of the BCP is to demonstrate a cost effective approach to closing breaches as rapidly as possible, upon occurrence, thus reducing costs and minimizing further storm damage. In addition to evaluating the need for a rapid response to breach closure, this report will identify the procedures which should be implemented upon the occurrence of breach(es) along the Fire Island Inlet to Montauk Point project area.

For the Corps to participate in a rapid breach closure project, it must first be established that it is economically feasible to implement an engineered closure while minimizing environmental impacts. To accomplish this objective the following were considered:

- evaluate barrier island breaching potential, breach impacts on bay hydrodynamics, and storm-induced damages
- identify sources of, and prepare decision matrix regarding use of, breach closure materials
- analyze cost and benefit differences based on alternative closure construction methods and timing of breach closure operations
- determine environmental impacts of barrier island breaches and breach closure construction and

identify ways to minimize them.

These pre-breach evaluations of engineering, cost, benefit, and environmental parameters will demonstrate how emergency breach closure can proceed in an expeditious, environmentally sound, and cost-effective manner. In addition, the following objectives were sought to identify the mechanisms necessary to respond rapidly to breach occurrence:

- develop a standardized Project Cooperation Agreement (PCA), to be pre-negotiated by the COE and the local sponsor
- establish a standardized emergency closure cross-section to serve as the basis for preparing plans and specifications
- identify real estate acquisition methods (in coordination with the sponsor)
- develop a contracting strategy to procure necessary equipment and services
- establish project approval and contracting authorities for the reparation of minor, moderate, and major breach occurrences (i.e., NAN, NAD, HQUSACE)
- obtain a general or blanket permit to accomplish the proposed work
- establish environmental checks and monitors to ensure maximum effort to preserve Threatened and Endangered species and their habitats.

The overall objective of this report is to show that it is technically sound and cost effective, without having significant adverse environmentally impacts, to close breaches as soon as they occur. The process that led to final closure of the Westhampton breach was not a timely response, and therefore not cost effective. As previously discussed, the initial breach was 200-300 feet wide and 2-5 foot deep. It could have been closed at an estimated cost of $300,000-500,000 within 2 weeks of occurrence. However, the existing process to act on this emergency allowed the breach to widen to 2,500 feet and to depths of 12-20 feet, causing severe coastal damage to the South Shore of Long Island and environmental impacts to the Moriches Bay. The final cost of closure rose from a $500,000 level to approximately $7,000,000.

The Sections which follow describe the specific problem along the barrier island, identifying sites vulnerable to a breach, and a plan to quickly close a breach.

Problem Description

For the purposes of the present study, a distinction is made between island ***overwashing***, island ***breaching*** and permanent ***inlet formation***. Overwashing pertains to the condition where a barrier island is temporarily overtopped by tides and/or waves during a storm. Overwashing locally flattens a barrier island dune field during a storm with a concomitant deposition of eroded sediment on the landward side of the island. ***Breaching*** refers to the condition where severe overwashing erodes a new inlet which permits exchange of ocean and bay waters under normal tidal conditions. Once a breach has formed, the likelihood of it remaining open to form a ***permanent inlet*** depends on the hydrodynamic characteristics of the bay and the hydrodynamic, morphologic, and geologic characteristics of the existing inlet and adjacent land.

Overwashing and breach formation are interrelated, i.e., overwashing can lead to breach formation. Overwashing is a serious condition inasmuch as it can cause severe storm-damage to shoreline areas. A permanent breach, on the other hand, is a much more serious condition because it: (1) destroys structures located in the vicinity of the breach, (2) is vulnerable to migration with an attendant destruction of structures in its path, (3) provides an additional opening to an embayment which can alter bay flushing characteristics and increase normal astronomical and storm tides within the bay, (4) can lead to instability or closure of the existing bay inlet opening, (5) can trap significant portions of longshore sediment transport leading to downdrift erosion of adjacent beaches, (6) causes significant residential and commercial damage to heavily urbanized areas in the back bay due to the new exposure to ocean effects, and (7) can result in environmental damages and changes to the barrier island, estuary and mainland environments.

Without Project Conditions

Four recent significant storm events, as previously discussed, have severely impacted the barrier island chain extending from Fire Island Inlet to Southampton, namely: (1) Hurricane Bob in 1991, (2) the 1991 Halloween Northeaster, (3) the December 1992 Northeaster, and (4) the March 1993 Northeaster. These storms caused erosion to beach berms and dunes at various locations along the study area and reduced the barrier island's capacity to withstand future storms at critical locations. Even minor storm events or unusual high tides cause significant loss of whatever protection remains. Additionally, overwashes and breaches have occurred at a number of locations along the study area. The most severe case involved the creation of two breaches east of Moriches Inlet in the vicinity of Pikes Beach during the December 1992 storm, as described in the breach history section.

Other locations along the study area have experienced breaching, overwash, or shoreline/dune recession sufficient to suggest that future storms could result in severe overwash or breach formation. Specific areas of concern today include the Old Inlet, Barrett Beach, and Atlantique areas of Fire Island, the area immediately west of Shinnecock Inlet, and the Pikes Beach area in Westhampton Beach.

If a breach occurs and it is not closed, or not closed expeditiously, the result will be breach growth, and subsequently increased damages to the backbay and mainland areas. As the breach grows in size, the bay flushing characteristics can be altered, resulting in increased astronomical and storm tides within the bay. If the breach is not closed, or not closed before it grows to the proportions of a permanent inlet, this increase in tide levels, in coordination with increased exposure to the ocean effects will result in residential and commercial damages to the urbanized areas during a storm event. This was the basis for the development of without-project conditions.

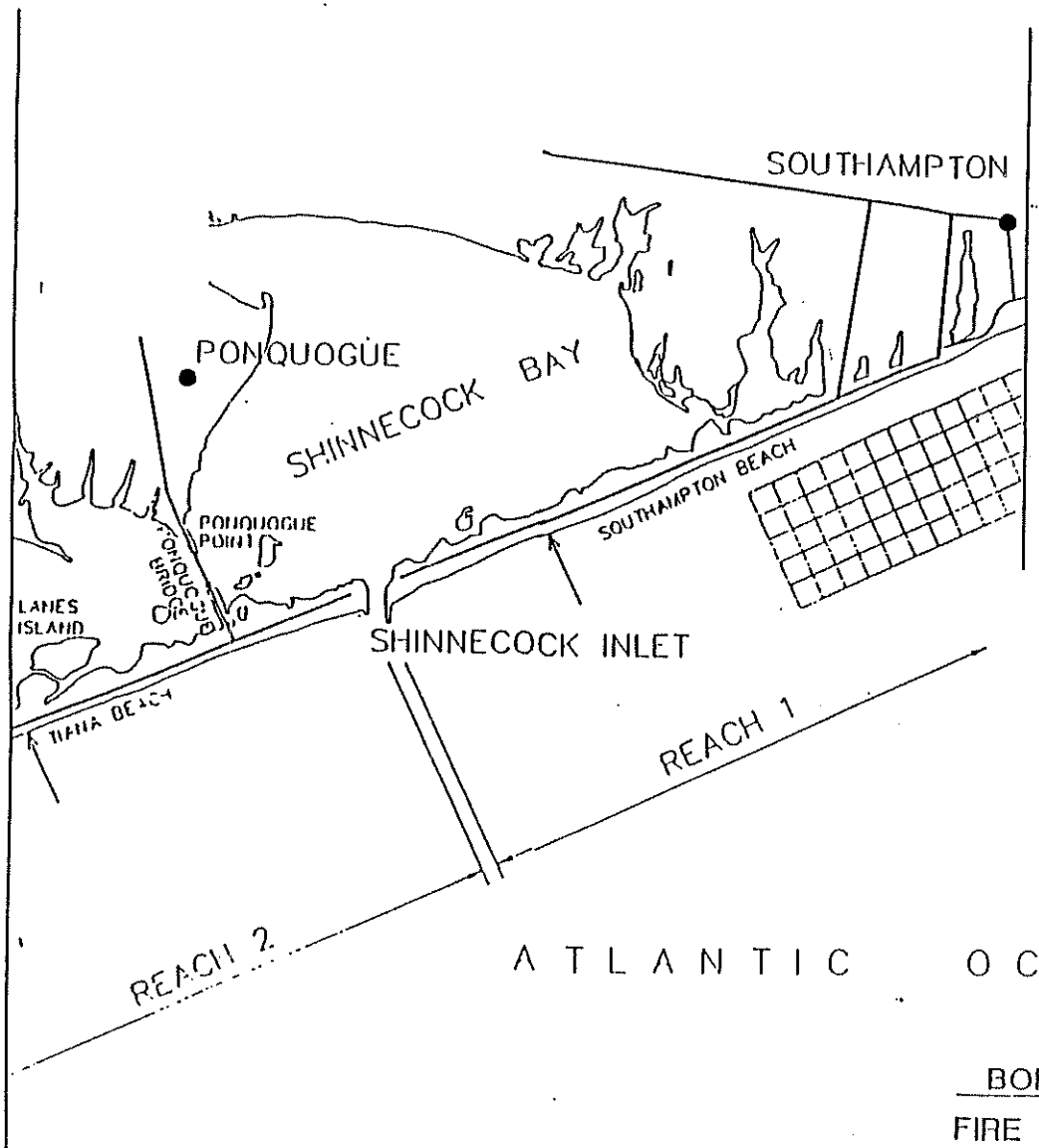
These without-project conditions were assessed by examining the breach vulnerability and stability of the project area, in addition to determining the hydrodynamic impacts of breaching. The breach vulnerability and stability was determined based upon the existing beach profiles in conjunction with overtopping rates, for each of the three back-bay areas. This analysis was based upon modeling of a one inlet system, and a two inlet system, as described in the following sections. The computations for the hydrodynamic impacts of breaching determined fluctuations in the tide levels resulting from different breach geometries. The results were confirmed by historical data from the Westhampton Breach. These without project conditions were developed as a function of the time that a breach remains open.

Breach Vulnerability and Stability

In order to determine the extent of Corps involvement in potential breach closure areas, an examination of the area was performed. The project shoreline from Fire Island Inlet to Southampton was separated into individual project reaches to ease decision-making for emergency breach closure management. Nine individual reaches were identified as shown in Figure 2. Issues of site accessibility, borrow source locations, breach vulnerability, economic development, coastal processes, topographic features, and potential breach closure techniques entered into reach delineation decisions. Based on past experiences and studies, site visits, aerial photography, profile surveys, and estuary conditions, a qualitative assessment of the potential for barrier breaching along the study area was performed and is summarized in Figure 3. These estimates of breach vulnerability refer to the threat of either breach formation stemming from a low, narrow island cross-section or permanent inlet formation, indicated by bay water depths and a narrow island section. These ratings are intended to focus the BCP on critical areas within the study limits, and include no quantification of barrier breaching potential.

Based on separate coastal processes evaluation, the risk of breaching was quantified on available beach profile data using procedures developed for the Westhampton Interim Shore Protection project which involved the application of a storm-induced erosion model and an irregular wave overtopping analyses. Profile locations are shown on Figure 2. Experience at Westhampton Beach indicated that breaching can occur with an island width less than about 500 feet and an overtopping rate exceeding a critical value of roughly 1.7 cfs/ft. As the duration of storm attack increases, the wider areas of the barrier island become increasingly susceptible to breaching. Accordingly, it was judged that a breach would be initiated if two criteria were satisfied, namely: (1) the critical overtopping discharge is exceeded, and (2) the pre-storm island width was 500 to 750 feet or less.

Results of the overtopping analyses are summarized in Table 1 for each of the study area reaches. The level of protection against barrier island breaching is given in Table 1 as determined from the overtopping calculations and an assessment of the effect of island width on breaching potential.



LEGEND

- ACCESS ROUTES
- FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
- COMMUNITY NAME
- STOCKPILE LOCATIONS
- REPRESENTATIVE PROFILE LOCATIONS
- OFFSHORE BORROW SITES
- UPLAND BORROW SITES

REACH DELINEATION &
BORROW SOURCE LOCATION MAP

FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN

0 2500 5000 7500
SCALE: 1:5000

MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

Figure 2a

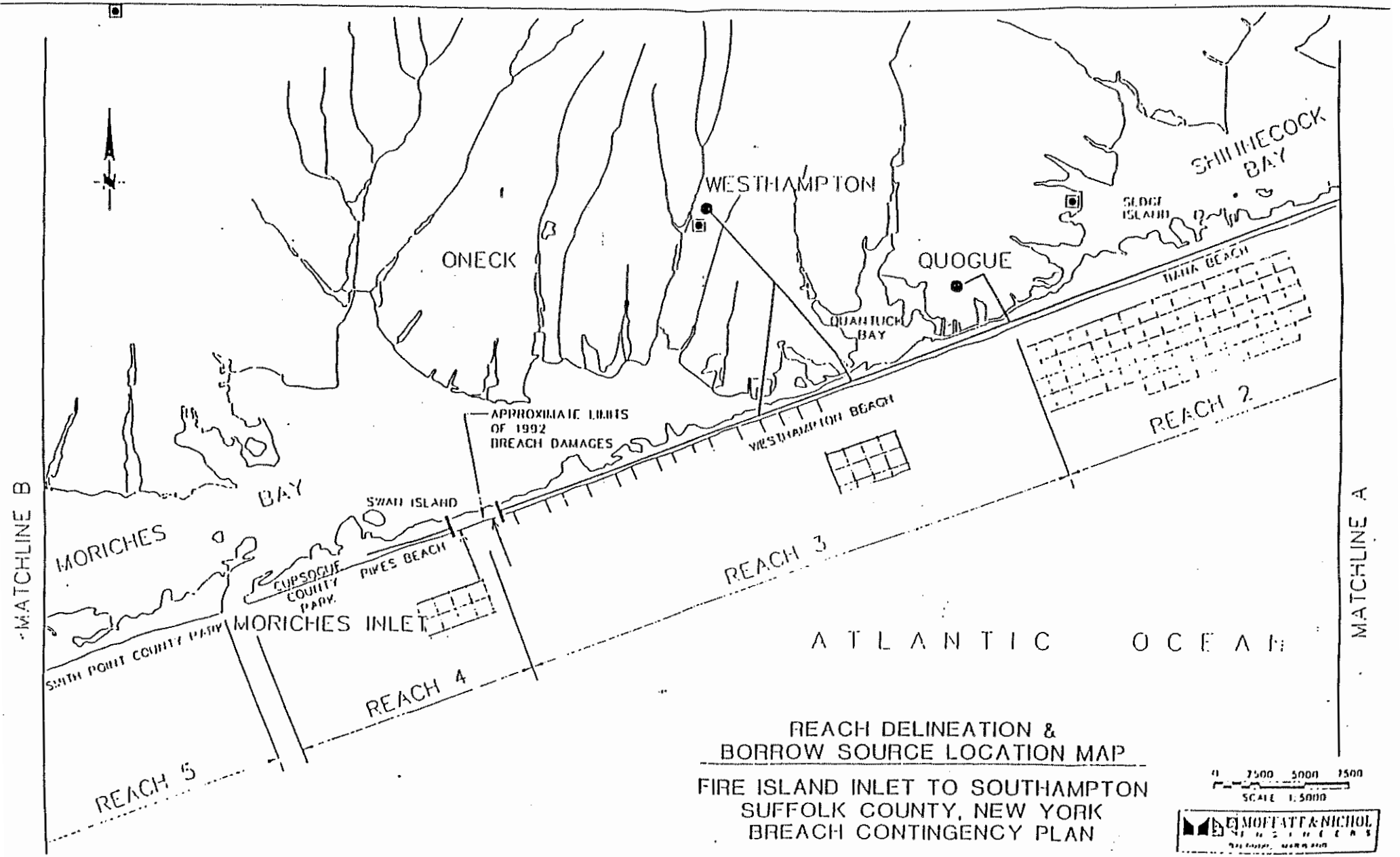

WESTHAMPTON
ONECK
QUOGUE
SHINNECOCK BAY
SLOOP ISLAND
TOWN BEACH
QUANTUCK BAY
APPROXIMATE LIMITS OF 1992 BREACH DAMAGES
WESTHAMPTON BEACH
REACH 2
REACH 3
REACH 4
REACH 5
BAY
MORICHES
SWAN ISLAND
CUPSOGUE COUNTY PARK
PIKES BEACH
MORICHES INLET
SMITH POINT COUNTY PARK
ATLANTIC OCEAN
MATCHLINE B
MATCHLINE A
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE 1:5000
MOFFATT & NICHOL

Figure 2b

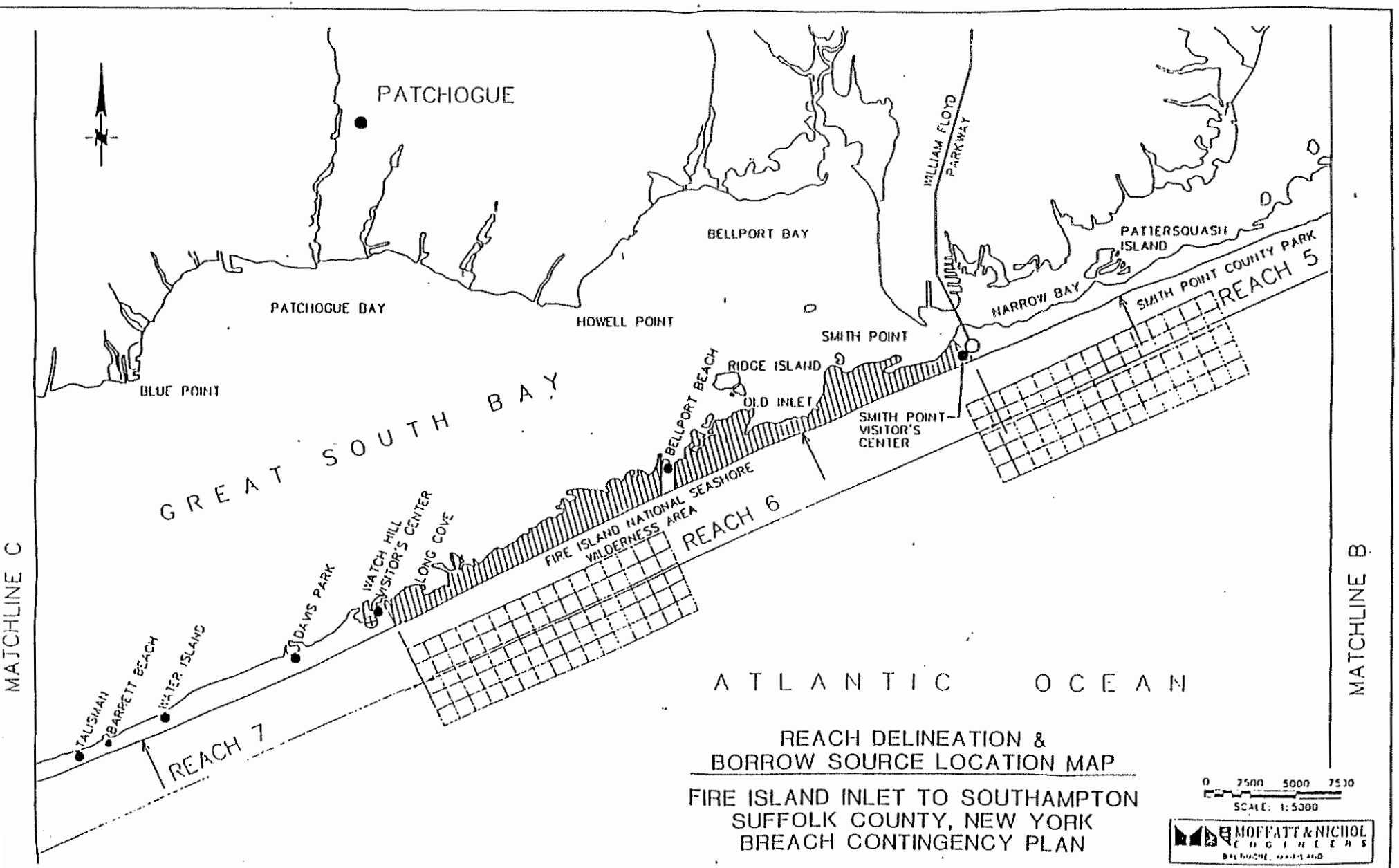

PATCHOGUE
PATCHOGUE BAY
BELLPORT BAY
HOWELL POINT
SMITH POINT
WILLIAM FLOYD PARKWAY
PATTERSQUASH ISLAND
NARROW BAY
SMITH POINT COUNTY PARK
REACH 5
BLUE POINT
GREAT SOUTH BAY
RIDGE ISLAND
OLD INLET
BELLPORT BEACH
SMITH POINT VISITOR'S CENTER
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
REACH 6
WATCH HILL VISITOR'S CENTER
LONG COVE
DAVIS PARK
WATER ISLAND
BARRETT BEACH
TALISMAN
REACH 7
ATLANTIC OCEAN
MATCHLINE C
MATCHLINE B
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE: 1:5000
MOFFATT & NICHOL ENGINEERS

Figure 2c

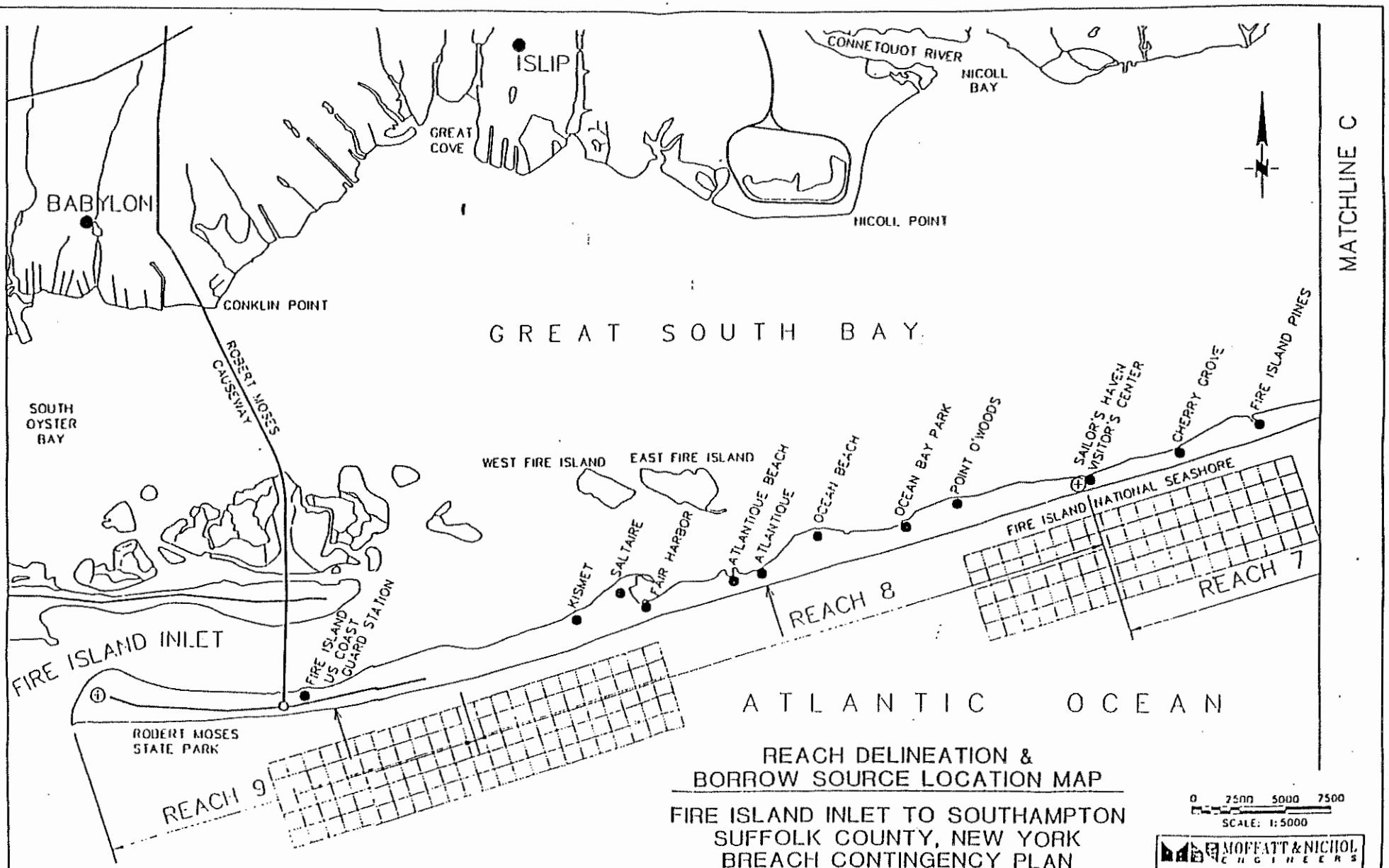

ISLIP
CONNETQUOT RIVER
NICOLL BAY
GREAT COVE
BABYLON
NICOLL POINT
CONKLIN POINT
GREAT SOUTH BAY
MATCHLINE C
ROBERT MOSES CAUSEWAY
SOUTH OYSTER BAY
WEST FIRE ISLAND
EAST FIRE ISLAND
ATLANTIQUE BEACH
OCEAN BEACH
OCEAN BAY PARK
POINT O'WOODS
SAILOR'S HAVEN VISITOR'S CENTER
CHERRY GROVE
FIRE ISLAND PINES
FIRE ISLAND NATIONAL SEASHORE
KISMET
SAL TAIRE
FAIR HARBOR
ATLANTIQUE
REACH 8
REACH 7
FIRE ISLAND INLET
FIRE ISLAND US COAST GUARD STATION
ROBERT MOSES STATE PARK
REACH 9
ATLANTIC OCEAN
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE: 1:5000
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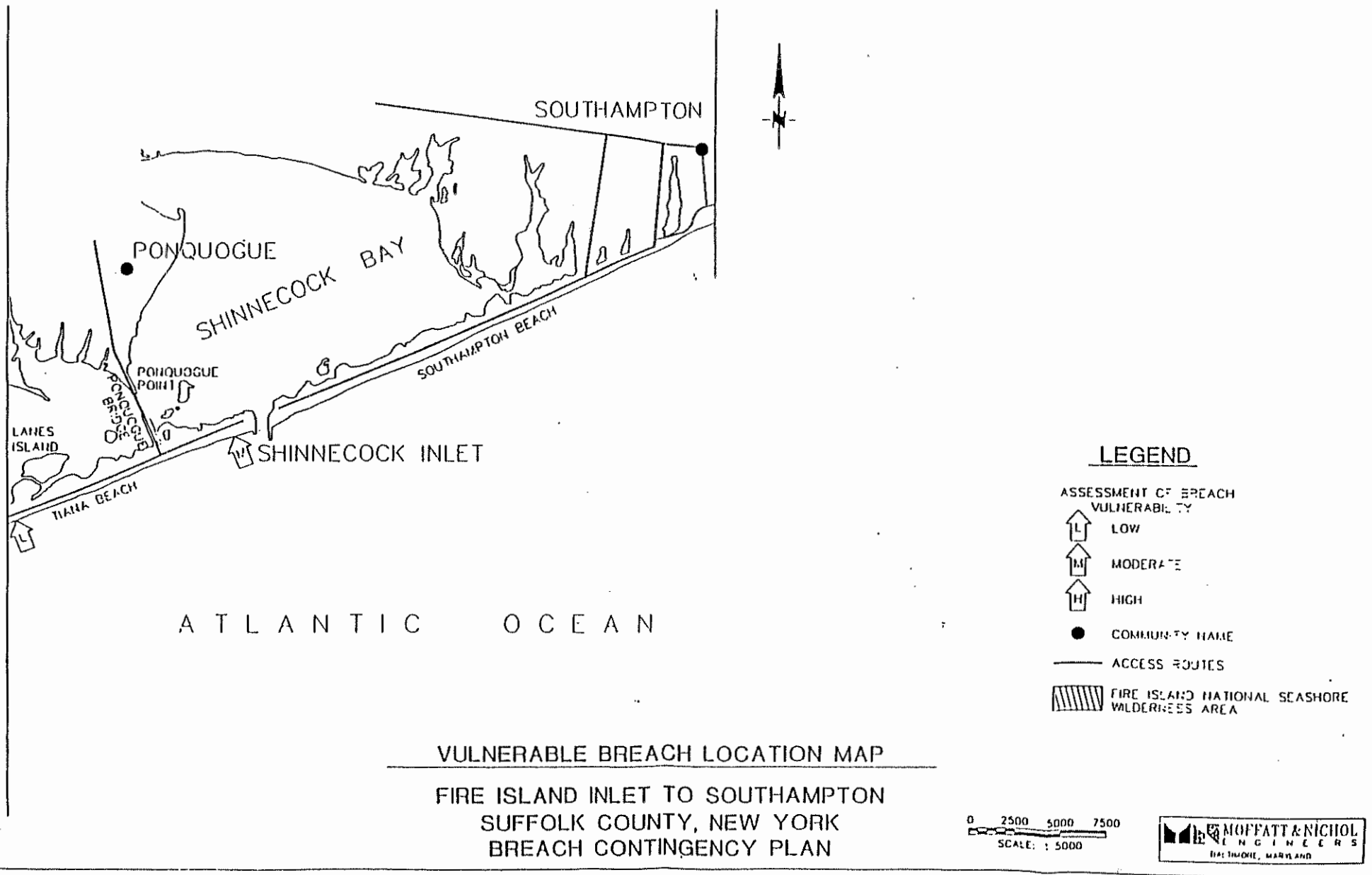
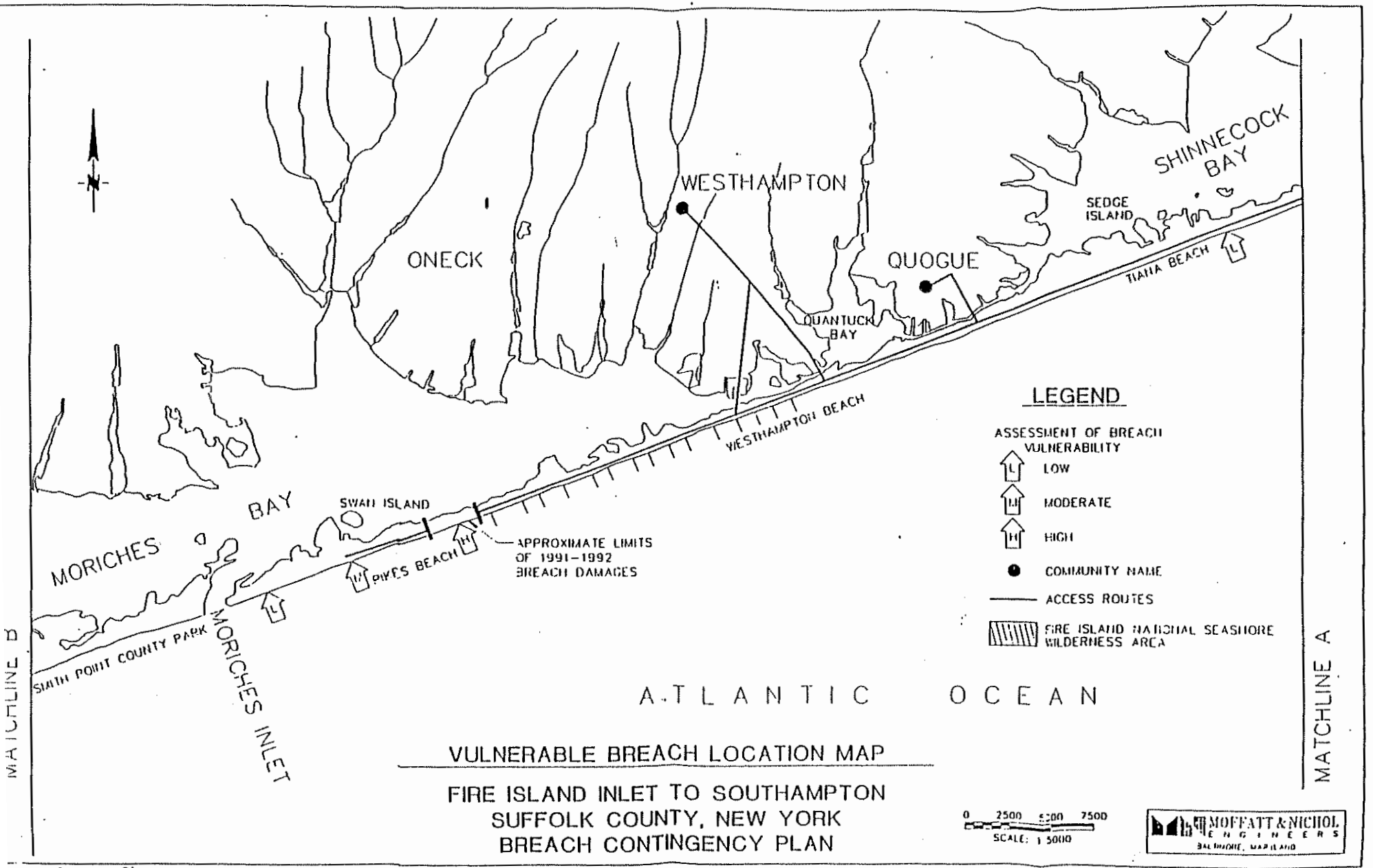
Figure 2d



VULNERABLE BREACH LOCATION MAP

FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN

Figure 3a


WESTHAMPTON
ONECK
QUOGUE
SHINNECOCK BAY
SEDGE ISLAND
TIANA BEACH
QUANTUCK BAY
WESTHAMPTON BEACH
SWAN ISLAND
BAY
MORICHES
PIKES BEACH
APPROXIMATE LIMITS OF 1991-1992 BREACH DAMAGES
SMITH POINT COUNTY PARK
MORICHES INLET
MATCHLINE B
MATCHLINE A
LEGEND
ASSESSMENT OF BREACH VULNERABILITY
LOW
MODERATE
HIGH
COMMUNITY NAME
ACCESS ROUTES
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
ATLANTIC OCEAN
VULNERABLE BREACH LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
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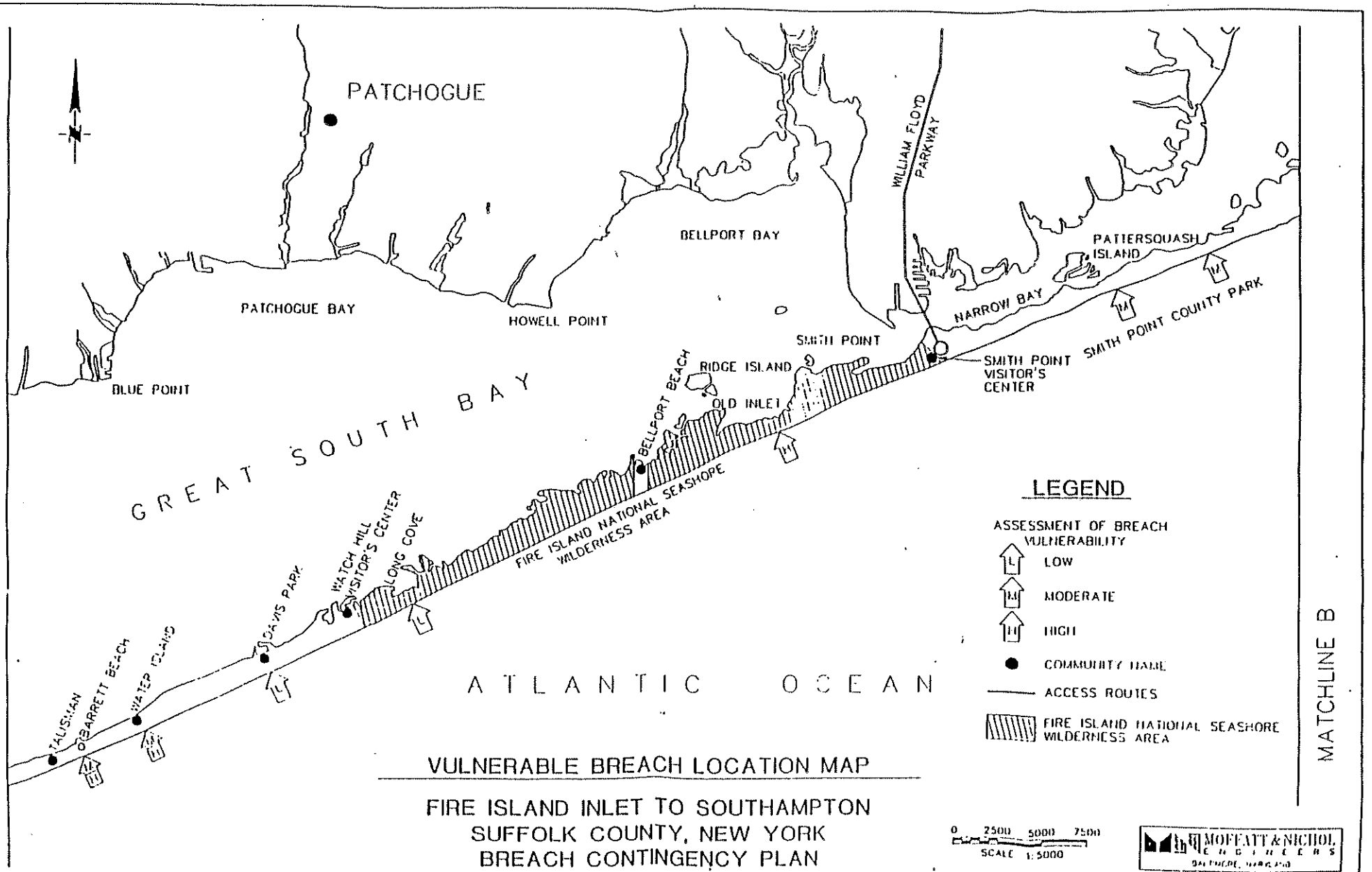
SCALE: 1 5000
MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

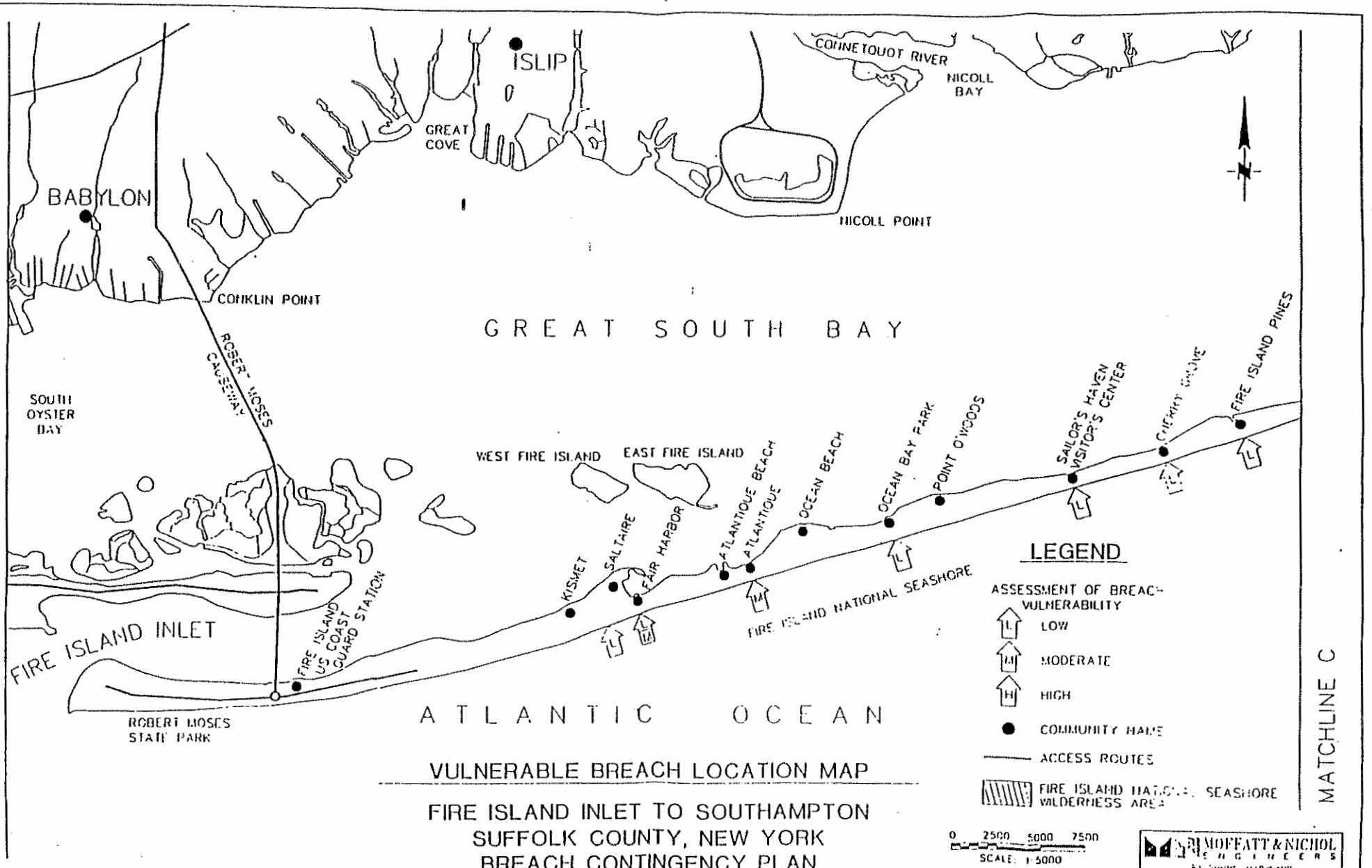
Figure 3b



VULNERABLE BREACH LOCATION MAP

FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN

Figure 3c



VULNERABLE BREACH LOCATION MAP

FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN

Figure 3d

Table 1
Overtopping and Level of Protection Results

Reach	Level of Protection (Years)	Annual Probability of Breach
1 (Southampton)	50	0.02
2 (Tiana/Shinnecock)	16	0.06
3 (Westhampton)	5	0.20
4 (Cupsogue)	5	0.20
5 (Smith Point)	5	0.20
6 (Old Inlet)	5	0.20
7 (Barrett Beach)	18	0.06
8 (Atlantique)	5	0.20
9 (Robert Moses)	53	0.02

Table 1 indicates that there is little risk of breach initiation for Reaches 1 (Southampton) and 9 (Robert Moses). This conclusion stems from examination of the existing beach profiles at those locations, which are characterized by relatively wide beaches and relatively high dunes. Reaches 2 (Tiana/Shinnecock) and 7 (Barrett Beach) have similar levels of protection, i.e., capable of withstanding storms with 16 and 18 year return periods, respectively. Areas relatively prone to breach initiation include Reaches 3 (Westhampton), 4 (Cupsogue), and 5 (Smith Point). The estimates of the levels of protection obtained quantitatively at Reaches 6 (Old Inlet) and 8 (Atlantique) were increased to five years. This adjustment was due to existing substantial island widths and relatively shallow water depths leeward of the most-likely breach locations, where these factors act to reduce tidal-induced current velocities with an attendant reduction in breach scouring.

The stability of a breach after initiation was evaluated to answer the following questions:

- Can the bay in question support two hydraulically stable tidal openings (i.e., the existing inlet and the new breach)?
- If the bay cannot support two stable tidal inlets, which of the two openings is more likely to remain open?
- What is the estimated, long-term stable cross-sectional area of the new breach if it is the inlet that is likely to remain open?

This evaluation was coupled with an analysis of historic breach growth patterns and effects of a breach opening on bay hydrodynamics to determine the impacts associated with either not closing or delaying the closure of the breach.

Current coastal engineering theory suggests that inlet stability depends on the balance between tidal flows which tend to keep the channel open and littoral drift which tends to close the inlet. For this study, the stability and ultimate fate of breaches which might leave open a second entrance to Shinnecock, Moriches and Great South Bays were addressed.

One-Inlet System. Shinnecock Inlet is hydraulically stable and has been in a scouring mode since 1955. The current cross-sectional area is roughly 16,600 square feet and the anticipated maximum stable cross-section is 17,750 square feet. Moriches Inlet is also stable with a cross-sectional area of 16,000 feet. Fire Island Inlet appears to be marginally stable, and thus may be vulnerable to increased shoaling. The existing cross-sectional area of Fire Island Inlet is about 36,200 square feet and is maintained by dredging. Inlet cross-sectional areas are relative to Mean Sea Level (MSL).

Two-Inlet System. Stability of the existing inlets was evaluated assuming the existence of a barrier island breach and using multiple inlet stability analysis to estimate the breach cross sectional area with time. An exponential equation was fit to historical survey data on breach growth for the 1980 and 1992 breaches at Cupsogue and Pikes Beach, respectively. This equation assumes the breach width is asymptotic in time to a long-term stable value. The exponential breach growth is consistent with the physical nature of barrier island breaches. Breach cross-sectional areas typically stabilize as the scouring potential associated with tidal flow velocities balances forces attempting to close the breach. As tidal flow velocities decrease with increasing breach area, the rate of breach growth which is initially rapid, slowly approaches an equilibrium condition. Results relative to each estuary are described below:

Shinnecock Bay. Results of the multiple inlet stability analysis indicates it is possible that if a breach were to form in Reaches 1 (Southampton) and/or 2 (Tiana/Shinnecock) that it could remain open causing increased shoaling of Shinnecock Inlet.

Moriches Bay. The multiple inlet stability analysis for Moriches Bay suggests that a breach forming in Reaches 3 (Westhampton), 4 (Cupsogue), or 5 (Smith Point) would likely remain open. This breach opening could result in an increased need for dredging to maintain Moriches Inlet. This finding appears to be consistent with the behavior of the 1992 breach.

Great South Bay. For Great South Bay the analyses indicate that a new breach would become a stable inlet and that Fire Island Inlet would have a tendency to close. This suggests that Great South Bay is the most vulnerable of the three estuaries to breaching impacts due to the increased shoaling of Fire Island Inlet.

The results of the breach stability analysis indicated a tendency for new breaches in the project area to remain open and possibly cause increased shoaling of existing inlets. To evaluate damages and closure construction costs attendant with a given breach, it was necessary to estimate the cross-sectional area of the breach with time. The long-term stable values obtained from the inlet stability analysis, which define the maximum breach cross sections are as follows: (1) Shinnecock Bay: 17,750 square feet, (2) Moriches Bay:

16,000 square feet, and (3) Great South Bay: 36,200 square feet. A range of breach growth rate parameters was developed to cover the range of historical data. The upper limit of the breach growth rates was used at Shinnecock and Moriches Bays. The exponential breach growth relationship was applied to Great South Bay However, a lower value of the breach growth rate was judged to be more representative of that bay due to the extreme breach cross-sectional areas which resulted from the higher growth coefficient.

Hydrodynamic Impacts Of Breaching

The purpose of this effort is to determine the physical impacts that breaches can have on an embayment. One example occurred in March 1993 along the inland shores of Moriches Bay due to a breach at Westhampton. This section of shoreline was exposed to severe flooding, while other sections were unaffected during this relatively minor storm event. Residents along the mainland shoreline opposite the inlet reported flood depths two feet greater than those caused by the December 1992 storm (approximately a 25-year event), which resulted in a Federal disaster declaration.

The physical impacts of that breach on Moriches Bay were:

- Increase in bay tide levels
- Increase in bay storm tide levels
- Increase in bay salinities
- Changes in bay circulation patterns and residence times
- Increase in sediment shoaling in navigation channels and shell fish areas.

Detailed computations were used to estimate the changes in normal and storm tide levels that would result if breaches of various geometries were formed at locations along the study area. Bay water levels were predicted for a range of breach cross-sectional areas and storm events. These results were used to estimate damages in conjunction with estimates of breach cross-sectional growth with time.

Breach Closure Analysis

The formulation of a breach closure plan was based on an evaluation of the without-project conditions and a range of with-project (solutions) scenarios. Since even the without-project conditions are based upon the time that a breach remains open, alternative breach closure methods are discussed below. The section on benefit analysis discusses the economic benefit evolution for the alternative solutions, including a discussion of the damages that would be likely to occur until closure is effected.

To allow prompt reaction to a barrier island breach occurrence, it was necessary to design an emergency breach closure that provides the appropriate level of protection for any shoreline section along the project reach. The main consideration was to maintain the integrity of the protective barrier islands which offer storm damage relief to mainland communities. A project life of 3 years was determined based on the design cross section, which is the same as the design used for the Westhampton Beach breach closure, and is selected to be consistent with an emergency condition and response. It is currently anticipated that the 3 year project life will coincide with construction of the District's proposed interim shoreline protection projects in the areas of greatest breach probability. The design storm is one having greater than a 50 percent probability of occurrence during the 3-year project life. This criteria yields a storm having a 5-year return period.

Breach Closure Design

The Westhampton breach closure design, as discussed in the breach history section, considered structural or hard solutions, but deemed such measures too costly and inappropriate as temporary measures. Closure dimensions were determined through analysis of coastal processes, including storm-induced erosion, long-term erosion, and wave runup. To match adjacent topography, a berm width of 150 feet at an elevation of 8 feet NGVD was selected as appropriate. Design slopes, both oceanside and bayside, were taken as 1 (vertical) to 20 (horizontal) which approximates beach slopes at the Westhampton beaches. An additional one foot tolerance was added to the design elevation.

Based on the experience and closure design at Westhampton, the same breach closure cross-section was selected for the BCP (see Figure 4). Placement of closure material should match adjacent existing mean high water lines on the ocean and bay sides as closely as practicable; thus design slopes may differ somewhat from the 1:20 slope, as determined necessary to eliminate any perturbations in shoreline alignment. The fill would overlap adjacent beaches and reduce the potential for erosion along the edges of the fill. Exact specification of closure volume is not possible until an actual breach has developed due to the wide range of physical conditions which might occur along the project reach (e.g., breach closure cross-section, required closure design slopes).

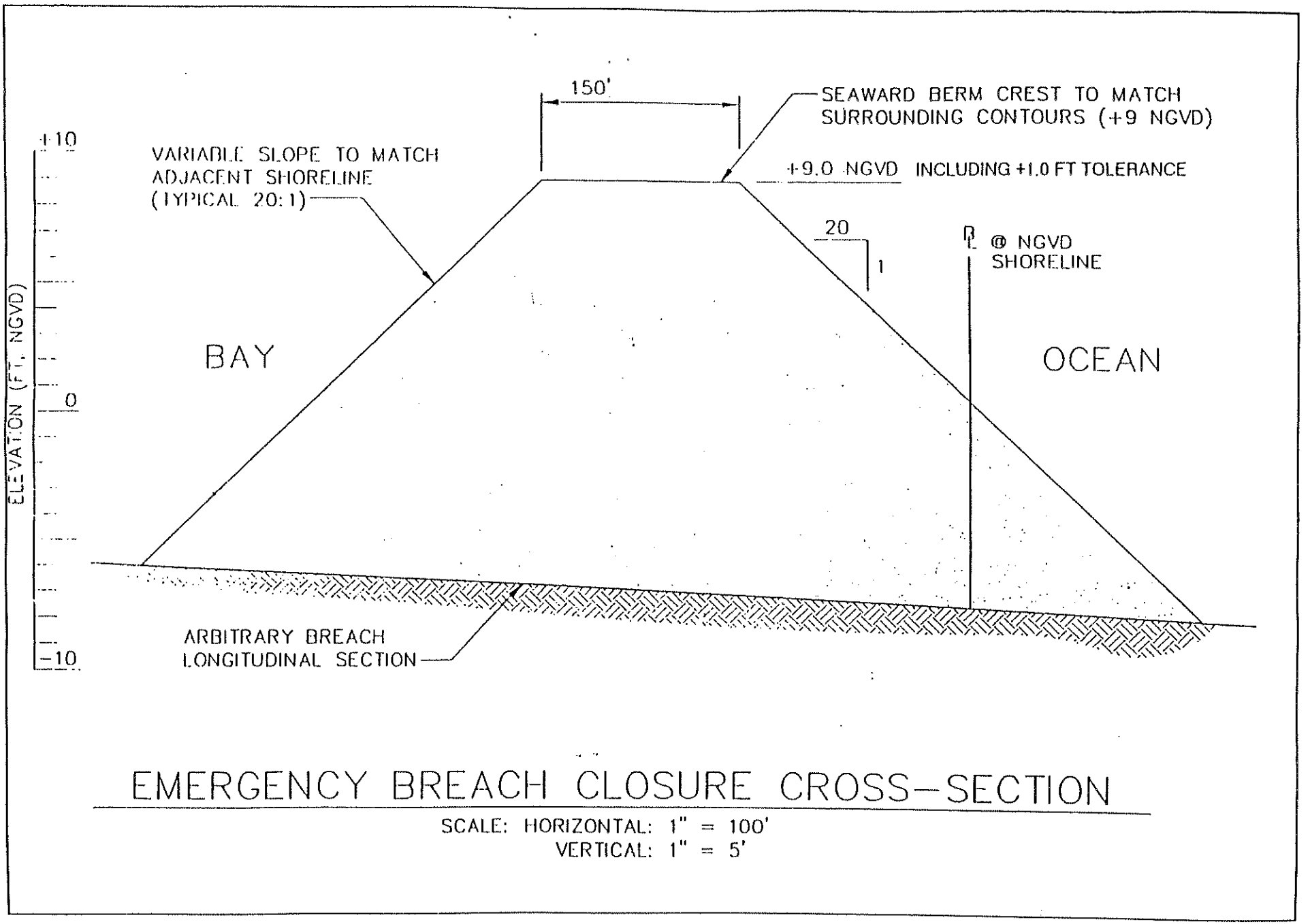


Figure 4. Emergency Breach Closure Cross-Section

Borrow Source Locations

Borrow sources were identified based on previous investigations of offshore sources and investigations of upland sites in order to examine the cost, feasibility and timing of breach closure efforts. Offshore borrow sites are likely to provide the most desirable material. Hydraulic dredging is normally used to deliver offshore sediments to the beach and is a feasible means for closing breaches along the entire study area. Attendant with hydraulic dredging is a delay between breach initiation and dredge mobilization. Delays can be expensive because breach growth is most rapid in the early stages of cross-sectional development. It would be most economical to fill a breach immediately after formation while it is a relatively small opening. Accordingly, it is cost effective to consider other sources of material that can be implemented soon after breach initiation, in addition to offshore sources. As an alternative to hydraulic dredging, offroad trucking of stockpiled material located strategically along the study area was considered to expedite breach closure where road access would prove difficult, (i.e., Fire Island shore fronting Great South Bay). For locations easily accessible by truck (i.e., areas fronting Shinnecock and Moriches Bays), upland sources were considered and provide a similar capability at less cost than stockpile use. Hence, the delivery methods considered here include ***hydraulic dredging***, and truck delivery from ***stockpile*** and ***upland*** material sources.

Stockpiles provide a readily available source of material for emergency situations. Although the BCP identifies the benefit of having stockpiles, Federal participation in stockpile creation would take place only on an as available basis. The Corps is responsible for dredging nearby waterways, such as the Intracoastal Waterway, Fire Island Inlet and Moriches Inlet. If cost-effective opportunities exist, dredging practices shall incorporate the creation of sand stockpiles. The creation of stockpiles will be coordinated between the Corps and the State. The State may have similar opportunities to stockpile suitable material (as evidenced by the recent placement of material at Robert Moses State Park) and may opt to fund fully without Federal expense. If stockpiles are used for breach closure, the Federal, State and local governments should make efforts to replenish the stockpile sites. If stockpile sites are not readily available, then upland and/or borrow sources would be utilized. Figure 2 delineates proposed stockpile locations where, if available, material should be placed. No stockpile sites are recommended in the Wilderness Area and other natural areas of the Fire Island National Seashore. If material becomes available, separate documentation (including, but not necessarily limited to NEPA documentation) will be required to discuss the details and the impacts of the proposed action. Some of the considerations of the construction of sand stockpiles are dewatering, wetland, threatened and endangered species, aesthetics, wind blown sand deposits on adjacent environments, impacts of placement methods, social and cultural impacts. These considerations are further discussed in Appendix C: Environmental Assessment.

Borrow source locations are identified in Figure 2, including offshore sources, upland sources and

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sand stockpiles. Upland sources for Reaches 1 (Southampton), 2 (Tiana/Shinnecock), 3 (Westhampton), 4 (Cupsogue), and 5 (Smith Point) were identified within 10 or fewer miles of each reach. These upland sites are located in East Quogue, Bridgehampton, and Westhampton. Alternative material sources to those shown in Figure 2 include Federal Navigation and local channel dredge materials from the adjacent estuary including the Intercoastal Waterway. Selection of a source for hydraulic dredging depends on the required volume and dredge requirements (i.e., ocean vs. bay dredge for volumes less than 100,000 cy).

Breach Closure Cost Estimates and Delay Analysis

This effort focused on the ability to effectively close barrier island breaches using construction methods considered for the BCP (i.e., stockpile trucking, upland trucking, and pipeline dredging). The factors affecting breach closure effectiveness of different construction methods include the rate at which material can be delivered to the breach relative to the rate at which breach area increases. Breach closure will be achieved if closure construction exceeds breach growth, however, the elapsed time to reach closure is a primary factor in construction costs, as well as the benefits.

To determine the most cost-effective means for breach closure, it was necessary to establish how fast closure material could be delivered to a breach using anticipated construction equipment. Delivery rates were based on past experience, and are listed below:

- Dredging: 45 linear feet of closure/day (21,000 to 28,500 cy/day), approach from one side
- Stockpile trucking: 40 linear feet of closure/day (3200 cy/day), approach from 2 sides and two, 8-hour shifts
- Upland trucking: 40 linear feet of closure/day (4000 cy/day), approach from one side and two, 8-hour shifts

The closure rates refer to the distance that can be closed, on average, during any given day. The rates of closure account for material lost to outwash and assume a representative average breach depth of roughly 7 feet below Mean Sea Level (MSL). Estimated cross-sectional closure rates were 315, 280, and 280 square-feet per day for dredging, stockpile trucking, and upland trucking, respectively.

Closure rates account for the loss of material during construction and placement of sheet-piling to mitigate erosional losses. To calculate the above rates of closure progress, a single row of sheeting was assumed for dredging, and two rows were assumed for upland trucking (due to slower sand placement for trucking). During stockpile trucking operations and dredging at Reaches 6 (Old Inlet) to 9 (Robert Moses), no sheeting would be used due to limited access and the need for an immediate response. Material losses

during construction were assumed to range from 25 percent for upland trucking with sheetpile protection to 60 percent for ocean dredging and no sheetpile protection for areas inaccessible to upland trucking.

A delay analysis was conducted to assess the impact of various lag times on closure costs. Truck response time was estimated to be roughly eight days (stockpile trucking) and six days (upland trucking) after breach opening. Dredge response time was taken as 1.5 months. These lag times reflect mobilization of equipment, site access preparation, and New York State and/or Federal response times. It is the intent of the BCP to ensure that these response times are achieved. This report details the recommended steps necessary to achieve these response times. (See Appendix D for breach closure procedure)

Construction Procedure Assessment. The time from breach initiation to breach closure was estimated for each construction method. The previously listed breach closure rates were combined with the exponential breach growth relationship to determine the time to closure. Breach cross-sectional area relative to time from breach initiation was plotted for the alternatives considered herein, and choking of the breach is achieved when the cross-sectional area is zero, and active flow is stopped.

Initial closure volumes were determined on the basis of closure sections which were sufficient to choke a breach. They were taken as 15, 30, and 85 percent of the design section for stockpile trucking (no sheetpiling), upland trucking (2 rows of sheetpiling), and dredging, respectively. Total closure volumes were computed as the sum of initial closure volumes which included outwash (40 to 60 percent) during active breach evolution, and the volume required to complete the design section, after breach closure, assuming 15 percent losses. The 15% losses are due to typical washoff of fine material as part of the hydraulic placement process.

Trucks hauling from upland sources cannot gain access to extensive sections of Fire Island. As a result, construction estimates for Reaches 6 (Old Inlet) to 9 (Robert Moses) address ocean dredging alone and stockpile trucking followed by ocean dredging. Since the cost to provide the same closure rate as stockpile use is less for upland trucking for reaches accessible by truck, the cost effective construction measure for Reaches 1 (Southampton) to 5 (Smith Point) is with upland trucking. Upland trucking at Great South Bay was not considered for Reach 9 (Robert Moses), since the use of an existing stockpile would be most cost effective. To achieve the design section for Reaches 1 (Southampton) to 5 (Smith Point), use of a bay dredge following closure by trucking is most cost effective. A bay dredge was selected, because the required dredging volumes anticipated are less than approximately 80,000 cy which is generally below the quantity to mobilize a larger ocean dredge.

Particular emphasis was focused on the effectiveness of stockpile trucking. Stockpiles, by definition,

offer a limited volume of material available for breach closure and for that reason may be ineffective if breach growth cannot be significantly impeded with available stockpile volumes. Based on required volumes for closure and anticipated production rates to deliver stockpiled material, stockpile trucking effectiveness is maximized when breach response is immediate and when the breach area is small. The stockpiled material can be used to reduce closure volume requirements and/or reduce breach-induced damages. Normally, when the required volume exceeds 120,000 cy of stockpiled material, it is cost effective to complete the closure of the breach and provide the design closure section by using an ocean dredge.

Estimated closure times for breaches into Moriches and Shinnecock Bays are similar since the breach growth curves used in the analysis depend on the maximum breach cross-sections which are nearly equal for these estuaries. Great South Bay, which is larger than Shinnecock and Moriches Bays, is capable of supporting a much larger breach. As a result, its breach growth rate is much higher than that of Shinnecock and Moriches Bays. This makes closing a breach on Great South Bay more difficult, and more costly. Breach closure construction rates for stockpile trucking were evaluated for two-sided delivery of closure materials. Stockpile trucking closure volumes, assuming two-sided delivery, were used to determine initial volume and costs for stockpile establishment. Results suggested that three stockpiles are necessary along Fire Island to meet stockpile volume needs for a single breach within Reaches 6 (Old Inlet) to 9 (Robert Moses). The existing stockpile at Robert Moses of roughly 200,000 cy would need to be augmented by two additional 60,000 cy stockpiles. Locations are at Sailor's Haven and in the Fire Island National Seashore Wilderness Area just west of Old Inlet would increase the probability that two-sided delivery could be accomplished.

Construction Cost Estimates. Costs associated with different construction methods were estimated using calculated breach closure times. Table 2 contains the results of these calculations. Quantities used in determining closure costs are not included. It is evident by the lower costs that the ability to augment dredging, either via stockpile or upland trucking, is essential in providing the most cost-effective breach closure. Along Great South Bay, stockpile trucking followed by dredging is the least costly means of closing a breach. Stockpile use alone, on the other hand, for anticipated high breach growth rate cannot be used to complete the breach closure design section which makes dredging necessary. There are areas along Fire Island (e.g., Water Island/Barrett Beach) where higher breach growth rates could diminish the efficacy of stockpile trucking. In such areas, the breach growth could exceed stockpile closure production rates, as island widths are narrow and bay water depths are sufficient to allow strong scour-inducing tidal flows. These areas where high breach growth rates are possible, however, have a level of protection against breaching corresponding to a storm with a return period of about 18 years. This relatively high level of protection is due to the existing high maximum island elevations and thus these sites are only moderately susceptible to breaching. With respect to Shinnecock and Moriches Bays, upland trucking augmented by bay dredging provides the most cost-effective solution with anticipated bay dredging material available from the Intercoastal

Waterway channels. It is noted that trucking alone can close a breach most quickly and with up to a week of setup time, a bay dredge can be used to provide the completion of the design section. Bay material availability could affect assumptions inherent in bay dredging costs associated with this construction method. This could, in effect, preclude upland trucking/dredging as the most cost-effective solution, and instead indicate that closure design should be constructed using only upland trucking.

It is evident that an immediate response using either upland or stockpiled material sources can significantly impede breach growth. Along Shinnecock and Moriches Bays, the use of upland sources can reduce required closure volumes due to the rapid response and could potentially eliminate the need to mobilize a bay dredge. For Great South Bay relative to an ocean dredging only alternative, using stockpiled material decreases the total volume requirements due to a shorter time to achieve closure. Additionally, the use of stockpile trucking/dredging reduces the time that the breach remains open with an attendant reduction in storm-induced damage (i.e., bay flooding and shoreline erosion).

The costs associated with dredge delays were considered for the dredging only alternative. For Great South Bay stockpile trucking/dredging would be rendered more and more ineffective as the delay in dredge mobilization increases, leading to stockpile depletion and decreased closure construction rates. This is especially the case when closure depends solely on the large Democrat Point stockpile and one-sided closure operations. For Moriches and Shinnecock Bays, no dredge delays are involved, because the breach can be cost effectively closed with upland trucking. The cost analysis which was performed for this study shows that a 3 month dredge lag following stockpile trucking at Great South Bay for example, would result in a stockpile trucking/dredging estimate of nearly $7 million relative to the roughly $5 million estimate for a 1.5 month dredge lag time. Such a substantial cost increase based on a moderate construction delay demonstrates that stockpile trucking would not be cost effective if dredging is delayed beyond 1.5 to 2 months.

An evaluation of construction delay cost is shown in Table 2 for the dredging only alternative. Delays of 3, 6, 9, and 12 months prior to dredging only operations were evaluated relative to the 1.5 month delay (which assumed a minimal setup lag time). It is evident that costs which follow directly from the breach growth rate, are asymptotic with time to a maximum value. The best means for reducing closure costs is to mobilize a dredge as soon as possible within the first 1.5 months. At Great South Bay for example, a roughly 20 percent increase in costs results with a dredging lag of 3 months (as opposed to 1.5 months). Similarly, approximately a 20 percent increase occurs with a 6 month delay (from 3 to 9 months). These results emphasize the need to respond rapidly to minimize costs.

Table 2
Breach Closure Cost Estimates

Reach	Estuary	Construction Method	Construction Lag (Days)	Total Costs First	Total Costs Annual
1 (Southampton)	Shinnecock	Dredging	45	$ 5,016,600	$ 2,032,900
		Upland only	6	$ 3,088,000	$ 1,282,100
		Upland/Dredging	6 & 45	$ 2,191,000	$ 922,600
2 (Tiana/Shinnecock)	Shinnecock	Dredging	45	$ 5,016,600	$ 2,032,900
		Upland only	6	$ 3,088,000	$ 1,282,100
		Upland/Dredging	6 & 45	$ 2,191,000	$ 922,600
3 (Westhampton)	Moriches	Dredging	45	$ 4,577,400	$ 1,861,900
		Upland only	6	$ 2,387,500	$ 1,009,400
		Upland/Dredging	6 & 45	$ 2,010,300	$ 862,600
4 (Cupsogue)	Moriches	Dredging	45	$ 4,577,400	$ 1,861,900
		Upland only	6	$ 2,387,500	$ 1,009,400
		Upland/Dredging	6 & 45	$ 2,010,300	$ 862,600
5 (Smith Point)	Moriches	Dredging	45	$ 4,577,400	$ 1,861,900
		Upland only	6	$ 2,387,500	$ 1,009,400
		Upland/Dredging	6 & 45	$ 2,010,300	$ 862,600
6 (Wilderness Area)	Great South	Dredging	45	$ 6,111,700	$ 2,459,200
		Stockpile/Dredging	8 & 45	$ 6,251,800	$ 2,515,500
7 (Barrett Beach)	Great South	Dredging	45	$ 6,111,700	$ 2,459,200
		Stockpile/Dredging	8 & 45	$ 6,251,800	$ 2,515,500
8 (Atlantique)	Great South	Dredging	45	$ 6,111,700	$ 2,459,200
		Stockpile/Dredging	8 & 45	$ 6,251,800	$ 2,515,500
9 (Robert Moses)	Great South	Dredging	45	$ 6,111,700	$ 2,459,200
		Stockpile/Dredging	8 & 45	$ 6,251,800	$ 2,515,500

Construction Lag (months)	Total Annual Costs Dredging only	Breach Closure Time from initiation (days)
SHINNECOCK BAY		
1.5	$ 2,032,900	77
3	$ 2,873,700	134
6	$ 3,146,000	233
9	$ 3,351,700	327
12	$ 3,492,000	417
MORICHES BAY		
1.5	$ 1,861,900	73
3	$ 2,446,300	129
6	$ 2,908,600	228
9	$ 3,083,800	322
12	$ 3,186,600	414
GREAT SOUTH BAY		
1.5	$ 2,459,200	113
3	$ 3,013,900	176
6	$ 3,492,700	283
9	$ 3,743,300	381
12	$ 3,868,600	475

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Benefit Analysis

The analysis of economic impacts from breach development and closure is limited to the National Economic Development (NED) costs of storm damage. The NED cost of storm damage was calculated for conditions both with and without breach closure. The difference represents the benefits of breach closure. To quantify the expected financial damages, the following relationships were derived:

- Flood Stage vs. Damage
- Flood Stage vs. Frequency
- Breach Area vs. Time From Breach Inception
- Damage vs. Breach Area
- Damage vs. Time from Breach Inception

As part of the Fire Island Inlet to Montauk Point (FIMP) Study a complete inventory was made of structures on both the mainland and barrier beach. The analysis of stage vs. damage relationships utilized previously developed structure inventories, and generalized percent damage relationships was supplemented with field investigations. Breach growth parameters were determined by analyzing survey data for the 1980 and 1992 breaches at Cupsogue and Pikes Beach respectively. Hydrodynamic models, calibrated to both existing conditions and 1992 breach conditions, were used to determine stage vs. frequency relationships for a range of breach areas in each bay. Stage vs. flood damage relationships were developed for over 37,000 structures in the study area, using generalized damage functions. The analysis indicates that the presence of a breach causes a significant increase in frequency of flooding along the mainland shore of each bay. By weighing expected damages by the frequency of occurrence, it was determined that a fully developed breach would eventually result in a three to four fold increase in storm damages. These data were used to establish annual damage vs. breach size relationships for each bay.

Applying the estimated breach growth rates resulted in the breach areas presented in Table 3. The uncertainty in the breach area in the months following the initial breach formation creates significant uncertainty in the level of damages expected during subsequent storms. In general, breach growth is rapid within the first three months, achieving 43% to 70% of its "maximum" cross-sectional area within this time. After approximately 1 year a breach is expected to stabilize at its "maximum" area. As evidenced in Table 4, the cross sectional area achieved within the first three months correlates to approximately 66% to 95% of the "maximum" damages attained within the 12 month period after breach formation. Table 4 provides a summary of the expected range of storm damages after a breach, expressed on an average annual basis. The expected storm damage reduction benefits are primarily due to the protection of residential mainland communities.

Table 3

Range of Breach Area (square feet) vs. Time from Breach Formation

Estuary	Range Value	1 Month	3 Months	6 Months	9 Months	12 Months
Great South	Minimum	5,040	13,120	21,480	26,820	30,220
Great South	Maximum	9,380	21,480	30,220	33,770	35,210
Moriches	Minimum	2,230	5,800	9,490	11,850	13,360
Moriches	Maximum	5,270	11,180	14,550	15,560	15,870
Shinnecock	Minimum	2,470	6,430	10,530	13,150	14,820
Shinnecock	Maximum	5,850	12,400	16,140	17,270	17,600

Table 4

Range of Average Annual Damages ($) vs. Time from Breach Formation

Estuary	Range Value	1 Month	3 Months	6 Months	9 Months	12 Months
Great South	Minimum	13,879,000	18,824,000	24,187,000	26,959,000	28,724,000
Great South	Maximum	16,382,000	24,187,000	28,724,000	30,567,000	31,314,000
Moriches	Minimum	9,765,000	14,087,000	17,053,000	18,091,000	18,733,000
Moriches	Maximum	13,468,000	17,806,000	19,240,000	19,669,000	19,801,000
Shinnecock	Minimum	3,376,000	5,026,000	6,414,000	6,587,000	6,697,000
Shinnecock	Maximum	4,806,000	6,537,000	6,784,000	6,858,000	6,880,000

Since various breach closure techniques require different time periods to implement, damages have been calculated for a range of closure times. The time period for each damage analysis includes the duration that the breach remains open, exposing thousands of properties to increased damage, plus a period of three years after closure based on the closure design life. For comparison purposes, all present worth damages have been converted to annual damages using the Fiscal Year 1994 Federal discount rate of 8 percent per year, with annual damages assumed to be distributed uniformly over the year.

Both the rate of breach growth and the occurrence of a post project storm which exceeds the design level are uncertain events which were analyzed using simulation techniques. Simulations were performed to calculate damages using the @Risk add-in for a LOTUS 1-2-3 spreadsheet. The @Risk add-in allows distributions to be repetitively sampled and all spreadsheet cells to be subsequently recalculated. It also keeps track of the generated input and output values. In this manner, a range in answers as well as the mean value were calculated.

Mean damages, which would occur under each breach closure scenario, were compared to damages which would occur without closure to determine the average annual damage reduction benefits. These benefits do not include impacts to the operation of navigation channels, disruption of littoral drift or changes in the salinity and circulation patterns of the bays. Delays in implementing a breach closure result in an increase in average annual damages which are reflected as an increase in benefits.

Benefit Cost Comparison

The annual benefits of breach closure were compared to annual costs to determine whether options were cost-effective. Table 5 provides a summary of annual closure benefits vs. annual costs for various construction methods. The benefit cost comparisons indicate that the most cost effective breach closure technique is to combine the rapid response capability of trucking upland or stockpile material with the high volume capacity of dredging. Implementing this combination of construction techniques, however, requires nearly immediate mobilization of the trucking operations to prevent uncontrolled breach growth. If mobilization is delayed, the increase in breach size makes dredging from offshore borrow sources the more viable approach. The lower boundary of benefits (10th percentile) reflects the impact of a second breach occurring after completion of the closure. Such an event significantly reduces the annualized value of closure benefits.

Table 5

Implementation Alternatives with BCP: Benefit Cost Comparison

	Alternative Construction Methods			
Estuary	Dredge only	Upland only	Upland Trucking and Dredging (Reach 9)	Stockpile Trucking and Dredging
Great South Bay				
Annualized Benefit	$14,210,000	NA	NA	$14,467,000
Annualized Cost	$2,459,200	NA	NA	$2,515,500
Net Benefits	$11,750,800	NA	NA	$12,400,400
BCR	5.8	NA	NA	5.8
Implementation Time	3 months	NA	NA	2.5 months
Moriches Bay				
Annualized Benefit	$9,270,000	$9,515,000	$9,434,000	NA
Annualized Cost	$1,861,900	$1,009,400	$862,600	NA
Net Benefits	$7,408,100	$8,505,600	$8,571,400	NA
BCR	5.0	9.4	10.9	NA
Implementation Time	2.5 months	1 month	1.5 months	NA
Shinnecock Bay				
Annualized Benefit	$3,402,000	$3,473,000	$3,473,000	NA
Annualized Cost	$2,032,900	$1,282,100	$922,600	NA
Net Benefits	$1,369,100	$2,190,900	$2,414,200	NA
BCR	1.7	2.7	3.8	NA
Implementation Time	2.5 months	1.5 month	1.5 months	NA

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Feasibility Determination

Procedures for closing barrier island breaches are recommended for each of the 9 project reaches. However, evaluation of a newly formed breach may influence closure methods. The most important decisions regarding closure pertain to the choice of construction procedures. The most feasible and cost effective procedures for each reach are recommended as follows:

Reaches 1 (Southampton) and 2 (Tiana/Shinnecock): The best means for closure along this reach would be with trucking from upland sources followed by use of a bay dredge within Shinnecock Bay to complete the design section (BCR of 3.8). A delay in dredge mobilization, or a marked increase in dredging costs, would render upland source trucking the most cost-effective closure method (BCR of 2.7). Similarities in the cost of closure coupled with low benefits along Shinnecock Bay relative to Great South and Moriches Bays, result in a relatively narrow range of benefit-to-cost ratios (1.7 to 3.8).

Reaches 3 (Westhampton), 4 (Cupsogue), and 5 (Smith Point): The recommended methodology for breach closure involves the initial use of upland sand sources and trucking followed by use of a bay dredge within Moriches Bay (BCR of 10.9). Should dredge mobilization be delayed or more costly than anticipated, closure could be obtained using only upland sources and trucking (BCR of 9.4). Increased development along Moriches Bay relative to Shinnecock Bay produces a range of BCR's from 5.0 to 10.9.

Reaches 6 (Old Inlet), 7 (Water Island), 8 (Atlantique), and 9 (Robert Moses): The most effective means of achieving breach closure along Reaches 6 (Old Inlet) to 9 (Robert Moses) involves trucking of sand on either side of the breach followed by use of an ocean dredge using offshore borrow sources. Since the proposed location of the westernmost stockpile site is immediately west of the Wilderness Area (Watch Hill), breaches occurring east of this stockpile site would be most cost effectively closed by a using the stockpile from the western side and an upland source via the Smith Point bridge. Breaches in reaches 8 and 9 would be most cost effectively closed by utilizing the stockpile sources, if available. See Figure 2 (BCR of 5.8). Dredging would be required to achieve closure of a breach and completion of the design section along these reaches, although the use of stockpiles and/or upland sources would lead to considerable savings. Although there are no pronounced differences between calculated BCR's (5.8 to 5.8) the positive impacts of stockpiling is refelceted in the net excess benefits.

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The dredging only alternative, despite reductions in the benefit to cost ratios still would be economically feasible, and is possible for any of the project reaches. It could be necessary if breach growth exceeds rates predicted on the basis of experience at Westhampton Beach. At Reaches 1 (Southampton) to 5 (Smith Point), decisions regarding the need for and type of dredge must be based on dredge availability and breach growth. Areas fronting Great South Bay must be monitored during stockpile trucking operations to determine effectiveness which will depend on actual breach growth rates. Multiple breaches, excessive breach growth, or other limitations to stockpile trucking might combine to limit the effectiveness of the stockpile trucking/dredging alternative. In such cases it will be necessary to complete breach closures using the dredging only alternative. Conversely, breach initiation at locations where breach growth is expected to be slow (e.g., Old Inlet) suggest that natural closure might occur. Monitoring of breaches at Old Inlet or any of the Wilderness Area along Fire Island should be undertaken prior to construction.

The analyses summarized in this report indicate that time is of the essence in effecting a breach closure. Small delays during early breach growth stages cause significant increases in total closure costs and a reduction of closure benefits. (It should be noted that results contained in this report are based on a limited number of prototype observations of breach growth rates at Westhampton Beach. The empirical data used to determine the rate of breach growth is comparable to conditions after the 1992 breach. Similarly, the stage damage curve for Moriches Bay compares favorably to the 1992 damage reports. Construction procedures and costs are relatively sensitive to the estimated growth rates used in this study.) At Moriches and Shinnecock Bays, upland sources can be used to close a breach provided there is no major damage to access routes leading to the breach area. A greater amount of uncertainty exists along Fire Island where the breach growth rate had to be estimated from the Westhampton breach data. If the breach growth rate was more rapid than estimated for the BCP, stockpiling could be less effective. To account for this possibility the BCP calls for ocean dredging to achieve final closure along Fire Island. Similarly, stockpiles would be less effective if multiple breaches were to occur along Fire Island. However, such breaches could be closed with the dredging only alternative.

ENVIRONMENTAL CONSIDERATIONS

ENVIRONMENTAL SETTING

The project area is the barrier island system within the Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point Reformulation Study Area. An Environmental Assessment (EA), in accordance with the National Environmental Policy Act, was prepared and is attached. The following summarizes the EA. For a full discussion, please refer to the attached EA.

Developments: The lands and waters within the proposed project area are owned by various interests and are subject to various uses. The Federal government (Department of the Interior, National Park Service, [NPS]) has jurisdiction over the area included within the boundaries of the Fire Island National Seashore (FINS). The New York State government has jurisdiction over Robert Moses State Park (Office of Parks, Recreation and Historic Preservation), tidal waters (bays) (Department of Environmental Conservation) and submerged lands offshore to the three mile limit (Department of State). The Suffolk County government (Department of Parks and Recreation) has jurisdiction over county parks located at Smith Point, Moriches and Shinnecock Inlets, and small parcels of shorefront land at various locations. Most of the remaining land is held by private landowners located in the Towns of Southampton, Brookhaven, Islip and the Villages of Easthampton, Southampton, Westhampton Dunes, Westhampton Beach, Quogue, Bellport, Patchogue, Brightwaters, Ocean Beach, Saltaire, and local municipalities.

Coastal Barrier Resources Act: This law established the Coastal Barrier Resources System and units within the system. It prohibits Federal expenditure, and financial assistance for the development of coastal barriers, or portions thereof, which are presently undeveloped. The coastal barrier units within the proposed action areas are the: 1) Southampton Beach Unit, (F12) 2) Tiana Beach Unit (F13) and 3) Fire Island Unit (including Robert Moses State Park) (NY59). The Coastal Barrier Resource Act (CBRA) will not affect the implementation of the Breach Contingency Plan, to the extent that CBRA allows for non-structural solutions, including beach nourishment.

Back-Bay Areas: Great South Bay Moriches Bay and Shinnecock Bay represent one of the largest estuarine ecosystems in New York State. The environmental resources found within the ecosystem, as well as residential development on both the mainland and barrier island, would be threatened, if the barrier island were left to erode unchecked.

Great South Bay Area. The barrier island system is the principal natural feature fronting Great South Bay. The eastern side is underdeveloped and contains extensive beaches, dunes, tidal wetlands along the back-bay area, and tidal wetland islands within the bay. Larger wetland islands are located in the back-bay area along Jones Island to the west. The mainland on the north side of Great South Bay contains two large river systems (Carmans River and Connetquot River) with extensive freshwater and tidal wetlands.

The Great South Bay Area contains eleven designated New York State, Department of State Significant Coastal Fish and Wildlife Habitats (NYSDOS, 1987). They include: Great South Bay East, Great South Bay West, Beaverdam Creek, Swan River, Carmans River, Connetquot River, Champlin Creek, Orowoc Creek, Cedar Beach, Gilgo Beach and Sore Thumb. Great South Bay has also been identified as a significant fish and wildlife habitat by the USFWS (1995).

Moriches Bay Area. The barrier beach/dune system is the most dominant natural feature fronting Moriches Bay. The Dune Road area in Westhampton, and the Village of Westhampton Dunes, is highly developed. (Note: Development of the beach area fronting the Village of Westhampton Dunes will be resumed under the Legal Settlement between the Village and the United States.) The barrier beach area west of Moriches Inlet is undeveloped with extensive dunes, beaches and back-bay wetlands. A few tidal wetland islands are located within Moriches Bay. The mainland behind the northern boundary of the bay provides numerous stream corridors associated with freshwater and tidal wetlands. Moriches Bay is connected to Shinnecock Bay by the Quogue Canal.

The Moriches Bay area contains five New York State Designated Significant Fish and Wildlife Habitats. They include: Moriches Bay, Smith Point County Park, Cupsogue County Park, and portions of Quantuck Creek and Quogue Refuge. Moriches Bay has also been identified as a significant fish and wildlife habitat by the USFWS (1995).

Shinnecock Bay Area. As in the other bay areas, the barrier beach system is the governing natural feature fronting the bay area. There are vital tidal wetlands in the back-bay area behind the Quogue/Tiana and Southampton barrier beaches. The bay is bordered by a dense residential population and small craft harbor facilities on the north and west sides.

Shinnecock Bay is connected to the west by the Quogue Canal and to Great Peconic Bay by the Shinnecock Canal. The Shinnecock Bay area contains eight New York State Designated Significant Fish and Wildlife Habitats. They include: Southampton Beach, Tiana Beach, Shinnecock Bay Dune Road Marsh, Far Pond and Middle Pond Inlets, and portions of Quantuck Creek and Quogue Refuge.

Marine Threatened and Endangered Species: No State and/or Federal-listed endangered or threatened marine species are known to breed within the study area. During the summer and early fall months, the threatened loggerhead (Caretta caretta) and endangered Kemp's ridley (Lepiduchelys kempi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) sea turtles, as well as the endangered fin (Balaenoptera physalus), humpback (Megaptera novaeangliae), and right (Eubalena glacialis) whales may be present in New York coastal waters (NMFS from USACOE, 1994). While sea turtles have been seen in this region, nesting has been documented only as far north as New Jersey (NRC, 1990). Although the Kemp's ridley, loggerhead and green sea turtles may feed in one of the bays, no reports have substantiated this.

Barrier Island: Six ecological communities are found within the barrier island system. The most southern community is usually under water, and is referred to as the nearshore/littoral community. The ocean beach community contains the geologic zones of: intertidal, berm, open beach, foredune, and primary dune. Behind the beach/dune system is often found a dune swale community of grasses and rushes. Interspersed throughout the interior of the barrier island are maritime forest communities. These may be bordered to the north by the frequently flooded saltmarsh community. The final system, often extending out to the island's northern boundary, 4000 feet off shore, is the bayside estuary community. There is little variation in topography in these ecological communities, except for the dune areas. The Federal Wilderness, located in the eastern eight miles of FINS, contains the best examples of these communities. The stability of these communities is sensitive to specific types of disturbance (i.e. tidal action, plant density, wave action, human development, wind activity, storms, and other natural high energy events). Threatened and endangered species associated with the barrier island community are cited below.

Terrestrial Threatened and Endangered Species: The Federal-listed threatened piping plover (Charadrius melodus), the State-listed threatened common tern (Sterna hirundo) and the endangered least tern (Sterna albifrons) all use essentially the same habitat: sand or sand/cobble beaches along ocean shores, bays and inlets between the high tide line and the area of dune formation. They usually nest at sites with little or no vegetation. However, it is not uncommon to find plover nests at the seaward base of dunes, or even behind

the dunes, where blow-outs provide access to the ocean and where beachgrass can shelter the nest and eggs from sun and weather (Andrle, 1988). The Federal-listed endangered roseate tern (Sterna dougallii) nests on barrier beaches near dunes vegetated with beachgrass and herbaceous plants, such as seaside goldenrod (Andrle, 1988) and has been sighted within the FINS property (Bilecky, 1995). The Federally-threatened Northeast beach tiger beetle (Cicindela dorsalis dorsalis) also utilizes the same habitat.

Piping plovers have been present in the past and were present in 1994 in various locations along the length of the barrier island system (USACOE, 1994). The Westhampton Barrier Segment has been identified by the USFWS as under consideration as a proposed Critical Habitat for the Atlantic Coast Piping Plover population.

The Federal-listed threatened plant species, seabeach amaranth (Amaranthus pumilus) has also been identified in various location on the barrier island system. An October 1994 survey by USFWS (in conjunction with The Nature Conservancy [TNC]) of the barrier island within the Village of Westhampton Dunes, resulted in 25 plants being identified on the bayside (23 opposite the west of Groin 15) of the Westhampton Groin Field. The State-listed endangered plant, seaside knotweed (Polygonum glaucom) is present on the Fire Island Barrier Segment.

Other New York State-listed species potentially known to occur are: the threatened Eastern Mud Turtle (Kinosternon subrubrum subrubrum), found in forests, marsh, swale, estuary communities) and the Eastern Spadefoot Toad (Scaphiopus holbrookii holbrookii) found in swale and forest communities.

Potential Offshore Borrow Areas: Borrow areas off the south shore of Long Island were identified as potential sources of material for breach closure efforts. The National Marine Fisheries Service (NMFS) in 1980 conducted a survey within three miles offshore for the Moriches to Shinnecock Reach of the FIMP Project. The survey cited the presence of species typically found off the south shore of Long Island. NMFS also stated that the offshore borrow areas, to be utilized for the Moriches to Shinnecock Reach, are of low benthic use, hence no significant long-term impacts are anticipated from the temporary loss of such sites due to dredging.

Potential Stockpiled Material. To increase the speed and cost effectiveness of emergency breach closures, suitable material may be stockpiled strategically in the study areas, not suitable as shorebird habitats, and marked as "Stockpiled Areas". This would be done in coordinated with USFWS and NYSDEC to ensure that they remain as stockpile areas and not as viable shore species habitat. Creation of stockpile areas would be based upon the availability of material, and would require documentation of the action and the associated impacts. A discussion of the potential impacts is included in the attached Environmental Assessment.

Potential Upland Source Areas. For locations easily accessible by truck, Corps' approved upland sources are to be considered to provide immediate breach closure response.

ENVIRONMENTAL IMPACTS

The following provides a summary of environmental resource impacts associated with each alternative.

No-Action. Under this alternative, no Federal measures would be taken to stabilize the barrier island system in the event of a catastrophic storm. In the event of a breach occurring, a high possibility exists that there is sufficient hydrologic force on both sides of the island to prevent natural breach closure. Therefore, when a breach occurs, wave attack protection for the barrier island and the mainland would be diminished and the back bay area would be vulnerable to additional impacts, resulting in increased bay tide levels, increased bay storm levels, increased bay salinities, changes in bay circulation patterns, and increased sediment shoaling. By taking no action, these impacts would create an ongoing threat to residential structures as well as to estuarine resources. However, the sand spits and tidal deltas that may be created could provide highly suitable feeding and nesting shorebird habitat.

No Action. Three sites listed on the National Register of Historic Places (NRHP) are present along the barrier island and include the Fire Island Light Station, the Beach Road Historic District, the Dr Wesley Bowers House. A number of other prehistoric and historic archaeological sites have been identified along the barrier islands. Some of these sites are potentially eligible for the NRHP and consist of structures related to the former United States Lifesaving Service (USLSS), former inlet locations, prehistoric landsurfaces and occupation sites, and ruins and other features related to the use of the barrier islands by the United States Coast Guard and the United States Navy. Under this alternative, NRHP listed and eligible sites existing along the barrier island have the potential to be damaged or destroyed by the creation of a breach in the location of these sites.

Breach Closure Activities under Corps Emergency Guidance. Without breach closure as per the Breach Contingency Plan, the closure of a barrier island breach would be similar to the 1993 Westhampton Emergency Breach Closure (about 11 months) as opposed to 2.5 months. This increased duration could permit the breach to enlarge, thereby allowing more damage within the developed areas on the barrier island (including emergency services) as well to the estuarine resources, as the breach expands to encompass the barrier island on one or both sides of the breach. The sand spits and tidal deltas that may be created may provide highly suitable feeding and nesting shorebird habitat. A breach closure 11-12 months later may impact the shorebirds that begin to utilize the newly formed habitat.

Actions that will not be implemented within 30 days of an emergency do not qualify for waivers of the Section 106 cultural process.

Breach Contingency Plan. Under the proposed Breach Contingency Plan, breach closure would be initiated within 72 hours of termination of a storm event that occurs along the barrier island chain from Fire Island Inlet to Southampton (excluding the Federal Wilderness Area within the Fire Island National Seashore Boundary). The Wilderness Area would be monitored for indications of natural breach closure. If this does not occur, or if there is an increase in tidal ranges within the Great South Bay that can potentially flood developments on the south shore of Long Island or Fire Island, the breach would then be closed under provisions of this plan.

The dredging and nourishment required in this emergency project would produce three general classes of environmental impacts: the dredging of the borrow area, an increase in turbidity levels, and placement of suitable material on the beach or in open water to restore a breached area to pre-emergency conditions.

Analysis of the impacts of dredging the borrow areas and placing material on the beach is based on the abundance and kind of organisms present, the quantity and quality of material placed, the method used, and the time of year. Some unavoidable adverse impacts will result from direct deposition and direct loss at the borrow area, but they will be minor and of short duration. No significant adverse impact is anticipated by filling the breached areas to the design cross-section.

Due to the sandy substrate and location of the site, any plume will be restricted in size and duration. It is not anticipated that there will be a release of pollutants or a significant lowering of dissolved oxygen levels resulting from the project. Biological recovery of the disturbed area will occur quickly when organisms relocate from outlying undisturbed areas. The recovery process is optimized when the placement material matches the beach material and beach profiles are the same.

Endangered Kemp's ridley, leatherback and green sea turtles, as well as threatened loggerhead turtles may be present near the project area (borrow area locations) during the summer and early fall months (NMFS, 1993). Under an agreement with NMFS, if hopper dredges are used between mid-June to mid-November, NMFS-approved observers will be placed onboard to determine if any impacts occur. The District will place special conditions into the Plans and Specifications forming the construction contract for the project to comply with NMFS' determination.

The piping plover, Federal-listed as threatened and the State-endangered least tern may utilize the project area. The Federal-listed threatened plant species, seabeach amaranth also has the capability to utilize the project area. Construction scheduling may necessitate fill placement during the shorebirds' nesting season (April-August). During informal consultation under Section 7 of the Endangered Species Act of 1973, as amended, USFWS concluded that the proposed Breach Contingency Plan is likely to adversely affect the piping plover and seabeach amaranth. In addition to potential direct impacts associated with breach closure activities, USFWS is concerned with potential indirect impacts resulting from potentially redevelopment and reoccupation of the closure area. The District initiated Formal Consultation and prepared a Biological Assessment for the piping plover and seabeach amaranth. In the Biological Assessment, the District proposes to provide protective measures and implement a coordinated survey/monitoring protocol (USFWS, 1995) to ensure the safety of the piping plover and seabeach amaranth.

Environmental impacts associated with each breach closure would vary according to their relative size and the duration of construction activities. It is anticipated that with a rapid breach closure the hydrodynamic impacts of the breach will be minimized, thus reducing the effects on the barrier island habitats, estuary and mainland habitats.

Breach stabilization should have no adverse effect on known or unknown cultural resources on the shore. Stabilization may serve to protect sites located at the breach from destruction or irreversible damage. Exposed sites or wrecks located adjacent to a breach might be adversely affected by sand placement if fill placed to close a breach, is also placed along the shore adjacent to the breach.

THE BREACH CONTINGENCY PLAN

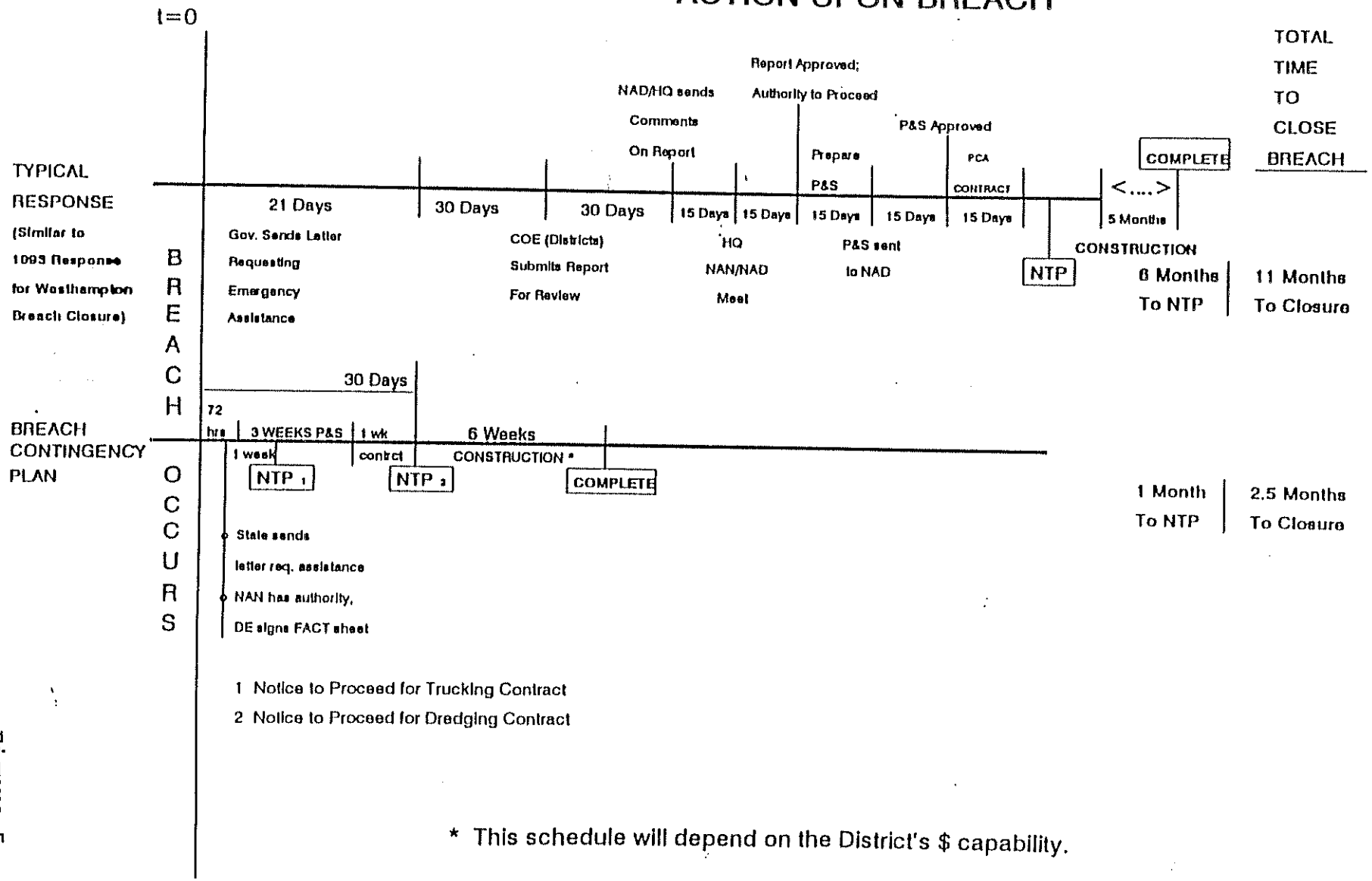
Currently, procedures to close breaches require a request from the Governor of the State of New York, following a declaration of emergency for Federal assistance stating that all available State resources have been exhausted. Upon receipt of the Governor's request, the Corps prepares an advance measures report which evaluates the feasibility of, and justification for, Federal participation in emergency works. This report is submitted to higher authority (NAD and HQUSACE) for review and approval. Approval of the advance measures report gives authority to the District to prepare Plans and Specifications and negotiate the PCA with the sponsor. Upon approval of Plans and Specs and execution of the PCA, a construction contract can be advertised and awarded. (Note that since the process is a long one, by the time it reaches the contract stage, "emergency contracting procedures" may no longer be warranted.) This procedure was identical to that used to close the Pikes Beach (Westhampton) breach which occurred during the 1992 northeaster. It took approximately six (6) months to award a contract, and an additional five months before the final design closure was completed.

The Breach Contingency Plan is designed to speed the Corps' response time to implement emergency measures pertaining to the authorized project of Fire Island Inlet to Montauk Point. The preceding discussions demonstrate that rapid closure of new breaches within the project area is cost effective and in the Federal interest. If breaches are closed rapidly, the volume of material needed to close the breach(es), and the time and costs to do so, are reduced dramatically.

This BCP report demonstrates a cost effective approach to closing breaches, and is intended to be the decision document to support closure of future breaches along the authorized project shoreline. Figure 5 shows the traditional approach used to closing breaches (as evidenced in the recent Westhampton breach closure using emergency procedures), and compares it to the recommended approach of the BCP outlined below.

Procedures for closing breaches under the Breach Contingency Plan are streamlined based on a recommended delegation of authority to the District to respond rapidly to breaches. Steps have been drawn out on the decision matrix in Figure 6, and further separated into three (3) basic phases, which are shown below. Under the District's authority, the BCP would include preparation of a fact sheet in lieu of a report upon each occurrence. The fact sheet, prepared by the District, would declare an emergency condition to exist and provide site specific details of the breached area including condition, location and proposed solution. The BCP report is intended to serve as the decision document, providing documentation and authority for future breach closures. The process would be further expedited by an accelerated contracting process, which, in an emergency, could be accomplished within one week. In addition, the State is attempting to obtain similar authority to access funding by replacing the Governor's letter requesting assistance with a letter from NYSDEC. The Corps would respond upon receipt of NYSDEC's letter

ACTION UPON BREACH



1 Notice to Proceed for Trucking Contract

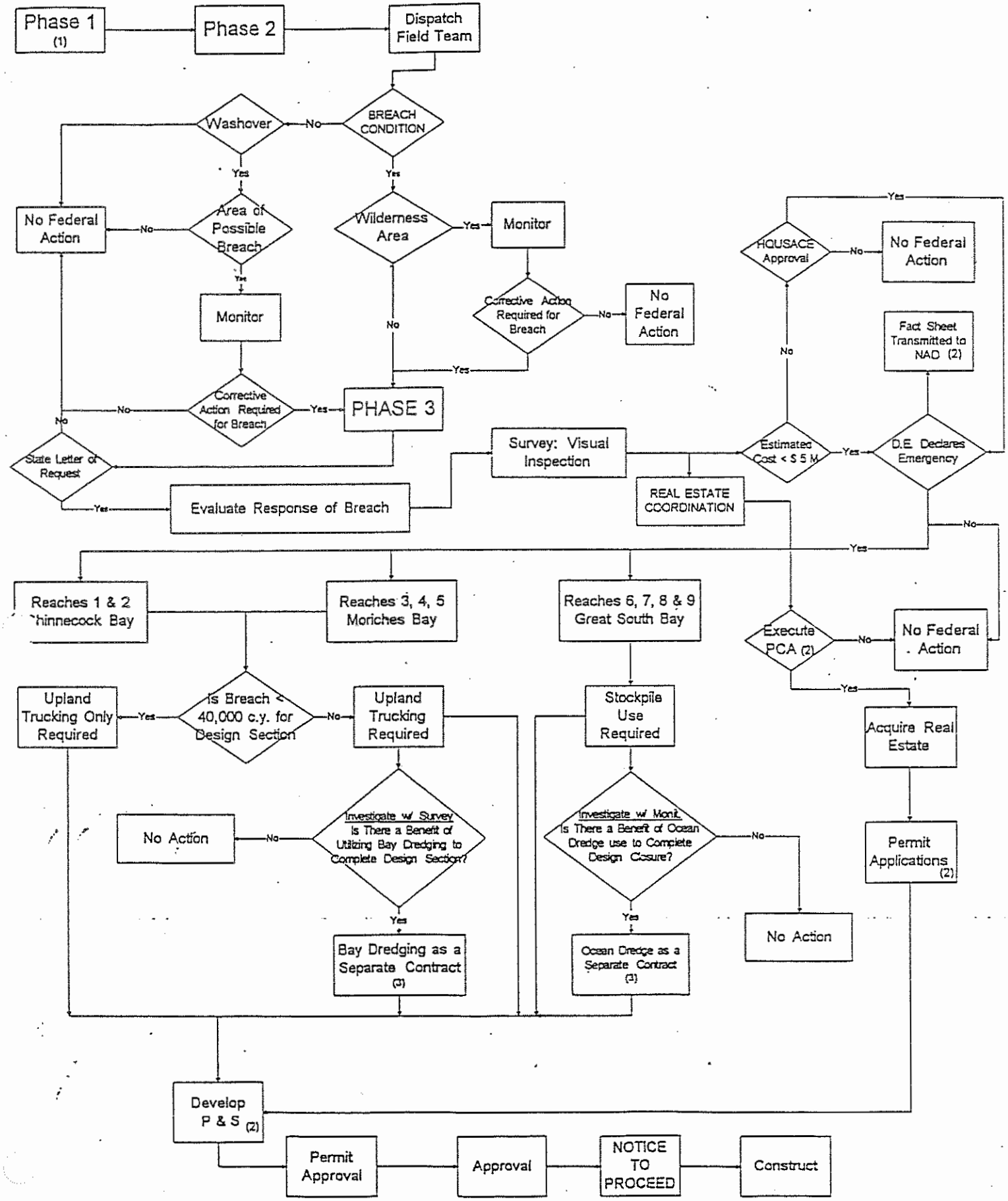
2 Notice to Proceed for Dredging Contract

* This schedule will depend on the District's $ capability.

Figure 5

BREACH CONTINGENCY PLAN - PHASE III IMPLEMENTATION STRATEGY

REFER TO APPENDIX D FOR PHASE I AND PHASE II TASK DESCRIPTIONS



(1) Anticipate award of IDTC's for trucking contracts in Phase 1

(2) These will be developed based upon generic forms (for P&S, PCA, Permits and Fact Sheet)

(3) Dredging contracts will be competitively bid, based on actual P&S.

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Figure 6

PHASE 1: Preparatory Phase

- Monitor shoreline condition: At least once each year, the District shall inspect the shoreline from Fire Island Inlet to Montauk Point, preferably by aerial photography;

- Monitor & track storm events: As a measure of preparation, the District shall monitor and track storms as they occur, particularly those that may affect the Long Island shoreline and communities. The monitoring of storm events includes coordination with all team members, which at a minimum includes representatives from the New York District Planning Division (Plan Formulation Branch and Environmental Branch), Operations Division (Emergency Management Branch and Regulatory Branch), Engineering Division, Project Management, the State (DEC and DOS), U.S. Fish and Wildlife Service, National Park Service and the potentially affected community representative;

- Identify construct and maintain sand stockpile sites, as available: Stockpiling of sand may be conducted by Federal, State and/or local municipalities as the opportunities arise, i.e., beneficial uses of dredged material, and is the most cost effective means of breach closure. Stockpile sites have been identified within this report based on accessibility for equipment, susceptibility to breaching, and available sources; stockpile sites shall be filled/restored as the material becomes available (eg. utilizing disposal materials from local area channel maintenance); the State shall be responsible for the maintenance of stockpiles. In cases where stockpiles sources are not available or not accessible, breach closure will be conducted utilizing, to the extent practicable, upland sources. The Federal, State and local governments shall work together to encourage beneficial uses of dredged material to restore stockpile sites used for breach closures;

- Maintain current permit(s) to close breaches: Based on recommendations of the BCP, appropriate permits will be sought for potential breach closures; these permits will be updated as necessary. It is currently anticipated that one blanket 3-year Water Quality Certificate for breach closure actions will be issued upon the State's receipt of the final approved BCP Executive Summary (renewable every 3 years to incorporate any new conditions); the State has submitted their determination for consistency with Coastal Zone Management by letter dated 4 December 1995, which will last the life of the BCP Any restrictions included in the WQC and/or CZM will be incorporated into the Plans and Specifications for breach closure.

- Maintain and update (as necessary) Breach Contingency Plan: The BCP will be updated as necessary to ensure information is current and correct;

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- The District shall maintain (2) Indefinite Delivery Type (Requirement) Contracts for Immediate Response for Breach Closure by Trucking: Two IDTC's will be maintained at the District in the event of a breach:

(1) For trucking sand from stockpile sites or upland sources (note that as stockpile sites become available, a second IDTC may be appropriate) to close breaches which occur between from Fire Island Inlet and Watch Hill, and

(2) For trucking sand from upland sources to close breaches which occur between the Fire Island Wilderness Area and Shinnecock Inlet.

The District shall also maintain a list of qualified contractors and equipment availability for trucking and ocean dredging. The State shall similarly maintain a list a qualified contractors and equipment availability for use when Federal participation may not be required. The District will further coordinate with dredging contractors during Phases 2 and 3;

- Review and update generic Plans and Specifications and generic Cost Estimates, as necessary: After the BCP has been approved, generic Plans and Specifications and associated generic cost estimates should be available for use for future breach closures. The P&S should be reviewed periodically;

- Update PCA: The PCA included herein as Appendix E is intended to be used as the model PCA for future breach closures. It is recommended that the district commander be delegated authority to execute the model PCA by the Acting Assistant Secretary of the Army for Civil Works (AASA(CW)). The model PCA would be updated (as necessary) for consistency with Federal and State requirements; however, any deviations from the approved model PCA would require specific approval of the deviations. A breach closure PCA will not be necessary in a reach where a PCA for interim measures (such as the pending Westhampton PCA) has been executed or where a PCA based on the reformulated Fire Island Inlet to Montauk Point plan has been executed.

- Coordination: Annual letter to and from the sponsor prior to storm season indicating willingness, acceptability, and capability. The Corps should coordinate with the State on the results of annual field visits. Coordination should also include an update from the State on all non-Federal efforts to provide storm damage protection to reduce the risk of barrier island breaching.

* As a result of Phase 1, if a significant storm event is recognized as a potential threat to the Fire Island Inlet to Montauk Point project area, Phase 2 is activated.

PHASE 2: Storm Event

- Track Storm: Upon recognition of a storm with the potential threat to the Fire Island Inlet to Montauk Point project area, the storm must be tracked daily;

- Mobilize team members (as identified in Phase 1) and conduct field reconnaissance of project area: Before the storm reaches the New York District boundaries, a storm watch team will be established; the team will conduct a site visit to specified areas along the Long Island South Shore from Fire Island Inlet to Montauk Point; Memoranda for the Record(s) will be prepared;

- Notify higher authority: Higher authority will be notified of the condition, the potential threat, and the potential request for funds to close a breach;

- Initiate Real Estate coordination, as necessary: Real Estate requirements should be identified and analyzed for preparation of acquisition in anticipation of the State's request for assistance to close a breach;

- Contractors are notified that services may be required: Two IDTC contractors which should already be awarded contracts shall be notified of the potential work involved, and made aware of the potential need to mobilize immediately; the IDTC for the trucking alternative may be requested to begin work (the State may opt to initiate a separate contract for the initial work); the list of dredging contractors will be reviewed and interested firms will be notified of the potential work involved.

* As a result of Phase 2, if a breach condition is evident - Phase 3 is activated.

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PHASE 3: Breach Condition (See Decision Matrix)

- Coordination with State: Upon evidence of a breach condition, the Corps will coordinate with the State to ascertain the extent of the anticipated Federal participation, confirm roles and responsibilities, and review PCA and real estate requirements;

- State requests assistance to close breaches along the project area: The New York State Department of Environmental Conservation has indicated that the authority for breach closure(s) will be delegated to the NYSDEC; therefore, a letter from the NYSDEC will serve as the State's request for assistance. The State may determine that they can fill the breached area; however, they would still encourage the Corps to pursue contracts to assist, in the event that the efforts are unproductive (eg. breach growth is greater than anticipated). The State's letter shall include confirmation of the proposed methods of real estate acquisition and the State's capability to furnish evidence of ownership and access to all required real estate;

- Corps conducts field investigation: After the storm has occurred, a breach is formed and the State has requested assistance, a Corps team will conduct a site investigation which will determine location, approximate size, growth rate and cost. Field investigations shall include coordination with other Federal, State and local agencies to ensure that all agencies which have accepted the BCP, specifically the National Park Service (NPS) are aware of the Corps' intent to close the specific breach;

- FACT SHEET: The District will prepare and submit a FACT SHEET to NAD stating the proposed action. The FACT SHEET will serve as an abbreviated method for upward reporting. The sheet will highlight location, status of environmental compliance, estimated costs, site specific required actions and the declaration of emergency. The use of the FACT SHEET will negate the need for a separate breach closure report and will provide the decision maker information needed to justify emergency action. In accordance with the recommendations of the BCP, if the Federal share of the breach closure is estimated to be < $5 M, District shall have authority to close the breach, with upward informational reporting to Division; if > $5 M, HQ authority is required. (A sample FACT SHEET is provided in Appendix A).

- District Engineer signs FACT SHEET thus declaring emergency: Based on approval from the AASA(CW) and delegation of signature authority, the DE's declaration of emergency would authorize the District to exercise emergency contracting procedures, prepare Plans & Specs, execute model PCA, award contract(s) and/or issue NTP for IDTC, and construct the breach closure;

- Project Funds would be utilized to the extent possible for emergency work: Funds shall be requested from HQUSACE, as needed; District may use authority for reprogramming and restoration of savings and slippage, depending on the availability of funds.

- Prepare Plans & Specifications: Generic Plans & Specifications should be available and updated based on Phase 1. The District shall modify the generic P&S to include the details of the specific action required. The P&S shall be based on a cursory survey of the breach and projected growth rate. The District shall approve the P&S.

- Execute PCA: The District and the NYSDEC shall have the authority to execute the PCA subject to available funding.

- Acquire Real Estate: The NYSDEC will attempt to obtain rights-of-entry on a voluntary basis, however, the State recognizes that, due to time constraints, condemnation will be the fastest mechanism to acquire the required real estate. The State has indicated that real estate required for the closure will be acquired by eminent domain. Approximately 3 days are anticipated for real estate acquisition; only administrative costs are anticipated for the acquisition;

- Confirm Permit Agreements: Applicable permit requirements under Section 10/404 will be confirmed and inserted into the Plans & Specs; all permits should be in the District's possession prior to the storm;

- Submit Plans to Contractor(s): The District approved P&S shall be submitted to Contracting Division, which shall request the IDC contractor to submit proposal for work within 24 hours of receipt of Plans (See Contracting Plan in Appendix D); in anticipation of a dredging contract being required (based on current size of breach and projected breach growth), interested contractors (as identified in Phase 2, will be requested to submit proposals (IFB);

- Issue NTP to available contractor (eg. IDTC)

- Construct

DECISION

Based on the favorable benefit to cost ratio, acceptable environmental impacts, the requests by Congressional interests, and the desire of the State of New York to participate in the rapid closure of a breach, it is deemed appropriate to formalize, refine, and implement a Breach Contingency Plan as outlined above. The Breach Contingency Plan, if approved, will be more clearly defined and detailed

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so as to facilitate a rapid response.

Local Sponsor

The project sponsor, the New York State Department of Environmental Conservation, has indicated its willingness to undertake the general items of local cooperation for future breach closures. The sponsor's willingness has been evidenced by the past breach closure operations, most recently the breach closure of 1993, which were funded under the authorizing project authority. A draft PCA has been prepared for execution between the State and the Federal Government upon the necessity of breach closure. The PCA identifies the responsibilities of both parties, and is provided as Appendix E. In addition to providing the required non-Federal share of all project costs, the State shall, at a minimum, be required to:

- timely provide all lands, easements, rights-of-ways, and disposal areas or any other interests, deemed necessary by the United States;
- hold and save the United States free from damages due to the construction operation maintenance, and replacement of the project, except where such damages are due to the fault or negligence of the United States or its contractors;
- pay the appropriate proportion of the costs related to the applicable breach closure;
- upon completion of each project feature, maintain, rehabilitate, repair and replace the works in accordance with regulations prescribed by the Secretary of the Army. The cost of the operation and maintenance will be the sole responsibility of the non-Federal sponsor.
- maintain financial commitment/payment on schedule
- acquire rights-of-way for construction
- issue Water Quality Certificate
- issue Coastal Zone management consistency determination

Conclusion

The goal of the BCP is to establish guidelines for responding to barrier island breaches within the shoreline segment extending from Fire Island Inlet to Southampton Village. These guidelines outline actions which can be taken for a breach occurrence to expedite breach closure, minimize breach closure costs, and minimize storm damages to barrier island and back bay shoreline areas. A decision matrix, shown in Figure 6 and described on pages 33 through 40, summarizes the sequence of activities needed to achieve breach closure. It also summarizes major issues, defines responsible parties, outlines required engineering efforts, and identifies critical decisions that can lead to Federal participation in a breach closure. The decision matrix emphasizes quick response to a breach so as to minimize both costs and potential damages.

Notwithstanding the need to act quickly, several steps must be taken to commence closure construction. As outlined in Figure 6, they include a New York State request for emergency assistance, a field survey of the breach, the preparation of plans and specifications, and award of the construction contract. Under the BCP, breach closure operations begun within 1 to 6 weeks from breach initiation would be completed within approximately 3 months depending on the site's location. Retrospectively, it is estimated that with-BCP costs for closing the Westhampton breach, using an upland trucking/dredging alternative, would have been approximately $2 million, assuming the maximum exponential breach growth rate. The actual cost to close the breach was $7 million.

Procedures for closing barrier island breaches are recommended for each of the 9 project reaches as discussed in the feasibility determination section. However, evaluation of a newly formed breach may influence closure methods. The most important decisions regarding closure pertain to the choice of construction procedures. The most feasible and cost effective procedures for each reach are recommended as follows:

Reaches 1 (Southampton) and 2 (Tiana/Shinnecock): The best means for closure along this reach would be with trucking from upland sources followed by use of a bay dredge within Shinnecock Bay to complete the design section (BCR of 3.8). A delay in dredge mobilization, or a marked increase in dredging costs, would render upland source trucking the most cost-effective closure method (BCR of 2.7).

Reaches 3 (Westhampton), 4 (Cupsogue), and 5 (Smith Point): The recommended methodology for breach closure involves the initial use of upland sand sources and trucking followed

by use of a bay dredge within Moriches Bay (BCR of 10.9). Should dredge mobilization be delayed or more costly than anticipated, closure could be obtained using only upland sources and trucking (BCR of 9.4).

Reaches 6 (Old Inlet), 7 (Water Island), 8 (Atlantique), and 9 (Robert Moses): The most effective means of achieving breach closure along Reaches 6 (Old Inlet) to 9 (Robert Moses) involves trucking of sand on either side of the breach followed by use of an ocean dredge using offshore borrow sources. See Figure 2 (BCR of 5.8). Dredging would be required to achieve closure of a breach and completion of the design section along these reaches, although the use of stockpiles would lead to net excess benefits. Breaches occurring to the west of the Smith Point bridge would not be expected to benefit significantly from stockpiles and can effectively be closed utilizing trucking from upland sources followed by ocean dredging.

The dredging only alternative, despite reductions in the benefit to cost ratios still meets the required needs of the NED, and is possible for any of the project reaches. At Reaches 1 (Southampton) to 5 (Smith Point), decisions regarding the need for and type of dredge must be based on dredge availability and breach growth.

The analyses summarized in this report indicate that time is of the essence in effecting a breach closure. Small delays during early breach growth stages cause significant increases in total closure costs and a reduction of closure benefits. (It should be noted that results contained in this report are based on a limited number of prototype observations of breach growth rates at Westhampton Beach. The empirical data used to determine the rate of breach growth is comparable to conditions after the 1992 breach. Similarly, the stage damage curve for Moriches Bay compares favorably to the 1992 damage reports. Construction procedures and costs are relatively sensitive to the estimated growth rates used in this study.) At Moriches and Shinnecock Bays, upland sources can be used to close a breach provided there is no major damage to access routes leading to the breach area. A greater amount of uncertainty exists along Fire Island where the breach growth rate had to be estimated from the Westhampton breach data. If the breach growth rate was more rapid than estimated for the BCP, stockpiling could be less effective. To account for this possibility the BCP calls for ocean dredging to achieve final closure along Fire Island. Similarly, stockpiles would be less effective if multiple breaches were to occur along Fire Island. However, such breaches could be closed with the dredging only alternative, which is also economically feasible.

RECOMMENDATIONS

Prefatory Statement

In making the following recommendations, I have given consideration to all significant aspects of this study as well as the overall public interest in a rapid response to closing breaches upon occurrence for the authorized project of the Fire Island Inlet to Montauk Point Project. These recommendations are made with the realization of the uniqueness of the project area and susceptibility of breaching of the barrier islands within the project area. The aspects considered include engineering feasibility, economic effects, environmental impacts, social concerns and compatibility of the project with the policies, desires, and capabilities of the State, Federal and other interested parties.

Recommendations

Expedited Breach Closure:

I recommend that breaches which occur along the authorized project of Fire Island Inlet to Montauk Point be closed to the specified closure design in an expedited manner substantially in accordance with the Breach Contingency Plan presented herein. To expedite construction, as was the case in the 1993 breach closures at Westhampton Beach, breach closures which occur within the project limits should be constructed as an increment of construction of the authorized project for beach erosion control for Fire Island Inlet to Montauk Point, New York, as authorized by the River and Harbor Act of 1960, subsequently modified by the River and Harbor Act of 1962, and the Water Resources Development Acts of 1974, 1986 and 1992. I further recommend that this plan be fully developed, implemented coordinated and agreed to by the U.S. Army Corps of Engineers and the State of New York.

Delegation of Authority

In order to expedite the process by which breaches are closed in accordance with the recommended design, I further recommend that the District be delegated authority, based upon the approval of the Breach Contingency Plan by the Office of the Chief of Engineers, to execute a PCA for such closure up to a maximum Federal dollar limitation of $5,000,000. Breach closures which require Federal participation in excess of the $5,000,000 threshold shall be forwarded to the Office of the Chief of Engineers for approval. Funding for the breach closure construction(s) will be provided in accordance with all applicable rules governing transfers. Funding would be requested from HQUSACE as needed.

Cost Share All Breach Closures as a Project Expenditure:

The local sponsor, the New York State Department of Environmental Conservation, shall be responsible for providing their required share of the total Federal project to close breaches or slow breach growth along barrier islands within the project area in accordance with the Project Cooperation Agreement (PCA). The cost sharing for breach closures shall be consistent with the authorization for the Fire Island Inlet to Montauk Point project (70% Federal - 30% non-Federal for the Moriches Inlet to Shinnecock Inlet Reach, and 65% Federal - 35% non-Federal for all other areas within the authorized project where construction has not been initiated). The draft PCA has been pre-negotiated with the sponsor and should be approved by the Office of the Chief of Engineers. The District should be delegated authority to execute the pre-negotiated PCA and award construction contracts within the aforementioned dollar limitations.

Disclaimer

The recommendations contained herein reflect the information available at this time and current Department policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to higher authority as proposals for authorization and/or implementation funding.

Gary Thomas

Colonel, Corps of Engineers

District Engineer

BREACH CONTINGENCY PLAN
FIRE ISLAND INLET TO MONTAUK POINT
LONG ISLAND, NEW YORK
REFORMULATION STUDY

APPENDIX A

SAMPLE FACT SHEET

FIRE ISLAND INLET TO MONTAUK POINT, NEW YORK

FACT SHEET
AND
DECLARATION OF EMERGENCY

Date: _____, 19__

Problem Statement: Due to the storm of _____ 19__, a breach was formed along [state specific reach of the authorized project and the general vicinity of the breach] and causes a potential threat to life and property along this barrier island and the mainland areas to the north of _____ Bay. (See figure __ for breach location.)

Justification: Based on the New York District's Breach Contingency Plan dated _____, 199_, it is economically justified to close breaches to the approved design cross section (see attachment). It has been demonstrated that it is most cost effective to close such breaches immediately to reduce the damage potential to the barrier islands and affected mainland areas. The District has been given the authority, based on HQUSACE approval of the Breach Contingency Plan, to close such breaches up to a maximum of $5,000,000. Breach Closures in excess of $5,000,000 require HQUSACE approval.

Proposed Solution: It is expected that the breach which currently exists at _____ along the _____ to _____ reach of the authorized project, which was caused as a direct result of the storm of _____ 19__, would be closed substantially in accordance with the recommendations of the New York District's Breach Contingency Plan. [Include a brief description of the Plan, and methodology of sand placement]

Authorization: The River and Harbor Act (R&HA) of 1960, as modified by Section 103 of the (R&HA) of 1962, Section 31 of the Water Resources Development Act (WRDA) of 1974, Section 502 of the WRDA of 1986, and the WRDA of 1992.

Funding Source: Construction General

Non-Federal Sponsor: New York State Department of Environmental Conservation (NYSDEC)

Estimated Construction Costs: Based on the current estimated breach width of _____ ft, the estimated average depth of _____ ft, as of _____ 19__, and the estimated rate of growth of _____ ft/day the projected estimated breach width at time of closure of _____ ft, and the estimated average depth of _____ ft at time of closure, the estimated construction cost of the design construction template is $_____, by means of _____. The actual construction cost will be determined upon completion of the breach closure.

Estimated Benefit Cost Comparison: Based upon the benefit cost analysis included in the Breach Contingency Plan, further defined by the breach location, and the closure method (as indicated above), it is anticipated that the benefit cost ratio for closing this breach is _____ (insert here may include the range of BCR's as stated in the BCP).

Environmental Assessment, contained in the Breach Contingency Plan.

Status of Cost Sharing: The New York District has received a letter from the New York State Department of Environmental Conservation dated _____ 19__, requesting Federal participation in the cost of repairing the breached area. The sponsor has been informed by letter dated _____ 19__ to utilize available resources to slow the growth of the breach. The sponsor has indicated that based on the size and severity of the breach, [depending on circumstance] available material from (site location) will be used in an attempt to slow the growth of the breach and attempt to halt the flow of ocean water into the bay; however, the sponsor has acknowledged that additional assistance is needed from the Corps to fully close the breach and ensure the approved design cross section. The non-Federal sponsor shall be responsible for ___% of the cost of the total Federal project to close the breach. The State will be reimbursed for any excess contributions, and similarly requested to provide any shortage to equal the required ___% share.

Attachments:

* Breach location
* Project cross-section
* Letter from the Sponsor, requesting Federal Participation

Required Actions:

* Preparation of Plans and Specifications (based on model)
* Execution of the Project Cooperation Agreement (based on model)
* Acquisition of Real Estate
* Notice to Proceed for Construction Contract
* Closure of the Breach

Therefore, I hereby declare an emergency condition to exist. This declaration of emergency invokes, at a minimum, the following statutory and regulatory authorities:

* Armed Services Procurement Act, 10 U.S.C. Section 2304 (c)(2)
* Federal Acquisition Regulation; Unusual and Compelling Urgency, FAR 6.302-2
* Defense Federal Acquisition Regulation Supplement; Unusual and Compelling Urgency, DFARS 206.302-2
* Environmental Effects of Army Actions; Environmental Review Categories; Emergencies, 32 CFR Section 651.9 (b)
* Corps of Engineers; Procedures for Implementing NEPA; Emergency Actions, 33 CFR Section 230.8

Gary Thomas
Colonel, Corps of Engineers
District Engineer

BREACH CONTINGENCY PLAN
FIRE ISLAND INLET TO MONTAUK POINT
LONG ISLAND, NEW YORK
REFORMULATION STUDY

APPENDIX B

REAL ESTATE SUPPLEMENT

REAL ESTATE SUPPLEMENT

1. PURPOSE - The purpose of this Real Estate Supplement is to present the overall plan describing the minimum real estate requirements, tasks, including costs and schedule (in the event of a breach within the project boundaries) for the Breach Contingency Plan.

This supplement is tentative in nature for planning purposes only, and is subject to change even after approval of the plan.

2. PROJECT INFORMATION:

a. The overall Fire Island to Montauk Point, New York, Combined Beach Erosion Control and Hurricane Protection Project was authorized by the River and Harbor Act of 14 July 1960 (PL. 86-645) in accordance with House Document 425, 86th Congress, 2nd Session, dated 21 June 1960. The cost-sharing was modified by Sections 103 and 502 of the Water Resources Development Act of 1986 (WRDA) (PL. 99-662). Section 502 of WRDA 1986 directed the Secretary of the Army to apply the cost sharing provisions of Section 31 (1) of the Water Resources Development Act of 1974 (PL. 93-251) to include periodic nourishment of the continuing construction project at Westhampton Beach, New York for a period of 20 years after the date of enactment of PL. 99-662. Section 102 (u) of the Water Resources Development Act of 1992 (PL. 102-580) subsequently extended the period of periodic nourishment to 30 years from the date of the project's completion at Westhampton Beach, with the non-Federal share not to exceed 35 percent of the total project cost.

Under the above described legislation, the project cost sharing for Westhampton Beach will be 70 percent Federal and 30 percent non-Federal. This cost-sharing formula will apply to the entire reach from Moriches Inlet to Shinnecock Inlet. Work not underway (physical construction) before April 30, 1986, is subject to the cost-sharing and policy provisions of Section 103 of the WRDA 1986, which, for the reaches from Fire Island Inlet to Moriches Inlet, and Shinnecock Inlet to Montauk Point, shall be cost-shared at the rate of 65 percent Federal and 35 percent non-Federal.

b. Location - The proposed project area is centrally located in Suffolk County, Long Island, New York, along the Atlantic shore. Great South Bay, Moriches Bay and Shinnecock Bay are connected to the Atlantic Ocean through Fire Island Inlet, Moriches Inlet and Shinnecock Inlet, all Federal navigation channels.

ENTIRE Append.
Rev Jan '96

The barrier island chain included in the study area includes Fire Island which extends about 30 miles from Fire Island Inlet to Moriches Inlet, the 15 mile barrier island which contains West Hampton and Tiana beaches and extends from Moriches Inlet to Shinnecock Inlet, and the 4 mile barrier island segment which extends east of Shinnecock Inlet to east Southampton.

3. **EXISTING FEDERAL OWNERSHIP** - Within the proposed project area the Government owns, in fee, large portions of land on Fire Island which is part of Fire Island National Seashore.

4. **EXISTING LOCAL SPONSOR'S OWNERSHIP** - Within the proposed project limits the State of New York owns Robert Moses State Park. The County of Suffolk owns Smith Point County and Cupsogue County Parks. There are various other smaller parks within the project limits that are under the jurisdiction of the local municipalities.

In addition, the State of New York, acting through its Department of Environmental Conservation (NYSDEC), maintains perpetual easement rights for numerous groins in the proposed area for the maintenance of groins.

5. **LOCAL SPONSOR'S ACQUISITION ASSESSMENT** - The NYSDEC has the ability to acquire the land interest needed for this proposed project in the required time frame. NYSDEC will utilize Section 404 of the Eminent Domain Procedure Law (See Exhibit "A") to gain entry to those lands which cannot be obtained voluntarily in the required time frame (72 hours). Additionally, the NYSDEC has authorized the Corps of Engineers and its contractors as contractors for the State for entry onto the land. (See Letter and CENAN-OC Memorandum).

The following are the real estate interests/estates required for project implementation:

a) Right(s) of-Entry for fill placement, for a period of 36 (36) months from the date of the instrument. The State of New York has agreed to grant the Army Corps of Engineers an emergency ROE pursuant to Section 404 of the EDPL. (see Exhibit A) CENAN-OC determined with the State of New York's legal representatives that this is correct. (See exhibit A-1 and A-2)

b) a Beach Nourishment Easement and right-of-way in on, over and across the lands to construct, operate, maintain, patrol, repair, rehabilitate, and replace the beach berm and appurtenances thereto, including the right to borrow and/or deposit fill, together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions and any vegetation, structures, or obstacles within the limits of the easement; reserving, however, to the grantor(s), (his) (her)

(its) (their) (heirs), successors and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject however, to existing easements for public roads and highways, public utilities, railroad and pipelines.

Use of a borrow area for a period of six (6) months is the 55 acres +/- at Democratic Point in the Robert Moses State Park. Permission to use the site would be granted by the Sponsor to the Corps. The PM have not decided whether this site will be required for the fill or whether the fill will be purchased from a local borrow area for the project. If the borrow area is selected for use by the PM and the Sponsor desires project crediting, then an appraisal (reviewed by and approved by Corps) would be needed.

The Sponsor (through the NYSDEC) will acquire the beach nourishment easement for operations and maintenance of a repair for the project life (three (3) years). The CENAN PM will provide the Operations Rehabilitation and Repair Manual to the Sponsor. The cost incurred for Beach Nourishment Easement(s) is expected to be minimal because the placement of fill at the sites is considered a benefitting offset.

In addition to the land owned by the state, the sites requiring the beach nourishment easements would be within the proposed project area covered by the Fire Island to Montauk Point Contingency Plan and would constitute the 20% +/- of land which is under private ownership and political sub-divisions of the State Sponsor, such as local municipalities lands.

6. **UNIFORM RELOCATION ASSISTANCE (PL 91-646)** - There are no relocations anticipated that would be covered by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended.

There are no houses of worship, schools, cemeteries, in the immediate area that have a high potential of being in the breach area.

7. **ACQUISITION SCHEDULE** - The NYSDEC will acquire the required real estate right-of-entry for construction in a seventy-two (72) hour time frame. Within six months of beach nourishment easement will need to be acquired. Real Estate Certification of these interests will take place during or shortly after the completion of the acquisition process. Crediting of administrative costs will take place during construction. Since this is a Contingency Plan, real estate costs cannot be estimated at this time given that the lands of the breach and damages are not known.

8. SUMMARY OF PROJECT REAL ESTATE COSTS:

Line Item No.	Description	
01---	LANDS AND DAMAGES	
01G--	RIGHT-OF-ENTRY	
01G20	BY LOCAL SPONSOR (LR)	$25,400
01G40	REVIEW OF LS	$ 4,600
01T--	LERRD CREDITING	
01T20	ADMINISTRATIVE COSTS	$ 5,000
TOTAL REAL ESTATE COSTS		* $35,000

* Each occurrence

9. MAPS - Since there are no specific locations identified, Figure 1 in the main text of the Breach Contingency Plan depicts the general vicinity of the proposed project area.

10. MINERALS - It is assumed that there are no mineral or other interests outstanding which would interfere with the acquisition of the subject estate in that there is no historical evidence of present or past mining activity.

11. RELOCATIONS OF UTILITIES AND FACILITIES - None

12. ADDITIONAL INFORMATION - The land cost estimates cannot be determined at this time since no breach has occurred. The land interests to be acquired by the NYSDEC are anticipated to be minimal due to offsetting benefits. The Operations and Maintenance for this contingency plan is 3 years (3) as life of the project.

CENAN-OC (405-10f)

5 Jan 1996
LICHTBLAU/9107

MEMORANDUM FOR: The Record

SUBJECT: U.S. Government entry under authority of Section 404, N.Y. State Eminent Domain Procedure Law

1. We have discussed the matter with legal representatives of New York State, and their experience agrees with our position in the matter.

2. An examination of Section 404 indicates that, when engaged in work connected with a proposed public project or in temporary occupancy during construction, the Condemnor (New York State), its officers, agents or contractors, shall have the right to enter upon any real property.

3. Since the United States has entered into a "contract" with New York State(the PCA), it qualifies as a contractor and thus may enter upon the private property condemned even without a right-of-entry from the owner.

4. The state representatives have indicated that this has occurred in the past in projects at Walkill and Westhampton.

Lorraine Lee
District Counsel

§ 402
Note 73a

III. ANSWER

98. —— Miscellaneous cases

Condemnee's assertion that proposed acquisition map delineated a land area greater than that specified as "project" area under the condemnor's license presented a factual question properly raised in the condemnation court which warranted a hearing. Utah-Brnendly Hydro Associates v. RKDK Associates, 1988, 138 A.D.2d 493, 526 N.Y.S.2d 122.

100. Motion to dismiss

Denial of property owners' motion to answer condemnation petitions was not erroneous, after trial court had previously denied property owners' motion to dismiss on ground that condemnation proceedings were barred by statute of limitations, where it was clear that no issues could be raised in answer that had not been raised and rejected. Binghamton Urban Renewal Agency v. Manculich, 1986, 119 A.D.2d 923, 501 N.Y.S.2d 917.

IV. IMMEDIATE ENTRY

128. —— Sufficiency

Commissioner of Transportation was entitled to immediate possession of property that it was sought to condemn for benefit of power authority for construction of underground and underwater electricity project, where delay would cause target date to be pushed back, resulting in possibility of summer peak usage brownout, as well as alleged additional $1,800,000 in costs to complete project for as little as two-month delay. Commissioner of Transp. v. V.A.L.T. Resources, Inc., 1989, 146 Misc.2d 137, 549 N.Y.S.2d 602.

§ 403. Names of reputed condemnees

The condemnor shall deliver to its appropriate legal officer or attorney, (who shall be in acquisitions pursuant to subdivision (A) of section five hundred one, the state attorney general) a copy of such acquisition map, whereupon it shall be the duty of such legal officer or attorney to advise and certify to the condemnor the names of the reputed condemnees of parcels to be acquired.

(As amended L.1982, c. 356, § 12.)

Historical and Statutory Notes

1982 Amendment. L.1982, c. 356, § 12, deleted "entitled to mailed or personal notice of acquisition as provided by the applicable subdivision of section five hundred two herein; thereupon, pursuant to section five hundred two, the condemnor shall provide notice of acquisition to those condemnees certified" following "to be acquired".

Effective Date of 1982 Amendment; Application. See section 22 of L.1982, c. 356, set out as a note under section 202.

§ 404. Right of entry prior to acquisition

The condemnor, its officers, agents or contractors when acquiring real property in accordance with this law, or when engaged in work connected with a proposed public project, as described in this law, shall have the right to enter upon any real property for the purpose of making surveys, test pits and borings, or other investigations, and also for temporary occupancy during construction. At a reasonable time prior to such entry, the condemnor shall deliver notice personally or by first class mail, to the property owner stating the necessity for the entry. The condemnor shall be liable to the owner for any damages caused by the condemnor as a result of the entry; but such damages shall not entail duplicate payment of damages to be compensated for by the condemnor pursuant to article three of this law. Entry damages, if any, shall not be deemed an acquisition.

(As amended L.1982, c. 356, § 13.)

Historical and Statutory Notes

1982 Amendment. L.1982, c. 356, § 13, in sentence beginning "Entry damages, if" substituted "acquisition" for "appropriation or acquisition of abandoned property".

356, set out

West's

The following forms appear in Sele
of the Eminent Domain Procedure La

Order to show cause for preliminary
activities for electric power trans
1.

Attorney's affidavit in support of mo
with preconstruction activities for
er's property, see Form 2.

Engineer's affidavit in support of mo
with preconstruction activities for
er's property, see Form 3.

Property negotiator's affidavit in suppo
interference with preconstruction
across landowner's property, see Fo

Order granting preliminary injunction
ties for electric power transmission

Notes

Constitutionality 1
Grounds for relief 4
Possession and use 3
Possession prior to vesting 2
Surveys and tests 3a

2. Possession prior to vesting

Where delay in granting villa
tion to allow it to immediately en
landowner's land and to use it
route to sewage treatment plan
fore permanent condemnation he
held would jeopardize federal
funding for project, imperil hea
jecting village to pollution,
village to fines for violations
laws, all to detriment of public
in granting relief requested
dice public's interest, and th
property granted relief requ
porated Village of Philmo
1980, 75 A.D.2d 656, 426

3. Possession and use

In proceeding on villag
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sewage treatment plant
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issue existed as to ne
plant but, rather, whe

Response to Comments faxed by Bob Hass, Real Estate, 12-5-95

2.a.

Under New York State Law USACE and its contractors, so long as they are acting lawfully in accordance with a joint State/Federal Agreement (the PCA), would be considered as "agents" of the State under Section 404 of the Eminent Domain Procedure Law.

As in all other joint project efforts, the State will provide the Federal Government written authorization for entry to all lands, easements, and rights-of-way needed for the project pursuant to Article III.A. of the PCA.

William W. Daley, P.E.

cc: J. Economides
W. Slezak

DEPARTMENT OF THE ARMY
RIGHT-OF-ENTRY
FOR CONSTRUCTION

FIRE ISLAND TO MONTAUK POINT
BREACH CONTINGENCY PLAN

Block XXX
Lot XXX

The undersigned, hereinafter called the "Owner" hereby grants to the ARMY CORPS OF ENGINEERS AND ITS AUTHORIZED AGENTS AND CONTRACTORS, hereinafter called the "Government", a right-of-entry and conditions:

1. The owner grants to the Government an irrevocable right to enter upon the lands hereinafter described at any time within a period of 36 months from the date of this instrument, and to close the breach in the barrier island at XXXXX and strengthen the barrier island by nourishing the beach with sand.

2. This permit or right-of-entry includes the right of ingress and egress on other lands of the Owner not described below, provided that such ingress and egress is necessary and not otherwise conveniently available to the Government.

3. All tools, equipment, and other property taken upon or placed upon the land by the Government shall remain the property of the Government and will be removed by the Government upon the completion of its work.

4. The land affected by this permit or right-of-way is located in the State of New York, County of Suffolk, Township of XXXXX and is described as follows: All that tract or parcel of land as delineated in red on map, marked Exhibit(s) "A", attached hereto and made a part hereof.

5. The Government shall give reasonable notice of the date upon which the work shall commence and the days it intends to utilize the rights granted herein. Person(s) to be contacted, _____ at Area Code ( )_____.

WITNESS MY HAND AND SEAL this day of _____, 1996.

BY _____
SIGNATURE SEAL

BY _____
SIGNATURE SEAL

UNITED STATES OF AMERICA

BY _____
JAY B. HECHT
Chief, Real Estate Division

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-



Michael D. Zagata
Commissioner

May 25, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Dear Mr. Piken:

Your letter of May 17 raises several questions regarding real estate requirements in the joint Breach Contingency Plan (BCP).

As successfully administered in the Westhampton Breach Closure Project, New York State does not anticipate acquiring breach closure project lands in fee ownership. Rather, we propose to gain right-of-entry to those lands for the purposes of closing a breach and restoring the integrity of the barrier island. Inasmuch as those purposes are mutually beneficial to both the land owner and all the associated governmental entitities involved in the closure effort, right-of-entry would not generally create an adversarial situation and we would expect to receive such permission voluntarily from the owner.

However, we will need to move very quickly to close a breach in its initial stages and there won't be sufficient time to solicit and receive voluntary entry rights from all property owners. In that case we will immediately inform property owners that we are entering upon their property for purposes of constructing emergency repairs to the barrier island pursuant to Section 404 of New York's Eminent Domain Procedure Law and Section 16-0107(16) of Environmental Conservation Law. We will simultaneously request their voluntary granting of a right-of-entry to so utilize their property. I enclose a copy of a draft right-of-entry that we propose to use, based on the Westhampton ROE. Please review and provide me with any comments or revisions needed to meet federal standards. To effectuate this procedure we maintain current property owner name and address lists for all ocean front property along the barrier island system.

Any request for federal assistance in breach closure would be made as soon as it was determined that the effort required exceeds immediately available state resources. At that time we would be able to indicate the time needed to prepare and mail the eminent domain letter to property owners. Under the law, the State's right to occupy the property begins at the time of notification. It is our intention to complete these preliminary efforts within three (3) days.

It is important to note that it is our intention to act immediately to close breaches in the barrier system. To that end New York State has already established a stockpile of 200,000 cubic yards of sand at Democrat Point at the west end of Fire Island. Together with the New York District we are exploring a number of avenues to establish similar stockpiles in the central and eastern portions of Fire Island, and elsewhere within the barrier system.

I hope this information will answer the questions raised by your headquarters office.

Sincerely,

William W. Daley, P.E.
Chief
Coastal Erosion Management

WWD/tc

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-



Michael D. Zag
Commissione

January 4, 1996

Mr. Jay P. Hecht
Chief of Real Estate
New York District
US Army Corps of Engineers
26 Federal Plaza
New York, New York 10278

RE: BREACH CONTINGENCY PLAN

Dear Mr. Hecht:

In connection with the joint federal/state Breach Contingency Plan a question has arisen concerning possible use of the stockpile of sand at Democrat Point for closing breaches or strengthening washover areas on Fire Island. The stockpile was created at 100% state cost with full federal cooperation as an inclusion in the last Fire Island Inlet and Shore Westerly maintenance dredging project. The purpose of the stockpile is to provide a quickly available source of sand that can be utilized in the early hours and days of a breach in the barrier system before other sources can be mobilized. However, due to its location, and the lack of a roadway system on Fire Island, it would most likely only be useful for locations west of the Village of Ocean Beach on Fire Island.

The stockpile is located on land entirely owned by New York State in Robert Moses State Park which is administered by the State Office of Parks, Recreation and Historic Preservation. Inasmuch as New York State is the non-federal sponsor of the Breach Contingency Plan the material could be utilized in the implementation of that Plan. Subject to necessary rules to protect the public and preserve park lands and facilities the stockpile is available at all times for its intended purpose. I will work with my colleagues in the State Office of Parks, Recreation and Historic Preservation to develop a multi-year Right-of-Entry and Temporary Work Easement that will specify those conditions before an emergency that may require use of the stockpile.

Sincerely,

William W. Daley, P.E.
Chief
Coastal Erosion Management Section

cc: D. Jacangelo
N. Rosenberg
R. Cowen

WWD/tc

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-

Michael D. Zag
Commissione

TO: Dean Dresser CENAN-RE FAX #: 212 264-0230	FROM: Bill Daley DATE: 1/8/96 PAGES INCLUDING THIS PAGE: 1 FAX #518 485 7786 PHONE #: 518 457 5620

January 8, 1996

Mr. Jay P. Hecht
Chief of Real Estate
New York District
US Army Corps of Engineers
26 Federal Plaza
New York, New York 10278

RE: BREACH CONTINGENCY PLAN

Dear Mr. Hecht:

An additional question has been raised concerning the State's authority to enter upon privately owned real estate to maintain a breach fill project. The State of New York, acting through its Commissioner of Environmental Conservation, will meet its obligations under any Project Cooperation Agreement (PCA) into which it enters to operate, maintain, repair, replace, and rehabilitate the Project and will acquire any interest in real estate necessary to permit the accomplishment of such responsibilities.

Sincerely,

William W. Daley, P.E.
Chief
Coastal Erosion Management Section

cc: J. Economides

WWD/tc

BREACH CONTINGENCY PLAN
FIRE ISLAND INLET TO MONTAUK POINT
LONG ISLAND, NEW YORK
REFORMULATION STUDY

APPENDIX C

ENVIRONMENTAL ASSESSMENT

FINAL ENVIRONMENTAL ASSESSMENT
BREACH CONTINGENCY PLAN
FOR THE
ATLANTIC COAST OF LONG ISLAND,
FIRE ISLAND INLET TO MONTAUK POINT, NEW YORK
BARRIER ISLAND SYSTEM

PREPARED BY:

UNITED STATES ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
PLANNING DIVISION
ENVIRONMENTAL ANALYSIS BRANCH
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278-0090
in cooperation with the
NATIONAL PARK SERVICE
FIRE ISLAND NATIONAL SEASHORE

NOVEMBER 1995

FINDING OF NO SIGNIFICANT IMPACT
BREACH CONTINGENCY PLAN
ATLANTIC COAST OF LONG ISLAND,
FIRE ISLAND INLET TO MONTAUK POINT, NEW YORK

I have reviewed and evaluated the Environmental Assessment for this project in terms of the overall public interest. The possible consequences of the alternatives (including the "no-action" plan) were considered in terms of probable environmental impact, social well-being, and economic factors. Under the proposed Breach Contingency Plan, breach closure would be initiated within 72 hours of termination of the storm event, in which the State of New York formally requests action, that occurs along barrier island chain from Fire Island Inlet to Southampton, excluding the Federal Wilderness Area within the Fire Island National Seashore Boundary. The Wilderness Area would be monitored for indications of natural breach closure. If this does not occur in the Wilderness Area, or if there is an increase in tidal ranges within the Great South Bay that can potentially flood developments on the south shore of Long Island or Fire Island, the breach would then be closed under the provisions of the plan.

Fill placement to close a breach will match existing shoreline profiles of the corresponding bays (Great South Bay, Moriches Bay and Shinnecock Bay) to the north and the Atlantic Ocean to the south. A minimum berm width of 150 feet would be created at a maximum elevation of 9 feet National Geodetic Vertical Datum (NGVD) between the back-bay and the Atlantic Ocean. The fill areas would blend into existing topography west and east of the breach fill areas. Placement fill grain size shall be compatible, if possible with the grain size of the existing beach at the breach site.

Fill will be obtained from several possible sources including, NEPA-approved upland sand sources, Federally-created stockpiles, SEQRA or locally approved stockpiles created by the State or local municipalities, and/or hydraulically dredged from the identified borrow locations.

The objectives of the proposed Breach Contingency Plan are 1) to close a breach as soon as one occurs, and 2) develop engineering and environmental procedures that are cost effective. Response to a barrier island breach without the Breach Contingency Plan in place, would follow the emergency procedures employed for the 1993 Westhampton Emergency Breach Closure (an 11 month action, with a design cross-section similar to the one proposed within this plan). Agency and NEPA coordination was initiated during the design phase and completed following its implementation. During this extended time frame, the breached condition would be allowed to continue, further increasing the potential for flood and storm damage problem as well as influencing the hydrodynamics of the affected bay.

The attached Environmental Assessment discusses environmental impacts associated with the plan. It also contains a detailed report (Appendix C) and Biological Opinion (Appendix G) prepared by the U.S. Fish and Wildlife Service which provides guidance on possible means to minimize adverse

impacts to fish and wildlife resources and Federally-protected species, respectively. Protective measures regarding the Federally-listed threatened piping plover (Charadrius melodus), State-listed endangered least tern (Sterna albifrons), and Federally-listed threatened plant species, seabeach amaranth (Amaranth pumilus), have been incorporated into the Environmental Assessment and will be included in the Project's Plans & Specifications.

As a result of my review, I find that the proposed work will have no significant impact on the quality of the human environment in the project area, and, therefore, that an Environmental Impact Statement is not required.

November 1995

Gary Thomas
Colonel, Corps of Engineers
Commanding

United States Department of the Interior

NATIONAL PARK SERVICE
Fire Island National Seashore
120 Laurel Street
Patchogue, New York 11772

IN REPLY REFER TO:
April 4, 1996

L7615

Memorandum

To: Field Director, Northeast Field Area

From: Superintendent, Fire Island National Seashore

Subject: Finding of No Significant Impact for Fire Island National Seashore's segment of the, U.S. Army Corps of Engineers, Fire Island to Montauk Point, Long Island, Breach Contingency Plan/Environmental Assessment

Background

As a result of four significant storms (Hurricane Bob in 1991, the Halloween Northeaster of 1991, the December 1992 Northeaster, and the March 1993 Northeaster), the southern Long Island barrier island chain from Fire Island Inlet to Southhampton was seriously impacted. Because of these storms and the threat of other significant storms, the State of New York established the Governor's Coastal Erosion Task Force in January of 1993.

One recommendation of the Task Force was to "Maintain barrier landform integrity by filling highly vulnerable washover fans and new inlet breaches, and maintaining alongshore sand transport". Based on this and other recommendations of the Task Force, Fire Island National Seashore (FIIS) convened a working group which included the Army Corps of Engineers (ACOE), the U.S. Fish and Wildlife Service (USFWS), other interested State and local agencies and private interests. This group, convinced that is technically feasible and economically prudent to close a breach as soon as it is reasonably possible, developed plans for closing breaches that occur on Fire Island.

The ACOE prepared and made available for public review in June of 1995, the Environmental Assessment for the U.S. Army Corps of Engineers, New York District, Fire Island to Montauk Point Long Island, New York, a Breach Contingency Plan (BCP/EA). The BCP/EA documents a proposed action (the BCP which encompasses the Task Force's planning intent as mentioned above) and two alternatives considered for project area. The EA assesses alternative planning strategies and potential environmental impacts of implementation.

In December 1995 the Breach Contingency Plan (BCP)/Env on Assessment (EA) was finalized by the ACOE in cooperation w FIIS and other federal, state and local agencies.

The plan's proposal for filling breaches within FIIS cause exception to the overall National Park Service Policy on shoreline management, which is to normally allow natural processes to proceed unabated. However, in this unique ca potential threat to lives and significant loss of develop properties outside Seashore boundaries, it is deemed reasc and responsible to consider exception to standing Service

The purpose of this Finding of No Significant Impact (FONS to document National Park Service (NPS) compliance with th Council on Environmental Quality's procedures on the Nati Environmental Policy Act (43 CFR 1500). This is regarding action to accept and allow the alternative selected, from BCP/EA, to be implemented within the jurisdictional area NPS. As a basis for this FONSI, the NPS is hereby adopt ACOE's EA which has been satisfactorily completed with in the National Park Service. Further EA(s) may be necessar breach closure material stockpiling if sand becomes avail (i.e. beneficially utilizing disposal material from local maintained channels), and when specific sites can be iden within the general areas indicated in the BCP/EA.

Need for Action

Per the Governor's Coastal Erosion Task Force, Draft Fina regarding the Westhampton breach, although many opinions offered, the Task Force recognized that the impacts could determined without further study. It recommended that im actions be taken to close the breach while investigating breach's impacts on tidal range, salinity and the ecosyst Moriches Bay. Subsequent to that recommendation, and the increasing awareness that a breach could occur anywhere a severely impacted barrier islands, the Task Force has mad recommendation to "Maintain barrier landform integrity by highly vulnerable washover fans and new inlet breaches." Additionally, "this recommended action to repair breaches overwash sites should be considered interim guidance unti supported or rejected by scientific information."

The breach event that occurred at Westhampton Beach expan an initial breach of a couple hundred feet to a one-half wide inlet. While the various levels of government were whether to close the breach, acquiring the permits etc., houses on the barrier island were destroyed. The cost to the breach went from $100,000, for a closure of a couple feet, to $8 million to close a half-mile wide inlet.

In addition to the cost, many individuals feared that the

inlet could have had other impacts related to: much higher tidal surges that could have impacted, low-lying areas of the mainland during major storms, increased salinity, altered water temperature from pre-inlet conditions, a resulting potential shift in the aquatic populations, etc.

Because of the lack of data that would support this claim, or the magnitude of these impacts, there are presently a number of studies that are underway to study these effects and gather this data. The U.S. Army Corps of Engineers has been directed by Congress to undertake a 10-year, $14 million project to evaluate such impacts. Additionally, the National Biological Survey, in coordination with the National Park Service, is in the middle of a three-year study of the geomorphological impacts of a breach or inlet formation across barrier islands, including Fire Island. This study will also provide critical data for planning program implementation strategies. A major consideration still remains as to what to do in case of a breach on Fire Island.

As the ACOE commenced with the BCP work, Fire Island National Seashore staff prepared a Draft Interim Breach Management Plan (DIBMP) . Though the NPS plan was never finalized or approved, its concepts were incorporated into the BCP/EA. FIIS staff provided considerable input to the ACOE in preparation of the Environmental Assessment. NPS statutory obligations, policies, existing plans, etc., including an alternative analysis, have been addressed and adequately considered, in the EA.

The EA also contains Appendices A-H, compliance with: the Endangered Species Act (including a Formal USFWS Biological Opinion), Sea Turtle Protection Plan, the Fish and Wildlife Coordination Act, Section 110 of the National Historic Preservation Act, Section 404 of the Clean Water Act, Applicable New York State Coastal Zone Management Policies, other pertinent correspondences, and responses to Draft BCP/EA Comments.

This BCP/EA was prepared with the knowledge that many of the biological and geomorphological issues of a breach occurrence on Fire Island are yet to be determined. Therefore, without the benefit of this scientific knowledge, this plan is intended to be an interim measure (should a breach occur), to manage and recover from the potential threats to public and private properties on Fire Island and the south shore of Long Island. This interim measure is proposed to be in place (and updated every 3-5 years) until a clear coastal policy can be achieved, using the data gleaned from proposed studies.

The Proposal and Alternatives Considered

The EA contains descriptions of the proposed plan and alternatives. In summary, the BCP as proposed and selected from the EA, calls for the following actions:

* Breach closure will be initiated within 72 hours of termination of a storm event that occurs along the barrier island chain from Fire Island Inlet to Southampton.

* A breach can be filled in the Wilderness Area only after inspection by the Critical Response Team including the NBS coastal geomorphologist. Once the storm subsides, and the tides recede to normal height, it can be determined if the breach is filling in naturally. Only after the above conditions are met and the decision is made that the breach will not fill in naturally, will artificial closure be undertaken.

* No stockpiling is to occur in the Wilderness Area

* Develop a standardized Project Cooperation Agreement (PCA), to be pre-negotiated by the ACOE and the local sponsor (NY DEC)

* Establish a standardized breach emergency closure cross-section design to serve as the basis for preparing construction plans and specifications

* Establish general borrow source locations (offshore, upland and stockpile areas) and delivery methods for the material (i.e. dredging, and trucking of upland material and stockpiled material)

* Complete separate impact analyses to determine actual impacts of individual stockpiles (within the Watch Hill and Sailors Haven disturbed areas), when breach closure material stockpiling sand becomes available (i.e. beneficially utilizing disposal material from locally maintained channels) and when specific stockpile siting plans can be developed.

* Identify real estate acquisition methods (in coordination with the sponsor)

* Develop a contracting strategy to procure necessary equipment and services

* Establish project approval and contracting authorities for the reparation of minor, moderate, and major breach occurrences

* The ACOE and the NY State DEC will develop a general or blanket joint permit to accomplish the proposed work. A separate NPS Special Use Permit will also be required for that portion of implementation within the jurisdictional areas of the NPS.

* Establish environmental checks and monitors both on the island and offshore to ensure maximum effort to preserve significant cultural resources, and natural resources (which include threatened and endangered species and their habitat) for

construction actions related directly to putting sand in a breach, to be conditioned by the Joint Permit and Special Use Permit.

Three alternative approaches were considered in arriving at the proposed plan: the no action, breach closure activities under ACOE emergency Guidance and the proposed plan. No other alternatives were considered.

The no-action alternative would be no Federal actions taken to provide for breach closure.

The ACOE breach closure under emergency guidance would create a situation similar to the Westhampton Emergency Breach Closure.

On May 31, 1995, the EA was made available for public and interagency review and comment. Written comments were accepted until June 30, 1995.

Summary of Environmental Impacts

No specific indication of detailed impact analysis from stockpiling are noted in the BCP/EA. Therefore, as indicated in the Background and Proposed Action sections above, before stockpiling is to occur, specific EA(s) for stockpile sites will be prepared. The EA(s) will document impacts of the effects (i.e. dewatering, loss of vegetation/habitat, operations, management etc.) of stockpiling and mitigation of such effects in order to assist in the selection of specific stockpile sites within the general stockpile areas.

The BCP/EA documents compliance with various federal policies. All of the policies and their compliance status are listed in Table 1 on page EA-38a. The most critical policy action is the Endangered Species Act of 1973, involved formal consultation proceedings with the US Fish and Wildlife Service. The consultation resulted in an opinion which indicated: "Although the biological opinion concluded that the project will not jeopardize the continued existence of the Atlantic Coast piping plover population, the project will further erode the species' already precarious status by reducing and degrading available nesting and foraging habitat."

NPS Rationale for Support of Proposed Action

The NPS realizes that until a reformulation plan is approved, emergency situations will be required to effectively deal with breaches in the barrier island. Filling breaches as quickly as possible, with minimal impacts could significantly reduce the probability of the kind of breach that occurred at Westhampton where it took 10 months and $7,000,000.00 to remedy the situation when it may have only taken 3 months and less than half the cost.

The BCP is an interim plan until the reformulation plan is completed. Once the reformulation plan is completed, a breach contingency plan will no longer be required. Filling a breach will have minimal impacts on the natural and cultural resources of Fire Island National Seashore as long as the following controlling conditions are also implemented:

1) Should a breach occur, it is intended that the BCP be activated. Guidance for the actions that occur will be the BCP in order to pro-actively address the concerns of NPS, NBS, USFWS, ACOE, state and local agencies . An on site evaluation by NPS, NBS, USFWS, ACOE, state and local professionals will determine all actions to be taken.

2) U.S. Department of the Interior, National Park Service, Fire Island National Seashore Special Use Permit with conditions will be issued (based on this FONSI) for the emergency actions involved in the construction of breach fill on NPS lands. Consultation with the USFWS and other resource management agencies will also be used to develop the permit conditions.

3) As discussed in the BCP/EA, an Environmental Assessment (EA) for Specific Site Locations of Stockpiles on NPS lands (in the disturbed portions of Watch Hill and Sailors Haven areas) will be completed when material becomes available for stockpiling. Fire Island National Seashore, Seashore staff will work cooperatively with the ACOE to complete the environmental assessment(s) for those stockpile locations within the Seashore.

4) U.S. Department of the Interior, National Park Service Special Use Permit with conditions will be completed for site-specific stockpiling EA(s) on NPS lands once FONSI(s) have been prepared for the EA(s).

FINDING OF NO SIGNIFICANT IMPACT

Selection and implementation of the BCP Proposed Action, as described above and within the jurisdictional boundary of Fire Island National Seashore, and based upon the National Park Service adoption of the BCP/EA, will not constitute a major Federal action that would have significant impact on the quality of the human environment within the meaning of Section 102 (2) (c) of the National Environmental Policy Act of 1969. Therefore, preparation of an environmental impact statement is not necessary.

Date 4/9/96

Jack Hauptman
Superintendent
Fire Island National Seashore

Concurred: _____ Date 4/9/96

Marie Rust
Field Director, Northeast Field Area
National Park Service

ENVIRONMENTAL ASSESSMENT
BREACH CONTINGENCY PLAN
ATLANTIC COAST OF LONG ISLAND,
FIRE ISLAND INLET TO MONTAUK POINT, NEW YORK

The responsible lead agency is the U.S. Army Corps of Engineers, New York District.

ABSTRACT: Under the proposed Breach Contingency Plan, breach closure would be initiated within 72 hours of termination of the storm event, in which the State of New York formally requests action, that occurs along barrier island chain from Fire Island Inlet to Southampton, excluding the Federal Wilderness Area within the Fire Island National Seashore Boundary. The Wilderness Area would be monitored for indications of natural breach closure. If this does not occur in the Wilderness Area, or if there is an increase in tidal ranges within the Great South Bay that can potentially flood developments on the south shore of Long Island or Fire Island, the breach would then be closed under the provisions of this plan.

Fill placement to close a breach will match existing shoreline profiles of the corresponding bays (Great South Bay, Moriches Bay and Shinnecock Bay) to the north and the Atlantic Ocean to the south. A minimum berm width of 150 feet would be created at a maximum elevation of 9 feet National Geodetic Vertical Datum (NGVD) between the back-bay and the Atlantic Ocean. The fill areas would blend into existing topography west and east of the breach fill areas. Placement fill grain size shall be compatible, if possible, with the grain size of the existing beach at the breach site.

Fill will be obtained from several possible sources including, NEPA-approved upland sand sources, Federally-created stockpiles, SEQRA or locally approved stockpiles created by the State or local municipalities throughout the barrier island system, and/or hydraulically dredged from one of the following locations:

1. U.S. Army Corps of Engineers' Atlantic Ocean Borrow Areas.
2. The Federally authorized Intracoastal Waterway.
3. The Federally authorized channels of Fire Island, Moriches and Shinnecock Inlets.
4. Existing channels maintained by Suffolk County.
5. Harbor or channel areas maintained by local municipalities.

The dredging and nourishment required in this emergency project will produce three general classes of environmental impacts: the dredging of the borrow area, an increase in turbidity levels, and the placement of suitable material on the beach or in open water to restore a breached area to pre-emergency conditions.

Analysis of the impacts of placing material on the beach is based on the abundance and kind of organisms present, the quantity and quality of material placed, the method used for placement, and time of year of placement. No significant adverse impact is anticipated in the filling of the breached areas to pre-emergency conditions.

Due to the sandy substrate and the location of the site, any plume at the placement site will be restricted in size and duration, and it is not anticipated that there will be a release of pollutants or a significant lowering of dissolved oxygen levels resulting from the project, either at the dredge location or placement site.

Biological recovery of the disturbed area will occur reasonably quickly, when organisms relocate from outlying undisturbed areas. The recovery process is optimized when the placement material matches the beach material and beach profiles are the same. There are some unavoidable adverse impacts in direct deposition and direct loss of benthos at the borrow area, but they are minor and of short duration.

If you would like further information on this assessment contact:

Mr. Peter Weppler
Project Biologist
U.S. Army Corps of Engineers
New York District, CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

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APPENDIX H - RESPONSE TO DRAFT EA COMMENTS

APPENDIX I - USACOE/USFWS ENVIRONMENTAL COMMITMENTS

TABLE 1

COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS AND PROTECTION STATUES

FEDERAL POLICIES	COMPLIANCE
Archaeological and Historic Preservation Act, as amended	Full
Clean Air Act, as amended	Full
Clean Water Act of 1977, as amended	Full
Coastal Zone Management Act of 1972, as amended	Full
Coastal Resources Barrier Act	Full
Endangered Species Act of 1973, as amended	Full
Estuary Protection Act (PL 90-454)	Full
Federal Water Project Recreation Act, as amended	N/A
Fish and Wildlife Coordination Act, as amended	Full
Land and Water Conservation Fund Act of 1965, as amended	Full
Marine Protection, Research, and Sanctuary Act of 1969, as amended	Full
National Environmental Policy Act of 1969, as amended	Full
National Historic Preservation Act, as amended through 1992	Full
Organic Act of 1916	Full
Fire Island National Seashore Act (PL 88-587)	Full
Wilderness Act (PL 88-577)	Full
Fire Island Wilderness Act (PL 96-585)	Full
Rivers and Harbors Appropriation Act of 1899, as amended	N/A
Watershed Protection and Flood Prevention Act, as amended	N/A
Wild and Scenic River Act, as amended	N/A
Floodplain Management (E.O. 11988)	Full
Protection of Wetlands (E.O. 11990)	N/A
Toxic Substances Control Act (PL 94-469), as amended	N/A
EXECUTIVE ORDERS, MEMORANDA, ETC	
Floodplain Management (E.O. 11988)	N/A
Protection of Wetlands (E.O. 11990)	N/A
Environmental Effects Abroad of Major Federal Actions (E.O. 12114)	N/A
Impacts Upon Prime and Unique Farmlands (CEQ Memo 8-30-76)	N/A
STATE AND LOCAL POLICIES	
All appropriate state and local policies will be complied with	

1.00 PROJECT HISTORY

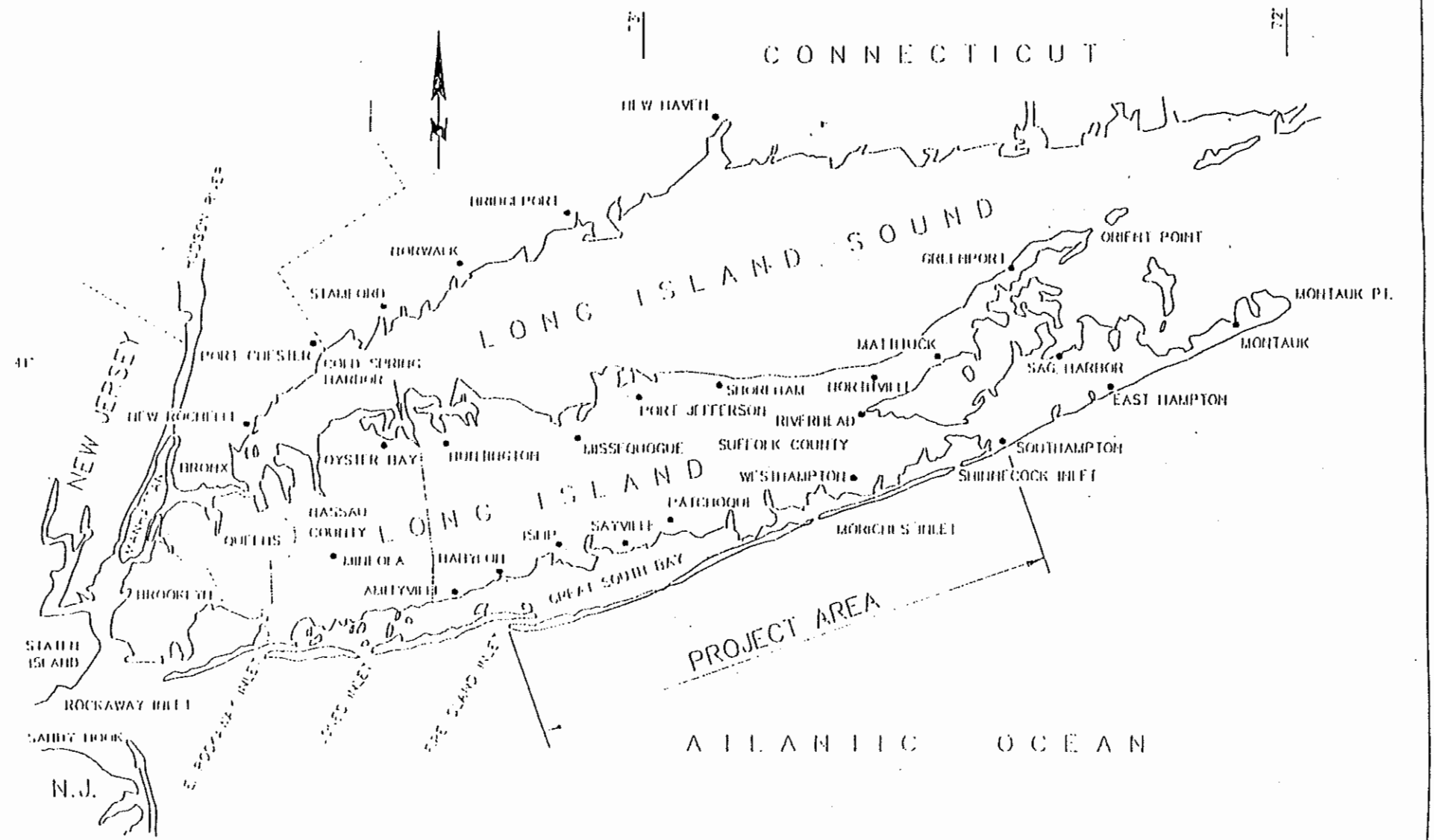
1.01 The proposed project is within the larger area under study as part of the Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point (FIMP), Beach Erosion Control and Hurricane Protection Project. A comprehensive program of dune reconstruction and beach stabilization for the entire project reach was described in draft and final Environmental Impact Statements (EIS) completed in 1976 and 1978 respectively. The U.S. Department of the Interior referred the final EIS to the President's Council of Environmental Quality (CEQ) based on its findings that the document inadequately addressed environmental impacts of the project. On 6 June 1978, the CEQ recommended project reformulation to the Chief of Engineers, who in turn directed the District to reformulate the project. This project is currently being reformulated to develop a recommended course of action to address erosion along the entire 83 mile-long coastline.

1.02 The barrier island system fronting the Atlantic Ocean from Fire Island Inlet to Southampton, in Suffolk County, Long Island, New York (See Figure 1) is particularly vulnerable to breaching. This area of concern is addressed in the proposed Breach Contingency Plan described in this document.

2.00 PROJECT DESCRIPTION

2.01 Breaching refers to the condition where severe overwashing forms a new inlet which permits exchange of ocean and bay waters under normal tidal conditions. Under the proposed Breach Contingency Plan, breach closure would be initiated within 72 hours of termination of the storm event, in which the State of New York formally requests action, that occurs along barrier island chain from Fire Island Inlet to Southampton, excluding the Federal Wilderness Area within the Fire Island National Seashore Boundary. The Wilderness Area would be monitored for indications of natural breach closure. If this does not occur in the Wilderness Area, or if there is an increase in tidal ranges within the Great South Bay that can potentially flood developments on the south shore of Long Island or Fire Island, the breach would then be closed under the provisions of this plan.

2.02 Fill placement to close a breach will match existing shoreline profiles of the corresponding bays (Great South Bay, Moriches Bay and Shinnecock Bay) to the north and the Atlantic Ocean to the south. A minimum berm width of 150 feet would be created at a maximum elevation of 9 feet National Geodetic Vertical Datum (NGVD) between the back-bay and the Atlantic Ocean. The fill areas would blend into existing topography west and east of the breach fill areas.



VICINITY MAP

SCALE: 1" = 15 MILES

FIGURE 1

Placement fill grain size will be compatible, if possible, with the existing beach material based on Corps criteria.

2.03 Fill will be either trucked in from NEPA-approved upland sand sources, or from NEPA/SEQR or locally approved stockpiles at several proposed locations (See Figure 2) along the barrier island system, and/or hydraulically dredged from one of the following locations:

1. U.S. Army Corps of Engineers' Atlantic Ocean Borrow Areas (See Figure 2), not to exceed 20 feet below the existing bathymetry at the time of the pre-dredge survey.

2. The Federally authorized Intracoastal Waterway at a depth no greater than two feet below the authorized channel depth.

3. The Federally authorized channels of Fire Island, Moriches and Shinnecock Inlets.

4. Existing channels maintained by Suffolk County at a depth no greater than two feet below the permitted depth of the utilized channel.

5. Harbor or channel areas maintained by local municipalities at a depth no greater than two feet below the permitted depth of the utilized area.

3.00 NEED FOR PROPOSED ACTION

3.01 Recent coastal storm damage resulting from a series of severe northeasters (i.e. December 1992, March, 1993) indicated a need to develop an interim plan to respond to barrier island breach formations, which may occur prior to completion of the FIMP Reformulation Study. Timely response minimizes cost and environmental damage. Other studies conducted by the National Park Service (Fire Island National Seashore) and the Governor's Coastal Erosion Task Force are also addressing the required management of barrier island breaches. The plan proposed here takes these other studies into account.

3.02 Numerous portions of the barrier island system are low-lying, experiencing overwash on a recurring basis, and

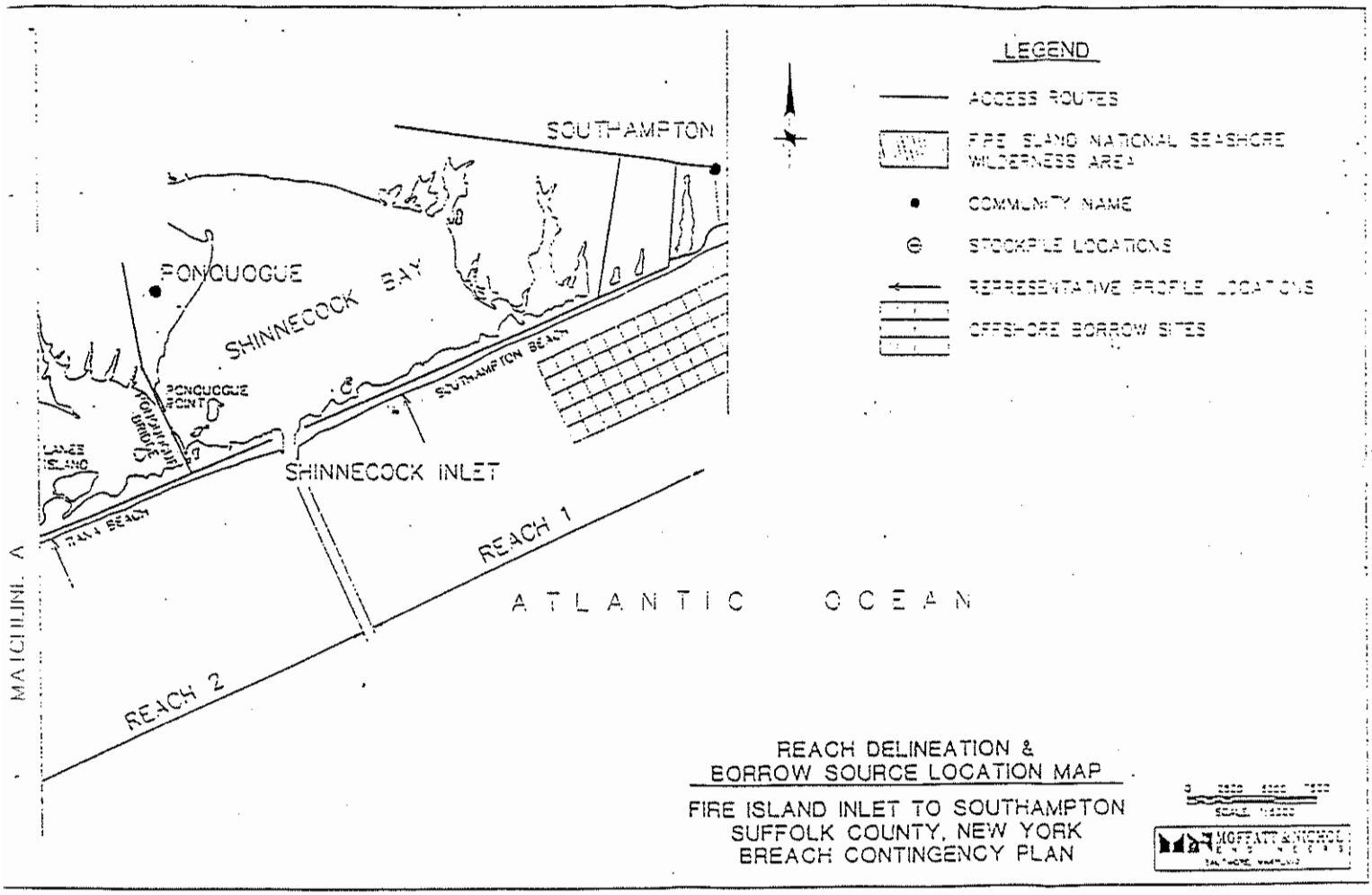
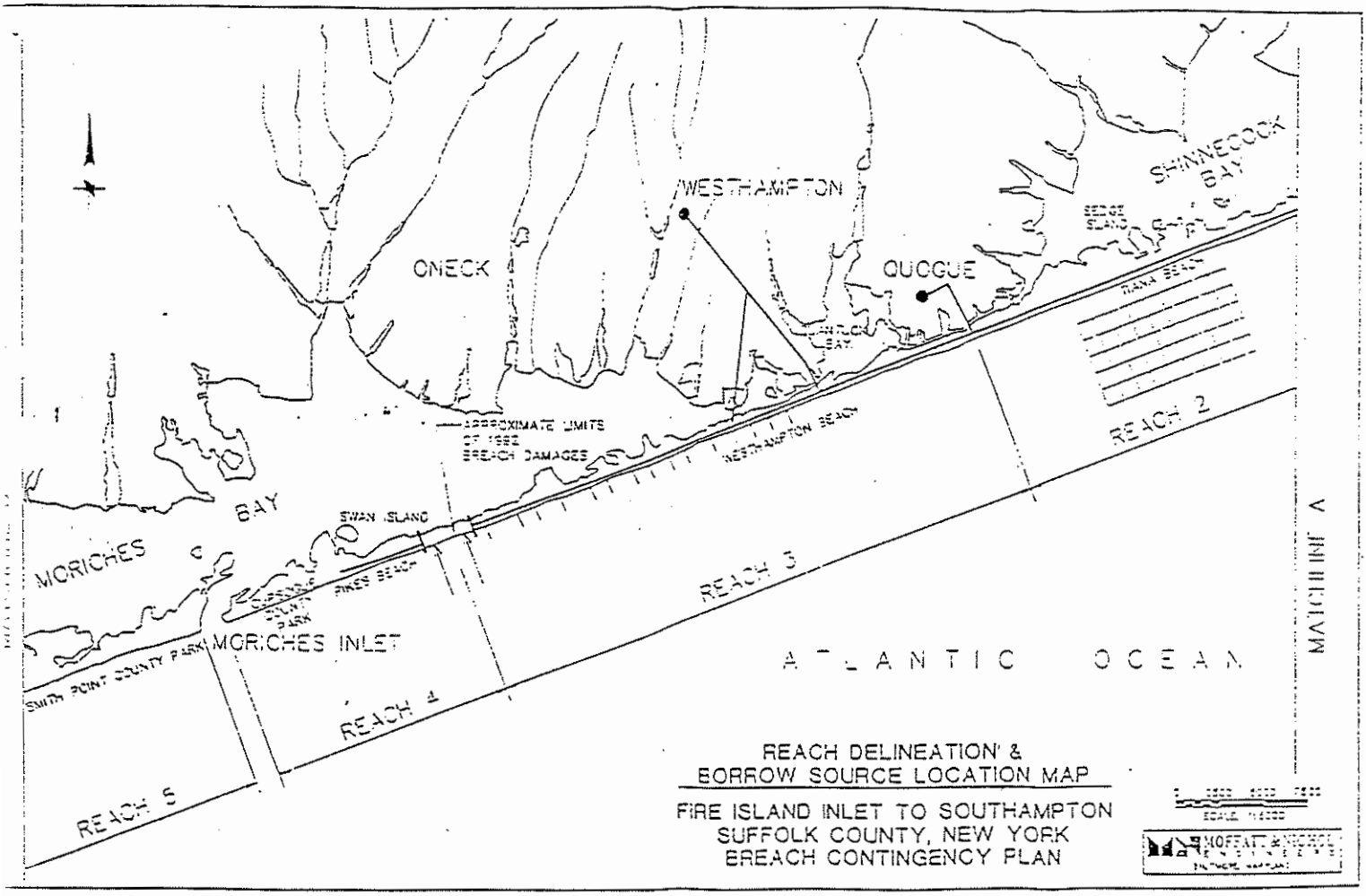

SOUTHAMPTON
PONQUOGUE
SHINNECOCK BAY
PONQUOGUE POINT
SOUTHAMPTON BEACH
SHINNECOCK INLET
REACH 1
REACH 2
ATLANTIC OCEAN
LEGEND
ACCESS ROUTES
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
COMMUNITY NAME
STOCKPILE LOCATIONS
REPRESENTATIVE PROFILE LOCATIONS
OFFSHORE BORROW SITES
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
MOFFATT & NICHOL

FIGURE 2



REACH DELINEATION & BORROW SOURCE LOCATION MAP

FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN

FIGURE 2

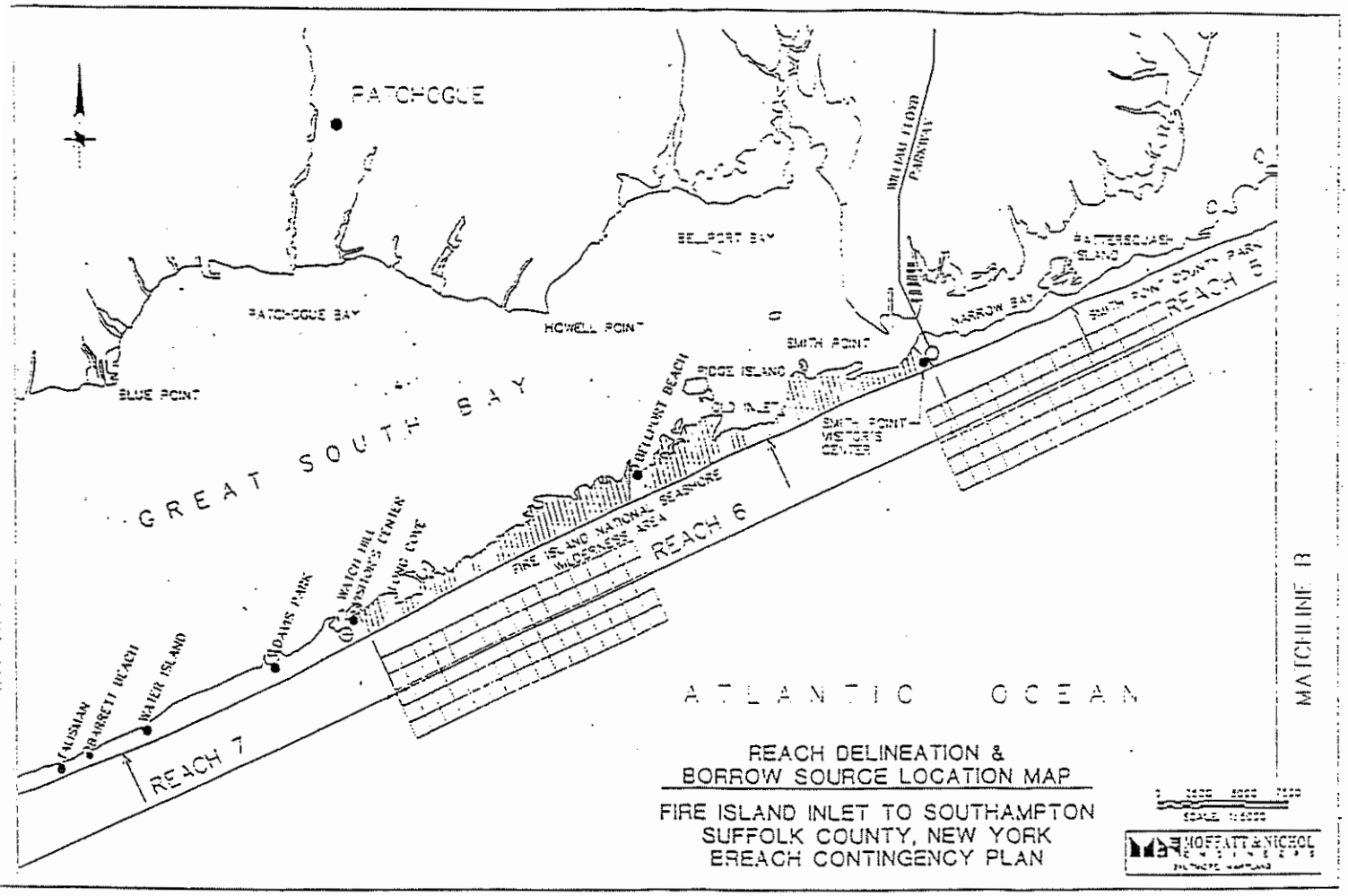

PATCHOGUE
PATCHOGUE BAY
BLUE POINT
GREAT SOUTH BAY
HOWELL POINT
BELLPORT BAY
WILLIAM FLOYD PARKWAY
NARROW BAY
SMITH POINT
SMITH POINT COUNTY PARK
REACH 8
FIRE ISLAND INLET
SMITH POINT VISITORS CENTER
FIRE ISLAND NATIONAL SEASHORE
WILDERNESS AREA
REACH 6
DAVIS PARK
WATCH HILL
LONG COVE
CAUSHAM
BARRETT BEACH
WEST ISLAND
REACH 7
ATLANTIC OCEAN
MATCHLINE B
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
EREACH CONTINGENCY PLAN
MOFFATT & NICHOL

FIGURE 2

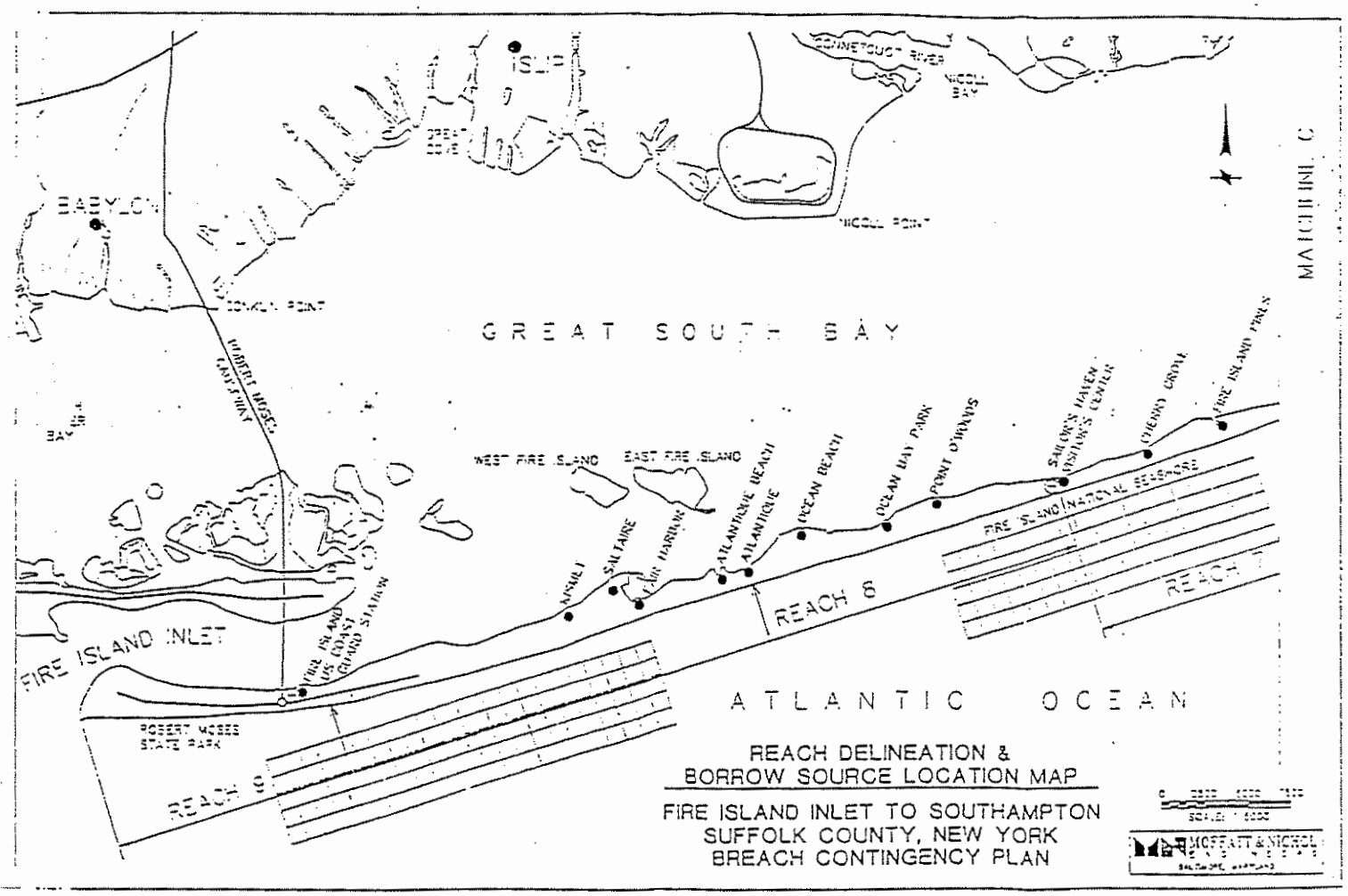

BABYLON
ISLIP
GREAT SOUTH BAY
FIRE ISLAND INLET
ATLANTIC OCEAN
REACH 8
REACH 9
REACH 7
WEST FIRE ISLAND
EAST FIRE ISLAND
ROBERT MOSES STATE PARK
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
MOFFATT & NICHOL

FIGURE 2

minor barrier breaches and inlet development have been relatively frequent. Recent coastal damages have indicated the possibility of future breaches having potentially adverse impact on bay hydrodynamics. Such impacts may include changes: in bay tide levels, bay salinities, and bay circulation patterns.

3.03 Investigations of the breaches that formed during the December 1992 Northeaster west of the Westhampton Groin Field, indicated that the openings vastly increased the flow of ocean water into Moriches Bay over pre-breach conditions (Conley, 1994). The increased flow of ocean tidal water associated with the 1992 Northeaster and exposure to the open ocean presented an impending threat of flooding and wave damage to mainland and barrier island residences during winter coastal storms, by allowing a significant ocean storm surge to be introduced into the bay, over the unbreached conditions.

4.00 ALTERNATIVES TO THE PROPOSED ACTION

4.01 The goal of the Breach Contingency Plan is to establish guidelines for responding to barrier island breaches that occur within the barrier island system extending from Fire Island Inlet to Southampton. There are two alternatives: 1) No Action and 2) Breach Closure Activities under Corps Emergency Procedures Guidance.

4.02 No Action. Under this alternative, no Federal construction measures would be taken to provide for preserving the barrier island system in the event of a catastrophic storm event. Therefore, when a breach occurs, wave attack protection for the barrier island and the mainland would be diminished. The back bay area would be vulnerable to increased storm-tide surges and associated flooding.

4.03 Breach Closure Activities under Corps Emergency Guidance. Response to a barrier island breach without the Breach Contingency Plan in place would follow the procedure used for the 1993 Westhampton Emergency Breach Closure. That process achieved a design cross-section similar to the one proposed by the Breach Contingency Plan in 11 months, at a cost of approximately 7 million dollars. Agency and NEPA coordination was initiated during the design phase and completed following its implementation.

5.00 AFFECTED ENVIRONMENT

5.01 *Developments.* The lands and waters within the proposed project area are owned by various interests and are subject to various uses. The Federal government (Department of the

Interior, National Park Service, [NPS]) has jurisdiction over the area included within the boundaries of the Fire Island National Seashore (FINS). The New York State government has jurisdiction over Robert Moses State Park (Office of Parks, Recreation and Historic Preservation), tidal waters (bays) (Department of Environmental Conservation) and submerged lands offshore to the three mile limit (Department of State). The Suffolk County government (Department of Parks and Recreation) has jurisdiction over county parks located at Smith Point, Moriches and Shinnecock Inlets, and small parcels of shorefront land at various locations. Most of the remaining land is held by private landowners located in Towns of Southampton, Brookhaven, Islip and Villages of Easthampton, Southampton, Westhampton Dunes, Westhampton Beach, Quogue, Bellport, Patchogue, Brightwaters, Ocean Beach, Saltaire, and local municipalities.

5.02 Fire Island National Seashore. FINS is managed by the NPS. There are 17 "exempted" and 3 Seashore District (non-exempted) communities within the boundaries of the Fire Island National Seashore (FINS) (See Figure 2). An exempted community is one that is defined by the 1964 FINS Enabling Legislation (Public Law 88-587), and described by the Federal Zoning Regulations, 36 C.F.R. Part 28, as falling within the boundaries of the Community Development District. The Seashore District is comprised of all portions of the lands and waters within the boundary of the Seashore which are not included in the Community Development District, comprising all private and public developments. The improved private properties in either district are exempted from the acquisition authority of the Secretary of the Interior, as long as the development conforms to all local and federal zoning requirements at the time of construction.

5.03 There are five National Park Service facilities on Fire Island under the jurisdiction of FINS. They are: the Lighthouse Area, Sunken Forest/Sailors Haven, Talisman, Watch Hill, and Smith Point.

5.04 FINS can be accessed via Smith Point County Park on the east end of the island and Robert Moses State Park on the west by bridges from the mainland of Long Island. There are paved roads to parking lots and the public recreational facilities at those two facilities.

5.05 FINS is accessible by the way of the above mentioned bridges by permitted four-wheel drive vehicles only. The shoreline along the entire length of Fire Island and the Burma Road, the sand trail along the interior of the island on the west end and through most of the communities, are the only lateral access routes within the FINS boundaries. (It should be noted, that the Burma Road does not extend into the Wilderness Area in the east, and through the communities of Cherry Grove and Water Island, located in the lateral center

of the island.) Together, they provide vehicular access along the island for FINS personnel, governmental agencies, law enforcement, emergencies, contractors, and seasonal vehicular access for permitted year-round residents and fishermen. For park visitors and summer residents, FINS is only accessible by water, or by foot from the parking areas at either end.

5.06 Robert Moses State Park. Robert Moses State Park is a highly developed and utilized beach recreational facility. The park is heavily utilized from May to September for beach activities. Fall and winter use is limited to surf-fishing hiking, and some off-road recreational vehicle use.

The Robert Moses Causeway provides vehicular access from the mainland of Long Island to the park.

5.07 Suffolk County Parks. Suffolk County has three major parks within the project area: Smith Point County Park, Cupsogue County Park, and Shinnecock East County Park. An undeveloped park is located at Tiana Beach (LIRPB, 1990).

1. Smith Point County Park is a fully developed beach use recreational facility. Off-road vehicle use via the Burma Road is limited at the park due to ocean shoreline erosion.
2. Cupsogue County Park which has a beach pavilion and parking lot has been open intermittently to county residents since 1984 because of repeated washovers of Dune Road.
3. Shinnecock East County Park is heavily used by campers and surf-fishermen. There are County-owned tidal wetlands along the back-bay area of the Tiana Beach Barrier Island, as well as mixed with private lands behind the Southampton barrier spit.
4. Suffolk County has approximately 475 undeveloped acres at Tiana Beach.

5.08 Other Municipalities. The Town of Southampton has recreation beach facilities west and east of the Suffolk County property as well as Pikes Beach Town Park south of Dune Road in the Village of Westhampton Dunes. The Village of Southampton owns a number of beach access points along both the ocean and bay sides of the barrier island. On Fire Island, recreational beach facilities exist within the Town of Islip at Barrett Beach and Atlantique Beach, the Town of Brookhaven at Leja Beach, and the Village of Bellport at HoHum Beach.

5.09 The developed areas within the FINS and along the Westhampton Barrier Segment have had a history of topographic disturbance (man-made and natural). Recent beach nourishment projects (locally by the Fire Island Communities, and the Emergency Breach Closure at Westhampton) has been undertaken to momentarily protect the developed areas from further

coastal damage. The natural barrier island topography does not generally exist within the developed areas of the barrier island system. Natural topography is found only where the land is one of the Federal "tract properties" located within FINS between some of the private communities.

5.10 Coastal Barrier Resources Act. This law established the Coastal Barrier Resources System and units within the system are prohibits Federal expenditure and financial assistance for the development of coastal barriers, or portions thereof, which are presently undeveloped. The coastal barrier units present within the proposed action areas are the: 1) Tiana Beach 2) Southampton Beach, and 3) Fire Island (including Robert Moses State Park).

5.11 Utilities. All electric and telephone service is provided by underwater feeders across the Great South Bay to Fire Island. The lines extend laterally along the barrier island.

5.12 The only sewage treatment plant on the barrier island is located within the Village of Ocean Beach. All other sewage disposal (private and public) is handled by individual septic systems.

5.13 Water service on Fire Island is provided by wells throughout the island. The communities of Fire Island Pines and Ocean Bay Park (private water companies), and the Village of Ocean Beach (public water authority) provide water service from their wells to individual public and private subscribers, as required. Throughout the rest of the barrier island system, water service is afforded by private wells and some portions the Suffolk County Water Authority.

Estuarine Resources

5.14 Great South Bay Area. The barrier island system is the principal natural feature fronting Great South Bay. The eastern is underdeveloped and exhibits extensive beach, dune, tidal wetlands along the back-bay area, and tidal wetland islands scattered within the bay. Larger wetland islands are located in the back-bay areas along Jones Island to the west. The mainland on the north side of Great South Bay contains two large river systems (Carmans River and Connetquot River) with extensive freshwater and tidal wetlands.

5.15 The Great South Bay Area contains eleven designated New York State, Department of State Significant Coastal Fish and Wildlife Habitats (NYSDOS, 1987). They include: Great South Bay East, Great South Bay West, Beaverdam Creek, Swan River, Carmans River, Connetquot River, Champlin Creek, Orowoc Creek, Cedar Beach, Gilgo Beach and Sore Thumb. Great South Bay has also been identified as a significant fish and wildlife habitat by the USFWS (1995).

5.16 The vast salt marshes, intertidal flats, and shallows in the Great South Bay area provide valuable nesting and feeding areas for migratory birds throughout the year, including large populations of shorebirds. Several heronies have been located on the wetland islands within Great South Bay, but the number of these natural resources is presently on the decline.

5.17 Great South Bay is also one of the most important waterfowl wintering areas (November to March) on Long Island containing populations of brant (Branta bernicula), scaup, black ducks (Anas rubribes), Canadian geese (Branta canadensis), mallards (Anas platyrhynchos), buffleheads (Bucephala albeola) and red-breasted merganser (Mergus serrator). Waterfowl use of the bay during the winter is due to the limited extent of ice cover (NYSDOS, 1987) each year. Generally, the birds feed in open water areas through midwinter, while prior to migration (early spring), the birds feed widely in the surrounding salt marshes.

5.18 Great South Bay is an productive area for marine finfish, shellfish and other marine wildlife, but indications are, these resources are on the decline. The bay serves as a feeding area and nursery (April to November) for bluefish (Pomotomus salt atrix), winter flounder (Pleuronectes americanus), summer flounder [fluke] (Paralichthys dentatus), kingfish (Memticurrhus saxatilis), tautog (Tautoga onitis), scup (Stenotomus chrysops), blue crab (Callinectes sapidus). Forage fish species that utilize the bay include Atlantic silverside (Menidia menidia), mummichog (Fundulus heteroclitus), striped killifish (Fundulus majalis), sticklebacks (Apeltes quadracus) and northern pipefish (Syngnathus fuscus) (NYSDOS, 1987).

5.19 The bay is inhabited by hard clams (Mercenaria mercenaria), soft clams (Mya arenaria), bay scallops (Aequipecten irradians) and mussels (Mytilus edulis). The area is open for commercial shellfishing.

5.20 Moriches Bay Area. The barrier beach/dune system is the most dominant natural feature fronting Moriches Bay. The Dune Road area in Westhampton, and the Village of Westhampton Dunes is highly developed. (Note: The beach area fronting the Village of Westhampton Dunes will be able to redevelop under the Legal Settlement between the Village and United States.) West of Moriches Inlet the barrier beach is undeveloped with extensive dunes, beach and back-bay wetlands. A few tidal wetland islands are located within Moriches Bay. The mainland behind the northern boundary of the bay provides numerous stream corridors associated with freshwater and tidal wetlands. Moriches Bay is connected to Shinnecock Bay by the Quogue Canal.

5.21 The Moriches Bay area contains five New York State

Designated Significant Fish and Wildlife Habitats. They include Moriches Bay, Smith Point County Park, Cupsogue County Park, and a portion of Quantuck Creek and Quogue Refuge. Moriches Bay has also been identified as a significant fish and wildlife habitat by the USFWS (1995).

5.22 The salt marshes, intertidal flats, and shallows in Moriches Bay provide valuable nesting and feeding areas for migratory birds and shorebirds throughout the year. Moriches Bay is also one of the most important waterfowl wintering areas (November to March) on Long Island containing populations of brant, scaup, black ducks, Canadian geese, mallards, buffleheads and canvasbacks (Aythya valisineria). Winter waterfowl use of the bay is due to the limited extent of ice cover (NYSDOS, 1987) each year. Waterfowl species feed in open water areas through midwinter. Prior to migration in early spring, the birds feed widely in the surrounding salt marshes.

5.23 Moriches Bay is a productive area for marine finfish, shellfish and other wildlife. The bay serves as a feeding area and nursery (April to November) for bluefish, winter flounder, summer flounder, American eel (Anguilla rostrata), tautog, scup, blue crab. Forage fish species that utilize the bay include Atlantic silverside, mummichog, striped killifish, and northern pipefish.

5.24 Moriches Bay is inhabited by hard clams, soft clams, bay scallops and mussels. The area is open for commercial shellfishing.

5.25 Shinnecock Bay Area. As in the other bay areas, the barrier beach system is the governing natural feature fronting the bay area. There are vital tidal wetlands in the back-bay area behind the Quogue/Tiana and Southampton barrier beaches. The bay is bordered by a dense residential population and small craft harbor facilities on the north and west sides.

5.26 Shinnecock Bay is connected to the west by the Quogue Canal and to Great Peconic Bay by the Shinnecock Canal. The Shinnecock Bay area contains eight New York State Designated Significant Fish and Wildlife Habitats. They include Southampton Beach, Tiana Beach, Shinnecock Bay, Dune Road Marsh, Far Pond and Middle Pond Inlets, and a portion of Quantuck Creek and Quogue Refuge.

5.27 The bay area contains extensive areas of open water and limited amounts of salt marshes and mudflats. Like the Great South and Moriches Bays, Shinnecock Bay provides valuable nesting and feeding areas for the same species of migratory birds and shorebirds.

5.28 Shinnecock Bay is a productive area for marine finfish,

shellfish and other wildlife. The bay serves as a feeding area and nursery (April to November) for bluefish, winter flounder, summer flounder, American eel, tautog, scup, blue crab. Forage fish species that utilize the bay include Atlantic silverside, mummichog, striped killifish, and northern pipefish (NYSDOS, 1987).

5.29 From December through early May, harbor seals (Phoca vitulina) (approximately 20-40 seals) can be found in the bay. Exposed sand shoals near the inlet provide a "haulout area", which the seals use for resting and sunning themselves. This location is one of five Long Island areas used as "haulouts".

5.30 Shinnecock Bay is inhabited by hard clams, soft clams, bay scallops and mussels. The area is open for commercial shellfishing. The residents of the Shinnecock Indian Reservation have established an American oyster (Crassostrea virginica) and hard clam aquaculture farm in nearby Heady Creek.

5.31 Great South Bay, Moriches Bay and Shinnecock Bay represent the one of the largest estuarine ecosystems in New York State. The environmental resources found within the ecosystem, as well as residential development on both the mainland and barrier island are threatened, if the barrier island is left to erode unchecked.

5.32 No State and/or Federal-listed endangered or threatened marine species are known to breed within the study area. During the summer and early fall months, the threatened loggerhead (Caretta caretta) and endangered Kemp's ridley (Lepiduchelys kempi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) sea turtles, as well as the endangered fin (Balaenoptera physalus), humpback (Megaptera novaeangliae), and right (Eubalena glacialis) whales may be present in New York coastal waters (NMFS from USACOE, 1994). While sea turtles have been known to occur in this region, nesting has been documented only as far north as New Jersey (NRC, 1990). Although there is a possibility that the Kemp's ridley, loggerhead and green sea turtles feed in one of the bays, no reports have substantiated this.

5.33 The development of the bay areas consists mostly of marinas and other docking facilities, mooring buoys, and the associated dredged boating channels. Great South Bay contains developed bay islands (West Fire Island and Secton Island) within FINS boundaries which contain a few residences and Pattersquash Island containing a hunting club.

Terrestrial Resources.

5.34 Barrier Island. The barrier island system within the

project study area includes Fire Island which extends from Fire Island Inlet to Moriches Inlet (approximately 32 miles), the 15 mile barrier island containing Westhampton and Tiana Beaches (Moriches Inlet to Shinnecock Inlet), and the 4 mile barrier island segment which extends from east of Shinnecock Inlet to the mainland at Southampton. The barrier island system has served residential and recreational needs for the public in the past. Overwashes occur frequently in this section where dunes are non-existent. Barrier island systems are geologically dynamic. Due to the high energy storms, and bay and oceanic forces associated with the Atlantic barrier barrier island shoreline, it will naturally have the potential of becoming unstable in some subtidal areas.

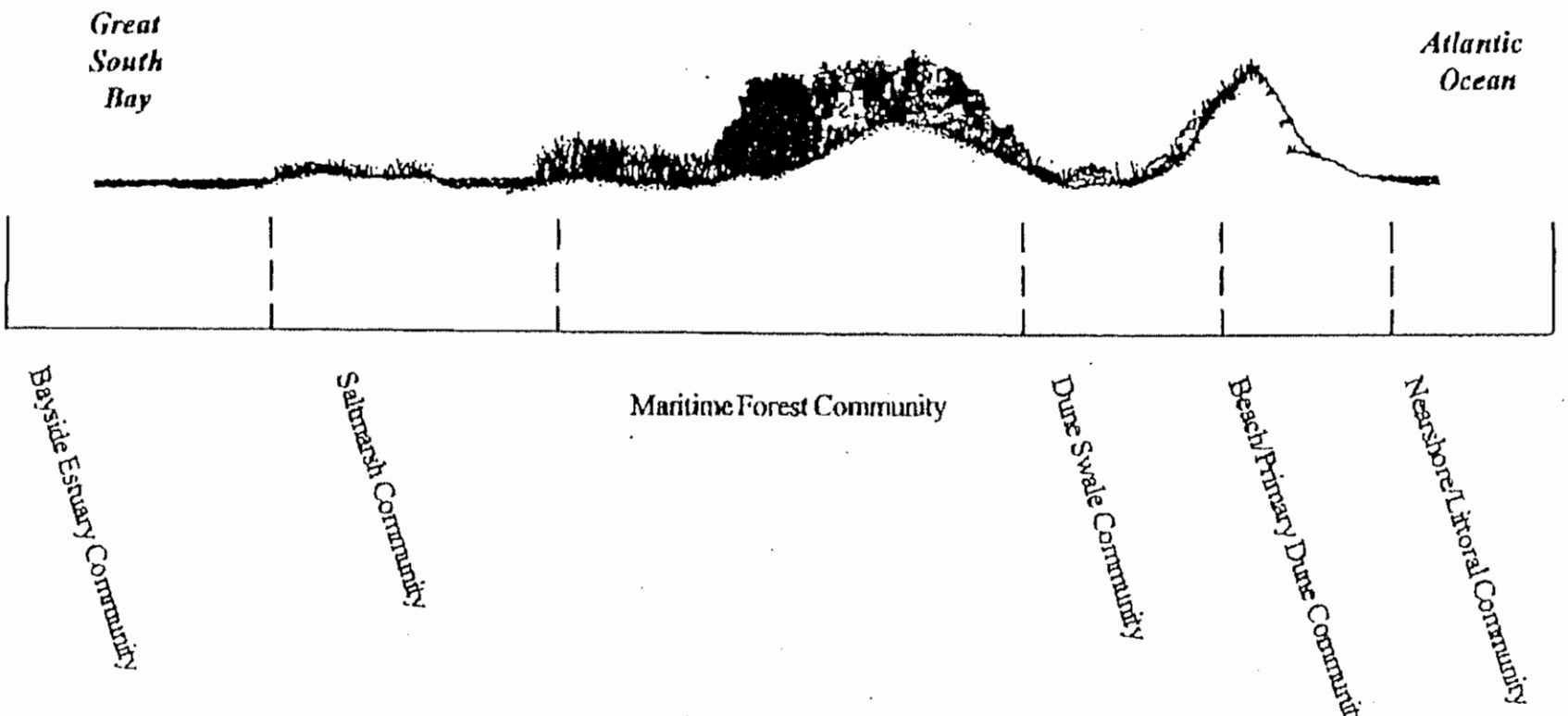
5.35 The area of the barrier island behind the Westhampton Groin Field contains private residences, beach clubs, and a Town of Southampton beach. The existing groin field has resulted in large accumulations of sand between Groins 1-11 (USACOE, 1995). The groin field also maintains the dune system which provides protection to the structures behind.

5.36 The Westhampton Groin Field area has vegetation comparable to that of the rest of the barrier island, containing primarily American beachgrass and seaside goldenrod. Piping plover nests have been sighted along this area, and as of June, 1994, approximately 25 pairs of least terns have established nests within the groin field. However, due to the high recreational summer traffic however, chick mortality is high.

5.37 Natural cross island topographical changes occur as a result of longshore sand transport through the process of longshore drift and high energy storms. Sand is moved from the ocean side of the barrier island to the center of the island, and then to the bayside. Changes associated with these events (overwash, inlet formation and closure) will build up the bayside slowly. Over hundreds of years, these events will slowly shift the island towards the bay. The barrier island system shows a topping of sand with pockets of forested areas and organic material in the marsh areas. Occasionally on the ocean beach, peat bogs are uncovered exposed areas that had been forested in the past.

5.38 Six ecological communities are found within the barrier island system (See Figure 3). The most southern community is usually under water, and is referred to as the nearshore/littoral community. The ocean beach community contains the geologic zones of: intertidal, berm, open beach, foredune, and primary dune. Behind the beach/dune system is often found a dune swale community of grasses and rushes. Interspersed throughout the interior of the barrier island

Fire Island National Seashore
General Barrier Island Cross Section
Ecological Communities



Fire Island Breach Contingency Plan (draft)
Not to Scale

are maritime forest communities. These may be bordered to the north by the frequently flooded saltmarsh community. The final system, often extending out to the island's northern boundary, 4000 feet off shore, is the bayside estuary community. There is little variation in topography in these ecological communities. The Federal Wilderness, located in the eastern eight miles of FINS, contains the best examples of these communities. The stability of these communities is sensitive to specific types of disturbance (i.e. tidal action, plant density, wave action, human development, wind activity, storms, and other natural high energy events). The following paragraphs briefly list species associated with each community.

5.39 Nearshore/Littoral Community. Fifty-four species species of finfish may be found in these waters. Some of the more common varieties are: Atlantic salmon (Salmo salar), Atlantic herring (Clupea harengus), striped bass (Morone saxatilis), black drum (Pogonias cromis), black sea bass (Centropristis striata), Atlantic halibut (Hippoglossus hippoglossus), and several species of jellyfish (NPS, 1994). Invertebrate shellfish and crustaceans are also found in the nearshore/littoral zone. These include: American lobster (Homarus americanus), hard clams, soft-shell clams, Atlantic surf clams (Spisula solidissima), sand dollars (Echinarachnius parma), and quahogs.

5.40 Man-made structures such as the groins near Westhampton, provide rocky intertidal habitat for aquatic and avian species (USFWS, 1994). Fish species utilize this habitat as a forage base and can find shelter amid the piled groin stone. In general, barnacles, crustaceans, polychaetes, mollusks can be found on, above, and around these structures.

5.41 The plant species found in this area are often transitory free floating specimens from other areas on the northern U.S. coastline or Long Island Sound. These specimens may be green seaweed such as sea lettuce (Ulva lactuca), brown seaweed such as common Southern kelp (Laminaria agardhii), red seaweed such as dulse (Rhodymenia palmata). The seaweeds may be used by smaller marine organisms as a refuge from predation. The seaweeds also collect at the hightide line and become food for area wildlife or a refuge for smaller beach wildlife.

5.42 Ocean Beach Community. Plant species found in this area must be able to withstand the variable high energy weather systems that frequent this zone. Above the high water line there usually are several annuals, such as seaside spurge, and sea rocket (Cakile edentula). American beachgrass (Ammophila breviligulata) is the most abundant plant on the foredunes, but several kinds of succulent or leathery-leaved herbaceous plants are occasional residents.

Beachgrass can survive repeated burial by the shifting sand, and it can spread rapidly by vegetative growth (rhizomes). Also found in this area; beach pea (Lathyrus maritimus) and dusty miller (Artemisia stelleriana). The roots and underground stems of the plants stabilize the dunes, and their leaves and aerial stems trap wind-blown sand. Vegetated foredunes, on sections of the barrier island allowing natural processes, form a buffer for the leeward sections of the Island against winds, salt spray, and storm tides.

5.43 Examples of fauna found in the intertidal area are amphipods such as beach fleas, crabs such as mole crabs (Emerita tallpoida), shorebirds such as sanderlings (Calidris alba), willets (Catoptrophorus semipalmatus), and dunlins (Calidris alpina).

5.44 The berm area is found at the high tide line. It is often marked by a buildup of ocean debris or vegetation. As the successive moon controlled high tides change, the berm debris/vegetation lines are found throughout the open beach (supratidal area). Species frequenting the berm debris/vegetation include: plovers, terns, gulls, along with over 50 other shorebird species.

5.45 Dune Swale Community. On back dunes, dunelets, secondary dunes, and in swales, shrubs grow with many other species of herbaceous plants, and they may form dense thickets over many acres. Beach plum (Prunus maritima), bayberry (Myrica pennsylvanica), and poison ivy (Rhus radicans) are the most common woody plants. Winds and salt spray that pass over the foredunes or through gaps in their crests control the height of the shrub canopy, and the height increases northward, away from the ocean. The shrubs of the back-dune zone can tolerate limited burial by sand. Bearberry (Arctostaphylos sp.) is characteristic on the lee (north) slope of undisturbed dunes.

5.46 If primary-dune or swale vegetation is disturbed by trampling or vehicles, the sand may be moved by the wind. Vegetation develops slowly on bare sand, and the early colonizing plants in many places are beach heather (Hudsonia tomentosa) and seaside goldenrod (Solidago sempervirens). Beachgrass normally is absent from surfaces that are being eroded actively.

5.47 Sands blown from the dunes may engulf and cover low vegetation, and then may be colonized and stabilized by woody vines, such as poison ivy and Virginia creeper (Parthenocissus quinquefolia). Although the distribution of seeds and other propagules may be nearly random, the various species are adapted to different ranges of environmental conditions. The subtle to sharp boundaries between different macroenvironments, and the spatial repetition of the

particular type of habitat in discrete patches and extensive zones, results in a mosaic of several herbaceous and shrubby vegetation types in an area that may extend several hundred feet north of the primary dunes. Generally, however, the density of plant cover increases with distance from the ocean front. The proportion of the vegetation cover formed by different species was investigated near and in the Sunken Forest within FINS by botanist Dr. Henry Art in 1971 (pers. comm. Ebert, 1995)

5.48 The only large island wildlife is found is in this zone. White-tailed deer (Odocoileus virginianus) can be found on Fire Island. Several common species of mammals are also found in the forests and tall grass sections of FINS, including red fox (Vulpes fulva), rabbits (Sylvilagus sp.), and white-footed mice (Peromyscus leucopus).

5.49 Maritime Forest Communities. The diversity of species generally expands with the increasing density of cover and the distance from the ocean. In a few protected areas, there are dense, broadleaf forests with a wind-pruned canopies 17 to 23 feet high. At Sunken Forest, the trees that occur in the transitional zone between the scrub and the forest are red cedar (Juniperus virginiana), pitch pine (Pinus rigida), wild black cherry (Prunus serotina), and winged sumac (Rhus copallina). Trees typical of the broadleaf forest are winterberry holly (Ilex verticillata), sassafras (Sassafras albidum), and serviceberry [shadbush] (Amelanchier sp.). The understory is composed of highbush blueberry (Vaccinium sp.) and other tall shrubs, as well as various lianas (woody vines), such as poison ivy, briers (Smilax sp.) Virginia creeper, and grape (Vitis sp.). Herbs, are more diverse in the Fire Island forests that in the dune and swale communities, and many of the species also are distributed widely on the upland sections of Long Island.

5.50 White-tail deer, red fox and many species of birds common to shrub forest zones are found in this area. This may also be the primary invertebrate area on the barrier island.

5.51 Saltmarsh Community. The availability of soil moisture, the salinity of the water, and the depth to the water table are major determinants of the distribution of vegetation types and of the floristic composition of vegetation types on the barrier island system. Where the surface of the porous sand is more that a few feet above the water table, soil-moisture fluctuations may be critical for plant survival. Many such areas support shrub thickets or temporary herbaceous vegetation types. Small depressions in which the freshwater table is at or near the surface during much of the year support bogs or marshes. Forest bogs and marsh transition zones support sour gum (Nyssa sylvatica) trees and such shrubs as highbush blueberry and swamp azalea

(Rhododendron serrulatum), as well as lush stands of ferns. On the bayshore, extensive salt marshes occur in areas subject inundation by salt water. The floristic composition of saltmarsh vegetation is related closely to the salinity of the water and to the frequency of inundation. Species characteristic of areas of brackish water are salt-marsh fleabane (Pluchea pupurascens), spike grass (Distichlis spicata), salt-marsh cordgrass (Spartina alterniflora), salt-meadow cordgrass (Spartina patens) groundsel bush (Baccharis halimifolia), and marsh elder (Iva frutescens).

5.52 All extensive salt-marsh grasslands on Fire Island were ditched for mosquito control in the 1960's. These remaining ditches increase the inland flow of brackish tidal waters and probably have disturbed the natural zonation of salt marsh vegetation. Both marshes and upland vegetation have been subject to an unknown degree of grazing by cattle and sheep, but virtually no records of grazing on Fire Island are known from the 20th Century.

5.53 Bayside Estuary Community. (See Section 5.13 - 5.33)

5.54 The project area is within the Atlantic Migratory Flyway for many migratory birds (i.e. geese, hawks, neotropical species) and butterflies. The barrier beach and back bay area within the serves as a nesting area for migratory shorebirds and as a wintering area for migratory waterfowl. Permanent avian species for the surrounding area include various species of gulls, crows, pigeons, and sparrows, normally associated with residential housing. The species of shorebirds which nest in colonies along the shorefront include plovers, terns, oystercatchers and sandpipers.

Threatened and Endangered Species

5.55 The Federal-listed threatened piping plover (Charadrius melodus), the State-listed threatened common tern (Sterna hirundo) and the endangered least tern (Sterna albifrons) all use essentially the same habitat: sand or sand/cobble beaches along ocean shores, bays and inlets between the high tide line and the area of dune formation. They usually nest at sites with little or no vegetation. However, it is not uncommon to find plover nests at the seaward base of dunes, or even behind the dunes, where blow-outs provide access to the ocean and where beachgrass can shelter the nest and eggs from sun and weather (Andrle, 1988). The Federal-listed endangered roseate tern (Sterna dougallii) nests on barrier beaches near dunes vegetated with beachgrass and herbaceous plants, such as seaside goldenrod (Andrle, 1988) and has been sighted within the FINS property (Bilecky, 1995). The Federally-threatened Northeast beach tiger beetle (Cicindela dorsalis dorsalis) also utilizes the same habitat.

5.56 Shorebird habitats are present within the project area. The barrier island system predominantly consists of low-lying sand flats, mudflats and sandy upland area almost devoid of vegetation (except maritime forest areas within FINS). Unoccupied and destroyed homes and housing debris are present along the barrier island with the Westhampton Barrier Segment. This area has been subjected to continued loss through the increasing occurrence of significant overwashes and breaches.

5.57 Overwash and breaching events potentially can create sand spits and deltas that provide a high quality of feeding and nesting habitat (USFWS, 1994) for a variety of shorebirds, including the piping plover. USFWS (1994) stated that "it is most likely that if the project area is allowed to remain in its present condition, there would probably be an overall increase in shorebird habitat". However, the characteristics which provide piping plovers with the most suitable habitat (relatively flat berms, overwash fans, spits, overwash areas which permit access to the back bays, and open vegetation) are the result of storm events, not necessarily the continued existence of a breach. An example of this, is the situation which occurred at Emergency Breach Closure Site at Westhampton. After the breach was filled, the number of breeding pairs increased threefold (5 nesting pair to 15 nesting pair), with several pairs nesting on the sand which was used to fill the breach. Although this was not the objective of the emergency project, it is well within the District's engineering capabilities to actively create nesting shorebird habitat as part of it's program of shoreline protection.

5.58 Piping plovers have been present in the past and were present in 1994 in various locations along the length of the barrier island system (USACOE, 1994). The Westhampton Barrier Segment has been identified by the USFWS as being considered for inclusion in a proposal to designate Critical Habitat for the Atlantic Coast Piping Plover population.

5.59 The Federal-listed threatened plant species, seabeach amaranth (Amaranthus pumilus) has also been identified in various location on the barrier island system. An October 1994 USFWS (in conjunction with The Nature Conservancy [TNC]) survey of the barrier island within the limits of Village of Westhampton Dunes, resulted in 25 plants being identified on the bayside (23 opposite just west of Groin 15) of the Westhampton Groin Field. The State-listed endangered plant, seaside knotweed (Polygonum glaucom) is present on the Fire Island Barrier Segment.

5.60 Other New York State-listed species potentially known to occur are: the threatened Eastern Mud Turtle (Kinosternon subrubrum subrubrum), found in forests, marsh, swale, estuary communities) and the Eastern Spadefoot Toad

(Scaphiopus holbrookii holbrookii) found in swale and forest communities.

5.61 Potential Offshore Borrow Areas. Borrow areas off the south shore of Long Island were identified as potential sources of material for breach closure efforts. The National Marine Fisheries Service (NMFS) in 1980 conducted a survey within three miles offshore for the Moriches to Shinnecock Reach of the FIMP Project. The survey indicated the presence of anglerfish (Lophius americanus), bluefish, butterfish (Peprilus triacanthus), Atlantic cod (Gadus morhua), winter flounder, summer flounder [fluke], yellowtail flounder (Limanada ferruginea), Atlantic mackerel (Scomber scombrus), scup, striped bass, American lobster, ocean quahog, and surf clam. The species observed are typical of species found off the south shore of Long Island. NMFS also stated that the offshore borrow areas that were to be utilized for the Moriches to Shinnecock Reach are of low benthic use, hence no significant long-term impacts are anticipated from the temporary loss of such a site due to dredging activities. An updated benthic survey of the borrow area was undertaken in the spring of 1994 for the Moriches to Shinnecock Reach Interim Project and final results are expected to be available in Spring, 1995.

5.62 Potential Stockpiled Material. To increase the time and cost effectiveness of emergency breach closures, stockpiled suitable material would be located strategically along the study area. These stockpiles would be placed in non-suitable shorebird habitat areas and marked as "Stockpiled Areas". Identified areas shall be coordinated with USFWS and NYSDEC to insure that they remain as stockpile areas and not as viable shore species habitat.

5.63 Potential Upland Source Areas. For locations easily accessible by truck, approved upland sources are to be considered to provide immediate breach closure response.

6.00 Cultural Resources

6.01 Terrestrial Cultural Resources. Archaeological surveys and inventories, including documentary research and field investigations, have indicated the potential for historic and prehistoric archaeological sites to exist within the onshore portion of the project area. These sites include former United States Lifesaving Service (USLSS) structures, former inlet locations, as well as prehistoric occupation sites. In addition a number of properties listed on the National Register of Historic Places (NRHP) are also present within its bounds. These properties include:

1. The Fire Island Light Station, located within the eastern boundary of Robert Moses State Park,

consists of the lighthouse, the keeper's quarters, the United States Coast Guard (USCG) Annex building and five ancillary structures related to radio communication technology and the archaeological remains of the first Fire Island Lighthouse dating to 1825.

2. The Beach Road Historic District located on Beach Road between Shinnecock Road and Halsey Neck Lane in Southampton on the eastern end of the project area.
3. The Dr. Wesley Bowers House also located on Beach Road in Southampton.

6.02 A number of other sites may be potentially eligible for the NRHP. These include ruins and landscape features related to the USCG, USLSS and the United States Navy located on Fire Island.

6.03 Submerged Cultural Resources. Submerged cultural resources consist of two types of sites: submerged prehistoric sites and shipwrecks. Recent studies (Pickman 1993, 1994) indicate that landsurfaces exposed during the Pleistocene and the post-Pleistocene exist beneath the barrier islands and continue offshore. These landsurfaces may have been utilized by prehistoric peoples prior to the inundation of these areas as glaciers melted.

6.04 A number of wrecks have been identified along the south shore of Long Island in both the near shore and offshore areas (Reiss 1993a, Reiss 1993b, Moeller 1978, Berg 1992). The Fire Island National Seashore has initiated a tracking/survey project to identify the materials and areas of wrecks. At present, the majority of the physical evidence identified by the study are mainly fragments of ships, ranging from small diagnostic pieces to large (over 40 feet) composite materials with diagnostic features.

7.00 ENVIRONMENTAL IMPACTS

7.01 No-Action. Under this alternative, no Federal measures would be taken to provide for stabilizing the barrier island system in the event of a catastrophic storm event. Therefore, when a breach occurs, wave attack protection for the barrier island and the mainland will be diminished. The back bay area would be vulnerable to additional impacts.

7.02 Taking no action would have a significant adverse effect upon the project area. There would be a continued, ongoing threat to existing residential structures as well as to estuarine resources. In the event of a breach occurring in the areas of private development (covering bay to ocean sections) there is a very high possibility that there will be sufficient hydrologic force on both sides of the island to

prevent natural breach closure.

7.03 If a high energy storm passes over the project area, as in the past, physical and biological alterations to the natural resources can be expected. Long-term and short-term impacts may occur, depending on the location and area resources. Initial analysis of storm affects may detect vast physical changes (i.e. washovers, breaches, fallen trees), while the truly significant long-term biological affects may not be detected for several years (i.e. plant introduction, removal of predators, creation of wetlands).

Physical Impacts

7.04 In the natural areas of the barrier island, dramatic visual changes in geography and plant life may result. This is particularly true in breach or washover sections where the two inland natural resource communities discussed in Section 6 may no longer exist (i.e. dune swale and maritime forest communities).

7.05 Physical changes to the natural resources in the developed areas would be dependent on the order of magnitude of the breach occurrence. The physical impacts of a long term breach opening on the associated impacted bay would be: 1) an increase in bay tide levels, 2) an increase in bay storm-tide levels, 3) an increase in bay salinities, 4) changes in bay circulation patterns and residence times, 5) an increase in shoaling of shellfish areas and navigation channels, 6) creation of a substantial flood tidal deltas and sand spits.

7.06 The potential threats to public, commercial, and residential properties on the barrier island system, as well as the south shore of Long Island, resulting from inlet development from a breach, and its subsequent migration, would continue to occur and possibly increase if no action is taken.

7.07 Developments. In the more developed community areas, structures have been built close together. During the historical development of the barrier island system, many natural physical factors of the barrier island had been altered (i.e. primary dunes, secondary dunes, low wetland areas). Physical impacts resulting from breaching or severe overtopping in a developed area would create a relatively low flat beach on both sides of the breached or washover area. Tidal water could inundate the developed community areas.

7.08 Reconstruction of structures destroyed by a breach on the barrier island system would not be possible until, and unless, the upland portion of the properties become restored by natural processes over time, which might never happen. Structures will not be able to be restored on the beachface or within the breached area itself, due to the low-lying, overwash nature of the property and the potential of inlet formation.

7.09 Because of the potential lack of governmental action to

restore the land, insured properties would be acquired by local or federal agencies per Federal Emergency Management Act standards, by way of federal flood insurance funding. Properties may be acquired by local or federal jurisdictions at the taxpayers' expense from willing sellers, or through acquisition by condemnation procedures if they are not covered by flood insurance. FINS would accept donations as public open space in perpetuity, of beach properties with National Seashore property destroyed by storms and breaches.

7.10 Revenues resulting from property taxes would be lost to government agencies, as storm-damaged properties are removed from tax rolls. For Federal, state, county and town parks, revenues generated from park visitors to the parks themselves and associated commercial establishments would also diminish as properties are abandoned to breach and inlet formation..

7.11 Abandonment of public recreational facilities affected by a breach would result in lost recreational opportunities for visitors and the Long Islanders who rely on these beaches for much of their recreational experiences. Additionally, state, town and county revenues, through marina and parking fees, would be lost.

7.12 Utilities. Abandonment of electrical and telephone services, water lines and sewage treatment (if affected) would be required across a breach condition. This would either result in the down-line customers left without services, or necessitate the expensive relocation of the utilities to service them.

7.13 Emergency Access. Vehicular access across a breach would most likely be impossible, depending on the depth of water to be crossed. This would result in a situation whereby access on and off Fire Island would be from either the Smith Point bridge or the Robert Moses Causeway and for the area between Shinnecock and Moriches Inlets, the three bridges within the Town of Southampton and Westhampton Beach. If more than one breach occurs, either during single storm event, or additional subsequent storms, a separate island would be created, whereby the only access would be by waterborne conveyance.

7.14 Back-bays. There would be increased maintenance requirements for the bay marinas, docking facilities, mooring buoys, and the associated dredged channels. This would be necessary, in order to provide access to Fire Island communities and for the basic operation of the facilities.

7.15 The developments on the bay islands within the boundary of FINS (because of a breach and an increase in tidal range) would be abandoned. Repairs to damaged structures would be precluded by the increased tidal ranges, and possible direct attack by wave action and tidal surges.

7.16 The communities fronting the mainland would also experience impacts associated with the breach occurence. Flooding during

tidal surges may impact utilities and emergency services situated adjacent to the bay.

7.17 Study of the December 1992 Breach at Westhampton has left many questions as to the potential impacts that might have occurred to the ecology of Moriches Bay, had the breach not been repaired. Partial explanations can be found from data collected during similar events of the recent past (Moriches Bay Breach, 1980). Under pre-breach conditions, the shallow estuarine waters of Moriches Bay warm up rapidly (as compared to the ocean). This warming action provides optimal temperature and salinity conditions (24-26 parts per thousand [ppt]) for the growth of hard clams. Observations following the 1980 Moriches Breach showed that before the breach was closed (within one year), parts of the eastern bay (far from the breach opening) retained a salinity of 26 ppt, and clams in this region displayed growth rates approximately three times greater than those in the western part of the bay (under direct influence of the breach) where salinity had risen to 30 ppt. After the breach was closed, the salinity of the western portion of the bay returned to 25 ppt (pers. comm. Cerrato, 1993). Salinity and tides were measured in Moriches Bay following the formation of the 1992 Westhampton Breach (Conley, 1994). Measurements were continued through the closure of the breach in September 1993 and finished in January 1994. At the peak of the breach's development, an additional 30% of the ocean tidal range was afforded access into the bay. This increase in bay tidal range resulted in an increase of salinity within the bay (Conley, 1994). Biological communities are structured in relation to the influence of salinity (Woodhead and McEnroe, 1991). Many other studies have also shown that higher salinities in concert with lower temperatures, have had negative impacts on hard clam growth and productivity. The increased influx of cooler, higher salinity water would affect the nature of the estuarine phytoplankton community and would thus have altered a vital food source for many of the estuarine filter-feeding organisms including shellfish. Any salinity change would disrupt what is now ideal estuarine habitat for fish and shellfish found in the bay. Ocean water intrusion could therefore significantly impact present commercial and sport fish distribution.

7.18 The presence of the new inlet along with the increase of salinity, would allow salinity-limited predators (starfish, lobster, crabs) to freely migrate into the bay and take up residence where salinity increases were sufficient. The increase in predator-related mortality to shellfish (especially the younger stages) would be devastating (pers. comm. Lawton, 1993). Studies conducted during the 1980 Moriches Breach, showed that benthic fauna in the vicinity of the breach revealed distinct oceanic assemblages, including predators not found in other parts of the bay.

7.19 There are no rivers or large freshwater areas on the barrier

island. Except for the wash-out of septic systems into the nearshore, marine water quality in the short-term, would be improved under the no action alternative due to the removal of nearby pollution sources.

7.20 Potential wildfire hazards are lessened in the no action alternative. The vegetation needed to sustain a fire is removed in a breach or washover. Because of the lack of vegetation, the threat of a spreading wildfire along the barrier island decreases.

Biological Impacts

7.21 Studies have shown a great increase in the diversity and number of species on a barrier island following a high energy meteorologic event. A breach or washover may become highly suitable habitat for colonizing shorebird species and early successional barrier island plant species. This is due to the newly formed large and generally low flat beach areas that would remain after the breach or washover. Physically the area around a breach or washover is very dynamic. Examples of the common barrier island vegetation species would be beachgrass, beach pea, and hudsonia.

7.22 It must also be noted that washover and breach areas are highly suitable piping plover habitat. If a breached area is formed the winter prior to the approximate shorebird breeding season (April 1 - July 1), the plovers in addition to other shorebirds will immediately begin using the newly altered area for foraging. In the existing the barrier island system, the primary foraging areas are the beach wracklines and areas of sparse vegetation located in the foredune area. Washover/breach areas are also prime habitat due to the availability bay associated foraging habitat. During the routine dynamic changes in washover or breach areas the vegetation is sparse. This is a positive impact in that it allows shorebirds to use these areas for nesting. The sparse beach grass and other colonizing vegetation in this area also assists these shorebirds with camouflage from predators. Another positive impact is the insects associated with the sparse vegetation (i.e. common ants and flies). They also become a food source for the foraging shorebirds.

7.23 Seabeach amaranth is a barrier island vegetation species that colonizes open space found along much of the barrier island system, especially in washover or breach areas which diminishes upland vegetative habitat. If the breached conditions are allowed to continue, one can assume that seabeach amaranth population would increase in the newly breached areas.

7.24 No action would also have an impact on prehistoric landsurfaces located under the beach. Continued erosion would expose prehistoric landsurfaces that may contain the remains of the early inhabitants of the area. Peat layers, that might lie above or contain prehistoric remains, were

exposed in areas adjacent to the breaches on the Westhampton Barrier Segment that had opened during the December 1992 storm. No material was collected from the peat layer exposed during the 1992 storm. Because of time constraints, no testing was conducted at that time. Although unlikely, materials may be identified or recovered from washed out areas. If this occurs on FINS property, the NPS would be required to protect or stabilize individual sites while the sites are assessed for archaeological significance.

7.25 No action could result in adverse effect to both known and unknown cultural resources. A breach in the barrier islands and lack of stabilization would permit wave, wind and other actions to cause irreversible damage and loss to sites in breach areas. Unknown archaeological resources, including sites located beneath the barrier islands or shipwrecks buried in the near shore area could be uncovered, damaged or destroyed as a result of a breach. The Fire Island National Seashore would be required to protect or stabilize individual sites within the boundaries of the park in accordance with Section 110 of the National Historic Preservation Act of 1966 (NHPA), as amended, until they could be fully investigated.

7.26 Submerged cultural resources located offshore, such as those in the locations of the borrow areas, would not be adversely affected by a no action plan. These sites would be located outside of wave action areas.

7.27 Breach Contingency Plan Closure. The preferred alternative for breach openings occurring west of Watch Hill and east of Smith Point on Fire Island is to initiate closure planning within 72 hours of cessation of the storm event, in which the State of New York formally requests action. Construction of the design identified in **Section 2.00** would begin as soon as possible. For the Federal Wilderness Area, monitoring of indications of natural breach closure would be conducted. If there is no indication that the breach will close naturally within the Wilderness Area, or if an increase in tidal ranges in the Great South Bay pose significant threats of flooding to developments on the south shore of Long island and along the barrier island, the breach would be artificially closed. The intent of this alternative is to stabilize the barrier island, stopping inlet migration (should one be formed) when a breach is filled.

Physical Impacts

7.28 Developments. The continued, ongoing threat to public, commercial, and residential development on the barrier island system and the south shore of Long Island, resulting from inlet development and migration, would be mitigated by breach closure. A maintained intact barrier island will provide more protection from storm damage, flooding, and oceanic force than allowing the barrier island to be sustained in a breached condition.

7.29 Emergency breach closure will not prevent natural cross island topographical changes from occurring. Sand will still migrate from the ocean side of the barrier island to the bayside by the way of wind/wave action.

7.30 It will be possible to rebuild structures destroyed by a breach under certain conditions, specifically where the elevation of the property exceeds the typical washover elevations, resulting in relatively sound upland conditions, and as permitted by local and federal regulations. Restored upland, defined by local and federal zoning standards, would enable the proper installation and sustained maintenance of sewage disposal and utilities.

7.31 In addition to the reconstruction of private residences, public recreational facilities affected by a breach would be restored allowing visitors to continue using the facilities. State, town and county revenues, generated by marina and parking fees, and private businesses would continue.

7.32 Utilities. Damaged utilities, including electrical and telephone service, could be restored across a repaired breach, thereby providing the necessary service to the severed communities and developments.

7.33 Emergency Access. Because access points available to the barrier island residences are limited, restoration of the access points is a vital benefit resulting from immediate breach closure. This would be a benefit to park personnel, local and county police, emergency access, as well as year-round residents with seasonal driving permits. Seasonal vehicular access for fisherman would also be maintained.

7.34 Back-bay Areas. Damage to marinas and other docking facilities, mooring buoys, and the associated channels for boating would be restored. The residential developments including essential services on the back bay and the bay island residents within the boundary of FINS, would still have the protection afforded by the breach closure.

7.35 Coastal Barrier Resources Units. Although the Coastal Barrier Resources Act prohibits the expenditure of Federal funds on identified units, the following exceptions allow a breach occurring within a unit to be filled:

- assistance for emergency actions essential to saving lives or protection of property within the coastal barrier units. Such actions shall be limited to the extent necessary to alleviate the emergency and not be used as a justification for any projects that exceed the scope and needs of the true and immediate emergency.
- non-structural projects, such as the planting of dune grass or beach nourishment which mimic, enhance, or restore natural stabilization

systems, would be performed for shoreline stabilization.
- funds for the maintenance, replacement, reconstruction, or repair, but not the expansion, of publicly owned or publicly operated roads, structures, or facilities.

Biological Impacts

7.36 Beach Nourishment. Impacts associated with the placement of sand on the beach are based on the abundance and kind of organisms present, the quantity and quality of material placed, the placement method used, and the time of year of placement. Sessile organisms would experience the immediate impacts through direct deposition, lowered oxygen and light penetration, and/or disturbance during critical life cycle periods. Mobile species, bottom dwellers and free swimmers, can usually escape.

7.37 Beach nourishment will also prevent the barrier island from breaching, thereby protecting the back-bay communities from inundation and other storm-related damage. The fragile estuarine environment will also be protected from salinity changes, preventing the intrusion of oceanic predators.

7.38 Borrow Areas. The sand to be placed on the shore will be obtained from a borrow areas located offshore of the barrier island system (See Figure 2). The maximum depth to which the borrow area will be dredged is 20 feet below existing bottom.

7.39 The dredging of the borrow area could generate three categories of adverse impacts:

1) the direct loss of benthic infauna within the dredged area. Mobile epibenthic forms such as fish and crustaceans would be expected to leave the area and should not be significantly impacted. Benthic recolonization would depend on the depth of the dredged area, sedimentation rate, and bottom substrate type. The depth of the borrow area will be limited where possible in order to minimize the potential for altering the bottom conditions within the pits.

2) an increase in turbidity levels. Due to the sandy substrate and location of the site, any plume will be restricted in size and duration and it is not anticipated that there would be any release of pollutants or significant lowering of dissolved oxygen levels resulting from the project. Surface sediments of the borrow area do possess a small percentage of silt which would be released into the water column. The dynamic wave and current conditions of the project area would rapidly dissipate the suspended solids.

3) the dredging of the any borrow site has the potential to impact cultural resources. However, the dredging of previously utilized borrow areas for which records of remote sensing anomalies representing potential cultural resources,

would decrease the chance of any potential impacts. If the use of a previously used borrow area for which a remote sensing study has been conducted is not feasible, then the New York State Historic Preservation Office (SHPO) will be consulted, and a plan to minimize the effect of dredging on unknown cultural resources will be developed.

7.40 No significant impacts to benthos located in the borrow area are anticipated due to their ability to recolonize in approximately 12-18 months.

7.41 The use of short-term heavy equipment required to both facilitate breach closure and make use of stockpiled sand may impact the beach habitat, i.e. disturbance (breaking up) of the sand. This may have short-term affect on upland beach vegetation, but should not exceed impacts associated with long-term offroad recreational vehicle use.

7.42 Proposed Sand Stockpiling Activities. The use of approved trucked upland source material will have different impacts than the dredging option. The impacts associated with the movement of upland sourced material would consist of:

1. Increased short-term noise and air emissions from the delivery trucks.

2. Increased short-term traffic and decreased aesthetics on the local residential route system.

3. Increased energy requirements for the truck use.

7.43 The design features, siting and logistics regarding any proposed sand stockpiling on Fire Island have not been finalized. As a result, only generic physical and biological impacts to sand stockpiling are discussed below. In the event a stockpile is created using Federal funds, a separate NEPA document containing a more detailed discussion of these and other associated issues will be prepared. Effects associated with stockpiles created by State or local municipalities would be addressed by way of the State and local environmental statutes.

7.44 Dewatering. In order to minimize the introduction of salt water into nearby freshwater systems or the movement of silty sediments into nearby habitats, dredged material will require dewatering before placement on upland sites. Dewatering of dredged material on land may potentially introduce saline water into the shallow freshwater lens on Fire Island. Increases in groundwater salinity from dewatering may cause adverse impacts to maritime forest and plant communities, as well as fauna of the barrier island habitats. This aspect of sand stockpiling will need to be studied further before a decision is finalized.

7.45 A potential mitigation measure may entail establishing dewatering sites (i.e. at existing dredge spoil islands). Best management practices such as the use of hay bales or sediment screens around the stockpile site will be examined as means to limit the migration of a small amount of fines from the stockpile. As stated above, specific analyses of sand stockpiling will be performed in a separate NEPA document which will include the necessary measures to mitigate the identified potential impacts.

7.46 Potential impacts to wetlands and other vegetated habitats included impacts resulting from burial by way of direct placement of material, trucking activities and migration of stockpiled sand from either aeolian or bedload transport.

7.47 To avoid impacts related to burial, the District will locate sand stockpiles in areas which do not coincide with freshwater and tidal wetlands or other vegetated areas of ecological importance. The location of wetlands will be based on field surveys and consultation with other Federal and state environmental agencies, as well as in-house information.

7.48 Existing vehicle routes on the barrier island will be used whenever possible, to reduce impacts to barrier island vegetation. Impacts of vehicular traffic may cause disaggregation of drift lines, as well as destruction of annual and perennial plant seedlings (Leatherman, 1988). By limiting vehicular traffic to the previously established access routes, impacts to saltmarsh, freshwater wetland, or other habitats may be avoided or substantially minimized.

7.49 Sand compaction associated with trucking activities may also affect the upland beach environment. However, negative effects are probably minimal since no discernable impacts were observed in several western Fire Island communities in 1992, which experienced a high level of vehicular traffic during beach nourishment activities.

7.50 Potential impacts to marsh areas resulting from the migration of coarser grained sand stockpile sediments by way of bedload transport will be evaluated in a subsequent NEPA document, as will the transport of fine grained sediments. Installation of sediment screens may prevent movement of larger grained material and migration of the stockpile, but will need to be examined further. Finer material which is transported by way of aeolian processes into adjacent wetlands may not pose a significant impact due to wetlands depend on finer material for maintenance of substrate.

7.51 The District will study various design options in order to reach a visually and aesthetically acceptable stockpile scheme within design limitations.

7.52 Threatened and Endangered Species. There is a potential for endangered Kemp's ridley, leatherback, and green sea turtles, as well as threatened loggerhead turtles to be present near the vicinity of the project area (borrow area locations) during the summer and early fall months (NMFS, 1993). Coordination with NMFS has resulted in agreement that if hopper dredges are utilized between mid-June to mid-November, a monitoring plan that places NMFS-approved observers onboard to determine if impacts occur will be implemented. The District will place special conditions into the Plans and Specifications forming the construction contract for the project to comply with NMFS' determination. These special conditions are set forth in Appendix A, attached.

7.53 The piping plover, Federal-listed as threatened and the State-endangered least tern utilize the barrier island. The Federal-listed threatened plant species, seabeach amaranth also has the capability to utilize the project area. The District will coordinate with Federal, state and local environmental agencies to position stockpiles in areas which are not utilized by the least tern, piping plover and seabeach amaranth. The possibility exists that a sand stockpiled may be used as nesting habitat by these shorebirds. Stockpiles which consist of sand and cobble material, exhibit a low design profile, and are near bayside tidal flats, may attract nesting piping plovers. Stockpiles with a fairly flat top may be utilized by least terns as nesting habitat. In the event that a stockpile is used as a nesting area, and then utilized for breach closure activities, there may be a loss of potential habitat.

7.54 In order to address the above possibility, the District based on consultation with the Federal, state and local environmental agencies, will examine different stockpiling siting and design options in a separate NEPA document.

7.55 Construction scheduling may necessitate fill placement during the shorebirds' nesting season (April-August). During informal consultation under Section 7 of the Endangered Species Act of 1973, as amended, USFWS concluded that the proposed Breach Contingency Plan is likely to adversely affect the piping plover and seabeach amaranth. In addition to the potential direct impacts of the associated with breach closure activities, USFWS is concerned with the potential indirect impacts resulting from the project area being potentially re-developed and re-occupied once closure is completed. The District prepared a Biological Assessment for the piping plover and seabeach amaranth in March, 1995 and initiated Formal Consultation in April, 1995. In the BA, the District proposed to provide protective measures and implement a coordinated survey/monitoring protocol (USFWS, 1995) to ensure the safety of the piping plover and seabeach

amaranth. The Biological Opinion dated July, 1995 accepted the protective measures we proposed. In addition to them, the District must consult with the USFWS for the siting and establishment of any proposed sand stockpiles. Please refer to Appendix G -(Biological Opinion) of this EA and Appendix I (Environmental Commitments) for the detailed description and required District involvement relating to the protective measures.

7.56 Cultural Resources. Stabilization of a breach should have no adverse effect on known or unknown cultural resources located on the shore. Stabilization may serve to protect sites from destruction or irreversible damage. Any sites located at the breach would have been destroyed when it was created. Exposed sites or wrecks located adjacent to a breach might be adversely affected by sand placement if fill is placed to close a breach is also placed along the shore adjacent to the breach location. These sites would require investigation prior to sand placement.

7.57 If peat layers, that may contain prehistoric remains, are exposed, there should be opportunity given (as is feasible under project conditions and as long as there is no time delay added to breach closure) to conduct, at a minimum, pedestrian surveys. Any area with potential remains should be surveyed and documented.

7.58 Considering the almost total absence of any archaeological materials from pre- and post-contact on Fire Island, at a minimum, the breach area should be surveyed by qualified archaeologist prior to any filling as long as there is no time delay added to the breach closure.

7.59 Placement fill trucked in from NEPA-approved upland sand sources or hydraulically dredged from the Federally authorized Intracoastal Waterway, or the Federally authorized channels of Fire Island, Shinnecock, and Moriches, or existing channels maintained by Suffolk County or local municipalities would not have an adverse effect on cultural resources. Fill obtained from NEPA approved sources would also have had their Section 106, NHPA compliance completed. The existing channels have been dredged in the past, destroying any potential cultural remains located within them. However, the use of heavy equipment has the potential to impact exposed sited adjacent to the breach areas.

7.60 The U.S. Army Corps of Engineers' Atlantic Ocean Borrow Areas identified for this Management Plan have not been surveyed for the remains of shipwrecks or for the potential for submerged prehistoric landsurfaces. Use of an offshore borrow area has the potential to impact cultural resources located within these borrow sites.

7.61 Historic Preservation Guidelines. The Advisory Council

Guidelines for the Protection of Historic Properties, 36 CFR Part 800.12 provides guidance for emergency undertakings. This section pertains to emergency undertakings that will be implemented in 30 days after the disaster or emergency takes place. If an action plan will not be implemented within 30 days, then any plan developed to close the breach will be reviewed in accordance with 36 CFR Part 800.4 through 800.6, which govern the Section 106, NHPA process.

Emergency Undertakings

1. 36 Part 800.12(a)/36 CFR Part 78. According to section 8 00.12(a), a Federal agency head may elect to waive historic preservation responsibilities in accordance with 36 CFR Part 78, "Waiver of Federal Agency Responsibilities Under Section 110 of the National Historic Preservation Act" (Appendix B). Section 110 of the NHPA provides regulations concerning historic properties under the ownership or on property owned by any Federal Agency. Under 36 CFR Part 78, a Federal Agency may waive all requirements of Section 110 of the NHPA, in whole or in part, in the event of a major natural disaster or an imminent threat to the national security. Waiver of Section 110 responsibilities, however, does not affect an agency's Section 106 responsibilities for taking into account the effects of emergency activities on properties included in or eligible for the NRHP and for affording the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on such activities.

Federal Agencies making use of the waiver authority shall follow the notice requirements specified in 36 CFR Part 78.4 and copies of the notice shall be sent to the ACHP and the New York State Historic Preservation Office (NYSHPO) and will be reviewed by the Secretary of the Interior for a determination of consistency in accordance with 36 CFR Part 78.5.

For this management plan, this waiver could only be utilized for events that occur within the bounds of the Fire Island National Seashore, which is Federal property managed by the National Park Service, for breach closure plans implemented in this area within 30 days of the emergency. No other Federally owned property exists within the breach management plan project area.

2. 36 CFR Part 800.12(b) and (c). According to this portion of the regulation, when an Agency Official proposes an emergency undertaking as a necessary response to a disaster declared by the President or State Governor and Section 800.12(a) does not apply, then the Agency Official may satisfy Section 106 by notifying the ACHP and the NYSHPO of the emergency undertaking and affording them an opportunity to comment within seven days. In addition, section 800.12(b) also applies to imminent

threat to public health or safety as a result of natural disaster or emergency declared by a local government's chief executive officer or legislative body, provided that if the ACHP or the NYSHPO object, the Agency Official shall then comply with Sections 800.4 through 800.6, which oversee Section 106 compliance .

This section would be utilized for most of the breach closures implemented within 30 days of an emergency.

7.62 Breach Closure Activities under Corps Emergency Guidance. Without breach closure as per the Breach Contingency Plan, the typical response to a barrier island breach would be similar to the 1993 Westhampton Emergency Breach Closure, which took about 11 months to fill as opposed to 2.5 months. This increased duration could permit the breach to enlarge in time, thereby allowing potentially more damage to occur within the developed areas (including emergency services) as well to the estuarine resources. 7.61. The sand spits and tidal deltas that will be potentially created may provide highly suitable feeding and nesting shorebird habitat. A breach closure 11-12 months later may impact the shorebirds that begin to utilize the newly formed habitat.

7.63 Cultural Resources.

Non-Emergency (more than 30 days) Actions

For actions that will not be implemented within 30 days of an emergency and therefore, do not qualify for waivers of the Section 106 process, the following processes should be followed for complying with Section 106.

1. If a breach is filled using sand derived from a NEPA approved sand source or stockpile or from previously dredged inlets and no sites were uncovered by t he process that created the breach on areas adjacent to the breach, then this project should h ave no effect on cultural resources. The NYSHPO should be notified of the proposed action and the determination of No Effect.

2. If a breach is filled using sand derived from the NEPA sand source or stockpile or previously dredged inlets, but cultural resources are uncovered on the beach adjacent to a breach by the processes that created it, they may be impacted by sand placement used to close the breach. The site should be investigated by the appropriate personnel prior to construction. This investigation will determine if the site is potentially eligible for the NRHP, if sand placement will have an adverse impact on it, and if additional studies may be

required. The results of this investigation will be coordinated with NYSHPO. If, upon further investigation, the site is either not eligible for the NRHP or will not be adversely impacted by sand placement the NYSHPO will be notified of the action, the existence of the cultural resource, the status of its NRHP eligibility and the determination of no effect or no adverse effect. If the site is eligible for the NRHP and will be impacted by sand placement, then the alternative of avoidance of the site by the action to fill the breach will be explored. If the site can be avoided, then a determination of no adverse effect can be applied to the site. If avoidance is unfeasible, then the NYSHPO and the ACHP shall be advised and a plan for the documentation of the eligible properties will be developed and undertaken prior to construction of the action plan in that portion of the project area.

3. If the only feasible sand source for filling the breach is the use of the identified offshore borrow areas, then the project may have an adverse effect on cultural resources located within the borrow area. Prior to construction, the borrow areas would require a remote sensing survey, including side scan sonar, magnetometer and sub-bottom profiling, to determine if any potential NRHP eligible remains of shipwrecks are present within the borrow area. Avoidance of all targets identified by this survey would be required during dredging. All work would be coordinated with the NYSHPO. If avoidance of targets is not feasible, then the targets would require additional investigations in the form of underwater archaeological surveys to determine which targets are the remains of wrecks and their NRHP eligibility. A plan for all NRHP wrecks documentation would be developed and implemented in coordination with the NYSHPO and the ACHP.

8.00 COORDINATION

8.01 The proposed breach contingency plan has been coordinated with the following agencies:

National Park Service
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
National Marine Fisheries Service
New York Department of Environmental Conservation
New York Department of State
  Coastal Zone Management Program
New York State Office of Parks, Recreation and
  Historic Preservation (SHPO)
Suffolk County Executive
Town of Southampton
Town of Brookhaven

Town of Islip
Village of Southampton
Village of Westhampton Beach
Village of Westhampton Dunes
Village of Quogue
Village of Bellport
Village of Patchogue
Village of Brightwaters
Village of Ocean Beach
Village of Saltaire
Other Municipalities

8.02 A Fish and Wildlife Coordination Act Report has been prepared by the USFWS-Long Island Field Office and is attached as Appendix C.

8.03 The Water Quality Certificate (WQC) application process is ongoing. A Section 404 (b)(1) evaluation is attached as Appendix D.

8.04 The proposed project's Consistency Determination for the applicable the New York State Coastal Zone Management (CZM) Policies is attached as Appendix E.

8.05 Coordination with the New York SHPO, in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, is ongoing.

8.06 Table 1 indicates the relationships of the proposed plan to various Federal environmental protection and requirements statutes and Executive Orders, as well as state and local requirements. This project sets forth a plan for an emergency action to be taken. The project reconstructs the impacted portion of the barrier island system, returning it to conditions which existed prior to the occurrence of a breach. For these reasons, it is concluded that implementation of this plan for emergency breach closure is not a major federal action significantly affecting the quality of the human environment, and that a fully coordinated Environmental Impact Statement (EIS) will not be necessary in order for this action to proceed in accordance with the National Environmental Policy Act.

9.00 CONCLUSION

9.01 The goal of the Breach Contingency Plan is to establish guidelines for responding to barrier island breaches that occur within the barrier island system extending from Fire Island Inlet to Southampton. Decisions following the occurrence of a barrier breach must be constituted efficiently. There is a need for a rapid response and the coordination necessary in order to commence closure activities. These include, but not limited to, the New York

State request for emergency assistance, field survey by the Breach Contingency Plan Team, preparation of the Plans and Specifications, and the contract award.

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APPENDIX A

SUBMITTALS

Environmental Protection Plan

Prior to commencement of the work, the Contractor shall submit to the Contracting Officer for approval his proposed environmental protection plan. This shall be followed by a meeting with representatives of the Contracting Officer to develop mutual understandings relative to compliance with this provision and administration of the environmental protection program. Approval of the Contractor's plan for environmental protection will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants.

Hopper Dredge Basket or Screens

Drawings showing the design and method of fabrication of the basket or screen used for hopper dredging as specified in this section shall be submitted for approval prior to the commencement of dredging activities.

PROTECTION OF FISH AND WILDLIFE

GENERAL

The Contractor shall at all times perform all work and take such steps required to minimize interference with or disturbance to fish and wildlife. The Contractor will not be permitted to alter water flows or otherwise disturb native habitat adjacent to the work area which in the opinion of the Contracting Officer, are critical to fish and wildlife. The Contractor shall anticipate orders to stop work at the discretion of the Contracting Officer if any fish or wildlife are endangered by construction activities.

Piping Plover, Roseate and Least Terns

The Contractor shall take all reasonable precautions to ensure the work is not conducted in a manner harmful to the Federally endangered piping plover and threatened roseate tern, as well as the state threatened least terns. The Contractor's personnel shall be aware of the presence of such species and be sufficiently familiar with them so as to minimize contact with them during normal construction hours. A Corps biologist will survey the work sites on a weekly basis from 1 May - 15 July to determine the presence of nest sites or nesting colonies of these birds. The Contractor will provide suitable transport to the biologist to reach the western project site across the breach. If no such sites are identified then no further action by the Contractor will be required. However, all such sites/colonies

that are identified will be fenced off by the Contractor within 24 hours of notification. The fencing shall remain in place through 15 August, unless otherwise notified by the Corps biologist that it could be removed sooner. The fence will consist of string fencing at a height of roughly four feet fastened to suitable poles placed no further than 15 feet apart. The fencing shall not impede the free movement of birds (including chicks unable to fly) into or out of the nest/colony and shall encompass an area of at least 100 yards around the nest/colony. The Corps biologist will determine the adequacy of fencing so erected, and determine the need for additional protection. The zone within the fencing shall be OFF LIMITS to all personnel at all times, and noise or activity of a continual nature shall be kept to a minimum in the area adjacent to the fencing. For piping plover nests, there shall be no restrictions to access to the waters edge by chicks during the period 1 June -15 August. This applies to pipelines as well as equipment storage and personnel. Any pipes placed along the beach between the nest site and the water shall be buried for 100 yards.

Seabeach amaranth

The Contractor shall take all reasonable precautions to ensure the work is not conducted in a manner harmful to the seabeach amaranth which is currently proposed for listing as Federally endangered or threatened. The Contractor's personnel shall be aware of the presence of such species and be sufficiently familiar with them so as to minimize contact with them during normal construction hours. A Corps biologist will survey the work sites on a weekly basis from 1 May - 15 July to determine the presence of seabeach amaranth. The Contractor will provide suitable transport to the biologist to reach the western project site across the breach. If no such sites are identified then no further action by the Contractor will be required. However, all such sites that are identified will be fenced off by the Contractor within 24 hours of notification. The fencing shall remain in place through the end of construction. The fence will consist of snow fencing at a height of three feet around a 10 foot diameter. The Corps biologist will determine the adequacy of fencing so erected, and determine the need for additional protection. The zone within the fencing shall be OFF LIMITS to all personnel at all times.

Sea Turtle Modifications (Hopper Dredging Only)

If a hopper dredge is used for any contract work, the Contractor shall comply with the following requirements. The intent of the following requirements are to monitor and document the presence of and document the effect of dredging on sea turtles. The intent of the following requirements is not to stop the dredging operations upon the encounter with sea turtles.

General

The Contractor shall obtain the services of a Government observer to observe for the presence of sea turtles and/or sea turtle parts being pulled into the hopper during dredging operations (as per the attached Scope of Work). The Contractor shall provide a sleeping quarter with a bathroom and shower facility for a Government observer; accommodations and meals for the observer in accordance with SPECIAL CLAUSE: ACCOMMODATIONS AND MEALS FOR GOVERNMENT INSPECTORS; and transportation for the observers in accordance with SPECIAL CLAUSE: INSPECTION. These requirements shall be in addition to those for the Government Inspectors.

Hopper Dredge Modifications

baskets oBaskets or Screens with the hopper inflow or overflows. The baskets or screening shall have an opening of approximately 4 inches by 4 inches. The design and method of fabrication will depend on the construction of the dredge used and shall provide 100 percent coverage of all dredged material for either hopper inflow or overflow. The baskets or screening shall remain in place during all dredging operations.

b. Floodlights: The Contractor shall install and maintain floodlights to allow the Government observers to safely monitor the baskets or screening.

c. Dragheads: Bars, screening or grates placed over the draghead shall have an opening of not less than 18 inches by 24 inches.

d. Freezer: The Contractor shall provide sufficient space in a freezer aboard the dredge for storing any dead sea turtle or turtle parts collected during the dredging operations.

Special Dredging Operation Requirements

The Contractor shall allow sufficient time between each dredging cycle for the Government observers for: inspection of the baskets or screens for turtles and/or turtle parts; documentation; and collection and labeling of any dead turtle or turtle parts for freezing.

MEASUREMENT AND PAYMENT

Sea Turtle Modifications

The work specified in this section for the sea turtle modifications will not be measured for payment and all costs

in connection therewith shall be included in the contract lump sum price for Bid Item No. XX, "Sea Turtle Modifications"

SPECIAL CLAUSES

INSPECTION (APR 1965)

The inspectors will direct the maintenance of the gauges, ranges, location marks and limit marks in proper order and position; but the presence of the inspector shall not relieve the Contractor or responsibility for the proper execution of the work in accordance with the specifications. The Contractor will be required:

a. To furnish, on the request of the Contracting Officer or any inspector, the use of such boats, boatmen, laborers, a part of the ordinary and usual equipment and crew of the dredging plant as may be reasonably necessary in inspecting and supervising the work.

b. To furnish, on the request of the Contracting Officer or any inspector, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant and to from the disposal areas. Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor.

ACCOMMODATIONS AND MEALS FOR GOVERNMENT INSPECTORS (1965 APR OCE)

a. The Contractor shall furnish regularly to Government inspectors on board the dredge or other craft upon which they are employed a suitable separate room for office. The room shall be fully equipped and maintained to the satisfaction of the Contracting Officer; it shall be properly heated, ventilated, and lighted, and shall have a desk which can be locked, and a chair for each inspector, and washing conveniences. The entire cost to the Contractor for furnishing, equipping and maintaining the foregoing accommodations shall be included in the contract price. If the Contractor fails to meet these requirements, the facilities referred to above will be secured by the Contracting Officer, and the cost thereof will be deducted from payments to the Contractor.

b. If the Contractor maintains on this work an establishment for the subsistence of his own employees, he shall, when requested, furnish to inspectors employed on the

work, and to all Government agents who may visit the work on official business, meals of a quality satisfactory to the Contracting Officer. The meals furnished will be paid for by the Government at a rate of $5.00 per person each meal.

PROTECTION OF CULTURAL RESOURCES. No known archaeological or historic properties have been identified. Should unanticipated archaeological materials be encountered during the course of any project activities, the Contractor shall cease work in the vicinity of the discovery. The Contractor shall immediately report the find to the Contracting Officer so that the proper authorities may be notified.

SCOPE OF WORK FOR SEA TURTLE OBSERVER

SCOPE OF WORK

TURTLE OBSERVATION ABOARD HOPPER DREDGES

1.0 PROJECT:

2.0 GENERAL: Under Section 7 of the Endangered Species Act of 1977 (16 U.S.C. 1531 et seq.) the National Marine Fisheries Service is now requiring sea turtle monitoring for all hopper dredging activities conducted during June though mid November within the Corps of Engineers jurisdiction. This is the first step in establishing an Endangered Species Observer Program in the District. The observer will work closely with the dredge crew to identify and record dredging incidents with sea turtles and other endangered species. Sampling for turtle and turtle parts will be accomplished through observation and inspection of the hopper along with screening of the intake structure or hopper overflow.

Endangered species are those whose prospects for survival are in immediate danger because of a loss or change of habitat, over-exploitation, predation, competition or disease. Threatened species are those that may become endangered if conditions surrounding the species begin or continue to deteriorate. Species may be classified on a Federal or State basis.

There are six species of endangered whales that have been observed along the Atlantic coast, and occasionally within the Delaware Bay. These include the sperm whale (Physeter catodon), fin whale (Balaenoptera physalus), humpback whale (Megaptera novaeangliae), blue Whale (Balaenoptera musculus), sei whale (Balaenoptera borealis) and black right whale (Balaena glacialis). These are migratory animals that travel north and south along the Atlantic coast.

There are five species of threatened or endangered sea turtles that occasionally enter the project area. These include the endangered Kemp's ridley turtle(Lepidochelys kempii),leatherback turtle (Dermochelys coriacea) and hawksbill turtle (Eretmochelys imbricata), and the threatened green turtle (Chelonia mydas) and loggerhead turtle (Caretta caretta). With the exception of the loggerhead these species breed further south from Florida through the Caribbean and the Gulf of Mexico. The loggerhead may have historically nested along the coastal barrier beaches. No known nesting sites are within the project area.

.0 PURPOSE: This Scope of Work (SOW) outlines the Contractor's requirements for conducting sea turtle monitoring on board the dredge _____. The Contractor will supply an endangered species observer(s) to be placed aboard the dredging plant to monitor for the presence of sea turtles. The Contractor must demonstrate previous experience in endangered species monitoring. Observers must be certified in writing as acceptable by NMFS for endangered species observing and handling. The data collected during this project will be used, along with additional data to prepare a biological assessment on endangered species occuring within the District.

.0 DETAILED REQUIREMENTS: The Contractor shall complete the following tasks:

.1 SITE DESCRIPTION/BACKGROUND: Observer will report to _____ (actual date will depend on contract arrangements between the Corps and the dredge operator). The observer will stay on board the hopper dredge and conduct monitoring of the baskets or screening over either the inflow or overflow for sea turtles. The hopper dredge will be placing approximately 500,000 cubic yards of sand _____. Sand will be pumped from a borrow area approximately feet offshore of the beach, south of the project location.

.2 ENDANGERED SPECIES PROTECTION: The Contractor shall provide education materials to dredge personnel on sea turtles

The contractor shall advise dredge personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles , that are protected under the Endangered Species Act Act.

.3 GENERAL PROVISIONS OF OBSERVER WATCH: One observer is to be placed on board the dredge to provide observation coverage approximately 25 percent of the total dredging time. Observers will check for the presence of any sea turtles or fragments of sea turtles entrained with the dredged materials brought on board the dredge or seen in the vicinity of the vessel. The dredge operator will provide acceptable devices to screen inflow discharge water. Screens will remain in place and functional while the observer is on board the dredge. The dredge crew will assist the observer as needed to maintain the screening devices in working order. This may include

assistance in emptying the specimen collecting baskets of clay and other accumulated debris at the end of each cut. Time will be made available for cleaning and examining the baskets.

..4 OBSERVATION PERIOD: The sea turtle observer shall be on board the dredge during the first week of the dredging operation. Following the first week, the observer shall be on board the dredge on a biweekly basis or as appropriate so that the total aggregate time on board the dredge equals 50 percent of the total time of the dredging operation. While on board the dredge the observer shall provide the required inspection coverage on a rotating, six (6) hours on and six (6) hours off, basis. In addition, these rotating six (6) hour periods should vary from week to week. The Contractor will provide the above coverage

.5 DISPOSITION OF TURTLE PARTS: All specimens of sea turtles or their parts collected during the observation period will be described in detail and photographed. Any dead sea turtles or sea turtle parts shall be placed in plastic bags labeled to note location and time taken, and placed in a freezer (freezer space will be provided by the dredge operator). All sea turtle and sea turtle parts stored in the freezer will be collected by a Corps of Engineers representative and stored until such time as it is picked up or delivered to the National Marine Fisheries Service - Northeast Region (NMFS). Injured turtles will be held on board the dredge until such time as the trained observer decides that the turtle is ready for release or should be transported to the
for rehabilitation.

.6 REPORTING: The Contractor will follow the reporting proceedures listed below:

.6.1. A sample observation sheet is appended to the end of this section and shall be used to record each observation. A sheet shall be completed for every cycle (load), whether sea turtles are present or not. The observation sheets will be submitted on a biweekly basis to the Contracting Officer's Representative. All data in the original form shall be forwarded directly to

, within 10 days of collection, and copies of the data will be supplied to the Contracting Officer's Representative. Following completion of the project, a copy of the Contractor's log regarding sea turtles shall be forwarded to Tricia Faust.

.6.2 Continuous liaison with
shall be maintained to avoid problems with execution of this contract

and to assure compliance with prescribed Corps of Engineers' policies and procedures. It will be the responsibility of the Contractor to report all significant developments.

.6.3 A summary report of observation shall be submitted to both Ms. Colleen of NMFS and the Corps of Engineers (COE) within 7 days of the completion of the contract period.

.6.4 Any collisions with a sea turtle or sighting of any injured or incapacitated sea turtle will be reported immediately to the Corps of Engineers. The order of contact within the Corps of Engineers will be as follows:

Order of Contact of Corps Personnel
for Observer to Report
Endangered Species Death or Injury

Title	Telephone Number Work Hour	After Hours
Corps, Inspector	*	*

*

* Phone numbers will be provided upon initiation of work

.0 GOVERNMENT-FURNISHED MATERIALS: The following materials will be furnished to the Contractor:

.1 Observation sheets will be supplied by the Contracting Officer's Representative (Corps).

.2 While on board, meals and sleeping quarter with a bathroom and a shower facility will be provided by the dredge operator.

.3 Boat transportation will be provided by the dredge operator between the dredge and the mainland. Observers will strive to cooperate with existing crewboat schedules while maintaining minimum requirements of the observer contract.

.4 The dredge operator will provide the observer with a statement of dangers associated with work on board the dredge. The observer will follow these safety requirements and recommendations while on board the dredge and while in transit between the dredge and the mainland.

..5 Corps of Engineers Manual, EM 385-1-1, dated April 1981, entitled "General Safety Requirements" will be provided.

. COMPENSATION TO THE CONTRACTOR: In consideration of the performance of this undertaking, the Contractor shall be paid the amount of $ for the work described in the preceding paragraphs. This shall constitute complete payment for all services required and expenses incurred in the performance of this contract.

. PERIOD OF PERFORMANCE: The Contractor shall report to the dredge on or about as indicated in paragraph 1. The work shall be completed by . Total time for performance of this work is 60 days from the notice to proceed.

TURTLE OBSERVATION REPORTING LOG

PROJECT:

TURTLE OBSERVER NOTES

LOAD NUMBER_____ DATE_____ TIME_____

LOCATION IN CHANNEL: LATITUDE_____ LONGITUDE_____

WEATHER CONDITIONS_____

PORT BASKET CONTENTS

_____

_____

_____

_____

TURTLE OR TURTLE PARTS PRESENT YES_____ NO_____

COMMENTS AND OTHER OBSERVATIONS

_____

_____

_____

BRIDGE WATCH: TIME_____ LOCATION_____

NUMBER OF TURTLES SIGHTED_____

_____

OBSERVER'S NAME

PROJECT:

INCIDENT REPORT OF SEA TURTLE MORTALITY AND DREDGING ACTIVITIES

Species _____

Date _____

Time 24 hour clock _____

Geographic site _____

Location: Latitude _____ Longitude _____

Vessel name _____

Type of dredging activity _____

Load # _____

Sampling method _____

Location specimen recovered _____

Draghead deflector? YES_____ NO_____

Condition of Dreflector _____

Weather conditions _____

Water temp: Surface _____ Column _____

Head width _____

Plastron Length _____

Carapace S.L. Length _____

Carapace S.L. width _____

Carapace O.C. Length _____

Carapace O.C. width _____

Condition of specimen _____

Turtle tagged YES_____ NO_____

Tag # _____ Tag Date _____

Comments/other _____

Observer's Name _____

Turtle Observers

Cecelia Miles
Rt 1 Box 111 A
Fernandina Beach, FL. 32034

James R. Richardson
University of Georgia
Institute of Ecology
Ecology Building Room 126
Green Street
Athens, GA 30602-2202

Steve Morreale
Okeono Foundation
P.O. Box 776
Hampton Bays, NY 11946

Eric Martin
Applied Biology
P.O. Box 974
Jensen Beach, FL 34958-0974

Chris Slay
2 Bayveiw Street
Lubce, Maine 04652

APPENDIX B

tion. Among other things, the panel assists in the following activities:

(1) The development of policy and procedures for effectively implementing the Convention in the U.S.;

(2) The evaluation of draft U.S. nomination documents;

(3) The making of recommendations for approval of U.S. nominations;

(4) The dissemination of information on the Convention within other Federal agencies; and

(5) The promotion of increased awareness and understanding of the importance of heritage conservation.

(b) *Composition.* (1) The Federal Interagency Panel for World Heritage is composed of representatives, named by their respective agencies, from the following agencies and offices:

(i) The Office of the Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of the Interior;

(ii) The National Park Service, U.S. Department of the Interior;

(iii) The U.S. Fish and Wildlife Service, U.S. Department of the Interior;

(iv) The President's Council on Environmental Quality;

(v) The Smithsonian Institution;

(vi) The Advisory Council on Historic Preservation;

(vii) The National Oceanic and Atmospheric Administration, Department of Commerce; and

(viii) The Department of State.

(2) Additional representatives from other Federal agencies with mandates and expertise in heritage conservation may be requested to participate in the Panel from time to time.

(3) The Assistant Secretary, or his/her designee, chairs the Panel, and sets its agenda and schedule. The NPS provides staff support to the Panel.

§ 73.13 Protection of U.S. World Heritage Properties.

(a) *Requirements.* (1) Article 5 of the Convention mandates that each participating nation shall take, insofar as possible, the appropriate legal, scientific, technical, administrative, and financial measures necessary for the identification, protection, conservation, preservation, and rehabilitation of properties of outstanding universal value

(2) Title IV of Pub. L. 96-515 requires that no non-Federal property may be nominated to the World Heritage List unless its owner concurs in writing to such nomination. The nomination document for each property must include evidence of such legal protections as may be necessary to ensure preservation of the property and its environment, including, for example, restrictive covenants, easements, and other forms of protection (16 U.S.C. 470a-1).

(b) *Protection Measures for Public Properties.* For properties owned or controlled by Federal, State, and/or local governments, the following items satisfy the protection requirements outlined in paragraph (a) of this section:

(1) Written concurrence by the owner prior to nomination;

(2) The nomination document must include reference to:

(i) All legislation establishing or preserving the area; and

(ii) All existing and proposed administrative measures, including management plans, that would ensure continued satisfactory maintenance of the property and its environment; and

(3) A written statement by the owner(s) that such protection measures satisfy the requirements outlined in (a) above.

(c) *Protection Measures for Private Properties.* For properties owned or controlled by private organizations or individuals, the following items satisfy the protection requirements outlined in (a) of this section.

(1) A written covenant executed by the owner(s) prohibiting, in perpetuity, any use that is not consistent with, or which threatens or damages the property's universally significant values, or other trust or legal arrangement that has that effect; and

(2) The opinion of counsel on the legal status and enforcement of such a prohibition, including, but not limited to, enforceability by the Federal government or by interested third parties.

In addition, if the owner(s) is willing, a right of first refusal may be given for acquisition of the property, along with a guaranteed source of funding and appropriate management framework in the event of any proposed sale, succession, voluntary or involuntary transfer, or in the unlikely event that the requirements outlined above prove to be inadequate to ensure the preservation of the property's outstanding universal value.

The protection measures for each private property being considered for possible nomination to the World Heritage List will be reviewed on a case-by-case basis to ensure that the requirements set forth above fulfill the mandate of Pub. L. 96-515.

§ 73.15 International World Heritage Activities.

(a) The Assistant Secretary, and other officials as appropriate, may represent the U.S. at meetings of the World Heritage Committee, the Bureau of the World Heritage Committee, or other international organizations or agencies which have activities that relate to World Heritage.

(b) In furtherance of Article 6 of the Convention and to the extent that resources permit, the Department will encourage and provide international assistance to other nations in activities relating to the identification, protection, conservation, and preservation of cultural and natural properties. The Secretary, or his designee, may develop and make available to other nations and international organizations training in, and information concerning, professional methods and techniques for the preservation of historic and natural properties (16 U.S.C. 470d; 16 U.S.C. 1537).

(c) NPS staff, in conjunction with the Federal Interagency Panel for World Heritage, provide support for the Assistant Secretary's international activities, including the preparation of documentation, briefing papers, and position statements.

(d) The Assistant Secretary responds, on behalf of the U.S., to requests from the World Heritage Committee, international heritage conservation organizations, or other nations regarding U.S. participation in the World Heritage Convention.

§ 73.17 Public Information and Education Activities.

(a) To the extent that time and resources permit, owners of U.S. properties approved for inclusion on the World Heritage List are encouraged to publicize the status of the property, through appropriate signs, plaques, brochures, public dedication ceremonies, and interpretive displays or programs.

(b) The Department, throught the NPS, may provide guidance to owners of U.S. World Heritage properties in developing publicity, educational, and/or interpretive programs.

(c) The NPS is responsible for developing and distributing general information materials on the World Heritage Convention, including brochures, slideshows, lectures, or other presentations in order to strengthen appreciation and understanding of the importance of World Heritage as set forth in Article 27 of the Convention.

PARTS 74-77—[RESERVED]

PART 78—WAIVER OF FEDERAL AGENCY RESPONSIBILITIES UNDER SECTION 110 OF THE NATIONAL HISTORIC PRESERVATION ACT

Sec.

78.1 Authorization.
78.2 Definitions.
78.3 Federal Agency decision to waive responsibilities.
78.4 Federal Agency notice.
78.5 Review by the Secretary of the Interior.

AUTHORITY: National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 *et. seq.*

SOURCE: 50 FR 7590, Feb. 25, 1985, unless otherwise noted.

§ 78.1 Authorization.

Section 110 of the National Historic Preservation Act of 1966, as amended ("Act"), sets forth certain responsibilities of Federal agencies in carrying out the purposes of the National Historic Preservation Act of 1966. Subsection 110(j) authorizes the Secretary of the Interior to promulgate regulations under which the requirements in section 110 may be waived in whole or in

disaster or an imminent threat to the national security. Waiver of responsibilities under section 110 does not affect an agency's section 106 responsibilities for taking into account the effects of emergency activities on properties included in or eligible for the National Register of Historic Places and for affording the Advisory Council on Historic Preservation an opportunity to comment on such activities.

§ 78.2 Definitions.

Federal Agency Head means the highest administrative official of a Federal agency, or designee.

Imminent Threat to the National Security means the imminence of any natural, technological, or other occurrence which, in determination of a Federal Agency Head, because of its size or intent, seriously degrades or threatens the national security of the United States such that an emergency action would be impeded if the Federal Agency were to concurrently meet its historic preservation responsibilities under section 110 of the National Historic Preservation Act, as amended.

Major Natural Disaster means any hurricane, tornado, storm, flood, high water, tidal wave, earthquake, volcanic eruption, landslide, snowstorm, fire, explosion, or other catastrophe, in any part of the United States which, in the determination of a Federal Agency Head, causes damage of sufficient severity and magnitude such that an emergency action is necessary to the preservation of human life or property, and that such emergency action would be impeded if the Federal Agency were to concurrently meet its historic preservation responsibilities under section 110 of the National Historic Preservation Act, as amended.

Secretary means Secretary of the Interior, or designee.

§ 78.3 Federal Agency decision to waive responsibilities.

(a) When a Federal Agency Head determines, under extraordinary circumstances, that there is an imminent threat of a major natural disaster or an imminent threat to the national security such that an emergency action human life or property, and that such emergency action would be impeded if the Federal Agency were to concurrently meet its historic preservation responsibilities under section 110 of the Act, that Federal Agency Head may immediately waive all or part of those responsibilities, subject to the procedures set forth herein and provided that the agency head implements such measures or procedures as are possible in the circumstances to avoid or minimize harm to historic properties.

(b) Waiver under § 78.3(a) shall not exceed the period of time during which the emergency circumstances necessitating the waiver exist.

(c) In no event shall a Federal Agency Head delay an emergency action necessary to the preservation of human life or property for the purpose of complying with the requirements in section 110 of the Act.

§ 78.4 Federal Agency notice.

(a) Federal Agency Heads making use of the waiver authority shall, within 12 days of the effective date of the waiver, notify the Secretary of the Interior, in writing, identifying:

(1) The major natural disaster or imminent threat to the national security necessitating the waiver and the emergency action taken;

(2) The period of effect of the waiver;

(3) Which provisions of section 110 have been waived;

(4) The geographic area to which the waiver applies; and

(5) The measures and procedures used to avoid or minimize harm to historic properties under the conditions necessitating the waiver.

(b) Information copies of the notice under § 78.4(a) shall be forwarded by the Federal Agency Head to the Advisory Council on Historic Preservation and the appropriate State Historic Preservation Officer.

§ 78.5 Review by the Secretary of the Interior.

(a) If the Secretary considers that all or part of the agency's decision as outlined under §78.4(a) is inconsistent

...ulations for use of the waiver under extraordinary circumstances, the Secretary shall notify the Agency Head and the Director of the Office of Management and Budget within 5 days of receipt of the Federal Agency notice under § 78.4(a) of termination of the waiver, or make appropriate recommendations for modifications of the waiver's use. Termination of a waiver by the Secretary is final.

(b) If the waiver is still in effect at the time the Federal Agency Head receives recommendations from the Secretary, the Agency Head shall consider the recommendations and any comments received from the Advisory Council and the State Historic Preservation Officer before deciding whether to continue, withdraw, or modify the waiver. The Federal Agency Head shall respond to recommendations received from the Secretary either accepting or rejecting those recommendations, and, where recommendations are rejected, explaining the reasons for such a decision. Information copies of such response shall be forwarded by the Federal Agency Head to the Advisory Council on Historic Preservation and the appropriate State Historic Preservation Officer.

(c) If the waiver is no longer in effect at the time the Federal Agency Head receives recommendations from the Secretary or comments from the Advisory Council or the State Historic Preservation Officer, the Federal Agency Head should consider such recommendations and comments in similar future emergencies.

PART 79—CURATION OF FEDERALLY-OWNED AND ADMINISTERED ARCHAEOLOGICAL COLLECTIONS

Sec.

79.1 Purpose.
79.2 Authority.
79.3 Applicability.
79.4 Definitions.
79.5 Management and preservation of collections.
79.6 Methods to secure curatorial services.
79.7 Methods to fund curatorial services.
79.8 Terms and conditions to include in contracts, memoranda and agreements for curatorial services.
79.9 Standards to determine when a repository possesses the capability to provide adequate long-term curatorial services.
79.10 Use of collections.
79.11 Conduct of inspections and inventories.

Appendix A to part 79—Example of a Deed of Gift

Appendix B to part 79—Example of a Memorandum of Understanding for Curatorial Services for a Federally-Owned Collection

Appendix C to part 79—Example of a Short-Term Loan Agreement for a Federally-Owned Collection

Authority: 16 U.S.C. 470*aa-mm*, 16 U.S.C. 470 *et seq.*

Source: 55 FR 37630, Sept. 12, 1990, unless otherwise noted.

§ 79.1 Purpose.

(a) The regulations in this part establish definitions, standards, procedures and guidelines to be followed by Federal agencies to preserve collections of prehistoric and historic material remains, and associated records, recovered under the authority of the Antiquities Act (16 U.S.C. 431-433), the Reservoir Salvage Act (16 U.S.C. 469-469c), section 110 of the National Historic Preservation Act (16 U.S.C. 470*h*-2) or the Archaeological Resources Protection Act (16 U.S.C. 470*aa-mm*). They establish:

(1) Procedures and guidelines to manage and preserve collections;

(2) Terms and conditions for Federal agencies to include in contracts, memoranda, agreements or other written instruments with repositories for curatorial services;

(3) Standards to determine when a repository has the capability to provide long-term curatorial services; and

(4) Guidelines to provide access to, loan and otherwise use collections.

(b) The regulations in this part contain three appendices that provide additional guidance for use by the Federal Agency Official.

(1) Appendix A to these regulations contains an example of an agreement between a Federal agency and a non-Federal owner of material remains who is donating the remains to the Federal agency.

(2) Appendix B to these regulations contains an example of a memoran-

APPENDIX C

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

TAKE PRIDE IN AMERICA

June 14, 1995

Colonel Thomas A. York
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Attention: Mr. Peter Weppler

Dear Colonel York:

This constitutes the U.S. Fish and Wildlife Service's (Service) FINAL Fish and Wildlife Coordination Act Report entitled "Fire Island Inlet to Montauk Point, Long Island, New York, Breach Contingency Plan." This report is prepared pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and is a revised edition of the Draft fish and Wildlife Coordination Act Report that was prepared by the Service in May of 1995.

This final report incorporates the review comments of the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (Corps). The NYSDEC letter of concurrence and their review comments on the draft report are contained within Appendix B of this final report. Specific comments made by the Corps on the draft report and the Service's response to these comments can be found in Appendix D and E respectively.

Impacts of the proposed project on the Federally listed piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) are not contained within this report. During informal Section 7 consultation under the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 15 31 et seq.), the Service concluded that the project is likely to adversely affect these two species. Therefore, the Corps has prepared a biological assessment and the Service will be preparing appropriate analysis of the impacts of the proposed project on these species under formal consultation procedures of Section 7 of the Endangered Species Act.

The Service is appreciative of the comments provided by your agency during the review of the draft report. Should you have any questions, contact Robert Murray, of my Long Island Field Office staff at (516) 581-2941.

Sincerely,

Sherry W. Morgan

Sherry W. Morgan
Field Supervisor

Enclosure

cc: NYSDEC, Stony Brook, NY
NYSDEC, Albany, NY
NMFS, Gloucester, MA
NMFS, Milford, CT
USEPA, New York, NY

FISH AND WILDLIFE COORDINATION ACT REPORT
SECTION 2(b)

FIRE ISLAND INLET TO MONTAUK POINT, LONG ISLAND, NEW YORK

BREACH CONTINGENCY PLAN

Prepared for:
U.S. Army Corps of Engineers
New York District
New York, New York

Prepared by:
Department of the Interior
U.S. Fish and Wildlife Service
Long Island Field Office
Islip, New York

Preparers: Robert G. Murray and Steven T. Papa
New York Field Office Supervisor: Sherry W. Morgan

June 1995

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I. INTRODUCTION

This is the U.S. Fish and Wildlife Service's (Service) FINAL Fish and Wildlife Coordination Act Report describing the potential environmental impacts on fish and wildlife resources that may result from the U.S. Army Corps of Engineers' (Corps) implementation of the "Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York - Breach Contingency Plan (BCP)." This report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The purpose of the Corps' BCP is to establish new breach closure guidelines to be implemented upon the occurrence of a breach or breaches along the Fire Island Inlet to Montauk Point project area. In effect, the BCP is proposed as a means to close a breach or breaches as quickly as possible in order to reduce the costs associated with delayed closure and to minimize further storm damage. Existing breach closure guidelines under Public Law 84-99 have exhibited a typical response time of approximately 11 months between breach occurrence and breach closure. The BCP guidelines are proposed as an expedited breach closure action plan providing for a 2.5 month breach closure process between breach occurrence and breach closure (U.S. Army Corps of Engineers 1994, 1995).

The purpose of this report is to document the project's potential impacts upon fish and wildlife resources and to recommend measures that should be taken to conserve and protect fish and wildlife resources in light of those impacts.

Specifically, this report will describe the proposed project, provide an overview of barrier island dynamics, and discuss the impacts that breaches can have on fish and wildlife resources. This report will also describe the fish and wildlife resources within the affected project area, including Great South Bay, Moriches Bay, and Shinnecock Bay, Fire Island, Westhampton Beach Barrier Island, the Hampton's Beaches and the designated borrow areas and stock pile areas, and discuss the potential environmental impacts upon these resources both with and without implementation of the BCP. At the conclusion of this report, the Service has identified mitigation measures to avoid, minimize, and compensate for project related impacts.

Impacts of the proposed project on the Federally listed piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) are not contained within this report. During informal Section 7 consultation under the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 15 31 et seq.), the Service concluded that the project is likely to adversely affect these two species. Therefore, the Corps has prepared a biological assessment and the Service is preparing appropriate analysis of the impacts of the proposed BCP on these species under formal consultation procedures of Section 7 of the Endangered Species Act. The Service is anticipating completing the Section 7 Biological Opinion in June of 1995.

In developing this final report, review comments on the draft report provided by both the New York State Department of Environmental Conservation (NYSDEC) and the Corps have been incorporated. Appendix B contains the NYSDEC letter of concurrence and specific comments regarding their review of the draft report. Appendix C contains the Service's response to the NYSDEC review. Appendix D contains the Corps' comments regarding their review of the draft report. Appendix E contains the Service's response to the Corps review.

II. ESSENTIAL TERMINOLOGY

Overwash: A process by which waves break through barrier dunes carrying beach sediments inland and, in severe circumstances, across the island to the bayside shoreline. Overwash tends to erode or flatten a barrier island dune field, may clear or bury dune and inland vegetation, and may also result in the creation of depositional fans extending the bayside shoreline toward the mainland. Overwash is one of the key processes controlling the creation of bayside barrier wetlands and barrier island migration.

Breach: A condition where severe overwash forms a channel which permits the exchange of ocean a bay waters only under normal high tide conditions. Tidal incursion does not occur during low tide. Over time, a breach may close or develop into an inlet. The likelihood that a breach may form an inlet depends on the hydrodynamics of the back bays. as well as the hydrodynamic and morphologic characteristics of other associated and existing inlets.

Permanent Inlet: A channel cut through a barrier island which allows for the free exchange of ocean and bay waters during all stages of the tide. Over time, inlets may grow, migrate, or close. As with a breach, the lifespan of an inlet will depend on the hydrodynamics of the back bays, as well as the hydrodynamic and morphologic characteristics of other associated and existing inlets.

III. DESCRIPTION OF THE PROPOSED PROJECT

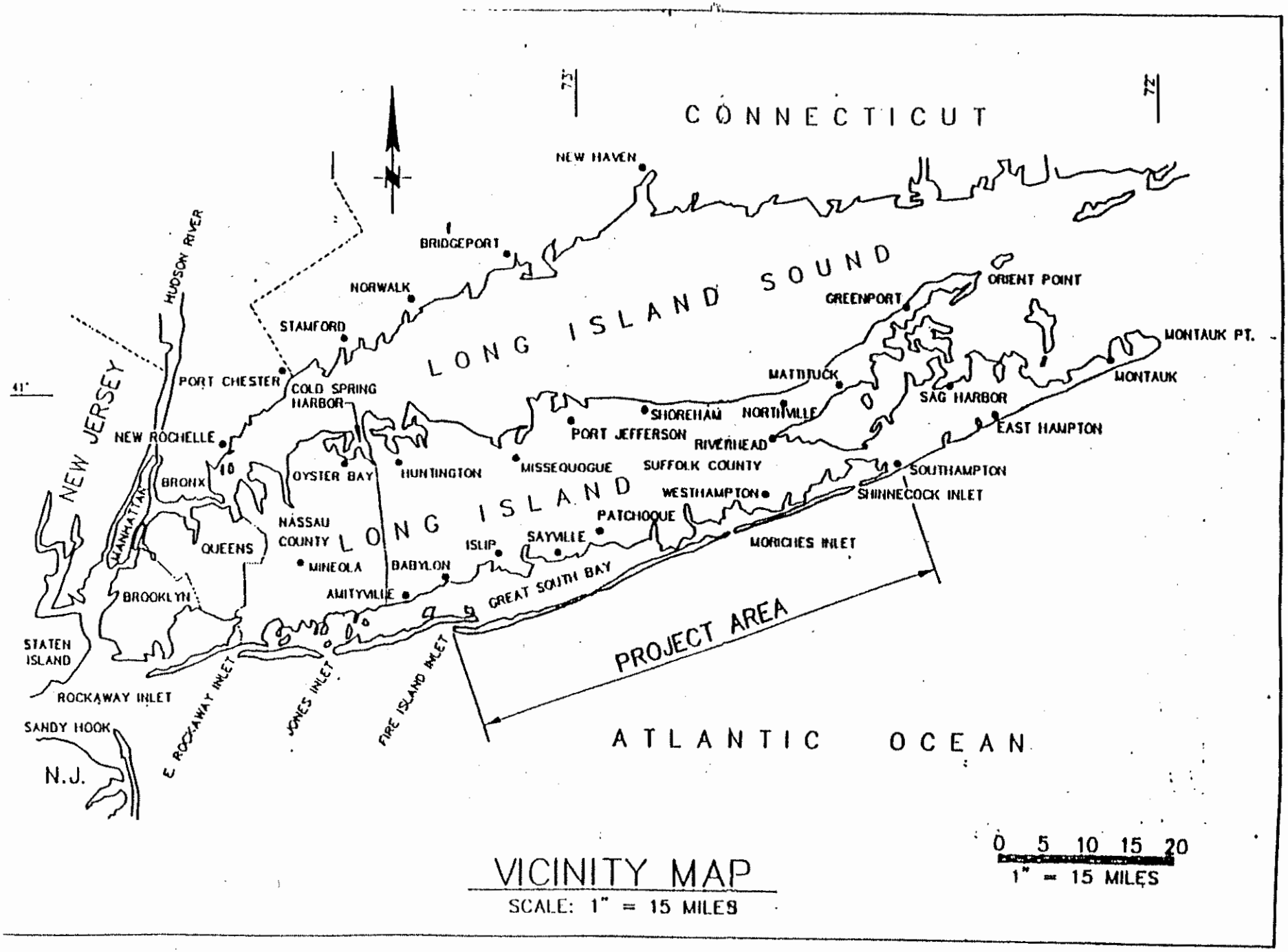
A. General Information

The project area addressed by the Breach Contingency Plan is the barrier island chain located along the Atlantic shore from Fire Island Inlet to Southampton, in Suffolk County, Long Island, New York (Figure 1). This project is within the area of the "Fire Island Inlet to Montauk Point Beach Erosion Control and Hurricane Protection Project," which is a comprehensive program of dune reconstruction and beach stabilization currently undergoing reformulation analysis.

In December of 1992, and March of 1993, severe northeasters resulted in coastal storm damage along the shores of Long Island and Fire Island and breach and inlet creation at Westhampton Beach. The resulting beach and dune erosion has left many areas within Long Island's barrier islands vulnerable to future breaching. This condition has prompted NYSDEC, along with various congressional representatives and their affected municipal officials, to request Federal Government assistance in developing a plan to respond to barrier island breach formations which may occur prior to completion of the previously mentioned reformulation study or implementation of short-term interim dune construction and beach nourishment plans (U.S. Army Corps of Engineers 1994).

B. Project Description

Under the proposed BCP, breach closure planning would be initiated within 72 hours of cessation of the storm event for areas outside of the Fire Island National Seashore which includes areas west of Watch Hill and east of Smith Point County Park on Fire Island. Breaches which occur within the Fire Island National Seashore (FINS) would be monitored for indications of natural breach closure. If there is no indication that a breach within the



VICINITY MAP

SCALE: 1" = 15 MILES

FIGURE 1: Breach Contingency Plan Project Area
(U.S. Army Corps of Engineers 1994)

FINS will close naturally, or if an increase in the tidal range in the Great South Bay poses significant threats of flooding to developments on the south shore of Long Island and on Fire Island, the breach will be artificially closed.

The BCP is proposed as an alternative to existing breach closure guidelines under Public Law 84-99 which have exhibited a typical response time of approximately 11 months between breach occurrence and breach closure. The BCP guidelines are proposed as an expedited breach closure action plan providing for a 2.5 month breach closure process between breach occurrence and breach closure. While both the BCP and the existing breach closure process utilize the same breach fill engineering dimensions, the only difference between these two plans is that breach filling will occur more rapidly under the BCP than under existing procedures. For example, the 1993 Westhampton emergency breach closure occurred under Public Law 84-99 procedures and took about 11 months at a cost of approximately 7 million dollars. The Corps estimates that if the BCP was implemented for the original closing of the breach at Westhampton, closure would have been initiated in three weeks and closed within 30-60 days (U.S. Army Corps of Engineers 1995).

The intent of the BCP is to fill breaches to match existing shoreline profiles of Great South Bay, Moriches Bay and Shinnecock Bay to the north and the Atlantic Ocean to the south. Breaches would be filled by establishing a minimum berm width of 150 feet with a maximum elevation of 9 feet National Geodetic Vertical Datum (NGVD) in the centerline of the barrier island between the back-bay and the Atlantic Ocean. The fill areas would blend into existing topography west and east of the breach fill areas, thus, the fill material should match adjacent existing mean high water lines on the ocean and bay sides. Placement fill grain size shall be equal or greater than the grain size of the existing beach at the breach site.

Fill material may be trucked in from approved upland sand sources or strategically stockpiled on the barrier island chain. The Corps has identified three potential stockpile areas at Robert Moses State Park, Sailor's Haven, and at Old Inlet in the Wilderness Area of Fire Island National Seashore (Figure 2a through 2d). The stockpile site at Robert Moses State Park is already established. Stockpile locations for the remaining two sites will be established in upland areas. Upland shorebird nesting areas will not be used as stockpile areas. Fill material may also be obtained by a hydraulic dredging operation from one of the following locations:

1. U.S. Army Corps of Engineers' Atlantic Ocean Borrow Areas (Figure 2a through 2d to a minimum depth of 2 feet below the existing grade and no greater than 20 feet below the existing bottom.

2. The Federally authorized Intracoastal Waterway at a depth no greater than 2 feet below the authorized channel depth.

3. The Federally authorized channels of Fire Island, Moriches and Shinnecock Inlets at a depth no greater than 2 feet below the authorized depth of the utilized Federal Channel.

4. Existing channels maintained by Suffolk County at a depth no greater than 2 feet below the permitted depth of the utilized channel.

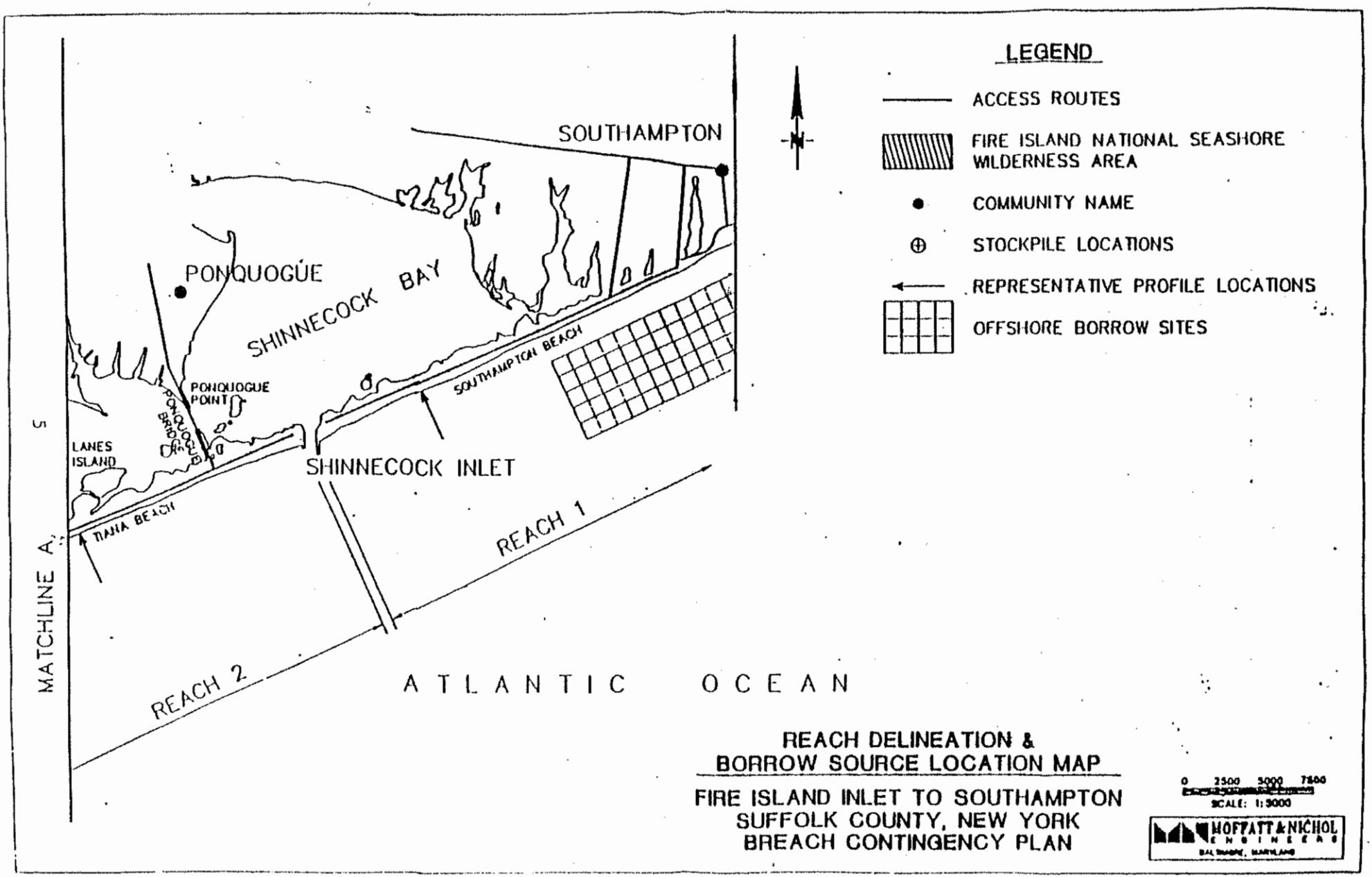


FIGURE 2: Proposed Stockpile Locations and Offshore Borrow Areas

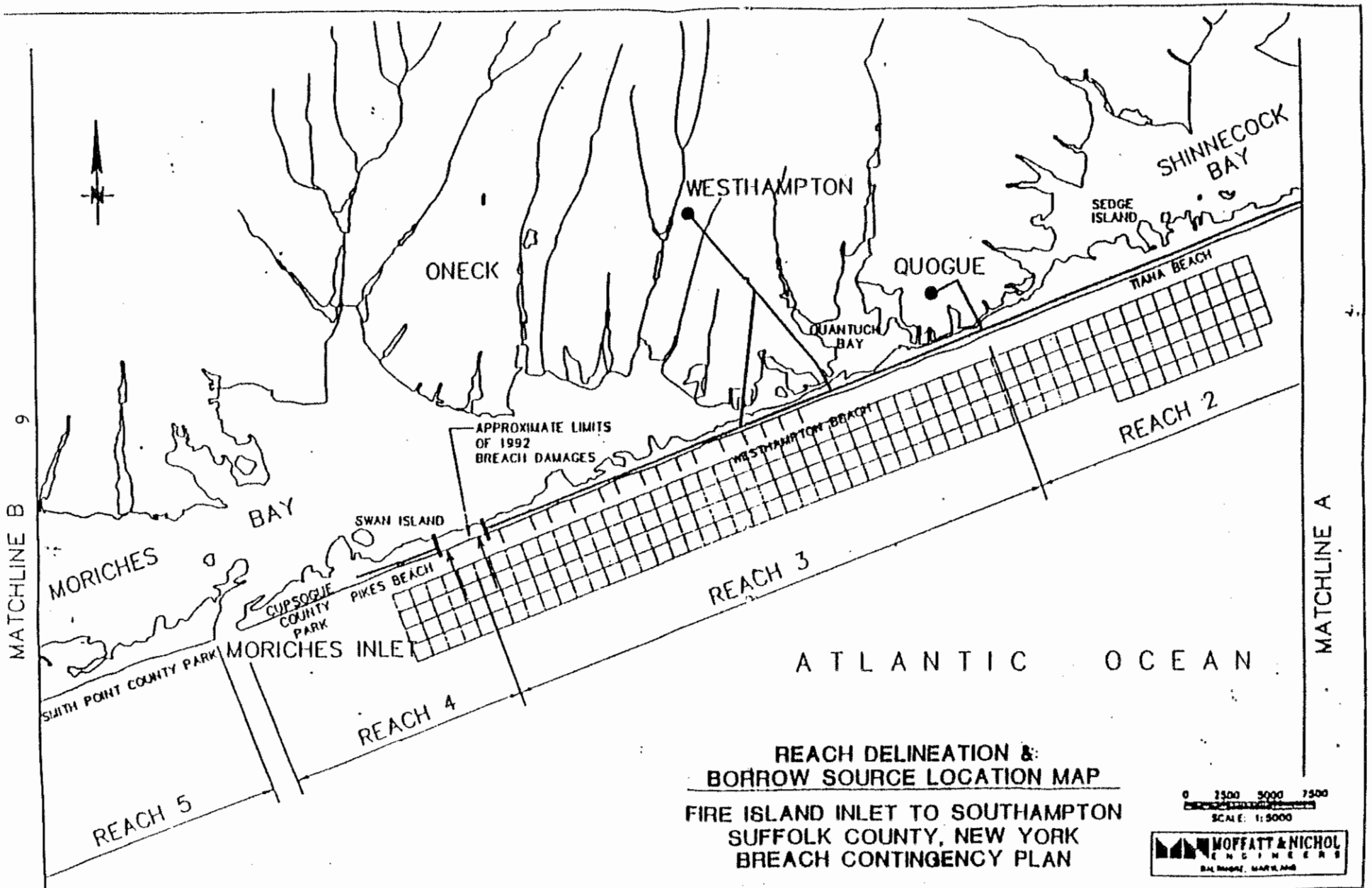


Figure 2(b): Proposed Stockpile Locations and Offshore Borrow Areas

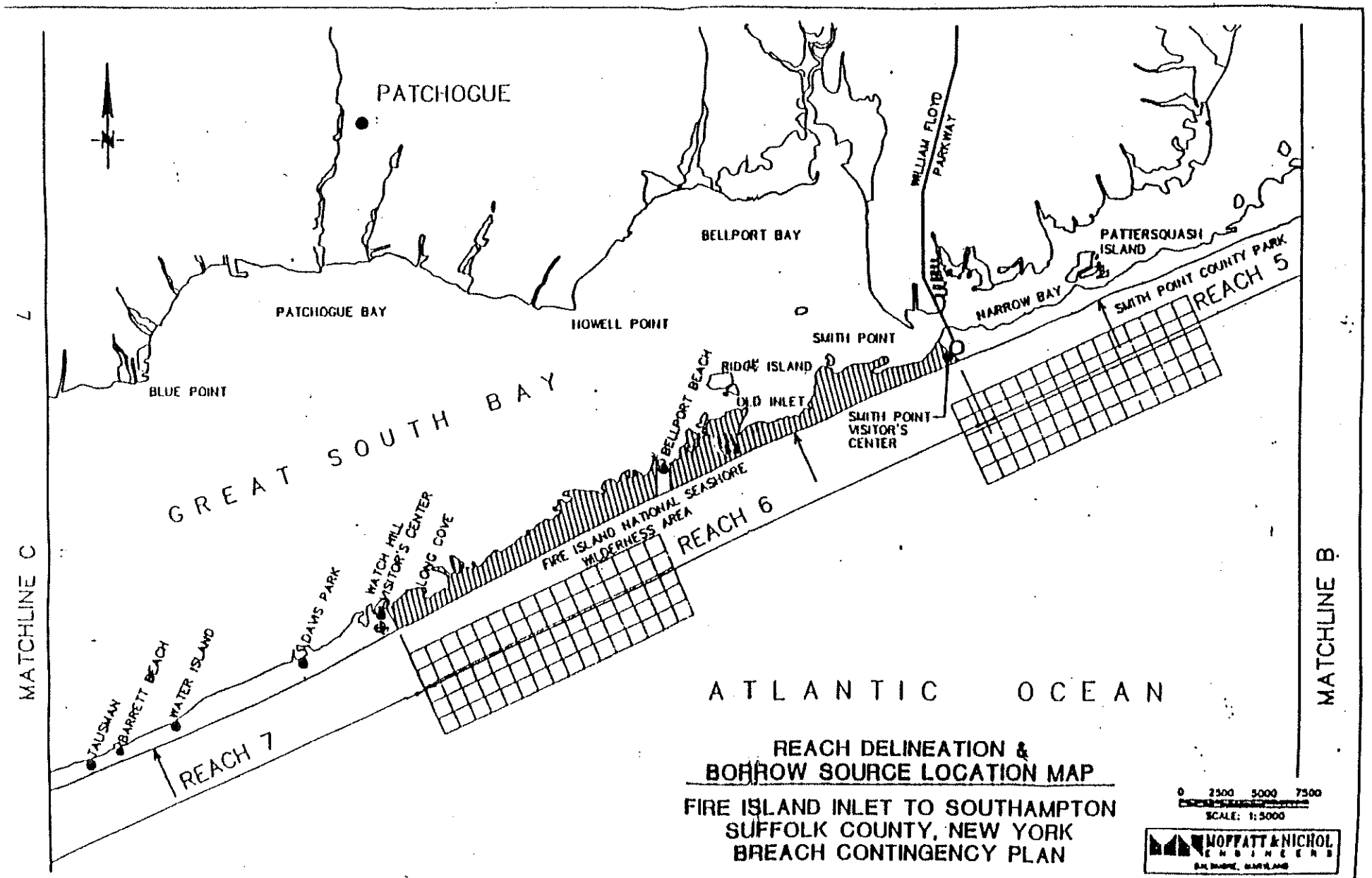


Figure 2(c): Proposed Stockpile Location and Offshore Borrow Areas

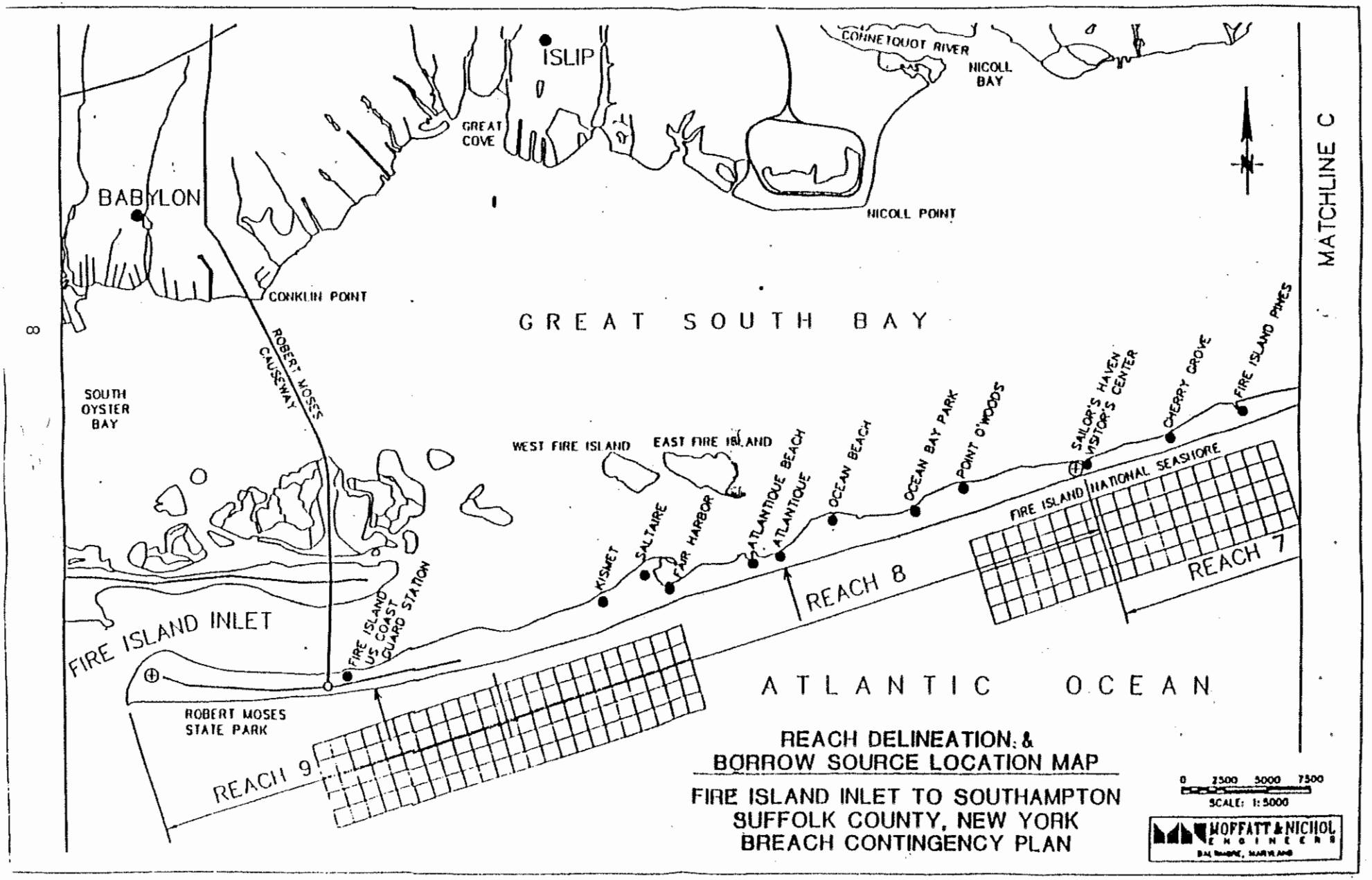


Figure 2(d): Proposed Stockpile Locations and Offshore Borrow Areas (U.S. Army Corps of Engineers 1994)

5. Harbor or channel areas maintained by local municipalities at a depth no greater than 2 feet below the permitted depth of the utilized area.

Borrow areas that have been most recently dredged, including the borrow areas used to fill the breach at Westhampton and to obtain material for breach fill efforts at various communities along FINS, will be the first areas to be used in the event of a breach. However, depending on the location of a future breach, logistics may dictate that new borrow sites within the designated borrow areas be used.

IV. BARRIER ISLAND DYNAMICS

Barrier beaches are dynamic landforms that undergo constant change. Winds, waves, currents, and storm events are the erosional and depositional forces which shape barrier beaches. However, rising sea level is the primary driving force on coastal barriers forcing the movement of the barrier landward (Leatherman 1988, U.S. Department of the Interior 1983). Increased flooding and erosion result from rising sea levels on coastal landforms.

In addition, the gradual downward sloping of the Atlantic Coastal plain into the sea plays a major role in barrier island migration. With a given rise in sea level, a coastal barrier migrates landward up that gentle slope. Without such a landward retreat, the barrier island would be inundated with water and would drown (U.S. Department of the Interior 1983). This process is frequently termed erosion, but the term erosion is not accurately descriptive for barrier beaches (U.S. Department of the Interior 1983).

The following discussion has been excerpted from the U.S. Department of the Interior's 1983 Final Environmental Statement entitled "Undeveloped Coastal Barriers" (U.S. Department of the Interior 1983).

> What happens to the whole barrier landform is not erosion in the sense that the barrier is being chopped away and gradually disappearing; barriers retreat or migrate, and they do so as an entire ecological unit. In marked contrast to sea cliffs which erode from fixed positions, coastal barriers move themselves backward onto marsh and lagoonal deposits as they climb the slope of the continental shelf.
>
> As the barrier landform retreats, its transported sand buries parts of its system, such as salt marshes, but new marshes develop further landward on the leading edge of the new sediment. Buried salt marsh frequently reappears on the other side of the barrier, exposed at low tide on the ocean side of retreating barriers. Core samples show marsh peat from underneath the dunes, furnishing further evidence that a barrier beach is migrating over old marshes. Sometimes major storms, in scouring a beach's foreshore, will exhume stumps from an earlier maritime forest.
>
> Although a barrier's movement is in response to the steadily rising sea level, the pace of its migration is not steady. Its migration depends in large part upon crucial events which occur during storms: inlet formation and overwash. These are the primary mechanisms by which sand is transported landward from the ocean front, along with a third process... wind blown dune migration.

All three processes can be resisted by stabilized dune systems. Formation and stabilization of well-developed dunes can significantly moderate a barrier's dynamics of change. But rising sea level makes it a certainty that some storm will strike with a surge powerful enough to breach the dunes and sweep vast quantities of sand toward the backside of the island. If conditions are right, a storm surge also may punch an inlet through a barrier.

Inlets contribute to barrier island retreat. During the battering of a severe storm, a new inlet can be broken through narrow, and perhaps weakened, places in a barrier beach.... Enormous quantities of sand can be swept through a new inlet as it ruptures. The inlet will continue to funnel more sand into the bay until days, months, or perhaps even years later, it will choke with sand and close. Then new marshes form on the flood tidal deltas. The new result of these dynamics is the further retreat of the barrier system with all ecological units retained.

Barrier beaches in active retreat actually "roll over" themselves into the lagoon or bay behind. The most common mechanism for accomplishing this is overwash--the breaching of dunes by a severe storm surge which carries beach and dune sand onto the backdune region. Depending on the storm's magnitude and the island's width, the overwash area of newly transported sand may go no further than the dunes, or it may spread onto the marshes or into the lagoon.

The frequency of overwash depends on the rate of dune building, storm frequency and tidal range. Following an overwash, the wind will begin winnowing the new deposits to form new dunes. Prevailing winds tend to blow unstabilized sand off the washover fan back toward the ocean and into the newly developing dunes. Over time, the new dunes begin to take shape and perhaps stabilize, only to be knocked down and pushed back by the next major overwash. In general, major overwashes occur only during exceptionally severe storms.

Wind-driven dunes are also factors in the retreat of some barriers, especially if they are oriented across prevailing winds. In some cases migrating dunes can cover existing marshes and move into the adjacent bay. Human activity, such as the disturbance of dune vegetation that acts as a stabilizer, has caused or accelerated the rate of dune migration on many barrier beaches.

The several mechanisms of retreat result in water and wind-borne sand being swept landward and upward over older, back-barrier environments, continually raising the base level of the barrier. This process has the effect of maintaining shallow water conditions in the adjacent estuary, even as sea level rises to submerge waterfront areas of the mainland.

Barrier beaches will not be submerged as long as retreat is possible. The key to a barrier beach's survival is its ability to respond to rising sea level in a slow, gradual shoreline retreat, boosted occasionally by storm activity. The ecosystems of the landform can react to these natural processes; the movement can take place as an ecological unit.

All of the sand transport processes have been involved in varying degrees in the creation, maintenance and migration of the coastal barrier systems for more than

several thousand years.... "Stability", however, is a comparative term when applied to barrier landforms. In spite of human efforts, the costal barriers still evolve and still move in response to oceanic forces.

Inlets... are an integral part of most coastal barrier systems and a major means by which sand is transported landward across a migrating coastal barrier system. They respond to changing conditions, opening and closing, and perhaps migrating a long distance along some barrier's shoreline. They may come near to equilibrium conditions if a balance is achieved between the tidal flows out through the channel, and the longshore transport of sand which tends to close the inlet. All the factors at work constantly adjust as the inlet cuts a deeper or wider swath or changes configuration.

Inlet stability is related to the strength of the longshore current versus the tide's capability for flushing. Inlets tend to close unless a river with substantial outflow of water is near. When open, however, an inlet becomes either a partial or complete obstacle to the longshore transport of sediment. An inlet may trap sand or pass by a large part of the longshore sand transport, depending on local conditions. Under the conditions of small tidal flow and a high sand transport rate, an inlet will close eventually.

Inlets are, of course, also outlets: estuarine and lagoonal waters use their channels. They are often formed when storm tides force water across a coastal barrier, thereby elevating the bay's water. When the storm moves on, the trapped bay water is forced seaward by a change in wind direction, creating a breach in the barrier. An inlet is the product if the channel is cut below mean sea level and then permits a free exchange of bay and ocean water.

An ebb tidal delta is created from the sand which is transported through the inlet with an ebbing tide. It then serves as a natural sediment bypass system as other sediment moves under the water from one side of the inlet to the other.

A flood tidal delta is created by sedimentation which was interrupted by a rising tide's current as it moved along a beach, and was then transported through an inlet for deposit in the bay. It is usually much larger than an ebb tidal delta as a bay is a relatively low energy environment. The flood tidal delta exhibits a deltaic pattern upon full development, and when an inlet closes or migrates, it becomes prime substrate for salt marsh development.

Inlets are essential to a barrier island's migration due to the development of flood tidal deltas, for part of the sand moving along the coast is carried through the inlet and into the estuary by the flood's currents. Because the water is less disturbed in the bay than along the ocean shore, a tidal delta is formed as the sand settles out. (Of course, some sediment moves back to the ocean when the current reverses, but usually the sediment deposited in the bay is more than what goes back out to sea.) From a flood tidal delta's growth rate, an indication of the amount of sand being caught from the inlet's sand transport can be gained.

Barrier ecosystems seem to rely mainly upon inlet dynamics for landward displacement. Migrating and temporary inlets provide the bases, i.e., the large

> flood tidal deltas upon which the barrier environments are established. These actually become the substrates for marsh growth and, thereby, extend the bay shoreline landward. Wind carried and overwash sediments then are deposited on top of this accretionary base....
>
> Overwashes literally push sand across a barrier from the beach and dune zones. The frequency with which it occurs depends, in large part, on the exposure and orientation of the barrier, frequency of major storms, wave energy, tidal range, and the ecological reactions of vegetation. In places where sea level rise is relatively rapid and storms occur with relative severity, overwash is a frequent phenomenon and may happen several times every year.
>
> Coastal barriers migrate through the overwash process when large lengths of the barrier are overtopped, sand is moved into the bay, and the landward limit of the barrier is extended. The sediments from overwash, however, are usually deposited on top of the living salt marsh which developed earlier on ancient flood tide deltas.

In summation, there is evidence that a cycle of inlet formation, marsh development, and overwash occurs on most barrier islands as they migrate landward (Leatherman 1988). This landward migration of barrier islands seems dependent upon inlet dynamics and the associated formation of flood tidal deltas, for it is the flood tidal delta which serves as the platform for future marsh development and the landward extension of the barrier beach's bay shoreline.

V. BREACH FORMATION IMPACTS ON FISH AND WILDLIFE RESOURCES

Much of the relevant literature pertaining to biological and environmental studies and inventories of the project area and adjacent habitats is compiled in two recent reports. New York Sea Grant (NYSG) (1993) provides an overview of the biological and environmental studies of the back-barrier bays and nearshore habitats within and adjacent to the Fire Island National Seashore. Cashin Associates, Inc. (1993) discuss the potential environmental impacts of barrier breaches on Long Island's south shore bays based on an assessment of the scientific and "grey" literature pertaining to inlet research specific to Long Island, as well as other coastal areas in the United States and abroad. The above study was authorized in January 1993, by the Governor's Coastal Erosion Task Force. Both studies recognize that while many biological and physical studies have been conducted in the south shore bays, only a few have specifically examined the environmental and physical impacts of breaches and inlets on bay ecology and physical dynamics.

The following sections briefly describe the impacts of a breach or new inlet on bay salinity and the potential affects that breaches may have on the fish and wildlife resources of Great South Bay, Moriches Bay, and Shinnecock Bay. The resources of concern include anadromous fish, waterfowl and shorebirds, benthic invertebrates and wetland habitats. As reported in the literature, the formation of new inlets or breaches may affect the back-barrier bays in the following ways: 1) increased flushing rate and lower residence times which may lead to improved water quality conditions; 2) creation of new subtidal and intertidal areas (e.g., flood tidal deltas, sand spits, back barrier flats, and salt marshes) which may serve as fish and wildlife habitat; 3) elimination of productive wetland and eelgrass habitats through burial by overwash sediments, or changes in sedimentation and/or current regimes; 4) potential increases in tidal range, which may lead to wetland and beach

erosion on the bay side, and 5) changes in salinity and current regimes which may influence distribution and abundance patterns of benthic fauna and other organisms (NYSG 1993; Cashin Associates, Inc. 1993).

A. Bay Salinity

Salinity in the back bays is influenced primarily by tidal exchange and freshwater inflow which is determined by groundwater flow rates, rainfall, stream flow, and freshwater runoff. Salinity increases in eastern Great South Bay, Moriches Bay, and Shinnecock Bay were reported in response to the opening of Moriches Inlet in 1931 and again in the early 1950s (Woods Hole Oceanographic Institute 1951; Glancy 1956; Turner 1983). Results of numerical modelling studies by Pritchard and Gomez-Reyes (1986) indicated that bay-wide salinity would increase if a new inlet was formed. Changes in salinity due to a breach may not be constant throughout the back-barrier bays as suggested by Conley (1994) who evaluated the effects of the breach at Westhampton Beach in 1992 (known as Little Pikes Inlet) on water salinity in Moriches Bay. In his study, an increase in salinity was shown at Speonk Point located directly north of the new inlet, however, no change was recorded at Forge Point near the western end of Moriches Bay. In order to more closely examine the potential effects of breaches and new inlets on bay salinity, baseline and breach salinity and freshwater inflow data would need to be studied.

B. Finfish

New York Sea Grant (1993) speculated on the potential impacts a breach would have on finfishes of Great South Bay. They suggested that slight variations in salinity would probably have little effect on the major fishes of the bay since most of the resident and migratory fish are euryhaline and are able to withstand a wide range of salinities.

Changes in sedimentation patterns which result in the formation of sandy bottom habitat may be beneficial to some species, for example, American sandlance (*Ammodytes americanus*), winter flounder (*Pleuronectes americanus*), Atlantic silverside (*Menidia*), and killifish (*Fundulus* spp.). Loss of vegetated wetlands due to a breach may represent a loss of spawning habitat for certain finfishes (e.g., sticklebacks). However, other species may be attracted to the newly created sandy habitat.

C. Waterfowl and Shorebirds

Beck et al. (1974) showed that major waterfowl feeding areas corresponded to eelgrass beds in the Great South Bay. However, non-vegetated bottoms also represent foraging habitat for waterfowl and wading birds. Waterfowl which forage in eelgrass beds will likely relocate to other vegetated bottom areas in the event that eelgrass habitats are negatively impacted due to a breach or new inlet formation. Sandy shores and shallow bottom areas which may be created by storms which bury salt marsh or eel grass beds would likely be used by shorebirds as foraging areas.

D. Shellfish and Benthic Invertebrates

Changes in the physical properties of the back-barrier bays may have an impact on the benthic resources (NYSG 1993). A number of studies have been undertaken on the biology of the hard clam (*Mercenaria mercenaria*) in the Great South Bay and Moriches

Bay (e.g., Greene 1978; Kassner 1982; Bricelj and Malouf 1984; Cerrato and Wallace 1989) due to its importance as a recreational and commercial fishery resource (McHugh and Ginter 1978; U.S. Fish and Wildlife Service 1983 and 1991). As a result of its significance, the potential positive and negative effects of breaches or new inlet formation on the distribution, growth, reproduction, development, predation, and competition of hard clams are discussed here. While the hard clam is an important resource, other shellfish and invertebrate species are also found in the back-barrier bays and are important food sources for migrating and resident waterfowl and shorebird species, as well as indicators of general ecological "health" of the bay. A general discussion of the potential impacts due to a breach on those species is also given here.

Overall, salinity within estuaries has a major affect on hard clam distribution (as well as most invertebrate species), with the upstream penetration of hard clams limited by lower salinity (Wells 1957; Pratt et al. 1992; Cashin Associates, Inc. 1993). Throughout the coastal waters of the northeast, adult and larval hard clams have been observed in salinities ranging from 15 to 35 parts per thousand (ppt) (Belding 1931; Curley et al. 1972; MacKenzie 1979). In the Great South Bay, USEPA (1982) found hard clams in a wide range of salinities.

Optimum salinity for embryonic, larval and veliger growth and survival ranges from 20 to 27.5 ppt (Carriker 1961; Castagna and Chanley 1973; MacKenzie 1979). Greene (1978) showed higher growth rates of individual clams in the vicinity of Fire Island Inlet compared to clams monitored in the bay. These rate increases were attributed to increased food levels and dissolved oxygen concentrations. However, other physical and geological factors such as salinity and substrate type could not be ruled out as contributing factors to higher growth rates (Cashin Associates, Inc. 1993).

An increase in salinity may favor the introduction of certain invertebrate species which may compete with the larval and adult hard clams for space, food, and oxygen on a small-scale. Potential competitors of the hard clam in the Great South Bay include the gem clam (*Gemma gemma*), soft clam (*Mya arenaria*), blue mussel (*Mytilus edulis*), slipper shell (*Crepidula fornicata* and *C. convexa*), the filter feeding echinoderm (*Sclerodactyla briaerus*), razor clam (*Ensis directus*), and false quahog (*Pitar morrhuana*) (USEPA 1982).

In a study examining the potential effects of salinity increases in the Great South Bay on hard clam predator species, USEPA (1982) indicated that increases in salinity may also cause an increase in the distribution and abundance of certain predator species including the whelks (*Busycon canaliculatum* and *B.carica*), moon snail (*Polinices duplicatus*), calico crab (*Ovalipes occelatus*), oyster drills (*Eupleura caudata* and *Urosalpinx cinerea*), and hermit crab (*Pagurus longicarpus* and *P. pollicaris*) which prey on larval and adult hard clams (USEPA 1982). In the above study, predator species for which little or no changes in distribution and abundance was expected included starfish (*Asterias forbesi* and *A. Vulgaris*), mud crab (*Dyspanopeus sayi*), and blue crab (*Callinectes sapidus*). Most of these species are limited in their range by lower salinities, but effects of other environmental factors are also important and must be considered. Salinity tolerance of a species can vary in relation to temperature, species acclimation, and species stage of development or age (USEPA 1982). For example, USEPA (1982) reports that salinity and temperature are the primary environmental characteristics influencing starfish abundance in the Great South Bay.

The increased flushing rate associated with a new inlet may create better water quality conditions. Ryther (1952) reported that poor water quality conditions in Moriches Bay, resulting from an invasion of "small form" phytoplankton species, improved in response to the opening of a new inlet in December 1951.

Increases in tidal exchange may affect sedimentation and erosion rates and patterns in the back-bay. Increased sedimentation or erosion may elevate suspended sediment concentrations, leading to decreases in filtration rates of hard clams (Pratt et al. 1992). In simulated storm event conditions in which suspended sediment concentrations reached 193 mg/L, filtration and shell growth rates of hard clams were decreased (Turner and Miller 1991). Bricelj and Malouf (1984) reported that very low suspended sediment concentrations (5 mg/l silt) had no effect on hard clam filtration rates. They observed that relatively higher silt concentrations of 20 mg/l and 40 mg/l caused reductions in particle filtration rates by 31% and 52%, respectively.

Physical disturbance of the bottom sediments from natural or man-made events can result in destruction of individual benthic organisms and communities (e.g., through burial, suffocation, etc.), and may cause major alteration of habitat (Levinton 1982; Cerrato 1986). Following a large disturbance, an orderly sequence of species occurs (termed succession) (Levinton 1982), beginning with the colonization of the affected habitat by species with high reproductive and colonization potential (termed fugitive or opportunistic species). Over time, these opportunistic species decline due to several factors which may include competition, predation, or impacts resulting from biogenically altered habitats and are replaced by later successional stage species known as equilibrium species. Table 1 lists the attributes of early and late stages of succession.

Biological field studies examining the effects of breaches and inlets on bay ecology in the study area are few. Cerrato (1986) collected seasonal data on benthic species between May 1981 to May 1982. This period followed the closure of a breach which occurred just east of Moriches Inlet in January 1980 and represented the first major recruitment period after closure of the breach. Efforts to close the breach were initiated in October 1980 and the work was completed by mid-December 1980 (Cerrato 1986). In his study, Cerrato (1986) reported high average seasonal abundances [3 to 5 times higher than earlier reported by O'Connor (1972) for Moriches Bay] and diversity of benthic fauna in Moriches Bay. A downward trend in opportunistic species was reported by Cerrato (1986) during his sampling period and was attributed to the potential environmental effects of breach opening and closure.

Benthic species which presently occur in the inlet environments will likely occur in the vicinity of a breach or new inlet (NYSG 1993). Greene (1978) grouped benthic species of the south shore bays into higher (>28 ppt) and lower (<28 ppt) salinity assemblages corresponding to proximity to the inlets. Higher salinity species in the Great South Bay include the blue mussel (*Mytilus edulis*) and tellin clam (*Tellina agilis*), the polychaetes, *Nepthys picta* and *Nereis arenaceondonta*, and the hermit crab, *Pagurus longicarpus*, lady crab (*Ovalipes ocellatus*), and the starfish (*Asterias forbesii*). Lower salinity assemblages are characterized by the following species: *Mercenaria mercenaria*, *Mulinia lateralis*, *Busycotypus canaliculatum*, *Sabellaria vulgaris*, *Trichobranchus glacilis*, *Retusa canaliculata*, and *Corophium tuberculatum* (NYSG 1993).

E. Wetlands and Vegetated Habitats

Alterations of sedimentation and current patterns and rates, as well as tidal level, due to a breach or new inlet may affect salt marsh development (NYSG 1993). Overwash events are also an important mechanism affecting salt marsh development. In an evaluation of aerial photography and vegetation and elevation records of Nauset Spit, Massachusetts, Zaremba and Leatherman (1984) showed that back-barrier salt marshes exposed to frequent overwash or strong bay-side currents did not support salt marsh vegetation. These authors also noted that, overall, shrub communities did not recover from overwash burial; however, some individual plants were able to survive partial burial. In general, recovery of major low and high salt marsh plant species (i.e., *Spartina patens* and *S. alterniflora*) depended on the degree of burial and marsh elevation prior to burial. Salt marsh plants which experience deep burial (>33 cm) did not recover. Rather those areas were colonized by dune plants (e.g., *Ammophila breviligulata*) (Zaremba and Leatherman 1984).

Earlier studies of the distribution and abundance of eelgrass (*Zostera marina*) in the south shore bays were conducted by Jones and Schubel (1978 and 1980) and Greene et al. (1981). These studies show that most of the eelgrass beds are located in the southern part of the Great South Bay. Turbidity and salinity increases may affect eelgrass distribution in the Great South Bay. As suggested in NYSG (1993), light is most likely the primary limiting environmental factor influencing the distribution of seagrass meadows in Great South Bay. As a result, increased suspended sediment concentrations due to a breach or new inlet may reduce irradiance levels and negatively impact eelgrass growth. Changes may also affect competition between seagrasses and seaweeds in the bay (Thorne-Miller et al 1983).

VI. ENVIRONMENTAL RESOURCES OF THE AFFECTED PROJECT AREA

The lands and waters within the proposed project area are owned by various interests and are subject to various uses. The Federal government (Department of the Interior, National Park Service, [NPS]) has jurisdiction over the area included within the boundaries of the Fire Island National Seashore (FINS). The New York State government has jurisdiction over Robert Moses State Park (Office of Parks, Recreation and Historic Preservation), tidal waters (bays) (Department of Environmental Conservation) and submerged lands offshore to the three mile limit (Department of State). The Suffolk County government (Department of Parks and Recreation) has jurisdiction over county parks located at Smith Point, Moriches and Shinnecock Inlets, and small parcels of shorefront land at various locations. The remaining land is held by private landowners located in Towns of Southampton, Brookhaven, Islip and Villages of Easthampton, Southampton, Westhampton Dunes, Westhampton Beach, Quogue, Bellport, Patchogue, Brightwaters, Ocean Beach, Saltaire, and local municipalities (U.S. Army Corps of Engineers 1995).

The proposed project will affect the terrestrial, estuarine, and marine environments of the project area. Tables 2 and 3 present a variety of physical information regarding Great South Bay, Moriches Bay, and Shinnecock Bay and the inlets associated with these bays.

A. Federally Listed Endangered and Threatened Species

As stated previously, impacts of the proposed project on the Federally listed piping plover and seabeach amaranth are not contained within this report. During informal Section 7

consultation under the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 15 31 et seq.), the Service concluded that the project is likely to adversely affect these two species. Therefore, the Corps has prepared a biological assessment and the Service is preparing an appropriate analysis of the impacts of the proposed BCP on these species under formal consultation procedures of Section 7 of the Endangered Species Act. The Service is anticipating completing the Section 7 Biological Opinion in June of 1995.

The nearshore waters of Long Island, including the proposed project area, may contain both Federally listed endangered and threatened species of sea turtles during summer and early fall months. Endangered species of sea turtles which may be present in the area of the proposed operations include Kemp's ridley (*Lepidochelys kempi*), leatherback (*Dermochelys coriacea*), and green (*Chelonia mydas*). A threatened species known to occur in the vicinity is the loggerhead sea turtle (*Caretta caretta*). Principal responsibility for these species is vested with the National Marine Fisheries Service (NMFS), who must be notified about the proposed project under Section 7 consultation requirements of the Endangered Species Act.

B. Fish and Wildlife Resources of the Barrier Island Ecosystem

The U.S. Fish and Wildlife Service prepared a baseline terrestrial, estuarine, and marine environmental inventory of the fish and wildlife resources of the Fire Island Inlet to Montauk Point study area in 1983 (U.S. Fish and Wildlife Service 1983). The terrestrial component of this study included herpetofauna, avifauna, and mammals.

Fowler's Toad (*Bufo woodhousei fowleri*) can be found at freshwater ponds near the primary dune throughout the south shore study area. Eastern spadefood toads (*Scaphiopus holbrooki*) are found only at Napeague Beach in Easthampton throughout the interdune area and at the seaward edge of the pitch pine woodland. Spring peepers (*Hyla crucifer*) are abundant at all freshwater ponds except for the seasonal ponds on the barrier islands at Shinnecock and Moriches Inlets and those at Napeague Beach. Their presence appears to be influenced by the existence of permanent freshwater outside the reach of salt spray and where shrubs and common reeds (*Phragmites australis*) provide cover at the edges of the ponds. Common snapping turtles (*Chelydra serpentina*) are abundant in the permanent fresh water ponds. Eastern painted turtles (*Kinosternon picta*) share the same habitats with the snapping turtles. The eastern box turtle (*Terrapene carolina*) spend most of their time in the woodlands or in the transition zone between woodlands and the interdune zone. Only one species of snake, the eastern garter snake (*Thamnophis sirtalis*), was observed in the study area in the vicinity of freshwater ponds, homes, and housing developments (U.S. Fish and Wildlife Service 1983).

The Fire Island Inlet to Montauk Point study area is a region of major importance to birds and is utilized extensively by migratory species (U.S. Fish and Wildlife Service 1983). Over 260 species of birds have been documented within the project area (Bull 1974). Many of these species occur in the project area only during spring and fall coastal migration. Most of the avifauna on Long Island's south shore and barrier beaches is dependent on specific habitat types for their existence, including salt and freshwater marshes, interdune swales, and beach berm. Activities that significantly alter the existing environment can lead to significant changes in the local avifaunal community (U.S. Fish and Wildlife Service 1983).

The coastal beaches within the project area can generically be divided into an upper zone, intertidal zone, and a nearshore subtidal zone. The upper beach zone extends from areas seaward of the seaward toe of a dune to just above the mean high water line. This area is rarely inundated except during storms and spring high tide events. The food pyramid of the upper beach community rests primarily upon beach wrack. Sand fleas (*Talorchestia* spp.) are the dominant life form of the typical upper beach zone.

Generally, species diversity and abundance in the upper beach zone is limited and distribution is patchy (Naqvi and Pullen 1982). However, this zone provides suitable loafing, foraging, nesting, and brood rearing habitat for several species of shorebirds, including piping plovers and least terns (listed as an endangered species by the State of New York).

The intertidal zone is alternately exposed and submerged as a result of tidal fluctuations, and is subject to the turbulence of waves and currents, resulting in shifting substrates. Although few species can withstand the stresses caused by being alternately exposed and submerged, those species that do tolerate such conditions are often abundant (Naqvi and Pullen 1982). Migrating and resident shorebirds, including several species identified in Table 4, feed upon the fauna of the intertidal zone which may include the mole-crab (*Emerita talpoida*), amphipods (*Acathohaustorius* spp.), and polychaetes (U.S. Fish and Wildlife Service 1993(a)).

The nearshore subtidal zone is defined as extending from the low tide mark to the lower limit of wave action (Perry 1985). This area is continuously flooded and is more physically and environmentally stable than the intertidal zone. Shellfish and crustaceans that may inhabit this general area include the little surf clam (*Mulinia lateralis*), razor clam, surf clam soft shell clam, hard-shelled clam, blue crab, lady crab and American lobster (*Homarus americanus*) (U.S. Fish and Wildlife Service 1993(b)).

Other nearshore subtidal benthic macrofauna documented as occurring in southwest Long Island include another smaller clam, *Tellina agilis*, the sand dollar (*Echinarachnius parma*), amphipods (*Protohaustarius deichmaae, Unicola irrorata*), and polychaetes (*Sthenelais limicola, Lumbrineris fragilis, Spiophanes bombyx*), all of which constitute a medium to coarse grained sand community (Steimle and Stone 1973).

A variety of fish species with both recreational and commercial importance can be found in the nearshore subtidal habitat. The nearshore subtidal zones are used by many species including scup (*Stenotomus chrysops*), fluke (*Paralichthys dentatus*), striped bass (*Morone saxatilis*), bluefish (*Pomatomus saltatrix*), weakfish (*Cynoscion regalis*), Atlantic cod (*Gadus morhua*), and winter flounder (*Pleuronectes americanus*) (National Marine Fisheries Service 1979).

Manmade structures such as the groins within the project area provide rocky intertidal habitat for both aquatic and avian species. In general, barnacles, crustaceans, polychaetes, mollusks and a variety of shorebirds can be found on, above, and around these structures.

C. Fish and Wildlife Resources of Great South Bay

The Fire Island barrier beach system is the principal natural feature fronting Great South Bay. The eastern portion of Fire Island is relatively undeveloped and exhibits an extensive

beach and dune system. Tidal wetlands are common along the back-bay area and tidal wetland islands are scattered throughout Great South Bay. Larger wetland islands are located in the back-bay areas along Jones Island to the west. The mainland on the north side of Great South Bay contains two large river systems (Carmans River and Connetquot River) with extensive freshwater and tidal wetlands.

The Great South Bay Area contains eleven designated New York State, Department of State Significant Coastal Fish and Wildlife Habitats (NYSDOS 1987). They include: Great South Bay East, Great South Bay West, Beaverdam Creek, Swan River, Carmans River, Connetquot River, Champlin Creek, Orowoc Creek, Cedar Beach, Gilgo Beach, and Sore Thumb. Great South Bay has also been identified as a significant fish and wildlife habitat by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1991).

The vast salt marshes, intertidal flats, and shallows in the Great South Bay area provide valuable nesting and feeding areas for migratory birds throughout the year, including large populations of shorebirds. This area proves especially important during spring and fall migration.

Great South Bay is also one of the most important waterfowl wintering areas (November to March) on Long Island containing populations of brant (*Branta bernicula*), scaup (*Aythya spp.*), black ducks, Canada geese, mallards, bufflehead and red-breasted merganser. Generally, the birds feed in open water areas through midwinter, while prior to migration (early spring), the birds feed widely in the surrounding salt marshes.

Great South Bay is an extremely productive area for marine finfish, shellfish and other marine wildlife. The bay serves as a feeding area and nursery (April to November) for bluefish, winter flounder, fluke, kingfish (*Menticirrhus saxatilis*), tautog (*Tautoga onitis*), scup, and blue crab. Forage fish species that utilize the bay include Atlantic silverside (*Menidia menidia*), mummichog (*Fundulus heteroclitus*), striped killifish (*Fundulus majalis*), sticklebacks (*Apeltes quadracus*) and northern pipefish (*Syngnathus fuscus*) (NYSDOS 1987).

The bay is inhabited by hard clams, soft clams, bay scallops (*Aequipecten irradians*), and blue mussels. The area is open for commercial shellfishing.

D. Fish and Wildlife Resources of Moriches Bay

Moriches Bay contains five New York State Designated Significant Fish and Wildlife Habitats (NYSDOS 1987). They include Moriches Bay, Smith Point County Park, Cupsogue County Park, and a portion of Quantuck Creek and Quogue Refuge. Moriches Bay has also been identified as a significant fish and wildlife habitat by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1991).

The salt marshes, intertidal flats, and shallows in Moriches Bay provide valuable nesting and feeding areas for migratory birds and shorebirds throughout the year. Moriches Bay is also one of the most important waterfowl wintering areas (November to March) on Long Island containing populations of brant, scaup, black ducks, Canada geese, mallards, buffleheads and canvasbacks (*Aythya valisineria*). Waterfowl species feed in open water areas through midwinter. Prior to spring migration, waterfowl feed widely in the

surrounding salt marshes. Moriches Bay is a productive area for marine finfish, shellfish and other wildlife. The bay serves as a feeding area and nursery (April to November) for bluefish, winter flounder, summer flounder, American eel (*Anguilla rostrata*), tautog, scup, and blue crab. Forage fish species that utilize the bay include Atlantic silverside, mummichog, striped killifish, and northern pipefish. Moriches Bay is inhabited by hard clams, soft clams, bay scallops, and blue mussels. The area is open for commercial shellfishing.

E. Fish and Wildlife Resources of Shinnecock Bay

Shinnecock Bay contains eight New York State Designated Significant Fish and Wildlife Habitats (NYSDOS 1987). They include Southampton Beach, Tiana Beach, Shinnecock Bay, Dune Road Marsh, Far Pond and Middle Pond Inlets, and a portion of Quantuck Creek and Quogue Refuge. The bay area contains extensive areas of open water and limited amounts of salt marshes and mudflats. Like the Great South and Moriches Bays, Shinnecock Bay provides valuable nesting and feeding areas for the same species of migratory birds and shorebirds.

Shinnecock Bay is a productive area for marine finfish, shellfish and other wildlife. The bay serves as a feeding area and nursery (April to November) for bluefish, winter flounder, summer flounder, American eel, tautog, scup, blue crab. Forage fish species that utilize the bay include Atlantic silverside, mummichog, striped killifish, and northern pipefish (NYSDOS 1987). Shinnecock Bay is inhabited by hard clams, soft clams, bay scallops, and blue mussels. The area is open for commercial shellfishing.

From December through early May, harbor seals (*Phoca vitulina*) (approximately 20-40 seals) can be found in the bay. Exposed sand shoals near the inlet provide a "haulout area", which the seals use for resting and sunning themselves. This location is one of five Long Island areas used as "haulouts."

The residents of the Shinnecock Indian Reservation have established an American oyster (*Crassostrea virginica*) and hard clam aquaculture farm in nearby Heady Creek.

F. Fish and Wildlife Resources of the Potential Offshore Borrow Areas

The Corps has identified six large potential borrow areas immediately off shore of the barrier islands (Figures 2a through 2d). Quantitative biological sampling of this area was last conducted in 1981. Results of this study indicate that the abundance and number of benthic species generally decreased from west to east, while diversity generally increased toward Montauk Point. Number of species and diversity consistently increased with depth at many of the potential borrow sites (Cerrato 1983).

Approximately 16 species of commercial and/or recreational value were identified in the borrow areas, including the ocean quahog (*Arctica islandica*), blue mussel, surf clam, rock crab (*Cancer irroratus*), Atlantic cod, yellowtail flounder (*Limnada ferruginea*), fluke, fourspotted flounder (*Paralichthys oblongus*), silverhake (*Merluccius bilinearis*), and winter flounder (Cerrato 1983).

The most important commercial species found in the study area is the surf clam (Cerrato 1983). Franz (1976) reported that 90% of the standing surf clam stock east of Fire Island

Inlet was made up of individuals greater than nine years old, which reflects poor recruitment into the commercial size subpopulation. This suggests that dredging at a potential borrow site would probably remove that area from the commercial surf clam fishery for a considerable period of time (Cerrato 1983). Refer to Cerrato (1983) for a complete discussion on the benthic borrow area resources.

As discussed above, the last detailed study of benthic invertebrate populations along the south shore of Long Island was conducted in 1981 and reported in Cerrato (1983). Studies in other coastal areas have shown that the abundance and diversity of benthic species can change significantly over time (R. Cerrato, Marine Sciences Research Center, personal communication, April 1995). Since 15 years have passed since the last comprehensive study of the borrow areas, new sampling of the borrow areas should be conducted in order to avoid identified productive benthic habitats within the larger borrow area during dredging operations.

G. Fish and Wildlife Resources in the Stockpile Material Sites

To increase the time and cost effectiveness of emergency breach closures, stockpiled suitable material would be located strategically along the study area (U.S. Army Corps of Engineers 1995). The Corps has identified three potential stock pile areas at Robert Moses State Park, Sailor's Haven, and at Old Inlet in the Wilderness Area of Fire Island National Seashore (Figures 2c and 2d). Terrestrial resources which may be found in these areas are discussed in part B of this section.

VII. FUTURE WITH AND WITHOUT THE PROJECT

The future of the project area without the BCP will be the same as with the BCP, as the future of both scenarios culminate in a closed breach and berm. As stated previously, the BCP is proposed as an alternative to existing breach closure guidelines, under Public Law 84-99 which have exhibited a typical response time of approximately 11 months between breach occurrence and breach closure. The BCP guidelines are proposed as an expedited breach closure action plan providing for a 2.5 month breach closure process between breach occurrence and breach closure. Both the BCP and the existing breach closure process utilize the same breach fill engineering dimensions. The only difference between these two plans is that breach filling will occur more rapidly under the BCP than under current existing procedures. Therefore, the future of the area without implementation of the proposed project is the existence of a breach condition for some 11 months, rather than for three months as proposed in the BCP, prior to completion of a breach closure operation.

The following discussion presents the ecological impacts that can therefore be expected to occur when breaches are filled under current breach filling guidelines (the future without the project) and under the proposed BCP guidelines. The BCP will entail both a breach fill and beach fill component. Breach filling refers to the placement of sand material into the actual breach, while the beach fill component of the BCP entails the blending in of the breach fill area into the existing topography west and east of the breach fill area.

A. Affects on the Barrier Island Ecosystem

1. General Adverse Environmental Impacts of Breach Filling

Breach filling entails the actual filling in of the breach. The actual breach area, in and of itself, will most likely not be able to provide productive intertidal habitat within the proposed 2.5 month period between its creation and closure. Additionally, areas immediately adjacent to the breach that supported intertidal resources before the breach event will probably be lost due to scouring and erosion on the ocean side. Thus, because the 2.5 month period between breach occurrence and breach closure is too short a period of time for benthic organism colonization, the Service does not believe that there will be adverse impacts associated with breach filling, at the breach site itself, upon fish and wildlife resources.

2. General Adverse Environmental Impacts of Beach Filling

The beach filling component of the breach fill project includes the blending in of the breach fill area into existing topography west and east of the breach fill area. There are three major ways that beach fill physically impacts the coastal beach environment. The first is that the deposited material covers the existing beach sediments. the second is that the deposited material modifies the beach (sand-water) interface, and the third is that the deposited material frequently increases the turbidity of the near shore area (Naqvi and Pullen 1982).

The primary adverse impact on the three zones due to the placement of sand material onto the beach fill area is the disturbance and destruction of intertidal and benthic resources due to the covering of existing beach material. Existing organisms would be buried, and the use of the entire area by fish and avian species for feeding could be temporarily disrupted. In addition, decreased water quality and increased turbidity in the nearshore subtidal zone could result from the actual beach fill activity. Such degradation would be transient in nature.

Motile organisms, such as fish, appear to be the least affected by beach fill activities as they are able to move to avoid disturbances (Hurme and Pullen 1988). Such motile species are able to return to the area when conditions are suitable again. Non-motile species may be fatally buried or subject to increased turbidity, however, such organisms are generally adapted to a highly turbid near-shore environment.

The recovery of benthic macrofauna (those animals 0.5 millimeter in diameter or larger) after beach nourishment varies from one site to another. Studies completed in the 1970's indicate that when nourishment ceases, the recovery of benthic macrofauna is rapid and complete recovery may occur within one or two seasons (Reilly and Bellis 1978; Parr et al. 1978). The ability of macrofauna to recover is due to: (a) their short life cycles, (b) their high reproductive potential, and (c) the recruitment of planktonic larvae and motile macrofauna from nearby unaffected areas (Naqvi and Pullen 1982).

Meiofauna (animals smaller than 0.5 millimeter in diameter and equal to or larger than 0.062 millimeter in diameter) tend to recover very slowly from a major disturbance, perhaps due to their slow reproduction, limited ability to migrate, and their highly specialized adaptations to a restricted environment (Naqvi and Pullen 1982). However,

meiofaunal recovery can be rapid following minor disturbances (Naqvi and Pullen 1982). In affect, biota associated with beach ecosystems are accustomed to change, and most members are capable of escaping from mechanical filling events. Moreover, the migration of adult or larval organisms, from adjoining sides of a nourished area, is a common occurrence as these species look to establish themselves in open niches (Thompson 1973).

3. Adverse Impacts of Beach Filling on Least Terns

Perhaps the greatest disturbance associated with beach filling is exhibited upon nesting shorebirds that may be onsite or on beaches adjacent to such an operation. Least terns and piping plovers commonly nest in the project area. As stated previously, the proposed project is likely to adversely affect the piping plover and a subsequent report is being prepared to assess impacts to plovers. Conducting a beach fill operation outside of the least tern and piping plover nesting season is the easiest way to avoid adverse impacts to these species.

However, if sand placement occurs during the least tern nesting season (April 15 - September 1), least terns may be precluded from nesting in adjacent areas due to disruptive construction activity. If project construction activities are conducted during the least tern nesting season (April 15 - September 1), their courtship, nesting, and brood rearing activities may be directly and adversely affected. The operation of dredging equipment immediately adjacent to a shoreline that is used by terns as a courtship, nesting, and brood rearing area has the potential to disturb terns to the point where they may not successfully nest and fledge young. Dredging equipment that is operated immediately adjacent to tern habitat may preclude terns from using the habitat entirely, forcing them to seek appropriate habitat elsewhere. Operation of machinery used to move dredge pipeline and to grade the nourished beach can greatly disturb terns, their nests, and can endanger the lives of chicks. Additionally, the actual placement of sand within a known nesting area can adversely affect the quality of the currently existing least tern nesting substrate.

B. Affects of Dredging on the Offshore Borrow Areas

The Corps has indicated that borrow areas may be dredged to a maximum depth of 20 feet below the existing bottom (U.S. Army Corps of Engineers 1995). Dredging involves the direct removal of habitat and organisms from a borrow area. Direct effects of dredging are from the substrate removal and from the resuspension of fine and medium sediments. In a study done by Woodward-Clyde Consultants (1975), it was determined that dredging may lower the productivity of a borrow area, reducing the usefulness of the site for the production of fish and shellfish until a suitable community is reestablished in the borrow area.

Dredging also directly affects fish populations by displacing them from the dredging operation site (Woodhead 1992). Fish utilizing borrow areas may potentially be exposed to elevated contaminant levels due to the siltation of contaminated fine material into the borrow pit. Small deep borrow areas are the poorest habitat due to reduced water circulation and high sedimentation rates which could lead to anoxic conditions lethal to species using the pits. However, as indicated in studies by Woodhead and McCafferty (1986), borrow areas and channels often contain higher levels of fish than adjacent shoals, indicating that borrow areas do not demonstrate adverse impacts to resources once the immediate construction period is over.

Indirect effects of dredging include increased turbidity in the water column (Woodhead 1992). Sand particles suspended by dredging are relatively dense and fall quickly back to the bottom while the fine sediments stay in suspension longer than sand, sinking slowly (Woodhead 1992). The net effect is wider broadcasting and dispersion of fines relative to sand and gravel. Dredging will cause a short-term reduction in water clarity down-current from the dredging activity.

Localized turbidity plumes can have lethal and sublethal effects on benthos and fish including hematological compensation for reduced gas exchange across gill surfaces, abrasion of epithelial tissue, packing of the gut with large quantities of ingested solids having little nutritive value, disruption of gill tissues (abrasion, clogging, increased activity of mucosa), and increased activity with a reduction of stored metabolic reserves (Profiles Research and Consulting Groups, Inc. 1980). Other effects of increases in turbidity include a decrease in light penetration, mechanical abrasion of the filter feeding and respiratory structures of animals, possible resuspension of contaminants and nutrients, burial of demersal eggs, larvae, and adults, and adsorption of essential nutrients from the water column (Stern and Stickle 1978).

The potential for oxygen deprivation problems in borrow areas is a very real concern. Reduced water circulation and increased siltation and sedimentation of fine material can lead to hypoxic or anoxic conditions lethal to organisms utilizing a borrow area. These adverse impacts have been found to be minimal in areas with strong currents where oxygen can be quickly replenished (Tuberville and Marsh 1982). Elimination of small deep borrow area designs can alleviate potential oxygen deprivation problems, but would affect a larger surface area.

C. Environmental Impacts Associated with the Difference in Time between Breach Occurrence and Breach Closure as Permitted under the proposed BCP and the existing Breach Closure Guidelines

To reiterate, the future of the project area without the BCP will be the same as with the BCP, as the future of both scenarios culminate in a closed breach and berm. The only major difference between the future with and without the project is the time it will take to achieve the future condition (a closed breach and berm construction). There is an approximate eight month time difference between the two plans represented by the time between breach occurrence and breach closure. Consequently, under the BCP, a breach, and all of its associated impacts, would only exist for approximately three months, rather than 11 months.

Given this shorter breach closure time frame as proposed in the BCP, breaches will most likely not have an opportunity to grow, develop into an inlet, migrate, or even close naturally. In effect, the impact of the breach on back bay tidal flushing, tidal range, salinity, water temperature, water clarity, predator emigration, and the burial of salt marsh and eel grass and the growth of flood tidal deltas will all be minimized.

Minimizing the growth of overwash and flood tidal deltas that could be created if a breach were left open for an additional eight months could decrease the potential creation of additional shorebird loafing, foraging, and nesting habitat. Since the nesting areas selected by least terns usually include broad, flat, open sand beaches, entirely devoid of vegetation (Bent 1963), one can conclude that sand deltas and spits provide high quality nesting

habitat. Thus their creation or expansion can improve and create habitat for least terns and other shorebird species. However, under the BCP, the creation of new shorebird loafing, foraging and nesting habitat will be minimized.

Closing a breach in three months time rather than 11 months would also minimize the burial and loss of saltmarsh, intertidal mudflat, and eel grass habitat. For species dependent upon these types of habitats, minimizing their natural destruction would be beneficial. However, flood tidal deltas and overwash areas lay the foundation for the creation of new saltmarsh, intertidal mudflat, and eel grass habitats. In the short term, to the extent that burial of these existing habitats can be minimized by decreasing the amount of time that a breach exists, a beneficial affect would be felt by those species dependent upon these habitats. However, in areas devoid of these types of habitats, minimizing the affects of a breach event that can lead to the creation of these types of habitats would result in a lost beneficial opportunity for natural processes to create new fish and wildlife habitat.

As suggested by New York Sea Grant (1994), the potential impacts that a breach would have on finfish, primarily through slight changes in salinity, would probably be minimal as most of the resident and migratory fish are euryhaline and able to withstand a wide range of salinities. Thus, minimizing the length of time that a breach remains open would most likely not affect finfish.

The distribution of shellfish and benthic invertebrates is very sensitive to salinity (Wells 1957; Pratt et al. 1992; Cashin Associates, Inc. 1993). Optimum salinity for embryonic, larval, and veliger growth and survival may be compromised or improved upon as salinity increases in an estuary system. In addition, increased salinity may favor the introduction of certain invertebrates species which may serve as competitors or predators of resident back bay shellfish species. An increased flushing rate associated with breach and/or inlet creation can also improve water quality conditions. A breach can also influence sedimentation and erosion rates. Such physical disturbance of the bottom sediments from a breach can result in the destruction of individual benthic organisms and communities through burial and suffocation and cause major alteration of habitat (Levinton 1982; Cerrato 1986).

Thus, minimizing the time that a breach remains and its effects on the physical properties and characteristics on the back bay can simultaneously have positive and negative impacts on fish and wildlife resources. However, the effect of a breach that is allowed to remain open for three months or 11 months will be short term in any event, primarily because ecological succession will occur following the disturbance associated with a breach, the breach will be closed, and the bay will therefore eventually return to its pre-breach environmental condition following breach closure.

VIII. MITIGATION RECOMMENDATIONS

The views and recommendations of the Service on this project are guided by its Mitigation Policy (U.S. Fish and Wildlife Service 1981). This policy seeks to mitigate losses of fish, wildlife, and their habitats, and uses thereof, from land and water developments. The Service's mitigation policy does not apply to the Endangered Species Act. The term "mitigation" is defined as: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or

restoring the affected environment; (d) reducing or eliminating impacts over time; and, (e) compensating for impacts by replacing or providing substitute resources or habitats.

In recognition that the BCP is merely an expedited version of already existing breach closure guidelines, the environmental impacts associated with the BCP are therefore not very different from those associated with the existing breach closure guidelines. Potentially, the most serious adverse environmental affect on a Service trust resource could occur if breach closure is initiated on or adjacent to nesting shorebird habitat during the nesting season. Specific shorebird species of concern include the piping plover and the least tern. As stated previously, the Service is preparing a separate biological opinion regarding the affects of the BCP upon the piping plover. As discussed in the following section, the Service has developed mitigation recommendations for the protection of the least tern if breach closure is initiated during their breeding season on known nesting habitat.

A. Mitigation Strategies to Protect Least Terns

1. Pre-Construction and Construction Mitigation Recommendations

Based upon the Service's review of the proposed project, breach fill and beach fill activities have the potential to adversely affect least terns. The following protection strategies have been developed to avoid and minimize potential impacts to least terns during project construction:

1. Activities associated with breach fill and beach fill (berm construction) should be accomplished outside the least tern nesting season (April 15 to September 1 of any given year).

2. Under circumstances where this is unavoidable and activities are scheduled during any time in the nesting season, an appropriate survey and monitoring plan, approved by the Service and the NYSDEC, shall be conducted to document the presence or absence of nesting terns in the work areas at the time of construction, to identify and delineate tern nesting areas and nest locations, and to determine if buffer zones can be established to avoid disturbance of tern nesting areas. Buffer zone distances shall be developed in coordination with the Service and the NYSDEC. The survey and monitoring plan should consist of the following.

    a. Pre-Construction Survey: Immediately following the occurrence of a breach event, and in the time period between breach occurrence and implementation of the breach fill construction plan, (assuming a breach occurs during the least tern nesting season of April 15 through September 1), a qualified bird monitor(s), pre-approved by the Service and the NYSDEC, shall be retained prior to commencement of the proposed activity and through project completion, but not beyond the date of last fledging, which may occur up to September 1. A least tern survey shall then be conducted at least two weeks prior to commencement of the proposed activity. During this pre-construction survey, the monitor shall conduct, at a minimum, a total of three surveys per week of the project area (staging, operation, and breach fill and beach fill areas), on alternate tidal cycles and not on consecutive days, for the occurrence of least tern. The

frequency and duration of monitoring shall be adequate to clearly determine the mobility of the individual broods and accurately define, and post and fence brood rearing areas.

b. Construction Survey: After the preliminary two week survey, survey and monitoring efforts can be limited to only those areas within the project area where construction activity will take place during the least tern nesting season (April 15 to September 1). A single survey shall be conducted every day on alternate tidal cycles. Surveying and monitoring shall continue through project completion but not beyond the date of last fledging, which may occur by September 1. The frequency and duration of monitoring of broods shall be adequate to clearly determine the mobility of the individual broods and accurately define, and post and fence brood rearing areas.

3. During construction surveying and monitoring, nest and brood rearing areas shall be posted and fenced immediately (supervised by the monitor) and no disturbance shall be permitted within 50 meters (approximately 164 feet) of the designated area. The boundaries of the protected areas shall be adjusted should terns move outside the originally posted area. Machinery operation or dredge pipe installation or removal shall not occur within 100 meters (approximately 328 feet) of the nest or brood rearing area. In the event that disturbance to least terns can not be avoided, the Corps shall notify the Service and the NYSDEC by the close of business that day and, if necessary, temporarily stop construction.

4. Flexibility in project timing shall be provided to allow for adjustments in scheduling to avoid active least tern areas during critical breeding stages.

5. The dredge disposal pipe shall be placed offshore in those areas where surveying has identified least tern nesting areas.

6. System of Notification: The Service and the NYSDEC shall be notified at least one week prior to the initiation of the pre-construction survey. Pre-construction survey reports and field notes shall be sent to the Service and the NYSDEC on a weekly basis. Concurrent construction surveys and field reports shall also be sent to the Service and the NYSDEC on a weekly basis. The monitor(s), in consultation with the Service and the NYSDEC, shall make adjustments to the minimum survey/monitoring components requirements if necessary. In the event that disturbance to least terns can not be avoided, the Corps shall notify the Service and the NYSDEC by the close of business that day. The on-site contractors shall be directed by the Corps to adjust or halt construction activities in order to avoid disturbances.

2. Habitat Protection

A common result of overwash and breach events is the creation of flood tidal deltas, overwash fans, and sand spits. Such areas provide both loafing, foraging, and nesting habitat for several species of shorebirds.

1. The Service recommends that these areas be protected, in perpetuity, as wildlife conservation areas. Thus, the Corps, as team leader of the Breach Contingency

Management Team (consisting of the Corps, the Service, the National Park Service, representatives of the affected Town, etc...) shall coordinate this effort to achieve this end.

2. Management strategies for these areas should be developed by the Breach Contingency Management Team. The Corps should be responsible for coordination of this effort.

3. The Corps shall coordinate efforts of the Breach Contingency Management Team to insure that an education program is implemented that informs residents and landowners, in the vicinity of a breach area, of the following activities that can adversely affect shorebirds that may nest in a breach area:

   a. Disruptive activities such as kite flying, ball playing, and fireworks should be prohibited within 200 meters (approximately 656 feet) of nesting or territorial adult or unfledged least terns from April 15 to September 1.

   b. Dogs and cats are common predators of least tern chicks. Pets should be leashed and prohibited within the vicinity of symbolically fenced least tern nesting and brood rearing areas from April 15 to September 1.

   c. To minimize raccoon, fox, and gull predation on tern eggs and chicks, feeding of these potential predators should not occur.

B. Mitigation Recommendations for the Offshore Borrow Areas

1. Conduct benthic resource survey of the borrow areas to identify species abundance and diversity patterns. This will enable the Corps to avoid identified productive benthic habitats within the larger borrow area during dredging operations.

2. Avoid exposing and disturbing and dredging, to the maximum extent practicable, fine silty sediment types during the overall dredging operation. By avoiding the exposure of fine silty sediments at the borrow area the probability that the same pre-work benthic assemblage will re-establish after dredging may increase.

3. Avoid producing deep, steep-sided dredging pits that will limit water circulation which may lead to silt and organic matter accumulation and hypoxic or anoxic conditions. Broad shallow pits with gently sloping sides are less likely to exhibit these effects.

4. If hopper dredges are used between June 15 and November 15 of any calendar year, special conditions will be necessary to protect Federally listed sea turtles and other marine species. The NMFS must be consulted in this instance.

IX. CONCLUSIONS

Existing breach closure guidelines exhibit a typical response time of 11 months between breach occurrence and breach closure. The BCP guidelines are proposed as an expedited breach closure action plan providing for a 2.5 month breach closure process between breach occurrence and breach closure. Thus, the future of the project area without the

BCP will be the same as with the BCP, as the future of both plans (BCP and existing breach closure guidelines) culminate in a closed breach. Consequently, the Service finds no significant adverse impacts to fish and wildlife resources that may occur as a result of closing breaches in the expedited manner as proposed by the BCP.

However, construction activities associated with implementation of the BCP could have adverse impacts on fish and wildlife resources and their supporting ecosystems. Beach fill will cover large patches of nearshore intertidal and subtidal marine habitats and dredging of the borrow areas will temporarily disturb benthic resources. Nearby waters will also become more turbid. The reduction of water quality could temporarily interfere with nearby fish abundance and assemblages.

The Service has also determined, during informal Section 7 consultation, that the proposed project **is likely to adversely affect** the Federally listed piping plover and seabeach amaranth, and the New York State listed least tern (endangered). The Service is conducting a concurrent, yet separate, analysis of the potential project impacts of the BCP on the Federally listed piping plover and seabeach amaranth under formal consultation procedures of the Endangered Species Act. At this time, the Service has not completed this analysis and formulated a biological opinion. Therefore, the Service is unable to form a conclusion regarding the total effects of project implementation on the piping plover and seabeach amaranth.

The Service finds that implementation of the proposed project will adversely affect the New York State listed least tern, as well as other shorebird species. The Service has recommended mitigation measures which will minimize adverse impacts to least terns due to direct and indirect effects of the project. These recommendations should be incorporated into the proposal in order to protect least terns from adverse impacts associated with project implementation.

Flood tidal deltas, overwash fans, and sand spits are commonly created by breach and overwash events. Such areas provide loafing, foraging, and nesting habitat for several species of shorebirds. In the event that such areas are created in the future, the Service has recommended that these areas be protected, in perpetuity, as wildlife conservation areas.

The Service has also recommended measures to minimize impacts associated with borrow area dredging. In addition, most recent benthic invertebrate studies were carried out in the early 1980s by Cerrato (1983). Studies in other coastal areas have shown that the abundance and diversity of benthic species can change significantly over time (R. Cerrato, Marine Sciences Research Center, personal communication, April 1995). Due to the lack of current benthic resource information within the borrow areas, the Service recommends that updated surveys be conducted. This will enable the Corps to avoid identified productive benthic habitats within the larger borrow area during dredging operations or to delineate new dredge sites.

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Table 2. General facts pertaining to Great South Bay, Moriches Bay, and Shinnecock Bay. Adapted from U.S. Fish and Wildlife Service (1983).

Descriptors	Great South Bay	Moriches Bay	Shinnecock Bay
Length ocean shoreline	54.8 km (34.0 mi)	37.6 km (14.5 mi)	17.7 km (11.0 mi)
Extreme width	8.7 km (5.4 mi)	4 km (2.5 mi)	4.7 km (2.9 mi)
Land drainage area	979 km^2 (378 mi^2)	194 km^2 (75 mi^2)	64.8 km^2 (25 mi^2)
Surface area	290 km^2 (112.0 mi^2)	43 km^2 (16.6 mi^2)	37.6 km^2 (14.5 mi^2)
Number of drainage basins and streams entering the bay	41	15	20
Mean tidal range - western end	0.43 m (1.4 ft)	0.21 m (0.7 ft)	0.21 m (0.7 ft)
Mean tidal range - eastern end	0.21 m (0.7 ft)	0.37 m (1.2 ft)	0.21 m (0.7 ft)

Table 3. General facts pertaining to Fire Island Inlet, Moriches Inlet, and Shinnecock Inlet. Adapted from U.S. Fish and Wildlife Service (1983).

Descriptors	Fire Island Inlet	Moriches Inlet	Shinnecock Inlet
Mean tidal range	1.2 m (4.1 ft)	1 m (3.3 ft)	0.88 m (2.9 ft)
Tidal current velocity - flood (kts)	2.4	1.1	2.5
Tidal current velocity -ebb (kts)	2.4	1.3	2.3
Westerly sand movement at the inlet	460,123 m^3 (600,000 yds^3)	267,789 m^3 (350,000 yds^3)	229,533 m^3 (300,000 yds^3)

APPENDIX A

TABLES

Table 1. Characteristics of the Early and Late Stages of Succession (Modified from J.S. Levinton, ed. 1982. Marine Ecology.)

Structure	Early	Late
Biomass	variable	variable
Species Diversity	low	high
Energy Flow		
Number of trophic levels	few	many
Primary production per unit of biomass	high	low
Individual populations		
Fluctuations	more pronounced	less pronounced
Life cycles	simple	complex
Feeding relations	generalized	specialized
Size of individuals	smaller	larger
Life span of individuals	short	long
Population control mechanisms	abiotic	biotic

TABLE 4. Common Avifauna of Long Island's Barrier Coastal Habitats (Adapted from U.S. Fish and Wildlife Service, 1983)

Common Name	Scientific Name
Mallard	*Anas platyrhynchos*
Black Duck	*Anas rubripes*
Gadwall	*Anas strepera*
American Oystercatcher	*Haematopus palliatus*
Willet	*Catoptrophorus semipalmatus*
Piping Plover	*Charadrius melodus*
Greater Black-backed Gull	*Larus marinus*
Herring Gull	*Larus argentatus*
Common Tern	*Sterna hirundo*
Least Tern	*Sterna albifrons*
Black Skimmer	*Rynchops niger*
Morning Dove	*Zenaida macroura*
Horned Lark	*Eremophia alpestris*
Barn Swallow	*Hirundo rustica*
Marsh Wren	*Cistothorus palustris*
Northern Mockingbird	*Minum ployglottos*
Brown Thrasher	*Toxostoma rufum*
Common Yellowthroat	*Geothlypis trichas*
Red-Winged Blackbird	*Agelaius phoeniceus*
Common Grackle	*Quiscalus quiscula*
Sharp-tailed Sparrow	*Amospiza caudacuta*
Seaside Sparrow	*Ammospiza maritima*
Song Sparrow	*Melospiza melodia*
Ring-necked Pheasant	*Phasianus colchicus*
Spotted Sandpiper	*Actitis macularis*
Eastern Kingbird	*Tyrannus*
Grey Catbird	*Dumetella carolinensis*
American Robin	*Turdus migratorius*
European Starling	*Sturnus vulgaris*
House Sparrow	*Passer domesticus*
House Finch	*Carpodacus mexicanus*
Tree Swallow	*Iridoprocne bicolor*
Blue Jay	*Cyanocitta cristata*
Brown-headed Cowbird	*Molothrus ater*
Northern Cardinal	*Cardinalis*
Green-backed Heron	*Butorides striatus*
Canada Goose	*Branta canadensis*
Black-capped Chickadee	*Parus atricapillus*

TABLE 5. Mammals inhabiting the barrier island and barrier beach ecosystem of the Fire Island Inlet to Montauk Point study area (Adapted from U.S. Fish and Wildlife Service, 1983).

Common Name	Scientific Name
Opossum	*Didelphis marsupialis*
Short-tailed shrew	*Blarina brevicauda*
Eastern mole	*Scalopus aquaticus*
Little brown bat	*Myotis lucifugus*
White-footed mouse	*Peromyscus leucopus*
Meadow vole	*Microtus pennsylvanicus*
Muskrat	*Ondatra zibethica*
House mouse	*Mus musculus*
Norway rat	*Rattus norvegicus*
Red fox	*Vulpes fulva*
Raccoon	*Procyon lotor*
Longtail weasel	*Mustela frenata*
Mink	*Mustela vison*
Striped skunk	*Mephitis*
Harbor seal	*Phoca vitulina*
White-tailed deer	*Odocoileus virginianus*

APPENDIX B

New York State Department of Environmental Conservation Concurrence

New York State Department of Environmental Conservation
Building 40 - SUNY, Stony Brook, New York 11790-2356
Phone (516) 444-0270
Fax # (516) 444-0297

RECEIVED
JUN 06 1995

Michael D. Zagata
Commissioner

June 5, 1995

Mr. Robert Murray
US Fish and Wildlife Service
P.O. Box 608
Islip, NY 11751-0608

RE: Fish and Wildlife Coordination Act Report for the Breach Contingency Plan, Fire Island Inlet to Montauk Pt.

Dear Mr. Murray:

The New York State Department of Environmental Conservation, Region 1 Office of Natural Resources (Department), has reviewed the above document and is providing its formal comments.

The Department is in general concurrence with your descriptions of the resources and the impacts associated with breach formation. However, the Department does not concur with your findings regarding the impacts of beach filling as described in Section VII., Future with and without the project.

The Department does not agree to the use of the term "beach filling" instead of "breach filling". On first glance they may seem synonymous but from an impact assessment perspective they are very different activities with different impacts. This is where the philosophy of the Department and the USF&WS differ.

It is inaccurate to presume that filling a breach will result in the destruction of intertidal habitats and benthic resources within the breach. The majority of the breach filling activity will occur in areas that were formally upland prior to the breach. These former upland areas will not become productive intertidal habitats within the proposed 2.5 month period that it will take to close the breach. The document even states that the rapid colonizing macrobenthos will take up to two seasons to recover. Also, areas that supported intertidal resources before the breach will probably be lost due to scouring and erosion on the ocean side and overwash and filling on the bay side.

Therefore, the Department concludes that the adverse impacts to the intertidal resources occurs because of the formation of the breach itself. The filling of the breach

within a period of two months has little impact upon the existing benthic resources or food resources for endangered species.

The Department can not concur with the mitigation strategies recommended for least tern habitat protection which would involve the Department in the creation of wildlife conservation areas on flood tidal deltas, overwash fans, and sand spits. The Department does not have the authority to create such conservation areas nor can the area be managed by the Department without ownership or lease of the property. Although this situation would be ideal, it is impractical and not achievable and should therefore be removed from the list of mitigation strategies.

Thank you for the opportunity to comment on this issue.

Sincerely,

Charles T. Hamilton

Charles T. Hamilton
Regional Supervisor, Office of Natural Resources, Region 1

APPENDIX C

U.S. Fish and Wildlife Service Response to NYSDEC Concurrence

The Service has reviewed the NYSDEC Letter of Concurrence and comments to the Service's Draft report. The Service states the following.

1) The NYSDEC has pointed out the differences between beach filling and breach filling. The Service notes that the BCP will entail both a breach fill and beach fill component. Breach filling refers to the placement of sand material into the actual breach, while the beach fill component of the BCP entails the blending in of the breach fill area into the existing topography west and east of the breach fill area. Consequently, the Service has added a new component to Section VII., "Future With and Without the Project", entitled "General Adverse Environmental Impacts of Breach Filling."

2) The NYSDEC has stated that "the filling of the breach within a period of two months has little impact upon the existing benthic resources or food resources of endangered species." The Service has determined that the endangered species that the NYSDEC is referring to is the piping plover, which is actually a federally listed threatened species.

However, while the Service concurs that breach filling will have little impact upon benthic resources, it is inaccurate for the NYSDEC to state that breach filling will have little impact upon food resources for piping plovers. Piping plovers commonly feed upon organisms found within wrack. Breaches increase the surficial area upon which wrack can accumulate and consequently, breaches increase the potential foraging area for plovers. Breach filling will minimize the area upon which wrack can accumulate and will therefore have an adverse impact upon the food resources for piping plovers.

Also, as stated within the text, a discussion of BCP related impacts upon piping plovers and seabeach amaranth is not contained within this Fish and Wildlife Coordination Act report. The Service is conducting a concurrent, yet separate, analysis of the potential project impacts of the BCP on the Federally listed piping plover and seabeach amaranth under the formal consultation procedures of the Endangered Species Act and is anticipating that this report will be completed by the end of June, 1995.

3) Upon the request of the NYSDEC, the Service has removed the NYSDEC as a potential team member to help coordinate efforts for the protection of and development of conservation areas for overwash areas, flood tidal deltas, and sand spits that may be created as a result of a breach event.

APPENDIX D

U.S. Army Corps of Engineers Response to DRAFT Report

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

May 23, 1995

Environmental Analysis Branch
Environmental Assessment Section

Ms. Sherry Morgan
Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Ms. Morgan:

The U.S. Army Corps of Engineers, New York District, has reviewed the draft Fish and Wildlife Coordination Act Report (FWCAR) which your office prepared for the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan dated May, 1995. Comments on the Draft FWCAR's Recommendations are attached.

As coordinated with Mr. Robert Murray of your Long Island Field Office (LIFO), the District expects to receive a Final FWCAR Thursday, June 15, 1995.

Should you have any question or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Stuart Piken, P.E.
Chief, Planning Division

Attch.

RECEIVED
MAY 26 1995

COMMENTS TO THE DRAFT FISH AND WILDLIFE COORDINATION ACT REPORT FOR THE ATLANTIC COAST OF LONG ISLAND, FIRE ISLAND INLET TO MONTAUK POINT, NEW YORK BREACH CONTINGENCY PLAN

A. MITIGATION RECOMMENDATIONS TO PROTECT THE LEAST TERN

Pre-Construction and Construction Mitigation Recommendations

Since the least tern nesting season coincides with the piping plover season (April 1 to September 1), all protection measures associated with the piping plover will be bestowed upon the least tern.

1/2. If construction activities are accomplished within the piping plover/least tern nesting season (April 1 to September 1), the District will institute a monitoring program designed to assure the protection of both piping plovers and least terns. The program shall consist of:

a/b. Pre-Construction Phase: The District cannot implement this portion of the monitoring program for a full two week period prior to construction because the action (construction) area will not be identified until a breach occurs. However, shorebird habitat within most of the potential impact areas is surveyed by the various Federal and state agencies. This information will help the Breach Contingency Management Team better prepare for immediate survey measures when a breach occurs. When the action area is identified, and it is within the nesting season, the monitor will implement the Construction Survey/Monitor Phase of the monitoring program.

c. Construction Survey/Monitor Phase - This phase's survey efforts shall be limited to only those areas within the area of construction activity that will take place during the nesting season (April 1 -September 1). A single survey shall be conducted daily on alternated tidal cycles. If any piping plovers/least terns are detected at any time during the survey, a monitoring component, consisting of observing and providing protection to the plovers/terns from any of project activities, will be implemented. Fencing and/or exclosures will be utilized to protect the nests until hatching. When the chicks begin to feed, the monitor will direct the contractor away from the chicks and, if necessary, temporarily stop construction in the feeding area. Also, if disturbance is deemed a potential threat, the frequency of the survey/monitoring activities will be increased to effectively monitor the plover/tern chicks for the duration of such construction activities. Monitoring shall continue until completion of the initial project construction but not beyond September 1 or the date of the last fledged chick, whichever occurs first.

d. Posting and Buffer Zone Establishment - Courtship areas, nests, and brooding areas, shall be posted immediately (under the monitor's supervision) and no disturbance shall be permitted within 150 feet of the posted area. Machinery operation or dredge pipe installation or removal shall not occur within 300 feet of the nest or breeding area. If there is not sufficient space available for the buffer zone, the District will consult with the USFWS and the NYSDEC to establish a buffer zone appropriately scaled to the available space. Posting of courtship areas shall not be required beyond July 1. The posted areas shall be updated, if necessary. Monitors shall document any plover/tern movement into the construction activity area to determine the effectiveness of the buffer.

e. System of Notification - The District shall notify the USFWS-Long Island Field Office and the NYSDEC within 24 hours of the determination that a breach will be closed. The monitor in consultation with the USFWS and NYSDEC, shall make any revisions necessary to better protect the plover/tern. A field note book shall be used to record all observations. It will be provided to the USFWS and NYSDEC at on a weekly basis. This information could be the grounds for recommendations on future maintenance work, as well as other similar dredging/beach nourishment projects that may occur along the south shore.

In the event that it appears that disturbance to the piping plovers/least terns cannot be avoided, the District will notify the USFWS, and the NYSDEC, by close of business that day. The on-site contractors shall be directed by the District to adjust or halt construction activities to avoid the disturbance to the extent practicable.

Habitat Protection

1/2. If the breach closure area falls within public jurisdiction, members of the Breach Contingency Management Team examine the feasibility of protecting the areas as wildlife conservation areas. If the area falls with private ownership, the landowner shall be approached by members of the team with the same concept. If necessary and the area is not planned for redevelopment, the Breach Contingency Management Team will develop a coordinated management plan for any newly created conservation area.

3. The Breach Contingency Management Team will coordinate the implementation of an education program addressing the following concerns.

a. Disruptive activities such as kite flying, ball playing, and fireworks should be prohibited within 660 feet of symbolically fenced nesting or territorial adult or unfledged plovers/terns from

April 1 to September 1.

b. Dogs and cats are common predators of plover/tern chicks. Pets should be leashed and prohibited within the vicinity of symbolically fenced nesting and brood rearing areas from April 1 to September 1.

c. To minimize raccoon, fox, and gull predation on plover/tern eggs and chicks, feeding of these potential predators should not occur.

B. MITIGATION RECOMMENDATION FOR THE OFFSHORE BORROW AREAS.

1. Benthic surveys of the borrow areas will undertaken for the overall Reformulation Study. The borrow areas to be potentially utilized for breach closure are the same areas to be utilized for the Reformulation project. However, to minimize borrow area impacts, the District will seek to dredge the most recently used borrow area closest to breached area(s).

2. Breach closure and any nourishment activity calls for the placement of sand comparable with the native beach material (>90% sand). The District when selecting a borrow area, attempts to avoid areas of silt and organic matter.

3. Standard dredging practices aim to avoid exposing and impacting the different sediment types that could be present under the borrow material. The District as standard practice, tries to dredge borrow areas with minimum depth and gently sloping slides to avoid reduction or loss of circulation.

4. If hopper dredges are used between June 15 and November 15, NMFS-approved observers shall be aboard the vessels to monitor the material coming aboard. If evidence of sea turtle entrainment in the dredge-head is observed, further consultation with NMFS will be required.

APPENDIX E

U.S. Fish and Wildlife Service Response to Corps Comments

The Service has reviewed the Corps' comments to the Service's Draft report. The Service states the following.

1) In reference to Section VIII., entitled "Mitigation Recommendations", Part 1., Pre-Construction Phase (Surveys for least terns), the Corps has stated that they cannot implement the pre-construction survey phase for least terns for a full two week period prior to breach construction because the action (construction) area will not be identified until a breach occurs. In subsequent conversations with the Corps, it was determined that there was some misunderstanding as to the timing of the surveys. Consequently, the Service has modified this recommendation to more explicitly state that least tern surveys shall occur in the time period between breach occurrence and implementation of the breach fill construction plan. (assuming a breach occurs during the least tern nesting season of April 15 through September 1).

2) Refer to section (d) of the Corps comments. The Service notes that the buffer distances are stated in metric units to reflect the same scale of measurement that is cited within the literature on this topic. Consequently, the Service recommends that the Corps, in their adoption of these buffer distances, also utilize the metric system of measurement.

3) Refer to the section entitled "Habitat Protection" within the Corps comments. The Service has adopted the Corps "Breach Contingency Management Team" concept, with the Corps as the designated team leader, as the appropriate authority to enable the realization of such habitat protection measures.

4) Refer to section B., "Mitigation Recommendation For The Offshore Borrow Areas" as contained within the Corps comments. The Corps has stated that benthic surveys of the borrow areas will be undertaken for the overall Reformulation Study. Since the Reformulation Study has already begun, the Service recommends that the Corps initiate this component of the overall Reformulation Study to ensure that this study is undertaken in a timely manner so that the results can be of use to the Breach Contingency Plan, the various interim dune construction and beach nourishment plans, as well as the Reformulation Plan.

APPENDIX D

CENAN-PL-EA

EVALUATION OF THE PROPOSED ACTION IN ACCORDANCE WITH THE GUIDELINES PROMULGATED UNDER SECTION 404 (b) (1) OF THE CLEAN WATER ACT 40 CFR 230

PROJECT: Atlantic Coast of Long Island, Fire Island, Fire Island Inlet to Montauk Point - Breach Contingency Plan

A. Compliance Review (40 CFR 230.10 (a) - (d))

No.	Criteria	Preliminary* Yes	Preliminary* No	Final** Yes	Final** No
1.	The discharge represents the least environmentally damaging practicable alternative and if located in a special aquatic site (40 CFR 230, Subpart E) the activity associated with the discharge must have direct access or proximity to, or be located within the aquatic ecosystem to fulfill its basic purpose	X		X	
2.	The activity does not appear to:				
	(a) violate applicable State water quality standards or effluent standards promulgated under Section 307 of the Clean Water Act;	X		X	
	(b) jeopardize the existence of a Federally listed threatened or endangered species or its habitat;	X		X	
	(c) violate the requirements of any Federally designated marine sanctuary	X		X	
3.	The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values	X		X	
4.	Appropriate and practicable steps have been taken to minimize the potential adverse impacts of the discharge on the aquatic ecosystem (40 CFR 230, Subpart H)	X		X	

*Negative responses to any of the compliance criteria at the preliminary stage signifies the need for a more thorough level of analysis and attachment of the appropriate supporting documentation. Send letter to the applicant which documents reasons for the preliminary determination of non-compliance.

**A negative response to one of the compliance criteria at the final stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage are to be evaluated (404 (b) (2)) as a part of the decision making process, attach the appropriate supporting data and evaluation.

Preliminary Evaluation by: Peter Weppler Date: 5-23-95

Preliminary Evaluation by: [illegible] Date: 5/24/95

B. Technical Evaluation Factors (40 CFR 230, Subparts C-F)

No.	Evaluation Factor	Level of Effect: N/A	Not Significant	Significant*
1.	Physical-Chemical Characteristics (Aquatic)			
	a. Substrate		x	
	b. Suspended Solids/Turbidity		x	
	c. Water Column		x	
	d. Current Patterns/Water Circulation		x	
	e. Normal Water Level Fluctuation		x	
	f. Salinity Gradient		x	
2.	Biological Characteristics (Aquatic)			
	a. Threatened and Endangered Species		x	
	b. Aquatic Food Web		x	
	c. Other Wildlife		x	
3.	Special Aquatic Sites			
	a. Sanctuaries and refuges	x		
	b. Wetlands	x		
	c. Mud Flats	x		
	d. Vegetated Shallows	x		
	e. Coral Reefs	x		
	f. Riffle and Pool Complexes	x		
4.	Human Use Characteristics			
	a. Municipal & Private Water Supplies	x		
	b. Recreational and Commercial Fisheries		x	
	c. Water-Related Recreation		x	
	d. Aesthetics		x	
	e. Parks, National and historic monuments national seashores, wilderness areas, research sites, etc.			x

*If a check mark is placed in the "significant" column, a detailed explanation must be attached behind this sheet. The impacts must be identified and evaluated and referenced by item number (i.e. B-2(c), B-4 (a), etc.) Whenever possible these effects shall be quantified.

C. Evaluation of Dredged and Fill Material (40 CFR 230, Subpart G)

1. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material (check appropriate items):

a. Physical Characteristics (x)
b. Hydrography relative to known or anticipated sources of contaminants ( )
c. Results from previous testings of the material or similar material in the vicinity of the project site ( )
d. Known, significant, sources of persistent pesticides from land runoff or percolation. ( )

( ) Water column stratification.

( ) Discharge vessel speed and direction.

( ) Rate of discharge.

(X) Characteristics of the dredged material (constituents, amount, types of material, settling velocities, etc.)

( ) Number of discharges per unit time.

( ) Other characteristics of the disposal site that affect rates and patterns of mixing (specify) _____

References consulted: _____

2. Determinations based on the review of the data identified in D-1:

(X) An evaluation of the appropriate factors identified in the previous subsection and the data contained in the State Water Quality Certification (required under Section 401 of the Clean Water Act) indicates that the disposal site and/or size of the mixing zone are acceptable.

( ) An evaluation of the available data including the State Water Quality Certification indicates that the disposal site and/or size of the mixing zone are unacceptable.

E. Actions to Minimize Adverse Effect (40 CFR 230, Subpart H)

( ) Through application of the recommendations contained in 40 CFR 230.70 - 230.77 appropriate and practicable conditions have been formulated to minimize or mitigate the adverse effects of the discharge. Special conditions are included in the statement of findings for this application.

(X) The nature and magnitude of the discharge is such that no special conditions are required to minimize the adverse effects of the discharge.

F. Factual Determination (40 CFR 230.11)

A review of the appropriate data identified in Sections A - E above indicates that there is minimal potential for any significant short or long-term environmental effects of the discharge as related to:

1.	Physical Substrate at the Disposal Site (Review Sections B-1, C, D, and E)	(X) Yes	( ) No*
2.	Water Circulation, Fluctuation, Salinity (Review Sections B-1, C, D, and E)	(X) Yes	( ) No*
3.	Suspended Particulates/Turbidity (Review Sections B-1, C, D, and E)	(X) Yes	( ) No*

4.	Contaminant Availability (Review Sections B-1, C, and D)	(X) Yes	( ) No*
5.	Aquatic Ecosystem Structure and Function (Review Sections B-2, B-3, C, and E)	(X) Yes	( ) No*
6.	Disposal Site (Review Sections B, D, and E)	(X) Yes	( ) No*
7.	Cumulative Impact on the Aquatic Ecosystem	(X) Yes	( ) No*
8.	Secondary Impact on the Aquatic Ecosystem	(X) Yes	( ) No*

*When the response is negative the effects must be identified, quantified (where possible), and evaluated. Attach the analysis to this form. A negative response may indicate that the discharge is not in compliance with the Section 404 (b) (1) guidelines.

Final Evaluation By _____ Date 5/24/95

Final Review By _____ Date 5/25/95

C, CENAN-PL-E

E. Findings

(X) The proposed disposal site for the discharge of dredged or fill material complies with the Section 404 (b) (1) guidelines.

( ) The proposed disposal site for the discharge of dredged or fill material complies with the Section 404 (b) (1) guidelines with the inclusion of appropriate conditions listed in the statement of findings.

( ) The proposed disposal site for the discharge of dredged or fill material does not comply with the Section 404 (b) (1) guidelines for the following reasons:

( ) There is a less damaging practicable alternative.

( ) The proposed discharge will result in significant degradation of the aquatic ecosystem.

( ) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem.

_____ 5/26/95

C, CENAN-PL

B. TECHNICAL EVALUATION FACTORS ATTACHMENT

B-4(e). Parks, National and historic monuments, national seashores, wilderness areas, research sites, etc.

Explanation: The creation of a breached area may occur within the Fire Island National Seahore Boundaries. Emergency closure activites, per the proposed Breach Contingency Plan, will return the breached area to pre-emergency conditions.

e. Spill records for petroleum products or designated hazardous substances (Section 311 of the Clean Water Act) ( )

f. Public records of significant introduction of contaminants from industries, municipalities, or other sources ( )

g. Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities ( )

h. Other sources (specify) _____ ( )

References consulted: NOTE: FILL MATERIAL TO CONSIST ENTIRELY OF CLEAN SAND (Offshore Borrow Areas) Other potential fill material will be dredged from local channels, if needed.

2. Determinations based on the review of the data identified in Section C-1:

(X) An evaluation of the appropriate information identified in the preceding section indicates that there is reason to believe the dredged or fill material is not a carrier of contaminants or that levels of contaminants are substantively similar at the extraction and disposal site. Constraints are available to reduce contamination to acceptable limits or limit the transport of contaminants outside the disposal site.

( ) Insufficient data were available to determine the presence or absence of contaminants and testing was required. A summary of the test methods and an evaluation of the results is attached.

( ) An evaluation of the appropriate information listed in the preceding section indicates that there is reason to believe that the dredged or fill material is a potential carrier of contaminants or that the levels of contaminants are not substantivally similar at the extraction and disposal sites. Constraints are not available to reduce contamination to acceptable levels within the disposal site or to prevent contaminants from being transported beyond the boundaries of the disposal site. Testing was required and a summary of the methods used and an evaluation of the results is attached.

D. Disposal Site Delineation (40 CFR 230.11 (f))

1. The following factors, as appropriate, have been considered in evaluating the disposal site:

(X) Depth of water at disposal site.

(X) Current velocity, direction, and variability at disposal site.

(X) Degree of turbulence.

( ) Ambient concentration of constituents of interest.

APPENDIX E

NEW YORK STATE COASTAL MANAGEMENT PROGRAM
CONSISTENCY DETERMINATION

Project: Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York Breach Contingency Plan.

Applicant: U.S. Army Corps of Engineers, New York District.

Applicable Policies: Based on a review of the Coastal Management Program policies for New York, 10 were found to be potentially applicable to the proposed project. These policies are listed below.

Consistency Determination: Each of the 10 applicable policies were evaluated with respect to the project's consistency with their stated goals. The project has been found to be consistent with each policy.

POLICY 1 Restore, revitalize and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational and other compatible uses.

Determination: By restoring the project shoreline, the project would not only protect the existing public infrastructure, but also protect any deeply buried cultural resources.

POLICY 7 Significant coastal fish and wildlife habitats will be protected, preserved and where practical, restored so as to maintain their viability as habitats.

Determination: The proposed Breach Contingency Plan would provide a means of protecting Great South, Moriches and Shinnecock Bays [all Significant Coastal Fish and Wildlife Habitats (NYSDOS, 1987)]. The Federal-listed Threatened piping plover (Charadrius melodus) and State-listed Endangered least tern (Sterna albifrons) have been known to nest within the potential action areas. Under Section 7 of the Endangered Species Act of 1973, as amended, a Biological Assessment was prepared to account for the potential impacts upon the piping plover and seabeach amaranth from the proposed action. This resulted in a survey/monitoring program coordinated with the USFWS-LIFO and the NYSDEC which will be instituted to insure the protection of the shorebirds. Therefore, no significant negative impacts are anticipated to the shorebirds during construction.

National Park Service and Corps biologists have identified in the past the Federally-listed threatened plant species, seabeach amaranth (Amaranthus pumilus) within the various portions of the potential action area. Practical

protective measures will be taken to insure the safety of the plant species. A pre-construction survey will determine if seabeach amaranth exists in the action area. If the plant species is found, appropriate protective measures will be instituted.

The proposed project will not have a significant impact on marine fisheries. The borrow/placement material is primarily coarse sand to which contaminants do not adhere, which settle rapidly, and produce very confined low turbidity plumes that also settle rapidly.

Protective measures that will be fully coordinated with the National Marine Fisheries Service, will be undertaken to ensure the safety of the Federally threatened loggerhead (Caretta caretta) and endangered Kemp's Ridley (Lepidochelys kempi), leatherbacks (Dermochelys coriacea), and green (Chelonia mydas) sea turtles that may pass through the borrow area.

POLICY 12 Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.

Determination: The proposed project's major goal is breach closure. The proposed project will restore the barrier island to pre-breach conditions.

POLICY 15 Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.

Determination: This proposed action proposes potentially dredging material from approximately 1.5 to 2.5 miles off the south shore of Long Island and placing that material at the breached area.

POLICY 16 Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.

Determination: The proposed project is necessary to protect people and property from storm damage and flooding.

POLICY 17 Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.

Determination: The proposed design for this project consists of the placement of beachfill within the breached area only.

The proposed action will restore the natural function of the barrier island: to protect Great South, Moriches, and Shinnecock Bays and the associated areas from flooding and storm induced erosion.

POLICY 18 To safeguard the vital economic, social and environmental interests of the State and of its citizens, proposed major action in the coastal area must give full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas.

Determination: The proposed action would provide a means of protecting Great South, Moriches, and Shinnecock Bays Significant Coastal Fish and Wildlife Habitats with minimal short-term impacts to natural resources while providing protection to the barrier island and mainland residential properties and emergency services.

POLICY 24 Prevent impairment of scenic resources of statewide significance.

Determination: The proposed action will protect the Great South, Moriches, and Shinnecock Bay areas, Significant Coastal Fish and Wildlife Habitats.

POLICY 35 Dredging and dredge spoil disposal in coastal waters will be undertaken in a manner that meets existing State dredging permit requirements and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands and wetlands.

Determination: The dredging will be undertaken in a manner consistent with the allowable practices. No significant fish and wildlife habitats will be impacted. If breach closure activities occur during the Federally endangered shorebird species and plant species nesting and growing seasons, the District will implement protective measures (coordinated with the USFWS-LIFO) (see Section 7 of EA).. Protective measures will also be taken to insure the safety of potentially occurring Federally endangered and threatened sea turtles. When the beach is nourished, aquatic habitat (intertidal and littoral zones) will be minimally impacted, but will recover shortly after the project completion.

POLICY 44 Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

Determination: All tidal wetland areas (intertidal areas and littoral zones) will shift seaward after each renourishment. Through conversations with NMFS, it is their opinion that nearshore impacts are minimal and consist of moving each community associated with tidal wetlands seaward. After the initial placement, the intertidal areas and littoral zones will return to "before project" status.

References:

New York State. Department of State. 1987. Public Notice: Significant Coastal Fish and Wildlife Habitats in Nassau and Suffolk Counties. February.

United States Environmental Protection Agency and United States Army Corps of Engineers. 1991. Evaluation of Dredged Material Proposed for Ocean Disposal; Testing Manual. February.

APPENDIX F

PL-E

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

~~Jean K. Davidson~~
~~Commissioner~~
Bernadette Castro
Commissioner

June 23, 1995

Stuart Piken
Chief, Planning Division
Department of The Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

Re: CORPS
Beach Contingency Plan/Fire Island
to Montauk Point
Fire Island, Suffolk County
95PR1315

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, it is the opinion of the SHPO that the Draft Breach Contingency Plan for Fire Island to Montauk Point, Long Island, New York is acceptable.

When responding, please be sure to refer to the SHPO project review (PR) number noted above. If you have any questions, please feel free to call me at (518) 237-8643 ext. 255.

Sincerely,

Robert D. Kuhn, Ph.D.
Historic Preservation Coordinator
Field Services Bureau

RDK:cm

An Equal Opportunity/Affirmative Action Agency

printed on recycled paper

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

June 19, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: F-95-368
U.S. Army Corps of Engineers/NY District
Fire Island to Montauk Point Long Island,
New York Draft Breach Contingency Plan
and Draft Environmental Assessment

Dear Mr. Piken:

We received the May 1995 Draft Fire Island to Montauk Point Draft Breach Contingency Plan Executive Summary and Draft Environmental Assessment, and the Corps' consistency determination for the project, on June 5, 1995.

The Breach Contingency Plan and Environmental Assessment may be changed during the draft review process. Therefore, the Department of State will not be able to begin its consistency review of the project until we receive a copy of the final plan and final environmental assessment. However, in order to ensure that the final plan will be undertaken in a manner consistent with the State Coastal Management Program, the Department of State will review the draft document, and forward comments and recommendations to you. Those comments might also be useful in the preparation of a consistency determination for the final plan.

If you or your staff have any questions regarding this matter, please call me at (518) 474-6000.

Sincerely,

Steven C. Resler
Coastal Resources Specialist
Supervisor of Consistency Review
Division of Coastal Resources
and Waterfront Revitalization

SCR/bms

RECYCLED PAPER

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

June 13, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Robert Greene
Regulatory Services
New York State Department of
Environmental Conservation
SUNY Campus, Building 40
Loop Road
Stony Brook, New York 11790

Dear Mr. Greene:

The U.S. Army Corps of Engineers, New York District (District) wishes to initiate the application process for a Section 401 Water Quality Certification concerning the proposed Fire Island to Montauk Point, Long Island, New York Draft Breach Contingency Plan.

The New York District requests that your office review the enclosed copy of the Draft Executive Summary and Environmental Assessment for the purpose of obtaining a General Section 401 Water Quality Certificate. We ask that the NYSDEC point of contact (POC) notify the District POC, Mr. Peter Weppler at 212-264-4663 once a file number is assigned. Due to the impending storm season, the District would appreciate any expedience provided by your office in processing this application.

If there are any questions concerning this matter, please contact Mr. Weppler of my office at the above telephone number.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

cc: Daley - NYSDEC-Albany, Flood Protection
Hamilton - NYSDEC-Region I
Chiarella - NYSDEC-Region I

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

May 31, 1995

Environmental Assessment Section
Environmental Analysis Branch

Mr. George R. Stafford
Director, Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Dear Mr. Stafford:

Pursuant to Section 307(c) of the Coastal Zone Management Act of 1972 as amended (16 U.S.C. 1456 [c]), the U.S. Army Corps of Engineers, New York District requests Consistency Determinations for the 10 State policies (Enclosure 1) applicable to the proposed **Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York Breach Contingency Plan** (Enclosure 2).

The New York District requests that your office review these findings and formally transmit your Consistency Determination to the District.

If there are any questions concerning this matter, please contact Mr. Peter Weppler of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enc.
cc: Daley, NYSDEC-Albany
Anders, NYSDOS

NEW YORK STATE COASTAL MANAGEMENT PROGRAM
CONSISTENCY DETERMINATION

Project: Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York Breach Contingency Plan.

Applicant: U.S. Army Corps of Engineers, New York District.

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DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

February 27, 1995

Environmental Analysis Branch
Environmental Assessment Section

Ms. Diane Rusanowsky
National Marine Fisheries Service
Habitat and Protected Resources Division
212 Rogers Avenue
Milford, CT 06460

Dear Ms. Rusanowsky

The New York District, Corps of Engineers (District) is pleased to furnish the enclosed copy of the Draft Breach Contingency Plan (BCP) for the barrier island chain located along the Atlantic shore from Fire Island Inlet to Southampton, within the Fire Island to Montauk Point, New York Hurricane and Storm Damage Protection Reformulation Study. Included in the BCP is the Preliminary Environmental Assessment which the District prepared in conjunction with the National Park Service.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the New York District requests information on the presence of endangered or threatened species in within the action areas as well as the marked borrow areas.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken P.E.
Chief, Planning Division

Enclosure
cc: Christopher Mantzaris, NMFS-Gloucester
w/o enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat and Protected
Resources Division
212 Rogers Avenue
Milford, CT 06460

March 9, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
Department of the Army
New York District, Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Piken:

Reference is made to your request for information about the presence of endangered or threatened species along the Atlantic shore from Fire Island Inlet to Southampton, within the Fire Island to Montauk Point, New York Hurricane and Storm Damage Protection Reformulation Study. As indicated in previous correspondence with your agency, a variety of federally listed marine or estuarine species may be found in New York State waters. A more detailed assessment of the endangered or threatened species likely to be encountered in the study area follows.

Coastal waters off the Long Island shore provide feeding and/or resting habitat for juvenile hard-shelled sea turtles (Kemp's ridley, green and loggerhead) during the early summer months through the late fall. Similarly, adult loggerheads and leatherback sea turtles may be encountered in the deeper portions of the study area during the same season. A variety of marine mammals, including the harbor porpoise and right, humpback and fin whales are also known to feed in the more offshore portions of the study area. Very occasional appearances by blue and sei whales or hawksbill sea turtles have been reported in the general area, but these events are so rare that it is doubtful that these species would be effected by either the dredging or breach closure aspects of project implementation.

I hope this information is useful to you and your staff as the reformulation study is developed and the draft barrier island Breach Contingency Plan is finalized. If you wish to discuss this matter further, please contact me at (203) 783-4228.

Sincerely yours,

Diane Rusanowsky

Diane Rusanowsky
Fishery Biologist

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

February 22, 1995

Mr. Cliff Jones
U.S. Army Corps of Engineers
New York District, Planning Division
26 Federal Plaza
NY., NY. 10278-0090

Dear ~~Mr. Jones~~ Cliff:

Enclosed are two copies of the Fire Island to Montauk Point Long Island, New York, Breach Contingency Plan which were reviewed by myself and others in this office. Comments are noted in the margins. The comments are intended to be constructive and strengthen the professional appearance and technical content of the report to ensure its acceptance.

In general, the report could be improved with reorganization to omit redundancies. For example, the history of what happened at Westhampton is scattered throughout the text. It would improve the document to consolidate all the facts regarding the Westhampton breach into one comprehensive discussion. The report would be greatly enhanced with a thorough technical edit.

I would like to call your attention to two specific margin comments. On page 15 it is stated that sheet piling may be necessary to mitigate erosional losses during breach filling. We agree with the occasional need to use sheet piling during project construction to curb the flow of water and reduce erosion losses. However, it must be clearly stated that sheet piling, or any other materials used for this purpose, will be removed upon project completion. This was assumed in the FINS plan, and must be a condition of this plan to obtain State consistency approval. Elsewhere in the plan, the proposed timing for action to address a breach seems slow. Collectively, we should be examining ways to speed the response and thus minimize closure cost.

Please feel free to call me if you have any questions regarding our comments. We are ready to assist you in completion of the plan anyway we can.

Sincerely,

Fred J. Anders
Coastal Preservation Specialist
Division of Coastal Resources

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APPENDIX G

Faxed 3/22/95

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

March 22, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
Department of the Army
New York District Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

On March 13, 1995, the U.S. Fish and Wildlife Service (Service) received the U.S. Army Corps of Engineers' (Corps) March 2, 1995, Biological Assessment on potential impacts of the Fire Island Inlet to Montauk Point, New York Breach Contingency Plan on two Federally-threatened species; the piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*). Your cover letter also requests initiation of formal consultation under Section 7 of the Endangered Species Act (ESA) for both the Fire Island National Seashore's (FINS) Interim Breach Management Plan (IBMP) and the Corps' Interim Breach Contingency Plan (IBCP). The Service has noted the incorporation of a variety of measures to protect these two species in the project description and proposed management practices sections of the Biological Assessment. However, the Service review has concluded that additional information, as outlined in the regulations governing interagency consultations (50 CFR Section, 402.14(c)), is necessary to initiate formal consultation on the FINS IBMP and the Corps' IBCP. To complete the initiation package, the following information is required. In order to expedite the consultation process, we would appreciate simultaneous provision of all copies of correspondence to the Service's Long Island Field Office (LIFO).

1. Please clarify the proposed breach closure strategy. In particular, we are unclear on whether the plan calls for the closure of the breach areas "within 72 hours after a storm event" (page BA-2 of the Biological Assessment), completion of closure activity "within 72 hours of it's (sic) initiation" (page BA-10), or, as stated in the January 12, 1995, IBCP Executive Summary (and in Figure 5), "[w]ith implementation of the BCP, breach closure operations will be initiated in 1 to 6 weeks from breach initiation and would be completed within approximately 3 months depending on location within the study area."

Based on the recent communication between Service and Corps staff, on February 16, 1995, we understand that the timing and duration of closure may be determined by a variety of factors such as availability of equipment and the source/delivery method for the fill material. In addition, we are unclear if and how the strategy will be affected if multiple simultaneous breaches occur. Since these considerations may, in turn, influence effects of the project on the threatened species,

clarification of potential project timing and/or duration for both single and multiple breach scenarios is fundamental to this consultation.

2. Please provide information on the probability of breach and/or major storm events on a monthly basis. This information (previously requested on February 16, 1995) will contribute to assessment of the probability of the breach fill activities occurring within the piping plover and/or seabeach amaranth seasons, and determination of the level of anticipated take.

3. The Biological Assessment references a number of strategies that may minimize or mitigate overall impacts of the project on piping plovers and/or seabeach amaranth. However, careful analysis of the effects of the action and implications for the species' survival and recovery requires a precise description of these measures. Clarification of the following points will greatly facilitate this process and assure that potential benefits to the species are fully recognized:

a. "[R]estoration measures designed to create more suitable habitat conditions" that "...may have a positive effect on maintaining or increasing suitable shoreline nesting habitat in the long-term" (BA-8).

b. Proposed management practices described under 4.0 (BA-9), to minimize potential impacts to piping plovers. Quantification of measures such as buffers between the birds and fill activities (especially moving equipment) would be especially helpful.

c. Information on how the Corps plans to solicit landowner support for the erection of predator exclosures (BA-11) and an assessment of the degree of cooperation anticipated.

d. Education efforts by the Corps, New York State Department of Environmental Conservation and the FINS designed to assure piping plover protection (BA-15).

e. Any standards (size of areas and method of determining same) for symbolic fencing to protect plover *courtship and brood rearing* areas (BA-15 and 16).

f. Specific seasonal restrictions that will be employed by the Corps, such as those in the Westhampton Interim Storm Damage Protection Project Biological Opinion (page 12), to protect plovers during redevelopment of filled areas (BA-16).

g. Specific mitigation measures that will be employed to minimize the potential impact of dredge pipe installation, vehicle sand transport, mobilization, and demobilization to seabeach amaranth (BA-18, section 6.3).

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

March 2, 1995

Environmental Analysis Branch
Environmental Assessment Section

Ms. Sherry Morgan
Field Supervisor
U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Ms. Morgan:

This letter is in reference to the U.S. Army Corps of Engineers' proposed Breach Contingency Plan within the Fire Island Inlet to Montauk Point, New York; Hurricane and Storm Damage Protection Project and the December 20, 1994 letter from Mr. James Haggerty regarding the General Permit Application Number 94-05220-L2 for the National Park Service's Breach Closure Plan for the barrier island between Fire Island Inlet to Moriches Inlet (excluding Robert Moses State Park).

The District has prepared a Biological Assessment (BA) (Attachment 1) for the piping plover (Charadrius melodus) and seabeach amaranth (Amaranthus pumilus) concerning potential impacts relative to the above referenced projects. The BA addresses both the potential direct and indirect impacts emergency breach closure for both projects within 72 hours.

With the fowarding of the completed BA and a copy the Corps' Draft Breach Contingency Plan, the District requests to initiate formal consultation with the Service as specified in 50 CFR Part 402.14(c) under Section 7 of the Endangered Species Act for the piping plover and seabeach amaranth.

Time constraints for this project require that all technical requirements be defined and the NEPA process completed by June 30, 1995. Therefore, it is imperative that we continue to work together towards completing formal consultation as soon as possible in order to allow sufficient time for further reviews, revisions, modifications, development of mitigation/monitoring plans and approval by June.

The District will continue to fully coordinate with your

LIFO staff during the formal consultation process.

Should you have any question or comments, please contact Mr. Peter Weppler or Mr. Howard Ruben of my staff at (212) 264-4663.

FOR THE COMMANDER:

Stuart Piken, P.E.
Chief, Planning Division

Attch.

CF:
Kevin Du Bois, USFWS-LIFO
Sophie Ettinger, CENAN-OP-RE
Charles Hamilton, NYSDEC-Region I
William Daley, NYSDEC-Flood Protection

Biological Assessment

Potential Impacts of the Fire Island Inlet to Montauk Point, New York Breach Contingency Plan on the two Federally Threatened Species; the Piping Plover and Seabeach Amaranth.

1.0 Introduction

The US Army Corps of Engineers, New York District (District), is conducting a 10 year comprehensive long term reformulation study to reevaluate storm damage reduction measures for the approximately 83 miles of authorized project shoreline of the south shore of Long Island from Fire Island Inlet to Montauk Point. The severely eroded conditions at several locations along the Fire Island to Montauk Point project area have prompted the development of interim measures to reduce the threat of storm damage until the results of the reformulation study are determined. These interim plans are expected to be approved within the next few years. However recent coastal storm damage to the main shores of Long Island and the barrier islands resulting from a series of severe northeasters (i.e. Oct. 1992 December 1992, March 1993) has eroded the major dune system to the point where any significant northeaster could cause another breach to occur. This hazardous condition has indicated a need to develop a plan to react and respond more quickly to barrier island breaches, which may occur prior to completion of improvement plans developed under either the long-term reformulation study or any of the scheduled short-term interim plans. Such a potentiality has prompted the New York State Department of Environmental Conservation along with various congressional representatives and affected municipal officials, to request the District's assistance. A preliminary study was performed to determine the practicality and feasibility of reacting to a breach, including identifying an approach as well as areas for which authority is needed. These study effort have resulted in the formulation of the District's recommended Breach Contingency Plan (BCP).

The endangered species act (ESA) of 1973 mandates the protection from extinction of uncommon or threatened wildlife and plant species. Section 7(a) of this act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened, and with respect to their critical habitat, if any has been designated. Section 7(a)(2) requires Federal agencies to insure that activities they authorize, fund, or

carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal Action may adversely affect a listed species, or its critical habitat, the responsible Federal agency must enter into formal consultation with the U.S. Fish and Wildlife Service. The Atlantic Coast population of piping plover (Charadrius melodus) was designated as Federally threatened on January 10, 1986 (Federal Register; December 11, 1985). Seabeach amaranth (Amaranthus pumilus) was designated as Federally threatened on May 7, 1993 (Federal Register; April 22, 1993). Both species occur in and around the project area (USACOE, 1994). This Biological Assessment (BA) shall address potential project impacts on the piping plover and seabeach amaranth and measures to avoid or minimize such impacts.

2.0 Project Description

a. Project Area

The BCP project area is located entirely in Suffolk County, Long Island, New York, along the Atlantic shore (see Figure 1). This area of coastline is extremely vulnerable to storm damage and the likelihood of barrier island breaching is high. Great South Bay, Moriches Bay and Shinnecock Bay are connected to the Atlantic Ocean through Fire Island Inlet, Moriches Inlet and Shinnecock Inlet respectively. All are Federal navigation channels. The project area includes the barrier islands from Fire Island Inlet to Southampton, the bay shorelines and adjacent back-bay areas.

The barrier island chain of the project area includes Fire Island which extends about 30 miles from Fire Island Inlet to Moriches Inlet and includes the Fire Island National Seashore (FINS), the 15 mile barrier island which contains Westhampton and Tiana Beaches and extends from Moriches Inlet to Shinnecock Inlet, and the 4 mile barrier island segment which extends east of Shinnecock Inlet to Southampton.

The proposed Breach Contingency Plan entails the closure of breach areas within 72 hours after a storm event, with a maximum elevation 9' (U.S.G.V.D.) from Fire Island Inlet to four miles east of Shinnecock inlet, with suitable clean material, dredged from offshore areas or trucked in from upland sites. The breach will be filled to match existing shoreline profiles of those areas contiguous to the breach including those areas north of the breach in relationship to the back bays (Great South Bay, Moriches Bay, and Shinnecock Bay).
A minimum width berm of 150 ft will be created. The maximum elevation of 9' U.S.G.V.D. will occur at the centerline of the

barrier island, between the backbay and Atlantic Ocean. The fill areas will blend into existing topography west and east of the breach fill area. Fill grain size will be equal or greater than beach grain dimensions for Fire Island. After the breach is filled snow fences may be installed to trap windblown sand for the purpose of maintaining fill at a maximum elevation 9 U.S.G.V.D. The fences will be installed after November 1 of any year and be removed by March 30 of any year with trapped sand being spread back on lower elevation areas of the breach fill area above apparent high water. Final elevation will not exceed elevation 9 of U.S.G.V.D.

Fill will be obtained from the following sites (List and Maps 1 - 5, A1-A4) and methods described:

1. Hydraulically dredge and place sand in breach

a. U.S.A.C.O.E. Atlantic Ocean Borrow areas (Site Maps A1-A4) by dredging 2′ below existing grade at the borrow site and no greater than 20′ below the adjacent elevations to the borrow area.

b. Federally authorized channels of Fire island Inlet by dredging no greater than 2′ below the authorized depth of the authorized waterway.

c. Federally authorized intra Coastal waterway of Great South Bay and Moriches Bay by dredging no greater than 2′ below the authorized depth of the authorized waterway identified as Site ICW1-ICW2. (Maps A1-A4)

d. Existing channels maintained by Suffolk County Department of Public Works identified as site GSB1 to GSB8 by dredging no greater than 2′ below the permitted depth of the channel. (Maps A1-A4)

e. Harbor or channel areas maintained by Fire Island Communities and or Associations identified as Site FI1-FI2 by dredging no greater than 2′ below the permitted depth of the Harbor Areas. (Maps A1-A4)

2. Truck in upland sand and place fill in the breach Grain size will match or be greater than beach sand grain size.

3. Truck in dredge material (that has been stockpiled in communities) and place in breach. (FIS1-FIS15, Maps A1-A4)

4. Place sandbags in the area of the breach. Sandbags will be

trucked to site and will utilize burlap material. Sandbags will be installed:

a. Along east and west side of breach to prevent breach widening.

b. Across breach to act as a dam. Sandbags will be left in place when breach is filled.

5. Install longard tubes in area of breach utilizing sand from identified dredge areas.

a. Along east and west side of breach to prevent breach widening.

b. Across breach area to act as a dam. Longard tubes will be removed, if possible, when breach is filled.

6. Beach slope will be a minimum of a 1:20 slope in the breach fill area.

7. Dredged channel slopes will be a maximum of 1:3. Borrow area side slopes will be a maximum of 1:5

3.0 Piping Plover (Charadrius melodus)

3.1 Background

The piping plover is a small, sand-colored shorebird approximately 7 inches long with a wingspan of about 15 inches. Breeding birds have white underparts, light-beige back and crown, white rump and black upper-tail with a white edge. Breeding plumage characteristics are a single black breastband, often incomplete, and a black bar across the forehead. The black breastband, is generally more pronounced in breeding males than in females (Wilcox, 1939). Eggs are an average 1.2 x 1.0 inches in size. They are laid daily, with four being the usual clutch size; rarely as few as two eggs are found, with eight the highest reported (Hussel and Woodford, 1985). Incubation is shared equally by both sexes, with hatching usually in 27-28 days (occasionally as long as 31 days). Young birds can leave the nest within a few hours, and can fly at 30-35 days of age (Wilcox, 1959). One brood a season is the average, but if the eggs or nest are destroyed during their initial attempt, the same pair will often rebuild another during the same season usually within 100-200 feet from the first. Wilcox found most pairs did not remain

mated together beyond the first year; but that those that did had a much greater tendency to return closer to the previous years nest (average distance of 204 feet between the two years nest, with a maximum of 1,150 feet) than those birds that chose a new partner (average distance of 788 feet between the two years, with a maximum of 8,600 for males, and a much greater separation of up to 82,363 feet for females). Downer and Leibelt (1990) reports an average annual turnover rate of 23-30% among the known nesting sites on Long Island, indicating that plovers regularly shift within the breeding areas. In Wilcox's study of three breeding areas on Long Island, young birds, returning the year after their hatching, were more likely to nest in a different area from which they were hatched. Adults were much less likely to leave their original nesting area, though they frequently change nest sites within the area. It should be pointed out that only one-quarter of Wilcox's banded birds were recaptured. It is likely, that at least some of the banded birds returned to nesting areas other than the three Wilcox concentrated on, while unbanded birds from other areas may have moved into his study area as well.

Piping plovers breed on the northern Great Plains, around the Great Lakes, and along the Atlantic Coast. The Great Lakes population is listed as endangered; the others are listed as threatened (USFWS, 1985). Breeding grounds are occupied from late March to August. Wintering occurs along the Atlantic (North Carolina to Florida) and Gulf of Mexico Coasts, as well the Bahamas and West Indies (USFWS, 1985). The coastal populations choose breeding habitat that is dry and sandy, open water beaches well above high tide. Grassless areas are traditionally utilized, though openings in grassy dunes as small as 200-300 feet wide may be used (Wilcox, 1959). District biologists have spotted plover nests along the southern shore of Long Island in grassy areas at the edges of dunes and even behind dunes in blowouts. Adjacent to the breach at Westhampton, nests were found in lower lying areas potentially subject to flooding under spring high tide and/or storm events. The 1989 Long Island Colonial Waterbird and Piping Plover Survey reports that Long Island nests are located primarily on peninsulas (30%) and barrier islands (39%). Other breeding areas include shoreline/ocean/estuary (24%) and saltwater non-barrier island (5%). Sand and/or gravel beaches (87%) were the most frequently used nesting areas with dune (7%) being used less often. Sand was the predominant nest substrate (90%), although gravel (11%) was also used. Nests are shallow, scraped depressions, sometimes lined with small pebbles, shells, or other debris (USFWS, 1985). The shell lining is

apparently common among the Long Island population (Wilcox, 1959). Densities as great as 20 pairs along a 2 mile stretch of beach just west of Moriches Inlet have been reported by Wilcox (1959), though he found nests were generally at least 200 feet apart (and seldom less than 100 feet apart).

Adults and chicks feed on small crustaceans, mollusks, marine worms, insects, insect larvae, and other invertebrates. They forage in the intertidal zone of bays and inlets and on oceanfront sand beaches, mud flats, and tidal wrack deposits. Most feeding occurs at low or falling tides during the daytime.

3.2 Piping Plover Status on Long Island

On Long Island, piping plovers begin arriving at the nesting area during the last week of March (Wilcox, 1959). Earliest egg laying is late April. Earliest hatching is late May, with most hatching complete by mid to late June. Brooding is completed within 20 days and all young are gone from the nest by late July. Wilcox (1939) reports that chicks leave the nest soon after hatching, but usually stay within 400-500 feet of the nest until time of flight (30-35 days after hatching). Elias-Gerkin (1994) that chicks may forage up to 1 mile from their nest site. Even very young birds are very agile, Wilcox having timed chicks as young as 2 days old running 81 feet in twelve seconds.

Based on data collected in 1994, 209 pairs of piping plovers nested on Long Island, up from 192 pairs in 1992. Recent increases in plover monitoring efforts acknowledge these as accurate counts. The population of piping plovers in New York over the last 10 breeding seasons is believed to have remained relatively constant (USFWS 1994).

Because of their smaller size, subpopulations of piping plovers such as those found on Long Island face increased risks of extirpation. This is especially true when fecundity is substantially below that which is recognized as the coast-wide average and needed to maintain a resilient population. Unfortunately this is the present situation on Long Island. These poor rates of reproductive success have been recently documented in what has been described prime plover habitat with very little human disturbance present (Elias-Gerken 1994).

3.3 Breach Conditions as Plover Habitat

Piping plover habitat preferences include overwashes,

emphemeral pools, flood deltas and spits. All of these features can be found in and around dune areas on the south shore of Long Island. These features can be formed from any number of natural phenomena usually related to storm activitys which includes the breaching of a barrier island. Thus a storm which results in these kind of physical features could potentially provide prime habitat for piping plovers. This has been observed at the sustained breach area known as Little Pike's Inlet in West Hampton N.Y. Even a short term breach (i.e. rapid closure) may result in the creation of quality plover habitat. However, the functional duration (as prime plover habitat) of these features is unknown and these preferred habitats may be lost to succession at some point in time (years) after the breach has been closed. During the time the breach was present (1993) 5 pairs of plovers nested in the area west of the breach. The season after the breach had been closed 15 nests were documented in the vicinity of the former breach. The additional substrate and its increased elevation (breach closure fill) in combination with remaining storm created features created highly attractive habitat, apparently more attractive than the previous year. Thus it is the physical features which resulted from the breach and not the open water connection that is important to the plovers. In that such features could be duplicated artificially, potentially valuable plover habitat could be created in conjunction with any breach fill or other nourishment activity.

3.4 Non Activity Factors Affecting Plovers

According to the U.S. Fish and Wildlife Service (1985), there is enough available information to indicate a substantial decline in the species and its habitat, shrinkage of its breeding range, and continued threats to the species, its habitat, and range. As late as the 1920's the piping plover was still considered common along the Atlantic Coast. Since 1972 the National Audubon Society has continued to include the plover on its Blue List of breeding birds in potential trouble. On Long Island alone, the birds have declined from an estimated population of over 500 breeding pairs (Wilcox, 1959) to the present estimate of around 200 pairs (NYSDEC, 1994). Increased beach development and recreational use are considered the major reasons for the decline, with the latter primarily responsible for curtailed breeding success (USFWS, 1985). The 1989 Long Island Colonial Waterbird and Piping Plover Survey reported that Long Island, human recreation and vehicle use accounted for

the greatest disturbances to nesting birds (54% and 41% respectively), with pets (27%), habitation (21%), predation (25%), and flooding (15%) being other current forms of disturbance. One-third of all nesting sites are on private property, and therefore under the potential threat of future development. The two-thirds of nesting areas on public land are not free from disturbances, as many are along yearly use recreational beaches. Heightened local and public concern for the plight of shorebirds such as the plover has led to active protective measures. However, because of the non-colonial nature of piping plovers, their breeding areas aren't as conducive to protection as the more colonial species (such as terns). Approximately 25% of the plover nesting areas examined by the aforementioned plover survey had no recorded protection, and just about all nesting areas were in close proximity to human use. Such exposure however, does tend to acclimate birds to human activities, thereby reducing their tendency to permanently abandon nests when startled. Such a phenomenon has been observed by District biologists on a number of occasions when birds disturbed repeatedly by human activity continually returned to their nests and successfully hatched full broods.

3.4 Potential Direct Effects of the Proposed Action

It is anticipated dredging would have no adverse impact on piping plovers, as the material to be removed is taken from the offshore, an area which does not represent a special, unique, or limited habitat. No loss of breeding habitat would occur as a result of the proposed dredging therefore, no threat to the species, continued existence, or decline in its current population is anticipated. Stabilizing the eroding beaches within the BCP project area may have a positive effect on maintaining or increasing suitable shoreline nesting habitat in the long-term. Especially in conjunction with restoration measures designed to create more suitable habitat conditions.

Potential impacts to piping plover habitat could result from the construction aspects of the proposed breach fill action. Sand from the dredging area is to be transported to the placement area. The sand would be moved through hydraulic pipeline that would extend from the dredging site across the nearshore and intervening beaches or by truck from storage piles or approved upland sites. Newly hatched and older chicks feed along the shoreline in the vicinity of their nests, until they are capable of flight. If construction begins during the breeding season, activity

associated with the laying of the pipeline or the trucking of sand, would likely disrupt breeding and nesting of plovers, whereas the pipe itself could serve to block access of young chicks to the shoreline. If the pipe is laid along the surface of the beach for its entire route (as normally occurs) this could affect all multiple nesting sites. This could impact the Long Island population more than the direct actions at the smaller fill site. In an analogous situation, all mobile equipment poses direct threats to nests (crushing), chicks (crushing, trapped in tire ruts), as well as direct disturbance to chicks and adults from the presence of equipment and humans.

Beach slope is also a critical factor for piping plover habitat selection and use. It is important not to design a slope greater than the piping plover can utilize. In order to maintain existing habitat conditions, the slope of the placement material must be consistent with adjacent existing beaches that contain successful brooding areas.

4.0 Proposed Management Practices

Many measures are being proposed to be incorporated into the Plans and Specifications that will minimize potential impacts to piping plovers. The hydraulic pipeline will be placed offshore as much as possible to allow the plover chicks to forage unobstructed. The pipe will placed in the nearshore zone as much as possible to lessen contact with the beach. A District biologist will be present during pipeline construction to ensure the approved alignment is adhered to. If a nest is present prior to pipeline construction, or the breach area has been known to contain nests within the past three years, the pipeline will be realigned, elevated or buried to allow the plover chicks access to the shore.

Because of continuous construction activity, as well as the presence of open water it is doubtful that any plover pair would be able to successfully nest along the actual beach nourishment site. However, plovers often change nesting sites within a given area and should be able to establish nests in the undisturbed beach areas outside the nourishment site or within the breach after it has been filled, as occured after the filling Westhampton breach. It is still conceivable that a pair could attempt to nest behind the pipe, in a widened area that was formed earlier in the project. This is not likely given the unsettled nature of the recently deposited sand, and the presence of continued construction activity further up the beach. Irregardless, should a nest be built in proximity to the pipe, an attempt

would be made to help its development by shielding the nest from construction activity in its immediate vicinity until the checks are fledged. Work would be redirected away from the nest via an exclosure and fencing which would also keep any chicks away from the breach area still being filled.

The proposed closure activity is slated to be completed within 72 hours of it's initiation. Dredging will take place continuously, from the time the pipe is laid until completion. To limit the operation by restricting dredging during the more sensitive, early nesting period (April-July) is not considered warranted. The dredge itself, is located too far from land to impact nesting plovers. The noise from sand moving through a pipeline to the placement area would be negligible as a cause of disturbance, as the birds are themselves adapted to louder natural surf sounds. Given the protective measures described above, the land-side activity will also have no impact on nests adjacent to the breach or those that may be established during the operation.

4.1 Management/Conservation Procedures

All fill shall consist of "clean" sand fill material and shall conform with the existing beach substrate and consist of material that is capable of maintaining suitable piping plover and seabeach amaranth habitat.

Upland fill utilized to fill the breach must be equal to or of larger grain size than beach sand grain size at the project site.

Excavated sediments shall be placed directly into the disposal site or conveyance vehicle. No sidecasting (double handling) or temporary storage of dredge material at the closure site is authorized.

The storage of equipment and materials shall be confined to within the project worksite and or upland areas greater than 75' from the tidal wetland boundary.

There shall be no disturbance to vegetated tidal wetlands outside the boundaries of the breach as a result of the BCP activity.

Only burlap material sandbags may be utilized in any temporary sandbagging operation.

Longard tubes will be removed, if possible upon completion of

filling of breach, or when they become exposed. Burlap sand bags will be removed if they become exposed.

The flood tidal delta, overwash fans, sand spits and other features that form potential habitat associated with the formation of the breach shall not be used as a source of fill to repair the breach.

Any actions on lands within the FINS shall be exercised in accordance with a plan that is mutually acceptable to the Secretary of Interior and the Secretary of the Army and that is consistent with Public Law #88-587, the enabling legislation creating FINS.

The Service shall be notified of the start and the completion date of the proposed project.

Nest exclosures will be installed (under supervision of Corps biologists or representatives) on all Piping Plover nests within 600' of the project area provided the land owner provides permission.

The contractor and employees shall be adequately informed of Endangered Species Act concerns, and contractor specifications written accordingly. These shall be highlighted prior to construction actions, when possible.

4.2 Monitoring

In addition to the above protective procedures for minimizing impacts within the nesting season, the District will institute a monitoring program designed to assure the protection of the piping plovers. In addition, the program will also be designed to collect data that will add to our understanding of how to implement future actions to further reduce potential for impacting plovers and improve habitat and productivity. The program will consist several contingencies.

1. If the breach event occurs outside the piping plover nesting season, all feasible attempts shall be made to complete the proposed fill activity prior to the start of the nesting season (April 1).

a. Because recent breach closure activity appears to have created suitable habitat, the District will initiate the following monitoring program for any breaches

created and subsequently repaired between September and April. This data will be useful in developing a better understanding of impacts/benefits to piping plovers resulting from breach closure activities and how to best design these and similar actions to improve their use by this species. This monitoring program will last for two seasons, the season that occurs proximal to the breach and the following season. The area monitored will be one mile in length centered on the breach closure.

A qualified Corps biologist or designated representative will commence a site survey April 15, once a week through July 1. If piping plovers are found to nest in the monitoring area, surveys will be increased to 2 consecutive days a week (including covering the tidal cycle) until the last bird is fledged or Sept. 1, which ever is later. All pertinent data, courtship, nesting, number of eggs etc. and perceived disturbances will be recorded. These surveys are intended to determine the usage of the area by plovers and provide a qualitative measure of success and an identification of physical features that the Corps might be able to design in the future projects as potential mitigation or enhancement, especially to areas with relatively little history of use.

Past surveys by Corps biologists, many as joint ventures with the FWS have clearly demonstrated that twice weekly monitoring on concurrent days has been consistently able to identify nests and track chicks through fledging.

2. If the proposed fill activity will occur during the Piping Plover nesting season (April through September 1)

The following procedures will be employed:

a. Pre-Activity Survey

Immediately (as soon as is possible) upon the formation of a breach a qualified Corps biologist will initiate a site survey. The monitor shall conduct at least two days of surveys of the action area (landing, staging, operation, sand transport, beach nourishment, and breach closure area, i.e. all affected areas) for occurrence of territorial, courting or nesting Piping

Plovers (pre-activity survey). Each day's monitoring shall consist of three surveys to be conducted during different times of the tidal cycle. Should a delay of commencement of the proposed activity allow for it, the surveys should occur for at least four days prior to commencement of the proposed fill activity.

Should the emergency response time not allow for the full two days of surveys prior to on site activity, use of previously collected, current (up to three years) reputable data on the occurrence of territorial, courting or nesting pipping plovers in the action area will be used in conjunction with on site data. A minimum of one day of on site survey data will be used in conjuction with the existing data.

b. Concurrent-Activity Survey/Monitoring

Following the "pre-activity" surveys of the action area as described in a. above, surveys/monitoring shall continue from the initiation of on-site activity through its completion. During this phase, in addition to identification and posting activities (surveying), the monitor shall also be observing for disturbance to plovers from project activities (monitoring). If no plover activity is observed during the pre-activity survey, then the concurrent survey will occur on 3 separate days each week, covering the full tidal cycle each day. If any plover activity (courting or nesting) is observed the frequency of surveys/monitoring shall increase to daily surveys and shall continue through-project completion but not beyond September 1, or the date of last fledging, whichever is later. All perceived disturbances to the birds will be documented.

The monitor shall maintain field notes which shall be provided to the Service and NYSDEC. The Service in consultation with the District may modify survey and monitoring specifications based on site specific considerations to avoid any adverse effects.

Fencing and/or exclosures will be utilized to protect the nests in the disturbance area until hatching. When the chicks begin to feed, the monitor will direct the contractor away from the chicks and, if necessary, temporarily stop construction in the feeding area.

c. Posting and Buffer Zone Establishment/Impact Monitoring

Courtship areas, nesting, and brood rearing areas (including chick feeding areas) shall be posted immediately (supervised by the monitor) and no disturbance shall be permitted within 200 meters of the designated area. The boundaries of the protected areas shall be adjusted should plovers move outside the originally posted area. Exceptions to this buffer zone shall be granted if construction is necessary adjacent to the breach, to allow for its closure. The biological monitor will pay special attention to such areas while under construction.

The posted areas should extend from the ocean side low water line to the bay side low water line, or to the furthest extent of the natural or man made feature which would prohibit piping plover chicks from traversing the area (e.g. scarp or dune). Monitors shall document any reactions to disturbance from the fill activity to determine the effectiveness of the buffer. A reduction in buffer may be established, after consultation with USFWS due to natural or man-made features which inhibit piping plovers transiting the area.

In addition to identifying and posting activities, the monitor shall also be observing for disturbance to plovers from project activities, taking corrective actions to avoid same.

d. System of Notification

A system of notification shall be established. If Piping Plovers are detected or it appears that disturbance of Piping Plovers cannot be avoided with the implementation of breach closure activity the Service will be notified by the end of that working day for further consultation. Notification shall also include on-site contractors, the Corps, and the NYSDEC. The on-site contractors shall be notified immediately and activities adjusted or halted to avoid or minimize disturbance.

In the event that an adult or chick is injured or killed during the repair activities two sets of actions will be undertaken: (1) notification of all appropriate personnel (the Service, the Corps, contractor, managers etc.) and (2) collection of evidence, information and

production of a written record. The information will include; the incident, the time and location, maps, photographs (if possible), a written description and names and phone numbers of witnesses to the incident or the discovery.

e. Post-Construction Surveys

During the initial survey, irrespective of the occurrence of plovers, the District will monitor the project site for two seasons. The first season will be the phase concurrent with the project. The next season will follow survey guidelines established in section 4.2-1b.

5.0 Special Conditions

The protection of Piping Plovers that nest on fill area after project completion shall be assured to the extent possible within the jurisdiction of the Corps and its cooperating agencies. The agencies (the District, the NYSDEC, the National Parks Service) will institute an education program that informs residents and landowners of the necessary protective measures. The agencies will also coordinate with the various property owner groups (Fire Island Association etc.) in order to establish the necessary protective measures. Applicable special conditions that are already in replace will remain in place.

5.1 Protection Agreement

To provide the best protection for piping plovers in the project area, the protective agreement should be coordinated in such a way as to encourage the land owners to cooperate with the agencies (the Service, NYSDEC, or their representatives). The following protection measures should be implemented:

a. The Service, the New York State Department of Environmental Conservation, or their designated representatives should be given access to the action area for the purpose of surveying, monitoring, posting, and/or symbolically fencing piping plover courtship, nesting and brood rearing areas, and, erecting predator exclosures for nests during the plover breeding season (April 1 to September 1) and; for-the purpose of

surveying seabeach amaranth during the growing season (May 1 to November 1). Access should be given during daylight hours on any day(s) of any given year at the required frequency to accomplish the purposes stated above.

Symbolic fencing may be placed in a 50 meter radius around nest sites where pedestrians, joggers, picnickers, fisherman, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers, their eggs or chicks.

b. Redevelopment construction activity as a result of the breach closure should be discouraged within 300 feet of a symbolically fenced courtship, nest or brood rearing area.

c. Except in emergencies, off-road vehicular traffic, including all terrain vehicles, shall be prohibited on the beaches in the action area during the breeding season (April 1 to September 1) in areas traditionally used by Piping Plovers, and in areas where they become established. Under certain conditions, and if approved by the Service, very limited use of essential vehicles may be permitted for activities such as trash removal or other management activities. The Service shall be notified in advance of the circumstances regarding the need for such limited use by essential vehicles. Off-road vehicles shall also avoid any identified locations of seabeach amaranth.

d. To preserve feeding habitat, the removal of natural organic material deposited on the beach by the tides (wrack), shall be prohibited during the breeding season in the areas used by plovers. Mechanical beach cleaning of any kind shall be prohibited, however, trash and litter may be manually removed from the wrackline.

e. Fireworks shall be prohibited on beaches where Piping Plovers nest from April 1 to September 1, or the date of last fledging, whichever is later.

f. Kite flying shall be prohibited within 200 meters of nesting or territorial adult or unfledged juvenile Piping Plovers from April 1 to September 1.

g. Because dogs and cats are common predators of Piping

Plover eggs and chicks, pets shall be leashed and under control at all times from April 1 to September 1 on beaches in the action area where Piping Plovers are present.

h. To minimize predators, no feeding of raccoons, gulls or other wildlife shall occur.

All protection measures will follow and be consistent with the Service's Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitats on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the ESA (1994).

6.0 Seabeach Amaranth (Amaranthus Pumilus)

6.1 Background

Seabeach amaranth is indigenous to Atlantic Coastal Plain beaches, with 13 known populations in New York State. The species occurs on barrier island beaches, where its primary habitat consists of overwash flats at accreting ends of islands and lower foredunes and upper strands of non-eroding dunes. It sometimes establishes small temporary populations in other areas, including bay-side beaches, blow-outs in foredunes, and beach nourishment material. According to Weakley and Bucher (1991), "Seabeach amaranth appears to need extensive areas of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner. This allows it (seabeach amaranth) to move around in the landscape, as a fugitive species, to occupy suitable habitat as it becomes available."

Seabeach amaranth is an annual plant that germinates from April to July. Upon germinating, this plant becomes a small unbranched sprig, but quickly branches into a clump consisting of 5-20 branches. The stems are fleshy and pink-red with small rounded leaves approximately 2.0 cm in diameter. The leaves are at the tip of the stem and usually a spinach-green color with a small notch at the rounded tip. Flowering begins as early as June, but more typically starting in July and continuing until death in September.

6.2 Non-Activity Factors Affecting Seabeach Amaranth

Seabeach amaranth has been and continues to be threatened by destruction or adverse alteration of its

habitat. Although storms and related erosion of beaches threaten the species, non-coordinated efforts to stabilize beaches can be more destructive to the species in the long term. However, beach renourishment projects can have positive impacts on the species.

Unrestricted recreational use of beaches is known to threaten populations of seabeach amaranth. Pedestrian activity occurs during the growing season, but does not usually occur where the species is present because most people will walk around any plant when observed. Off-road vehicle (ORV) use during the growing season has adverse effects if the vehicles are not routed around the plants. The stems of the plant are brittle and are easily broken, therefore killing the plant and reducing seed production. If ORV use takes place in the dormant season, then the impacts are not as significant, unless it degrades or alters the physical aspects of the habitat.

6.3 Potential Direct Effects of Proposed Action

a. Dredging would have no adverse impact on seabeach amaranth, as the material to be removed does not represent a special, unique, or limited habitat. No loss of habitat would occur as a result of the proposed dredging therefore, no threat to the species, continued existence, nor cause a decline in its current population. By stabilizing erosion zones the project could have a positive affect on available habitat in the long-term.

b. Potential impacts would occur via the beach nourishment part of the proposed action. Direct sand placement onto the plant species, will result in mortality with no chance of seed production. This could significantly impact the local population.

c. Beach slope is also a critical factor for seabeach amaranth habitat selection and use. It is important not to engineer a slope greater than what is exhibited at seabeach amaranth locations, if present. In order to maintain existing habitat, the slope of the placement material must be consistent as compared to the current habitat.

d. Overwash areas have been identified as being primary habitat for the seabeach amaranth. Being a temporary species, seabeach amaranth occupies suitable

habitat when it becomes available, i.e. washovers, therefore stabilizing these areas after they breach could decrease such overwashes.

e. Trampling by workers or construction equipment could also destroy the plants directly.

6.4 Proposed Management Practices

a. If a breach action occurs a District biologist/botanist will survey the area immediately prior to any project activity within the seabeach amaranth growing season (May 1 - November 1). Approximately twice a month, June 15 to October 15 the area around and including the breach repair will be surveyed. Records shall include plant locations, numbers of plants and size of plants . If there is any seabeach amaranth present, the District shall identify and delineate seabeach amaranth locations via symbolic fencing placed in a 10 foot diameter ring.

b. All construction activities shall avoid all delineated locations of seabeach amaranth where feasible. The District will undertake all practicable measures to avoid an incidental take. In the unlikely event that the species appears at the placement area, and there is a very good possibility that the surrounding placed sand will encroach upon and smother the plant, the District proposes to transplant the individual plant to a similar habitat near or within the project area to lessen the impact of placement. Transplantation will include removal of a sufficiently large enough and intact volume of sand to include the full extent of the roots. This action, when necessary, will occur as soon as possible after the plant is identified and every attempt will be made to include the entire (undamaged) root system.

c. If present, seeds of all plants transferred will be harvested and stored to be relearned at a later date. A portion of this seed shall be sent to a qualified nursery to attempt germination. If successful, germinated plants will be replanted in suitable habitats in the project area and monitored for determining its ability to re-establish itself on site. It is understood that this action, when feasible will be undertaken for individual plants whose destruction

could not be avoided. The action will be attempted as a means of mitigating such loss but will not be construed as a long term commitment or research on the part of the District by replanting beyond the second year.

d. Placement areas shall be finished to a natural grade with compatible material.

e. A System of Notification similar to the one described above for the piping plover will also be utilized for seabeach amaranth.

7.0 Summary of Overall Impacts and Proposed Mitigation - Avoidance Procedures

a. Impacts due to project implementation to nesting piping plovers and existing seabeach amaranth are possible. No contractor shall be allowed into nesting areas without being accompanied by a qualified biologist. Dredging will occur continuously, 24 hr/ day until the breach is repaired. Sources of loud noise (above that of movement through the pipe, i.e. earth-moving equipment) will be located and muffled to minimize disturbances.

b. Additional impacts to the feeding activity of the piping plovers may occur. Piping plover chicks feed on their own almost immediately after hatching, and must have access to a beach or other shoreline until they are able to fly. A pipeline lying across the beach would block access to its food source. Practicable measures (i.e. pipeline burial or elevation) will be undertaken to allow the piping plover chicks to feed undisturbed.

c. A survey/monitoring effort will be undertaken. District biologists will be on site during laying of the pipeline to ensure it is aligned in the agreed to manner (as designated by the local, State, and Federal agencies involved with project review). During placement operations, the District will conduct on-site monitoring to ensure the activity is not impacting nesting and brooding behavior, and to modify any procedures to reflect actual observed impact associated responses.

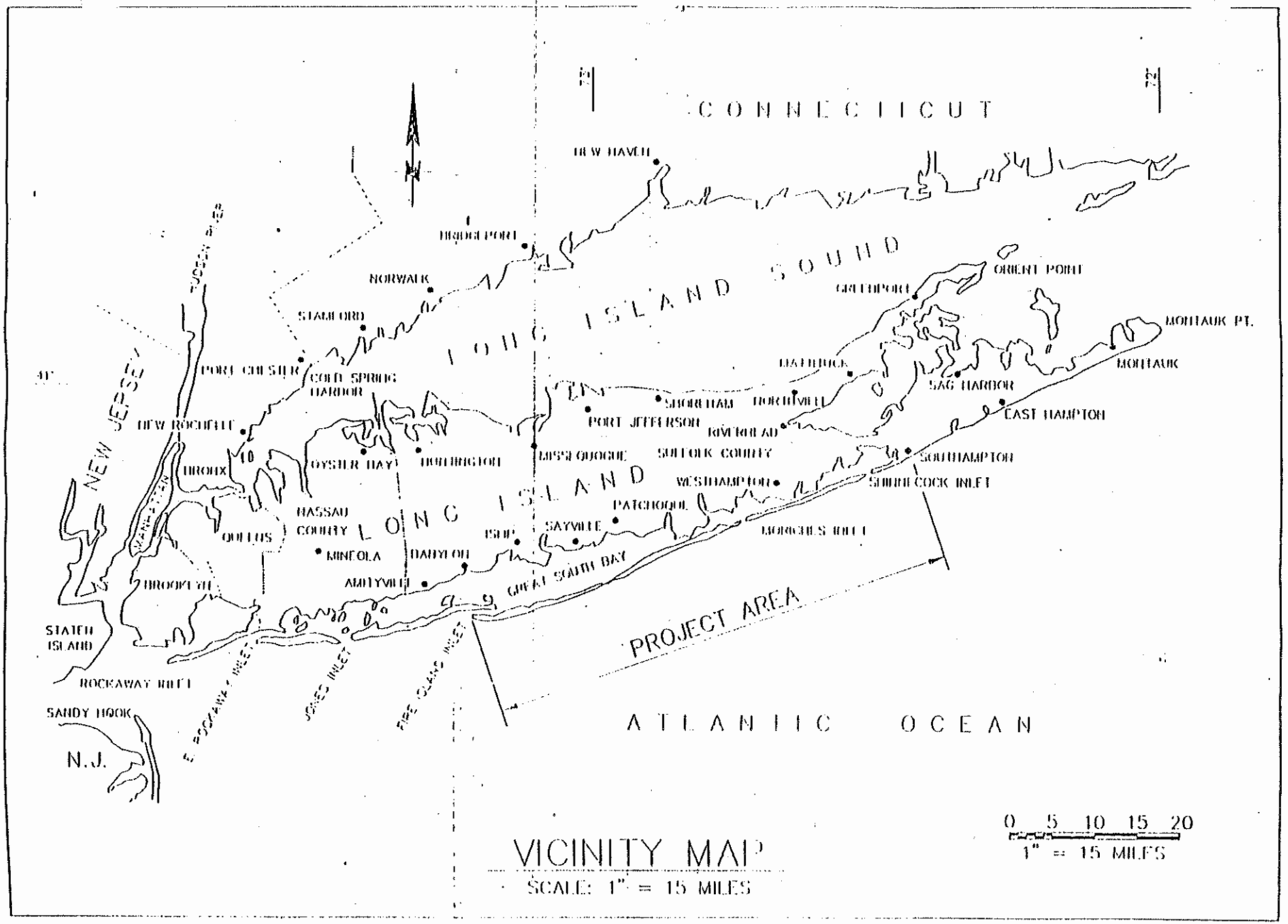
8.0 Conclusions

Given the control measures summarized above and detailed in the earlier sections and the local implementation of existing USFWS protection measures, impacts to either piping plovers or seabeach amaranth associated with the BCP projects will be minimized. The precautions taken will allow dredging or upland source placement of fill and continuous operation, thereby providing the most cost-effective expeditious operation minimizing plover and seabeach amaranth impacts.

The possible threats to human welfare and property damage not with standing, allowing a breach to remain open indefinitely may not help the piping plover on Long Island. At Little Pikes Inlet apparent high value habitat (before and after closure) produced very poor fecundity rates in these birds (Westhampton Beach Interim Storm Protection Project, Biological Opinion, USFWS 1994) and this was without human disturbance. In a situation where a breach occurred and was not repaired and human occupation and recreational activities remained in the vicinity, the birds would probably still be stressed to co-exist even after implementing any necessary protection measures. Judging from recent experiences without human disturbance, and drawing from the literature concerning human disturbance effects upon piping plovers, it is possible that under these conditions piping plovers would fair worse than they did at Westhampton. However, by filling the breach additional territory for nesting will be provided and the newly created beach will facilitate the effectiveness of the protective measures by providing an undeveloped area ideal as a buffer zone to any plovers nesting on the filled breach.

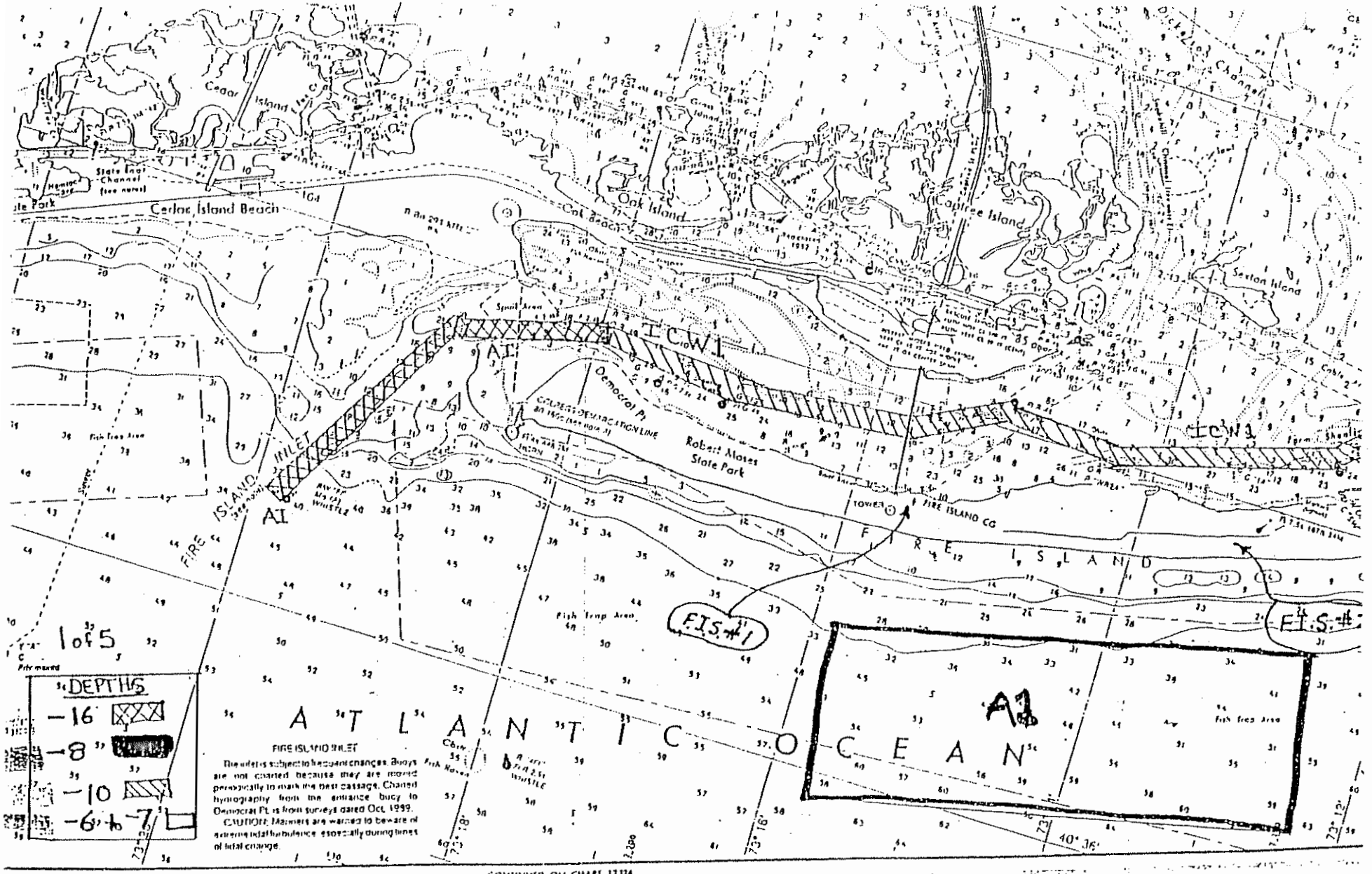
Good piping plover habitat is extremely limited on Long Island. It should be maximized in areas that promise, or are maintained as, low disturbance areas. The 1994 plover season showed that the physical existence of an open connection to the ocean is not the feature that promotes habitation by piping plovers. Rather it is those features that result from the breach that attracts plovers. Potential habitats such as this could be created and/or maintained in many areas along the BCP area (including FINS). Non-destructive modifications such as the removal of phragmites and dense invasive scrub (which can provide cover for predators), and the creation of overwash fans, spits, and ephemeral pools may be feasible enhancement measures to increase potentially usuable habitats. These could be created as part of the mitigation for breach closure activities or similar beach nourishment projects now under planning. What can be achieved is balance

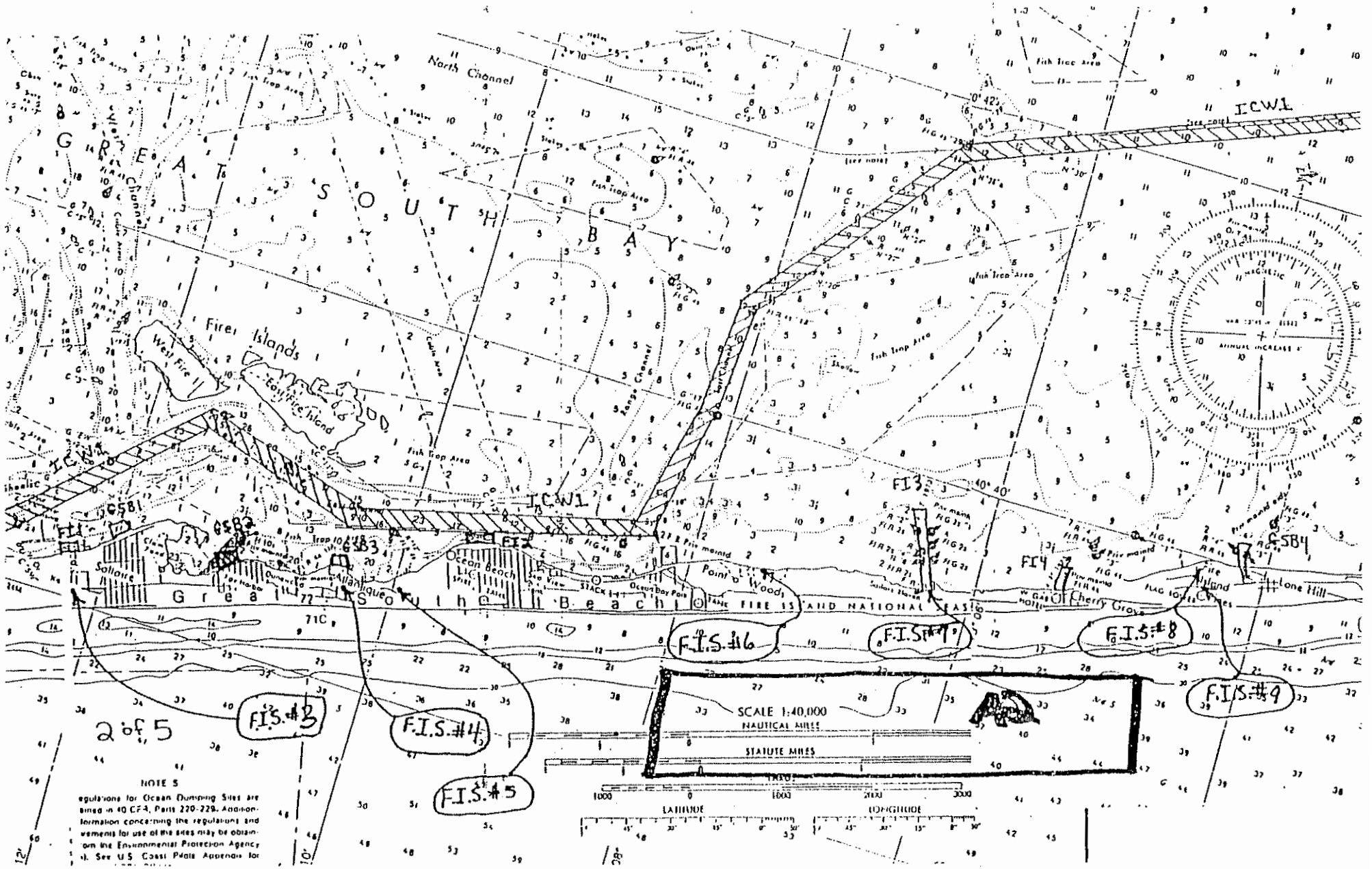
that offers mitigation of breach closure as a method of propagating and maintaining piping plover habitat while at the same time creates a solution to the storm induced erosional continuum and it's associated safety and economic problems.

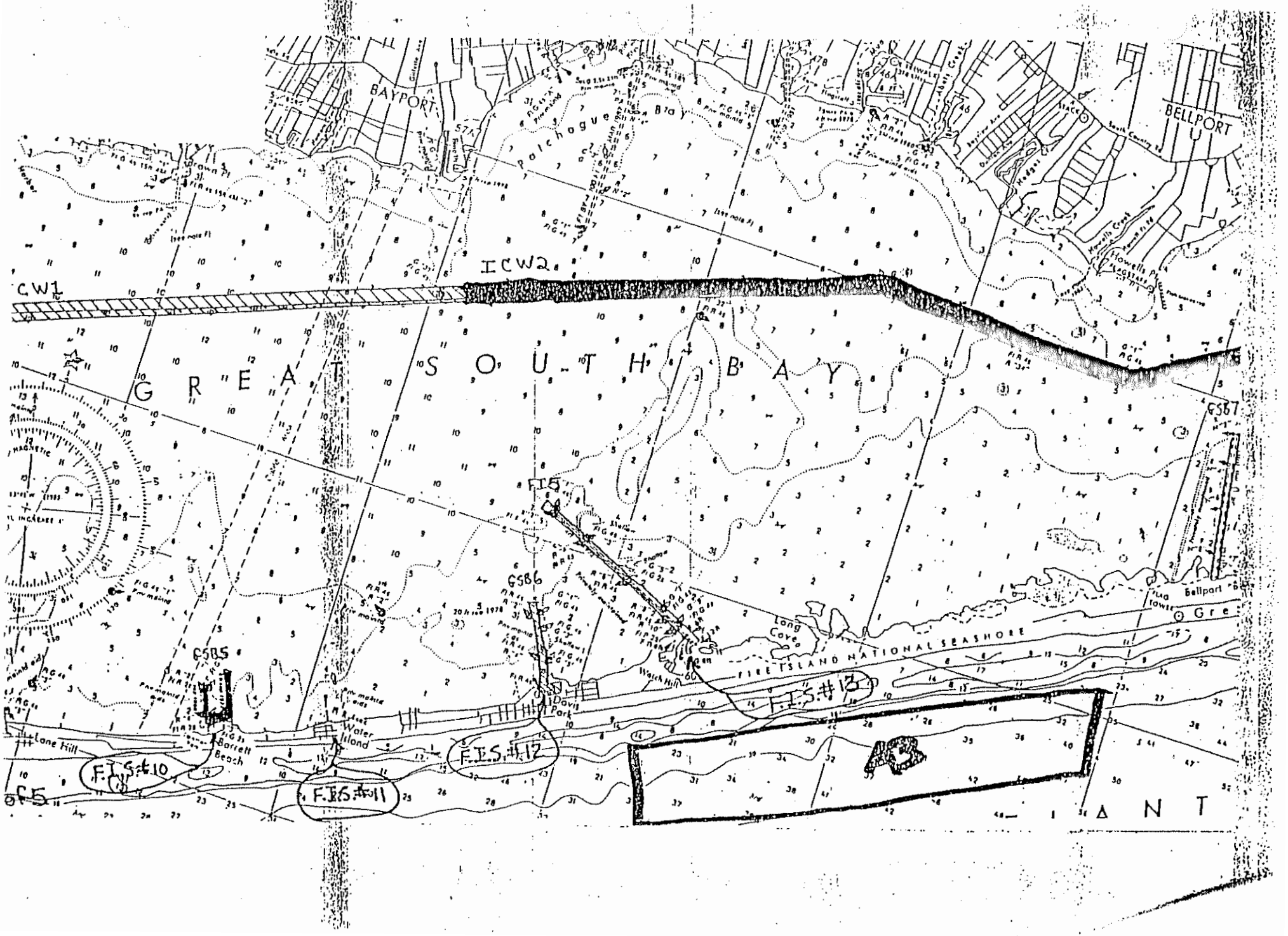


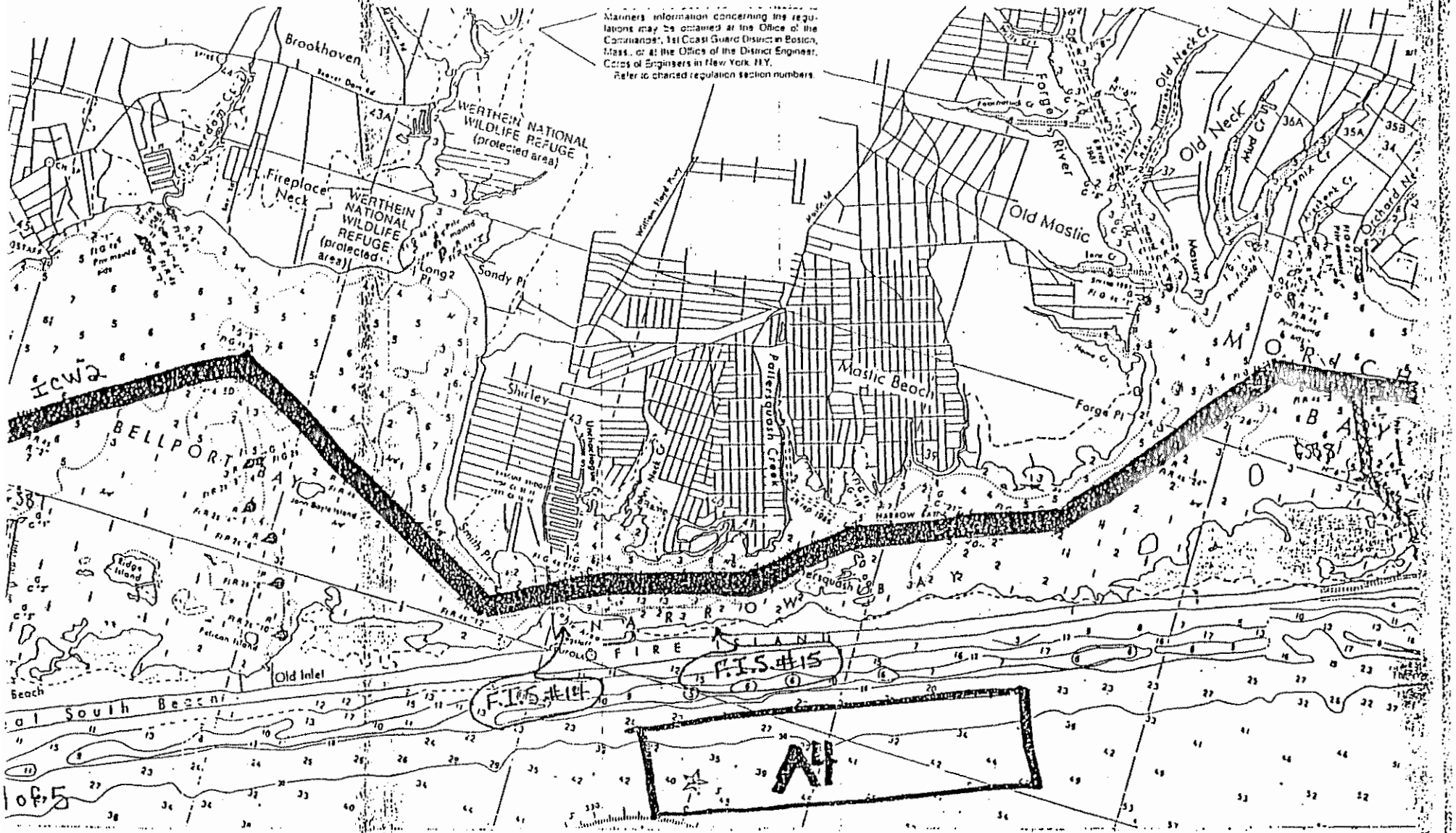
VICINITY MAP

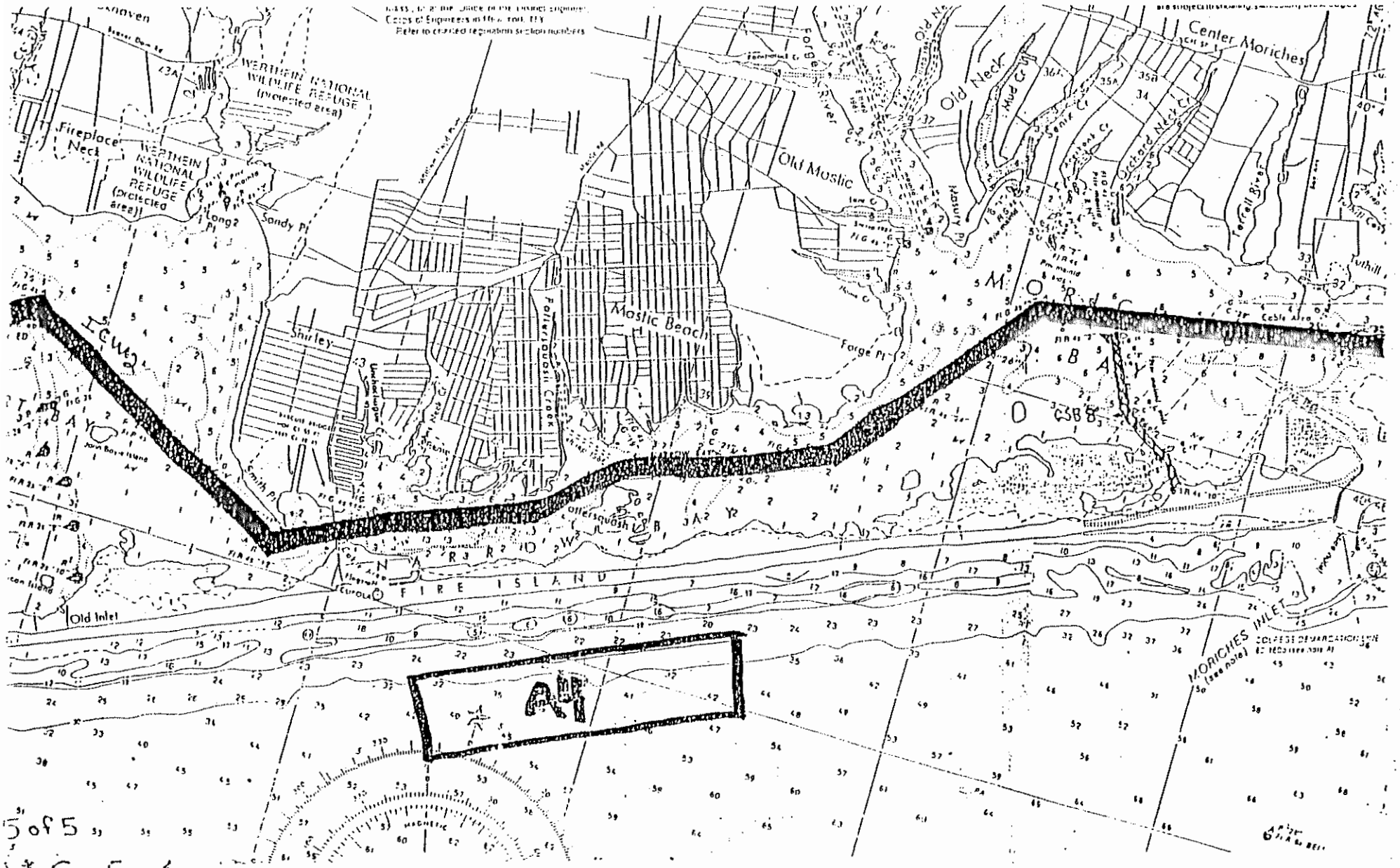
SCALE: 1" = 15 MILES


Cedar Island
Cedar Island Beach
Oak Island
Oak Beach
Captree Island
Sexton Island
ICW
Democrat Pt
Robert Moses State Park
FIRE ISLAND INLET
FIRE ISLAND CG
FIRE ISLAND
F.I.S. #1
F.I.S. #2
A1
ATLANTIC OCEAN
1 of 5
DEPTHS
-16
-8
-10
-6 to -7
FIRE ISLAND INLET
The inlet is subject to frequent changes. Buoys are not charted because they are moved periodically to mark the best passage. Charted hydrography from the entrance buoy to Democrat Pt. is from surveys dated Oct. 1999.
CAUTION: Mariners are warned to beware of extreme tidal turbulence, especially during times of tidal change.
CONTINUED ON CHART 12336


GREAT SOUTH BAY
North Channel
Fire Islands
West Fire Island
Fire Island
ICW1
FI1
FI2
FI3
FI4
GSB1
GSB2
GSB3
GSB4
Great South Beach
Ocean Beach
Point o' Woods
Lone Hill
F.I.S.#1
F.I.S.#2
F.I.S.#3
F.I.S.#4
F.I.S.#5
F.I.S.#6
F.I.S.#7
F.I.S.#8
F.I.S.#9
SCALE 1:40,000
NAUTICAL MILES
STATUTE MILES
FEET
LATITUDE
LONGITUDE
2 of 5
NOTE 5


BAYPORT
Patchogue Bay
BELLPORT
ICW2
ICW1
GREAT SOUTH BAY
FIS
GS86
GS85
GS87
Long Cove
FIRE ISLAND NATIONAL SEASHORE
Davis Park
Water Island
Lone Hill
Barrett Beach
F.I.S. #10
F.I.S. #11
F.I.S. #12
F.I.S. #13
Bellport
Gre
ANT


Mariners' information concerning the regulations may be obtained at the Office of the Commander, 1st Coast Guard District in Boston, Mass., or at the Office of the District Engineer, Corps of Engineers in New York, N.Y.
Refer to charted regulation section numbers.
Brookhaven
WERTHEIN NATIONAL WILDLIFE REFUGE (protected area)
Fireplace Neck
Long Pt
Sandy Pt
Shirley
Smith Pt
Pattersquash Creek
Mastic Beach
Old Mastic
Forge River
Old Neck
Old Neck Cr
Mud Cr
Senix Cr
Masury Pt
Orchard Ne
Forge Pt
BELLPORT BAY
MORICHES BAY
NARROW BAY
FIRE ISLAND
Old Inlet
Ridge Island
Pelican Island
South Beach
ICW2
F.I.S. #14
F.I.S. #15
A1
1 of 5



Center Moriches
Old Neck
Mud Cr
Senix Cr
Orchard Neck Cr
Terrell River
Old Mastic
Forge River
Mastic Beach
Fattersquash Creek
Forge Pt
Shirley
Sandy Pt
Long Pt
Fireplace Neck
WERTHEIN NATIONAL WILDLIFE REFUGE (protected area)
Smith Pt
Old Inlet
FIRE ISLAND
MORICHES INLET
5 of 5

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**Please note the stockpile sites pictured are from an earlier planning phase. The identified sites are Watch Hill, Sailor's Have and Democrat Point "Fire Island Stockpile" areas for sand, Robert Moses State Park east to Moriches Inlet. These areas are indicated by F.I.S. #1 through F.I.S. #15 on main map of Fire Island.

Site F.I.S. #1 Town of Islip - U.S. Coast Guard Station barracks between Robert Moses Causeway and U.S.C.G. station.

Site F.I.S. #2 Town of Islip - Northeast corner of bathing beach parking lot at Robert Moses State Park.

Site F.I.S. #3 Town of Islip - Robert Moses State Park eastern boundary, main access to the ocean beach.

Site F.I.S. #4 Town of Islip - Community of Atlantique near boat basin between Sea Breeze Walk and Ravens Walk.

Site F.I.S. #5 Town of Islip - Community of Robins Rest between Sloop Walk and Sextant Walk

Site F.I.S. #6 Town of Brookhaven - Community of Point of Woods Field south of ferry dock and old rail system.

Site F.I.S. #7 Town of Brookhaven - Community of Sailors Haven. Open area just south of the ferry dock.

Site F.I.S. #8 Town of Brookhaven - Community of Fire Island Pines just north of Ocean Walk.

Site F.I.S. #9 Town of Brookhaven - Community of Fire Island Pines just south of Ocean Walk and west of Sky Walk.

Site F.I.S.#10 Town of Brookhaven - Barrett Beach Park

Site F.I.S.#11 Town of Brookhaven - Water Island (east)

Site F.I.S.#12 Town of Brookhaven - Davis Park by ferry dock.

Site F.I.S.#13 Town of Brookhaven - Bayberry Dunes

Site F.I.S.#14 Town of Brookhaven - Smith Point County Park northwest corner of parking lot.

Site F.I.S.#15 Town of Brookhaven - Smith Point County Park east end of overnight camping area.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

July 14, 1995

Colonel Gary Thomas
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Dear Colonel Thomas:

The U.S. Fish and Wildlife Service (Service) has reviewed the project plans for the U.S. Army Corps of Engineers' Breach Contingency Plan (BCP) and the Fire Island National Seashore's (FIIS) Interim Breach Management Plan (IBMP). These plans address emergency closure of storm-created breach and/or inlet conditions along barrier islands in Suffolk County, Long Island, New York. Agreement between our agencies to proceed with formal consultation pursuant to Section 7(a) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.) was reached during an April 7, 1995 meeting. The Service received the Corps' initial biological assessment for this project on March 13, 1995. This letter and enclosures represent the Service's biological opinion on the effects of this action on the Federally threatened piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) in accordance with section 7 of the Act, but does not address the requirements of any other environmental laws. A complete administrative record of this consultation is on file in the Service's Long Island Field Office.

One aspect of these plans that will require further coordination with the Service is the siting, establishment and use of stockpile locations. Since locations have only been generically identified in project plans, the Service has not been able to determine if stockpile siting will affect listed species. Thus, for purposes of this biological opinion, we have assumed the potential for adverse effects. For stockpile locations that will be sited within FIIS, we recommend coordination with the National Park Service as well.

Although the biological opinion concludes that this project will not jeopardize the continued existence of the Atlantic Coast piping plover population, the project will further erode the species' already precarious status by reducing and degrading available nesting and foraging habitat. For this reason, the Service appreciates the efforts exerted by the Corps, and described in the project description herein, to minimize the adverse effects of this project on piping plovers. However, the Service must reiterate its outstanding concern about the additive impacts on the plover from this and other projects on Long Island. Additionally, the section of this opinion which describes seabeach amaranth conservation recommendations, expresses a similar concern for that species. This project may increase the susceptibility of both of these vulnerable beach dwelling species to jeopardy due to future Federal actions and/or ongoing and future non-Federal actions.

Given the emergency nature of these plans, the Service placed top priority on expediting the Section 7 consultation for these projects. To that end, the Service appreciates the cooperation and assistance that staff from the Corps, Fire Island National Seashore, New York State Department of Environmental Conservation, New York Natural Heritage Program, and The Nature Conservancy provided.

Should the Corps have any questions about this biological opinion, please have your staff contact Mr. Kevin Du Bois of the Long Island Field Office at (516) 581-2941.

Sincerely,

Sherry W. Morgan

Sherry W. Morgan
Field Supervisor

Enclosures

cc: TNC, Cold Spring Harbor, NY (C. Brittingham)
NYSDEC, Stony Brook, NY (C. Hamilton)
NYNHP, Delmar, NY (S. Young)
COE, Manhattan, NY (New York District)(J. Haggerty)
COE, Manhattan, NY (New York District)(P. Weppler)
NPS, Patchogue, NY (FIIS)(J. Hauptman)
USFWS, Asheville, NC (N. Murdock)

I. EXECUTIVE SUMMARY

The attached biological opinion refers to the Corps' Fire Island to Montauk Point - Long Island, New York, Breach Contingency Plan and the FIIS' Fire Island Inlet to Moriches Inlet, New York, Interim Breach Management Plan. These plans are designed to identify the emergency response necessary to fill breaches that occur within the action area and to subsequently restore the design fill profile, while minimizing the effect of these activities on Federally threatened species, piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*).

The Corps has adopted a number of measures designed to reduce the adverse effects of the proposed project on Federally threatened species. However, under certain circumstances, it may not be possible for the Corps to implement some or all of these measures, and as a result, the Service has identified the following project-related direct and indirect effects:

- Unavailability of suitable piping plover nesting habitat during construction.
- Loss of piping plover productivity due to construction disturbance.
- Loss of piping plover nests and/or chicks.
- Loss and/or degradation of habitat due to an interruption of recurved spit formation, inlet migration, and acceleration of dune succession.
- Disturbance of piping plovers during their breeding season, and loss or degradation of habitat as a result of restoration and enhancement of recreational use and redevelopment.
- Combined effects which reduce the capacity of the habitat to contribute to recovery, and have the potential for creation of a population "sink".
- Burying of seabeach amaranth plants and seed which occur in the fill area along the edges of a newly formed breach.
- Trampling and crushing of seabeach amaranth plants and seeds during project construction activities.
- Destruction of seabeach amaranth plants and seeds, and loss or degradation of habitat as a result of the restoration or enhancement of recreational use and redevelopment.
- Diminished dispersal of seed to adjacent populations or habitat whose colonization and occupation may partially depend on successful dispersal from plants in the fill area.
- Prevention of seed entrapment to bayside habitat, thereby reducing the formation of small populations in less conducive, secondary habitat.
- Creation of suitable, unvegetated habitat.

After reviewing the status, environmental baseline for the action area, the direct and indirect effects of the project, and the cumulative effects of future State, local and private actions that are reasonably certain to occur within the action area, it is the Service's biological opinion that the implementation of the BCP and/or IBMP will not jeopardize the continued existence of either the piping plover or seabeach amaranth.

In addition to the measures already proposed by the Corps, the Service has identified only one other reasonable and prudent measure, which is non-discretionary, and must be implemented by the Corps to reduce the anticipated level of take of piping plovers resulting from the implementation of the proposed breach closure plan(s).

- Minimize take resulting from the siting and/or establishment of stockpile material.

Incidental take is not defined for threatened species of plants, and, therefore, no reasonable and prudent measures nor terms and conditions are provided for seabeach amaranth. Terms and conditions for implementing the piping plover reasonable and prudent measures are described in the biological opinion's incidental take statement, Section 4(B).

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II. CONSULTATION HISTORY

8-30-94 The U.S. Fish and Wildlife Service receives a copy of the Draft Interim Breach Management Plan (IBMP) from Fire Island National Seashore (FIIS).

9-29-94 The Service forwards comments on the draft IBMP to FIIS staff for review, and in preparation for a meeting scheduled for October 5, 1994.

10-5-94 The Service meets with FIIS staff to discuss a variety of issues related to the IBMP including spoil stockpile locations, deposition of material and overlapping endangered species occurrences; the likelihood that a breach in the Wilderness Area will close naturally, and questions on lead agency status.

10-7-94 The Service meets with the Corps and FIIS to discuss each agency's tasks and scheduling requirements pursuant to the IBMP. The attendees develop a preliminary agenda with the FIIS to provide impact analysis to the Corps by 12-5-94, initiation of Endangered Species Act (ESA) Section 7 consultation by the Corps on 12-20-94, and Section 7 completion by 5-5-95.

11-9-94 The Service receives information from the FIIS on the location of historical breaches, and locations of existing breach vulnerability within the FIIS Wilderness Area.

11-18-94 Pursuant to a November 1, 1994, meeting between Corps and Service staffs, the Corps furnishes the Service with preliminary information on three proposed interim plans situated within the larger Fire Island to Montauk Point Reformulation project area; the BCP is among them. The Corps' letter identifies the BCP to be conceptual, currently in the planning stages.

12-1-94 Pursuant to the October 7, 1994 meeting, the Service notifies the FIIS of the Corps' intent to expand the concept of the IBMP (to develop their own breach closure plan, i.e. the BCP) to a larger area which would include the stretch of barrier from Moriches Inlet to a point where the barrier meets the mainland, at approximately Halsey Neck Lane in Southampton. Additionally, the letter identifies that the Corps intends to prepare an Environmental Assessment for the BCP that will also serve as the FIIS National Environmental Policy Act compliance for the FIIS IBMP. The letter informs the FIIS that it is the Service's understanding that the Corps, as permitting agency, will initiate formal consultation on both plans, but that the Service should be officially notified as to who will assume lead agency status for the consultations. The letter officially notifies the FIIS that it will not be expected to initiate consultation on the FIIS portion of the Corps' BCP, since this action would be superfluous.

12-16-94 The Service responds to the Corps' public notice for the FIIS IBMP, and includes a copy of the Service's most recent comments on the New York

State Department of Environment's (NYSDEC) final Section 404 permit application package, submitted to the Corps on August 19, 1994. The Service response includes recommendations pursuant to the ESA as well as comments and recommendations regarding outstanding issues which were not reflected in the NYSDEC's August 19, 1994, final application package.

12-23-94 The Service receives correspondence from the Corps regarding the generation of a list of special conditions that would accompany the NYSDEC's approved 404 permit for the FIIS IBMP. The Corps requests a work session with the Service and NYSDEC to resolve ESA questions.

1-12-95 The FIIS sends a copy of the final version of their IBMP to the Service.

1-24-95 In a phone conversation, the Corps indicates that they had hoped to initiate ESA Section 7 formal consultation for the FIIS IBMP and the Corps' BCP by mid-December 1994 so that both would be completed by May. The Corps references a November 4, 1994, letter in which the Corps contacted the FIIS about jointly developing an EA relating to the IBMP/BCP impacts on property within FIIS jurisdiction. The letter outlines the Corps' proposed dates of initiation (12-20-94) and completion (5-2-95) for the BCP and IBMP consultations.

2-16-95 The Service meets with Corps staff to discuss strategies to expedite the ESA Section 7 process in general, and the Corps' BCP specifically. The Corps indicates that they view the interim storm prevention projects as a means to collect performance data with which to evaluate their upcoming Fire Island to Montauk Point Reformulation Study. As a result, the Corps indicates that they think that interim projects should be monitored extensively. Additionally, the Corps indicates that they are committed to a June 30, 1995, completion date for the formal consultation process. Service staff commits to respond with additional information requests within seven days of receipt of the Corps' request for consultation initiation.

2-22-95 The Service meets with the NYSDEC in an attempt to resolve outstanding issues relating to the FIIS IBMP. Issues of note include post-project monitoring duration, concurrent-activity monitoring intensity and frequency, private landowner protection agreements, education and outreach options, appropriate Corps 404 permit lifespan. and Fish and Wildlife Coordination Act Report comments and concurrence.

2-28-95 The Service receives correspondence from the NYSDEC regarding the FIIS IBMP and follow up comments to the joint Service/NYSDEC meeting held on February 22, 1995.

3-22-95 The Corps notifies the Service of its feasibility study to determine what measures can be taken quickly to respond to future breach situations within the Fire Island to Montauk Point, New York Hurricane and Storm Damage Protection Reformulations Study Area. A copy of the Draft BCP was sent

to the Service to assist in the development of the Service's Fish and Wildlife Coordination Act Report for the BCP.

3-13-95 The Service receives the Corps' March 2, 1995, Biological Assessment on the potential impacts of the Fire Island to Montauk Point, New York BCP, and a request for the initiation of ESA formal consultation.

3-15-95 The Service contacts the Corps to request an additional copy of their BCP Biological Assessment.

3-22-95 The Service responds to the Corps' March 2, 1995, request for formal consultation initiation with a request for additional information deemed essential pursuant to the regulations governing interagency consultations. 50 CFR Section 402.14 (c).

3-27-95 The Service calls the Corps to follow up on the Service's request for additional information to initiate formal consultation on the IBMP/BCP. The Service conveys that they are ready to meet and discuss outstanding issues at the Corps' convenience.

The Service contacts NYSDEC providing them with the status of a response to their February 28, 1995, letter pertaining to outstanding IBMP issues.

3-30-94 The Service meets with the representatives from the Corps and FIIS to discuss the Corps' Draft BCP EA, the separate actions that may be taken by the State of New York and the Corps, based on the use of two separate closure response plans (IBMP and BCP, respectively), stockpiling sand, the likelihood of multiple breaches, availability and travel time associated with acquiring an ocean-going dredge, gaps in the wildlife information database that may be met either by the BCP or the Corps' Fire Island Inlet to Montauk Reformulation Study, and other topics of mutual concern relating to these projects.

3-31-95 The Corps responds to the Service's request for clarification on certain aspects of the Corps' Biological Assessment for the BCP. The Corps relays their intent to meet with the Service to discuss these issues so that ESA Section 7 formal consultation can commence.

4-3-95 The Service responds to a Corps request for clarification, and faxes the Corps an outline of topics to be discussed relative to the seemingly divergent IBMP and BCP projects. The Service requests a meeting to discuss the issues identified.

4-4-95 The Service invites NYSDEC to an April 7, 1995 meeting to discuss the FIIS IBMP and Corps BCP. The Service reiterates the need to resolve differences between the two plans, so that a single, expedited ESA Section 7 consultation review could be initiated.

4-5-94 The Service speaks with Corps staff regarding the differences between the FIIS' IBMP and the Corps' BCP, the fact that those differences were not reflected in the Corps' BCP BA, restoration/enhancement activities that the Corps might propose to reduce the level of anticipated take, and the Corps' ESA Section 7(a)(1) responsibilities to use their authority to further the recovery of listed species.

4-7-95 The Service hosts a meeting with the Corps, FIIS, and NYSDEC to discuss the significant differences between the Corps' BCP and the FIIS (and NYSDEC) IBMP. To expedite the ESA Section 7 process, the Service attempts to facilitate compromise between the plans so that they could essentially be reviewed as a single plan. The meeting attendants agreed to adopt a "worst case scenario" with regard to the timing of a potential breach(es) and the initiation of breach closure activities. The Service requests additional information regarding Corp reference to measures they might be willing to employ to reduce the BCP's anticipated impact to listed species. The Corps responds that they could not commit to any measures designed to create or enhance listed species habitat. The Corps, FIIS, and NYSDEC agree to accept a single ESA Section 7 consultation that would address the impacts of both projects in a single document.

4-11-95 The Service calls the Corps to supply them with a copy of the BCP on disk, to aid in drafting the combined BCP and IBMP project description.

4-12-95 In a letter to the Corps, the Service acknowledges the Corps' response to the Service's request for additional information, and the joint April 7, 1995 meeting with representatives from the NYSDEC and FIIS which provided information necessary to initiate formal consultation on April 7, 1995. The Service anticipates the need for additional information, clarification, and analysis, as the two staffs work through the consultation process. The Service reiterates its intention to expedite the Section 7 process in an attempt to meet the Corps requested time frames for consultation completion, June 19, 1995 (within 73 days).

The Service speaks with the Corps' Regulatory Branch regarding the IBMP permit conditions. The Corps indicates that they are still waiting for New York State Department of State concurrence on the project, and for feedback from the NYSDEC on the proposed conditions. The Corps indicates that their Section 404 permit cannot be issued until after the ESA Section 7 consultation is completed (in June).

4-27-95 The Service overnight-mails a copy of the draft joint IBMP/BCP project description to the Corps, FIIS, and NYSDEC for their review, comment and concurrence (The draft project description was developed relying on agreements made at various meetings between the three agencies, and attempted to reflect the consensus on a common course of action). The Service specifically identifies areas where differences in the two plans were resolved, and provides a justification for those changes. Based on the commitment of all involved parties to expedite the ESA Section 7 process, the Service requests that comments be forwarded no later than May 3, 1995.

The Service faxes the Corps, FIIS, and NYSDEC to alert them of the incoming draft joint project description. The Service mentions that, once a joint project description is agreed upon, that the Service would need the Corps and the NYSDEC to officially endorse and resubmit the project description as their own (normally, the project description would not be developed by the Service).

5-9-95 The FIIS faxes the Service with comments on the joint draft BCP/IBMP project description.

5-24-95 The Corps faxes the Service with comments on the joint draft BCP/IBMP project description.

6-8-95 The NYSDEC calls the Service to indicate that they have reviewed the joint IBMP/BCP project description, that they are satisfied with its language, and that any previous reservations have been withdrawn.

The Corps returns the Service's call to discuss May 24, 1995, Corps comments on the joint IBMP/BCP project description. Corp staff indicates that they were not aware of all agreements made between the Service and the Corps, and, particularly, with regard to the Service's and Corps' proposed duration of the plan (3 years vs. 10 years, respectively), and the duration of post-project monitoring (5 years vs. 2 years, respectively), indicates that they will confer with superiors to determine if Service recommendations are acceptable. A response will be delivered no later than June 13, 1995. The Corps was informed that, once issues were resolved, they would have to officially notify the Service of their concurrence with the project description as written, and identify it as their own. The Corps and Service also discussed issues relating to the compatibility of proposed fill sediment types/sizes.

6-12-95 The Service contacts the Corps about their May 24, 1995, comments to the draft joint BCP/IBMP project description. Agreements are made regarding the lifespan of the proposed plan (3 years), the inclusion of Fish and Wildlife Coordination Act Report recommendations in the project description, and the duration of post-project monitoring (minimum of 2 years, 5 years in the vicinity of plovers or historical nesting habitat). The Service notifies the Corps of its intention to send a draft copy of the incidental take statement, including reasonable and prudent measures and terms and conditions, for Corps review, comment, and concurrence.

6-15-95 The Service contacts the NYSDEC to verify their intention to include the renourishment of the fill profile in the joint BCP/IBMP project description. The NYSDEC concurs.

6-19-95 The Service faxes the Corps and NYSDEC with proposed changes to the joint draft BCP/IBMP project description regarding: the compatibility of deposition material; a definition of survey day-length; FIIS comments on qualified surveyors; contractor responsibilities regarding take situations; and multi-agency stockpile site selection.

6-21-95 The Corps contacts the Service and indicates that all June 19, 1995, revisions sent to them are acceptable. The Corps discusses a potential change to the project description, initiated by the NYSDEC, to raise the maximum fill elevation from 9' to 10' NGVD to prevent or reduce the frequency of overwash, and decrease the frequency of NYSDEC future maintenance/restoration of the fill profile. The Service indicates that the entire biological opinion would have to be retrofitted, with significant revisions to the effects of the action and incidental take statement sections. The Service also expresses concern over the inherent delays that would be caused by such a change. Nevertheless, the Service indicates that, if desired, a formal request for such a significant change to the agreed upon April 7, 1995, project description would be required.

The Service contacts the Corps to discuss language in the joint draft BCP/IBMP project description regarding construction activities related to the non-emergency restoration/maintenance of the design fill profile. The Corps verbally agrees with all changes to the text. The Corps indicates that they will not pursue the previously discussed change of the maximum fill elevation from el. 9' to 10' NGVD.

6-26-95 The Service contacts the Corps to determine if the Corps and/or its applicant (NYSDEC) is willing to conduct activities related to the non-emergency restoration/maintenance of the design fill profile outside of the plover nesting season.

6-29-95 The Corps contacts the Service regarding draft project description language faxed to the Corps on June 28, 1995. The Corps states that, the NYSDEC still wants to retain the ability to conduct fill profile restoration activities during the plover season, but only during "emergency" conditions. The Service and the Corps discuss a variety of strategies that would meet State needs while precluding work during the plover season. The Corps then provides revised project description language.

The Service contacts the Corps to advise them that the Service would not recommend the proposed changes, particularly with regard to the referenced unrestricted filling activities above the apparent high tide line. The Corps agrees, and the two agencies subsequently agree that the Service will amend the biological opinion to incorporate activities related to the restoration/maintenance of the fill profile within the plover season, and revise the project description, effects of the action, and incidental take statement sections accordingly. The Service indicates that additional time will be needed to rewrite these sections.

III. DESCRIPTION OF THE PROPOSED ACTION

The Service's Biological Opinion with regard to both the FIIS' IBMP and the Corps' BCP is based on an April 7, 1995, agreement by the Corps, FIIS, and NYSDEC, to adopt a single breach[1] closure plan (herein referred to as the BCP) and response timetable that reflects "worst case scenario" breach conditions. The following joint project description is designed to reflect the agreed upon and most cost effective breach closure techniques and procedures, and, in addition, incorporate project modifications agreed upon by the Corps and NYSDEC during the consultation process that will diminish the adverse effects to Federally listed threatened species that will occur from the project's implementation.

The goal of the breach closure planning process is to pro-actively establish a set of operating guidelines for the rapid and cost effective closure of barrier island breaches that minimizes storm changes to the Fire Island and Westhampton barrier islands and Southampton barrier spit, backbay areas, and corresponding portions of Long Island's southern mainland shoreline (Figure 1).

The project, as designed, is compatible with the recommendations of the Governor's Coastal Erosion Task Force in the "Draft Final Report, Volume One, Emergency Response to Coastal Storms." It should be noted, however, that the Task Force recommendations were based on the current lack of information and uncertainty as to the effects of leaving a breach open, and, as a result, are considered interim guidance pending additional scientific information. While the proposed project will not directly address information needs regarding the effects of an open breach(es) and/or inlet formation, it will, by comparison, indirectly assist that effort by attempting to provide information on the reverse situation, the ecological effects (benefits or disadvantages) of breach closure.

The joint project description reflects information from a variety of sources including information provided in the Public Notice of the FIIS IBMP, information provided during the FIIS sponsored meetings and in the August 19, 1994 NYSDEC application package to the Corps, information in the Corps's Biological Assessment and BCP, and joint meetings between the Corps, NYSDEC, FIIS and the Service. It should be noted that the prescribed breach closure methodologies described herein were modified and/or adopted relative to their past performance, and were "based on a limited number of prototype observations of breach growth rates at Westhampton Beach (U.S. Army Corps of Engineers 1995)."

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[1]A condition where severe overwash and/or bayside flooding form a channel which permits the exchange of ocean and bay waters under normal tidal conditions. Once a breach has formed, the likelihood of it remaining open to form a permanent inlet depends on the hydrodynamic characteristics of the bay, and the hydrodynamic and morphologic characteristics of the existing inlet.

A. Proposed Breach Closure Project

The proposed project area is divided into nine "Reaches" (Figures 2a-d) includes the south shore barrier islands, Fire Island, Westhampton, and Southampton, from Fire Island Inlet to the eastern terminus of the barrier spit, Town of Southampton, Suffolk County, New York. Breach closure activities may be initiated at a single or multiple locations in one or more of the following Towns or Villages in Suffolk County, New York: Town of Southampton, Village of Quogue, Village of Westhampton, Village of Westhampton Dunes, Town of Brookhaven, Town of Islip, Village of Saltaire, Village of Ocean Beach. Adjacent large water bodies are Shinnecock Bay, Moriches Bay, and Great South Bay to the north, and the Atlantic Ocean to the south.

The proposed project design entails the placement of clean upland sand or dredge material in any breach(es) occurring after a storm event. The actual amount of fill used will vary dependent on the breach size and the rate of loss of placement material. The breach(es) will be filled to match the existing shoreline profiles of the backbays to the north, and the Atlantic Ocean to the south of the barrier island. The placement of suitable beach material will form a berm in the center line of the barrier island with a minimum top width of 47.5 meters (150 feet) at an elevation no greater than 2.8 meters (9 feet) United States Geodetic Vertical Datum (U.S.G.V.D.). No overfill will be permitted. The minimum 47.5 meter (150 foot) berm will be placed landward of the existing adjacent dune. The slope of the fill extending seaward from the berm will be 1:20. However, placement of material at the point of overlap with adjacent beaches may vary somewhat from 1:20, as determined necessary to match adjacent existing apparent high waterlines, and to reduce the potential for erosion along the edges of fill.

The NYSDEC and/or Corps may employ a variety of closure techniques to fill any potential breach(es) as quickly and cost effectively as possible. The source of the breach fill material will be from one or more of the following: (1) hydraulically dredged material from a previously identified offshore borrow area(s), (2) hydraulically dredged material from locally maintained channels or harbors in Great South Bay or Moriches Bay (see Public Notice "Dredge Site Locations for Fire Island Breach Closures"), (3) truck delivery from previously stockpiled sites (see Public Notice "Fire Island Stockpile Areas for Sand, Robert Moses State Park East to Moriches Inlet"), and (4) truck delivery from upland material sources. Temporary[2] placement of sheet-piling may also be used as a closure technique to mitigate erosional losses during sand deposition.

Borrow source locations are identified in Figures 2a-d, including offshore sources and sand stockpiles. Upland sources for Reaches 1 (Southampton), 2 (Tiana/Shinnecock), 3 (Westhampton), 4 (Cupsogue), and 5 (Smith Point) were identified within 10 or fewer miles of each reach. These upland sites are located in East Quogue, Bridgehampton, and Westhampton. Three stockpile sites will be established along Fire Island to meet anticipated closure volume requirements for a single breach within Reaches 6 (Old Inlet) to 9 (Robert Moses). The existing stockpile at Robert Moses State Park contains 153,024

[2]To be removed prior to project completion, redevelopment, or re-occupation.

h. "Non-destructive modifications such as the removal of phragmites and dense invasive scrub (which can provide cover for predators), and the creation of overwash fans, spits, and ephemeral pools may be feasible enhancement measures to increase potentially usable habitats. These could be created as part of the mitigation for breach closure activities or similar beach nourishment projects now under planning" (page BA-21).

One aspect of this consultation that we believe might be most efficiently completed through a joint effort between our agencies to analyze the Corps' data on site-specific vulnerability to breach with the known data on current and historical occurrences of piping plovers and seabeach amaranth. The Service's endangered species biologist will be contacting your staff shortly to discuss the best way to facilitate this analysis, which in turn, will form a basis for assessing potential direct impacts of breach filling on these species. Similarly, we recommend a joint effort to compare locations of these two species with locations of the proposed stockpile sites for an analysis of impact of sand delivery and/or removal.

Although certainly not an information requirement, we would be very appreciative if your office could furnish us with a computer disk copy (Word Perfect format 5.1 or earlier version) of the Corps' Biological Assessment and IBCP. The disk copy would enable the Service to reduce the time spent retyping (transferring) language from the Corps' documents to our Biological Opinion. Likewise, we will be happy to supply the Corps with disk copies of our Biological Opinions for use in future reports, National Environmental Policy Act documents, Biological Assessments and other requests to initiate the ESA Section 7 consultations on Corps projects.

The Service appreciates the Corps' efforts to provide the "best scientific and commercial data available or which can be obtained during the consultation for an adequate review of the effects that an action may have upon a listed species or critical habitat." Upon receipt of the requested additional information, formal consultation will be initiated, and the Service will identify the dates when consultation must be completed (day 90) and the Biological Opinion delivered (day 135).

As stated during meetings with the Corps on both February 16, 1995, and March 13, 1995, it is the Service's intention to work cooperatively to expedite the ESA Section 7 formal consultation process for both the FINS IBMP and the Corps IBCP. As the finalization of both breach fill plans are a Service priority, let me further assure you that my LIFO staff is available immediately to meet with Corps staff to discuss these requests for additional information and/or any other issues which may need further resolution to expedite the consultation process.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to call Field Supervisor Sherry Morgan at (607) 753-9334 or

Endangered Species Biologist Kevin Du Bois at the Long Island Field Office at (516) 581-2941.

Sincerely,

David A. Stilwell
Acting Field Supervisor

cc: NYSDEC, Stony Brook, NY (Charles T. Hamilton)
USACOE, New York, NY (Joseph Vitri)
USACOE, New York, NY (Howard Ruben)
USACOE, New York, NY (Pete Weppler)
FINS, Patchogue, NY (Jack Hauptman)

cubic meters (200,000 cubic yards). The two other proposed sites, at Sailors Haven and just west of Old Inlet in the Fire Island Wilderness Area, will contain approximately 45,907 cubic meters (60,000 cubic yards) each so long as the fill placement is consistent with both the FIIS Wilderness Management Plan and the Wilderness Act. Alternative material sources include Federal Navigation and local channel dredge materials from the adjacent estuaries, including the Intercoastal Waterway. Selection of a material source for breach closure is dependent on the required closure volume and delivery rates anticipated given proposed methodologies. Closure rates based on past Corps experience are listed below (U.S. Army Corps of Engineers 1995):

1. Dredging: 13.8 linear meters (45 feet) of closure/day at a fill rate of 16,100 to 21,806 cubic meters/day (21,000 to 28,500 cy/day), and approaching from one side;

2. Stockpile trucking: 12.3 linear meters (40 feet) of closure/day at a fill rate of 2,448 cubic meters/day (3200 cy/day), approaching from 2 sides, and with two 8-hour shifts;

3. Upland trucking: 12.3 linear meters (40 feet) of closure/day at a fill rate of 3,060 cubic meters/day (4000 cy/day), approaching from one side, and two 8-hour shifts.

The units associated with the closure rates refer to the alongshore distance that can be closed, on average, during the course of any given day. These rates account for material lost to outwash, and assume a representative average breach depth of roughly 2.2 meters (7 feet) below Mean Sea Level (MSL). Estimated cross-sectional closure rates were 27.4, 26.5, and 26.5 square-meters (350, 280, and 280 square-feet) per day for dredging, stockpile trucking, and upland trucking, respectively.

As previously stated, closure rates account for the loss of material during construction and placement of sheet-piling to mitigate erosional losses. To provide the above rates of closure progress, a single row of sheeting was used for dredging, and two rows were used for upland trucking due to slower sand placement for the reaches fronting Shinnecock and Moriches Bays. During stockpile trucking operations and dredging at Reaches 6 (Old Inlet) to 9 (Robert Moses), no sheeting would be possible due to limited access and the need for an immediate response. Material losses during construction were assumed to be 40 percent (one row of sheetpiling) and 60 percent (no sheetpiling) for dredging, 50 percent for stockpile trucking, and 25 percent for upland trucking.

The average grain size of replacement upland fill will be equal to or larger than the beach sand at the project site. All fill will consist of clean sand with no asphalt, slag, flyash, broken concrete or demolition debris. Fill dredged under emergency conditions shall be compatible, if possible, with the grain size of the existing beach at the breach site. In an attempt to assure that source material grain sizes are compatible, the Corps will attempt to use only those offshore borrow sites where grain size tests have shown the material to be suitable.

Dredging from the U.S. Army Corps of Engineers Federally authorized borrow areas south of Fire Island in the Atlantic Ocean will be limited to 0.61 meters (2 feet) below the existing depth of the borrow site and no deeper than 6.1 meters (20 feet) below the adjacent ambient depths outside the borrow area. Side slopes will not exceed 1:5.

Dredging of the Federally authorized channels of Fire Island Inlet will be limited to no greater than 0.61 meters (2 feet) below the authorized depth of 4.9 meters (16 feet). Side slopes will not exceed 1:3.

Dredging of the Federally authorized Intracoastal Waterway of Great South Bay from Fire Island Inlet to Patchogue will be limited to no greater than 0.61 meters (2 feet) below the authorized depth of 3.04 meters (10 feet). Side slopes will not exceed 1:3.

Dredging of the Intracoastal Waterway of Great South Bay and Moriches Bay from Patchogue to Moriches Inlet will be no greater than 0.61 meters (2 feet) below the authorized depth of 2.4 meters (8 feet). Side slopes will not exceed 1:3.

Dredging of the Suffolk County Department of Public Works maintained channels will be limited to no greater than 0.61 meters (2 feet) below their authorized depths which range from 1.8 to 3.04 meters (6 to 10 feet). (See Public Notice for listing of specific channels and authorized depths). Side slopes will not exceed 1:3.

Dredging of the community or privately maintained channels or harbors will be limited to no greater than 0.61 meters (2 feet) below their authorized depths which range from 1.8 to 2.1 meters (6 to 7 feet). (See Public Notice for listing of specific channels/harbors and authorized depths). Side slopes will not exceed 1:3.

There will be no expansion of channel bottom width as a result of dredging activity.

Based on the Corps' analysis of the site-specific effectiveness of each of these closure techniques, it is anticipated that some fill techniques, by themselves, may not be capable of facilitating breach closure. For instance, extensive sections of Fire Island cannot be reached by trucking material from upland sources. Stockpiles, by definition, have a limited volume of material available for breach closure, and, as such, may be ineffective if breach growth cannot be significantly impeded with available stockpile volumes. Multiple breaches, cutting off access to newly created islands, may also limit the effectiveness of trucking stockpiled or upland material since access from two directions will be impossible. The Corps' benefit cost comparisons indicate that the most cost effective breach closure technique is to combine the rapid response capability of trucking upland or stockpile material with the high volume capacity of dredging (U.S. Army Corps of Engineers 1995). Implementing this combination of construction techniques, however, requires nearly immediate mobilization of the trucking operations to prevent uncontrolled breach growth. If mobilization is delayed, the increase in breach size makes dredging from offshore borrow sources the more viable approach. Based on a consideration of these factors, reach-specific procedures for closing barrier island breaches are identified as follows:

Reaches 1 (Southampton) and 2 (Tiana/Shinnecock): The preferred means for closure along this reach would be with trucking from upland sources followed by use of a bay dredge within Shinnecock Bay to complete the design section (Benefit Cost Ratio (BCR) of 3.3). A delay in dredge mobilization or a marked increase in dredging costs would render upland source alternative trucking the most cost-effective closure methodology (BCR of 2.7). Similarities in the cost of closure coupled with low benefits along Shinnecock Bay, relative to Great South and Moriches Bays, result in a relatively narrow range of benefit-to-cost ratios (1.7 to 3.3).

Reaches 3 (Westhampton), 4 (Cupsogue), and 5 (Smith Point): As in the case of Reaches 1 and 2 (Tiana/Shinnecock) the recommended methodology for breach closure involves the initial use of upland sand sources and trucking followed by use of a bay dredge within Moriches Bay (BCR of 10.9). Should dredge mobilization be delayed or more costly than anticipated, the closure could be obtained using only upland sources and trucking (BCR of 9.4). Increased development along Moriches Bay, relative to Shinnecock Bay, produces a more clearly defined range of BCRs with a range from 5.0 to 10.9.

Reaches 6 (Old Inlet), 7 (Water Island), 8 (Atlantique), and 9 (Robert Moses): The most effective means of achieving breach closure along Reaches 6 (Old Inlet) to 9 (Robert Moses) involves trucking of sand from pre-breach constructed stockpiles on either side of the breach followed by use of an ocean dredge using offshore borrow sources, see Figure 2a-d [2 of the BCP] (BCR of 7.0). It is judged that dredging would be required to achieve closure of a breach and completion of the design section along these reaches, although there is considerable savings associated with the use of stockpiles. Pronounced differences between calculated BCRs (5.8 to 7.0) indicate the positive impacts of stockpiling on both construction costs and damage reduction.

The dredging only alternative is possible for any of the project reaches, and could be necessary if breach growth exceeds rates predicted on the basis of experience at Westhampton Beach. At Reaches 1 (Southampton) to 5 (Smith Point), decisions regarding the need for and type of dredge must be based on dredge availability and breach growth. The use of stockpiled material along the barrier fronting Great South Bay must be monitored during trucking operations to determine the fill strategy's effectiveness, which will depend on actual breach growth rates. Multiple breaches, excessive breach growth, or other limitations to stockpile trucking might combine to limit the effectiveness of the stockpile trucking/dredging alternative. In such cases it will be necessary to complete breach closures using the dredging only alternative. Conversely, breach initiation at locations where breach growth is expected to be slow (e.g., Old Inlet) and visual survey of the breach could suggest that natural closure might occur. This situation suggests that continued monitoring of the breach should be undertaken with any construction activities stemming from the actual breach and flooding characteristics.

At Moriches and Shinnecock Bays, upland sources can be used to close a breach provided there is no major damage to access routes leading to the breach area. Due to the lack of paved roads on a majority of the Fire Island barrier, the success of upland trucking is less certain. In addition, due to the scarcity of information regarding historical rates of breach growth on the Fire Island barrier, estimates of breach growth rate had to be

modeled after data from the most recent 1992 breach at Pike's Beach on the Westhampton barrier. In the event of a breach growth rate more rapid than those estimated for the BCP, stockpiling could be less effective. To account for this possibility the BCP calls for the use of an ocean dredge to achieve final breach closure along Fire Island. Similarly, stockpiles would be less effective in the event of multiple breaches along Fire Island, however, such breaches could be closed with the dredging only alternative.

The proposed project plan also envisions the placement of burlap sand bags or Longard Tubes along either the east and west side of the breach from the Atlantic Ocean to the backbay shoreline; or from the east side to the west side across the breach to prevent breach widening and act as an impoundment [reference the Public Notice]. The elevation of the Longard Tubes and sandbags placed across the breach will be no greater than 2.8 meters (9 feet) U.S.G.V.D. The Longard Tubes will be removed if possible when the breach is filled and the sandbags will be left in place when the breach is being filled.

Snow fences may be installed for the purpose of maintaining the fill at the maximum elevation of 2.8 meters (9 feet) U.S.G.V.D. If used, the fences will be installed after November 1 and be removed by March 30 in any given year. Trapped windblown sand which accumulates above the maximum elevation of 2.8 meters (9 feet) U.S.G.V.D. will be spread above Apparent High Water (AHW) on areas below elevation 2.8 meters (9 feet) U.S.G.V.D. All activities will be completed by close of business on March 30 of any year.

A topographical survey of the filled area will be conducted within 30 days of the breach fill completion and copies will be provided to the Service's Long Island Field Office (LIFO); and the Region I offices of the NYSDEC, Bureau of Marine Habitat Protection and/or the New York District of the Corps, as appropriate.

Within the three year duration of the proposed BCP, and after the completion of a breach closure operation, the fill profile will be monitored. If the profile changes significantly, the Corp and/or its applicant will conduct renourishment activities to restore the breach fill to design specifications. These activities are non-emergency in nature, and may include but not be limited to; beach nourishment, dredging, upland trucking of fill, stockpile utilization, access corridor establishment, redistribution of deposited sand, etc. All attempts will be made to conduct these activities outside the plover nesting season in those areas where piping plovers are determined to occur, and outside the seabeach amaranth growing season, May 1 to November 1. However, there may be instances where work in occupied habitat and during the nesting/growing season(s) cannot be avoided. At no time during the restoration of the breach fill design specifications will the beach elevation exceed the original fill design profile, elevation 2.8 meters (9 feet) U.S.G.V.D.

B. Timetable for Project Implementation

As stated earlier, the proposed project is intended to expedite breach closure, minimize breach closure costs, and minimize storm changes to the Westhampton and Fire Island barrier islands and Southampton barrier spit, backbay areas, and their corresponding

southern mainland shorelines. A key component of the strategy is the immediate initiation of closure activities, using either upland or stockpiled material sources to significantly impede breach growth.

It is anticipated that breach closure within Reaches 5 (Smith Point) through 9 (Robert Moses) will be accomplished through a joint NYSDEC/Corps effort, under the authorization of the IBMP and BCP, respectively. A series of administrative and inter-agency decisions, that define the timing of physical project initiation will influence the methods, and, significantly, the duration of closure operations. These actions are outlined in the Timeline For Response found in Figure 3, adapted from Appendices E and F in the Corps' BCP, and include a New York State request for emergency assistance, field survey of the breach, etc.

Within Reaches 5 through 9, both the Corps' BCP and the NYSDEC's IBMP will be operative. The NYSDEC will initiate trucking activities from upland and stockpiled sources within 72 hours after breach creation (Fire Island National Seashore 1994. New York State Department of Environmental Conservation 1994) and storm subsidence. Because the BCP will only be put into action if the State of New York (NYSDEC) specifically requests emergency assistance from the Corps, the Corps' ability to respond with trucking activities will lag behind the NYSDEC; Corps upland trucking will begin within six (6) days, and stockpile trucking will begin within eight (8) days after breach creation (U.S. Army Corps of Engineers 1995) and storm subsidence.

Due to the costs involved in the use of dredging, it is anticipated that the State of New York (NYSDEC) will request Corps assistance (fiscal and physical), and that, as a result, dredging activities will only be initiated by the Corps. The Corps anticipates that the time lag prior to a dredge response will be 1.5 months. Estimated Corps lag times reflect mobilization of equipment, site access preparation, and New York State and Federal response times.

For Reaches 1 (Southampton) through 4 (Cupsogue), only the BCP will be operative. Lags in Corps response time are the same as those stated above, and reflect, primarily, the time needed to respond to a State (NYSDEC) request for emergency assistance.

To summarize, in any of the Reaches identified, 1-9, breach closure operations will be initiated in a matter of days (trucking) to 6 weeks (dredging only) after breach creation and storm subsidence. The Corps estimates that breach closure will be completed within approximately 3 months of initiation depending on breach location(s) within the project area.

C. Measures Proposed to Reduce the Adverse Effects on Threatened Species

Potential impacts to piping plover and seabeach amaranth resulting from the implementation of the proposed project include (1) the potential for direct effects to piping plovers from construction activities during the courtship, nesting, and brood rearing (nesting) season and to seabeach amaranth during the germination and growing seasons, (2) the potential for indirect effects to piping plovers and seabeach amaranth from human activities after project completion, including further stabilization efforts and

redevelopment within the action area, (3) potential for impacts to piping plover and seabeach amaranth habitat from use of unsuitable nourishment materials, and (4) loss of potential prime new piping plover and seabeach amaranth habitat created by the breach(es).

The following specific actions will be incorporated within the project description to avoid and minimize the likelihood of adverse effects to Federally listed species found within the project area. It should be noted that these conditions will also benefit a variety of sensitive beach strand species such as terns, seabeach knotweed (*Polygonum glaucum*), and/or other New York State listed species.

1. If a breach event occurs outside the piping plover nesting season, all feasible attempts will be made to complete the proposed fill activity prior to the start of the nesting season (April 1).

2. If any of the proposed fill activities occurs during the piping plover nesting season (April 1 through Sept 1), the NYSDEC and/or Corps will implement the following:

   a. Retain Qualified Bird Monitor(s)

      A qualified endangered species bird monitor(s), from a list[3] pre-approved by the Service, will be retained prior to commencement of the proposed activity through project completion but not beyond September 1, or the date of last fledging; or not beyond July 1 if no piping plovers are detected in the action area during the "Concurrent Activity Survey" described in c. below. (Staging of equipment, dredge pipe installation and removal, stockpile sites, and machinery operation areas are all considered part of the project and/or action areas.) For the purpose of determining that chicks can evade machinery and circumvent barriers such as pipes, plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters (49.21 feet), whichever occurs first. The average incubation period is 27 days. The earliest probable hatch date is May 20.

   b. Pre-activity Survey

      No more than one week prior to April 1 or the commencement of any on-site project activity in the action area to close the breach, the monitor will conduct at least three days of surveys of the project area (landing, staging, operation, sand transport, beach nourishment, and breach closure area, i.e. all areas affected by the breach fill activity) for occurrence of territorial. courting or nesting piping plovers (pre-activity survey). Each day's monitoring (a total of 9 hours) will consist of two (2) surveys to be conducted during different times of the tidal cycle. Should a delay of

[3]Developed by FIIS Natural Resources for monitors on the National Seashore.

commencement of the proposed activity allow for it, the surveys should occur for at least four days prior to commencement of the proposed fill activity to be consistent with other non-rapid response projects.

Should the emergency response time be insufficient to allow for the full three days of surveys prior to any on-site activity, and annual surveying efforts have already begun, then the use of current, reputable data on the occurrence of territorial, courting or nesting piping plovers in the action area collected prior to the breach event can be used in conjunction with the on-site surveys. At a minimum, one day of on-site surveys will be conducted.

c. Concurrent-Activity Survey / Monitoring

Following the "pre-activity" surveys of the project area as described in b. above, surveys/monitoring will continue from the initiation of on-site activity in the project area through July 1 at a frequency of at least three non-consecutive days (a total of 9 hours each) per week/two times per day, covering different times of the tidal cycle on each of the three days if possible during daylight hours. During this phase, in addition to identifying and posting[4] areas where plovers are present, the monitor(s) will also document any disturbance to plovers from project activities. If no piping plovers (territorial, courting, nesting, or brood rearing) are detected by July 1 in the project area during the minimum three non-consecutive day per week/two time per day surveys, monitoring can cease. If any piping plovers are detected (territorial, courting or nesting) at any time during the "concurrent-activity survey", the frequency of surveys/monitoring will be conducted daily/two times per day and will continue through project completion but not beyond September 1, or the date of last fledging.

d. Notification of the Service / Survey / Monitoring Modifications

The Service's LIFO will be notified within 24 hours (via phone (516) 581-2941 or fax (516) 581-2972) of piping plovers being detected during either the "pre-activity surveys" or "concurrent-activity surveys". The monitor(s) will increase the survey requirements prescribed in 2.b. and 2.c. above should it be determined that the prescribed frequency is insufficient. This may include increasing the minimum weekly frequency. In particular, the monitor(s) will make necessary adjustments to the daily/two times per day surveys/monitoring during the brood rearing stage such that the weekly and daily frequency and duration of brood surveys is adequate to clearly determine the mobility of the individual broods, accurately define and post brood rearing areas, and provide adequate protection from project related disturbance.

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[4] Posting includes symbolic fencing and appropriate signage.

The monitor(s) will maintain field notes which will be provided to the Service's LIFO, NYSDEC, and FIIS on a weekly basis. The Corps and/or NYSDEC, in cooperation with the Service may modify the survey and monitoring specifications based on site specific considerations to reduce or avoid any adverse effects to State and Federally listed species from the project.

e. Posting and Buffer Zone Establishment / Impact Monitoring

Courtship areas, nests, and brood rearing areas (including chick feeding areas) will be posted immediately (supervised by the monitor(s)) and no disturbance will be permitted within 90 meters (300 feet) of the designated area.. The boundaries of the protected areas will be adjusted should plovers regularly move outside the originally posted area. Adjustments of brood rearing areas based on frequent monitoring of the broods' mobility is particularly critical. Posting of courtship areas will be discontinued after July 1 in any given year.

To establish boundaries for posting, the monitor(s) will determine the boundary line drawn perpendicular to the long axis of the beach within 90 meters (300 feet) of either side of the courtship area, nest, or brood rearing area. The resulting area should extend from the ocean side low water line to the bay side low water line, or to the furthest extent of a natural or manmade feature which would prohibit piping plover chicks traversing the area (e.g. dune, scarp, bulkhead). Monitor(s) will document any reactions to disturbance from the fill activity to determine the effectiveness of the 90 meters (300 foot) buffer and increase the buffer if necessary. Given the emergency nature of the response, should site specific conditions preclude the establishment of a 90 meters (300 foot) buffer, and it be determined by the monitor that less than a 90 meters (300 foot) buffer would provide sufficient protection from disturbance, a reduction in the buffer may be established. If reduced, however, the monitor will document the reduction, providing a written justification in the field notes.

f. System for Notification of Disturbance

A system of notification will be established if it appears that disturbance of piping plovers is occurring despite implementation of the project conditions. Notification will include on-site contractors, the Corps, the NYSDEC, the FIIS, and the Service's LIFO. The on-site contractors will be notified immediately and activities adjusted or halted to avoid or minimize disturbance. The Service will be notified by the close of business that day for further consultation.

g. The dredge disposal pipe will be placed offshore to the maximum extent practical, to allow plover chicks unobstructed access to the wrackline, water's edge, and/or other foraging habitats. Where the pipeline crosses

the beach, the Corps and/or its contractor will bury the pipeline a minimum of 38.5 centimeters (15 inches) (half its diameter), cover it with sand, and create a ramp whose slope is 10:1 so that piping plover chicks can negotiate the pipe and access the lower beach unimpeded. The Corps and/or its contractor will not remove the pipe until, at a minimum, the third week in June and only after notifying and receiving approval from the Service and FIIS (if pipelines are laid within the FIIS) based on the fledge status of any plover chicks.

h. Wrackline disturbance will not occur in the foraging area of unfledged chicks.

i. All vehicle and/or equipment movement involved in the trucking of sand from stockpiled or upland sites, including mobilization and demobilization efforts will occur outside established buffers and avoid disturbance to piping plovers as described in 2.e. above, and seabeach amaranth as described in 3.c. below.

3. If the breach fill occurs during the seabeach amaranth growing season (May 1 through November 1)[5], the NYSDEC, Corps, and/or their designated representatives will:

a. Retain Qualified Seabeach Amaranth Surveyor(s)

A qualified seabeach amaranth surveyor(s), from a list[6] pre-approved by the Service, will be retained prior to commencement of the proposed activity.

b. Pre-activity Survey

No more than one week prior to commencement of any on-site project activity in the project area to close a breach(es), the surveyor will conduct a technically sound survey, commensurate with currently accepted methods, of the action area (landing, staging, operation, sand transport, beach nourishment, and breach closure area) in order to document the presence or absence of seabeach amaranth. The survey method will provide adequate coverage of potential habitat for the species in the action area (i.e. walking a zigzag line along the beach from the most recent high tide line or berm to the crest of the dune). The surveyor will maintain

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[5] Depending on the climatic condition, germination may occur sooner. The timing of senescence (plant death), and the termination of seed production, is also heavily dependent on temperature (frost). Therefore, in mild years, seabeach amaranth may persist beyond November 1, and management decisions should be made accordingly.

[6]Developed by FIIS Natural Resources for monitors on the National Seashore.

field notes which will be provided to the Service's LIFO along with survey methodologies.

Should the emergency response time be insufficient to allow for one day of on-site surveying prior to any project activity, and if regularly scheduled annual surveys have already begun, then the use of current and up-to-date information on sites occupied by seabeach amaranth in the action area collected prior to the breach event can be used in lieu of on-site pre-activity surveys.

c. Posting and Buffer Zone Establishment / Impact Monitoring

Identified seabeach amaranth locations will be posted[7] and symbolically fenced immediately by the surveyor. Construction activities including, but not limited to, landing, staging, operation, and sand transport activities will avoid locations of seabeach amaranth. The surveyor will determine if buffer zones can be established to avoid disturbance of seabeach amaranth plants. To establish buffers, the surveyor will post and symbolically fence a minimum of 3.3 meters (10 foot) diameter zone around identified locations. The buffers will be adjusted should it be determined that the buffer zones are inadequate or that a single larger buffer area might better accommodate a number of seabeach amaranth locations. Condition 2.f. above regarding a system of notification with further Service consultation will also apply to seabeach amaranth.

4. The Corps and/or FIIS will conduct post-project monitoring to assess the impacts of artificially filling a breach(es) on Federally listed species. Monitoring will be initiated in the spring of/or following the fill event and will be continued for a minimum of two years. If plovers have not historically nested in the project area, and are not detected after two years of surveys, then post-project monitoring may cease. However, if plovers nested in the project area in the season immediately preceding the breach event, or if plovers are detected in the project area, then monitoring activities shall begin and/or continue throughout the fifth breeding season (calendar year) following breach closure. Parameters which should be monitored include topography, vegetation, invertebrates, and use of the area by seabeach amaranth, and piping plover, least terns, and other avifauna. A sampling protocol comparable to the scope and intensity of that described in Enclosure 1 will be utilized. However, the actual sampling scheme based on site-specific considerations may be subject to further discussions among the Service, Corps, FIIS, and NYSDEC. In all cases, the sampling design will be amenable to statistical analyses, and of sufficient scope and intensity to include the specific parameters outlined in Enclosure 1.

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[7] Posting includes symbolic fencing and appropriate signage. In the case of plants, signage should not explicitly identify the plant type but serve to keep activity out of the area. For example: *Sensitive Habitat Area: Please stay out of fenced protected area. Thank you.*

5. The Corps-selected contractor and their employees will be adequately informed of ESA concerns, including, but not limited to, the establishment of adequate buffers and procedures to follow in the event of a take (disturbance or mortality), and bid plans and specifications will be written to include this requirement. The contractor will be supplied with a copy of this Biological Opinion, and be equally responsible for its judicious implementation.

6. The sand deposition area(s) will be finished to a natural grade and contour to maintain suitable nesting and foraging habitat for piping plovers and potential habitat for seabeach amaranth in the project area.

7. The dredged or trucked material to be deposited in the breach and as beach fill will conform with the already existing substrate on the beach and consist of material that is capable of maintaining suitable piping plover and seabeach amaranth habitat.

8. Longard tubes will be removed, if possible, upon completion of filling of the breach. Should, for any reason, they not be removed upon completion, they will subsequently be removed if they became exposed, or if they pose a current or future barrier to piping plovers traversing the area. Burlap sandbags will be removed if they become exposed or pose a current or future barrier to piping plovers traversing the area. Any remaining burlap sandbags and Longard Tubes will be no greater than elevation 2.8 meters (9 feet) U.S.G.V.D.

9. The installation of sheetpiling, used solely and temporarily as a means of breach closure, will be removed prior to project completion. Other "hardened" shoreline stabilization structures such as seawalls, revetments, rip rap, groins, or other similar structures will not be used.

10. If snow fences are installed, it will not be for the purpose of dune creation above the maximum project design elevation of 2.8 meters (9 feet) U.S.G.V.D. Trapped windblown sand which accumulates above the maximum elevation of 2.8 meters (9 feet) U.S.G.V.D., as a result of the snow fencing, will be spread above apparent high water on areas below elevation 2.8 meters (9 feet) U.S.G.V.D. Installation, removal and spreading will occur between November 1 and April 1 to avoid the piping plover nesting season (April 1 to September 1) and seabeach amaranth growing season (May 1 to November 1). Installation, removal, and spreading can occur after September 1 provided a qualified seabeach amaranth surveyor, approved by the Service, has determined that either no plants occur in the area, or plants have been adequately delineated such that buffer zones can be established and disturbance of the plants (burial or uprooting) will not occur during the installation, removal, spreading, or anticipated natural redistribution of accumulated sand. The survey will be technically sound and commensurate with currently accepted methods. The surveyor will maintain field notes which will be provided to the Service and Corps, FIIS, or NYSDEC as appropriate, along with survey methodologies.

11. The planting of vegetation will not occur in the breach fill or beach nourishment area.

12. The protection of piping plovers and seabeach amaranth in the project construction area(s) after project completion will be enhanced by actions taken both prior to and after project implementation. This will occur annually, for the life of the BCP and/or IBMP, by educating landowners, homeowner associations, and beach managers (as appropriate) in the project area of the recommendations in the Endangered and Threatened Species Protection Plan in Enclosure 2, and by seeking written Memoranda of Agreement with the Federal (FIIS), State (NYSDEC), and County (Suffolk County Parks) landowners in the project area to secure access for the purpose of protecting piping plovers during the nesting season and seabeach amaranth during the germination and growing seasons.

13. Activities described herein are designed to minimize the potential direct and indirect adverse impacts of the project, and as such are an integral part of the project design. As a result, the Corps and/or the NYSDEC, based on the same jurisdiction and authorization to carry out the emergency closure activities, will obtain the right of entry from all landowners:

    (1) within the project impact and buffer areas for the purpose of conducting pre- and concurrent activity endangered or threatened species surveys/monitoring, fencing, posting, and predator exclosure activities;

    (2) within the project impact monitoring area as will be determined under Enclosure 1 for the purpose of carrying out the post project monitoring activities to assess the indirect effects of the action;

    (3) within the project construction area(s) for the purpose of providing access after project completion in the construction area to post, symbolically fence and erect predator exclosures to avoid and/or minimize the indirect effects of the action.

14. The permit, issued to the NYSDEC by the Corps, will be for a duration of three (3) years, is considered interim, and will be re-evaluated following the results of the National Biological Service study and/or additional information on the impacts of the breach closure plan to Federally listed endangered or threatened species. Although the original permit will remain in effect for a period of no more than three years, with further consultation with the Service, it may be subject to renewal. Regardless of the ultimate duration of the NYSDEC permit, the Corps and/or NYSDEC will fulfill the performance standard for monitoring the indirect effects to the barrier island habitat for Federally listed species resulting from the proposed project (as described in 12 above). The Service will be notified of the start date and completion date of the proposed project.

15. In developed areas, where breach closure will facilitate potential residential, infrastructure, or associated construction and reconstruction activities, impacts may accrue from the resumption of recreational and/or residential use. The Corps and/or NYSDEC, through their respective regulatory powers, propose to establish

permit conditions that will attempt to eliminate or minimize direct and indirect impacts on piping plovers and seabeach amaranth. The permit conditions are premised on the identification of State and/or Federally listed species and/or essential habitat, and the establishment of three zones with associated time of year work restrictions to protect piping plovers and seabeach amaranth within the developed project areas. Prior to permit issuance, a qualified biologist will verify the presence or absence of State and/or Federally listed species and/or essential habitat. The three zones include; 1) Zone 1: Suitable Plover Habitat Zones, 2) Zone 2: No Plover Habitat Zone, and 3) Zone 3: Seabeach Amaranth Occupied Zone. The zone-specific management provisions are as follows.

a) Zone 1, Suitable Plover Habitat, Management Provisions: No regulated exterior work will be permitted between April 1 and June 30th, during which time the area will be surveyed and plover nesting and brood rearing areas symbolically fenced. By June 30th, exceptions to this work restriction on regulated exterior work may be authorized to commence in those areas outside of the designated nesting and brood rearing areas, while work will not be authorized within the designated nesting and brood rearing areas until after fledging.

b) Zone 2, No Plover Habitat, Management Provision: There will be no time of year work restriction imposed upon this area.

c) Zone 3, Seabeach Amaranth Occupied Zone, Management Provisions: No reconstruction or repair will be allowed that would result in the direct or indirect take of seabeach amaranth plants. Reconstruction activities may be allowed during the germination and growing seasons so long as all work will avoid seabeach amaranth plants and/or buffer areas will be established to protect the plants.

16. The flood tidal delta, overwash[8] fans, and sand spits, associated with breach opening or inlet formation, will not be utilized as a source of breach fill material. These sediments provide substrate for seabeach amaranth germination and intertidal substrate that may be used by piping plovers in addition to a variety of wading birds and shorebirds for foraging and brood rearing, and also may potentially serve as the basis for new salt marsh development.

17. As per the Fire Island Wilderness Act - Public Law 96-585, the repair of breaches in the Wilderness Area will occur only in cases where it is necessary to prevent loss of life, flooding, and other severe economic and physical change to the Great South Bay and surrounding areas.

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[8](Within the context of this Opinion) A process by which waves break through barrier island dunes carrying sediments inland, and, in severe circumstances, across the island to the bayside shoreline.

18. Artificial breach closure in the Wilderness Area will only occur following a post storm evaluation of the breach site by a qualified coastal geomorphologist which determined that the breach will not close relatively quickly on its own. This recommendation is consistent with the August 25, 1994 Draft IBMP prepared by the FIIS. The Draft FIIS Plan states that existing public policies and Federal legislation for the Wilderness Area of the FIIS, dictate a separate management plan and inlet response plan.

19. The Corps and/or NYSDEC will examine questions of ownership and the possibility of establishing conservation easements for areas where spits have developed or where overwash sediments have been deposited to protect these habitats for fish and wildlife use, including piping plover and seabeach amaranth.

D. Measures Proposed to Reduce the Adverse Effects on Other Aquatic and Terrestrial Resources

Aside from endangered and/or threatened species concerns, additional potential impacts from implementation of the proposed project have been identified. These include (1) the loss of newly created wetland habitats from dredging flood tidal deltas in the back barrier bays, (2) the loss in number and size of newly created habitats such as intertidal flats, sand spits, open vegetation and dunes via sediment transport resulting from overwashes, breaches and inlet formation, (3) reduced flushing rates resulting in reduced water quality, and (4) a reduction or modification of the benthic assemblages in the Atlantic borrow areas.

Consequently, the following measures will also be incorporated as part of the project design:

1. Project operations, including, but not limited to, staging, mobilization, corridor establishment and vehicle access, and demobilization will avoid or minimize impacts to both newly formed and pre-existing wetlands including vegetated, non-vegetated, intertidal, and subtidal habitats.

2. A site visit of the proposed stockpile locations and potential transportation routes between stockpile sites and potential breach locations will be conducted by the Corps, NYSDEC, FIIS, and the Service to ensure adequate consideration of impacts to significant cultural and/or natural resources such as wetlands, Federally designated Wilderness Area, Federal and State endangered and threatened species, etc.

3. Any actions on lands within the FIIS will be exercised in accordance with a plan that is mutually acceptable to the Secretary of the Interior and the Secretary of the Army and that is consistent with Public Law 88-587, the 1964 enabling legislation creating the Fire Island National Seashore.

4. The Corps and/or NYSDEC will ensure that impacts to natural and cultural resources in the proposed Atlantic borrow sites are avoided or minimized.

IV. A. BIOLOGICAL OPINION: Piping Plover

1. DESCRIPTION OF THE PIPING PLOVER ACTION AREA

The defined "action area" must encompass the potential for a breach or breaches that may occur anywhere and everywhere within the boundaries of the proposed plan. As a result, the piping plover action area includes the entire landmass of the Fire Island and Westhampton barrier islands, and the barrier spit, as far east as Halsey Neck Lane, in the Town of Southampton, Suffolk County, New York (Figure 1).

Site names used to discuss piping plover data, and the boundaries drawn to delineate them, were developed by the New York Natural Heritage Program in conjunction with The Nature Conservancy and the New York State Department of Environmental Conservation, to reflect factors associated with piping plover behavior and/or life history, and do not necessarily correspond to the Corps' Reach delineations. Figures 4a-d depict the piping plover survey sites referred to herein, giving the names and boundaries for each.

2. STATUS OF THE SPECIES: Piping Plover

a. Life History

Piping plovers are small, sand colored shorebirds approximately 17 centimeters (7 inches) long with a wingspread of about 38 centimeters (15 inches) (Palmer 1967) that nest on sandy, coastal beaches from South Carolina to Newfoundland. Since 1986, the Atlantic Coast population has been protected as a threatened species under provisions of the U.S. Endangered Species Act of 1973 (U.S. Fish and Wildlife Service 1985)[9]. The United States' portion of the population was estimated at 968 pairs in 1994 (U.S. Fish and Wildlife Service 1995).

Piping plovers begin returning to their Atlantic Coast nesting beaches in mid-March (Coutu et al. 1990, Cross 1990, Goldin 1990, MacIvor 1990, Hake 1993). Males establish and defend territories and court females (Cairns 1982). Piping plovers are monogamous, but usually shift mates between years (Wilcox 1959, Haig and Oring 1988, MacIvor 1990), and less frequently between nesting attempts in a given year (Haig and Oring 1988, MacIvor 1990, Strauss 1990). Plovers are known to breed at one year of age (MacIvor 1990, Haig 1992), but the rate at which this occurs is unknown.

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[9] Three distinct populations of piping plovers have been identified. The Atlantic Coast Population breeds along the east coast of North America and has been designated as threatened. The Great Lakes Population has historically nested on sandy beaches throughout the Great Lakes but has declined dramatically and now occurs on just a few sites on the upper lakes. This population is designated as endangered. The third population breeds on major river systems and alkali lakes and wetlands of the Northern Great Plains and has been designated as threatened.

Piping plover nests can be found above the high tide line on coastal beaches, on sand flats at the ends of sand spits and barrier islands, on gently sloping foredunes, in blowout areas behind primary dunes, and in washover areas cut into or between dunes. They may also nest on areas where suitable dredge material has been deposited. Nest sites are shallow scraped depressions in substrates ranging from fine grained sand to mixtures of sand and pebbles, shells or cobble (Bent 1929, Burger 1987, Cairns 1982, Patterson 1988, Flemming et al. 1990, MacIvor 1990, Strauss 1990). Nests are usually found in areas with little or no vegetation although, on occasion, piping plovers will nest under stands of American beachgrass (*Ammophila breviligulata*), or other vegetation (Patterson 1988, Flemming et al. 1990, MacIvor 1990). Plover nests may be very difficult to detect, especially during the 6-7 day egg-laying phase when the birds generally do not incubate (Goldin 1994).

Eggs may be present on the beach from mid-April through late July. Clutch size for an initial nest attempt is usually four eggs, one laid every other day. Eggs are pyriform in shape, and variable buff to greenish brown in color, marked with black or brown spots. The incubation period[10] usually lasts for 27-28 days. Full-time incubation usually begins with the completion of the clutch and is shared equally by both sexes (Wilcox 1959, Cairns 1977, MacIvor 1990). Eggs in a clutch usually hatch within four to eight hours of each other.

Piping plovers generally fledge only a single brood per season, but may renest several times if previous nests are lost. Chicks are precocial[11] (Wilcox 1959, Cairns 1982). They may move hundreds of meters from the nest site during their first week of life (U.S. Fish and Wildlife Service 1994a), and chicks may increase their foraging range up to 1,000 meters before they fledge (are able to fly) (Loegering 1992). Chicks remain together with one or both parents until they fledge at 25 to 35 days of age. Depending on date of hatching, flightless chicks may be present from mid-May until late August, although most fledge by the end of July (Patterson 1988, Goldin 1990, MacIvor 1990, Howard et al. 1993).

Cryptic coloration is a primary defense mechanism for this species; nests, adults, and chicks all blend in with their typical beach surroundings. Chicks sometimes respond to vehicles and/or pedestrians by crouching and remaining motionless (Cairns 1977, Tull 1984, Goldin 1993, Hoopes 1993). Adult piping plovers also respond to intruders (avian and mammalian) in their territories by displaying a variety of distraction behaviors, including squatting, false brooding, running, and injury feigning. Distraction displays may occur at any time during the breeding season, but are most frequent and intense around the time of hatching (Cairns 1977).

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[10] "Incubation" refers to adult birds sitting on eggs, to maintain them at a favorable temperature for embryo development.

[11] "Precocial" birds are mobile and capable of foraging for themselves within several hours of hatching.

Plovers feed on invertebrates such as marine worms, fly larvae, beetles, crustaceans, and mollusks (Bent 1929, Cairns 1977, Nicholls 1989). Feeding areas include intertidal portions of ocean beaches, washover areas, mudflats, sand flats, wrack lines[12], and shorelines of coastal ponds, lagoons or salt marshes (Gibbs 1986, Coutu et al. 1990, Hoopes et al. 1992, Loegering 1992, Goldin 1993). Studies have shown that the relative importance of various feeding habitat types may vary by site (Gibbs 1986, Coutu et al. 1990, McConnaughey et al. 1990, Loegering 1992, Goldin 1993, Hoopes 1993), and by stage in the breeding cycle (Cross 1990). Adults and chicks on a given site may use different feeding habitats in varying proportion (Goldin 1990).

Feeding activities of chicks may be particularly important to their survival. Most time budget studies reveal that chicks spend a very high proportion of their time feeding. Cairns (1977) found that piping plover chicks typically tripled their weight during the first two weeks post-hatching; chicks that failed to achieve at least 60% of this weight gain by day 12 were unlikely to survive. During courtship, nesting, and brood rearing, feeding territories are generally contiguous to nesting territories (Cairns 1977), although instances where brood-rearing areas are widely separated from nesting territories are not uncommon. Feeding activities of both adults and chicks may occur during all hours of the day and night (Burger 1993), and at all stages in the tidal cycle (Goldin 1993, Hoopes 1993).

Migration patterns are poorly understood. Most piping plover surveys have focused on breeding or wintering sites. Northward migration occurs during late February, March and early April, and southward migration extends from late July to August and September. Both spring and fall migration routes are believed to primarily occur within a narrow zone along the Atlantic Coast.

b. Population Status and Distribution

Historical Population Trends

Historical population trends for the Atlantic Coast piping plover have been reconstructed from scattered, largely qualitative records. Nineteenth century naturalists, such as Audubon and Wilson, described the piping plover as a common summer resident on Atlantic Coast beaches (Haig and Oring 1987). By the beginning of the 20th century, uncontrolled hunting, primarily for the millinery trade, and egg collecting had greatly reduced the population, and, in some areas along the Atlantic Coast, the piping plover was close to extirpation. Following passage of the Migratory Bird Treaty Act in 1918, and changes in the fashion industry, piping plover numbers recovered to some extent (Haig and Oring 1985).

Available data suggest that the most recent population decline began in the late 1940's or early 1950's (Haig and Oring 1985). Starting in 1972, the National Audubon Society's "Blue List" of birds with deteriorating status included the piping plover. Johnsgard

[12] Wrack is organic material including seaweed, seashells, driftwood and other materials deposited on beaches by tidal action.

(1981) described the piping plover as "... declining throughout its range and in rather serious trouble." The Canadian Committee on the Status of Endangered Wildlife in Canada designated the piping plover as "Threatened" in 1978 and elevated the species' status to "Endangered" in 1985.

Reports of local or statewide declines between 1950 and 1985 are numerous and many are summarized by Cairns and McLaren (1980) and by Haig and Oring (1985). While Wilcox (1939) estimated more than 500 pairs of piping plovers on Long Island, a 1994 survey recorded 209 pairs. Blodget (Massachusetts Division of Fisheries and Wildlife, pers. comm., 1991) reports that there was little focus on gathering quantitative data on piping plovers in Massachusetts through the late 1960's, because the species was commonly observed and presumed to be secure. However, numbers of pairs of breeding piping plovers declined 50-100% at seven Massachusetts sites between the early 1970's and 1984 (Griffin and Melvin 1984). Further, recent experience of biologists surveying piping plovers has shown that counts of these cryptic birds sometimes goes up with increased census effort. This suggests that some historic counts of piping plover numbers by one or a few observers, who often recorded occurrences of many avian species, may have underestimated the piping plover population. Thus, the magnitude of the species' decline may have been even more severe than available numbers imply.

Trends Since Listing under the Endangered Species Act

Table 1 summarizes nesting pair counts for the U.S. Atlantic Coast piping plover population from 1986-1994 furnished to the U.S. Fish and Wildlife Service by the States. Table 2 provides a summary of piping plover productivity[13] estimates for the U.S. Atlantic Coast from 1987-1994.

The apparent increase in numbers of pairs between 1986 and 1989 (Table 1) is thought to at least partially reflect the effects of increased survey efforts following the proposed listing in 1985. Intensified survey effort may have played an especially important role in population estimates for New York State. For example, Wich (1993) states, although protection of beach nesting birds in New York increased after 1983, survey effort also intensified, especially at sites such as Breezy Point, Queens County, and Westhampton Beach, Suffolk County. While the relative contributions of each cannot be determined, he believes that "the stability of more recent estimates probably accurately reflects the status of New York's plover population." Ducey-Ortiz et al. (1989) documented an increasing plover monitoring effort in New York between 1984 and 1988 and found that, when results from 54 uniformly monitored sites were analyzed, the population trend did not increase or decrease significantly.

There was a net increase of 245 pairs in the Atlantic Coast plover population between 1989 - 1994. However, the net increase of 245 pairs was very unevenly distributed. The New England subpopulation increased 244 pairs (+118%) while the Southern Atlantic

[13] Productivity refers to number of chicks surviving to fledging divided by the number of adult pairs.

subpopulation declined 13 pairs (-7%). Population estimates from New York-New Jersey increased 4% during this time period.

c. Vulnerability to Extinction

The original recovery objective for the Atlantic Coast Piping Plover, established in the 1988 recovery plan, was to increase the Atlantic Coast population of the piping plover (U.S. and Canada) to a self-sustaining population of 1200 breeding pairs, while maintaining the current distribution for five consecutive years (U. S. Fish and Wildlife Service 1988a). The 1200 pair objective was established before estimates of survival and productivity rates, information on movements of birds within the population, or estimates of potential carrying capacity of habitat were available. The original objective was not based on any quantitative analysis, but simply sought to achieve a 50% increase over the 1986 population estimate. Recovery efforts since 1988 will provide additional information to test whether the original objective provides for a "self-sustaining population."

Demographic Considerations

As part of an on-going effort to revise the 1988 Atlantic Coast Piping Plover Recovery Plan, a population viability analysis (PVA) was developed to assess the risk of population extinction. A PVA model, developed by Melvin and Gibbs (1994) and discussed below, estimated probabilities of extinction, as well as probabilities that the population would fall below thresholds of 50, 100, and 500 pairs during the next 100 years. Important model inputs, including fecundity (productivity) and mean annual survival rates for immature (less than one year old) and mature piping plovers were based on actual field data.

Melvin and Gibbs (1994) calculated a mean fecundity of 1.21 chicks fledged per pair during the five year period, 1989-1993 for the U.S. portion of the Atlantic Coast population. The scenario modelled that most closely approximates the current status of the Atlantic Coast population, that of a 1200[14] pair population with average productivity of 1.25[15] chicks per pair, showed an extinction probability of 35% over 100 years, and a 95% probability of dropping below 500 pairs during the same time period. Furthermore, increases in both annual Atlantic Coast average fecundity and population over the last five years are largely attributable to the New England portion of the range. Because of their smaller size, subpopulations face an even larger risk of extirpation, and this is especially true in areas, such as New York, where average fecundity has been substantially below the coast-wide average.

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[14] Higher than the 1994 population estimate of 1150 pairs.

[15] This is higher than the mean of 1.21 chicks per pair calculated by Melvin and Gibbs for 1989-1993. Averages of 1.27 and 1.33 chicks per pair calculated by the Service for 1988-1993 and 1988-1994, respectively, have different coefficients of variation that would also affect modelling results.

Modelling results suggest that extinction probabilities for the Atlantic Coast population are very sensitive to changes in average productivity rates. For example, extinction probability over 100 years for a 2,000 pair population was 4% when average productivity was 1.50 chicks per pair; this extinction probability increased to 22% when other parameters were held constant and average productivity was reduced in the model to 1.25 chicks per pair. The probability that the population would drop below 500 pairs over 100 years increased from 26% when average productivity was 1.5 chicks per pair to 82% when average productivity was reduced in the model to 1.25 chicks per pair.

The model demonstrates that increases in productivity will reduce extinction probabilities. However, it also shows that any drop in survival rates could very substantially increase the risk of extinction. Such long-term declines in survival rates could occur due to continuing declines in availability or quality of wintering or migration habitat, increased human disturbance on wintering grounds, increased mortality due to disease, parasites, or environmental contaminants, increased predation, or reduced longevity or fitness due to unforeseen genetic factors. When declines in adult and chick survival rates of just 5% and 10%, respectively, were modelled for the 2,000 pair population with average fecundity of 1.5 chicks per pair, the extinction probability increased from 4% to 32%, and the probability that population size would drop below 500 pairs increased from 26% to 90%.

The PVA indicates that extinction probabilities for Atlantic Coast plovers are more sensitive to fecundity and survival rates and variability within these parameters than to initial population size. However, this does not mean that population size is not important to population survival. Increasing population size will delay time to extinction, allowing implementation of measures to improve survival and productivity rates. The larger and more dispersed the Atlantic Coast population is, the less the overall effects of environmental stochasticity, catastrophes, or inconsistent management will be. In this regard, the Service believes that it is particularly important to increase population numbers and productivity of piping plovers especially in areas outside of New England.

Genetic Considerations

In addition to the effects of demographic factors modelled in the PVA, small populations risk loss of genetic diversity through inbreeding and random genetic drift. In the short term, loss of genetic diversity may reduce individual fitness and productivity. Over the long-term, loss of genetic diversity may erode the evolutionary potential of a population or species, reducing its ability to adapt to changes in its environment, and thereby increasing its risk of extinction. The risk of loss of genetic diversity is related to effective population size (N_e), the number of individuals actually passing their genes on to the next generation. An N_e of 500 was cited by Franklin (1980) and Frankel and Soule (1981) as the minimum necessary to maintain long-term genetic fitness and evolutionary potential.

No formal estimates of N_e/N have been made for the Atlantic Coast piping plover. It appears that a large percentage of breeding plovers fledge young that are subsequently recruited into the breeding population, but the species' sparse distribution results in highly non-random mating that may pose a barrier to gene flow (U.S. Fish and Wildlife

Service 1995a). Increasing the size and density of the breeding population would likely reduce current risks of declining genetic diversity.

3. ENVIRONMENTAL BASELINE: Piping Plover

a. General Overview

Barrier beach systems are dynamic landforms and, although they undergo constant and sometimes chaotic change, they play a significant role in storm damage prevention, flood control, and the protection of backbay fishery and shellfishery resources, and provide habitat for a variety of other wildlife species. The geomorphic characteristics of barrier islands, beaches, dunes, overwash fans, breaches, and inlets are critical to the protection of a variety of natural resources, and influence a barrier's ability to respond to wave action, including storm overwash and sediment transport (Massachusetts Barrier Beach Task Force 1994).

Unfortunately, the protection of these important natural landforms, processes, and wildlife resources is often in conflict with popular and competing private uses including residential development and the establishment of supporting infrastructure, and public uses including recreational fishing, swimming, surfing, sunbathing, fireworks displays, off-road vehicle use, watercraft use, and other associated aesthetic pursuits. In addition to the direct impacts associated with human disturbance, as public and private stakes in barrier beaches increase, so does the desire to secure those investments.

Human efforts within the action area to stabilize barrier islands through beach nourishment, snow fencing, dune construction, and vegetative and structural shoreline stabilization inhibit the natural processes which redefine barrier island morphology, and allow for renewal of transitory, storm-created habitats. These actions often result in additional impacts to wildlife including threatened and endangered species. For instance, it has been widely recognized that fugitive species, which have evolved to rely on the dynamic nature of barrier beaches, often suffer from efforts to prevent storm events which shape and reshape barrier beach morphology: beach erosion, overwash, breach, and inlet formation (Massachusetts Barrier Beach Task Force 1994). Open vegetation[16], recurved inlet spits (which form backbay unvegetated intertidal flats), and overwash fans are all examples of storm-created, early successional habitats (Leatherman 1988) that piping plovers and seabeach amaranth occupy, and that have been altered or eliminated within the piping plover and seabeach amaranth action area.

Fluctuations in piping plover populations, in a number of states, seem to revolve around major storm events with significant recovery following the hurricanes of 1938, 1954, and perhaps to a lesser degree the storms of 1991-93. Raithel (1984) showed that Rhode Island piping plover numbers reached a 20th century peak following the 1938 hurricane, which flattened dunes and destroyed shoreline developments.. That number declined after World War II, as habitat was lost to dune stabilization efforts and renewed

[16]Open vegetation was defined by Elias-Gerken (1994) and refers to areas of sparsely vegetated foredune areas.

summer home construction. The population partially recovered following another severe hurricane in 1954 before beginning a steady decline which continued throughout 1988 (Dyer et al. 1988). Studies of Long Island (Wilcox 1959) showed similar fluctuations in piping plover numbers following the 1938 hurricane. An increase from 20 pairs prior to the hurricane in 1938 to 64 pairs recorded in 1941 attests to the plover's ability to rapidly colonize newly available habitat. Again, as in Rhode Island, these gains were gradually eroded as habitats were lost to artificial dune stabilization and summer home and road construction.

Activities within the action area which have stabilized dynamic environments and which have prevented the creation and/or maintenance of transient habitats may have forced fugitive species into inferior habitats and have contributed to population declines.

Vegetative reinforcement of dunes can result in habitats that cannot be used by plovers for nesting (Massachusetts Barrier Beach Task Force 1994, MacIvor 1988, Elias-Gerken 1994), foraging, and predator avoidance (Elias-Gerken 1994). Past restoration of dunes by vegetating bare patches in overwash fans and low relief foredune areas may have impeded the natural forces which renew those habitats, and may have also destroyed habitat for rare species like piping plovers (Massachusetts Barrier Beach Task Force 1994, Dyer et al 1988). Although they are temporary habitats, the fact that piping plovers seem to prefer overwash areas to beach habitats (MacIvor 1988) underlies their importance to the recovery of the species.

The use of snow fences and christmas trees to capture drifting sand and/or to build dunes may have produced steepened dune faces, or by themselves, created physical barriers to plover movement (Strauss 1990). Dune building activities may have prevented plovers from accessing preferred foraging and brood rearing habitats including interdunal swales, wet meadows, and ephemeral pools (MacIvor 1988, Elias-Gerken 1994) which, in addition, have served as important feeding areas for a variety of other bird species (Massachusetts Barrier Beach Task Force 1994).

Aside from destroying or degrading dune blowout and overwash areas, construction or artificial augmentation (beach scraping) of dunes on beaches may have reduced the foredune area without concomitantly expanding the foreshore, and beaches narrow as a result. In instances where dunes were repaired or extended seaward to the apparent mean high waterline, plover nesting may have been discouraged altogether. In other areas, where the beach berm was wider, artificial dune repair and/or augmentation may have forced plovers to nest closer to the apparent spring high waterline, increasing the likelihood of nest loss due to flooding. When nests are lost to flooding, renests tend to be farther from the water. Where dune construction limits the landward relocation of nests, renesting may be rendered unsuccessful (MacIvor 1990) and the nesting site may be abandoned (Burger 1987).

Where breaches or inlets present an obstacle to human and vehicle traffic, they may have indirectly created improved nesting and foraging habitat for plovers. MacIvor (1988) found that prior to the breach of North Beach (Cape Cod, MA), off-road vehicle (ORV) activity was extensive, and occurred primarily on the beach between the foredune and shoreline and in the wrack. During this time, only one of 14 plover nests were in beach

berm habitat. However, after the separation, and the creation of South Beach Island, when vehicle access became impossible, there was a significant increase in the number of nests at the site and an increase in use of berm habitat. Eleven of 17 plovers relocated their nests to areas that were not available in previous years due to ORV activity, where undisturbed wrack could be used to support chick productivity. Goldin (1993) found similar tendencies towards gravitation of adult plovers to beach habitats in the absence of ORVs. Chicks at Breezy Point, New York, spent more time in wrack foraging habitats and had higher chick survival after ORVs were banned from brood-rearing beaches.

Stabilization efforts which have resulted in increased human use of beaches may have increased predation pressures on plovers and other beach-nesting birds. Predators, like raccoons, foxes, crows, and rats may be attracted to food scraps, fish parts, and garbage associated with human recreational use (MacIvor 1988, Strauss 1990). In recognition of past damage, the Atlantic Coast Piping Plover Recovery Plan (Dyer et al. 1988) recommends that beach construction activities in and adjacent to plover habitats be discouraged, especially those that will result in increased recreational use of plover habitats.

The indirect effects of artificial breach closure and beach nourishment should be considered carefully. Development along coasts and dune stabilization projects in the action area may have decreased the availability of plover nesting habitat, both in area and diversity, may have increased human disturbance of adult birds or mortality of eggs or chicks, and may have forced plovers to nest in less favorable areas where productivity has been diminished because of predators or high tides. Past breach closure activities that have allowed for the resumption of ORV traffic or human disturbance, after periods of calm and the initiation of nesting, may have caused abandonment, a reduction in use of neighboring habitat, and further reductions in productivity.

Declines in piping plover populations have been at least partially attributed to beach stabilization efforts, the loss of transitory storm-created habitats, and the species' inability to capitalize on a variety of available opportunistic zones. The following description of the dynamic and transient habitats within the action area is designed to highlight specific examples of the generic actions listed above that may have affected the current status of seabeach amaranth and piping plover.

b. ENVIRONMENTAL BASELINE: For piping plovers in the action area.

The piping plover action area includes the entire landmass of the Fire Island and Westhampton barrier islands, and the barrier spit in the Town of Southampton, Suffolk County, New York (Figure 1). Breach closure activities may be initiated at a single, or multiple locations in one or more of the following Towns or Villages: Town of Southampton, Village of Quogue, Village of Westhampton Beach, Village of Westhampton Dunes, Town of Brookhaven, Town of Islip, Village of Saltaire, Village of Ocean Beach.

The nearest large bodies of water are Shinnecock Bay, Moriches Bay, and Great South Bay, each with mean tidal ranges of approximately 1 meter (3.3 feet), and the Atlantic

Ocean. Between 1838 and 1930, the barrier beach extended unbroken from Fire Island Inlet to Southampton. Currently, the action area is divided into three landmasses by artificially stabilized and maintained inlets. A description of specific past actions which have had the potential to affect the character of piping plover population status and distribution follows, is broken into reach-specific segments as defined by the Corps, and progresses from east to west.

Reach 1 - Southampton

The area between First Neck Lane and Halsey Neck Lane is an eroding headland, but lacks the high cliffs and cobble beaches that would normally characterize its erosional history. To the west, areas of the barrier island spit not affected by artificial shoreline stabilization retreat at about 0.31 meters (1 foot) per year. Dunes are lower to the east and increase in height to the west. However, there are several low spots even to the west where overwash can be expected in major storms (McCormick et. al. 1984). Most of the area between Shinnecock Inlet and the eastern terminus of the barrier spit in Southampton experienced overwash following the 1938 hurricane. The jetty on the east side of Shinnecock Inlet has stabilized beaches as far as approximately 0.62 kilometers (1 mile) to the east, but has also contributed to the downdrift erosion of Westhampton barrier island beaches.

Shinnecock Inlet, "born" in 1938, remained open naturally until 1954 when it was artificially widened and stabilized with a rock jetty. The stabilization process eliminated both dry beach and sandy intertidal habitat and may have affected the availability of preferred plover nesting and foraging habitat. According to McCormick et. al. (1984), Shinnecock would have eventually closed naturally due to the longshore transport of sand. By artificially stabilizing Shinnecock Inlet, inlet migration, and the associated processes of spit formation and overwash that create sparsely or unvegetated habitats which maintain unrestricted access from ocean to bay, and which are favorable habitats for both piping plover and seabeach amaranth, were prevented from occurring.

TNC piping plover surveys for the Southampton Beach area began in 1983 (New York State Department of State and The Nature Conservancy 1991). Although TNC reported that plover productivity was good throughout the 1980's, the number of pairs occupying the Southampton Beach area tended to rise only slightly from a low of zero in 1983 to a high of seven pairs in 1992 and 1993 (Table 3). Plover nesting generally occurs near the western end of the Southampton barrier spit where recognized threats include predation by gulls, feral and domestic cats, harassment or predation by dogs, heavy beach vehicle use, and disturbance by pedestrians. Although many landowners are cooperative, some still do not allow fencing to protect nests (The Nature Conservancy 1994c). The eastern shore of Shinnecock Inlet, like other inlet areas, has been a magnet for recreational use, especially for ORVs, camping, fishing, surfing, and pedestrian use. Only one pair of piping plover was observed to frequent beaches on the east side of Shinnecock Inlet in all the years between 1983-1990. Average annual productivity for the entire Southampton Beach survey area, since records began to be kept in 1991, was highest in 1994 at 2.16 chicks per pair.

Reach 2 - Tiana

The Westhampton barrier island beaches, west of the Shinnecock Inlet, can be accessed via the Ponquogue Bridge in Hampton Bays, the Post Lane Bridge in Quogue, and the Beach Lane and Jessup Lane Bridges in Westhampton. Dune Road is the sole vehicular access route stretching from Shinnecock to Moriches Inlets. Although the stretch of barrier beach around Westhampton has historically been subject to frequent overwash and the formation of ephemeral inlets (Tanski 1988), this section of the south shore "has been greatly modified by works of man" (McCormick et. al. 1984).

As a result of the artificial stabilization of Shinnecock Inlet, downdrift erosion west of the inlet increased dramatically, and the frequency of overwash threatened the buildings and docks on the Westhampton barrier island (McCormick et. al. 1984). Dunes were artificially rebuilt after an overwash in the mid-1970's, and, despite the risk of damage from overwash, the existing docking facilities were expanded to their present-day configuration at the Suffolk County commercial fishing cooperative. Severe beach erosion has occurred in recent years, leaving beaches narrow in many places, although generally wide enough to support piping plover nesting. During the December 1992 storm, sand from the overwashed dunes filled bayside wetlands, again threatening the integrity and operation of the County commercial fishing facility. In anticipation of the spring 1993 nor'easter, the NYSDEC attempted to create a sacrificial dune on the oceanside of Dune Road, approximately 18.3-30.5 meters (60-100 feet) wide and 6.1 meters (20 feet) high, to protect the Suffolk County docks. That material too was lost to the storm, and the dune was again rebuilt, this time planted with beach grass, and armored with stone weighing approximately one to several metric tons. Although threatening to man-made structures, those same overwash processes created sandy, sparsely vegetated, bayside nesting habitat west of Shinnecock Inlet which became occupied by terns and one nesting pair of plovers in 1994 (The Nature Conservancy 1995). Beach vehicle use along the entire Tiana stretch has been moderate, while heavy pedestrian use has centered around the Town's Ponquogue Beach bathing facility, and the "lettered[17]" public access points. Human disturbance in the intertidal zone has interfered with the foraging of adults and chicks (The Nature Conservancy 1995).

The Tiana Beach portion of the Westhampton barrier island is relatively narrow, and manmade dunes on the south shore shield the island's interior from overwash and flooding. Along a large portion of the Westhampton Barrier Island, tidal wetlands lie directly adjacent to, and north of, Dune Road. The road elevation is so low that it frequently floods, failing to present a barrier to either tidal flow or the patchy formation of functional wetland units south of the road in the island's interior.

Residential development is dense in the middle section of the Tiana Beach. Hotels occupy a portion of the beachfront, and the berm seaward of these units is groomed to remove natural wrack and other floatable marine debris (Van Schoik and Antenen 1993). Although Tiana is less heavily used than beaches to the east and west, human disturbance by sunbathers, pedestrian traffic, and other recreational pursuits have affected piping

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[17]For example: Roads "H," "I," "J," "K," "L," etc.

plover productivity (New York State Department of State and The Nature Conservancy 1991). Human disturbance between Road K and Mermaid Lane was thought to have caused at least one nest abandonment in 1991.

Predation by foxes, cats, dogs, and crows is thought to threaten plovers at Tiana. Several cases in 1991 (dog) and 1992 (cat) have been reported where predators have either directly predated nests, and/or have forced nest abandonment. At least some predator exclosures have been used since 1992, but their success in reducing the threat of predation and nest abandonment has been limited. The second renesting attempts of two paris in 1992, following the predation of their first nests by cats, were also unsuccessful as they were flooded out by an extreme high tide on June 5, 1992. Third nesting attempts were successful and the two pairs were able to fledge three chicks.

Hampton Beach (Figure 4b) is of moderate width, and dunes form a more or less continuous ridge which is low to moderate in height. The likelihood of future overwash is greatest at its center where dunes are low and there is a history of frequent overwash (McCormick et. al. 1984). Residential beachfront development is relatively dense. Beach access within Southampton Town is normally reserved by permit for Town residents only, but, while there are no hotels in Hampton Beach, condominiums and beach clubs provide for non-resident access, concentrating and intensifying human beach use. In addition, a number of Quogue Village oceanfront parks provide resident point access, with the beaches receiving moderate to heavy use by beach-goers. ORV use is moderate, but heavier along stretches within Southampton Town jurisdiction. Beach grooming activity is sporadic (Terchunian, pers. comm. 1994).

Erosion along the Hampton Beach survey area in recent years has made the beach narrow. Perhaps due to the likelihood that nests could be flooded, Hampton Beach has attracted only a few adult nesting pairs, and has not been successful in fledging any chicks. The area suffers from heavy pedestrian use, and the protection of plover nests in some areas has been hampered by private landowners unwilling to allow the erection of protective fencing. Vehicle use compacts wrack, reducing the quality of available foraging habitat. Ocean beach raking in front of the private beach clubs further reduces the amount of wrack available for foraging. In 1993, the beach received heavy weekend recreational use, and protective measures were not employed. At least one nest was flooded by high tides. The subsequent renest was established in an area that later became a volleyball area. No chicks were fledged. Plover surveyors were told of the intolerance of some landowners who, in 1993 recounted existing and past acts of egg theft or destruction. As with other survey areas, foxes, crows, gulls, cats, and pedestrians with dogs are thought to threaten successful plover nesting in Hampton Beach.

Reach 3 - Westhampton

Westhampton Island Westhampton Beach: The Groin Field

The Ash Wednesday nor'easter of 1962 caused the Westhampton barrier to breach between the Village of Westhampton Beach's Jessup Lane Bridge and Picket Point, and resulted in a considerable loss of private property in Westhampton. To restabilize and strengthen the existing beach, eleven stone groins were installed on the Westhampton

barrier between 1965 and 1966 (Tanski 1988). An earlier beach protection plan, developed by the Corps in the 1950's, called for beach nourishment only. However, in response to local concerns over the stability of the fill, and costs of maintaining the design beach profile without structures, the plan was modified to include the installation of the groins and additional fill. According to McCormack et. al. (1984), "The predictable result was a sudden increase in erosion of the beaches immediately downdrift (west) of the last groin." Four more groins with sand filled compartments were installed between 1969 and 1970 in an attempt to control downdrift erosion. Although areas within the groin field stabilized somewhat, the area of accelerated downdrift simply shifted to the west. Dunes in the area are of moderate height. The beach is heavily used by bathers, and is groomed in some sections (Van Schoik and Antenen 1993). TNC (1994b) reported that prior to 1994, there was limited use of exclosures in Westhampton or public education about plovers. A local lack of understanding and/or empathy for the plight of the piping plover might explain references in a TNC (1993) report, of local residents in the Lashley Pavilion area that had personal knowledge of individuals who had removed eggs from nests. Other threats reported include the overcrowded nature of beach use, flooding, heavy predation, and free-running dogs. In addition, during her study of plover habitat suitability in 1992 and 1993, Elias-Gerken (1994) found that human disturbance was high within the groin field and areas to the west (i.e. the Village of Westhampton Dunes). In 1993, plover broods were disturbed 43% of the time during behavioral observations in oceanfront open vegetation habitats (Elias-Gerken 1994), and it was common for broods to be alarmed as oceanfront residents accessed the beach along paths through the dune vegetation.

Westhampton Island West: Pikes Beach

The area directly west of the groin field suffers from a paucity of sand replenishment, resulting from the groins' sand entrapment and deflection of drifting sand into offshore waters. At the same time, beaches west of the groin field lose sand via littoral drift. The combined effect of these two processes results in a climate of accelerated erosion and a narrowing of the barrier island width (McCormick et. al. 1984). Following the installation of the groin field, downdrift beaches to the west suffered from chronic erosion, and the heavily developed residential community there was subjected to washovers five to six times a year (Tanski 1988). West of the groin field, the barrier island continued to narrow until 1992 when, as a result of the December '92 nor'easter, it breached in two locations, leading to the formation of Little Pike's Inlet (westernmost) and Pike's Inlet (easternmost). Closed for safety purposes and/or inaccessible to vehicular traffic, the barrier island from the western boundary of the groin field to Moriches Inlet (Cupsogue County Park) was isolated with minimal beach use by humans.

Pike's Inlet shoaled, and complete closure was assisted artificially by the Corps. "Little" Pike's Inlet, having grown to approximately 914.4 m (3,000') wide, was artificially filled in 1993 with a steel sheet pile bulkhead as its spine. The combined 1,219.2 m (4,000') wide area remains low, has the potential to overwash with every storm tide, and is sparsely vegetated (Van Schoik and Antenen 1993).

Having no record of previous use by piping plover, the filled artificial overwash area was rapidly colonized by 5 pair of plovers in 1993, and 15 pairs of plovers in 1994. It is not

known whether plovers were drawn to Pikes Beach from other nesting sites, or whether the increase represents new recruitment into the area by first year breeders. However, productivity in both years was relatively low at 1.00 chicks per pair. Site fidelity by one-year-old adults, cannot adequately account for increases in the numbers of piping plovers that have chosen to nest at Pikes Beach in 1994; thus it appears that plovers are immigrating to Pikes Beach from other sites.

As of May 17, 1995, 10 piping plover nests had been occupied in the Pikes Beach area with another four pairs observed in courtship and territorial displays. Nests with eggs were identified early, and predator exclosures were erected around all 10 nests. Unfortunately, by June 1, all 10 nests had experienced fox predation. Although the remanents of Hurricane Allison passed by Long Island on June 7, 1995, overwashing Dune Road in two locations, the June 19, 1995, surveys conducted in the Pike's Beach area identified 21 pairs (estimated), 11 nests, and 43 eggs. The fate of these late and/or re-nest attempts will likely not be known until after the completion of this report.

During the formation and expansion of both inlets, low tidal deltas were created. The delta formed along the western shore of the former Pike's Inlet is the larger of the two, and extends into the bay, bending to the east somewhat. Although it is frequently overwashed, and, therefore, not well suited for plover nesting, it may serve as an important feeding area, especially for unfledged chicks.

Although Dune Road is currently functional, and accommodates a fair amount of vehicle traffic (moderate during the week, but heavier on weekends), vehicle disturbance to incubating birds appears to be minimal (Freshman, pers. comm. 1995). On June 21, 1995, Service personnel witnessed an adult laying an egg within 3 m (10') of Dune Road. The road and/or traffic does not appear to present an absolute barrier to plover foraging since individual adults have been observed feeding in both ocean and bayside habitats. Vehicles may, however, pose a much more serious threat to unfledged chicks.

Disturbance by pedestrians appears to be greater than vehicle disturbance from road traffic, and leads to more frequent flushing of incubating adults. The installation of electrical poles to restore service to the Village of Westhampton Dunes may have affected the nesting activity of at least one pair, and was suspended pending further analysis of impact.

Two nest sites formerly occupied in 1994, west of Cove Lane, have not been reestablished in 1995. A variety of factors may have contributed to the abandonment of this area including the erosion of oceanic beaches leaving them highly susceptible to flood damage, observed fox activity, the widespread and densely concentrated reconstruction of residential and/or associated structures, and human disturbance from the reoccupation of homes and use of property. However, reconstruction activity on one house in the middle of the nesting area, and reconstruction of two structures east of the nesting area does not seemed to have had a detrimental effect on territorial establishment, courtship behavior, or incubation activity so far. This may be explained, in part, due to the fact that the reconstruction activity and/or property use is relatively minor, that the activity is also

either on the fringe of the plover nesting area, or very sparsely concentrated. It may also reflect the considerable variation in the tolerance of individual plovers to disturbance.

Additional information on factors, operational prior to 1995, that have contributed to the current status and distribution of the piping plover in and around Westhampton Beach are discussed in greater detail in the Service's Westhampton Interim Storm Damage Protection Project Biological Opinion (U.S. Fish and Wildlife Service 1994b).

Reach 4 - Cupsogue

Following the installation of the Westhampton groin field, Cupsogue County Park became more susceptible to overwash, and in 1980 the barrier breached just east of the Cupsogue jetty. The new inlet was artificially filled, and a portion of the bayside shoreline was armored at a cost of approximately 11 million dollars. It has been reported that, should the connection between the beach and the jetty be broken again and left unattended, the barrier island tip at Cupsogue can be expected to retreat rapidly (McCormick et. al. 1984).

In 1986, following Hurricane Gloria, Dune Road was severely damaged as a result of overwash, and was subsequently closed. Without vehicular access, Cupsogue County Park also closed. It remained closed until 1991 when Dune Road was refurbished and the Park was reopened to accommodate heavy summer recreational use. The 1991 Halloween storm, followed by the two 1992 breach events at Pikes Beach forced Cupsogue Park to close to the public again from 1992-1994. Where they present an obstacle to human and vehicle traffic, breaches may indirectly create improved, undisturbed nesting and foraging habitat for plovers. However, surveys have shown that from 1986 (the time it was first closed), to 1994, Cupsogue County Park has supported a low but relatively stable number of nesting plover pairs (Table 3). During the entire time the Park was closed, boat and jet ski access to the park did facilitate varying degrees of uncontrolled human disturbance, including camping, picnicking, fishing, and use by pets, and may have offset the potential benefits of reduced vehicular access.

Dune Road was again cleared of debris and regraded in 1994, in anticipation of residential reconstruction and reoccupation and the Corps' 1996 beach and dune restoration projects. Dune Road was flooded by a relatively minor storm in December of 1994, and until the late spring of 1995, Dune Road had remained in poor shape, highly vulnerable to additional storm tides and overwash. Dune Road was regraded following the close of the winter nor'easter season, and Cupsogue County Park reopened for Memorial Day weekend on May 27, 1995. Although Dune Road was overwashed again on June 7, 1995, damage was minor, and did not significantly deter access to Cupsogue County Park.

Although the jetty along the eastern shore of Moriches Inlet traps sand and builds the beach, those effects are somewhat localized. Towards the eastern end of the Park, which has not benefitted as greatly by the sand trapping of the eastern Moriches jetty, and where sand supply has been limited by the Westhampton groin field, the beach is more narrow, and the dune is steeply scarped. The back beach area is dominated by phragmites (Van Schoik and Antenen 1993). Oceanfront beaches within Cupsogue are

generally narrow, and most of the beach is subject to flooding. While surveys in 1994 did reveal dune blowouts and areas of dry beach suitable for plover nesting, the advent of renewed recreational use of the Park is likely to adversely affect foraging and brood rearing activities in and adjacent to the designated recreational ocean beaches in the future.

Plovers which nest at Cupsogue will most likely continue to utilize the gravel road behind the dunes, leading from the vehicle parking lot to the inlet. There, plovers must contend with human disturbance during peak summer months in addition to spring peaks in recreational fishing use.

Moriches Inlet was formed by a breach in 1931, closed naturally in 1950, and was forced open again in 1953 as the result of a storm (Kaufman and Pilkey 1983). Although "there appears to be a substantial amount of sand [naturally] bypassing the inlet and moving to the west" (Tanski 1988), the continued maintenance dredging of Moriches Inlet has diminished the westward delivery of sand, and, as a result, has contributed to the rate and character of barrier island migration[18] along western beaches by accelerating erosion there. Prior to inlet and beach stabilization efforts, the average long-term barrier island (Westhampton and Fire Island barriers) recession rate was approximately 0.46 meters (1.5 feet) per year. After inlet stabilization, the average rate of barrier island recession along western beaches increased to an average of approximately 2.13 meters (7 feet) per year.

Fire Island (Reaches 5-9): Overview

Fire Island barrier island is approximately 32 miles long, and can be accessed from the east via the William Floyd Parkway and Smith Point Bridge, and from the west by way of the Robert Moses State Parkway and Causeway bridge. From May to October, ferries service the communities, beaches, and FIIS stations of Watch Hill, Davis Park, Fire Island Pines, Cherry Grove, Sailors Haven, Ocean Bay Park, Seaview, Ocean Beach, Atlantique, Dunewood, Fair Harbor, Saltaire and Kismet. Fire Island is unique in that it is the only developed barrier in the United States without a complete set of interconnecting paved roads. In the summer, water taxis shuttle passengers between communities. Interior pedestrian walking paths and boardwalks also provide access between communities. In addition to the heavily used recreational facilities at Smith Point County Park and Robert Moses State Park, the Fire Island barrier supports town bathing beaches at Old Inlet (Brookhaven), Bellport Beach (Brookhaven), Barrett Beach (Islip), and Atlantique (Islip). The FIIS provides visitors centers, each with a self-guided nature trail, at Fire Island Lighthouse, Sailors Haven, Watch Hill, and Smith Point (Figure 5a-b).

Approximately 26 miles of the island was set aside by the Federal Government in 1964 as the Fire Island National Seashore. Its purpose is for "conserving and preserving for the use of future generations certain...natural features within Suffolk County, New York,

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[13]The term *migration* includes changes in sand volume, accretion and erosion, and barrier island retreat.

which possess high values to the Nation as examples of unspoiled areas of natural beauty..." (Fire Island National Seashore 1994). Executive Orders 11644 and 11989 address the use of ORVs within the FIIS, and generally prohibit their use where they represent a threat to wildlife and/or where they cause or will cause adverse effects.

That same year, Bull (1964) reported that plovers bred at "little-disturbed beaches", with "the numbers of pairs naturally depending on the extent of unspoiled and undeveloped beachfront." He also reported, "thus, many miles of Fire Island contain quite a few nesting pairs."

Although the natural forces of wind, tide and waves combined to cause sand reservoirs on Fire Island to shift and migrate, beginning with the 1991 Halloween nor'easter, and followed by the 1992 nor'easter, and the March 1993 blizzard, many Fire Island beaches were rapidly and significantly altered. As beach berms were eroded, and beach elevations dropped, dry beaches were lost. Both beaches and dunes became denuded of vegetation. Dune faces became scarped and steepened. Dunes were overtopped and the barriers overwashed in many locations including Robert Moses State Park, Fair Harbor, Kismet, Ocean Bay Park, Old Inlet, and Smith Point County Park (Pasciutti, pers. comm. 1995). As many as 100 residential structures within the boundaries of the FIIS were either destroyed, or severely damaged and in danger of imminent collapse, and the historic water tower, public roads, parking lots, and other public bathing facilities at Robert Moses State Park narrowly avoided damage due to emergency stabilization efforts (Fire Island National Seashore 1994). Subsequent to those storms, damaged structures were, for the most part, restored or rebuilt.

Fire Island has a history of sporadic overwashes and formation and closures of inlets (Leatherman and Allen 1985) which have renewed habitats important to piping plovers (Elias-Gerken 1994). Over the last several hundred years, the frequency of overwashes and breaches on Fire Island has decreased since the 1938 hurricane, apparently due to anthropogenic barrier island stabilization (Elias-Gerken 1994). Fire Island would probably be covered with more overwashes, more open vegetation, and perhaps more inlets if humans had not begun to counter natural geologic processes and storm-related changes to barrier island morphology following the 1938 hurricane (Leatherman and Allen 1985). On Fire Island, where ephemeral pools, bayside overwash fans, and sandspits were absent and where broods had access only to oceanic foraging habitats, Elias-Gerken (1994) found that the majority of piping plovers tended to cluster near the barrier island tips at Moriches Inlet (Smith Point County Park) and Democrat Point (Robert Moses State Park). Contrary to this general trend, one pair of plovers nested at Old Inlet in 1993, following an overwash event in which vegetation was removed and/or buried and access from ocean to bayside foraging habitats was created.

Historically, in addition to the barrier island tips, piping plovers have nested at Sailors Haven, Watch Hill, and Old Inlet. Anywhere on the central barrier islands of Long Island when ephemeral pools and bayside foraging habitats were unavailable, Elias-Gerken (1994) found that beach use by plovers was positively related to the width of

open vegetation[19], and that this habitat characteristic appears to be an important selection factor for plovers, especially when other types of foraging habitat are absent or unaccessible by chicks. In some areas of Fire Island, ORV's appear to be truncating the open vegetation field widths, making the beaches less attractive for plover nesting and brood rearing. The nesting density of piping plovers in 1992 and 1993 was found to be low on the Fire Island barrier, 0.1 pairs per kilometer (Elias Gerken 1994), and productivity was also relatively low (Table 3). Between 1991 and 1994, the average productivity on Fire Island, for all areas of nesting, was 0.40 chicks per pair. Threats to plovers on Fire Island include ORVs, flooding by high tides, beach grooming, scraping, barrier island and vegetative stabilization, and human disturbance. In addition, predators (avian and foxes), are commonly sighted on Fire Island.

Following the documentation of a piping plover chick found crushed in a tire track at Watch Hill in 1991, the Service requested that the FIIS develop greater protection measures for piping plovers including a reduction of vehicle use in brood rearing areas. In 1992, to facilitate research on habitat suitability and foraging ecology, year-round vehicle free zones were established at Watch Hill, Sailors Haven, and Lighthouse Beach. However, the discovery of another plover chick found crushed in a tire track at Sailors Haven in 1992 compelled the FIIS to reevaluate their efforts, and develop a 1993 piping plover protection plan to prevent future mortality resulting from the use of ORVs in the vicinity of unfledged chicks. In preparation for the 1993 nesting season, the FIIS agreed to: provide monitors to locate and symbolically fence plover territories and nests; prepare an interim plan to implement piping plover protection measures; reduce vehicle use; develop a vehicle escort protocol; and develop an education program for ORV drivers (Fire Island National Seashore 1994). In 1993, in addition to the year-round vehicle free areas, the FIIS established a vehicle escort system at Old Inlet to protect plovers and began to draft its formal *Shoreside Species Breeding Habitat Management Plan*. In 1994, the escort system was supplanted with a seasonal vehicle ban from April 15 to August 15. In 1995, the FIIS revised their *Management Plan for Shoreside Species Breeding Habitat* (former Shoreside Species Breeding Habitat Management Plan) again. Year-round vehicle free areas at Watch Hill and Lighthouse Beach were terminated, the Sailors Haven area remained vehicle-free, and otherwise, east/west beach vehicle traffic was restored during periods of incubation (in accordance with Service guidelines), and brood rearing areas became vehicle-free until hatched chicks fledged. These changes were initiated by the FIIS to better accommodate essential service vehicles while maintaining adequate levels of protection for all existing Federally listed species including piping plover.

Developed Communities

There are approximately 17 developed communities on the Fire Island barrier island, between Davis Park and Kismet. Access within communities and/or connection to the mainland of Long Island's south shore is accomplished without the use of paved roads. Interior pathways are maintained for use by emergency 4-wheel drive vehicles, and utility and service oriented businesses. However, the common modes of travel are pedestrian

[19]Sparsely vegetated foredune areas (Elias-Gerken 1994).

(by boardwalk, inland path, or beach), or related to the water (by ferry, personal watercraft, or water taxi). Although some homes are occupied year-round, residential use is highly seasonal, with peak use coinciding with the second half of piping plover breeding, nesting and brood rearing activities. Fire Island beaches are also a popular tourist destination, and because they are readily accessible by ferry, the use of those beaches by non-residents can also be heavy.

Residential communities have long practiced artificial stabilization of the barrier beach in an attempt to protect developments from storm-related damage. Various communities have been involved in snow fencing, dune maintenance and repair, and artificial vegetative stabilization. During late September/early October in 1992, the Fire Island communities of Ocean Ridge/Davis Park, Fire Island Pines, Point O'Woods, Ocean Bay Park, Corneille Estates, Fire Island Summer Club, and Saltaire received NYSDEC pilot project permits to conduct beach scraping activities. The process involved using heavy machinery to remove the approximate top 6" layer of sand over a wide section of the dry beach, and using that accumulated material to augment or reconstruct artificial dunes. Between 1993 and 1994, eight Fire Island communities, including Kismet, Lonleyville, Atlantique, Robbins Rest, Corneille Estates, Fire Island Summer Club, and Davis Park/Ocean Ridge, were (re)issued NYSDEC beach scraping permits (Land Use Environmental Company 1995). Scraping activity in 1994 occurred between May 24 and May 30, and then again between July 21 and July 25.

It is not known to what degree, if any, scraping activities in spring of 1994 had on the establishment of piping plover nesting sites in those areas, but proposed continued beach scraping in 1995, along with the addition of scraping activities in four other communities, Ocean Beach, Seaview, Ocean Bay Park, and Saltaire, is likely to discourage future nesting in those communities.

Since 1986 at least, the Service is unaware of any recorded nesting activity within Fire Island's developed communities. This is in seemingly sharp contrast to other developed and less remote communities in the action area (i.e. Westhampton, Quogue, and Southampton), where nesting plovers are normally found. Although it would appear that suitable nesting habitat exists on the beaches within Fire Island's developed communities, and that these areas could potentially support nesting plovers, the current level of beach use when combined with development and stabilization activities that degrade existing habitat may explain the lack of censused data on nesting and brood rearing activity.

The patchwork of land use on Fire Island is further broken up by small areas of parkland situated between the residential communities. These areas of designated Fire Island National Seashore property exist between Kismet and Saltaire, Atlantique and Corneille Estates, and between Cherry Grove and Fire Island Pines. These areas are so small that their use by plovers may be significantly influenced by activities on the nearby residential lots. Larger sections of FIIS beach within the borders of the developed communities, at Sailors Haven, Talisman, Blue Point Beach, and Watch Hill are large enough so that the disturbance from adjacent communities is more limited.

Tiger beetles were observed within the FIIS in 1992 (Ebert, pers. comm. 1994), but none were collected, and it remains uncertain if the species observed were northeastern beach tiger beetles (*Cincindela dorsalis dorsalis*), which are Federally listed as threatened.

Reach 5 - Smith Point

The eastern end of Smith Point County Park (Fire Island East) is a narrow eroding beach. For a distance of approximately four kilometers (2.5 miles) east of Moriches Inlet the dune ridge is low, on the order of 3.1 meters (10 feet) in height. This suggests that the interruption in littoral drift by the stabilized inlet and its predecessors probably have accelerated the retreat of the shoreline in this area (McCormick et. al. 1984). Low, sparsely vegetated corridors between the ocean and bay beaches, indicators of recent overwash activity, can be found in several locations east of the Smith Point Park recreation area. Elsewhere in the park, bare sand can be found at sites of dredged material deposition (Van Schoik and Antenen 1993). Both the inlet and overwash sites within Smith Point County Park are underutilized, and could potentially accommodate more pairs of plovers. East of the recreational bathing area, the beach is used heavily by ORVs, and the beach berm is covered with ORV ruts (Elias-Gerken 1994). Only the eastern tip, a tern and piping plover nesting site, is protected from ORVs, and there is a high degree of overlap between the shorebird protection areas and the locations where seabeach amaranth has been found. Plovers compete for nesting space in the protected area, possibly due to the intense vehicle pressure along the rest of the beach. Within the protected area, only pedestrian disturbance interferes with the foraging activities of unfledged piping plover chicks. The western end of Smith Point County Park is operated as a heavily utilized recreational bathing beach.

Wilderness Area

At the eastern end of the Fire Island barrier, a portion of the FIIS is designated as the Otis W. Pike Federal Wilderness Area. The FIIS Wilderness Area extends over 11.3 km (7 miles), from the western edge of the Smith Point County Park west to Watch Hill. The official boundary of the Wilderness Area extends from the toe of the oceanfront dune northward to the backbay shoreline, and, significantly, excludes the oceanfront beach. Off-road vehicle use within the Federal Wilderness Area is prohibited, but since the oceanfront beach is not within the specially designated Wilderness Area, vehicle travel east and west along the oceanfront beach is not prohibited.

The low nesting occurrence in the vicinity of the Fire Island Wilderness Area, with only one pair in both 1993 and 1994, might partially be explained by lack of preferred foraging habitats and distance from inlets (barrier island tips). While not optimal, Elias-Gerken (1994) postulated that suitable habitat within the FIIS may lie vacant because it is surrounded by beaches elsewhere on the Fire Island barrier where better habitat exists (Elias-Gerken 1994). She further theorized, that due to the general absence or scarcity of storm-created habitat types, only about 20% of the FIIS now contains suitable plover nesting and brood rearing habitat, and that populations of piping plover there would increase "spectacularly" if the incidence of overwashes or new inlets were to increase.

Plover mortality within the Wilderness area has been attributed to off-road vehicle use, vandalism, and predators.

Reach 6 - Old Inlet

About 2.5 kilometers west of the Smith Point Bridge lies the area known as Old Inlet. A boardwalk spans the barrier island from a dock on Great South Bay to the toe of the primary oceanfront dune, and provides a pathway for those wishing to access Fire Island beaches. However, perhaps because access is limited to the boating community, visitation is moderate (Fire Island National Seashore 1994), and pedestrian use of the more remote Wilderness Area is generally light (Elias-Gerken 1994).

Winter storms in December of 1992 and in March of 1993 created numerous washovers in the primary dunes and left an ephemeral inlet in the Wilderness Area at Old Inlet. Sand buried woody vegetation, and open vegetation grew in along the margins of the overwash fan. Overwash activities widened the area that was suitable for colonization by plovers (FIIS 1994), and provided access to bayside intertidal flat foraging areas.

Following the formation of the overwash area in 1993, and the renewal of an unobstructed corridor from ocean to bayside foraging habitats, a pioneering pair of plovers was attracted to Old Inlet. The pair successfully hatched three chicks. The first chick disappeared by three days of age (Elias-Gerken 1994). The second and last chick died at four days of age, and a necropsy determined that they died of starvation. A single pair nested at Old Inlet again in 1994; no chicks were fledged. Elias-Gerken (1994) recommended that new blowouts in the Fire Island Wilderness Area be monitored because they provide wider, flatter pockets of beach where open vegetation will grow, offering preferred habitats for plovers.

Reach 7 - Water Island

The Watch Hill survey area is characterized by a lifeguarded, oceanfront beach, and the FIIS Watch Hill Visitor's Center facility, which includes a 188 slip bayside marina, campgrounds, and public picnic facilities. Since 1987, plovers have historically nested in the area just east of the recreational bathing beach, and from 1986 to 1993, plover breeding activity has also been recorded near the Watch Hill marina, on a dredged material site. From 1992-1994, an approximate 0.62 kilometer (one mile) portion of the oceanfront beach was closed year-round to conduct research on plover foraging ecology and habitat suitability (Elias-Gerken 1994). During that time, east/west vehicle access was preserved with the maintenance of dune cuts located east and west of the protected area, and an inland road which bypassed the beach route.

In the residential communities of Davis Park, Fire Island Pines, and Cherry Grove, the beach is generally narrow, and the dune is steeply scarped from erosion. Plovers have not been recorded to nest in any of those communities. At Water Island, however, although no nests were found, there has been a great deal of evidence of plover courtship activity (Fire Island National Seashore Habitat Management Plan 1994 Summary [unpublished report] 1994). In 1993, Elias Gerken (1994) found 14 nest scrapes in the

upper beach berm, but no nests with eggs. To encourage active nesting at Water Island, she suggested that ORV's be diverted away from the beach.

Reach 8 - Atlantique

The Sailors Haven survey site occupies approximately 0.62 kilometers (one mile) of the barrier beach. Dune cuts east and west of Sailors Haven make it possible for vehicles to bypass the beach area by following an inland route. As a result of this existing alternative east/west pathway, the Sailors Haven beach was able to be closed to vehicle traffic from 1992-1994, as part of a piping plover research study (Fire Island National Seashore 1994, Elias-Gerken 1994). According to FIIS reports (1994), the frequency of use by threatened or endangered species at Sailors Haven grew as off- road vehicle use declined. There is little development other than a bathhouse and several residences for FIIS park personnel (Elias-Gerken 1994). Pedestrian beach use has been common in the past. The beaches are generally narrow in the western half of Sailors Haven. The beaches are wider in the eastern half where plover activity has been reported every year from 1990-1994 (Ebert, pers. comm. 1994).

The Fire Island Lighthouse Visitor's Center beach extends from the western border of the Kismet residential community to the eastern edge of the Robert Moses State Park (parking) Field Five. The Lighthouse Visitor's Center sustains heavy recreational beach use, particularly as a refuge for sunbathers and surfers. Fire Island officials have observed piping plover adults feeding and loafing in this area (Ebert, pers. comm. 1994), but, for unknown reasons, plover surveyors have not recorded any nesting activity at the Lighthouse site.

Reach 9 - Robert Moses

According to historical records, a single storm opened Fire Island Inlet to a width of nine miles in 1690 (McCormick et. al. 1984). Over the past 300-400 years, sand from the predominant east-to-west littoral drift has been filling in that gap, and has created most of the dry land west of Point O'Woods since. Fire Island Lighthouse, built in 1825, and at the time only 152.4 meters (500 feet) from Fire Island Inlet, now stands greater than 2.8 kilometers (4.5 miles) from the inlet. The current inlet location is stabilized by a single jetty on the east side. However, the boundaries of the navigable inlet continue to migrate, as sand regularly overpasses[20] west of the jetty, and has created a recurved spit at Democrat Point.

Robert Moses State Park is heavily used as a recreational bathing beach, with four large bathhouses and parking fields spaced approximately every 0.6-1.2 kilometers (1-2 miles) of its approximate 3.7 kilometer (6 mile) length (Elias-Gerken 1994). The use of Robert Moses Fields Four and Five, along with FIIS Lighthouse Beach directly adjacent and to the west, has been problematic for nesting plovers. Plovers return to nest in early April, at a time when the recreational beaches are relatively barren. However, once the weather

[20]Sand bypassing a groin or jetty by travelling over its top (U.S. Army Corps of Engineers [Shore Protection Manual] 1984).

warms, conflict between nesting birds and the public is inevitable. These beaches have supported a few pairs of nesting plovers in almost each year since 1987, however, none has ever been recorded to have fledged a chick. The beach fronting Robert Moses Field Four has, in the past, not been opened on a regular basis, and instead has been used to accommodate overflow traffic from the other beaches during long holiday weekends or other periods of peak capacity. Regardless, human disturbance has been a major cause of nest failure, as disturbance causes incubating adults to spend an excess of time off the nest (The Nature Conservancy 1990). Also, once summer beach use begins in earnest, the high concentration of beach-users in the vicinity of nest sites has the potential of preventing plovers from reaching intertidal foraging areas. Predation by feral cats has also been cited as a major contributor to low productivity within the Park (The Nature Conservancy 1990).

The beach between Robert Moses Fields Four and Three, fronting the watertower, are not officially open to the public for recreational use. There is no direct access to the beach and it is not lifeguarded. However, this stretch does receive minimal pedestrian use, from individuals who walk in from adjoining beaches with public access. The December nor'easter of 1992, caused considerable erosion in front of the watertower. The dune was renourished to protect the integrity of the structure; however, little sand remains on the beach, and tides routinely flood to the base of the existing artificial dune. As a result, there is little, if any, suitable plover nesting habitat fronting the watertower beach.

The two western bathing areas at Robert Moses State Park, Parking Fields Two and Three, support heavy summer recreational use. The beaches are routinely groomed, and natural wrack that could potentially support the foraging activities of unfledged chicks is sparse or absent most of the summer. Even with the daily removal of trash and periodic beach raking, garbage accumulates both in the intertidal zone and uplands, and likely contributes to an artificially inflated predator population of gulls, crows, and rats. Nesting activity has not been recorded in front of the western park beaches.

West of Robert Moses Field Two, in an area heavily traversed and rutted by ORVs on their way to the Democrat Point jetty, the Long Island Beach Buggy Association (LIBBA) has fenced areas seaward of the toe of the dune to allow dune grass communities to recolonize and stabilize beach berm areas without being crushed or eroded by ORVs (TNC 1991a). While this practice may have improved the beach's suitability as piping plover brood rearing habitat, by incidentally encouraging the development of open vegetation foraging habitat, no plovers have been observed to nest between Field Two and the jetty.

Democrat Point is an extremely dynamic, high energy barrier beach tip. The beach berm is low, and flooding from the ocean, inlet, and bay provides for the formation of large ephemeral pools, whose locations, shape and size may vary from year to year. Fire Island Inlet is dredged by the Corps approximately every two years, and this activity may also affect the processes that shape the appearance of the Democrat Point spit. The Democrat spit has not been structurally stabilized, but, rather, has been allowed to respond naturally to wind, tide, and storm. Piping plovers have been known to nest at this site since 1985 (The Nature Conservancy 1991a), but observed productivity has been

poor. Democrat Point generally supports a well developed wrackline on the sand spit west of the jetty. The beach berm is rather wide, but rutted with ORV tracks. Major threats to piping plover eggs and chicks include tidal flooding, use by off-road vehicles. noise and landing disturbance from jet skis, and other recreational activities associated with Robert Moses State Park.

In an effort to protect piping plovers and improve nesting success, State Park officials have attempted to dampen human and ORV disturbance by erecting symbolic string fencing (in association with LIBBA), have erected interpretive signs, and conducted outreach programs aimed at educating the public about plovers. They have attempted to train ORV users to practice responsible beach driving practices, and have limited the use of beach grooming equipment in and around plover nesting areas. While these activities must have assuredly enhanced existing plover habitat, the data does not show significant increases in the recruitment of nesting pairs over the last nine years (Table 3). However, these improvements in plover management may have contributed to the successful fledging of four chicks in 1993, for a productivity of 2.0 chicks per pair.

4. EFFECTS OF THE ACTION: Piping Plover

The BCP would provide for the closure of breaches in the action area by placement of fill from upland stockpiled, upland borrow, and/or dredged material. Implementation of single or multiple breach closure projects under the proposed plan may have immediate direct effects during the construction phase, and long term indirect effects on piping plovers and their habitat.

The actual effects of the proposed action would depend on the number, timing, and locations of the projects. In addition, project effects would also vary depending on the number and locations of piping plovers and their breeding areas at the time that project activities are conducted under this Plan. Because of these variables, the potential effects on piping plovers and their habitat that can be expected in the action area if the Breach Contingency Plan is implemented can be described, but they cannot be quantified with certainty.

The BCP provided an assessment of breach vulnerability in the action area and identified locations with high, moderate, and low vulnerability for potential breaches to occur. This assessment classified two locations as high, two locations as moderate/high, five locations as moderate, one location as low/moderate, and nine locations as having low vulnerability. For perspective, of 54 pairs of piping plovers that nested in the action area during 1994, 16 pairs at two sites were at or near locations with high vulnerability for breaches, seven pairs at one site were at or near a moderate vulnerability location, and ten pairs at four sites were at or near low vulnerability locations. The remaining 21 pairs nested at five sites which were not classified for breach vulnerability. Because numbers and locations of piping plovers vary from year to year, and could be similar or quite different at the time of project implementation, this type of comparison can only suggest a potential level of impact under similar conditions.

a. Direct Effects

The Corps has agreed to incorporate into the project plan a number of "Measures Proposed to Reduce the Adverse Effects on Threatened Species", as detailed in the "Description of the Proposed Action", Section III, which will avoid or reduce the potential for adverse impacts on piping plovers during construction activities. The Service believes it will be possible to implement these measures for the majority of projects that may be conducted under this plan, thereby avoiding or significantly reducing project-related direct adverse impacts. However, under certain conditions (i.e., multiple breaches occurring during the plover breeding season at a number of breeding locations; plovers nesting within the fill area), it may not be possible to fully implement the proposed measures. In addition, the stockpiled fill material may provide suitable habitat that may become occupied by piping plovers resulting in adverse effects during breach closure operations. Therefore, the following direct effects on piping plovers from construction activities may occur during breach closure project(s), including future renourishment of the fill profile, if they are conducted at or near plover nesting areas during the nesting season:

1) Unavailability of suitable nesting habitat during construction.

Dredging and construction operations within and adjacent to plover nesting habitat would prevent plovers from utilizing the habitat which is currently under construction, forcing them to seek appropriate habitat elsewhere.

2) Loss of productivity due to construction disturbance and harassment.

Dredging and construction operations that encroach upon established plover courtship, nesting and brood rearing areas have the potential to disturb both adults and chicks that use this habitat. Impacts may include territory abandonment, disruption of pair bonds, nest abandonment, elevated predation of eggs and chicks due to adults being less attentive, and increased chick mortality due to reduced foraging opportunities. These effects would adversely affect piping plover productivity. Data on distances at which piping plovers react to disturbances (Flemming et al. 1988, Cross 1990, Loegering 1992, Cross and Terwilliger 1993, and Hoopes 1993) indicate that plovers within a 200 meter vicinity of construction activities could be disrupted. This 200 meter distance reflects disturbance distance associated with pedestrians, which is likely to be less than that associated with heavy construction equipment operation and the trucking of stockpiled or upland fill during 24 hour periods. The "Description of the Proposed Action", Section 3, includes a proposed buffer zone of 90 meters, with provisions for monitoring during construction, and increasing the buffer if it is found to be insufficient. However, a delay in adjusting the buffer, or insufficient buffer size due to the emergency nature of the project, would result in these adverse effects.

3) Loss of piping plover nests and/or chicks.

Dredging and construction operations, especially the movement of equipment and vehicles on the beach (e.g. dredge pipeline, beach grading), can greatly endanger nests and chicks. Inadequate buffers or no buffers between nourishment operations and chick

rearing areas would result in a high probability that chicks and eggs in the vicinity of machinery will be accidentally crushed. Data from Patterson (1988), Cross (1990), Coutu et. al. (1990), Strauss (1990), and Loegering (1992) show that plover chicks may move up to 1,000 meters from their nest sites, commonly traveling more than 200 meters in the first week post hatching. In addition, if dredge pipeline is placed in a manner that prevents plover chicks from gaining access to foraging habitats, including ocean intertidal areas and wrack, bayside intertidal areas and wrack, and open vegetation areas, foraging opportunities during critical periods would be reduced and chick mortality may increase.

The actual number, timing, and locations of projects that may be conducted under this Plan are unknown and cannot be accurately predicted. Therefore, the resulting direct effects on piping plovers could range from none for projects undertaken outside plover nesting areas or outside the breeding season, to the reduction or complete loss of breeding productivity for piping plovers affected by construction activities in any given year.

b. Indirect Effects

The following indirect effects on piping plovers and their habitat may result from the closure of breaches under the proposed plan:

1) Loss and/or degradation of habitat due to interruption of recurved spit formation, inlet migration, and acceleration of dune succession.

Impacts on habitat may include (a) a decrease in the amount of early successional habitat available due to forestalling inlet formation and migration; and, (b) a possible decrease in the number of years early successional habitat persists in the project area when compared to that available during natural inlet formation, migration, or closure. Both of these impacts, in turn, have potential to affect numbers and productivity of plovers nesting within the project area.

Wilcox (1959) describes the effects on piping plovers from catastrophic storms in 1931 and 1938 that breached the Long Island barrier islands, forming Moriches and Shinnecock Inlets and leveling dunes. Only 3-4 pairs of piping plovers nested on 17 miles of barrier beach along Moriches and Shinnecock Bays in 1929. However, following the creation of Moriches Inlet in 1931, plover numbers increased to 20 pairs in two miles by 1938. Wilcox adds that Moriches Inlet moved one mile west between 1931 and 1956. In 1938, a hurricane opened Shinnecock Inlet and also flattened dunes along both bays. In 1941, plover numbers along the same 17 mile stretch of beach peaked at 64 pairs. Numbers then gradually decreased, a decline that Wilcox attributes to deposition of dredged sand to rebuild dunes, planting of beach grass, and construction of roads and summer homes.

Although three southern Long Island inlets that formed during storm events in 1962, 1980, and 1992 were artificially closed (Cashin Associates, Inc. 1993), the Service is not aware of any information on effects of the 1962 or 1980 inlets or their closure on piping plovers. Little Pikes Inlet, formed in December 1992, widened to more than 900 meters and resulted in the formation of a recurved spit on its western side before the Corps of

Engineers filled it, starting in May 1993 and ending in November 1993. According to data compiled from The Nature Conservancy, Elias-Gerken (1994), and Elias-Gerken and Fraser (1994), while only one breeding pair of piping plovers had been documented in the vicinity of the breach during the entire preceding ten years, five pairs nested within 1.1 km of the breach in 1993. Following the completion of the breach fill, fifteen pairs nested and/or reared young in 1994 on a 2.0 km section of fill, for a density of approximately 7.5 pairs/km. The only area on 88 km of barrier beach on Jones Island, Fire Island, or Westhampton Islands where plovers attained a higher density in 1992 or 1993 was on the western end of Jones Island (Elias-Gerken and Fraser 1994). Elias-Gerken (1994) also notes that formation of a large overwash at Old Inlet on Fire Island between the 1992 and 1993 nesting seasons coincided with the colonization of that site by a pair of piping plovers which nested there in 1993 and 1994.

Information on effects of storm events on Atlantic Coast piping plover numbers from areas outside this project area generally supports the tenet that resultant habitat renewal is a major factor affecting population trends.

> Raithel (1984) notes that Rhode Island piping plover numbers reached a 20th century peak following the 1938 hurricane, but declined as habitat was lost to post-World War II dune stabilization efforts and summer home construction. The Rhode Island population partially recovered following another severe hurricane in 1954, before beginning a steady decline that continued through the mid-1980's.
>
> At Assateague National Seashore in Maryland, piping plover numbers and productivity increased substantially following major storms that overwashed the northern part of the island during the winters of 1991 and 1992 (Bottitta et al. 1994).
>
> Cape Lookout National Seashore in North Carolina serves as a prime example of an area where existing and relatively recently closed inlets comprise a large proportion of habitat occupied by breeding plovers (McConnaughey et al. 1990).
>
> By contrast, the formation of South Beach Island in Massachusetts, created by a 1987 breach, did not result in an immediate influx of nesting plovers; however, MacIvor (1990) does document changes in microhabitats selected by plovers after the breach, which she linked to the post-breach absence of vehicles. Furthermore, this area has experienced a substantial increase in plover abundance beginning in 1992 coincident with the overall increase in plover numbers in Massachusetts, and Outer Cape Cod in particular.

Information on the relative value of habitat formed by inlets and its effects on productivity of the birds that nest there is limited; furthermore, plover productivity data is easily confounded by other factors, such as predation pressure and human disturbance. Productivity of the five pairs of plovers that nested on the western side of Pikes Inlet in 1993 and of the fifteen pairs on the Westhampton Dunes fill in 1994 was 1.00 chicks/pair in both years, lower than the State and coast-wide averages. However, 1994 prey availability and foraging rates in bayside habitats, which were heavily selected by plover chicks, suggest that the long-term productivity of these habitats might be high if

maintenance by natural storm events were unimpeded by shoreline stabilization activities (Elias-Gerken and Fraser 1994), and other threats such as predation decline. Unfortunately, the absence of and/or short life of unstabilized inlets on Long Island makes it difficult to more comprehensively evaluate this matter.

As stated above, data on the impacts of filling breaches on plover productivity is not conclusive. However, the striking influx of plovers to recently breached and overwashed areas suggests that their habitat characteristics are highly attractive to the species. Prey availability and foraging rates observed by Elias-Gerken (1994) further support this thesis. Limited data gathered at Westhampton Dunes in 1994 (Elias-Gerken 1994 and Fraser 1994) suggests that breach fill can also supply these characteristics, but the smaller aerial extent of a fill compared to the recurved spits, bayside mudflats, and early succession beach that would be formed by a naturally persisting and migrating inlet will be lower, perhaps very substantially so. Furthermore, the potential for accelerated succession, including growth of dunes and colonization by vegetation, may decrease the number of seasons during which these conditions will persist.

On the basis of data summarized above, the Service believes that the BCP will reduce or preclude future increases in carrying capacity due to interruption of natural inlet dynamics. As noted by Wilcox and Elias-Gerken, the formation of recurved spits and inlet migration has been attended by dramatic local increases in numbers of breeding pairs. Although the breach fill is likely to function, at least in the short-term, as highly attractive plover habitat, the amount of habitat created will be less than that likely to form if the inlet were allowed to widen naturally and migrate over time. Furthermore, because the fill may effectively accelerate beach succession, the carrying capacity of the fill is likely to decline much faster than a breach responding under natural conditions. Thus, nesting opportunities for plovers that would have been able to breed in the project area, if new breaches were not filled, will be reduced.

2) Disturbance of piping plovers during their breeding season, and loss or degradation of habitat as a result of restoration and enhancement of recreational use and redevelopment.

In some cases, the occurrence of a breach may attract recreational users such as fishermen and off-road vehicles. In other cases, the occurrence of a breach or breaches or erosion of the fill profile may eliminate or hinder human access to habitat which may be used by piping plovers, and it may reduce the attractiveness of the area for recreational use, thereby improving its suitability for plovers. If the project beaches are occupied by piping plovers, these birds may suffer indirect effects from human activity after project completion and/or restoration of the fill profile as a result of the increased attractiveness of these areas for human activity. Human activities that may potentially adversely affect plovers include recreational activities such as off-road vehicle use, unleashed pets, fireworks, kite flying, increased predation due to refuse which attracts predators, vandalism of nests and eggs, and reduction of foraging habitat from deliberate removal of wrack near plover nesting and feeding areas or destruction of wrack by off-road vehicles.

Some of these activities are presently restricted for the protection of piping plovers in certain portions of the action area. Implementation of the "Endangered and Threatened Species Protection Plan" which is included in the "Measures Proposed to Reduce the Adverse Effects on Threatened Species" as part of the project plan may also reduce the impacts associated with increased human use and recreational activities in the project action area.

Closure and stabilization of breaches may result in the development or redevelopment of areas that would otherwise remain undeveloped following the occurrence of a breach. Short-term adverse effects including disturbance of plovers during the nesting season associated with development related construction activities may adversely affect piping plovers that occur in those areas. However, as discussed in the "Measures Proposed to Reduce the Adverse Effects on Threatened Species" as part of the project plan, the Corps and/or the NYSDEC would condition permits issued for those activities within their jurisdiction with specific measures to protect piping plovers in those areas. Therefore, the short-term effects from actual construction during development/redevelopment after a breach closure would be avoided or minimized. However, there still will be long-term loss or degradation of utilized or potential plover habitat from development.

The long-term loss or degradation of habitat from development/redevelopment would result from the replacement of nesting and foraging habitat with structures and roads, obstruction of overwash which maintains suitable habitat, non-federal stabilization efforts such as placement of snow fences, vegetation planting, and sandpiling to protect houses and other developments, attraction of natural predators, and the presence of pets which prey on plovers.

3) Combined effects which reduce the capability of habitat to contribute to recovery.

As noted in Elias-Gerken (1994), certain portions of the central barrier islands of Long Island lack suitable piping plover habitat and may not be able to contribute to the recovery of the New York piping plover population. It was also noted that some nesting beaches are subjected to predation and/or human disturbance resulting in low nest and brood survival.

As discussed above, indirect project effects include adverse impacts on the habitat for piping plovers that would be created by the formation of a new breach, resulting in adverse effects on carrying capacity and productivity. Adverse effects on habitat, coupled with threats including predation and human disturbance would further reduce productivity in piping plover areas affected by the project. Due to these combined factors, as piping plovers are initially attracted to the habitat created by newly formed breaches which are subsequently filled, these areas may have high densities of birds, but low productivity due to project related effects.

Any reduction in productivity is a particular and significant concern regarding the recovery of New York's piping plovers which already have a low average productivity. Most sites on Long Island face threats that may reduce plover productivity, and there is virtually no pristine habitat on the island. Therefore, it is necessary to reduce threats in

order to improve productivity on those sites. Even if productivity is above replacement levels, project related effects which contribute to the degradation of potentially prime habitat, increased human disturbance, and predation would reduce the potential to improve productivity in those areas affected by the project. While it is important that the resulting habitat from closing a newly formed breach may still be attractive to piping plovers and capable of supporting them, its potential contribution to the improvement and recovery of piping plovers would likely be diminished.

5. CUMULATIVE EFFECTS: Piping Plover

Cumulative effects are those effects of future State or private activities on endangered and threatened species or critical habitat that are reasonably certain to occur within the action area of the Federal action subject to consultation. Future Federal actions will be subject to the consultation requirements established in Section 7 and, therefore, are not considered cumulative in the proposed action.

A) Potential Lessening of NYSDEC authority to regulate activities within and adjacent to piping plover habitat

In 1991, the NYSDEC identified the need to review and revise the New York State Tidal Wetlands Act, Article 25. Recent discussions with the NYSDEC indicate that proposed changes to Article 25 include the deregulation of shoal and mudflat areas of the southshore/Atlantic beaches of Long Island, and severely restricting the NYSDEC's authority to regulate activities in areas adjacent to tidal wetlands. Since shoal, mudflat, and areas adjacent to tidal wetlands often provide piping plovers with foraging and nesting habitat, lessening or eliminating NYSDEC jurisdiction over such areas could potentially adversely affect piping plovers. For a more complete discussion on this topic, please refer to the Biological Opinion on the "Westhampton Interim Storm Damage Protection Project" prepared by the Service (U.S. Fish and Wildlife Service 1994b).

B) Establishment of Beach Erosion Districts on Fire Island

In March of 1995, the Town of Brookhaven established six beach erosion districts along Fire Island allowing the Town to assist residents on Fire Island to maintain beaches during the winter months. Sand fence installation as well as beach grass plantings may be used to attempt to stabilize town beaches. Such actions may have the potential to adversely affect piping plover habitat; however, the status and distribution of plovers along the work areas would need to be assessed on an annual basis to reach a more definitive conclusion as to how such actions may affect plover habitat.

C) Beach Scraping

Beach scraping, a technique to augment or construct artificial dunes, has been utilized by at least eight communities on Fire Island over the past three years. Such activity has the potential to adversely affect plovers and their habitats; however, the status and distribution of plovers within each community would need to be assessed on an annual basis in order to reach a more definitive conclusion as to how such actions may affect plovers and their habitats. Beach scraping activities will most likely continue to be

utilized by residential communities in the future as this is more cost effective than the traditional methods, such as beach nourishment, for private citizens to protect their properties by artificial beach stabilization.

6. BIOLOGICAL OPINION: Piping plover

After reviewing the current status of the Atlantic Coast population of the piping plover (*Charadrius melodus*), the environmental baseline for the action area, the direct and indirect effects of the Corps Breach Contingency Plan and FIIS Interim Breach Management Plan, and the cumulative effects of future State, local, or private actions that are reasonably certain to occur within the action area, it is the Service's biological opinion that authorization and implementation of the Corps Breach Contingency Plan and/or FIIS Interim Breach Management Plan will not jeopardize the continued existence of the Atlantic Coast population of the piping plover.

B. Incidental Take Statement: Piping Plover

Sections 4(d) and 9 of the Endangered Species Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury of listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

As outlined in the "Effects of the Action" section previously, an accurate quantification of anticipated take is difficult to predict for the following reasons: 1) this opinion evaluates the implementation of a plan as opposed to concrete site-specific actions; 2) levels of impact are evaluated herein relative to a snapshot of the most recent data on piping plover population abundance and distribution within the action area; and, 3) action area piping plover distribution/abundance may be different when actual breach closure activities occur. However, the Service believes, based on the best scientific information available, that the levels listed below reflect a reasonable assessment of anticipated take.

1. Incidental Take Statement for Direct Effects

Although the strongest classes of nor'easters are most prevalent in October, January, and March (Davis and Dolan 1993), the month when a nor'easter of any class might cause a breach(es) of the subject barrier islands cannot be accurately predicted. Therefore, for the purposes of impact analysis on the proposed plan, the Corps, FIIS, NYSDEC, and Service agreed that a "worst case scenario" would be used. The worst case scenario is

defined as a breach occurring on the last day of the last possible month of the nor'easter season (May) so that the proposed emergency activities would have to be conducted throughout June, July, and August, the entire plover nesting season, to initiate and complete breach closure.

Furthermore, for the purposes of "worst case scenario" analysis, once the breach has occurred, it is assumed that the Corps will be engaged in construction activity in and adjacent to occupied piping plover habitat adjacent to new inlets and prime foraging locations, and at stockpile sites. The direct affect of construction activity is expected to manifest over only one breeding season per breach event.

As stated earlier, the Corps has agreed to initiate a number of measures that will avoid or reduce the potential for direct effects to piping plovers during construction activities at the breach site. Although these measures will probably be implemented for the majority of projects, under certain conditions, it may not be possible to implement some of them. In addition, the stockpiled fill material may provide suitable habitat that may become occupied by piping plovers resulting in adverse effects during breach closure operations. Therefore, in summary, the direct effects on plovers, during the initial project and subsequent restoration/maintenance of the fill profile include:

(a) Harassment of plovers during territory establishment/courtship behavior which results in territory abandonment, pair bond disruption, delay in egg-laying with subsequent loss of renesting opportunities or failure to nest.

(b) Harassment of incubating plovers, causing nest abandonment. Disturbance may also increase the amount of time adult plovers spend off the nest engaged in defensive behaviors such as distraction displays, thereby increasing opportunities for nest predation and arrest of embryo development due to exposure to cold or heat.

(c) Harassment and/or direct mortality of eggs and unfledged plover chicks. Inadequate buffer distances, and the continuous trucking of stockpiled or upland fill material will create a likelihood that eggs or broods in the vicinity of moving equipment will be accidentally crushed. Adults may also spend increased time engaged in disturbed behaviors and less time brooding chicks, increasing the chicks' vulnerability to predation and decreasing their foraging opportunities during critical growth periods.

For <u>each</u> breach closure event which occurs within the piping plover nesting season, where: one or more piping plover pairs occur within any area affected by breach closure activities, including breach areas, stockpile areas and/or areas related to the restoration/maintenance of the fill profile; and, in which circumstances are such that implementation of all of the Corps' proposed measures to reduce the adverse effects of the project on Federally threatened species is not possible, it is anticipated that take will occur in <u>one</u> of the following ways:

For each increment of 1-5 pairs nesting at each affected area for one breach closure event:

1) disruption of nesting activity for one piping plover pair such that nesting activities are delayed, or abandoned; or,

2) harassment of adults such that one nest is predated or abandoned, or crushing by vehicles, with subsequent loss of 4 eggs; or

3) harassment of adults such that one brood is predated with subsequent loss of 2 chicks; or

4) decreased foraging opportunities or crushing by vehicles such that 2 chicks are killed.

The Service does not anticipate any direct mortality of adult piping plovers during breach fill activities or during subsequent breach fill design profile restoration activities.

2. Incidental Take Statement for Indirect Effects

In those areas where one or more piping plover pairs establish nesting territories within the vicinity of a breach or a breach closure, a breach filling event or subsequent restoration of the fill profile could affect piping plovers indirectly in areas recently isolated by the breaching event or eroded by storms through: restoration of pedestrian and vehicular access; and restoration and enhancement of recreational use and residential development. Because plovers will be attracted to the habitat created by both a breaching event and a breach-closure, any subsequent enhancement of human activity in the area could result in harassment to (or take of) plovers that nest there.

As outlined in items 2a-c of the Endangered and Threatened Species Protection Plan (Enclosure 2), the Corps will educate Town, Village, and private landowners to solicit their support for protection and recovery efforts, and, specifically, granting Corps, NYSDEC, or their representatives permission to access private property for the purposes of surveying, monitoring, posting, and symbolically fencing piping plover courtship, nest, and brood rearing areas, and erecting predator exclosures for nests during the nesting season. The Plan's effectiveness in fully preventing take associated with pedestrians, joggers, fishermen, other recreational users, vehicles, and residential development/reconstruction relies on a 100% effective education program that reaches every potential source of harassment (take), and an educated public that is fully compliant with every aspect of the Plan. In addition, the Corps and/or the NYSDEC would condition permits issued for development activities within their jurisdiction with specific measures to protect piping plovers. While the Plan and special permit conditions, when implemented, will minimize the level of anticipated take, it is the Service's belief that a small degree of incidental take resulting from indirect effects will be unavoidable. Therefore, it is anticipated that take will occur in one of the following ways:

For each increment of 1-5 pairs nesting at each affected area for one breach closure event:

1) disruption of nesting activity for one piping plover pair such that nesting activities are delayed, or abandoned; or,

2) harassment of adults such that one nest is predated or abandoned, or crushing by vehicles, with subsequent loss of 4 eggs; or,

3) harassment of adults such that one brood is predated with subsequent loss of 2 chicks; or

4) decreased foraging opportunities or crushing by vehicles such that 1 chick is killed.

The Service does not anticipate any indirect mortality of adult piping plovers from breach fill activities nor during subsequent breach fill design profile restoration activities.

3. Reasonable and Prudent Measures For Direct and Indirect Effects

The measures described below are non-discretionary, and must be implemented by the Corps so that they become binding conditions of any grant or permit issued to the NYSDEC or any other applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps 1) fails to demonstrate clear compliance with the reasonable and prudent measures and their implementing terms and conditions in this Biological Opinion; or 2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (3) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Reasonable and prudent measures are measures considered necessary or appropriate to minimize the amount or extent of anticipated incidental take of the species. In addition to the initiatives already proposed by the Corps in the project description, the Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize the anticipated take of piping plovers.

A) Design siting and/or establishment of stockpile material such that the area will not provide suitable piping plover nesting habitat.

B) Design renourishment projects to minimize disturbance or mortality of piping plovers in foraging, nesting, and/or brood rearing areas.

The Service believes that the Corps' Endangered and Threatened Species Protection Plan has already incorporated all the reasonable and prudent measures necessary to minimize the anticipated level of take from indirect effects, and, therefore, no additional measures will be required.

4. Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of ESA, the Corps must comply with the following terms and conditions. The terms and conditions described herein are non-discretionary, and must be implemented by the Corps so that they become binding conditions, as appropriate, in order for the exemption in Section 7(o)(2) to apply.

Notice: While the incidental take statement provided in this consultation satisfies the requirements of the Endangered Species Act, as amended, it does not constitute an exemption from the prohibitions of take of listed migratory birds under the more restrictive provisions of the Migratory Bird Treaty Act. Neither does it release the Corps from its responsibility to comply with other laws, Acts, or management plans pertaining to the FIIS including: Public Law 88-587, the 1964 enabling legislation creating the Fire Island National Seashore; the Federal Wilderness Act; the FIIS Wilderness Area Management Plan, and; the FIIS Management Plan for Shoreside Species Breeding Habitat.

A) In the event that piping plover adults, chicks, or eggs are injured or killed during either the initial breach fill project or subsequent maintenance of the design fill profile, two sets of actions shall be undertaken: (1) notification of appropriate law enforcement agents, biologists, landowners, and managers; (2) collection of evidence, information and production of a written record of evidence. Service Law Enforcement Agents can be reached at (516) 825-3950, extensions 234, and 250, and Service Biologists can also be reached at (516) 581-2941, (607) 753-9334, or (508) 443-4325. The following evidence collection procedures shall be followed:

1) Do not disturb the setting until Service Law Enforcement Agent(s) arrive and conduct their investigation and reports.

2) Fence the area if necessary to avoid disturbance of the scene and further disturbance or risk to the remaining birds.

3) As soon as possible after the area has been secured and Service Law Enforcement has been contacted, use the attached form (Enclosure 3) to document observations on conditions at the scene.

4) If a Service Law Enforcement Agent is not available to respond to the scene, the Service's Law Enforcement office may authorize another party to act in their behalf. Follow all instructions of the Service Law Enforcement Agent(s), including removing the egg or carcass if specifically authorized, and refrigerating collected items in an airtight or sealed plastic bag.

B) The Corps shall initiate and/or continue monitoring of piping plover distribution, population abundance, and productivity within the action area "pre-breach" as part of the monitoring necessary to determine the level of take that results from implementation of the proposed project. Annually, the Corps shall draft a report summarizing the current status of piping plover in the action area, and this updated information shall be submitted to the Service's Long Island Field Office no later than February 1 in the calendar year following the previous year's plover nesting season.

C) The Corps, whether carrying out or permitting activities related to the non-emergency restoration of the design breach fill profile, shall implement the following measures to reduce the level of anticipated take.

1. All feasible attempts shall be made to complete the renourishment of the fill profile outside of the plover nesting season (April 1 to September 1).

2. If any of the fill profile renourishment activities are to occur during the piping plover nesting season, the Corps, or its applicant shall:

a. Retain Qualified Bird Monitor(s)

A qualified endangered species bird monitor(s), from a list[21] pre-approved by the Service, shall be retained prior to commencement of the proposed activity through project completion but not beyond September 1, or the date of last fledging; or not beyond July 1 if no piping plovers are detected in the action area during the "Concurrent Activity Survey" described in c. below. (Staging of equipment, dredge pipe installation and removal, stockpile sites, and machinery operation areas are all considered part of the project and/or action areas.) For the purpose of determining that chicks can evade machinery and circumvent barriers such as pipes, plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters (49.21 feet), whichever occurs first. The average incubation period is 27 days. The earliest probable hatch date is May 20.

b. Pre-activity Survey

No more than one week prior to April 1 or the commencement of any on-site project activity to renourish the fill profile, the monitor shall conduct at least four non-consecutive days[22] of surveys of the project area (landing, staging, operation, sand transport, and beach nourishment area, i.e. all areas affected by the fill profile renourishment activity) for the occurrence of territorial, courting or nesting piping plovers (pre-activity survey). Each day's monitoring shall consist of two separate surveys to be conducted during different times of the tidal cycle.

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[21]Developed by FIIS Natural Resources for monitors on the National Seashore.

[22]Nine hours per day, or the maximum that daylight allows.

c. Concurrent-Activity Survey / Monitoring

Following the "pre-activity" surveys of the project area as described in 2.b. above, surveys/monitoring shall continue from the initiation of on-site activity in the project area through July 1 at a frequency of at least four non-consecutive days per week/two times per day. During this phase, in addition to identifying and posting[23] areas where plovers are present, the monitor(s) shall also document any disturbance to plovers from project activities. If no piping plovers (territorial, courting, nesting, or brood rearing) are detected by July 1 in the project area then surveying/monitoring can cease. If any piping plovers are detected (territorial, courting or nesting) at any time during the "concurrent-activity survey", the frequency of surveys/monitoring shall be conducted daily/two times per day and shall continue through project completion but not beyond September 1, or the date of last fledging.

d. Notification of the Service / Survey / Monitoring Modifications

The Service's LIFO shall be notified within 24 hours (via phone (516) 581-2941 or fax (516) 581-2972) of piping plovers being detected during either the "pre-activity surveys" or "concurrent-activity surveys." Should it be determined that the prescribed frequency is insufficient, the monitor(s) shall increase the survey requirements prescribed in 2.b. and 2.c. above . This may include increasing the minimum weekly survey frequency. In particular, the monitor(s) shall make necessary adjustments to the daily/two times per day surveys/monitoring during the brood rearing stage such that the weekly and daily frequency and duration of brood surveys is adequate to clearly determine the mobility of the individual broods, accurately define and post brood rearing areas, and provide adequate protection from project related disturbance.

The monitor(s) shall maintain field notes which shall be provided to the Service's LIFO, NYSDEC, and FIIS on a weekly basis. The Corps and/or its applicant, in cooperation with the Service may modify the survey and monitoring specifications based on site specific considerations to reduce or avoid any adverse effects to Federally and State listed species from the project.

e. Posting and Buffer Zone Establishment / Impact Monitoring

(Refer to Section 3(C)(2)(e) in the Description of the Proposed Action for protocols on posting and the establishment of buffer zones.)

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[23]Posting includes symbolic fencing and appropriate signage.

Courtship areas, nests, and brood rearing areas (including chick feeding areas) shall be posted immediately (supervised by the monitor(s)), and for the duration of the courtship, nesting, incubation phases, no disturbance shall be permitted within 200 meters (650 feet) of the designated area. Based on frequent[24] monitoring, the size and location of the protected area shall be adjusted (increased or decreased) in response to the observed mobility of the brood. The boundaries of the protected areas shall be expanded should plovers regularly move outside the originally posted area. Similarly, if frequent observation demonstrates that plovers do not use the entire protected area, then it may be reduced, but in no case shall it be reduced to less than 100 meters (325 feet) on each side of the brood. Posting of courtship areas may be discontinued after July 1 in any given year.

Monitor(s) shall document any reactions to disturbance from the fill profile restoration activity to determine the effectiveness of the 200 meter (650 foot) buffer and increase the buffer if necessary.

f. System for Notification of Disturbance

A system of notification shall be established if it appears that disturbance of piping plovers is occurring despite implementation of the measures described in Section 4(C) herein. Notification shall include on-site contractors, the Corps and/or its applicant, the FIIS, and the Service's LIFO. The on-site contractors shall be notified immediately and activities adjusted or halted to avoid or minimize disturbance. The Service shall be notified by the close of business that day for further consultation.

g. Any dredge disposal pipe used in renourishment activities will be placed offshore to the maximum extent practical, to allow plover chicks unobstructed access to the wrackline, water's edge, and/or other foraging habitats. Where the pipeline crosses the beach, the Corps and/or its contractor will bury the pipeline a minimum of 38.5 centimeters (15 inches) (half its diameter), cover it with sand, and create a ramp whose slope is 10:1 so that piping plover chicks can negotiate the pipe and access the lower beach unimpeded. The Corps and/or its contractor will not remove the pipe until, at a minimum, the third week in June and only after notifying and receiving approval from the Service and FIIS (if pipelines are laid within the FIIS) based on the fledge status of any plover chicks.

h. Wrackline disturbance will not occur in the foraging area of unfledged chicks.

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[24]Refer to the frequency prescribed in 2(c).

i. All vehicle and/or equipment movement involved in the trucking of sand from stockpiled or upland sites, including mobilization and demobilization efforts shall occur outside established buffers and avoid disturbance to piping plovers as described in 2.e. above.

3. The contractor and their employees shall be adequately informed of Endangered Species Act concerns, including, but not limited to, the establishment of adequate buffers and procedures to follow in the event of a take (disturbance or mortality), and bid plans and specifications shall be written to include this requirement. The contractor shall be supplied with a copy of this Biological Opinion, and be equally responsible for its judicious implementation.

4. The sand deposition area(s) shall be finished to a natural grade and contoured to maintain suitable nesting and foraging habitat for piping plovers.

5. The dredged or trucked material to be used to restore the design fill profile shall conform with the already existing substrate on the beach and consist of material that is capable of maintaining suitable piping plover habitat.

6. The planting of vegetation shall not occur in the fill profile restoration area.

7. The protection of piping plovers in the project construction area(s) after project completion shall be enhanced by actions taken both prior to and after project implementation. This shall occur in each year that fill profile restoration occurs, for the life of the BCP and/or IBMP, by educating landowners, homeowner associations, and beach managers (as appropriate) in the project area of the recommendations in the Endangered and Threatened Species Protection Plan in Enclosure 2, and by seeking written Memoranda of Agreement with the Federal (FIIS), State (NYSDEC), and County (Suffolk County Parks) landowners in the project area to secure access for the purpose of protecting piping plovers during the nesting season as outlined in Enclosure 2.

8. Activities described herein are designed to minimize the anticipated level of take, and as such are an integral part of the project implementation. As a result, the Corps and/or its applicant shall obtain the right of entry from all landowners:

(a) within the project impact and buffer areas for the purpose of conducting pre- and concurrent activity endangered species surveys/monitoring, fencing, posting and predator exclosure activities;

D) The Corps shall coordinate the selection of the stockpile sites with the Service and FIIS, and shall obtain both their approvals prior to establishing any stockpile site. Stockpile sites shall be:

1. selected and established where they are not likely to be utilized by plovers for nesting (for example, in areas where adults cannot lead chicks to suitable foraging areas because of dense vegetation or physical obstructions).

C. CONSERVATION RECOMMENDATIONS: Piping Plover

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species, to help implement recovery plans, and to develop information. Implementation of these conservation recommendations is also consistent with the September 29, 1994, MOU among fourteen Federal agencies, including the Corps and the Service.

A) The recently re-initiated Fire Island Inlet to Montauk Point Reformulation Study (Reformulation Study) encompasses approximately 134 km (83 miles) of Long Island barrier beach coastline. Within the project area of the Reformulation Study, the BCP covers approximately 80 km (50 miles) of Long Island barrier beach coastline. Several other Corps shoreline protection projects are also proposed for the south shore of Long Island. Refer to Figure 6 for a map depicting proposed shoreline protection projects on Long Island. These projects are also briefly discussed below.

1) "Westhampton Interim Storm Damage Protection Project": Proposed for construction in the spring of 1996 directly affecting 6.7 km (4 miles) of coastline.

2) "Fire Island Interim Project", the "West of Moriches Interim Project", and the "West of Shinnecock Inlet Interim Project" will be developed over the next two years. These three projects will affect approximately 48 km (30 miles) of Long Island barrier beach coastline.

3) "Fire Island Inlet and Shores Westerly - Beach Nourishment and Navigation Project" on Jones Beach Island is a dredging and beach nourishment project occurring every two years affecting 8 km (5 miles) of Long Island barrier beach coastline.

4) "Long Beach Island" beach nourishment project: Affecting approximately 14 km (8.7 miles) of Atlantic Ocean coastline, slated for construction by October 1997.

5) "East Rockaway Inlet to Rockaway Inlet and Jamaica Bay, New York" beach nourishment project: Affecting approximately 10 km (6.2 miles), slated for construction by October 1995.

Consequently, within the next ten years:

• Corps proposed beach construction projects will directly affect approximately 87 km (54 miles) of Long Island barrier beach coastline with the potential to affect another 25 km (16 miles of shoreline included within the BCP) of coastline for a combined beach construction project area of approximately 112 km (69 miles) of Long Island barrier beach coastline.

In addition:

• During 1994, the 80 km project area for the BCP supported 54 pairs of plovers, or approximately 26% of Long Island's nesting piping plover population.

• During 1994, the 112 km beach construction area, as discussed above, was utilized as nesting habitat for approximately 70 out of 209 pairs of plovers, or 33% of Long Island's nesting piping plover population.

In consideration of the large extent of piping plover nesting habitat that will be affected by the Corps' beach construction projects within the next 10 years, the Service recommends that a quantitative baseline piping plover habitat assessment be performed within the 112 km coastal area, as discussed above, in order to enable the Service and the Corps to determine the extent and value of the existing piping plover habitat. Upon completion of any of the projects as discussed above, an "after project" piping plover habitat assessment should also be performed and results should then be compared to those as depicted in the original baseline study. This comparison will enable the Service and the Corps to determine the extent to which piping plover habitat has been affected, and will allow the Service and the Corps to develop appropriate habitat compensation should need be. The Corps should work closely with the Service in the development of such a study.

The Corps should also implement studies to more fully determine the extent and duration of impacts from artificial beach stabilization and coastal alteration and to facilitate a more complete analysis of impacts of these activities on regional plover populations. Such studies should also seek to define possible project modifications that will minimize adverse impacts on piping plovers, other State and Federally threatened and endangered species, and the beach ecosystem.

B) In April 1995, NYSDEC initiated a Long Island Piping Plover Management Team whose goal is to gather beach managers from all levels of government together with private beach users to develop comprehensive management strategies to enhance the recovery status of piping plovers on Long Island. The Corps, FIIS, NYSDEC, and Service are all members of the Team, and have actively participated in meetings to date. Based on the number and magnitude of Corps projects, recently or proposed to be initiated, that have the potential to affect

piping plovers, seabeach amaranth, roseate terns, northeastern beach tiger beetle, and other rare beach strand species of State concern, the Service recommends that the Corps continue to participate in the Long Island Piping Plover Management Team, and take a leading role in the development, funding, initiation, and completion of actions recommended to improve the recovery status of piping plover on Long Island.

C) Predation is a major factor limiting piping plover productivity at many Atlantic Coastal beaches (U.S. Fish and Wildlife Service 1995). As an example within the BCP action area, in the vicinity of Little Pike's Beach in the Village of Westhampton Dunes, fox predation was responsible for the predation and/or abandonment of all ten exclosed nests in 1995. Range-wide natural threats from predation have been exacerbated by human-abetted changes in the number and types of predators affecting plovers which have become exaggerated to unnatural levels. As a result, the Service recommends that, throughout the action area and across Long Island, the Corps: 1) work with land managers to re-evaluate and clarify their policies on the management of predator populations and/or habitat where predation might be limiting local piping plover populations; 2) actively remove nuisance predators where warranted and feasible; 3) work with the NYSDEC to obtain increased access for licensed furbearer trappers, especially for those trapping foxes, raccoons, and opossums; 4) work with local beach managers to sponsor local beach clean-ups, during the off-season from September 1 to March 31, to remove garbage and litter that supports elevated and unnatural predator populations; and 5) work to develop and test new predator management techniques to protect nests and chicks. Additional information on these strategies can be found in Recovery Tasks 1.4 and 3.6 in the Service's draft revised piping plover recovery plan (U.S. Fish and Wildlife Service 1995).

D) During the course of breach formation, flood tidal deltas may be created. As is currently the case at Pike's and Little Pike's beaches, these areas may provide loafing, foraging, and nesting habitat for piping plovers and several other shorebird species. The Corps, FIIS, and NYSDEC, in consultation with the Service, should work to protect these areas in perpetuity as wildlife conservation areas. Management strategies to protect and enhance populations of nesting plovers and other fish and wildlife species as well the habitat upon which they depend, should be developed to ensure the areas remain productive.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or benefit listed species or their habitats, the Service is requesting notification of the proposed implementation of any conservation recommendations.

V A. BIOLOGICAL OPINION: Seabeach Amaranth

1. DESCRIPTION OF THE SEABEACH AMARANTH ACTION AREA

The seabeach amaranth action area is defined from Fire Island Inlet to First Neck Lane, just east of Coopers Neck Pond, in the Town of Southampton, Suffolk County, New York (Figure 7). The Service has made a determination that plants east of Halsey Neck Lane are in the seabeach amaranth action area because 1) activities within the project area may affect seed dispersal, the establishment of founder populations, and the recolonization of surrounding, formerly existing, and connected plant sites within the population (U.S. Fish and Wildlife Service 1994b), and 2) since the plants east and west of Halsey Neck Lane (and within the action area) are on the same barrier island and groups of plants are separated by distances less than 5 km, they fit the definition of a single "population" (Weakley and Bucher 1992). In 1994, no other plants were located within 5 km east of those found near Coopers Neck Pond, at either the Gin Lane or Water Mill beaches further to the east. Similarly, along the western border of the action area, there are no plants within 5 km and west of Democrat Point that would warrant the extension of the seabeach amaranth action area westward and beyond Fire Island Inlet.

The site names identified for piping plover are also used for seabeach amaranth.

2. STATUS OF THE SPECIES: Seabeach amaranth

Seabeach amaranth (*Amaranthus pumilus*) historically occurred in the Outer Coastal Plain of the Atlantic Coast of the United States, from Massachusetts to South Carolina. Its range is characterized by barrier islands developed by high wave energy, low tidal energy, frequent overwash of the generally low-lying islands, and frequent breaching by hurricanes and formation of new inlets (Weakley and Bucher 1992). Its primary habitat consists of overwash flats at accreting ends of barrier islands and lower foredunes and upper strands of non-eroding beaches. It occupies elevations from 0.2 to 1.5 m (8 in to 5 ft) above the mean high water mark. Eroding beaches with scarped foredunes generally do not provide suitable habitat for seabeach amaranth. Because their seeds are presumably long-lived and are readily dispersed by wind and water, seabeach amaranth occasionally establishes small temporary and casual populations in other habitats. These secondary habitats include sound-side beaches, blowouts in foredunes, and sand and shell deposits placed as beach replenishment or dredged fill (Weakley and Bucher 1992).

Seabeach amaranth is an annual herb which, in its own right, acts as an effective sand binder (Murdock 1993). Depending on distribution of life forms within a population (i.e., plants or seeds), seabeach amaranth can experience significant spatial distribution shifts from season to season and year to year. Seabeach amaranth moves around in the landscape as a fugitive species and occupies suitable habitat as it becomes available (Murdock 1993). As a result, the survival and recovery of the species appears to rely on extensive areas of barrier island beaches and inlets functioning in a relatively natural and dynamic manner.

In the extremely porous sands of its beach habitat, water and certain cations are probably growth/survival limiting factors, and the extensive root systems of perennial species often monopolize these resources. Because seabeach amaranth is intolerant of competition it does not occur in well-vegetated sites. If a barrier island community is protected from physical disturbance, it will quickly succeed to a perennial-dominated dune grass community (Weakley and Bucher 1992) and seabeach amaranth will be out-competed. The successional trend towards stabilization is, of course, often halted or reversed by natural disturbance in a dynamic barrier island environment.

Isolation of suitable habitat areas from one another by too great a distance can prevent recolonization following natural or man-caused catastrophes. Seabeach amaranth is extremely vulnerable to habitat fragmentation and the isolation of small populations can often lead to local extirpation (Murdock 1993). The present reduction of seabeach amaranth to a portion of its former range makes it more vulnerable to natural disasters (hurricanes) and unnatural disasters (e.g., oil spills).

Since the species was first discovered, it has been eliminated from two-thirds of its historic range. Between 1988 and 1989, range-wide reductions of 76% prompted its Federal listing as a threatened species effective on May 7, 1993 (Murdock 1993). Currently, it can only be found in three states: New York, North Carolina, and South Carolina. The 41 populations known to have been extirpated are believed to have succumbed as a result of "hard" shoreline stabilization structures, storm-related erosion and tidal-inundation, heavy recreational beach use by off-road vehicles (ORVs), and possibly as a result of herbivory by webworms (Murdock 1993). The continued existence of seabeach amaranth is threatened by these activities (Elias-Gerken 1994; Van Schoik and Antenen 1993) as well as by the adverse alteration of essential habitat, primarily as a result of "soft" beach stabilization (beach nourishment and deposition of dredge material, sand fencing, and planting of beach grass) but also from beach grooming, herbivory by feral animals (Murdock 1993), and perhaps song birds, deer, and rabbits (Van Schoik and Antenen 1993). Ironically, although storms and related erosion of beaches threatens seabeach amaranth because of its currently restricted range and reduced populations, attempts to stabilize beaches against these natural geophysical processes is often more destructive to the species and to beaches in the long run (Murdock 1993). Protection of long "multi-inlet" stretches of coastline has diminished and, as a result, the overall coastline landscape within seabeach amaranth's range has apparently been altered to a degree that does not allow it to exercise its fugitive life strategy (Weakley and Bucher 1992).

Some of the largest known seabeach amaranth populations are associated with the nesting sites of piping plover (*Charadrius melodus*), least tern (*Sterna albifrons*), caspian tern (*Sterna caspia*), or Wilson's plover (*Charadrius wilsonia*) (Weakley and Bucher 1992). Essential habitats for amaranth and for the nesting of these birds are similar; sand flats above the reach of high tide but frequently disturbed by natural forces to allow only sparse vegetative cover. Fortunately, because the plant occupies much of the same habitat as used by piping plovers and terns, conservation of nesting habitat provides some incidental protection for seabeach amaranth (Van Schoik and Antenen 1993; Hake, pers. comm. 1994). In a similar fashion, protection of seabeach amaranth plants and habitat throughout its range may provide benefits to other rare species (sea turtles and others)

and the conservation of amaranth and its essential habitat should help assure the maintenance of wide, sandy beaches which are also the focus of public recreational activities (Murdock 1993).

a. Life History - Plant

Seabeach amaranth plants germinate over a fairly long period of time, from April to July. Initially, the plant forms a small, unbranched sprig, but soon begins to branch profusely into a clump consisting of five to twenty offshoots. The stems are fleshy and pink-red or reddish, with small, rounded leaves that are 1.3 to 2.5 cm in diameter. The leaves, clustered towards the tip of the stem, are normally a spinach-green color, and have a small notch at the rounded tip. Flowers and fruits are rather inconspicuous and borne in clusters along the stem. Flowering begins as soon as plants reach sufficient size, typically in July. Many seedlings perish because of unfavorable location, weather conditions, interspecific competition, intraspecific competition, or a combination of these factors. In some years mortality of seedlings, before they reach reproductive age, is perhaps as great as 90%.

Plants range in size from just a few centimeters to over a meter (measured across the broadest aspect of the plant) indicating various germination dates and/or growth rates. Van Schoik and Antenen (1993) reported that while even some of the smallest plants produced seed, almost all plants over 15 cm. wide produced seed. Based on the morphology of the flower and inflorescence, seabeach amaranth is probably wind pollinated. Most species of the genus *Amaranthus* are self-fertile and it is likely that selfing plays a large, probably dominant role in seed production (Weakley and Bucher 1992). Plants sometimes remain alive for some time following loss of all foliage, supported by photosynthetic activity of the stem and/or stored carbohydrates. In late fall or early winter, plants which have not died from other causes, senesce (death caused by an accumulation of metabolic products, increase in respiratory rate, and a loss in dry weight, especially of fruits and leaves).

Although it is threatened by vegetative competition, seabeach amaranth can be found proximate to various other species: predominantly cape american beach grass (*Ammophila breviligulata*), but also sea rocket (*Cakile edentula*), sand spurge (*Euphorbia polygonifolia*), seabeach orach (*Atriplex arenaria*), seabeach sandwort (*Arenaria peploides*), seabeach knotweed (*Polygonum glaucum*), and in sparse stands of phragmites (*Phragmites australis*).

Evidence from surveys (The Nature Conservancy 1993, Weakley and Bucher 1992) in the three states in which seabeach amaranth currently exists suggests that over the course of the growing season the adult plant and its capacity to produce seed may be threatened by a variety of natural and anthropogenic factors including, but not limited to: storms, hurricanes, and nor'easters; tidal flooding; predation; snow fencing, beach grooming, beach stabilization, and even vandalism or harvest resulting from protection and/or education efforts. As a result, the abundance and distribution of early season germination diminishes over time, and late-season surveys will often reflect the cumulative effect of these threats to seabeach amaranth.

b. Life History - Seed

Seed production begins in July or August but continues until the death of the plant. Seed production generally peaks in September and is closely correlated with peak hurricane frequency. Healthy looking plants, producing and dispersing seed, were observed on Long Island as late as November 2 (Brittingham 1994) and, during years with mild winters, may proceed throughout the month and into December. Seabeach amaranth has evolved to produce relatively few, large seeds. The relative roles of the fresh seed crop and banked seeds is currently unknown but worthy of further study.

Seabeach amaranth seed is distributed by wind and water with the pattern and extent of distribution dependent on three different strategies, each designed to ensure germination under favorable conditions. Seed retained in utricles (air-filled shells) are blown about easily and when moved along the sand surface are likely to be initially deposited in the lee behind plants where wind speeds decrease (Weakley and Bucher 1992). If landward winds persist, utricles tend to concentrate at the foot of the dune, since velocities are usually not sufficient to carry them up the face of the dune. If winds blow seaward, utricles in the lee of the foredune are sheltered and stay put while utricles in more exposed areas are blown into the surf and are dispersed by currents and tides.

Naked seeds act more like large, low-density sand grains and, although they are also dispersed by wind, they do so to a much lesser degree. They tend to remain close to the parent plant, in its lee or in a nearby depression.

Many utricles remain attached to the plant and are never dispersed, leading to *in situ* planting. If conditions remain favorable at the plant's site, the seed source for retention of that site is guaranteed; if conditions are no longer suitable, seeds have also been dispersed via wind and water to colonize new sites.

Given the vagaries of dispersion, it is understandable why seabeach amaranth is generally of sparse to very sparse occurrence, even in the most suitable habitats. Occasionally, it may be the most common component in a community, but even then it rarely achieves a cover value of greater than one percent (Weakley and Bucher 1992). It is not uncommon to find fewer than five individuals of seabeach amaranth per kilometer of beach. Seabeach amaranth generally reaches its greatest frequencies on barrier island-end flats and occurs at lower frequencies on upper beaches along the length of a barrier island.

c. Population Status and Distribution: Range-wide

Weakley and Bucher (1992) completed range-wide surveys of seabeach amaranth at known historical sites in both 1987 and 1988 (Table 4). In 1987, 39 populations contained a total of 11,740 plants. The winter of 1987-88 was generally non-erosive and, as a result, the 1988 census showed increased numbers at most populations, as well as the appearance of seabeach amaranth at new locations. In 1988, 45 populations contained a total of 43,651 plants representing a one-year increase of 372%. Fluctuations in population size, both increases and decreases, are not unusual for seabeach amaranth (Murdock, pers. comm. 1994).

Seabeach amaranth populations were not systematically searched in 1989, although Weakley and Bucher (1992) reported that amaranth populations appeared to increase somewhat over 1988 levels. The late 1980's seemed to be characterized by minimal erosive storms and no serious hurricanes, and resulted in a number of "good" years for seabeach amaranth, although the long-term survival of the species was still threatened by beach erosion, "hard" and "soft" beach stabilization, recreational beach use, and predation.

The occurrence of several major storms and erosional events in the following years caused previous population trends to reverse. Hurricane Hugo struck the coast of South Carolina in September of 1989, causing extensive flooding and erosion from storm tides and winds as far north as Cape Fear in North Carolina. Several nor'easters caused substantial erosion in the Carolinas in the winter of 1989-90 and in the summer of 1990, Hurricane Bertha caused flooding and erosion, especially in northern and central North Carolina.

In 1990, the South Carolina population census was 188 plants (Murdock 1993). Habitats in North Carolina continued to support healthy populations and the total survey for both North and South carolina revealed 43 populations with a total of 11,075 plants. This was in addition to 13 populations and a total of 357 plants which "reappeared" on Long Island, New York (Clemants and Mangels 1990). It is unknown whether these populations became established as a result of long-distance seed dispersal by Hurricane Hugo, short distance dispersal from previously undetected populations on Long Island, or by erosion and exposure of historically buried, local seed banks. Even with the addition of the New York populations, the 1990 survey documented a range-wide reduction of 74% from the 1988 census. In South Carolina, where hurricane erosion and dune reconstruction were extensive, seabeach amaranth numbers went from 1800 in 1988 to 188 in 1990, a reduction of 90%.

In 1991, state-wide surveys were conducted only in New York. Prior to Hurricane Bob, 13 populations were reported in New York with a total of 2051 individual plants; a 557% increase over the previous year's number. While Hurricane Hugo likely contributed to the loss of adult plants in the southern portion of seabeach amaranth's range, its creation of primary overwash habitat, and removal or thinning of competitive beach grass communities may explain early season increases in the New York population in 1991. However, like the effect of Hurricane Hugo on southern populations, spot surveys conducted in the late fall in New York, after Hurricane Bob, showed substantial reductions in the number of seabeach amaranth adults (perhaps 15-20%) and seed production potential in New York.

In 1992, 43,302 seabeach amaranth plants were reported from 15 different sites in North Carolina; 51.7% of those (22,410 individuals) were reported by the Corps to have been located on Topsail Island, and 30.7% (13,310 individuals) were reported to have been found on Ocracoke Island. Eight sites were reported to contain over 100 plants, while five sites had over 1,000. Seabeach amaranth was not surveyed in South Carolina in 1992.

In 1992, the number of sites in New York remained about the same, however, the number of individuals found decreased to 567 plants, a 39% drop. Only two sites, both on Jones Barrier Island, had populations of over 100 plants. Storms and related erosion can threaten seabeach amaranth (Murdock 1993), and as with Hurricane Bob in 1991, the "Halloween" storm of 1991 likely contributed to the 1992 population decline documented in New York.

In 1993, 17,169 seabeach amaranth plants were found at 21 North Carolina sites; 35.5% (6,130 individuals) were found on the west end of Long Beach. Eleven sites had over 100 plants, and five sites had over 1,000.

Comparisons of the numbers of plants range-wide cannot be drawn after 1990 since survey information is lacking from South Carolina from 1991-1994, and from North Carolina in 1991, and 1994. However, if the numbers reported by the Natural Heritage Program for North Carolina accurately reflect population trends in those southern states, then it would appear that conditions were much less favorable for seabeach amaranth in 1993 as opposed to 1992. The effects of the December '92 nor'easter, and the spring '93 storm may have contributed to the reduction in the number of individuals surveyed in 1993.

Following a severe winter storm in the early months of 1993 in New York, surveys showed that the New York population continued to decline by 61%, to 221 plants. Only one site, on Jones Barrier Island, between Overlook and Cedar Beaches, contained a population of over 100 plants.

In 1994, only New York populations were surveyed within the existing range of seabeach amaranth (SC, NC, and NY). The New York population continued to decline in 1994 to a total of 186 plants at 9 sites, representing a decline of 16% over 1993 values. Although the Overlook/Cedar Beach site (Jones Barrier Island) contained 12 less plants than in 1993, it's population size remained relatively stable, and was again the only site to contain over 100 plants in 1994.

d. Population Status and Distribution: State-wide

Historically, seabeach amaranth was found in New York from Coney Island, King's County east through Queens, Nassau and Suffolk Counties to Goff Point in the Town of East Hampton (Clemants and Mangels 1990), however, prior to 1990, the plant species had not been recorded on Long Island since 1955 (The Nature Conservancy 1991b). After rediscovery of a seabeach amaranth population at Gilgo beach in 1990, further surveys at historic locations identified 347 individuals at 13 sites, with only one population having more than 100 individuals. All were located on barrier islands, with the majority at or near inlets. Surveys in 1991 located 2,051 individuals at 13 sites before Hurricane Bob, with spot, post-hurricane surveys showing a potential 15-20 percent decrease in the number of individuals (Table 5).

Both the number of sites and number of individuals decreased to 9 in 1992. In the advent of Hurricane Bob and the "Halloween" storm in 1991, dunes were eroded and became scarped and steep-faced. Beaches became narrower and were flooded more frequently.

The number of individuals dropped to 567 plants in 1992, a 61% decrease, as major coastal storms continued to erode and reshape Long Island's beaches. The second "one hundred year storm" in two years struck New York in December of 1992 (the "No-Name Storm"), and although plants already had ample opportunity to produce and disperse seed, germination habitat continued to be lost and/or degraded due to erosion. In addition, dune blowouts and areas of overwash and sparse vegetation, created as a result of these storms, were, to a limited extent, filled, blocked from access by seed with the installation of manmade dunes and/or stabilized with vegetation. The usual short-term loss in seabeach amaranth numbers, due to erosion, therefore, was exacerbated and transformed into a longer-term decline by degrading or eliminating the storm-created habitats in which the plant would opportunistically settle and traditionally rebound.

In March of 1993, Long Island's south shore was buffeted by the "Blizzard of '93", continuing the string of storms and subsequent erosion control activities on oceanic beaches aimed at preventing further property damage. Surveys of adult seabeach amaranth showed the New York populations continued to decline in both 1993 and 1994, to 221 plants (61% decrease) at 10 sites, and 186 plants (16% decrease) at 9 sites, respectively.

During their survey work, Clemants and Mangels (1990) reported that tidal inundation, ORV use, activities associated with dredging, and trampling by bathers threatened seabeach amaranth. In New York, the operation of ORVs continues to pose a direct and indirect threat to seabeach amaranth. At one town beach, ORVs were responsible for several plant overruns (Van Schoik and Antenen 1993).

Beach grooming has also been recognized as a threat to amaranth. While garbage, floatable marine debris, and a small amount of medical waste were commonly found in wrack in the past, major beach washups in 1988 has heightened the public's awareness of this problem. Following the 1988 event, major steps were taken to redress factors that contributed to the washups; however, the public continues to perceive garbage, and especially medical waste as a major threat to public health and safety. In response to that public perception, beach managers have stepped up efforts to groom many of the public's recreational beaches, and this activity has likely affected seabeach amaranth plants which have attempted to germinate and/or grow within recreational beach areas.

Seabeach amaranth in New York has been locally extirpated or severely diminished by the incremental fortification and modification of only small portions of the coastline (Weakley and Bucher 1992). "Fragmentation of habitat in the north has apparently led to regional extirpation, resulting from the separation of suitable habitat areas from one another by too great a distance to allow recolonization following natural or man-caused catastrophes" (Weakley and Bucher 1992). Rendering larger portions of the coastline "permanently" unsuitable may doom seabeach amaranth because any given area in any given year will become unsuitable (Weakley and Bucher 1992) due to the natural forces of erosion and vegetative competition. "If a seed source is no longer available in the vicinity, seabeach amaranth will no longer be able to reestablish itself when the area is once again suitable. In this way, it can be progressively eliminated, even from generally favorable stretches of the habitat surrounded by 'permanently' unfavorable areas" (Weakley and Bucher 1991). Therefore, very small populations of seabeach amaranth

like those in New York, with only one site with over a hundred plants (Jones Beach Island-East), and a total 1994 census of only 186 plants at 9 sites, are extremely vulnerable to extirpation.

Although seabeach amaranth is not currently listed as threatened or endangered by New York State (New York State Department of Environmental Conservation, Division of Lands and Forests 1992), and therefore receives no protection from State legislation, it is afforded some incidental protection as a result of other conservation measures. One of the largest New York populations, Jones Beach Island East, was found within symbolic string fencing constructed to protect piping plover nesting habitat (Van Schoik and Antenen 1993). Plants found at the Jones barrier island sites were also larger in 1993 than those at other sites, potentially due to the higher and wider (protected) beach there which afforded earlier germination (Van Schoik and Antenen 1993) and/or protection from the plover fencing which provided more stable growing conditions. Surveys of seabeach amaranth at Smith Point County Park have also shown plants to be located primarily within symbolically fenced piping plover and tern protection areas.

During survey investigations in September 1994, caterpillars were found to be feeding on the leaves of seabeach amaranth at Cedar and Gilgo. The caterpillar was determined to be one of two species - *Estigmene acraea* or *Spilosoma sp.* (Young, pers. comm. 1994). Although herbivory by webworms has been frequently referred to in the literature, the influence of this insect on seabeach amaranth populations is unknown.

e. Status and Distribution in the Action Area

The following section refers to the status and distribution of seabeach amaranth in the action area, is organized by geographic location, and progresses from east to west. Area-specific effects that occurred in discrete years are discussed separately within geographic units. Nomenclature used to describe sites may include common geographic names or, in the case of survey data, may refer to biological survey areas with discrete boundaries (Figures 4a-d);

easternmost survey area:	Southampton Beach
	Westhampton Island Tiana Beach
	Westhampton Island Hampton Beach
	Westhampton Island Westhampton Beach
	Westhampton Island West
	Fire Island East
	Fire Island Old Inlet
	Watch Hill/Long Cove
	Fire Island Pines
	Sailors Haven/Sunken Forest
	Fire Island Villages
	Fire Island Lighthouse
westernmost survey area:	Democrat Point

Within the confines of the Southampton Beach survey area (Figure 4a), the number of plants has varied annually from a low of 7 in 1993 to a high of 27 in 1992 (Table 6). Groupings of plants were located between Halsey Neck Lane and First Neck Lane in the eastern portion of the survey area, and then from approximately Shinnecock Road (across from Heady Creek) to Road D in the middle portion of the survey area. Only in 1994 were plants located to the west, in the area near Shinnecock County Park-East. The Park, bordering Shinnecock Inlet, is a popular spot for sport fishing, camping, pedestrian, and ORV use, all activities which may explain the low numbers of plants found there.

The new moon tides of August 16-19 and September 15-18, 1992, were the highest of the year and overwashed the beach berm flooding plants. Many plants, located and fenced early in the season for protection, were lost prior to formal surveying activities conducted later in the fall. A series of severe storms during the winter of 1992-1993 continued to erode beaches making them lower and narrower than in previous years. Perhaps, as a result, there were fewer plants at fewer sites in Southampton (and across Long Island) in 1993.

Although most plants greater than 15 cm in width produced seeds in 1993, seabeach amaranth plants in Southampton, Hampton Bays, Quogue, and Westhampton were generally smaller than those on Jones Beach to the west. The generally narrower beaches found in the Hamptons were suspected to have prevented earlier germination, and/or provided for a less stable growing environment (Van Schoik and Antenen 1993). Plants found at the Hamptons sites were generally located at the toe of the dune, and not distributed at or around the wrack. One plant was located at the top of a dune behind a snow fence.

Tiana Beach is a narrow, heavily used beach. Both sun bathers and ORVs frequent the beaches. Residential development is dense in the middle section of the survey area and the beach area seaward of hotels is groomed (Van Schoik and Antenen 1993). Although seabeach amaranth has been located in the survey area in almost every year since 1990, its numbers have remained low with a high of 4 in 1990.

Hampton Beach (Figure 4b), as a distinct survey area, was created in 1994 by further subdividing the Tiana Beach survey area. Hampton Beach is of moderate width at its western boundary and generally narrows progressively eastward. Residential beachfront is relatively dense. There are no hotels, but condominiums and beach clubs provide non-residential access. A number of Quogue Village oceanfront parks provide residential point access, and the beaches receive moderate to heavy use by beach-goers. ORV use is moderate but heavier along stretches within Southampton Town jurisdiction. Beach grooming activity is sporadic (Terchunian, pers. comm. 1994). All nine plants in 1994[25] were located between the Quogue Beach Club east of Post Lane, and the Quogue Village Line west of Dolphin Lane.

[25]1994 is the first year that data was recorded at this site.

Of all the areas on the Westhampton Barrier Island, the Westhampton Island (WI) Westhampton Beach survey area has, on average, supported the greatest number of seabeach amaranth plants. The survey area is divided into 14 sections or compartments by groins, originally installed to trap sand and prevent shoreline erosion. Over the years, these groin compartments have retained some sand so that the beach is wider than adjoining beaches west of groin #15. The beach is heavily used by bathers, and is groomed in some sections (Van Schoik and Antenen 1993), but plants have been able to persist at this site within the protective boundaries of symbolically fenced tern and plover nesting sites (Van Schoik and Antenen 1993). Seabeach amaranth plants and protected shorebirds are frequently located close to one another due to similarities in natural history requirements. Fencing erected to protect piping plovers and tern species incidentally prevents plant loss due to pedestrian and ORV trampling as fencing is erected in early season, before germination is apparent.

Beaches downdrift of the WI Westhampton Beach groin field were starved of nourishing sand, causing severe and accelerated erosion to the west. As a result, the beach was breached in two locations during the December 1992 storm. Subsequent to the closure of this area, the beaches west of groin #15 were isolated and experienced less than normal human use. Breach-induced restrictions on ORV and pedestrian traffic would normally be expected to enhance the viability and spread of populations of seabeach amaranth through a reduction in seed pulverization, seedling and plant mortality, and habitat disturbance. However, data collected for this area and Cupsogue County Park, west of Westhampton Beach, do not reflect that expectation, perhaps as a result of the confounding effects from Hurricane Bob.

The western breach shoaled and closure was artificially assisted by the Corps while the eastern breach, having grown to approximately 3,000' wide, was filled in 1993 with a steel sheet pile bulkhead as its spine. The combined 4,000' wide area remains low, and is sparsely vegetated (Van Schoik and Antenen 1993). Natural storm and wind-driven tides acted upon the Corps' designed fill profile to allow overwash processes to remove and/or inhibit the reestablishment of seabeach amaranth's vegetative competitors: American beach grass, and the invasive phragmites. The funneling of overtopping waves through overwash troughs could have eroded and/or redistributed sediments allowing for banked seeds to be uncovered and germinate. A combination of these factors may explain the dense grouping, in 1994, of 22 plants located in a frequently overwashed thoroughfare just west of groin 15 in the Pikes Beach area.

The two breaches at WI West (Figure 4b) created low tidal deltas on the bayside of the barrier. Although this area is frequently overwashed (Meskill, pers. comm. 1994), three other plants were found in the vicinity of these depositional fans in 1994.

Because of severe storms that overwashed and destroyed Dune Road during the mid to late 1980's, and the December 1992 storm that caused the Westhampton barrier island to breach in two locations, vehicular access to Cupsogue County Park has been prohibited almost every year since 1986. Although officially closed and largely without an enforcement presence, the Park did accommodate a fair amount of boat traffic and human disturbance. The beach at Cupsogue is narrow and the back beach area is dominated by

phragmites (Van Schoik and Antenen 1993). Prior to 1990, seabeach amaranth was last seen at the Cupsogue County Park, WI West survey site, in 1894.

In 1990, nine plants were located at the edge of a diffuse wrack zone in front of the pavilion's beach ramp, where a section of the Park's beach was reserved for recreational bathing and where ORV use has been restricted. The number of plants increased in 1991, to a high of 45. However, surveys conducted after Hurricane Bob showed that flooding and storm related erosion resulted in a 71% decrease in the number of plants found at Cupsogue County Park. Late season surveys at Cupsogue indicated that all 13 plants that survived Hurricane Bob had subsequently been lost to attrition. Surveyors in 1992 found only one amaranth plant in the Park in 1992. The winter storms of 1992-1993 eroded the beach and scarped the dunes, further degrading the quality of seabeach amaranth habitat within the Park. Again in 1993, only one amaranth plant was found at Cupsogue. Although a 1994 survey by TNC and the Service revealed a number of dune blowout areas and plateaus of dry beach that would seem to support seabeach amaranth on the ocean shorefront, it would appear that the poor colonization by seabeach amaranth at Cupsogue in recent years is largely a result of natural processes, and, in particular, the erosional effects of Hurricane Bob on historical seabeach amaranth habitat (Table 6).

The eastern end of Smith Point County Park (Fire Island East) is a narrow eroding beach, and is heavily utilized by ORVs. Only the eastern barrier island tip, a tern and plover nesting site, is protected from ORVs, and there is a high degree of overlap between the shorebird protection areas and the locations where seabeach amaranth has been found in 1990, 1991, and 1993. Elsewhere in the park, bare sand can be found at sites of major overwashes and at a dredged material deposition site (Van Schoik and Antenen 1993). Outside the protected area, impacts to seabeach amaranth are similar to those in other heavily utilized parklands within the action area.

Since it was first "rediscovered" within the FIIS in 1990, the occurrence of seabeach amaranth has been reported to be extremely sparse. Sites that have historically supported seabeach amaranth include Old Inlet, Long Cove/Watch Hill, Water Island, Sailors Haven/Sunken Forest, and Fair Harbor. At Fire Island, plants are typically found at the toe of the dune, within amaranth, plover, or sand fencing, or protected from ORV and pedestrian trampling by scattered storm damage debris.

During late September/early October in 1992, the Fire Island communities of Ocean Ridge/Davis Park, Fire Island Pines, Point O'Woods, Ocean Bay Park, Corneille Estates, Fire Island Summer Club, and Saltaire (Figures 5a-b) received NYSDEC pilot project permits to conduct beach scraping activities. The process involved using heavy machinery to remove the approximate top 6" layer of sand over a wide section of the dry beach, and using that accumulated material to augment or reconstruct artificial dunes. Since no survey data was reported for the Fire Island communities in 1992, the impact of the project to seabeach amaranth cannot be assessed. However, these activities are almost certain to have had a negative effect on the existing and future colonization of those sites by seabeach amaranth. Plants that germinated would have been torn from their substrate, and existing seedbank deposited along the shore would have been redistributed and buried within the artificial dune.

Between 1993 and 1994, eight Fire Island communities, including Kismet, Lonleyville, Atlantique, Robbins Rest, Corneille Estates, Fire Island Summer Club, and Davis Park/Ocean Ridge, were (re)issued NYSDEC beach scraping permits (Land Use Environmental Company 1995). Scraping activity in 1994 occurred between May 24 and May 30, and then again between July 21 and July 25. It seems unlikely that, under those conditions, any seabeach amaranth could have survived. Proposed continued beach scraping in 1995, along with the addition of activities in four other communities, Ocean Beach, Seaview, Ocean Bay Park, and Saltaire, is likely to degrade additional potential seabeach amaranth habitat.

No seabeach amaranth plants have ever been located at the Fire Island Lighthouse site (Figure 4d), nor at any of the beaches adjacent to (parking) Fields 2-5 within Robert Moses State Park (Table 6). These areas are popular recreational bathing areas and it is likely that if any plants germinate within the survey area, they succumb to a combination of pedestrian trampling and beach grooming.

Democrat Point, on the other hand, once supported 80 individual plants, at a site of sand deposition and accretion, just west of the jetty. Given the spit's propensity to overwash, the drastic reduction in the number of surveyed plants between early season and late season surveys in 1991, from 80 to 8 plants, is very likely due to storm surge flooding from Hurricane Bob. ORV use is a recognized threat, and because Democrat Point is a popular spring/fall fishing destination, trampling of the weakened population of adult plants and seeds may have played an important role in the disappearance of the species from the site in subsequent years.

Although the Long Island Beach Buggy Association erected fencing at Democrat Point to protect the spread of stabilizing beach grass at the toe of the dune (The Nature Conservancy 1991a), survey reports from the past two years show no record of seabeach amaranth being found within the fenced and protected area of sparse vegetation.

For additional information on the Status and Distribution in the Action Area, specifically from the eastern portion of the Smith Point County Park to the western shore of the Shinnecock Inlet, please refer to pages 47-51 of the Service's Westhampton Interim Storm Damage Biological Opinion (U.S. Fish and Wildlife Service 1994b).

3. ENVIRONMENTAL BASELINE: Seabeach Amaranth

As discussed in Section IV 3.a., Environmental Baseline: Piping Plover, barrier beach systems are dynamic landforms where natural processes are often in conflict with competing uses such as development, recreation, and efforts to stabilize inlets and barrier islands. These actions often result in additional impacts on plant and animal species which occur in these habitats. For instance, it has been widely recognized that fugitive species, which have evolved to rely on the dynamic nature of barrier beaches, often suffer from efforts to prevent storm events which shape and reshape barrier beach morphology: beach erosion, overwash, breach, and inlet formation (Massachusetts Barrier Beach Task Force 1994).

Ironically, although storm-related erosion threatens seabeach amaranth (because of its restricted range and reduced populations), past attempts to stabilize beaches against the forces of erosion are often more destructive to the species and the beaches in the long run (Murdock 1993). Seabeach amaranth appears to need extensive areas of barrier island beaches, functioning with little human interference, allowing the species to move around in the landscape occupying suitable habitat as such habitat is storm created. Dune stabilization, through processes of sand augmentation (beach scraping, dune repair) and planting, often occurs on the lower foredune and/or overwash areas; the primary habitats for seabeach amaranth (Murdock 1993). Depending on the timing of initiation, these processes may have resulted in the burial of mature plants, curtailed or eradicated seed production, in the burial of annually produced seedbank, prevented wind and tide-dominated dispersion, and eliminated the viability of the following year's population. Weakly and Bucher (1991) noted that seabeach amaranth in the Carolinas only very rarely occurred when sand fences and vegetative stabilization had taken place, and in these instances, was present only as a few scattered individuals.

As a fugitive species dependent on a dynamic landscape and large scale geophysical processes, seabeach amaranth is extremely vulnerable to habitat fragmentation and isolation of small populations. If the seed source is no longer available in a region (buried, crushed), amaranth will be unable to reestablish itself when the area is once again suitable. In this way, it can be progressively eliminated even from generally favorable stretches of habitat surrounded by "permanently" unfavorable areas. Fragmentation in the northern extent of its range has apparently led to regional extirpation, resulting from the separation of suitable habitat areas from one another by too great distances to allow recolonization following natural catastrophes (Murdock 1993).

Where breaches or inlets present an obstacle to human and vehicle traffic, they may have indirectly created improved nesting and foraging habitat for plovers. In a similar way, breach-induced restrictions on ORVs and other human disturbance in the past may have enhanced the viability and spread of populations of seabeach amaranth through a reduction in seed pulverization, seedling and plant mortality, and habitat disturbance (Elias-Gerken 1994). When trampled or run over by ORVs, the fleshy stems of seabeach amaranth are easily broken and do not generally survive. The shearing and compressional effects of ORV passage extends to a depth of approximately six inches and has the power to desegregate the drift and break rhizomes (Leatherman 1988). In addition to plant mortality and reduced seed production during past growing seasons, winter ORV use may have resulted in the pulverization of seeds.

Declines in seabeach amaranth populations have been at least partially attributed to beach stabilization efforts, the loss of transitory storm-created habitats, and the species' inability to capitalize on a variety of available opportunistic zones.

Throughout the action area, there are a number of positive and negative anthropogenic effects that have defined the annual variation in population size and spatial distribution of seabeach amaranth plants. They include, but are not limited to, the erection of protective amaranth fencing, incidental protection from the erection of shorebird and beach vegetation protective fencing, the creation of fill profiles that facilitate overwash

processes, trampling of plants by pedestrians, crushing of plants and seeds by ORVs, destruction of plants, and removal or redistribution of seed and seed-trapping wrack material in the process of beach grooming and scraping.

Information on the effects of these activities which have led to the current status of seabeach amaranth in New York are described in greater detail in Section V(A)(2), Status of the Species: Seabeach Amaranth, above.

4. EFFECTS OF THE ACTION: Seabeach Amaranth

Under the BCP, breaches in the action area would be closed by placement of fill from upland stockpiled, upland borrow, and/or dredged material. The implementation of single or multiple breach closure projects under the proposed plan may have immediate direct effects during the construction phase, and long term indirect effects on seabeach amaranth and its habitat.

The actual effects of the proposed action would depend on the number, timing, and locations of the projects, and would also vary depending on the number and locations of seabeach amaranth plants at the time that project activities are conducted under this plan. Because of these variables, the potential effects on seabeach amaranth and its habitat that can be expected in the action area if the BCP is implemented can be described, but they cannot be quantified with certainty.

As discussed in the "Effects of the Action" Section of this document for piping plovers (Section IV (A)(4)), an assessment of breach vulnerability in the action area, Figures 4a-d, classified two locations as high, two locations as moderate/high, five locations as moderate, one location as low/moderate, and nine locations as low vulnerability. During the 1994 growing season, a total of 62 seabeach amaranth plants occurred in the project action area. Of these, 28 plants at two sites were at or near locations with high vulnerability to breaches, 12 plants at two sites were at or near a moderate vulnerability location, and four plants at two sites were at or near low vulnerability locations. The remaining 18 plants were at two sites which were not classified for breach vulnerability. Because numbers and locations of seabeach amaranth can vary widely from year to year, and could be quite different at the time of project implementation, this type of comparison can only suggest a potential level of impact under similar conditions.

a) Direct Effects

The Corps has agreed to incorporate into the project plan a number of "Measures Proposed to Reduce the Adverse Effects on Threatened Species" as detailed in the "Description of the Proposed Action", Section III, which will avoid or reduce the potential for adverse impacts on seabeach amaranth during construction activities. The Service believes it will be possible to implement these measures for the majority of projects that may be conducted under this plan, thereby avoiding or significantly reducing project-related direct adverse impacts. However, under certain conditions (i.e., multiple breaches occurring at seabeach amaranth locations, particularly during the growing season), it may not be possible to fully implement the proposed measures, and some or all of the direct effects may occur. Therefore, the following direct effects on seabeach

amaranth from construction activities, including renourishment of the fill profile, may occur during breach closure projects(s) if they are conducted at seabeach amaranth locations:

1) Burying of plants and seeds which occur in the fill area along the edges of a newly formed breach.

Seabeach amaranth plants and seeds may remain in habitat along and near the edges of a newly formed breach, within areas that may be impacted during project construction activities. New plants may also become established in these areas during the growing season, and be adversely affected by project activities if there is a delay between the breach/inlet formation and commencement of project activities that allows germination to occur.

The placement of fill on areas where seabeach amaranth occurs during the growing season would result in the mortality of those plants covered, and the loss of seed production that would have occurred until the end of the growing season. Burying seeds which are present in the fill area may also adversely affect their ability to germinate in the next growing season. The depths of fill at which adverse effects on seabeach amaranth occur are not known. Seed dispersal patterns and the effects on the seedbank of placing fill material at seabeach amaranth locations are not clearly understood at present. However, seabeach amaranth has been found to thrive on beaches that are periodically maintained by beach nourishment (Murdock 1993). Seabeach amaranth seeds which may be distributed to beaches following beach nourishment, and plants which germinate there, would be less susceptible to flooding and loss; therefore, they would have a better chance of survival throughout the growing season.

Because seabeach amaranth is susceptible to habitat fragmentation (Murdock 1993; Weakley and Bucher 1992), destruction of single and sizeable populations could result in localized extirpation. The placement of fill may eliminate local plants or populations, while also creating new areas of suitable seabeach amaranth habitat.

2) Trampling and crushing of plants and seeds during project construction activities.

The operation of construction equipment in areas where seabeach amaranth occurs may result in the crushing of plants and seeds and the loss or reduction of seed production if construction activities are not restricted to avoid them. Heavy pedestrian traffic associated with the work crews may also adversely affect seabeach amaranth during project construction if seabeach amaranth areas are not adequately protected. The fleshy stems of the plants are brittle and easily broken and do not generally survive even a single pass by a normal truck tire (Murdock 1993).

The actual number, timing, and locations of projects that may be conducted under this Plan are unknown and cannot be accurately predicted. Therefore, the resulting direct effects on seabeach amaranth could range from none for projects undertaken outside seabeach amaranth locations or habitat, to the loss of plants and seeds, and the loss or reduction of seed production at seabeach amaranth locations affected by construction activities in any given year.

b) Indirect Effects

The following indirect effects on seabeach amaranth and its habitat may result from the closure of breaches under the proposed plan:

1) Destruction of seabeach amaranth plants and seeds, and loss or degradation of habitat as result of restoration and enhancement of recreational use and redevelopment.

In some cases, the occurrence of a breach may attract recreational users such as fishermen and off-road vehicles. In other cases, the occurrence of a breach or breaches may eliminate or hinder human access to seabeach amaranth habitat, and it may reduce the attractiveness of the area for recreational use, thereby improving its suitability for seabeach amaranth germination and survival. If the project beaches are occupied by seabeach amaranth, these populations may suffer indirect effects from human activity after project completion as a result of the increased attractiveness of these areas for human activity. Human activities that may potentially adversely affect seabeach amaranth include trampling or crushing of seabeach amaranth plants and seeds by pedestrians and off-road vehicles.

These activities are presently restricted for the protection of seabeach amaranth in certain portions of the action area. Implementation of the "Endangered and Threatened Species Protection Plan" which is included in the "Measures Proposed to Reduce the Adverse Effects on Threatened Species" as part of the project plan may also reduce the impacts associated with increased human use and recreational activities in the project action area.

Closure and stabilization of breaches may result in the development or redevelopment of areas that would otherwise remain undeveloped following the occurrence of a breach. Short-term adverse effects including destruction of seabeach amaranth during the growing season associated with development related construction activities may adversely affect seabeach amaranth that occur in those areas. However, as discussed in the "Measures Proposed to Reduce the Adverse Effects on Threatened Species", the Corps and/or the NYSDEC would condition permits issued for those activities within their jurisdiction with specific measures to protect seabeach amaranth in those areas. Therefore, the short-term effects from actual construction during development/redevelopment after a breach closure would be avoided or minimized. However, there still will be long-term loss or degradation of utilized or potential seabeach amaranth habitat from development.

The long-term loss or degradation of habitat from development/redevelopment would result from the replacement of suitable seabeach amaranth habitat with structures and roads, obstruction of natural processes which maintain suitable habitat, non-federal stabilization efforts such as placement of snow fences, vegetation planting, and sandpiling to protect houses and other developments.

2) Diminished dispersal of seeds to adjacent populations or habitat which may depend, in part, on successful dispersal of seed from plants in the fill area.

Seabeach amaranth is a fugitive species; an early successional resident which persists in temporary, newly disturbed habitats by virtue of its high dispersal ability (Lincoln et al. 1982). Seabeach amaranth seed dispersal patterns are not clearly understood at the present time. However, seabeach amaranth populations outside the fill area may be indirectly negatively impacted by the burying of plants and/or seeds in the fill area. The burying of plants and/or seeds in the fill area may prevent or reduce seed production and dispersal to populations in other areas which may depend, in part, on that source of seed. Likewise, the colonization of future sites may be diminished by this loss or reduction of seed production and dispersal, reducing the future abundance and extent of the plant's occurrence.

3) Prevention of seed entrainment to bayside habitat thereby reducing the formation of small populations in less stable, secondary habitat.

The closure of a newly formed inlet under this Plan would prevent the bayside entrainment of seabeach amaranth seeds through the inlet and reduce or preclude the potential establishment of seabeach amaranth in bayside habitat as a result of dispersal to those areas. Weakley and Bucher (1992) noted that bayside habitats are secondary habitats where seabeach amaranth occasionally establishes small, temporary, and casual populations. On Long Island these bayside habitats are typically heavily vegetated by wetland plants which would soon outcompete seabeach amaranth. These small temporary populations in bayside habitats would not contribute significantly to the long-term stability of the Long Island seabeach amaranth populations. Therefore, closure of a breach may promote dispersal of seeds to primary oceanside habitat where it may benefit the viability of populations in those habitats.

4) Creation of suitable, unvegetated habitat.

The natural processes that maintain storm-created habitat, reduce or eliminate vegetative cover, and renew beaches in sand deposition areas make barrier island beaches suitable for seabeach amaranth germination and survival. The placement of fill material to close a newly formed breach would provide unvegetated habitat in place of the inlet which could be colonized by seabeach amaranth plants. Since vegetational succession decreases and temporarily eliminates the suitability of adjacent habitat for seabeach amaranth, the deposition of bare sand above the normal high tide line would represent a new source of suitable habitat for the establishment of seabeach amaranth.

While the placement of fill to close a newly formed breach differs from beach nourishment projects that are periodically conducted along eroding shorelines, the unvegetated habitat that would result is similar. Gantt (1994) noted that beach nourishment may benefit habitat for seabeach amaranth by mimicking natural disturbances the species has evolved with, however, more study is needed to determine the long term effects on the habitat and seabeach amaranth populations. Due to this uncertainty, the Wilmington District Corps has instituted a long-term seabeach amaranth monitoring program of beaches in North Carolina that routinely receive beach nourishment. This monitoring program is expected to continue until there is enough data collection and research results to allow a reasonable prediction of the actual effects of beach nourishment on seabeach amaranth.

5. CUMULATIVE EFFECTS: Seabeach Amaranth

Cumulative effects are those effects of future State, local, or private activities on endangered and threatened species or critical habitat that are reasonably certain to occur within the action area of the Federal action subject to consultation. Future Federal actions will be subject to the consultation requirements established in Section 7 and, therefore, are not considered cumulative in the proposed action.

A) Change in State Listing and State Legal Status

State legislation offers no protection to the habitat of seabeach amaranth in any of the three states where it remains, and habitat loss and/or adverse alteration continues to be a constant threat to recovery. Seabeach amaranth is not currently State-listed in New York, and as a result it is not protected under the State's Environmental Conservation Law (Section 9-1503). However, according to the New York State Natural Heritage Program (Young, pers. comm. 1994), seabeach amaranth will be listed as threatened or endangered (codes "T" or "E", respectively) in New York State by the Department of Environmental Conservation's Division of Lands and Forests sometime in 1995. Both the threatened and endangered categories are defined in regulation 6 NYCRR part 193.3 and apply to New York State Conservation Law section 9-1503. Part (f) reads as follows:

> "It is a violation for any person, anywhere in the State to pick, pluck, sever, remove, damage by the application of herbicides or defoliants, or carry away, without the consent of the owner, any protected plant. Each plant so picked, plucked, severed, removed, damaged, or carried away shall constitute a separate violation ."

The proposed change in State legal status for seabeach amaranth would afford additional protection under State law. However, the enforcement of New York State "take" provisions is heavily dependent on landowner consent. With State-listing, protection of seabeach amaranth on non-Federal property would be enhanced only so long as the landowner was not inclined to grant consent for the plant's "take."

B) Potential Weakening of NYSDEC authority to regulate activities within areas adjacent to tidal wetlands within which seabeach amaranth can be found

The State's Tidal Wetlands Land Use Regulations 6 NYCRR Part 661, Pursuant to Article 25 of the Environmental Conservation Law (New York State Department of Environmental Conservation 1990), recognizes that wetlands and adjacent areas "generally serve to an approximately equal degree the wildlife habitat, recreation, education and research, and open space and aesthetic appreciation values of tidal wetlands." Seabeach amaranth, generally found in areas defined by the tidal wetland regulations as adjacent areas (up to 300' (91.4 m) landward of any vegetated tidal wetland boundary or from the apparent high water line in non-vegetated areas like the ocean beach), are afforded protection through Sections 661.6 and 661.9 (c) of Article 25 of Tidal Wetlands Land Use Regulations.

Recent discussions with the NYSDEC indicate that proposed changes to Article 25 might include severely restricting the NYSDEC's authority to regulate activities in areas adjacent to tidal wetlands. Since areas adjacent to tidal wetlands often provide suitable habitat for seabeach amaranth, weakening or eliminating NYSDEC jurisdiction over such areas could adversely affect seabeach amaranth. For a more complete discussion on this topic, please refer to the Biological Opinion on the "Westhampton Interim Storm Damage Protection Project" prepared by the Service (U.S. Fish and Wildlife Service 1994b).

C) Expansion of Beach Regrading (Grooming) and Cleaning Activities

In 1977, the NYSDEC's Tidal Wetlands regulations, Part 661.5, Use Category 23, sought to define "routine beach regrading and cleaning, both above and below mean high water mark" in a regulatory context (New York State Department of Environmental Conservation 1990). Current guidance (Marsh 1991) regulates beach grooming and regrading activities in the vicinity of threatened and endangered birds but not plants or other wildlife. No permit is needed to conduct the following activities outside primary or secondary dunes, or in areas of established vegetation:

- rake or smooth ruts and small mounds on beaches;
- collect and remove trash or debris from beaches;
- use hand tools, sand sifters or mechanical beach cleaning machines or yoke rakes to conduct beach grooming and cleaning;
- seasonally, from October 15 to April 15, install sand (or snow) fencing so as to entrap sand and minimize the effects of blowing sand;
- redistribute sand collected by the above activities on beaches, but not below the Mean High Water...

All of these activities, without any regulatory oversight or protection, could potentially impact seabeach amaranth, in plant or seed form, which usually occupies bare sand or sparsely vegetated beach areas. Historic trends suggest that grooming and "cleaning" of beaches, including sand-fencing, may continue to increase. Therefore, the impacts of those activities on seabeach amaranth within the action area are also likely to increase.

D) Residential Density Changes Within the Town of Southampton

According to the Southampton Town Planner (Keane, pers. comm. 1994), the town is currently reviewing applications for the development of several subdivisions along the ocean beach within the action area. Development of these unoccupied lots will increase residential density and the impacts associated with human disturbance and, potentially, ORV use. However, the Town is in the process of negotiating the purchase of a portion of one of the subdivisions, an approximate 3 acre parcel, which will help limit residential growth along the oceanside of the barrier. The intended purpose of the town's purchase is for environmental preservation.

E) Establishment of Beach Erosion Districts on Fire Island

In March of 1995, the Town of Brookhaven established six beach erosion districts along Fire Island allowing the Town to assist residents on Fire Island to maintain beaches during the winter months. Sand fence installation as well as beach grass plantings may be used to attempt to stabilize town beaches. Such activities have the potential to adversely affect seabeach amaranth and its habitat, although the type and extent of such effects would require annual evaluation.

F) Beach Scraping

Beach scraping, a technique to augment or construct artificial dunes, has been utilized by at least eight communities on Fire Island over the past three years. Such activity has the potential to adversely affect seabeach amaranth and their habitats; however, the status and distribution of seabeach amaranth within each community would need to be assessed on an annual basis in order to reach more definitive conclusions about the extent of those impacts. Beach scraping activities will most likely continue in residential communities as this is a more inexpensive method of dune stabilization than sand nourishment from an outside source.

6. BIOLOGICAL OPINION: Seabeach Amaranth

After reviewing the current status of seabeach amaranth (*Amaranthus pumilus*), the environmental baseline for the action area, the direct and indirect effects of the proposed Corps Breach Contingency Plan and FIIS Interim Breach Management Plan, and the cumulative effects of future non-Federal actions, it is the Service's biological opinion that while authorization and implementation of the Corps Breach Contingency Plan and/or the FIIS Interim Breach Management Plan, as proposed, will likely result in both the destruction of plants and seed and the adverse modification of existing habitat, it is not likely to jeopardize the continued existence of seabeach amaranth range-wide.

B. INCIDENTAL TAKE STATEMENT: Seabeach Amaranth

Sections 7 (b)(4) and 7 (o)(2) of the Act do not apply to the incidental take of Federally-listed plant species and, therefore, no incidental take statement, and subsequently no reasonable and prudent measures, nor terms and conditions will be provided in this report.

C. CONSERVATION RECOMMENDATIONS: Seabeach Amaranth

Section 7(a)(1) of the Endangered Species Act (Act) directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species, to help implement recovery plans, and to develop information.

1) The seabeach action area for the BCP covers approximately 50 miles of beach habitat, and contains approximately 33% of all the plants found in the 1994

Long Island population census. When combined with the additional seabeach amaranth habitat and 62% of the 1994 Island-wide population found within the action area of the recently initiated Fire Island Inlet and Shore Westerly to Jones Inlet, New York, Beach Erosion Control and Navigation Project, these two projects have the potential to affect 95% of all the known extant groupings of seabeach amaranth plants on Long Island.

Aside from private actions that may affect seabeach amaranth, these two Corps projects support the preliminary conclusions of the Service's draft *Recovery Outline for Amaranthus pumilus on Long Island, New York*, that the status of Long Island's population is subject to a high degree of threat, and is in imminent conflict with development or other economic projects (U.S. Fish and Wildlife Service 1995b). However, in 1994, 79% of all the land on Long Island which supported seabeach amaranth plants was within government ownership, and therefore, the potential to enact projects that would reverse amaranth's declining population status is high.

As a result, the Service recommends that the Corps pursue opportunities to cooperate with other government landowners to protect and enhance seabeach amaranth populations and the habitat upon which it depends. Specific strategies for recovery are described in detail in the Service's draft recovery outline. Those that the Corps should pursue might include: 1) Annually, conduct a comprehensive survey for seabeach amaranth in formerly occupied and/or suitable habitat on Long Island. Prior to implementation, surveys should be coordinated with the Service, NYSDEC, The New York Natural Heritage Program, and TNC to avoid duplication of effort; 2) develop a habitat characterization and use model; 3) develop protocols for seed collection, plant storage, greenhouse propagation, and successful seed sowing (redistribution); 4) delineate protection areas for seabeach amaranth, and identify appropriate protection and recovery actions to be implemented; 5) conduct studies to identify seed banks, determine seed viability, and investigate germination parameters; and 6) educate the public about the importance (environmental and economic) of seabeach amaranth.

2) During the course of breach formation, flood tidal deltas may also be created, and these sandy, sparsely vegetated spits may serve as habitat for seabeach amaranth. At Little Pike's beach, although the flood tidal delta created in 1992/93 is low-lying, it did support at least one pioneering seabeach amaranth plant in 1994. Two other plants were located in the overwash fan just to the west at the foot of the smaller flood tidal delta that formed at Pike's Inlet. Since these areas provide habitat for seabeach amaranth, and a variety of other rare and threatened beach strand species, and because the management of these newly created areas is not hampered by pre-existing human use or structural development, the Service recommends that these areas be protected in perpetuity as wildlife conservation areas. Management strategies to protect and enhance seabeach amaranth habitat should be developed through an ecosystem approach so that the areas can be managed for a maximum benefit to a variety of beach strand species, including threatened and endangered ones. Where human actions alter the natural processes which reshape and/or maintain flood tidal deltas, beach managers should consider

periodic maintenance activities (deposition of dredged material, etc.) that would benefit the long-term productivity of the area.

3) In this Biological Opinion, the Service extended the delineation of the seabeach amaranth action area, beyond the project area due to the potential impact of the loss of plants or seed productivity on the maintenance of connected outlying and/or founder populations. This is in part due to the current lack of understanding of the factors which affect the annual distribution and spatial variability of seabeach amaranth. To address these unknowns, the Service recommends that the Corps conduct a seed dispersion study. The study would involve planting seabeach amaranth in an isolated, protected area (ideally, with no known historical occurrence of seabeach amaranth), such as the Amagansett NWR or the TNC Mashomack Preserve, then watching for the subsequent appearance of plants along stretches of beach formerly unoccupied and out of the reach of other potential source populations. Over the long term, these studies may enhance our understanding of the factors controlling seabeach amaranth's dispersal pattern, and allow for better protection and management of recovery efforts.

4) Following the initial filling of any breach as a result of BCP implementation, the maintenance of the designed breach fill profile (beach nourishment, dredging, trucking of sand, and other associated construction activities) has the potential to affect seabeach amaranth. Therefore, in areas where seabeach amaranth is found or has regularly been found in the past, the Service recommends that the Corps and/or its applicant conduct all renourishment activities outside the seabeach amaranth growing season (May 1 to November 1)[26]. If the Corps and/or its applicant cannot avoid the amaranth growing season, then they should survey the area prior to the commencement of renourishment activities to determine if plants exist, or if plants can be avoided. Fill should not be placed in a way that results in the burial of seabeach amaranth plants. If fill is to be placed prior to July in an area that has historically supported amaranth plants, the Corps and/or its applicant, during the fall of the year prior to fill placement, and after having obtained the necessary approvals from the Service and NYSDEC, should collect seed, following the suggestions made in Brittingham (1994), store it, and then rebroadcast the seeds in the fill area (under the direction of the Service or DEC) for germination following the fill event[27]. If plants cannot be avoided, and after

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[26]Depending on climatic conditions, the growing season may begin sooner and end later.

[27] Note: It is important to recognize, as Murdock (1993) did, that simply cultivating the plants or planting seeds, even if successful in the wake of fill operations, will not alleviate all threats to seabeach amaranth. Therefore, the Service cautiously endorses these practices only as a means of enhancing natural productivity while primarily seeking to protect natural ecosystems and the storm-related barrier island dynamics upon which seabeach amaranth depends. Only by following that course would the requirements of the Act be met; the successful reestablishment of the

obtaining the necessary permits from the Service and NYSDEC, the Corps should relocate some of the plants out of the fill area to nearby suitable primary habitat (within the action area if possible), being careful not to damage sensitive stems and root systems, and allow some plants to be buried, mimicking natural dispersal strategies. In addition, the Corps and/or its applicant should collect seed for rebroadcasting as described above. If plant relocation cannot be accomplished, or if it has been proven not to be successful, then the Corps and/or its applicant should collect, store, and broadcast seed only.
Further studies and experimentation are needed to determine the best seasons and techniques for beach nourishment in seabeach amaranth habitat. Therefore, the effects of implementing the strategies described above should be monitored, documented, and analyzed for future application at this and other sites.

5) In an effort to determine the need to reinitiate consultation, the Corps and/or FIIS should annually update the seabeach amaranth section of their BCP/IBMP Biological Assessment to reflect changes in seabeach amaranth location, population abundance, and the direct and indirect effects of the BCP on the species. The updated Biological Assessment should be submitted to the Service's Long Island Field Office (LIFO) no later than February 1 in the calendar year following the subject amaranth growing season. If, for any reason, the Corps cannot meet the February 1 deadline, than they should contact the Service's LIFO to establish a new deadline.

6) The Corps should refer to the specific recommendations outlined in the Fire Island Inlet and Shore Westerly to Jones Inlet, New York, Beach Erosion Control and Navigation Project and Westhampton Interim Storm Damage Protection Project Biological Opinions and implement those which have not already been done, and/or adapt and implement those that are germane to this project, especially recommendations 1, 2, 3, 4a-d, and 6, and recommendations 1 and 5, respectively.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

VI REINITIATION

This concludes formal consultation on the effects of the proposed joint Corps Breach Contingency Plan and FIIS Interim Breach Management Plan (from Fire Island Inlet to the eastern end of the barrier spit at approximately Halsey Neck Lane in Southampton, New York) on piping plover and seabeach amaranth. As required by 50 CFR 402.16, reinitiation of formal consultation is required if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an adverse effect

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species in the wild.

to the listed species that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Additionally, if the Corps permits an applicant to conduct fill profile restoration activities, the Corps permit expiration date should not extend beyond the expiration date of the 3-year BCP. Restoration and/or renourishment activities which occur after the BCP has expired may require a reinitiation of the ESA Section 7 process.

Sincerely,

Sherry W. Morgan

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Field Supervisor

cc: TNC, Cold Spring Harbor, NY (C. Brittingham)
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ENCLOSURE 1

Monitoring to Assess Impacts of Filling Breaches
to Federally Threatened Species
(Fire Island Inlet to the eastern terminus of the barrier spit in Southampton Town)

Monitoring will be initiated the spring of/or following the fill and should be continued for 5 years, unless modified by mutual agreement of the Corps, NYSDEC, NPS, and Service. Monitoring will include topography (profiles), vegetation (% cover), invertebrates, Federally listed species (piping plovers and seabeach amaranth), and other avifauna. The sampling protocol suggested below conveys the scope and intensity of monitoring deemed appropriate to assess the impacts of the fill; however, the actual sampling scheme may be subject to further discussion among the Corps, NYSDEC, NPS, and Service.

Transect locations for sampling topography, vegetation, and invertebrates

Eight transects, four inside the filled area and four outside, should be established. The approximate edges of the fill should be delineated and distance(s) from stable markers should be noted for future reference. The four transects inside the fill should be established by dividing the fill area into five equal areas along lines perpendicular to the ocean shoreline; transects should be located along the boundaries of these strips. Four control transects should also be established at 1.0 km (approximately 3,280 feet) and 1.25 m (approximately 4,104 feet) east and west of the edges of the fill. See Figure 8a. If a control transect falls within a developed community, alternative transects should be located in accordance with a protocol established by agreement between the Service, Corps, NYSDEC, NPS.

Topography and vegetation

Twice each year, between March 1-15 and September 1-15, measure the slope along each transect in approximately 7.62 meter (25 foot) increments starting at the approximate mean low tide line on the ocean and running north to the bayside. At the mid-point of every second approximate 7.62 meter (25 foot) increment, visually estimate the percentage of vegetative cover in a .5 m^2 (approximately 19.5 inches) frame centered on the transect. See Figure 8b. Determine the profile elevation at approximately .3 meter (1 foot) increments.

Invertebrates

Invertebrate prey will be sampled three times per season, approximately April 10-20, June 10-20, and August 1-10. Core samples (methodology described in pp. 25-26 of Hoopes et al. 1992) (Attachment 1) will be taken in intertidal and sand or mudflat habitat on each transect where it occurs. Sticky traps will be deployed in intertidal zone wrack, berm wrack, and open vegetation following methodology described by Elias-Gerken and Fraser (1993) (p. 10) (Attachment 2). Sampling points will be located at the mid-point of the portion of the transect in each habitat type (Figure 8c). If piping plovers are present in the vicinity of a transect, then invertebrate sampling will be conducted by a biologist knowledgeable about their behavior, to minimize disturbance to the birds. Invertebrates will be identified, at a minimum, to their taxonomic order.

Piping plover surveys

From approximately March 20 to August 30, piping plover surveys should be conducted twice each week, on non-consecutive days, along 6 km (approximately 3.72 miles or 20,000 feet) of beach, centered on the fill. (Plover surveys may be discontinued after July 1 if no birds are present in the monitoring area.) Records should include:

- Location and size of all plover territories and courtship areas
- Nest locations
- Location and size of adult and chick feeding areas
- Hatching success
- Fledging success
- Chick activity budgets and habitat use data, as described by Elias-Gerken and Fraser (1994), p. 9; one sampling period should be recorded for each brood each week during two time periods: (1) dawn to 10:00 a.m.; (2) 10:00 a.m. to 3:00 p.m.
- Sightings and counts of other avian species in the area
- Evidence of predator activity or induced mortality (crow, fox, raccoon, dog, cat, etc.)

Seabeach amaranth surveys

Approximately once per month, June 15 to October 15 in the area that includes the fill and 2 km (approximately 1.25 miles or 6550 feet) of beach east and west. Records should include:

- Plant locations (on the beach in GPS coordinates and relative to the apparent high water line (AHWL))
- Number of plants
- Topographic maps showing general locations and numbers of plants for annual comparisons
- Size of plants (diameter measured at its broadest point, and size classes as described in Antenen (1991).
- Reproductive status (flowering/bearing seed or not).

Photography

Whenever aerial flights over the breach/fill area are made (assume at a minimum at least once per year), photos of the fill and surrounding beach should be taken. Date, approximate elevation of the aircraft, and ground scale should be noted.

P. 58 - need best to do

ATTACHMENT 1

RELATIONSHIPS BETWEEN HUMAN RECREATION AND PIPING PLOVER FORAGING ECOLOGY AND CHICK SURVIVAL

Final Report

Submitted to:

Anne Hecht
Project Officer
U.S. Fish and Wildlife Service
Region 5
Newton Corner, MA

Submitted by:

Edwin Mark Hoopes and Curtice R. Griffin
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August 1992

paces in one habitat type by the total number of paces in all habitats. Distance between transects varied between beaches and was dependent on the total linear distance of each study beach.

We used Ivlev's (1961) Electivity Index to determine whether plovers exhibited a preference for, or avoidance of any habitats:

$$E = (r - p)/(r + p)$$

where E is the electivity index, r is the habitat use value expressed as a percentage of total habitat use and p is the total availability of that habitat expressed as a percentage of total habitat availability. Since E is a ratio of percentages, it results in values between + 1 and -1. The closer E is to + 1, the greater the preference. Conversely, the closer E is to - 1, the greater the avoidance. When E = 0, there is no preference or avoidance. For the purposes of discussion, we consider any value of E greater than or equal to $\pm$ 0.500 to be a strong preference.

Invertebrate Availabilities

We sampled both infauna and surface-flying macroinvertebrates. Infuana invertebrates were sampled using a 2-cm deep (10-cm diam.) core to determine what potential prey items were available to plovers (Bengston and Svanson 1968, Woodin 1974). Six 2-cm cores were taken at high and low tides, in intertidal and mudflat habitats, in April, June, and August. Two centimeter cores represent the depth plovers

could realistically probe. Each core was sieved (0.6 mm mesh) to remove as much sediment as possible. Remaining substrate was placed in a collection jar of seawater-formalin (85%-15%) solution, stained with rose bengal to aid in separating out invertebrates, and stored for later analysis. Invertebrates were identified to Order.

Sticky traps were used in four habitats (berm, wrack, overwash, and dune) to quantify what surface-flying insects were available to foraging plovers. Sticky traps were constructed by dipping 30 cm long, 2.5 cm wide paint stirrers into Tree Tanglefoot (Detroit, MI). Ten sticky traps were deployed for 24 hours in each habitat in April, June, and August. Insects were identified to Order.

Human Disturbance

We recorded the reactions of plovers to human-related disturbances during observation periods up to 15 min in duration. Disturbance stimuli were divided into four major categories-- pedestrian, dog/pet, ORV, and kite. Data recorded included: 1) response distance (the estimated distance between the disturbance stimulus and focal bird), 2) response type (ground versus air), 3) distance focal bird travelled from the disturbance, 4) duration of response (time from focal birds' first reaction to disturbance until bird returns to non-disturbance behavior; Table 2), and 5) behavior and habitat used by focal bird immediately before and after disturbance. We define a human-related disturbance

FINAL REPORT

Amaranthus pumilis

1991 Survey

Long Island, NY

Prepared by: Susan Antenen
Director of Science and Stewardship
Long Island Chapter
The Nature Conservancy

AMARANTHUS PUMILIS
PROJECT SUMMARY
1991

Methods of 1991 Survey

The purpose of the 1991 Amaranthus pumilis survey was to document the location and extent of the seabeach amaranth in New York and to determine whether populations are constant for specific areas that can be protected.

The 1991 survey methods were similiar to the 1990 survey by Clemants and Mangels. However, there were two survey periods in 1991. The mid-season survey extended from June 12 to August 29. The late-season survey was between September 27 and October 21.

Population boundaries were mapped and individual plants were counted for each site. During the late-season survey the individual plants were classified into six size classes:

(s)	seedling	(3)	20 - 43.5 cm
(1)	2.5 - 7.5 cm	(4)	35 - 55 cm
(2)	8 - 19.5 cm	(5)	>55 cm

Chris Mangels completed the field work for the Long Island Chapter of The Nature Conservancy. All field forms were submitted to the New York Natural Heritage Program in December 1991.

Comparison of 1991 to 1990

More area was surveyed in 1991 than 1990. All, but one of the 1990 sites, plus an additional 8 sites were surveyed. A total of 40 site visits were made. The South Fork was not surveyed.

There was site fidelity for this species. In 1991 it was found on all sites where there had been a sizable population in 1990. In most cases, the populations were slighly higher in 1991 than in 1990. (see table 1)

Except at Westhampton Beach, all the sites are on public land: New York State Office of Parks, Recreation and Historic Preservation, Suffolk County, Southampton, Babylon, and Oyster Bay. The Long Island Chapter of The Nature Conservancy already has management agreements with New York State and Suffolk County. In theory, the amaranth is found on protected land. However, due to the multiple use mandates by the public agencies, the species is still very vulnerable.

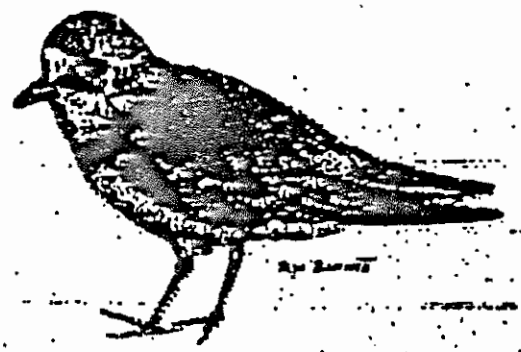
Number of plants

Before Hurricane Bob on August 19, the total number of plants documented was 2013.

A total of 3372 individual plants were documented in the late-

ATTACHMENT 2

PIPING PLOVER HABITAT SUITABILITY ON CENTRAL BARRIER ISLANDS OF LONG ISLAND, NY



Susan P. Elias-Gerken

James D. Fraser

Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
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Annual Report for 1992

January 1993

Chick survival.— We checked each brood every 1 to 4 days ($\bar{x}$=2.5 days) to locate broods, determine the cause of chick loss if possible, and determine the number fledging.

Behavioral Observations

All broods were visited every 1 to 4 days ($\bar{x}$=2.5 days) for behavioral observations. Selection of broods for observation was based on age, with highest priority given to chicks 3-10 days old. When a brood was located, we recorded the foraging habitat occupied (Table 1), distance from the nest, and disturbance data (see methods section entitled "Disturbance and Predation" on page 14). We then commenced behavioral observations on the first chick of the brood seen, referred to as the "focal chick". We recorded information on the focal chick for 5 minutes total using a spotting scope, tape recorder, count-down timer, and metronome.

Activity budgets and habitat use.— Once every ten seconds for the five-minute period, we made instantaneous determinations of behavior, disturbance, and foraging habitats. If a chick was in or moved into vegetation, we continued the observation (i.e., allowed the clock to run out) even if its behavior could not be seen. In this way, we minimized the bias in habitat use data. We calculated the percentage of time chicks spent in various behaviors and foraging habitats.

Foraging rates.— During the same 5-minute observation we continuously recorded foraging behavior to determine foraging rate. We calculated foraging rate by dividing the number of foraging attempts by the observation time, expressing it in attempts per minute.

Invertebrate Prey Abundance

We collected surface invertebrate prey samples once a week for six weeks beginning in late June, using paint stirrers set out for 3 hours along transects perpendicular to the long axis of the beach. We set out pairs of stirrers, one horizontal and one vertical, in each of four habitats along the transect. These habitats were: intertidal zone wrack (fresh, wet lines or clumps of (usually) vegetation and shells deposited at the peak of the last tide); berm wrack (older, drier lines or clumps of (usually) vegetation and shells deposited at the peaks of storm tides on upper portions of the beach); open vegetation (strips or patches of (usually) live vegetation, e.g., American Beach Grass (*Ammophila breviligulata*), which chicks move through freely for foraging and cover on the upper beach); and ephemeral pools, when available (Table 1).

We put out two transects per each block sampled. We used a random numbers table to select a number from 0 to 999 to establish the east-west position of the transect within the 1 km block. We allocated the second transect according to brood foraging territory location, defined by the most recent location at which the youngest brood of the block had been seen foraging. We sampled 12 nesting blocks, and 1 non-nesting block. Originally we had planned to sample 4 non-nesting blocks, and 9 nesting blocks, but 3 non-nesting blocks had to be reclassified as nesting blocks when chicks moved into them to forage.

Disturbance and Predation

We measured amount and type of disturbance and predation through the entire season on nesting blocks, and through mid- May on non-nesting blocks. We visited blocks every 1 to 4 day ($\bar{x}$=2.5 days) with a minimum of 2 visits per week including 1 weekday and 1 weekend day. As

Table 1. Terms used to describe Piping Plover nesting and foraging habitats on ce... Island, NY barrier islands, 1992.

Habitat Type	Definition
Intertidal Zone	Zone between high and low tides with damp to saturated sand.
Intertidal Zone Wrack	Fresh, wet lines or clumps of (usually) vegetation at the peak of the last high tide.
Berm Wrack	Dry, older lines of wrack deposited on the berm by storm tides/winds.
Berm (Back Shore)	Zone of dry sand, shell, cobble, and beach debris landward of the high water mark and seaward of open or continuous vegetation.
Interdune	Bare patches of sand, shell, and cobble among vegetated dunes.
Ephemeral Pool	Zones of variable size and shape where water collects following storm rains and sea washover; found in front of/ within interdune areas on wide (> 190 m) beaches; have sandy to muddy substrates; host abundant insects; may contain water year-long or dry up until next storm.
Open Vegetation	Strips or clumps of vegetation, usually Common Beach Grass (*Ammophila breviligulata*), which chicks may move through freely for foraging and cover. Often grows on dunes between the berm and dense vegetation and around ephemeral pools. Averaged 11.5% cover.
Dense vegetation	Live or dead, thick and matted grasses, forbs, and/or shrubs, too thick for chicks to move through; if present, marks the end of the beach and beginning of the island interior. 100% cover.

ENCLOSURE 2

ENDANGERED AND THREATENED SPECIES PROTECTION PLAN

The piping plover (*Charadrius melodus*) is Federally listed as a threatened species and New York State listed as an endangered species. Seabeach amaranth (*Amaranthus pumilus*) is Federally listed as a threatened species and New York State listed as a candidate threatened species. In recognition of the State and Federal listed status of these two species, additional protective steps will be taken to minimize or eliminate the impact of the proposed project, and to aid in species recovery. Those actions, which will be carried out as part of the proposed project are listed as follows:

1. To protect piping plovers and seabeach amaranth on public property, the U.S. Army Corps of Engineers (Corps) and/or the New York State Department of Environmental Conservation (NYSDEC) will seek written Memorandums of Agreement with the National Parks Service (Fire Island National Seashore), New York State Office of Parks, Recreation, and Historic Preservation, and Suffolk County Parks to authorize the NYSDEC, Corps, or their designated representatives to carry out the following measures to protect piping plovers and seabeach amaranth plants that occur on their respective beaches after project completion.

   a. The Corps, NYSDEC, the U.S. Fish and Wildlife Service (Service) and/or their designated representatives will all be given access to the project beaches for the purpose of surveying, monitoring, posting, and/or symbolically fencing piping plover courtship, nests, and brood rearing areas, and erecting predator exclosures for nests during the plover breeding season (April 1 to September 1), and for the purpose of surveying seabeach amaranth during the growing season (May 1 to November 1). Access will be given during daylight hours on any day(s) of any given year at the required frequency to accomplish the purposes stated above.

      Symbolic fencing will be placed in a 50 meter radius (approximately 163 feet) around nest sites where pedestrians, joggers, picnickers, fisherman, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers and their eggs. If areas fenced for plover protection do not contain seabeach amaranth plants, then the fencing will be removed shortly after the last chick has fledged. If areas symbolically fenced to protect plovers also contain seabeach amaranth, then the fencing may remain in place until the end of the seabeach amaranth growing season (approximately November 1[1]) or may be diminished to reflect the protection needs of seabeach amaranth stated below.

---

[1]Seabeach amaranth plants will continue to produce seed until the time they senesce, around November 1 in any given year. However, the exact timing of plant death is heavily influenced by weather conditions, specifically temperature. Therefore, in mild years, seabeach amaranth may persist beyond November 1, and management decisions should be made accordingly.

At a minimum, symbolic fencing will be placed in a 3.3 meter (10 foot) radius around seabeach amaranth plants, and may be removed between November 1 and April 1 in any calendar year. For irregularly spaced clusters of seabeach amaranth plants, larger areas may be fenced to offer more effective protection.

b. Off-road vehicular traffic, including all terrain vehicles, will be managed on the beaches in the project construction area in accordance with the Service's April 15, 1994 Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act. Off-road vehicles will also avoid impacts to seabeach amaranth.

c. To preserve feeding habitat in areas used by plovers, the removal of natural organic material deposited on the beach by the tides (wrack) will be prohibited during courtship, incubation, and brood rearing.

In areas specifically designated, and routinely and historically used for recreational bathing, mechanical beach cleaning may be employed.

To accommodate the wide ranging movements and foraging needs of plover chicks, mechanical beach cleaning activities will be prohibited outside of designated recreational bathing areas during brood rearing. In these areas, trash, litter, and/or other hazardous materials may be removed from the wrackline by hand.

d. Fireworks are highly disturbing to piping plovers and will be prohibited on beaches where piping plovers nest from April 1 to September 1, or the date of last fledging.

e. Compared to pedestrians, dogs, and vehicles, plovers are particularly intolerant of kites, perhaps because they are perceived as potential avian predators. As a result, kite flying will be prohibited within 200 meters (approximately 656 feet) of nesting or territorial adults or unfledged juvenile piping plovers (in fenced areas) from April 1 to September 1.

f. Because dogs and cats are common predators of piping plover eggs and chicks, pets will be leashed at all times from April 1 to September 1 on beaches in the action area where piping plovers are present.

g. To minimize the impact of predators, and to reestablish natural food limitation controls on population size, no feeding of raccoons, foxes, gulls, feral animals or other wildlife will occur.

2. To educate Town, Village, and private landowners, and to encourage their support of protection and recovery efforts for piping plover and seabeach amaranth on private lands within the project area, from Fire Island Inlet to the eastern terminus of the barrier spit in the Town of Southampton, the Corps and/or NYSDEC will conduct an Endangered and Threatened Species Protection Plan education program. In addition to information on the biology of, and threats to piping

plover and seabeach amaranth, the education program will outline the efforts agreed to by County, State, and Federal landowners, and inform private landowners that they may also actively participate in protection and recovery efforts by granting the Corps, NYSDEC, or their designated representatives permission to access private property for the purposes stated in 1a-g above. Information will be disseminated as follows:

a. Annually, information on the protection and recovery needs of piping plover and seabeach amaranth will be distributed to private landowners within the project area. This will occur through the use of various mediums which may include, but is not limited to, public speaking engagements, slide presentations, public service announcements, press releases, newspaper articles, and the distribution of fact sheets, and brochures.

   Distribution will target private landowners through their representatives and associations (meetings, etc.) including the Fire Island Association, Long Island Coastal Alliance, all established Dune Districts and/or property owner associations (for example, the Seaview Property Owners Association) within the project area, Fire Island beach scraping pilot project permittees, and others not necessarily specifically identified herein.

b. Beach-user groups and/or advocates will also be targeted to receive outreach information. Those groups include, but are not limited to the Fire Island Wilderness Committee, Long Island Beach Buggy Association, and the Long Island Fisherman magazine, among others.

c. The Corps and NYSDEC will attempt to distribute outreach materials to all oceanfront landowners concurrent with the issuance of Corps 404 wetlands permits, or NYSDEC Article 25 Tidal Wetlands, Article 15 Protection of Waters, Article 34 Coastal Erosion Management permits, or Water Quality Certificates.

ENCLOSURE 3

Piping Plover Incident Observation Report

DO NOT DISTURB THE SITE. DO NOT TOUCH OR REMOVE THE BIRD OR EGG UNLESS OTHERWISE AUTHORIZED TO DO SO BY U.S. FISH AND WILDLIFE LAW ENFORCEMENT STAFF.

Observer's Name _____ Date _____ Time _____Affiliation __

_____ Site Name _____

Town _____ Time of incident (if known)_____

Witness? (Name) _____ Phone number _____

Witness? (Name) _____ Phone number _____

Bird / Nest Conditions

Plovers observed today	# of Eggs _____	# of Chicks _____	# of Adults _____
# / date last sighted	___ / _____	___ / _____	___ / _____

Nest condition: Undisturbed ___ Disturbed (describe) _____ Condition of eggs/bird: Shell broken ___; Bird: plump ___ Flat ___ Missing parts? _____

Tracks?: Tire _____ Animal (type) _____ Footprints _____

Number and location relative to bird or egg: _____

Incident setting (where and how found)_____

_____

Site/Environmental Conditions

Current weather conditions _____

Date of last rainfall (if known) _____ Tide: High _____ Low_____ Rising _____ Falling _____

Condition of sand: loose ___ packed ___ wet ___ dry ___ other/describe _____Symbolic Fencing ___ Predator exclosures ___ Damage? (describe) _____

Efforts to secure the scene _____

_____ Photos taken? Y N

Notification: FWS LE __ Town __ Trustees __ Local LE __ DEC LE __ TNC __ Landowner __ Other ___

Threats/Disturbances

Unleashed pets ___ ORVs ___ Crows ___ Gulls ___ Fox ___ Other _____

Other Comments: _____

_____

_____

_____

_____

_____

_____PLEASE

DRAW A SITE DIAGRAM (on the reverse): Include: legend, take location (distance to permanent landmark), nest location, fencing and predator exclosure if present, tire ruts, roads, & other significant landmarks, water bodies, all wrack lines, AHWL, etc.

ENCLOSURE 4

RESULTS OF SERVICE IN-HOUSE REVIEW OF PROPOSED STOCKPILE LOCATIONS

FIS Sites	Wetlands	ES	Remarks
1	-	-	A
2	-	-	A
3	PEM, POW	-	B
4	PEM	-	B
5	PSSIA	-	B
6	E2EM	SBA	B
7	E2FL	SBA	B
8	-	-	A
9	-	-	A
10	E2FL	-	B
11	-	-	A
12	-	-	A
13	E2FL, E2SB, E2EM, PSSIA	SBA, PP	C
14	UPLAND	-	A
15	E2EM	-	B

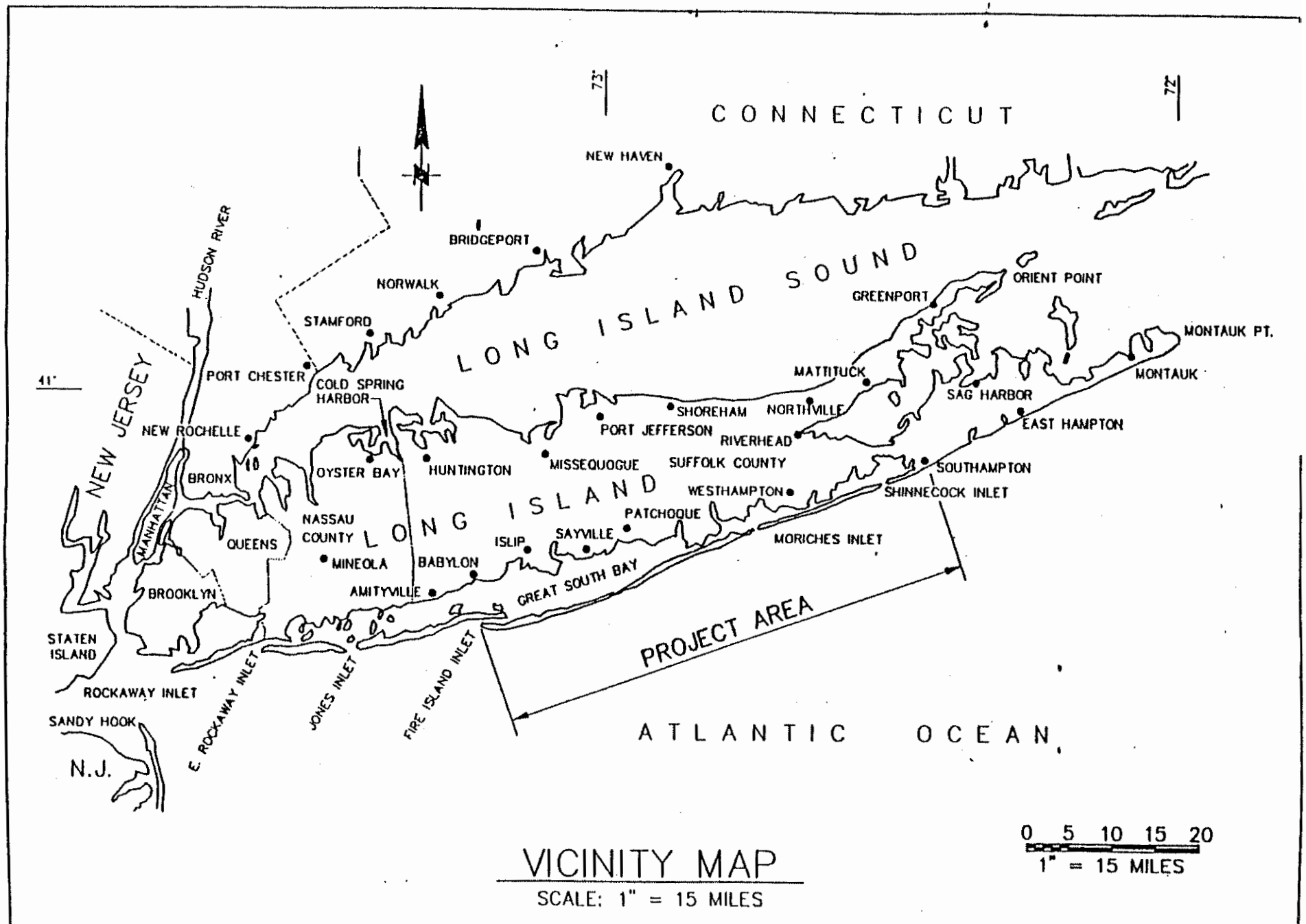
Key:

wetland types (from USFWS National Wetlands Inventory maps):
E2EM = estuarine intertidal emergent
E2FL = estuarine intertidal flat
E2SB = estuarine intertidal streambed
PEM = palustrine emergent
POW = palustrine open water
PSSIA = palustrine scrub-shrub broadleaved deciduous temporary

ES(endangered species):
PP = piping plover (*Charadrius melodus*)
SBA = seabeach amaranthus (*Amaranthus pumilus*).

Remarks:
A = no fish and wildlife concerns identified
B = NWI map identified wetlands in the stockpile site proximity
C = data identified piping plover or seabeach amaranth sites in stockpile site proximity

Figure 1: Vicinity Map



VICINITY MAP

SCALE: 1" = 15 MILES

Figure 1

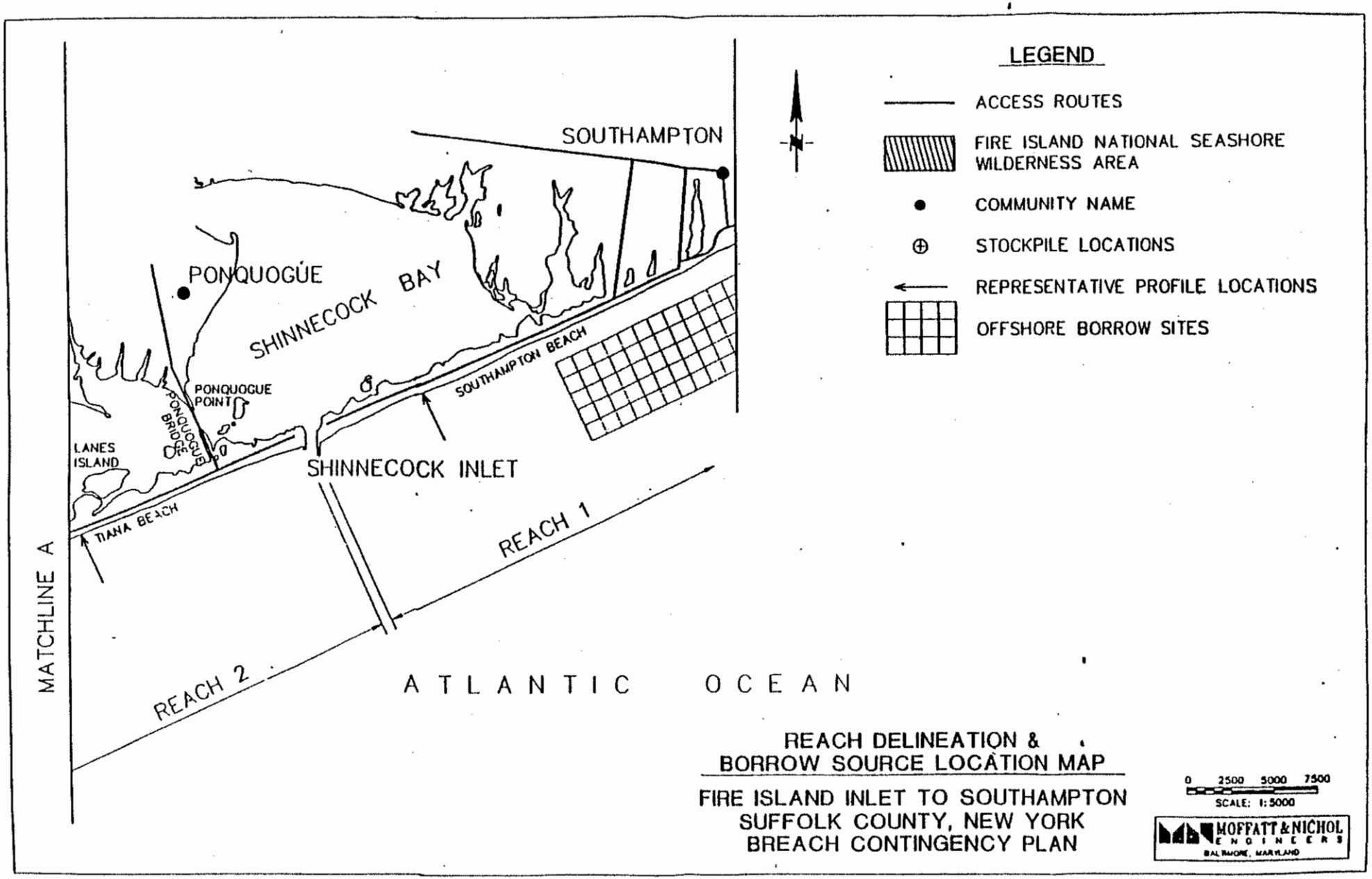

SOUTHAMPTON
PONQUOGUE
SHINNECOCK BAY
PONQUOGUE POINT
PONQUOGUE BRIDGE
SOUTHAMPTON BEACH
LANES ISLAND
SHINNECOCK INLET
TIANA BEACH
REACH 1
REACH 2
MATCHLINE A
ATLANTIC OCEAN
LEGEND
ACCESS ROUTES
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
COMMUNITY NAME
STOCKPILE LOCATIONS
REPRESENTATIVE PROFILE LOCATIONS
OFFSHORE BORROW SITES
REACH DELINEATION & BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE: 1:5000
MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

Figure 2a

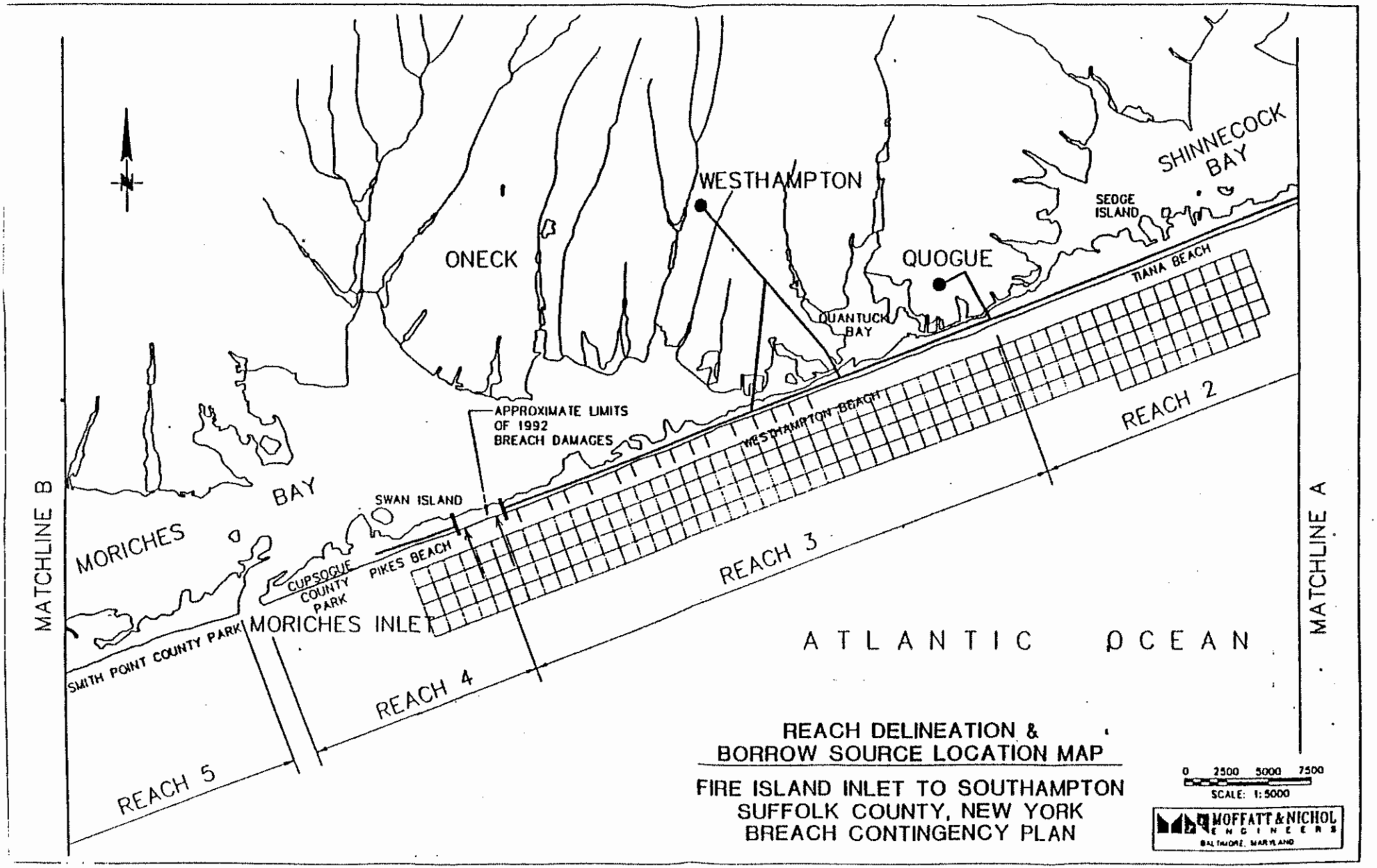

WESTHAMPTON
ONECK
QUOGUE
SHINNECOCK BAY
SEDGE ISLAND
TIANA BEACH
QUANTUCK BAY
APPROXIMATE LIMITS OF 1992 BREACH DAMAGES
WESTHAMPTON BEACH
REACH 2
REACH 3
REACH 4
REACH 5
SWAN ISLAND
BAY
MORICHES
CUPSOGUE COUNTY PARK
PIKES BEACH
MORICHES INLET
SMITH POINT COUNTY PARK
ATLANTIC OCEAN
MATCHLINE B
MATCHLINE A
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE: 1:5000
MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

Figure 2b

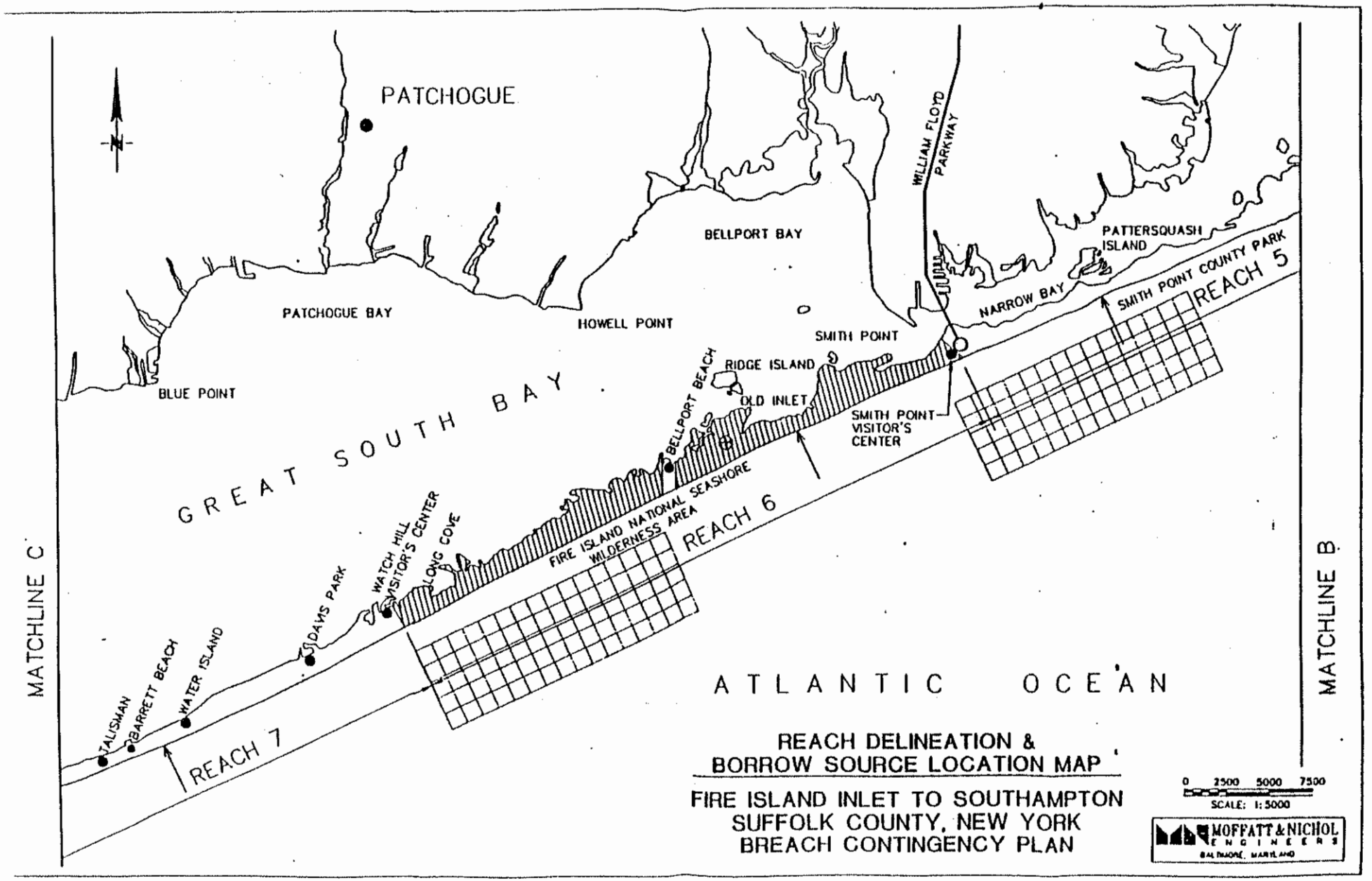

PATCHOGUE
WILLIAM FLOYD PARKWAY
BELLPORT BAY
PATTERSQUASH ISLAND
NARROW BAY
SMITH POINT COUNTY PARK
REACH 5
PATCHOGUE BAY
HOWELL POINT
SMITH POINT
RIDGE ISLAND
BELLPORT BEACH
OLD INLET
SMITH POINT VISITOR'S CENTER
BLUE POINT
GREAT SOUTH BAY
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
REACH 6
WATCH HILL VISITOR'S CENTER
LONG COVE
DAVIS PARK
WATER ISLAND
BARRETT BEACH
TALISMAN
REACH 7
ATLANTIC OCEAN
MATCHLINE C
MATCHLINE B
REACH DELINEATION &
BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE: 1:5000
MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

Figure 2c

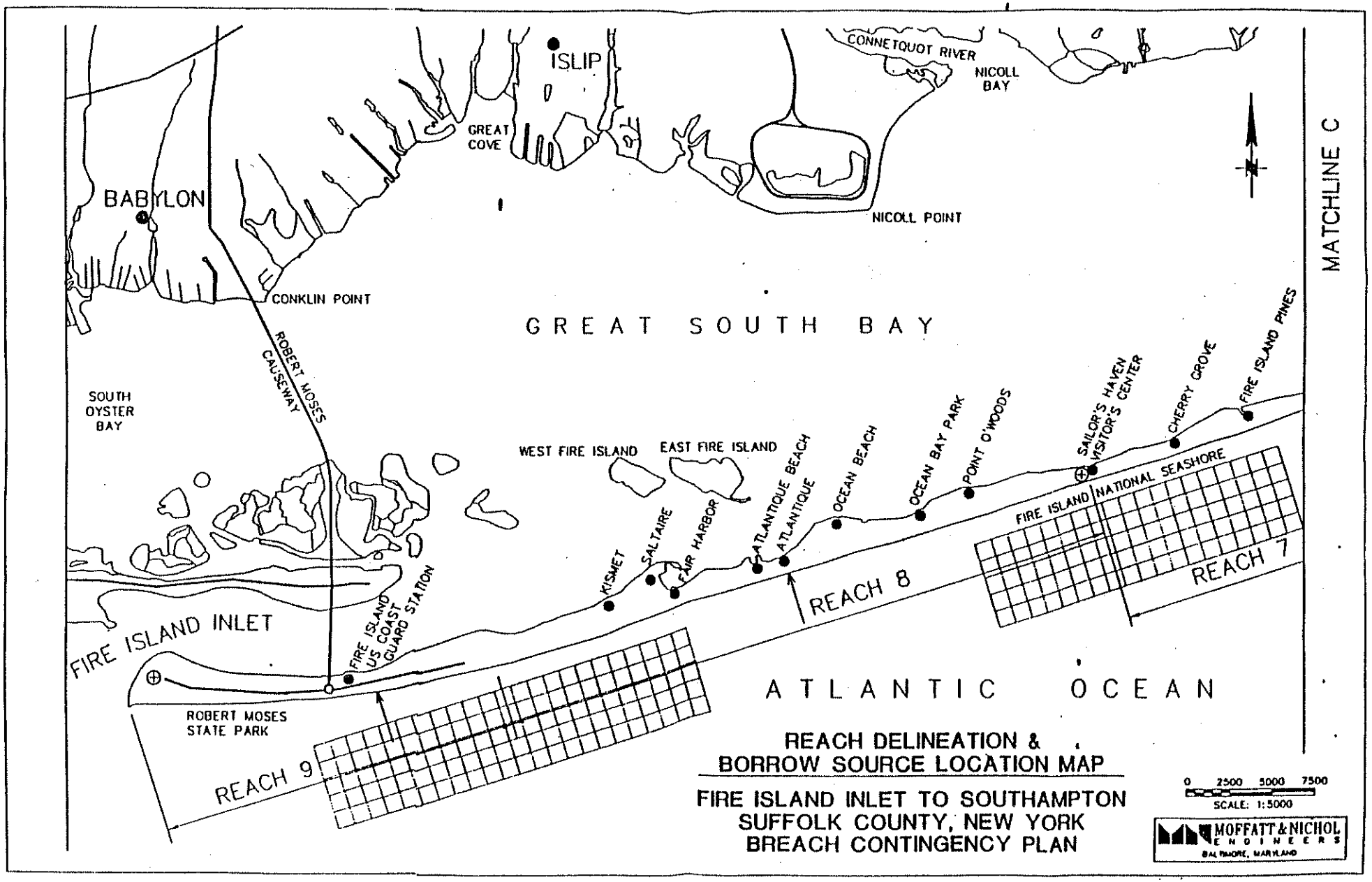

ISLIP
CONNETQUOT RIVER
NICOLL BAY
GREAT COVE
BABYLON
NICOLL POINT
MATCHLINE C
CONKLIN POINT
GREAT SOUTH BAY
ROBERT MOSES CAUSEWAY
SOUTH OYSTER BAY
WEST FIRE ISLAND
EAST FIRE ISLAND
ATLANTIQUE BEACH
OCEAN BEACH
OCEAN BAY PARK
POINT O'WOODS
SAILOR'S HAVEN VISITOR'S CENTER
CHERRY GROVE
FIRE ISLAND PINES
FIRE ISLAND NATIONAL SEASHORE
KISMET
SAILAIRE
FAIR HARBOR
ATLANTIQUE
FIRE ISLAND INLET
FIRE ISLAND US COAST GUARD STATION
REACH 8
REACH 7
REACH 9
ROBERT MOSES STATE PARK
ATLANTIC OCEAN
REACH DELINEATION & BORROW SOURCE LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE: 1:5000
MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

Figure 2d

TIMELINE FOR RESPONSE ACTION UPON BREACH

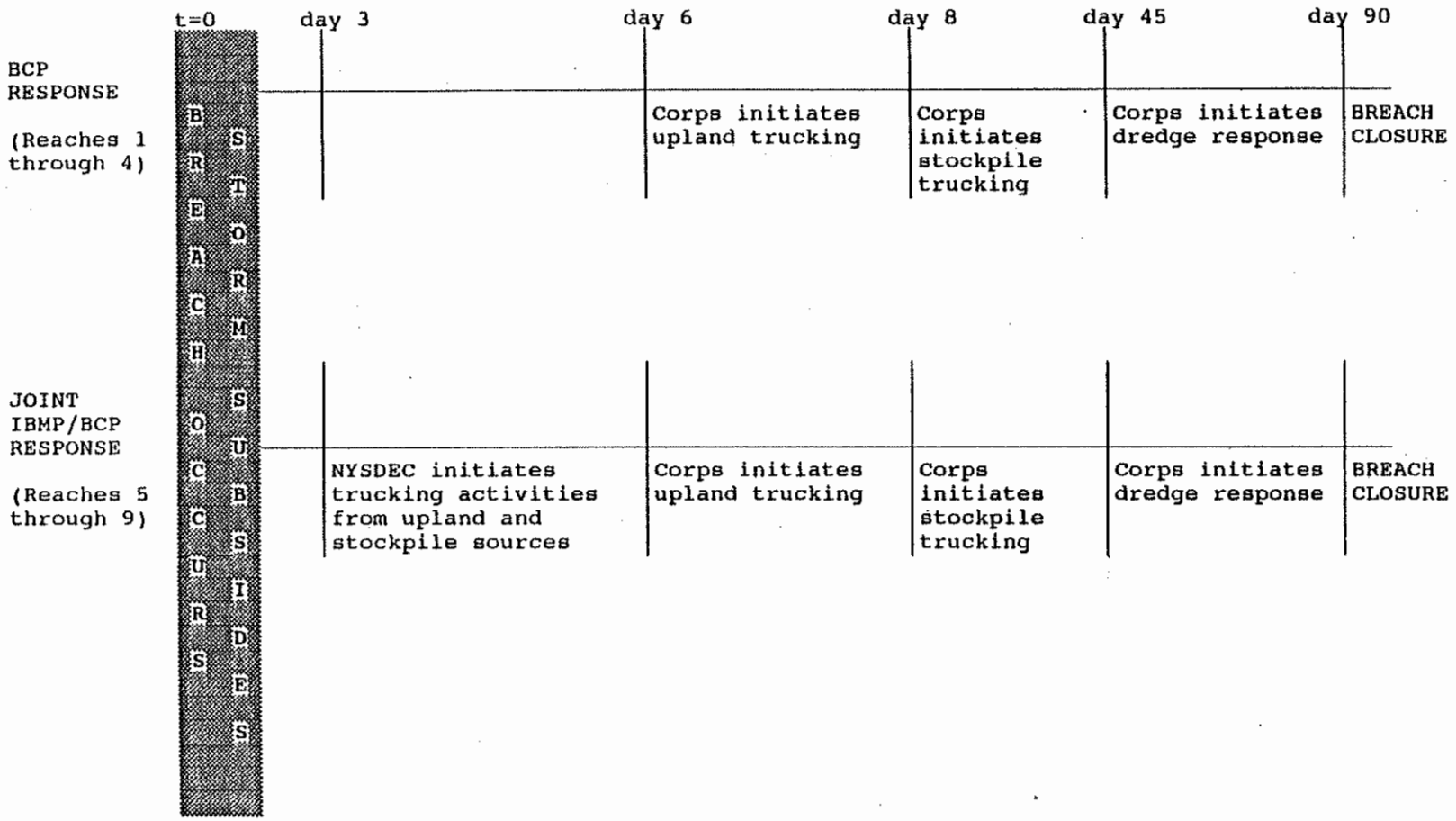


Figure 3: Timeline for breach response (adapted from Corps, 1994)

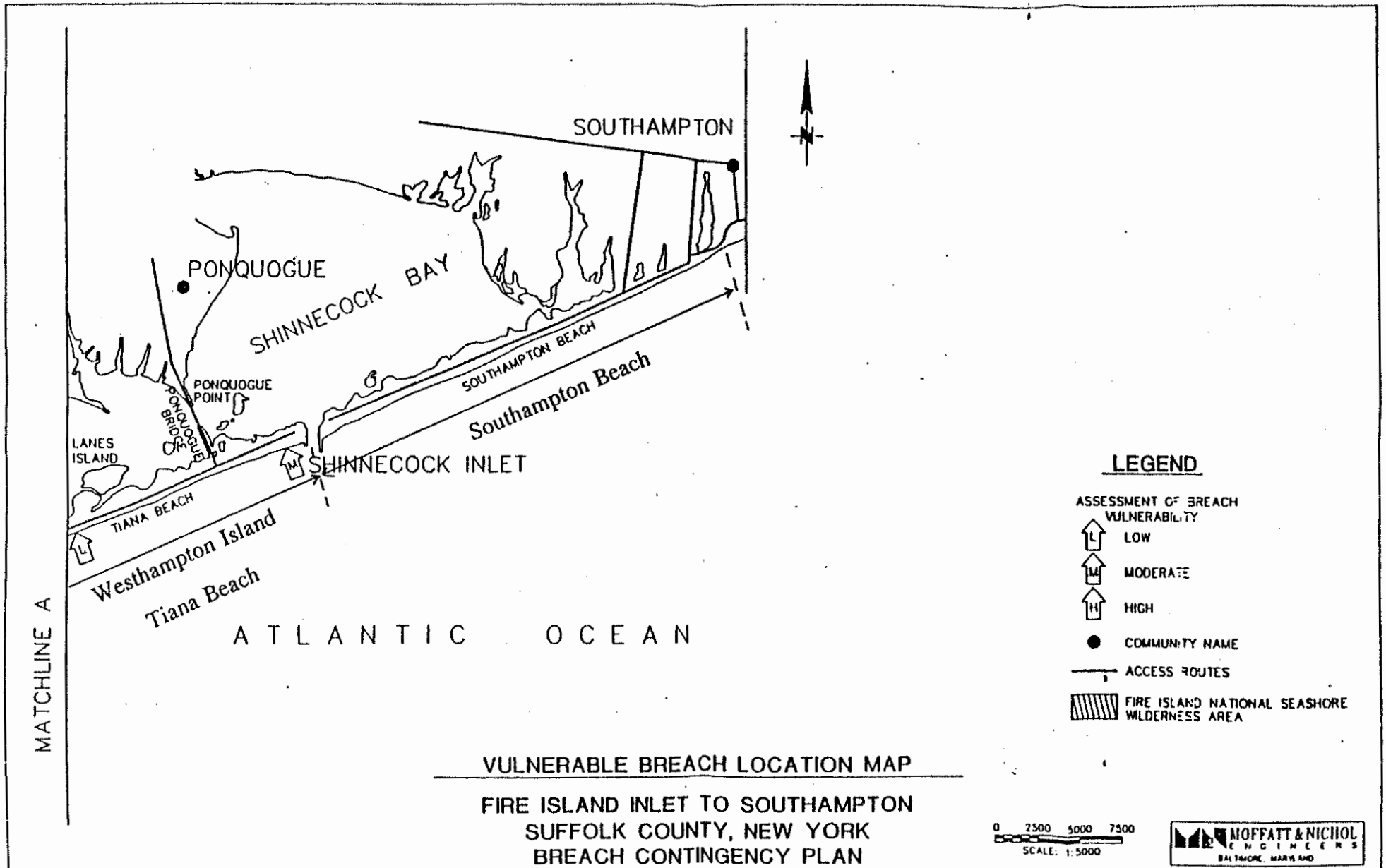
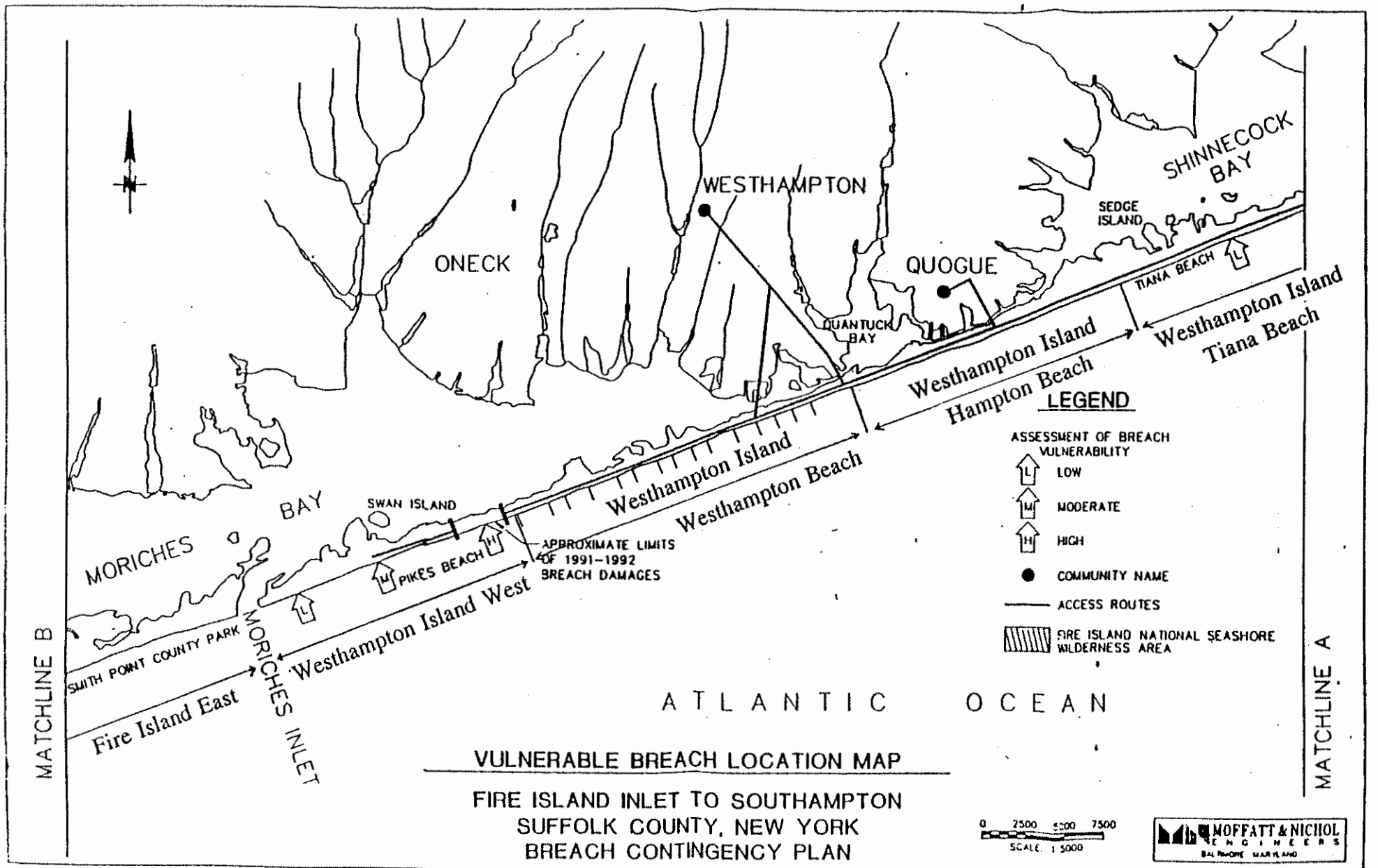

SOUTHAMPTON
PONQUOGUE
SHINNECOCK BAY
PONQUOGUE POINT
PONQUOGUE BRIDGE
SOUTHAMPTON BEACH
Southampton Beach
LANES ISLAND
SHINNECOCK INLET
TIANA BEACH
Westhampton Island
Tiana Beach
ATLANTIC OCEAN
MATCHLINE A
LEGEND
ASSESSMENT OF BREACH VULNERABILITY
L LOW
M MODERATE
H HIGH
COMMUNITY NAME
ACCESS ROUTES
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
VULNERABLE BREACH LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE: 1:5000
MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

Figure 4a



VULNERABLE BREACH LOCATION MAP

FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN

Figure 4b

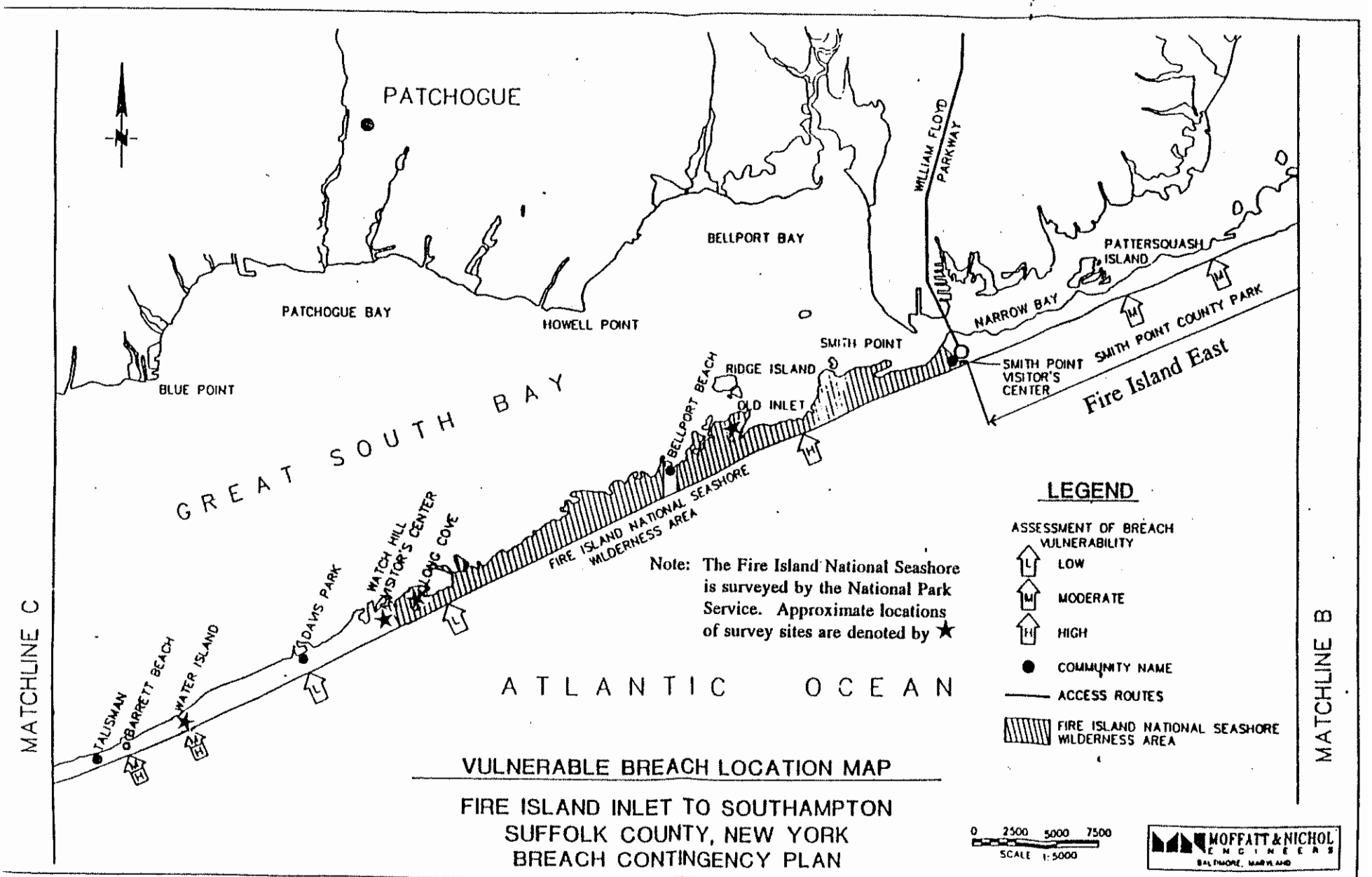
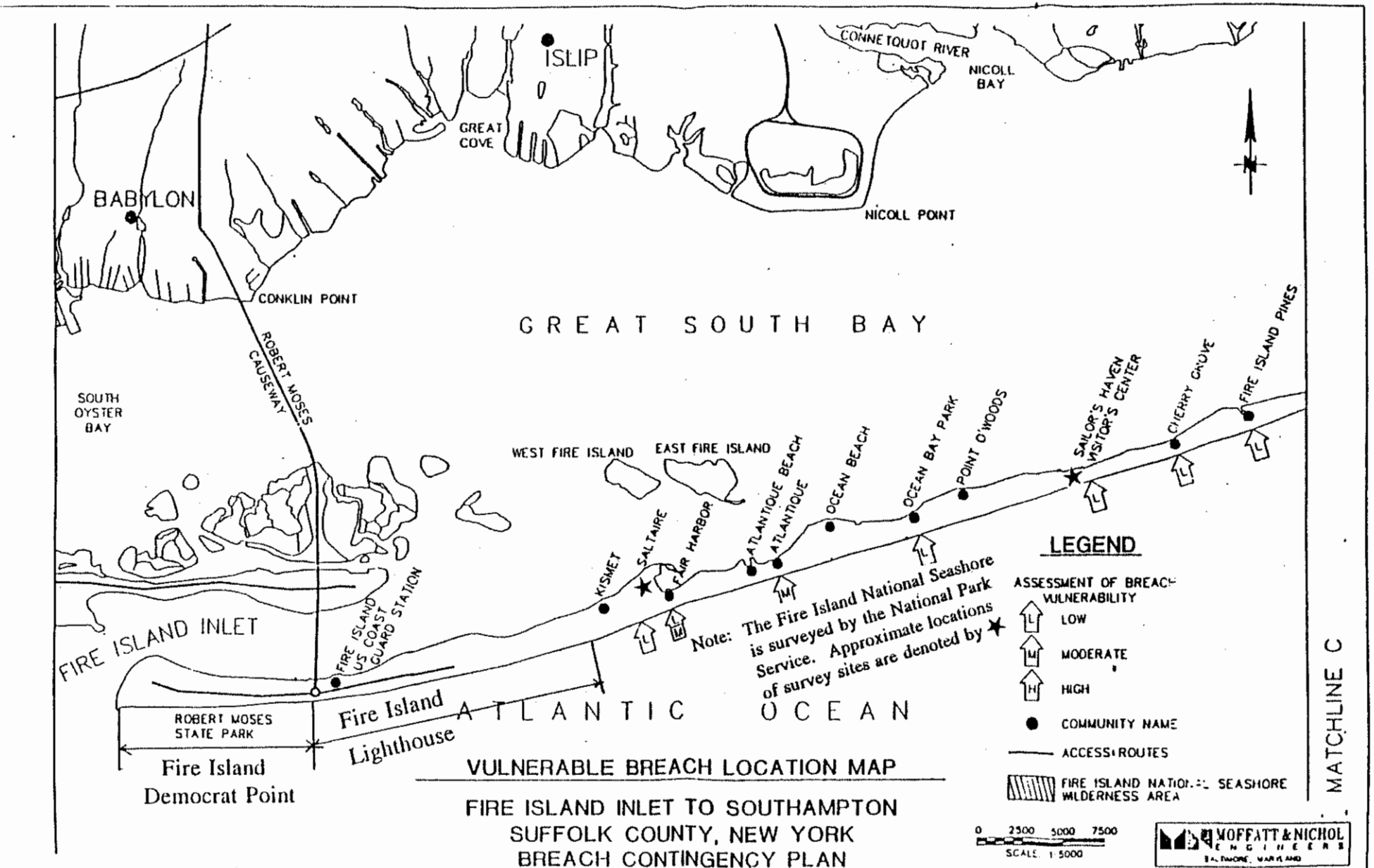

PATCHOGUE
PATCHOGUE BAY
BELLPORT BAY
HOWELL POINT
WILLIAM FLOYD PARKWAY
PATTERSQUASH ISLAND
NARROW BAY
SMITH POINT COUNTY PARK
SMITH POINT
SMITH POINT VISITOR'S CENTER
Fire Island East
BLUE POINT
GREAT SOUTH BAY
RIDGE ISLAND
OLD INLET
BELLPORT BEACH
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
WATCH HILL VISITOR'S CENTER
LONG COVE
DAVIS PARK
WATER ISLAND
O'BARRETT BEACH
TALISMAN
ATLANTIC OCEAN
MATCHLINE C
MATCHLINE B
Note: The Fire Island National Seashore is surveyed by the National Park Service. Approximate locations of survey sites are denoted by ★
LEGEND
ASSESSMENT OF BREACH VULNERABILITY
L LOW
M MODERATE
H HIGH
COMMUNITY NAME
ACCESS ROUTES
FIRE ISLAND NATIONAL SEASHORE WILDERNESS AREA
VULNERABLE BREACH LOCATION MAP
FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN
0 2500 5000 7500
SCALE 1:5000
MOFFATT & NICHOL ENGINEERS
BALTIMORE, MARYLAND

Figure 4c



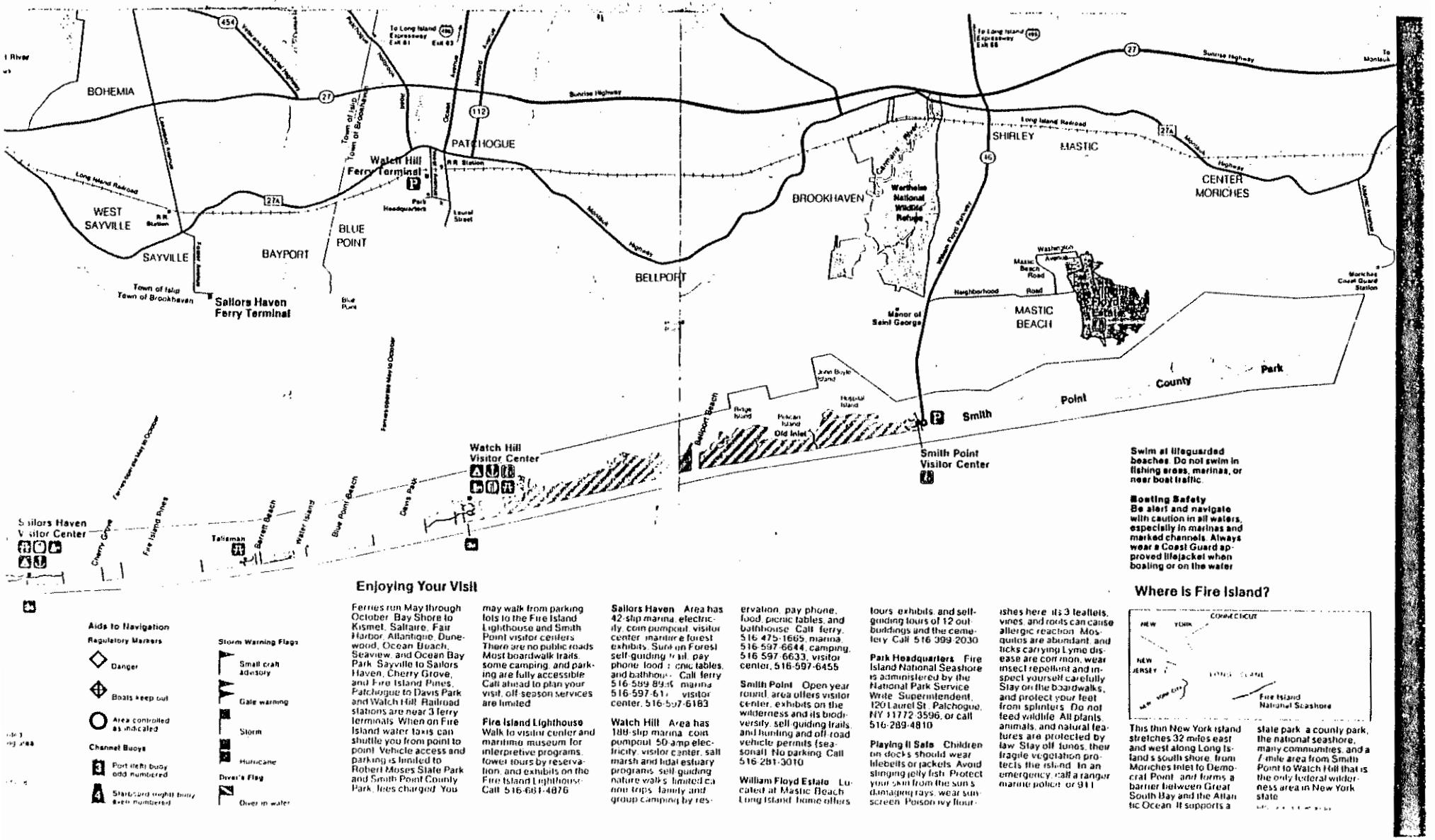
VULNERABLE BREACH LOCATION MAP

FIRE ISLAND INLET TO SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
BREACH CONTINGENCY PLAN

Figure 4d

Figure 5a

(Reprinted with FIIS permission)



Enjoying Your Visit

Ferries run May through October. Bay Shore to Kismet, Saltaire, Fair Harbor, Atlantique, Dunewood, Ocean Beach, Seaview, and Ocean Bay Park. Sayville to Sailors Haven, Cherry Grove, and Fire Island Pines. Patchogue to Davis Park and Watch Hill. Railroad stations are near 3 ferry terminals. When on Fire Island water taxis can shuttle you from point to point. Vehicle access and parking is limited to Robert Moses State Park and Smith Point County Park; fees charged. You may walk from parking lots to the Fire Island Lighthouse and Smith Point visitor centers. There are no public roads. Most boardwalk trails, some camping, and parking are fully accessible. Call ahead to plan your visit; off-season services are limited.

Fire Island Lighthouse Walk to visitor center and maritime museum for interpretive programs, tower tours by reservation, and exhibits on the Fire Island Lighthouse. Call 516-661-4876.

Sailors Haven Area has 42-slip marina, electricity, coin pumpout, visitor center, manmade forest exhibits, Sunken Forest self-guiding trail, pay phone, food, picnic tables, and bathhouse. Call ferry, 516-475-1665; marina, 516-597-6644; camping, 516-597-6633; visitor center, 516-597-6455.

Smith Point Open year round; area offers visitor center, exhibits on the wilderness and its biodiversity, self-guiding trails, and hunting and off-road vehicle permits (seasonal). No parking. Call 516-281-3010.

Watch Hill Area has 188-slip marina, coin pumpout, 50-amp electricity, visitor center, salt marsh and tidal estuary programs, self-guiding nature walks, limited canoe trips, family and group camping by reservation, pay phone, food, picnic tables, and bathhouse. Call ferry, 516-475-1665; marina, 516-597-6644; camping, 516-597-6633; visitor center, 516-597-6455.

William Floyd Estate Located at Mastic Beach, Long Island, home offers tours, exhibits, and self-guiding tours of 12 outbuildings and the cemetery. Call 516-399-2030.

Park Headquarters Fire Island National Seashore is administered by the National Park Service. Write: Superintendent, 120 Laurel St., Patchogue, NY 11772-3596, or call 516-289-4810.

Playing It Safe Children on docks should wear lifebelts or jackets. Avoid stinging jelly fish. Protect your skin from the sun's damaging rays; wear sunscreen. Poison ivy flourishes here. Its 3 leaflets, vines, and roots can cause allergic reaction. Mosquitos are abundant, and ticks carrying Lyme disease are common; wear insect repellent and inspect yourself carefully. Stay on the boardwalks, and protect your feet from splinters. Do not feed wildlife. All plants, animals, and natural features are protected by law. Stay off dunes; their fragile vegetation protects the island. In an emergency, call a ranger, marine police, or 911.

Swim at lifeguarded beaches. Do not swim in fishing areas, marinas, or near boat traffic.

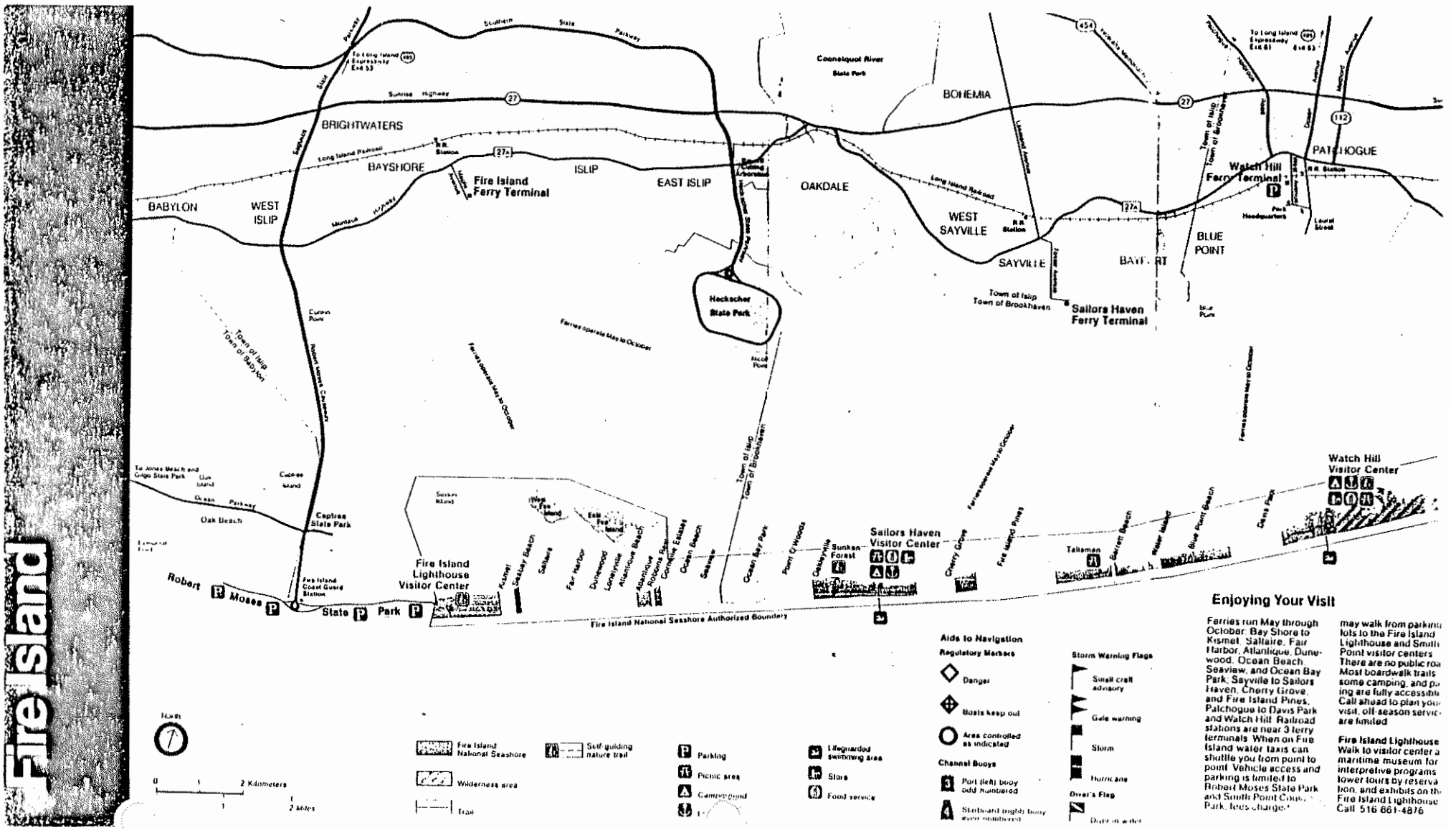
Boating Safety
Be alert and navigate with caution in all waters, especially in marinas and marked channels. Always wear a Coast Guard approved lifejacket when boating or on the water.

Where is Fire Island?

This thin New York island stretches 32 miles east and west along Long Island's south shore, from Moriches Inlet to Democrat Point, and forms a barrier between Great South Bay and the Atlantic Ocean. It supports a state park, a county park, the national seashore, many communities, and a 7-mile area from Smith Point to Watch Hill that is the only federal wilderness area in New York state.

Figure 5b

(Reprinted with FIIS permission)



SHORELINE PROTECTION PROJECTS IN NEW YORK DISTRICT

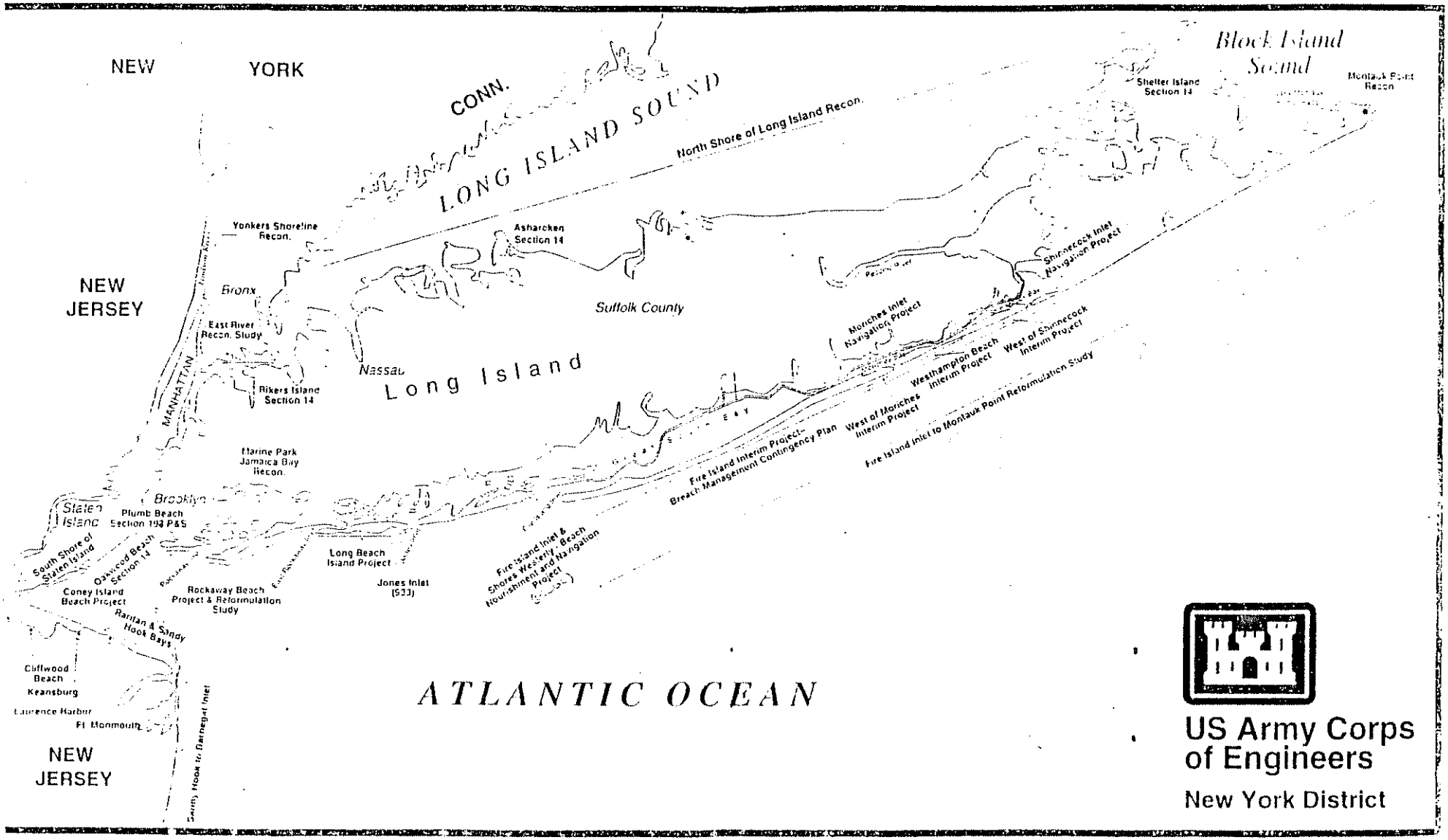
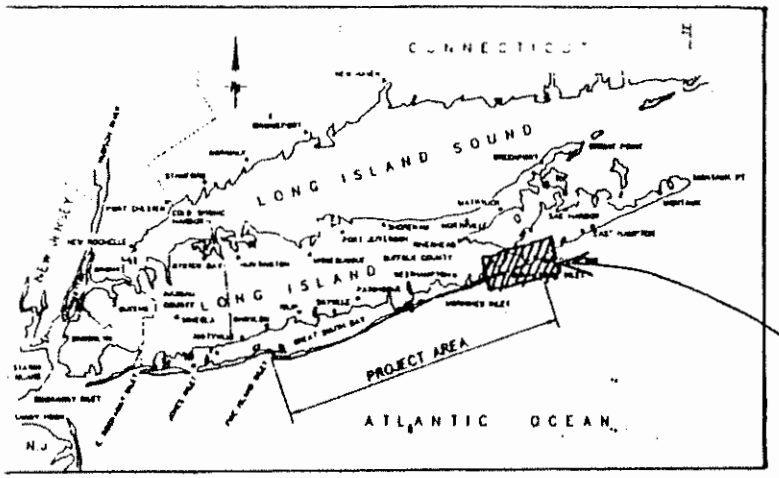


Figure 7 : Seabeach Amaranth Action Area



PONQUOGUE

SHINNECOCK BAY

SOUTHAMPTON

LANES ISLAND

PONQUOGUE BRIDGE

PONQUOGUE POINT

Halsey Neck Lane

First Neck Lane

TIANA BEACH

SOUTHAMPTON BEACH

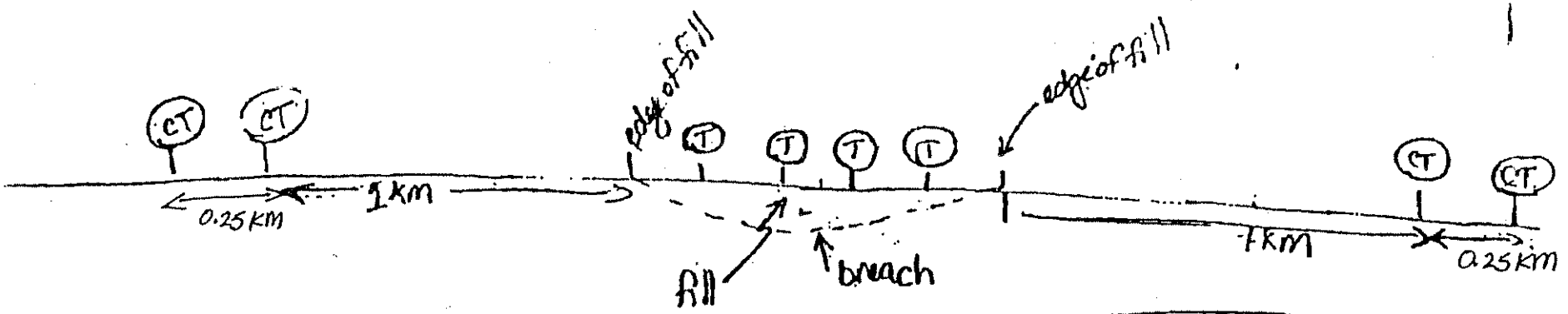
SHINNECOCK INLET

← To Fire Island Inlet — BCP Project Area —

← To Fire Island Inlet — Seabeach Amaranth Action Area

CT = [illegible] transect

Figure 8a [illegible] locations



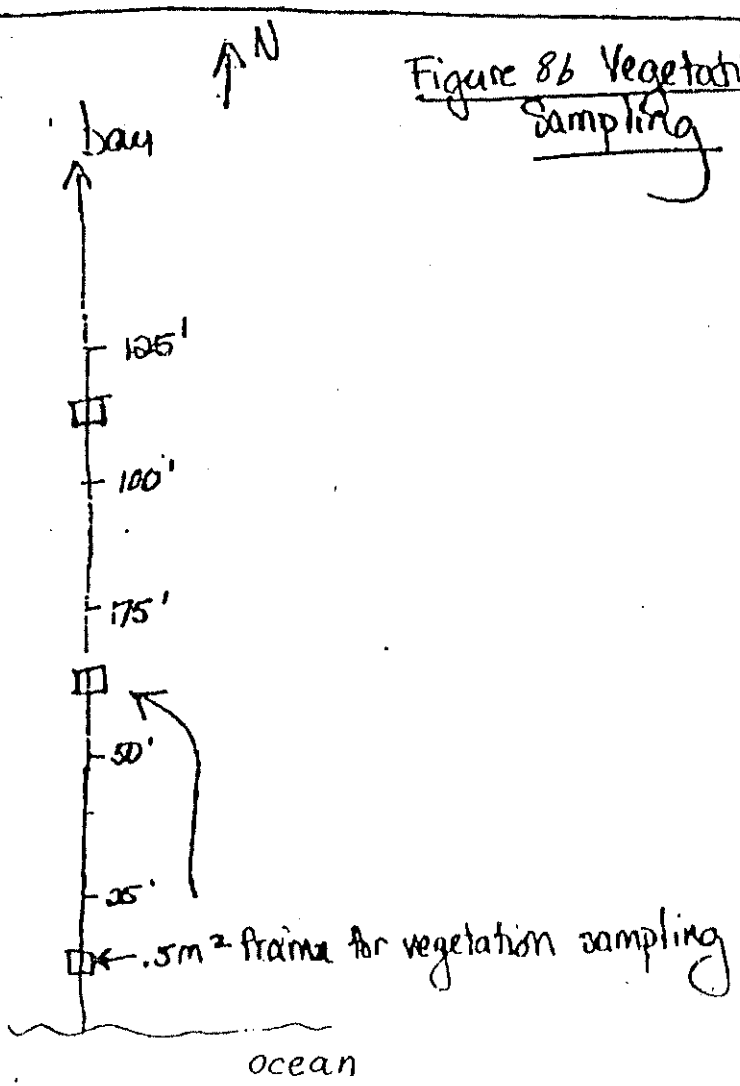


Figure 8b Vegetation Sampling

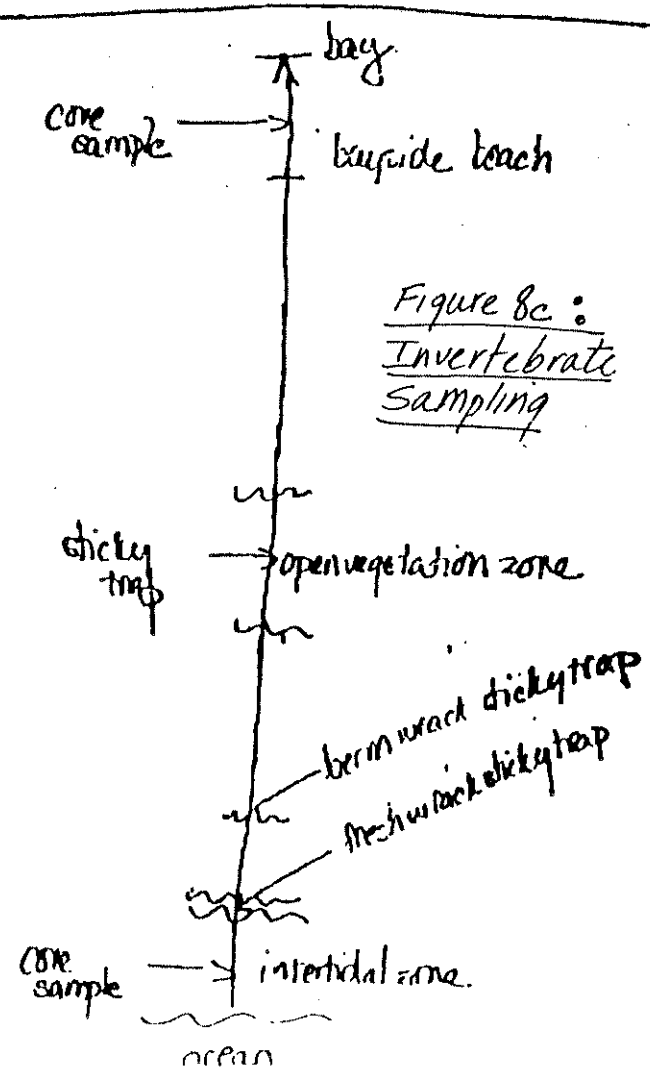


Figure 8c: Invertebrate Sampling

Table 1

Summary of Atlantic Coast Piping Plover Population Estimates, 1986 to 1994

STATE/REGION	PAIRS								
	1986	1987	1988	1989	1990	1991	1992	1993	1994
Maine	15	12	20	16	17	18	26	32	35
Massachusetts	139	126	134	137	139	160	213	289	352
Rhode Island	10	17	19	19	28	26	20	31	32
Connecticut	20	24	27	34	43	36	40	24	30
NEW ENGLAND	184	179	200	206	227	240	297	376	449
New York	106[1]	135[1]	168[1]	191	186	191	187	192	209
New Jersey	102[2]	93[2]	105[2]	128	126	126	134	127	124
NY-NJ REGION	208	228	273	319	312	317	321	319	333
Delaware	8	7	3	3	6	5	2	2	4
Maryland	17	23	25	20	14	17	24	19	32
Virginia	100	100	103	121	125	131	97	106	96
North Carolina	30[3]	30[3]	40[3]	55	55	40	49	53	54
South Carolina	3	-	-	-	-	1	-	-	-
SOUTHERN REGION	158	160	171	199	200	194	172	180	186
U.S. TOTAL	550	567	644	724	739	751	790	875	968
ATLANTIC CANADA	240	223	238	233	229	236	236[4]	236[4]	182
ATLANTIC COAST TOTAL	790	790	882	957	968	987	1026	1111	1150

[1] The recovery team believes that this estimate reflects incomplete survey effort. See discussion on page ___.

[2] The New Jersey plover coordinator estimates that one quarter to one third of the apparent population increase between 1986 and 1989 is due to increased survey effort.

[3] The recovery team believes that the apparent 1986-1989 increase in the North Carolina population is due to intensified survey effort. See discussion on page __. No actual surveys were made in 1987; estimate is that from 1986.

[4] 1991 estimate.

Table 2

Summary of Piping Plover Productivity Estimates for the U.S. Atlantic Coast, 1987 - 1994

STATE/REGION	CHICKS FLEDGED/PAIR[1]								
	1987	1988	1989	1990	1991	1992	1993	1994	1988-1994 AVERAGE[2]
Maine	1.75 (12)	.75 (20)	2.38 (16)	1.53 (17)	2.50 (18)	2.00 (24)	2.38 (32)	2.0 (35)	1.96 (162/162)
Massachusetts	1.1 (89)	1.29 (114)	1.59 (123)	1.38 (125)	1.72 (156)	2.03 (206)	1.92 (264)	1.80 (334)	1.75 (1322/1424)
Rhode Island	1.13 (19)	1.6 (19)	1.47 (19)	.90 (26)	.77 (26)	1.55 (20)	1.80 (30)	2.0 (32)	1.46 (172/175)
Connecticut	1.29 (24)	1.7 (27)	1.79 (34)	1.63 (43)	1.39 (36)	1.45 (40)	.38 (24)	1.47 (30)	1.44 (234/234)
NEW ENGLAND		1.32 (180)	1.68	1.38	1.62	1.91	1.85	1.81	1.70 (1890/1995)
New York	.9 (39)	1.24 (42)	1.02 (62)	.80 (70)	1.09 (158)	.98 (130)	1.24 (125)	1.34 (131)	1.12 (718/1324)
New Jersey	.85 (93)	.94 (105)	1.12 (128)	.93 (126)	.98 (126)	1.07 (134)	.93 (127)	1.16 (124)	1.02 (870/870)
NY-NJ REGION		1.03	1.09	.88	1.04	1.03	1.08	1.25	1.06 (1588/2194)
Delaware		0 (3)	2.33 (3)	2.00 (6)	1.60 (5)	1.00 (2)	.50 (2)	2.5 (4)	1.60 (25/25)
Maryland	1.17 (23)	.52 (25)	.9 (20)	.78 (14)	.41 (17)	1.00 (24)	1.79 (19)	2.41 (32)	1.22 (151/151)
Virginia		1.02 (64)	1.16 (32)	.65 (63)	.88 (43)	.59 (39)	1.45 (49)	1.65 (58)	1.07 (348/779)
North Carolina			.59 (49)	.43 (14)	.07 (14)	.42 (41)	.74(53)	.4 (48)	.51 (219/346)
SOUTHERN REGION		.85	.88	.72	.68	.62	1.18	1.42	.95 (743/1301)
U.S. AVERAGE	1.04	1.11 (419)	1.28 (486)	1.06 (504)	1.22 (599)	1.35 (660)	1.47 (725)	1.57 (828)	1.33 (4221/5490)
ATLANTIC CANADA		1.65 (46)	1.58 (99)	1.62 (105)	1.07 (137)	1.55 (135)	.69 (78)		1.34 (600/1590)

[1] Parentheses indicate number of pairs on which productivity estimate is based.

[2] Parentheses indicate number of pairs on which productivity is based / estimated number of nesting pairs in the state or region between 1988 and 1994.

Table 3

Estimated Number of Piping Plover Pairs from 1986-1994[2]

SITE NAME	1986	1987	1988	1989	1990	1991	1992	1993	1994
Southampton Beach	3	3	3	5	4	4 (4)	7 (3)	7 (5)	6 (13)
Westhampton Island Tiana Beach	6	8	10	9	3	10 (1)	5 (4)	5 (4)	7 (4)
Westhampton Island Hampton Beach	2	0	1	1	1	0	0	1 (0)	1 (0)
Westhampton Island Westhampton Beach (Groins 1 - 15)	4	20	18	16	18	11 (NS)	3 (3)	16 (7)	9 (3)
Westhampton Island West: (Pikes Beach)	0	0	0	NS	0	0	0	5 (5)	15 (15)
Westhampton Island West: (Cupsogue County Park)	2	5	4	6	5	4 (NS)	6 (7)	3 (2)	5 (1)
Fire Island East (Smith Point County Park)	2	2	3	3	5	7 (NS)	7 (1)	2 (2)	4 (1)
Fire Island Old Inlet	NS	NS	3 (3)	NS	NS	NS	NS	1 (0)	1 (0)
Fire Island Watch Hill/ Long Cove	0	1	1 (0)	1	0	1 (2)	2 (2)	4 (NS)	2 (0)
Fire Island Sailors Haven	NS	NS	NS	NS	NS	1 (2)	1 (NS)	1 (3)	2 (0)
Fire Island Lighthouse: (Including RM Fields 4 & 5)	0	2	3	0	2	1 (NS)	1 (0)	0	1 (0)
Fire Island Democrat Point	2	2	2	4	1	2 (0)	2 (0)	2 (4)	1 (0)

NS = Not surveyed or no data available
( ) = Numbers in parentheses refer to piping plover productivity (# chicks fledged per pair).

---

[2] Slight differences exist between the data reported by the NYSDEC, TNC, and Seatuck Foundation, primarily resulting from variations in site names and boundaries. Data reflecting the number of pairs in Westhampton were taken from the U.S. Fish and Wildlife Service (1994).

TABLE 4

Range-wide Numbers of Populations, Plants and Density for Seabeach Amaranth, 1987-1994

Year	1987	1988	1989	1990	1991	1992	1993	1994
Number of sub-populations	39	45	H	56	NS	NS	NS	NS
Number of plants	11,740	43,651	H	11,432	--	--	--	--
Avg. Density/km	26*	97*	H	19**	--	--	--	--

Key

H = Hurricane Hugo struck, presumably, no survey was completed.
NS = No survey (Murdock, pers. comm. 1994)
* = 450 km of shoreline in NC and SC (Weakley and Bucher 1992) used for calculation.
** = 575 km of shoreline in NC, SC, and NY (Weakley and Bucher 1992) used for calculation.

TABLE 5

Statewide Number of Populations, Plants, and Density of Seabeach Amaranth, 1990-1994

Year	1990	1991*	1992	1993	1994
Number of populations	13	13/6	9	10	9
Number of plants	357	2051/796	567	221	186
Avg. density/km☼	2.9	16.4/6.6	4.5	1.8	1.5

Key

* = Hurricane Bob year.
/ = before Hurricane Bob/immediately after Hurricane Bob.
☼ = Note: 125 km used for the calculation of density on Long Island (Weakley and Bucher 1992).

TABLE 6

Estimated Number of Seabeach Amaranth Plants 1990-1994[3]

SITE NAME	1990	1991A	1991B	1992	1993	1994
Southampton Beach	NS	8	NS	27	7	9
Westhampton Island Tiana Beach	4	1	NS	0	3	1
Westhampton Island Hampton Beach						9
Westhampton Island Westhampton Beach (Groins 1 - 15)	33	1350/202	147	72	13	0
Westhampton Island West: Pikes Beach portion	NS	100/1	47	20	1	25
Westhampton Island West: Cupsogue County Park portion	9	45/13	0	1	1	0
Fire Island East: Smith Point County Park	3	64/19	NS	0	1	11
Fire Island Old Inlet	0	0	NS	3*	NS	3*
Fire Island Watch Hill/Long Cove Water Island				3*	NS	1* 3*
Fire Island:						
Fire Island Pines	0	0	NS	0	0	NS
Sailors Haven/Sunken Forest	1	0	NS	0	0	NS
FI Villages (communities)	1	NS	NS	NS	0	NS
Fire Island Lighthouse: (Including RM Fields 4 & 5)	0	0	NS	0	0	0
Fire Island: Democrat Point	80	80	8	1*	0	0

NS = No data available or site not surveyed

1991A = Mid-season survey (between June and September 1)

1991B = Late-season survey (between September 15 and October 21)

/ = Before Hurricane Bob/immediately after Hurricane Bob

* = Data from FIIS biologists and unpublished FIIS reports

Note: In 1991 the late-season count required some guesswork due to sand burial from storms and seedling germination. In 1992, there were no major storms until after the growing season.

[3] Most data taken from TNC's annual seabeach amaranth reports (1993 and 1994a). Additional information on Fire Island came from unpublished FIIS reports (1994), and from FIIS biologists (Ebert 1994, pers. comm.)

BREACH CONTINGENCY PLAN
FIRE ISLAND INLET TO MONTAUK POINT
LONG ISLAND, NEW YORK
REFORMULATION STUDY

APPENDIX H

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

November 20, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. William F. Barton
Chief, Consistency Review and Analysis Bureau
Department of State
Division of Coastal Resources and Waterfront Development
162 Washington Avenue
Albany, New York 12231-0001

Attn: Mr. Steve Resler

Dear Mr. Barton:

This letter is in reference to CZM Application F-95-368, Fire Island to Montauk Point, New York, Breach Contingency Plan.

In light of recent correspondence between our staffs, the New York District grants your request for an extension for the Department of State consistency decision. The extension is needed in order for the New York District and Department of State to agree upon conditions regarding the use of steel sheetpiling for facilitating breach closure.

This letter will serve as a fifteen day extension, effectively extending the review period end date from 17 November 1995 to 4 December 1995.

Any questions regarding this extension can be addressed to Mr. Peter Weppler at 212-264-4663. For any further technical information please contact either Mr. Clifford Jones, or Mr. Stephen Couch at 212-264-9077.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

November 17, 1995

Mr. Stuart Piken
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: F-95-368
Fire Island to Montauk Point, New York Breach Contingency Plan

Extension for Determination of Consistency with the New York Coastal Management Program

Dear Mr. Piken:

The Department of State and the Corps of Engineers are attempting to develop conditions under which permanent sheet steel piling may be used in the Breach Contingency Plan. To date, the Department of State has not received the Corps' response to the draft conditions and guidelines that we prepared that could be considered in deciding when permanent sheet steel piling would or would not be allowed after breaches are filled. Our decision to agree or disagree with your consistency determination is due today.

Since both agencies have not yet agreed to conditions under which permanent sheet steel piling could be used, I would appreciate it if you or your staff would please indicate, before the close of business today, whether or not the Corps will agree to a further extension of time for our decision. This extension of time should be until the Corps and the Department of State agree on the conditions under which permanent sheet steel piling would be used in the Breach Contingency Plan.

Sincerely,

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

WFB/SCR

RECYCLED PAPER

locations of seabeach amaranth.

d. To preserve feeding habitat, the removal of natural organic material deposited on the beach by the tides (wrack) shall be prohibited during the breeding season in the areas used by plovers. Mechanical beach cleaning of any kind shall be prohibited, however, trash and litter may be manually removed from the wrackline.

e. Landowners will be requested to refrain from the following activities:

1. Use of fireworks on beaches where Piping Plovers nest from March 15 to August 31, or the date of last fledgling, whichever is later.

2. Kite flying within 200 meters of nesting or territorial adult or unfledged juvenile Piping Plovers from March 15 to August 31.

f. Because dogs and cats are common predators of Piping Plover eggs and chicks, pets should be leashed and under control at all times from March 15 to August 31 on beaches in the action area where Piping Plovers are present.

g. To minimize predators, no feeding of raccoons, gulls or other wildlife shall occur.

95-20-1 (8/87)—9d

New York State
Department of Environmental Conservation

NOTICE

The Department of Environmental Conservation (DEC) has issued permit(s) pursuant to the Environmental Conservation Law for work being conducted at this site. For further information regarding the nature and extent of work approved and any Departmental conditions on it, contact the Regional Permit Administrator listed below. Please refer to the permit number shown when contacting the DEC.

Regional Permit Administrator

ROBERT A. GREENE

Permit Number 1-4799-00023/00001

Expiration Date 4/5/2006

NOTE: This notice is **NOT** a permit

This letter is an amendment to the original permit and, as such, shall be available at the job site whenever authorized work is in progress.

All other terms and conditions remain as written in the original permit.

Very truly yours,

Roger Evans

Roger Evans
Permit Administrator

cc: B.Daley, DOW-Albany

United States Department of the Interior

FISH AND WILDLIFE SERVICE

3817 Luker Road
Cortland, New York 13045

January 24, 1996

Mr. Stuart Piken, P.E.
Chief, Planning Division
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Attention: Peter Weppler

Dear Mr. Piken:

The U.S. Fish and Wildlife Service (Service) has reviewed your November 24, 1995, request for opinion relating to an exception under Section 6 of the Coastal Barrier Resources Act (CBRA) for the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan (BCP). We apologize for the delay in responding to your request. Employees in this office were furloughed for three weeks from December 18, 1995, through January 5, 1996, due to a lack of Congressionally-authorized funding.

The November 24 request did not include a project description. Our comments are based on the assumption that the project description is the same as that identified in our July 14, 1995, **Biological Opinion on the Fire Island to Montauk Point Long Island, New York Breach Contingency Plan and Fire Island Inlet to Moriches Inlet, New York, Interim Breach Management Plan.** Page I of the Executive Summary indicates:

> "These plans are designed to identify the emergency response necessary to fill breaches that occur within the action area and to subsequently restore the design fill profile, while minimizing the effect of these activities on Federally threatened species, piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*)."

The goal of the proposed action identified in that document is:

> "The goal of the breach closure planning process is to pro-actively establish a set of operating guidelines for the rapid and cost effective closure of barrier island breaches that minimizes storm changes to the Fire Island and Westhampton barrier islands and Southampton barrier spit, backbay areas, and corresponding portions of Long Island's southern mainland shoreline."

h. Access by chicks to the wrackline, waters edge and other feeding areas shall not be impeded. Wrackline disturbance shall not occur in the area of unfledged chicks.

II. If the proposed fill activity occurs during the seabeach amaranth growing season (May 1 through November 1):

a. A qualified seabeach amaranth surveyor, approved by the Service shall be retained prior to commencement of the proposed activity. No more than one week prior to commencement of any on-site project activity in the action area to close the breach, the surveyor shall conduct a technically sound survey commensurate with currently accepted methods of the action area (landing, staging, operation, sand transport, beach nourishment,and breach closure area) in order to document the presence or absence of seabeach amaranth. The survey method shall provide adequate coverage of the range of the plants occurrence in the action area. An example of a potential technique is walking a zigzag line along the beach from the most recent high tide line or berm to the crest of the dune. The surveyor shall maintain field notes which shall be provided to the Service along with survey methodologies.

b. The surveyor shall identify and delineate seabeach amaranth locations and determine, with consultation by the Service, if buffer zones can be established to avoid disturbance of seabeach amaranth plants. Construction activities for beach nourishment and breach closure including landing, staging, operation, and sand transport activities shall avoid locations of seabeach amaranth. Conditions 1.f .above regarding a system of notification with further consultation, flexibility in project timing shall also apply to seabeach amaranth.

Protection Agreement

1. The landowners will be requested to provide full cooperation with the Service, the New York State Department of Environmental Conservation, or their designated representatives in protecting Piping Plovers (Charadrius melodus) and seabeach amaranth (Amaranthus pumilus) that may occur in the action area, and to accept the following protection measures:

   a. The Service, the New York State Department of Environmental Conservation, or their designated representatives shall be given access to the action area for the purpose of surveying, monitoring, posting, and/or symbolically fencing Piping Plover courtship,nest and brood rearing areas, and erecting predator enclosures for nests during the plover breeding season (March 15 through August 31) and; for the purpose of surveying seabeach amaranth during the growing season (May 1 to November 1). Access shall be given during daylight hours on any day(s) of any given year at the required frequency to accomplish the purpose stated above.

   The symbolic fencing may be placed in a 50 meter radius around nest sites where pedestrians, joggers, picnickers. fisherman, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers, their eggs or chicks.

   The symbolic fencing may be placed in a 10 foot radius around seabeach amaranth plants.

   b. Redevelopment construction activity as a result of the breach occurrence shall be prohibited within 300 feet of a symbolically fenced courtship, nest or brood rearing area.

   c. Except in emergencies, off-road vehicular traffic, including all terrain vehicles, shall be prohibited on the beaches in the action area during the breeding (March 15 through August 31) in areas traditionally used by Piping Plovers, and in areas where they become established. Under certain conditions, and if approved by the Service, very limited use of essential vehicles may be permitted for activities such as trash removal or other management activities. The Service shall be notified, in advance, of the circumstances regarding the need for such limited use by essential vehicles. Off-road vehicles shall also avoid any identified

Plan A

I. If the proposed fill activity will occur during the Piping Plover nesting season (March 15 through August 31)

a. **Hire Qualified Bird Monitor**
A qualified endangered species bird monitor, approved by the Service shall be retained prior to commencement of the proposed activity through project completion but not beyond September 1, or the date of last fledgling, whichever is later. (Dredge pipe installation and removal, and machinery operation is considered part of the proposed activity.) Plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters (49.21 feet), whichever occurs first.

b. **Pre-activity Survey**
No more than one week prior to commencement of any on-site project activity in the action area to close the breach, the monitor shall conduct at least three days of surveys of the action area (landing, staging, operation, sand transport, beach nourishment, and breach closure area) for occurrence of territorial, courting or nesting Piping Plovers (pre-activity survey). Each days monitoring shall consist of three surveys to be conducted during different times of the tidal cycle. Should a delay of commencement of the proposed activity allow for it, the surveys should occur for at least four days prior to commencement of the proposed fill activity.

c. **Concurrent-Activity Survey/Monitoring**
Following the "pre-activity" surveys of the action area as described in b. above, surveys/monitoring shall continue from the initiation of on-site activity in the action area through July 1 at a frequency of at least three days per week/three times per day, covering different times of the tidal cycle on each of the three days. During this phase, in addition to identifying and posting activities (surveying), the monitor shall also be observing for disturbance to plovers from project activities (monitoring). If no Piping Plovers (territorial, courting or nesting) are detected by July 1 in the action area during the minimum three day per week/three time per day surveys, monitoring can cease. If any Piping Plovers are detected (territorial, courting or nesting) at any time during the "concurrent-activity survey", the frequency of surveys/monitoring shall increase to a minimum of four days per week/three times per day and shall continue through project completion but not beyond August 30 or the date of last fledgling, whichever is later.

d. The monitor shall maintain field notes which shall be provided to the Service and NYSDEC on a weekly basis. The Service may modify survey and monitoring specifications based on site specific considerations to avoid any adverse effects.

e. Posting and Buffer Zone Establishment / Impact Monitoring

Courtship areas, nests, and brood rearing areas (including chick feeding areas) shall be posted immediately (supervised by the monitor) and no disturbance shall be permitted within 300 feet (90.68 meters) of the designated area. The boundaries of the protected areas shall be adjusted should plovers move outside the originally posted area. Posting will be conducted.

To establish boundaries for posting, determine the area within 300 feet of either side of the courtship area, nest, or brood rearing area along a line drawn perpendicular to the long axis of the beach. The resulting area should extend from the ocean side low water line to the bay side low water line. Monitors shall document any reactions to disturbance from the fill activity to determine the effectiveness of the 300 foot buffer. A reduction in buffer may be established, after consultation with USFWS due to natural or manmade features which inhibit piping plovers transversing the area.

In addition to identifying and posting activities, the monitor shall also be observing for disturbance to plovers from project activities.

f. System for Notification of Disturbance

A system of notification shall be established if it appears that disturbance of Piping Plovers cannot be avoided with the implementation of the project conditions. Notification shall include on-site contractors, the Corps, the Service, the NYSDEC. The on-site contractors shall be notified immediately and activities adjusted or halted to avoid disturbance. The Service shall be notified by the close of business that day and further consultation under Section 7 of the Endangered Species Act will be required.

g. The dredge disposal pipe shall be place offshore.

SPECIAL CONDITIONS

For Article 15 (Water Quality Certification)

27. The dredged material to be deposited in the breach and as beach replenishment shall conform with the existing substrate on the beach or consist of material that is capable of maintaining suitable Piping Plover and Seabeach Amaranth habitat.

28. The project design of the breach fill shall not exceed a final maximum elevation of 9 U.S.G.V.D. and shall adhere to the design features as specified in the plan. No overfill above 9 U.S.G.V.D. will be permitted.

29. This permit is valid for short-term breach closure activities only. Work beyond the scope of the closure design shall require additional approvals.

30. The borrow areas shall be dredged so as to create a gradual (1:3 maximum) slope down to final project depth.

31. Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to a approved upland area for disposal. No debris is permitted in tidal wetlands and or protected buffer areas.

32. To protect potential Piping Plover nest areas and Seabeach Amaranth areas that develop on the project deposition sites, the attached protection agreement must be implemented prior to commencement of the project. Permittee shall ensure an educational program is implemented on Fire Island that informs residents and landowners of the attached Protection agreement. The Department in cooperation with the Fire Island Association and the National Park Service will inform and advise applicable landowners or Fire Island associations of the protective measures specified in the attached protection agreement to establish landowner cooperation to the greatest extent possible.

Supplementary Special Conditions A Thru F Attached.

The following conditions apply to all Tidal Wetlands; Freshwater Wetlands; Coastal Erosion Management; and Wild, Scenic, and Recreational Rivers Permits:

A. A copy of this permit, including all conditions and approved plans, shall be available at the project site whenever authorized work is in progress. The permit sign enclosed with the permit shall be protected from the weather and posted in a conspicuous location at the work site until all authorized work has been completed.

B. The permittee shall require that any contractor, project engineer, or other person responsible for the overall supervision of this project reads, understands, and complies with this permit and all its general, special, and supplementary special conditions. Any failure to comply precisely with all of the terms and conditions of this permit, unless authorized in writing, shall be treated as a violation of the Environmental Conservation Law. If any of the permit conditions are unclear, the permittee shall contact the Division of Regulatory Affairs at the address on page one or telephone (516) 444-0365.

C. If project design modifications become necessary after permit issuance, the permittee shall submit the appropriate plan changes for approval by the Regional Permit Administrator prior to undertaking any such modifications. The permittee is advised that substantial modification may require submission of a new application for permit.

D. At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of the permitted work, the bottom portion of that form shall also be signed and returned, along with photographs of the completed work and, if required, a survey.

E. For projects involving activities to be undertaken in phases over a period of more than one year, the permittee shall notify the Regional Permit Administrator in writing at least 48 hours prior to recommencing work in subsequent years.

F. The granting of this permit does not relieve the permittee of the responsibility of obtaining a grant, easement, or other necessary approval from the Division of Land Utilization, Office of General Services, Tower Building, Empire State Plaza, Albany, NY 12242 (516) 474-2195, which may be required for any encroachment upon State-owned lands underwater.

SPECIAL CONDITIONS

For Article 15 (Water Quality Certification)

3. There will be no expansion of bottom of channel width by any dredging.

4. Upland fill utilized to fill the breach must be equal to or of larger grain size than beach sand grain size at the project site. Grain size shall be compatible with existing beach material.

5. Permittee will ensure that monitoring "The Impacts of Filling Breaches on Fire Island National Seashore" (Schedule A) will be conducted by the National Park Service, pending availability of funding, from Moriches Inlet to the western boundary of Fire Island National Seashore. NYSDEC and NYS O.P.R. will conduct the monitoring program, pending availability of funding, at Robert Moses State Park should the breach occur at that location.

   The final monitoring design (Schedule A) will be created after consultation with the U.S.F.W.S, NYSDEC and F.I.N.S. staff within 60 days if the breach event.

6. The storage of construction equipment and materials shall be confined to within the project work site and or upland areas greater than 75' distant from the tidal wetland boundary.

7. All fill shall consist of "clean" sand (Not asphalt, slag, flyash, broken concrete or demolition debris).

8. Excavated sediments shall be placed directly into the disposal site or conveyance vehicle No sidecasting (double dipping) or temporary storage of dredge material is authorized.

9. Dredged sediments shall be contained in sealed water tight trucks.

10. There shall be no disturbance to vegetated tidal wetlands outside the boundaries of the breach as a result of the permitted activity.

11. All dredging shall be conducted so as to leave a uniform bottom elevation free of mounds or holes at the completion of the dredging activity.

12. Within 30 days of completion of dredging operation a dredged survey shall be submitted to the Region I Marine Habitat Protection and NY District U.S.A.C.O.E.

13. Only burlap material sandbags may be utilized in any temporary sandbagging operation.

SPECIAL CONDITIONS

For Article 15 (Water Quality Certification)

14. Longard tubes will be removed, if possible upon completion of filling of breach, or when they become exposed.

15. Within 30 days of the breach filling the permittee shall supply a topographical survey of the filled area to Region I Marine Habitat Protection and N.Y. District U.S.A.C.O.E.

16. Beach nourishment material will be compatible with adjacent surface material.

17. Burlap sand bags will be removed if they become exposed.

18. Permittee will maintain a list of Endangered Species bird monitors that will be reviewed and approved on an annual basis by U.S.F.W.S.

19. Permittee will maintain a list Seabeach Amaranth monitors that will be approved on an annual basis by the U.S.F.W.S.

20. Nest enclosures will be installed on all Piping Plover nests within 600' of the project area provided the owner provides permission to the permittee.

21. At any time there are regulated activities ongoing between March 15 and August 31, a bird monitor will be on site to monitor endangered species activity and avoid disturbance to said species.

22. Permittee will attempt to obtain right of entry from all landowners within the study area of Schedule A to install fencing and posting to protect endangered species between March 15 - August 31.

23. Permittee may modify Schedule A monitoring after consultation with U.S.F.W.S. if environmental conditions warrant such modifications.

24. Permittee will comply with attached Plan A.

25. The contractor and employees shall be adequately informed of Endangered Species Act concerns, and contractor specifications written accordingly.

26. The beach disposal area(s) shall be finished to a natural grade and contour to maintain suitable nesting habitat for Piping Plovers and potential growing habitat for seabeach amaranth in the project area.

DESCRIPTION OF AUTHORIZED ACTIVITY

- Place burlap sandbags from the east side to the west side across the breach, no greater than elevation 9 U.S.G.V.D. to act as a temporary dam until fill is available.
- Install Longard Tubes along the east side and west side of the breach from the Atlantic Ocean shoreline to the backbay shoreline.
- Install Longard Tubes from the east side to the west side across the breach, no greater than elevation 9 U.S.G.V.D. to act as a temporary dam until fill is available.
- Grain size for fill material shall conform with the existing beach substrate and consist of material that is capable of maintaining suitable piping plover and seabeach amaranth habitat.
- Side slopes for channel areas will be a minimum of 1:3.
- Side slopes for borrow areas will be a minimum of 1:5.

NYS1&2.KAK

ADDITIONAL GENERAL CONDITIONS FOR ARTICLES 15 (Title 5), 24, 25, 34 and 6 NYCRR Part 608 (Water Quality Certification)

9. That if future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

10. That the State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

11. Granting of this permit does not relieve the applicant of the responsibility of obtaining any other permission, consent or approval from the U.S. Army Corps of Engineers, U.S. Coast Guard, New York State Office of General Services or local government which may be required.

12. All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

13. Any material dredged in the prosecution of the work herein permitted shall be removed evenly, without leaving large refuse piles, ridges across the bed of a waterway or floodplain or deep holes that may have a tendency to cause damage to navigable channels or to the banks of a waterway.

14. There shall be no unreasonable interference with navigation by the work herein authorized.

15. If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

16. If granted under 6 NYCRR Part 608, the NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

17. All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or his agent as part of the permit application.

Such approved plans were prepared by U.S. Army Corps. of Engineers approved on 4/5/96.

SPECIAL CONDITIONS

1. Snow fences may be installed within 45 days of the completion of placement of fill for the purpose of maintaining the fill area at the maximum elevation of 9 U.S.G.V.D., to trap windblown sand. Trapped windblown sand which accumulates above the maximum elevation of 9 U.S.G.V.D. as a result of the snow fencing will be spread above apparent high water on areas below elevation 9 U.S.G.V.D. Installation, removal and spreading shall occur between November 1 and April 1 to avoid the Piping Plover nesting season (March 15 through August 31) and seabeach amaranth growing season (May 1 to November 1). Installation, removal, and spreading can occur after September 1 with consultation by the Service provided a qualified seabeach amaranth surveyor, approved by the Service, has determined that either no plants occur in the area or plants have been adequately delineated such that buffer zones can be established and disturbance of the plants will not occur during the installation, removal or spreading operation. The survey shall be technically sound and commensurate with currently accepted methods. The surveyor shall maintain field notes which shall be provided to the Service along with survey methodologies.

2. U.S.A.C.O.E. Borrow sites (Sites A1-A4) may not be dredged greater than 20' below adjacent elevations outside the borrow area.

GENERAL CONDITIONS

Inspections

1. The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3). A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

Permit Changes and Renewals

2. The Department reserves the right to modify, suspend or revoke this permit when:
   a) the scope of the permitted activity is exceeded or a violation of any condition of the permit or provisions of the ECL and pertinent regulations is found;
   b) the permit was obtained by misrepresentation or failure to disclose relevant facts;
   c) new material information is discovered; or
   d) environmental conditions, relevant technology, or applicable law or regulation have materially changed since the permit was issued.

3. The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms, fees or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

4. The permittee must submit a renewal application at least:
   a) 180 days before expiration of permits for State Pollutant Discharge Elimination System (SPDES), Hazardous Waste Management Facilities (HWMF), major Air Pollution Control (APC) and Solid Waste Management Facilities (SWMF); and
   b) 30 days before expiration of all other permit types.

5. Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination perviously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

Other Legal Obligations of Permittee

6. The permittee has accepted expressly, by the execution of the application, the full legal responsibility for all damages, direct or indirect, of whatever nature and by whomever suffered, arising out of the project described in this permit and has agreed to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from this project.

7. This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

8. The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required for this project.

DESCRIPTION OF AUTHORIZED ACTIVITY

- Placement of 100,000 cubic yards of hydraulic dredge material, or mechanically placed upland fill, in any breach on Fire Island after a storm event.

- Breach will be filled to match existing shoreline to the north and south of the barrier island. A minimum width berm of 150' in width will be installed at a maximum elevation of 9 U.S.G.V.D. in the centerline of the barrier island between the backbay and the Atlantic Ocean.

- Dredge U.S.A.C.O.E. borrow areas (sites A1-A4) south of Fire Island in the Atlantic Ocean 2' below existing grade of borrow site and no greater than 20' below adjacent grade outside the borrow area, with side slopes to be a minimum of 1:5.

- Dredge federally authorized channels of Fire Island (site A1) and no greater than 2' below federally authorized depth.

- Dredge Intracoastal Waterway of Great South and Moriches Bay no greater than 2' below authorized depth (sites ICW1 to ICW2).

- Dredge Suffolk County Department of Public Works maintained channels no greater than 2' below authorized depth (sites GSB1 - GSB8).

- Dredge community, privately maintained channels or harbors, no greater than 2' below authorized depth (sites FI1 - FI5).

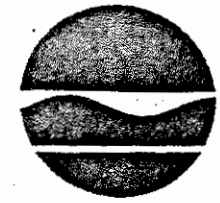
- Dredge breach "delta" (outwash) to same depth as adjoining shoals and/or littoral zone and place dredge material in the breach.

- Truck in upland sand and place in breach with up to 100,000 cubic yards of material.

- Truck in stockpiled dredge material and place in breach with up to 100,000 cubic yards of material (sites FIS1 - FIS15).

- Place burlap sand bags along the east and west side of the breach from the Atlantic Ocean shoreline to the backbay shoreline.

New York State Department of Environmental Conservation
Building 40 - SUNY, Stony Brook, New York 11790-2356
Telephone (516) 444-0365
Facsimile (516) 444-0373



Michael D. Zagata
Commissioner

April 10, 1996

U.S. Army Corps of Engineers
New York - Jacob Javits Federal Building
New York, NY 10278-0090

RE:1-4799-00023/00001

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit. Please read all conditions carefully. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather.

Very truly yours,

Kevin A. Kispert
Environmental Analyst I

KAK:jr
enclosure
File

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER 1-4799-00023/00001		EFFECTIVE DATE 4/5/96
FACILITY/PROGRAM NUMBER(S)	PERMIT Under the Environmental Conservation Law	EXPIRATION DATE(S) 4/5/2006

TYPE OF PERMIT ■ New ☐ Renewal ☐ Modification ☐ Permit to Construct ☐ Permit to Operate

- ☐ Article 15, Title 5: Protection of Waters
- ☐ Article 15, Title 15: Water Supply
- ☐ Article 15, Title 15: Water Transport
- ☐ Article 15, Title 15: Long Island Wells
- ☐ Article 15, Title 27: Wild, Scenic and Recreational Rivers
- ■ 6NYCRR 608: Water Quality Certification
- ☐ Article 17, Titles 7, 8: SPDES
- ☐ Article 19: Air Pollution Control
- ☐ Article 23, Title 27: Mined Land Reclamation
- ☐ Article 24: Freshwater Wetlands
- ☐ Article 25: Tidal Wetlands
- ☐ Article 27, Title 7; 6NYCRR 360: Solid Waste Management
- ☐ Article 27, Title 9; 6NYCRR 373: Hazardous Waste Management
- ☐ Article 34: Coastal Erosion Management
- ☐ Article 36: Floodplain Management
- ☐ Articles 1, 3, 17, 19, 27, 37; 6NYCRR 380: Radiation Control
- ☐ Other:

PERMIT ISSUED TO U.S. Army Corps of Engineers			TELEPHONE NUMBER
ADDRESS OF PERMITTEE New York - Jacob Javits Federal Building, New York, NY 10278-0090			
CONTACT PERSON FOR PERMITTED WORK Peter Weppler, U.S. Army Corps of Engineers			TELEPHONE NUMBER 212-264-4663
NAME AND ADDRESS OF PROJECT/FACILITY Fire Island Breach Contingency Plan, Fire Island Inlet East to Southampton Mainland			
LOCATION OF PROJECT/FACILITY			
COUNTY Suffolk	TOWN Babylon, Islip, Brookhaven & Southampton	WATERCOURSE Atlantic Ocean, Great South Bay, Moriches Bay, Shinnecick Bay	NYTM COORDINATES

DESCRIPTION OF AUTHORIZED ACTIVITY

See Attached Description.

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified (see page 2) and any Special Conditions included as part of this permit.

PERMIT ADMINISTRATOR: Roger Evans	ADDRESS Bldg. 40, SUNY, Room 219, Stony Brook, NY 11790-2356	
AUTHORIZED SIGNATURE Roger Evans	DATE 4/5/96	Page 1 of 7

survey/monitoring data sheets, and maps indicating the area of survey/monitoring, for the federally listed threatened and endangered species.

26. Copies of all interim and final reports/surveys/monitoring data/maps will be submitted to the Seashore upon their completion.

27. This permit does not authorize any entry upon, nor activities within, any lands not under the jurisdiction of the NPS. Such activities must be coordinated and authorized prior to entry, through the respective agency or owner.

28. Issuance of this permit by the NPS does not provide the permittee with preferential rights, (particularly use of motorized equipment in the Wilderness Area) nor does it assure future authorization to conduct similar activities in Fire Island National Seashore.

29. The foregoing provisions do not relieve the permittee or their subcontractors of any responsibility for compliance with all applicable federal, state laws, rules and regulations.

30. Failure to comply with the terms of this permit by the permittee, the permittee's employees or any other member of the breach construction and monitoring team will result in revocation of this permit and/or denial of those in the future.

Special Use Permit Number NFA FIIS _ _ _ _ _ _ _ _
(Conditions)

9. This Special Use Permit is conditional upon the FONSI issued by Fire Island National Seashore on April 9, 1996. All requirements of the FONSI must be met and become part of the conditions of this permit.

10. Permittee will immediately inform Seashore management of the area/location of pending breach closure emergency and the measures to be taken, when a request from the Governor of the State of New York, following a declaration of emergency for Federal Assistance, has been received by permittee.

11. Entrance to the breach closure area is exclusive to the: Critical Response team: National Park Service personnel, National Biological Service (NBS) personnel, Army Corps of Engineers (ACOE) personnel, U.S. Fish and Wildlife (USFWS) personnel, personnel from other state and local agencies, and contractors and their personnel when it is decided that the breach is to be closed. The National Park Service will retain the right to dismiss any persons from the area not associated with the project, any person in violation of this Special Use Permit (SUP), or any person in violation of any Seashore standing regulation.

12. No personal collecting of any kind is allowed under this SUP.

13. No archeological or vertebrate paleontological materials may be collected. The location of any historical or archeological remains found shall be reported and mapped and immediately made available to Seashore staff.

14. Breach closure procedures, as set forth in the conditions of the FONSI, will be initiated in the designated area within 72 hours of termination of a storm event that occurs along the barrier island chain from Fire Island Inlet to Southhampton.

15. A breach can be filled in the Wilderness Area only after inspection by the Critical Response Team including the NPS, USFWS, NBS, ACOE, state and local agencies. Once the storm subsides and the tides recede to normal height, it can be determined if the breach is filling in naturally. Only after the above conditions are met and consultation with the USFWS and other resource management agencies has occurred, and the decision is that the breach will not fill in naturally, will artificial closure in the Wilderness Area be undertaken.

16. No stockpiling is to occur in the Wilderness Area

17. A standardized Project Cooperation Agreement (PCA), to be pre-negotiated by the ACOE and the local sponsor (NY DEC) will be developed and made available to the Seashore.

18. A standardized breach emergency closure cross-section design to serve as the basis for preparing construction plans and specifications will be developed (and reviewed by the various agencies mentioned above) before any closure takes place.

19. Establish general borrow source locations (offshore, upland and stockpile areas) and delivery methods for the material (i.e. dredging, and trucking of upland material and stockpiled material). A map will be provided to the Seashore locating each of the source locations before closure is to occur.

20. Complete separate impact analyses to determine actual impacts of individual stockpiles (within the Watch Hill and Sailors Haven disturbed areas), when breach closure material stockpiling sand becomes available (i.e. beneficially utilizing disposal material from locally maintained channels) and when specific stockpile siting plans can be developed.

21. In the event property will need to be acquired in order to fill a breach, supply the Seashore with the mechanism that will be used in real estate acquisition (in coordination with the sponsor). Also provide to the Seashore a map of those areas/properties to be acquired.

22. Develop a contracting strategy to procure necessary equipment and services and provide a list of the equipment to be on-site to the Seashore.

23. Have on site the ACOE and the NY State DEC general or blanket joint permit to accomplish the proposed work. The permit will state all conditions for the proposed work including the provisions of this SUP.

24. Make available to the Seashore the environmental checks and monitors (as described in the BCP) both on the island and offshore, that will ensure maximum effort to preserve significant cultural resources, and natural resources (which include threatened and endangered species and their habitat) for construction actions related directly to putting sand in a breach in any area within Seashore jurisdiction that a breach fill will take place.

25. Before initiation of construction of breach filling, the permittee will provide the Seashore with the survey/monitoring protocol. This survey/monitoring protocol will be developed in consultation with the U.S. Fish and Wildlife Service and the Seashore. At the time of completion of construction of breach filling, the permittee will provide the Seashore with the

Form 10-114
Rev. Aug. 86
OMB No. 1024-0026

UNITED STATES DEPARTMENT OR THE INTERIOR
National Park Service

Special Use Permit

Name of Use Construction of Breach Fill

Date Permit Reviewed 19__ _____
Reviewed 19__ _____
Reviewed 19__ _____
Expires 19__ _____

Long Term _____
Short Term XX

Permit # - NFA - FIIS - - 9500 - - -
Region Park Type No #

Fire Island National Seashore
Name of Area

US Army Corps of Engineers (Name or Permittee) of NY District, CENAN-PL-EM, 26 Federal Plaza, NY, NY 10278 (Address) (212)264-9219 (Phone)

is hereby authorized during the period from (Time _____ day ____ Month ____ 19 __), through (Time _____ day ____ Month ____ 19 __), to use the following described land or facilities in the above named area:

For the purpose(s) of: filling an island breach

Authorizing legislation or other authority (RE- NPS-53 Appendix 1):

NEPA Compliance: CATEGORICALLY EXCLUDED ___ EA/FONSI XX EIS ___ OTHER APPROVED PLANS ___

PERFORMANCE BOND: Required ____ Not Required XX Amount $ _____

LIABILITY INSURANCE: Required ____ Not Required XX Amount $ _____

ISSUANCE of this permit is subject to the conditions on the reverse hereof and appended pages and when appropriate to the payment to the U.S. Dept. of the Interior, National Park Service of the sum of $ _____.

The undersigned hereby accepts this permit subject to the terms, covenants, obligations, and reservations, expressed or implied herein.

PERMITTEE _____ _____
Signature Date

Authorizing Official _____, _____ _____
Signature Superintendent Date

Additional Authorizing Official _____, _____ _____
(If Required) Signature Title Date

[illegible]

[illegible] also therefrom. Provided, [illegible]

[illegible] of the Superintendent in writing [illegible]

[illegible] permit may be [illegible]

[illegible]

[illegible]

[illegible] all information and reports required [illegible] September 3, 1965 [illegible]

[illegible]

[illegible] employees [illegible]

(c) The Permittee will send to each labor union or representative of workers with [illegible] contract or understanding [illegible] Superintendent [illegible] of the Permittee's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, as amended, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

[illegible] as amended, so that such provisions will be binding upon each [illegible] enforcing [illegible] provisions including sections [illegible] tractor or vendor [illegible] of such direction [illegible] tion to protect the interests of the United States.

The BCP is an interim plan until the reformulation plan is completed. Once the reformulation plan is completed, a breach contingency plan will no longer be required. Filling a breach will have minimal impacts on the natural and cultural resources of Fire Island National Seashore as long as the following controlling conditions are also implemented:

1) Should a breach occur, it is intended that the BCP be activated. Guidance for the actions that occur will be the BCP in order to pro-actively address the concerns of NPS, NBS, USFWS, ACOE, state and local agencies . An on site evaluation by NPS, NBS, USFWS, ACOE, state and local professionals will determine all actions to be taken.

2) U.S. Department of the Interior, National Park Service, Fire Island National Seashore Special Use Permit with conditions will be issued (based on this FONSI) for the emergency actions involved in the construction of breach fill on NPS lands. Consultation with the USFWS and other resource management agencies will also be used to develop the permit conditions.

3) As discussed in the BCP/EA, an Environmental Assessment (EA) for Specific Site Locations of Stockpiles on NPS lands (in the disturbed portions of Watch Hill and Sailors Haven areas) will be completed when material becomes available for stockpiling. Fire Island National Seashore, Seashore staff will work cooperatively with the ACOE to complete the environmental assessment(s) for those stockpile locations within the Seashore.

4) U.S. Department of the Interior, National Park Service Special Use Permit with conditions will be completed for site-specific stockpiling EA(s) on NPS lands once FONSI(s) have been prepared for the EA(s).

FINDING OF NO SIGNIFICANT IMPACT

Selection and implementation of the BCP Proposed Action, as described above and within the jurisdictional boundary of Fire Island National Seashore, and based upon the National Park Service adoption of the BCP/EA, will not constitute a major Federal action that would have significant impact on the quality of the human environment within the meaning of Section 102 (2) (c) of the National Environmental Policy Act of 1969. Therefore, preparation of an environmental impact statement is not necessary.

Date 4/9/96

Jack Hauptman
Superintendent
Fire Island National Seashore

Concurred: _____ Date 4/9/96

Marie Rust
Field Director, Northeast Field Area
National Park Service

* Breach closure will be initiated within 72 hours of termination of a storm event that occurs along the barrier island chain from Fire Island Inlet to Southampton.

* A breach can be filled in the Wilderness Area only after inspection by the Critical Response Team including the NBS coastal geomorphologist. Once the storm subsides, and the tides recede to normal height, it can be determined if the breach is filling in naturally. Only after the above conditions are met and the decision is made that the breach will not fill in naturally, will artificial closure be undertaken.

* No stockpiling is to occur in the Wilderness Area

* Develop a standardized Project Cooperation Agreement (PCA), to be pre-negotiated by the ACOE and the local sponsor (NY DEC)

* Establish a standardized breach emergency closure cross-section design to serve as the basis for preparing construction plans and specifications

* Establish general borrow source locations (offshore, upland and stockpile areas) and delivery methods for the material (i.e. dredging, and trucking of upland material and stockpiled material)

* Complete separate impact analyses to determine actual impacts of individual stockpiles (within the Watch Hill and Sailors Haven disturbed areas), when breach closure material stockpiling sand becomes available (i.e. beneficially utilizing disposal material from locally maintained channels) and when specific stockpile siting plans can be developed.

* Identify real estate acquisition methods (in coordination with the sponsor)

* Develop a contracting strategy to procure necessary equipment and services

* Establish project approval and contracting authorities for the reparation of minor, moderate, and major breach occurrences

* The ACOE and the NY State DEC will develop a general or blanket joint permit to accomplish the proposed work. A separate NPS Special Use Permit will also be required for that portion of implementation within the jurisdictional areas of the NPS.

* Establish environmental checks and monitors both on the island and offshore to ensure maximum effort to preserve significant cultural resources, and natural resources (which include threatened and endangered species and their habitat) for

construction actions related directly to putting sand in a breach, to be conditioned by the Joint Permit and Special Use Permit.

Three alternative approaches were considered in arriving at the proposed plan: the no action, breach closure activities under ACOE emergency Guidance and the proposed plan. No other alternatives were considered.

The no-action alternative would be no Federal actions taken to provide for breach closure.

The ACOE breach closure under emergency guidance would create a situation similar to the Westhampton Emergency Breach Closure.

On May 31, 1995, the EA was made available for public and interagency review and comment. Written comments were accepted until June 30, 1995.

Summary of Environmental Impacts

No specific indication of detailed impact analysis from stockpiling are noted in the BCP/EA. Therefore, as indicated in the Background and Proposed Action sections above, before stockpiling is to occur, specific EA(s) for stockpile sites will be prepared. The EA(s) will document impacts of the effects (i.e. dewatering, loss of vegetation/habitat, operations, management etc.) of stockpiling and mitigation of such effects in order to assist in the selection of specific stockpile sites within the general stockpile areas.

The BCP/EA documents compliance with various federal policies. All of the policies and their compliance status are listed in Table 1 on page EA-38a. The most critical policy action is the Endangered Species Act of 1973, involved formal consultation proceedings with the US Fish and Wildlife Service. The consultation resulted in an opinion which indicated: "Although the biological opinion concluded that the project will not jeopardize the continued existence of the Atlantic Coast piping plover population, the project will further erode the species' already precarious status by reducing and degrading available nesting and foraging habitat."

NPS Rationale for Support of Proposed Action

The NPS realizes that until a reformulation plan is approved, emergency situations will be required to effectively deal with breaches in the barrier island. Filling breaches as quickly as possible, with minimal impacts could significantly reduce the probability of the kind of breach that occurred at Westhampton where it took 10 months and $7,000,000.00 to remedy the situation when it may have only taken 3 months and less than half the cost.

In December 1995 the Breach Contingency Plan (BCP)/Environmental Assessment (EA) was finalized by the ACOE in cooperation with FIIS and other federal, state and local agencies.

The plan's proposal for filling breaches within FIIS causes exception to the overall National Park Service Policy on shoreline management, which is to normally allow natural processes to proceed unabated. However, in this unique case of potential threat to lives and significant loss of developed properties outside Seashore boundaries, it is deemed reasonable and responsible to consider exception to standing Service policy.

The purpose of this Finding of No Significant Impact (FONSI) is to document National Park Service (NPS) compliance with the Council on Environmental Quality's procedures on the National Environmental Policy Act (43 CFR 1500). This is regarding the action to accept and allow the alternative selected, from the BCP/EA, to be implemented within the jurisdictional area of the NPS. As a basis for this FONSI, the NPS is hereby adopting the ACOE's EA which has been satisfactorily completed with input from the National Park Service. Further EA(s) may be necessary for breach closure material stockpiling if sand becomes available (i.e. beneficially utilizing disposal material from locally maintained channels), and when specific sites can be identified within the general areas indicated in the BCP/EA.

Need for Action

Per the Governor's Coastal Erosion Task Force, Draft Final Report regarding the Westhampton breach, although many opinions were offered, the Task Force recognized that the impacts could not be determined without further study. It recommended that immediate actions be taken to close the breach while investigating the breach's impacts on tidal range, salinity and the ecosystem of Moriches Bay. Subsequent to that recommendation, and the increasing awareness that a breach could occur anywhere along the severely impacted barrier islands, the Task Force has made the recommendation to "Maintain barrier landform integrity by filling highly vulnerable washover fans and new inlet breaches." Additionally, "this recommended action to repair breaches and overwash sites should be considered interim guidance until supported or rejected by scientific information."

The breach event that occurred at Westhampton Beach expanded from an initial breach of a couple hundred feet to a one-half mile wide inlet. While the various levels of government were deciding whether to close the breach, acquiring the permits etc., many houses on the barrier island were destroyed. The cost to close the breach went from $100,000, for a closure of a couple hundred feet, to $8 million to close a half-mile wide inlet.

In addition to the cost, many individuals feared that the new

inlet could have had other impacts related to: much higher tidal surges that could have impacted, low-lying areas of the mainland during major storms, increased salinity, altered water temperature from pre-inlet conditions, a resulting potential shift in the aquatic populations, etc.

Because of the lack of data that would support this claim, or the magnitude of these impacts, there are presently a number of studies that are underway to study these effects and gather this data. The U.S. Army Corps of Engineers has been directed by Congress to undertake a 10-year, $14 million project to evaluate such impacts. Additionally, the National Biological Survey, in coordination with the National Park Service, is in the middle of a three-year study of the geomorphological impacts of a breach or inlet formation across barrier islands, including Fire Island. This study will also provide critical data for planning program implementation strategies. A major consideration still remains as to what to do in case of a breach on Fire Island.

As the ACOE commenced with the BCP work, Fire Island National Seashore staff prepared a Draft Interim Breach Management Plan (DIBMP) . Though the NPS plan was never finalized or approved, its concepts were incorporated into the BCP/EA. FIIS staff provided considerable input to the ACOE in preparation of the Environmental Assessment. NPS statutory obligations, policies, existing plans, etc., including an alternative analysis, have been addressed and adequately considered, in the EA.

The EA also contains Appendices A-H, compliance with: the Endangered Species Act (including a Formal USFWS Biological Opinion), Sea Turtle Protection Plan, the Fish and Wildlife Coordination Act, Section 110 of the National Historic Preservation Act, Section 404 of the Clean Water Act, Applicable New York State Coastal Zone Management Policies, other pertinent correspondences, and responses to Draft BCP/EA Comments.

This BCP/EA was prepared with the knowledge that many of the biological and geomorphological issues of a breach occurrence on Fire Island are yet to be determined. Therefore, without the benefit of this scientific knowledge, this plan is intended to be an interim measure (should a breach occur), to manage and recover from the potential threats to public and private properties on Fire Island and the south shore of Long Island. This interim measure is proposed to be in place (and updated every 3-5 years) until a clear coastal policy can be achieved, using the data gleaned from proposed studies.

The Proposal and Alternatives Considered

The EA contains descriptions of the proposed plan and alternatives. In summary, the BCP as proposed and selected from the EA, calls for the following actions:

United States Department of the Interior

NATIONAL PARK SERVICE
Fire Island National Seashore
120 Laurel Street
Patchogue, New York 11772

IN REPLY REFER TO:

April 18, 1996

L7615

Mr. Stuart Piken
Chief, Planning Division
Coastal Section,
New York District
US Army Corps of Engineers
Jacob J. Javits Federal Building
New York, N.Y. 10278-0090

Dear Mr. Piken:

Enclosed is the National Park Service (NPS), Finding of No Significant Impact (FONSI) for Fire Island National Seashore's segment of the U.S. Army Corps of Engineers, Fire Island to Montauk Point, Long Island, Breach Contingency Plan/Environmental Assessment. We respectfully request that a copy of the NPS FONSI be sent to each person on the mailing list who will be getting a copy of the final Breach Contingency Plan and Environmental Assessment.

Also enclosed for your review is a draft of a generalized NPS Special Use Permit (SUP). One of the conditions of the FONSI is that a National Park Service SUP be required as part of the action to fill a breach. Be assured that a SUP for a specific location will be ready for issuance to the Army Corps of Engineers (ACOE) when the conditions to fill a breach, as stated in the FONSI, arise.

If you have any further comments, please contact me at 516-289-4810, or Michael Bilecki at 516-289-1711 or 1716.

Sincerely,

Jack Hauptman
Superintendent

cc: (all w/enc.)
Joseph Vietrie, COE
Hal Hawkins, COE
Cliff Jones, COE
Foley, M., NAR (RNR)
Lepore, R.,(Reg. SOL)
Clark, D., Ch. Env. Compliance, NESSO

United States Department of the Interior

NATIONAL PARK SERVICE
Fire Island National Seashore
120 Laurel Street
Patchogue, New York 11772

IN REPLY REFER TO:
April 4, 1996

L7615

Memorandum

To: Field Director, Northeast Field Area

From: Superintendent, Fire Island National Seashore

Subject: Finding of No Significant Impact for Fire Island National Seashore's segment of the, U.S. Army Corps of Engineers, Fire Island to Montauk Point, Long Island, Breach Contingency Plan/Environmental Assessment

Background

As a result of four significant storms (Hurricane Bob in 1991, the Halloween Northeaster of 1991, the December 1992 Northeaster, and the March 1993 Northeaster), the southern Long Island barrier island chain from Fire Island Inlet to Southhampton was seriously impacted. Because of these storms and the threat of other significant storms, the State of New York established the Governor's Coastal Erosion Task Force in January of 1993.

One recommendation of the Task Force was to "Maintain barrier landform integrity by filling highly vulnerable washover fans and new inlet breaches, and maintaining alongshore sand transport". Based on this and other recommendations of the Task Force, Fire Island National Seashore (FIIS) convened a working group which included the Army Corps of Engineers (ACOE), the U.S. Fish and Wildlife Service (USFWS), other interested State and local agencies and private interests. This group, convinced that is technically feasible and economically prudent to close a breach as soon as it is reasonably possible, developed plans for closing breaches that occur on Fire Island.

The ACOE prepared and made available for public review in June of 1995, the Environmental Assessment for the U.S. Army Corps of Engineers, New York District, Fire Island to Montauk Point Long Island, New York, a Breach Contingency Plan (BCP/EA). The BCP/EA documents a proposed action (the BCP which encompasses the Task Force's planning intent as mentioned above) and two alternatives considered for project area. The EA assesses alternative planning strategies and potential environmental impacts of implementation.

RETURN THIS FORM TO:

Regional Manager
Bureau of Marine Habitat Protection
New York State Department of Environmental Conservation
Bldg. 40 - SUNY, Room 223
Stony Brook, NY 11790-2356

Michael D. Zagata
Commissioner

PERMIT NO.: _____ ISSUED TO: _____

CONTRACTOR NAME: _____

ADDRESS: _____

_____

TELEPHONE: _____

Dear Sir:

Pursuant to *Supplementary Special Condition D* of the referenced permit, you are hereby notified that the authorized activity shall commence on _____. We certify that we have read the referenced permit and approved plans, and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and depicted on the approved plans in full compliance with all plan notes and permit conditions. Ther Permit sigh, permit, and approved plans will be available at the site for inspection in accordance with General Condition No. 1.

_____
PERMITTEE DATE

_____
CONTRACTOR DATE

THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS AT LEAST TWO DAYS IN ADVANCE OF COMMENCEMENT OF THE PROJECT. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON COMPLIANCE WITH PERMIT CONDITIONS.

Cut along this line _____

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO:

Regional Manager
Bureau of Marine Habitat Protection
New York State Department of Environmental Conservation
Bldg. 40 - SUNY, Room 223
Stony Brook, NY 11790-2356

Michael D. Zagata
Commissioner

PERMIT NO.: _____ ISSUED TO: _____

CONTRACTOR NAME: _____

ADDRESS: _____

_____

TELEPHONE: _____

Dear Sir:

Pursuant to *Supplementary Special Condition D* of the referenced permit, you are hereby notified that the authorized activity was completed on _____.

We have fully complied with the terms and conditions of ther permit and approved plans.

_____
PERMITTEE DATE

_____
CONTRACTOR DATE

*THIS NOTICE, WITH PHOTOGRAPHS OF COMPLETED WORK AND/OR A COMPLETED SURVEY *, AS APPROPRIATE, MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT. FAILURE TO DO SO WILL RESULT IN A COMPLIANCE INSPECTION BY NYSDEC STAFF.*

**Note: An as-built survey is required for the following categories of new construction: single family dwellings and additions, septic systems, decks, pools, bulkheads and other shoreline stabilization structures.*

New York State Department of Environmental Conservation
Building 40 - SUNY, Stony Brook, New York 11790-2356
Telephone (516) 444-0365
Facsimile (516) 444-0373

Michael D. Zagata
Commissioner

AMENDMENT TO PERMIT

Stuart Pilken P.E.
Chief Engineer, Planning Division
NY District Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Date: May 14, 1996

Re: Permit No. & Location:

1-4799-00023/00001

U.S. Army Corps of Engineers

F.I. Breach Contingency Plan

Mr. Pilken:

This permit amendment is intending to correct the omission of special condition #33, which was inadvertently left off the original permit. Therefore, the permit is amended to include special condition #33 as follows:

#33. General conditions 6, 8, and 10 are included by the State of New York as the permit issuing authority under the Clean water Act. Such General conditions do not, nor are they intended to, apply to, abrogate, or annul any obligation, responsibility or liability on the part of the State of New York, including indemnification by the State of New York to the Federal Government under the Project Cooperation Agreement (PCA) for the Fire Island Breach Contingency Plan. Any obligations by the Federal Government under this Water Quality Certification are limited to available funds authorized for and appropriated to the Fire Island Breach Project. Pursuant to the PCA, the State of New York remains legally responsible to hold and save the Federal Government free from all damages arising from the construction, operation, maintenance, repair replacement, and rehabilitation, of the Project and any Project-related betterments, including liabilities arising from General Conditions 6,8 and 10, except for damages due to the fault or negligence of the Federal Government or it's contractors.

The New York District, Corps of Engineers has determined that the BCP qualifies for an exception from CBRA for the following activities:

- Assistance for emergency actions to save lives or property, provided that such activities are limited to the actual emergency situation;
- Non-structural projects such as dune grass plantings and beach nourishment to mimic, enhance, or restore natural stabilization systems;
- Funds for the maintenance, replacement, reconstruction, or repair, but not the expansion, of publicly owned or publicly operated roads, structures, or facilities.

The Service concurs that these activities qualify for exception under Section 6 of CBRA, as amended by the Coastal Barrier Improvement Act of 1990.

The Service has previously addressed other issues under the Fish and Wildlife Coordination Act and the Endangered Species Act; our concurrence with the CBRA decision does not alter our previous positions in any way. If you have any questions or desire further information, contact me at (607) 753-9334.

Sincerely,

Sherry W. Morgan

Sherry W. Morgan
Field Supervisor

cc: NYSDEC, Stony Brook, NY (Reg. Services)
EPA, Chief, Marine & Wetlands Protection Branch, New York, NY
FIIS, Patchogue, NY (M. Bilecky)

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

November 24, 1995

Environmental Analysis Branch
Environmental Assessment Section

Ms. Sherry Morgan
Field Supervisor
U.S. Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, New York 13045

Dear Ms. Morgan:

The New York District, Corps of Engineers (District) has been coordinating with your Long Island Field Office (USFWS-LIFO) staff regarding the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan (BCP). The District and USFWS-LIFO have concluded coordination for the Fish and Wildlife Coordination Act and Section 7 of the Endangered Species Act.

The Coastal Barrier Resources Act (CBRA) of 1982, as amended, by the Coastal Barrier Improvement Act (COBIA) of 1990, prohibits the expenditure of Federal funds on identified CBRA units within the Coastal Barrier Resources System (CBRS). Two CBRA units have been identified within the proposed BCP project area. They are: 1) Southampton Beach and Tiana Beach (Unit#'s F12 & F13/13P), and 2) Fire Island (Unit# NY-59/NY-59P).

The purposes of CBRA are to minimize the loss of human life, wasteful expenditure of Federal funds, and damage to natural resources associates with units of the CBRS. The purpose of the BCP effort is similar to CBRA. The BCP's intention is to react immediately to a breach condition along the project area, thereby minimizing the potential adverse impacts on human life and natural resources as well as maximizing the use of Federal funds.

The District has determined that Federal actions conducted under the BCP meet the following exceptions under Section 6 of CBRA:

- assistance for emergency actions essential to saving lives or protection of property within the coastal barrier units. Such actions shall be limited to the extent necessary to alleviate the emergency and not be used as a justification for any projects that exceed the scope and needs of the true and immediate emergency.
- non-structural projects, such as the planting of dune grass or beach nourishment which mimic,

enhance, or restore natural stabilization systems, would be performed for shoreline stabilization.
- funds for the maintenance, replacement, reconstruction, or repair, but not the expansion, of publicly owned or publicly operated roads, structures, or facilities.

Pursuant to CBRA of 1982, as amended, by COBIA of 1990, and utilizing related data and reports previously transmitted to your USFWS-LIFO office, please forward your opinion on the District's determination.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken P.E.
Chief, Planning Division

Enclosure

cf: Robert Murray, USFWS-LIFO
Mike Bilecky, NPS-FINS

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

December 4, 1995

Mr. Stuart Piken
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: F-95-368
Fire Island to Montauk Point, New York Breach Contingency Plan

Dear Mr. Piken:

The Department of State has completed its review of the U.S. Army Corps of Engineers, New York District's consistency determination with respect to the New York State Coastal Management Program, together with supporting documentation, for the proposed Fire Island to Montauk Point, New York Breach Contingency Plan.

Based upon the project information submitted and the conditions agreed to, the Department of State agrees with the U.S. Army Corps of Engineers, New York District's consistency determination for this activity, subject to the following conditions agreed to in writing on December 4, 1995:

1. During State declared emergencies, the final decision to use sheet piling to facilitate breach closure will rest with the New York District's designated response team representatives, after full consultation with the New York State Department of Environmental Conservation and other involved agencies' team representatives that comprise the response team, since its use is based on the engineered cost effectiveness to reduce sand losses.

2. All sheet piling used during the closure of a breach will be removed before or upon project completion. Sheet pile may be allowed to remain if response agencies:

   a) agree that closure (duration as defined in the plan) will require measures beyond those presented in the plan;

   b) agree that circumstances are such that a permit for additional sand placement (to exceed the design presented in the plan) could not be obtained.

   If response agencies agree to the above two criteria, the following additional

guidelines should be considered to ensure that adjacent areas (within 2000 ft. of the breach) can withstand potential adverse impacts from leaving the sheet pile wall in place:

- The volume of sand per linear foot in adjacent dune areas above ten (10) feet Mean Sea Level must exceed 20 $yds^3/ft.$;
- The nearshore profile volume between Mean Sea Level and -20 feet is above 450 yds^3/ft;
- The width of the barrier island or spit from the bay to the Atlantic Ocean (Mean Sea Level to Mean Sea Level) is generally greater than 1,000 feet wide;
- The subaerial volume of the barrier island or spit from shoreline to shoreline (bay to ocean) exceeds 150 yds^3/ft;
- Dune blowouts are not present;
- There are no dredged navigation channels perpendicular to the barrier shoreline (this does not apply when such channels exist at the breach site).

If conditions a and b above are met upon completion of a breach closure, the additional guidelines will be used by all agencies representing the response team in determining whether or not sheet piling may remain in place or is to be removed upon completion of a breach closure.

Thank you for your cooperation in this matter.

Sincerely,

William F. Barton Jr.

George R. Stafford
Director
Division of Coastal Resource
and Waterfront Revitalization

GRS/WB/SCR

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

December 4, 1995

REPLY TO ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Mr. William F. Barton
Chief, Consistency Review and Analysis Bureau
Department of State
Division of Coastal Resources and Waterfront Development
162 Washington Avenue
Albany, New York 12231-0001

Attn: Mr. Steve Resler

Dear Mr. Barton:

This letter is in reference to CZM Application F-95-368, Fire Island to Montauk Point, New York, Breach Contingency Plan.

The U.S. Army Corps of Engineers, New York District agrees with all but one of your office's November 21, 1995 conditions under which permanent sheet piling could be used during implementation of the Breach Contingency Plan. The District will agree with the conditions completely if Condition 1. is modified to read "During State declared emergencies, the decision to use sheet piling to facilitate breach closure will rest with the New York District's designated team representatives, after full consultation with the New York State Department of Environmental Conservation and other involved agencies' team representatives that comprise the response team, since its use is based on the engineered cost effectiveness to reduce sand losses.

If this modification is satisfactory, please provide the District with your office's consistency determination.

Any questions regarding this matter can be addressed to Mr. Peter Weppler at 212-264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

November 21, 1995

Mr. Stuart Piken
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: F-95-368
Fire Island to Montauk Point, New York Breach Contingency Plan

Dear Mr. Piken:

A copy of the conditions under which permanent sheet steel piling could be used in the Breach Contingency Plan are attached. Bill Daley of the Department of Environmental Conservation has reviewed these conditions and agrees with them.

If these conditions are acceptable to the Corps of Engineers, they will be incorporated in the Department of State's decision to concur with the Corps' consistency determination for this project. If these conditions are acceptable, please forward your agreement with them as soon as possible so that we may expedite our concurrence with your consistency determination.

If you have any questions regarding this matter, please call Steven C. Resler at (518) 474-6000.

Sincerely,

William F. Barton

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

WFB/SCR

RECYCLED PAPER

Draft Conditions For Use of Sheet Piling
In Breach Contingency Plan

1. During State declared emergencies, final decision to use sheet piling to facilitate breach closure will be made by the Department of Environmental Conservation's designated response team agent after full consultation with all of the involved agencies comprising the response team.

2. All sheet piling used during the closure of a breach will be removed before or upon project completion. Sheet pile may be allowed to remain if response agencies:

   a) agree that closure (duration as defined in the plan) will require measures beyond those presented in the plan;

   b) agree that circumstances are such that a permit for additional sand placement (to exceed the design presented in the plan) could not be obtained.

   If response agencies agree to the above two criteria, the following additional guidelines should be considered to ensure that adjacent areas (within 2000 ft. of the breach) can withstand potential adverse impacts from leaving the sheet pile wall in place:

   - The volume of sand per linear foot in adjacent dune areas above ten (10) feet Mean Sea Level must exceed 20 $yds^3/ft.$;

   - The nearshore profile volume between Mean Sea Level and -20 feet is above 450 yds^3/ft;

   - The width of the barrier island or spit from the bay to the Atlantic Ocean (Mean Sea Level to Mean Sea Level) is generally greater than 1,000 feet wide;

   - The subaerial volume of the barrier island or spit from shoreline to shoreline (bay to ocean) exceeds 150 yds^3/ft;

   - Dune blowouts are not present;

   - There are no dredged navigation channels perpendicular to the barrier shoreline (this does not apply when such channels exist at the breach site).

If conditions a and b above are met upon completion of a breach closure, the additional guidelines will be used by all agencies representing the response team in determining whether or not sheet piling may remain in place or is to be removed upon completion of a breach closure.

Draft Conditions For Use of Sheet Piling In Breach Contingency Plan

1. During State declared emergencies, final decision to use sheet piling to facilitate breach closure will be made by the Department of Environmental Conservation's designated response team agent after full consultation with all of the involved agencies comprising the response team.

2. All sheet piling used during the closure of a breach will be removed before or upon project completion. Sheet pile may be allowed to remain if response agencies:

   a) agree that closure (duration as defined in the plan) will require measures beyond those presented in the plan;

   b) agree that circumstances are such that a permit for additional sand placement (to exceed the design presented in the plan) could not be obtained.

   If response agencies agree to the above two criteria, the following additional guidelines must be considered to ensure that adjacent areas (within 2000 ft. of the breach) can withstand potential adverse impacts from leaving the sheet pile wall in place:

   - The volume of sand per linear foot in adjacent dune areas above ten (10) feet Mean Sea Level must exceed 20 $yds^3/ft.$;

   - The nearshore profile volume between Mean Sea Level and -20 feet is above ~~2600~~ 450 yds^3/ft;

   - The width of the barrier island or spit from the bay to the Atlantic Ocean (Mean Sea Level to Mean Sea Level) is generally greater than 1,000 feet wide;

   - The subaerial volume of the barrier island or spit from shoreline to shoreline (bay to ocean) exceeds 150 yds^3/ft;

   - Dune blowouts are not present;

   - There are no dredged navigation channels perpendicular to the barrier shoreline (this does not apply when such channels exist at the breach site).

If conditions a and b above are met upon completion of a breach closure, the additional guidelines will be used by all agencies representing the response team in determining whether or not sheet piling may remain in place or is to be removed upon completion of a breach closure.

intention to let the specific case dictate the appropriate mechanism to use in implementing the BCP.

In any event, all actions regarding closure of breaches will be coordinated between the Federal, State (DEC and DOS) and local governments. For each specific breach occurrence, a coordinated decision will be made regarding the cost effectiveness and environmental ramifications of leaving or removing any sheetpiling used for construction.

The New York District expects to receive your consistency determination on November 17, 1995.

If there are any questions concerning this matter, please contact Mr. Peter Weppler of my office at (212) 264-4663 or Mr. Clifford Jones at 212-264-9079.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

November 7, 1995

Environmental Assessment Section
Environmental Analysis Branch

Mr. George R. Stafford
Director, Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Attention: Mr. Steve Resler

Re: F-95-368
Fire Island Inlet to Montauk Point, New York
Breach Contingency Plan

Dear Mr. Stafford:

This letter confirms your office's November 2, 1995 request for a fifteen day extension for the above referenced consistency determination and the need to discuss the use of steel sheet piling during breach closure activities. Our respective staff representatives have been discussing the issue of structural inclusions for breach closures within the authorized project area. The following paragraphs are provided for clarification of this issue.

The Executive Summary Report for the Breach Contingency Plan (BCP) demonstrates the cost effectiveness of closing breaches immediately, or as soon as practicable, after breach occurrence. As stated in the report, breach closure is anticipated to be most effective if steel sheet piling is used. However, at Old Inlet and Robert Moses, sheeting is not anticipated. The purpose of using sheeting is primarily to create a calmer construction environment, by reducing fill losses and slowing the high velocity of water flowing through the breached area. The use of sheeting is a contractor's option and would be done on a case by case basis, as necessary. In our opinion, it would be unwise for us to unilaterally state at this time that sheetpiling would never be appropriate.

Similarly, removal of any sheeting is an additional expense which may necessitate a greater degree of maintenance to ensure the project design. It must be clearly understood that it is the State's responsibility to maintain the breach closure design. If the State determines that removal of any structures used for closure is absolutely necessary, we will comply. However, the District is of the opinion that it would be unwise to require at this time that any steel sheeting used for construction must be removed. It is our

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

November 2, 1995

Mr. Stuart Piken
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: F-95-368
Fire Island Inlet to Montauk Point, New York
Breach Contingency Plan

Request for Extension for Determination of Consistency with the New York State Coastal Management Program

Dear Mr. Piken:

Pursuant to 15 CFR 930.41(a) and (b), the Department of State requests that the Corps of Engineers New York District approve an extension of fifteen (15) days to the review period within which New York State must respond to the consistency determination for the Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York Breach Contingency Plan. This extension is necessary to discuss the conditions under which structures such as steel sheeting would be used during breach filling activities.

The State's original 45-day review period ends on November 2, 1995. We would appreciate your confirmation of the extension to the review period to November 17, 1995 as soon as possible, so that the Department of State may complete its review and take appropriate action.

Sincerely,

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

WFB/SCR

RECYCLED PAPER

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

September 26, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
Environmental Analysis Section
U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, NY 10278-0090

Re: F-95-368
COE/NY - Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York Breach Contingency Plan

Acknowledgement of Federal Consistency Determination

Dear Mr. Pitken:

This will acknowledge receipt on September 18, 1995 of the U.S. Army Corps of Engineers/ New York District consistency determination with respect to the New York State Coastal Management Program, together with supporting documentation, for the above-referenced project. Pursuant to 15 CFR 930.41, the State's 45-day review period commenced as of that date.

The Department of State anticipates being able to advise you of the State's agreement or disagreement with the consistency determination on or before November 2, 1995.

Please call Steven Resler at (518) 474-6000 if you have any questions.

Sincerely,

William F. Barton/dlb

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

WFB:dlb

RECYCLED PAPER

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NOTICE OF COMPLETE APPLICATION

APPLICANT:

U S DEPT OF THE ARMY
THE PENTAGON
WASHINGTON DC 20310

APPLICATION ID 1-4799-00023/00001-0

Date: NOVEMBER 01, 1995

PERMITS APPLIED FOR:

1 SECTION 401 - CLEAN WATER ACT: WATER QUALITY CERTIFICATION

PROJECT IS LOCATED IN SEVERAL TOWNS IN SUFFOLK COUNTY.

PROJECT DESCRIPTION:

THE U.S. ARMY CORPS OF ENGINEERS PLAN TO FILL AND RESTORE BREACHES IN THE FIRE ISLAND BARRIER ISLAND FOLLOWING COASTAL STORMS. A BERM OF COMPATIBLE SAND WITH A MIN. WIDTH OF 150' AND A MAX. ELEVATION OF 9'USGVD WILL BE CONSTRUCTED BETWEEN THE BACK BAY AND THE ATLANTIC OCEAN BLENDING INTO EXISTING TOPOGRAPHY. THE SAND WILL BE OBTAINED FROM UPLAND SOURCES, STRATEGICALLY PLACED STOCKPILES, EXISTING CHANNEL AND HARBOR DREDGING OPERATIONS, OR OFFSHORE BORROW AREAS. THE PROJECT AREA IS FIRE ISLAND, FROM FIRE ISLAND INLET TO SOUTHAMPTON, IN THE TOWNS OF BABYLON, ISLIP, BROOKHAVEN, AND SOUTHAMPTON, SUFFOLK COUNTY.

STATE ENVIRONMENTAL QUALITY REVIEW (SEQR) DETERMINATION:

SEQR - 2 Project is a Type I action and will not have a significant effect on the environment. A coordinated review with other agencies was performed and a Negative Declaration is on file.

SEQR LEAD AGENCY NYS Department of Environmental Conservation

STATE HISTORIC PRESERVATION ACT (SHPA) DETERMINATION:

SHPA - 0 The proposed activity is not subject to review in accordance with SHPA. The permit type is exempt or the activity is being reviewed in accordance with federal historic preservation regulations.

THIS PROJECT IS LOCATED IN A COASTAL MANAGEMENT AREA AND IS SUBJECT TO THE WATERFRONT REVITALIZATION AND COASTAL RESOURCES ACT.

AVAILABILITY FOR PUBLIC COMMENT:

Comments on this project must be submitted in writing to the Contact Person no later than 11/24/95

CONTACT PERSON:

KEVIN A KISPERT
NYSDEC
SUNY CAMPUS, BUILDING 40
STONY BROOK NY 11794
(516) 444-0365

TO THE APPLICANT

1 THIS IS NOT A PERMIT

2 This is to advise you that your application is complete and a review has commenced. Additional information may be requested from you at a future date, if deemed necessary, in order to reach a decision on your application.

3 Your project is classified MAJOR. Accordingly, a decision will be made within 90 days of the date of this Notice. If a public hearing is necessary, you will be notified within 60 days and the hearing will commence within 90 days of the date of this notice. If a hearing is held, the final decision will be made within 60 days after the hearing is completed.

4 Publication of this Notice in a newspaper is required. Consult the accompanying instructions for Newspaper Publication.

SEND TO

PETER WEPPLER
DEPT. OF THE ARMY, N.Y. DISTRICT C.O.E.
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK NY 10278-0090

CC Chief Executive Officer
ENB
File

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

November 24, 1995

Environmental Analysis Branch
Environmental Assessment Section

Ms. Sherry Morgan
Field Supervisor
U.S. Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, New York 13045

Dear Ms. Morgan:

The New York District, Corps of Engineers (District) has been coordinating with your Long Island Field Office (USFWS-LIFO) staff regarding the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan (BCP). The District and USFWS-LIFO have concluded coordination for the Fish and Wildlife Coordination Act and Section 7 of the Endangered Species Act.

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enhance, or restore natural stabilization systems, would be performed for shoreline stabilization.
- funds for the maintenance, replacement, reconstruction, or repair, but not the expansion, of publicly owned or publicly operated roads, structures, or facilities.

Pursuant to CBRA of 1982, as amended, by COBIA of 1990, and utilizing related data and reports previously transmitted to your USFWS-LIFO office, please forward your opinion on the District's determination.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken P.E.
Chief, Planning Division

Enclosure

cf: Robert Murray, USFWS-LIFO
Mike Bilecky, NPS-FINS

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

September 14, 1995

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Mr. George R. Stafford
Director, Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Attention: Mr. Steve Resler

Dear Mr. Stafford:

Pursuant to Section 307(c) of the Coastal Zone Management Act of 1972 as amended (16 U.S.C. 1456 [c]), the U.S. Army Corps of Engineers, New York District requests Consistency Determinations for the 10 State policies (Enclosure 1) applicable to the proposed **Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York Breach Contingency Plan** (Enclosure 2).

The New York District requests that your office review these findings and formally transmit your Consistency Determination to the District.

If there are any questions concerning this matter, please contact Mr. Peter Weppler of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enc.
cc w/o enc. : Daley, NYSDEC-Albany
Anders, NYSDOS

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

September 14, 1995

REPLY TO ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Mr. George R. Stafford
Director, Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Attention: Mr. Steve Resler

Dear Mr. Stafford:

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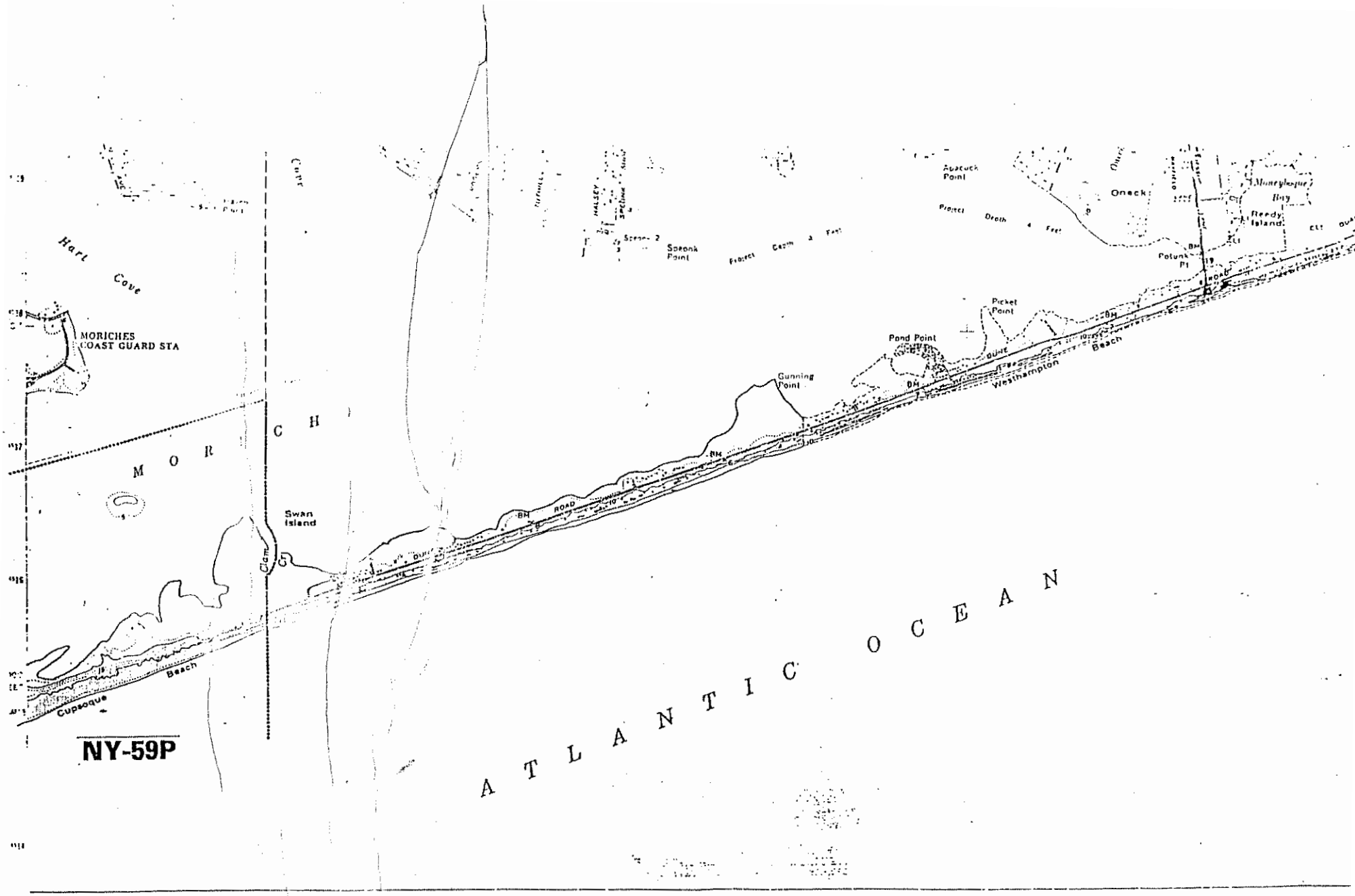
The New York District requests that your office review these findings and formally transmit your Consistency Determination to the District.

If there are any questions concerning this matter, please contact Mr. Peter Weppler of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enc.
cc w/o enc. : Daley, NYSDEC-Albany
Anders, NYSDOS



NY-59P

COASTAL BARRIER RESOURCES SYSTEM

FI UNIT NY 59P

10/24/90

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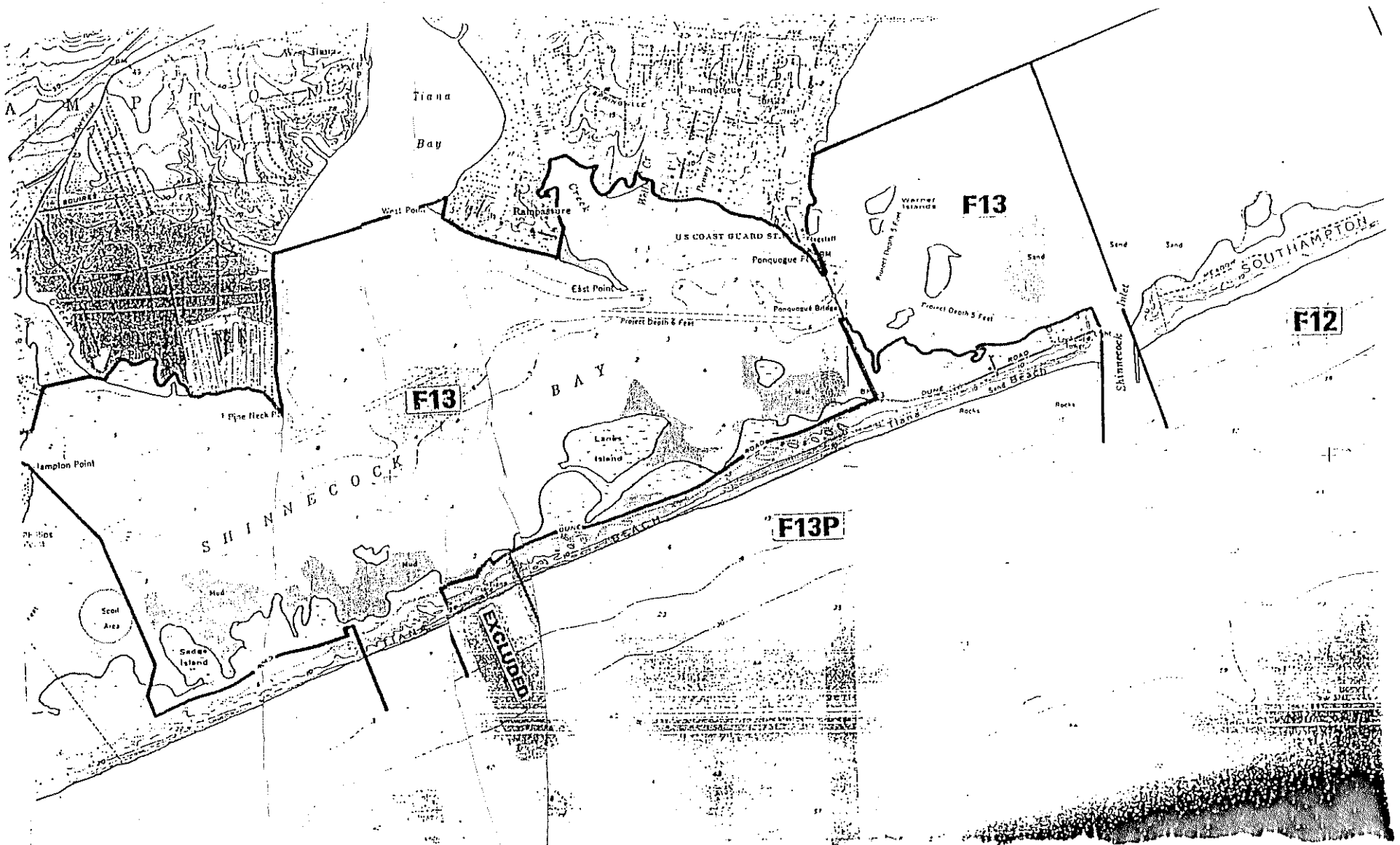
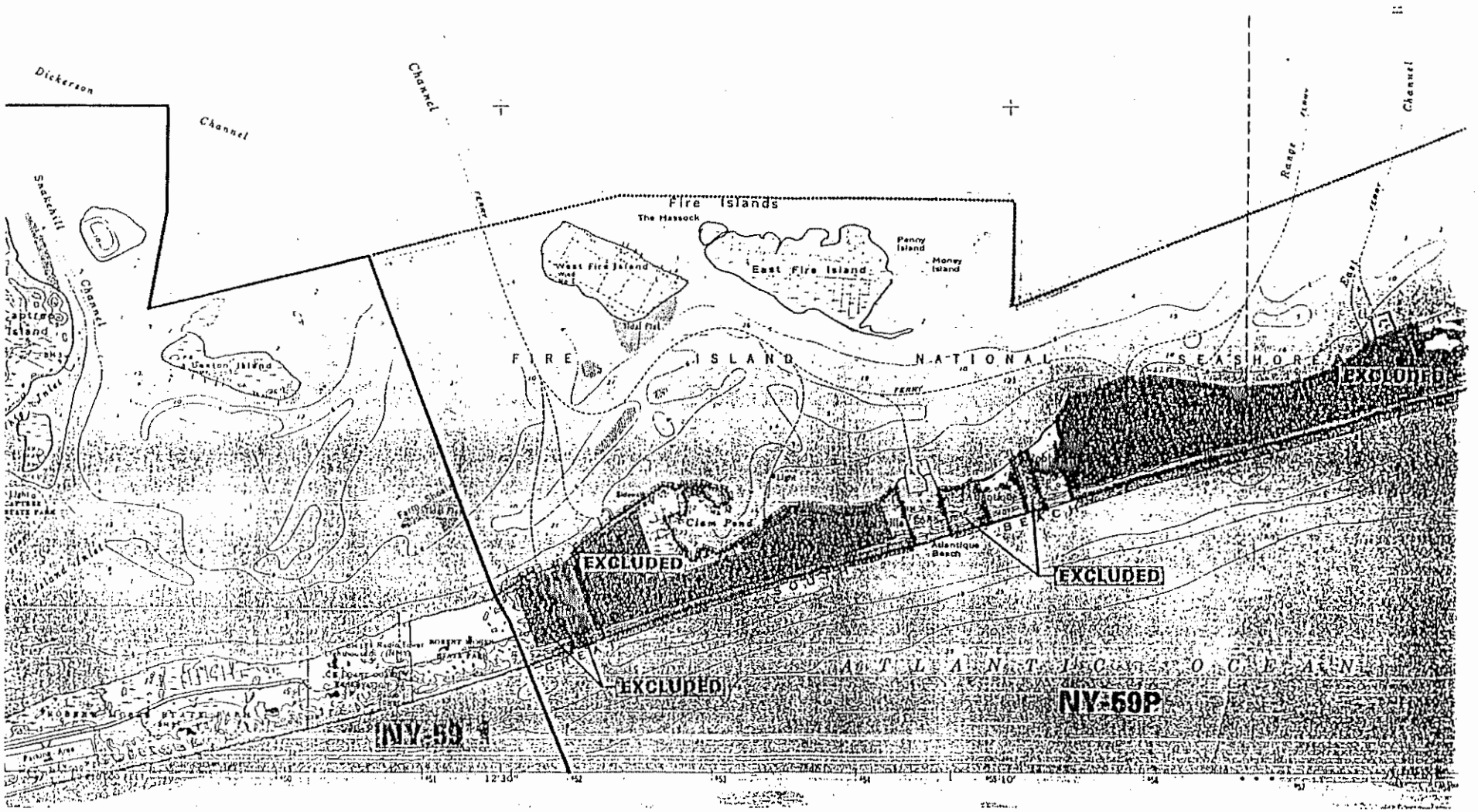
vice from a set of maps adopted

—— Solid lines depict
TH CBRS



Tiana
Bay
West Point
Rampasture
Creek
East Point
US COAST GUARD ST.
Ponquogue Bridge
Project Depth 6 Feet
Project Depth 5 Feet
Warner Islands
F13
F12
SOUTHAMPTON
Shinnecock Inlet
Sand
Rocks
Mud
Lanes Island
BAY
SHINNECOCK
Pine Neck
Hampton Point
Scoil Area
Sedge Island
F13P
EXCLUDED



COASTAL BARRIER RESOURCES SYSTEM

roduced by the U.S. Fish

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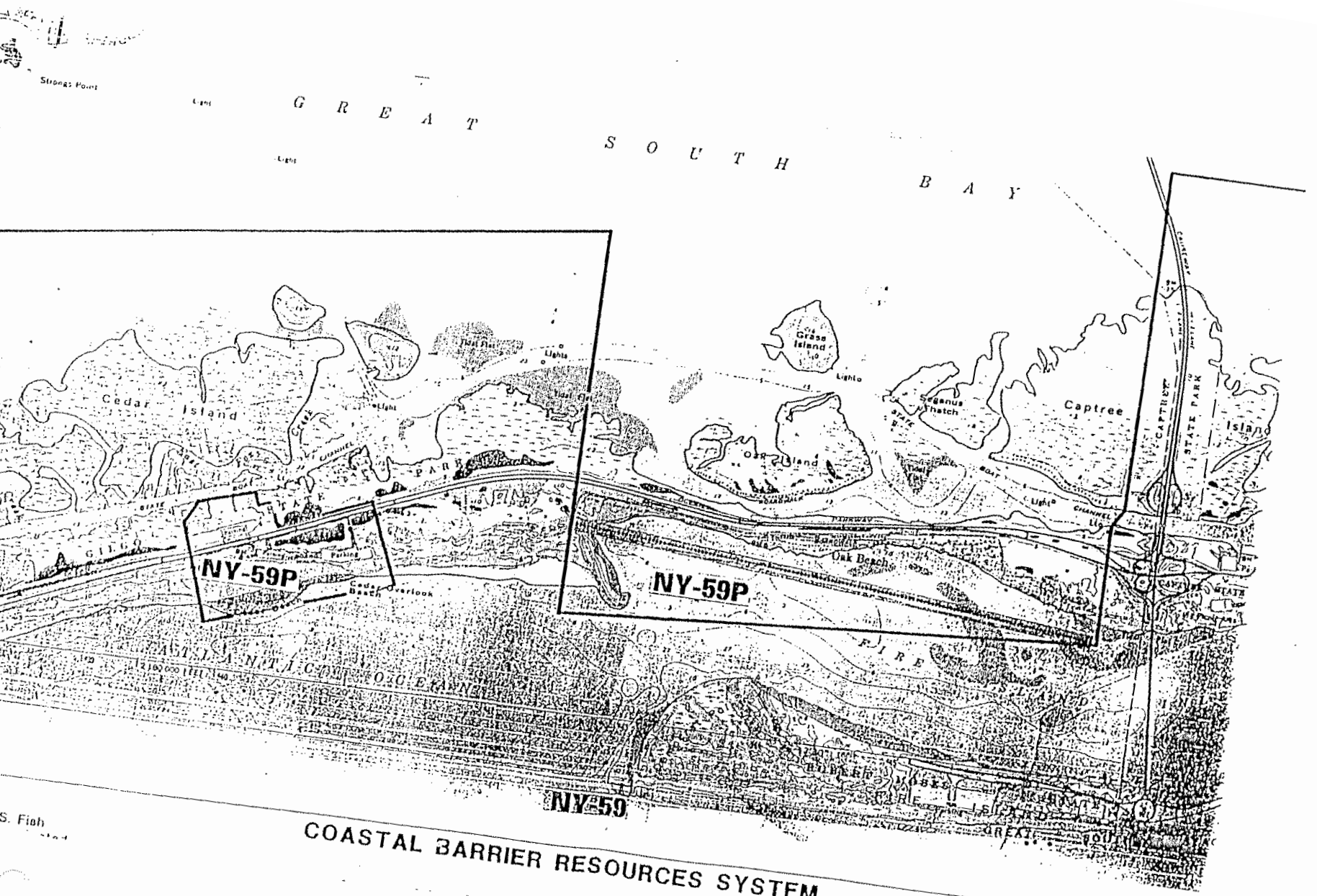
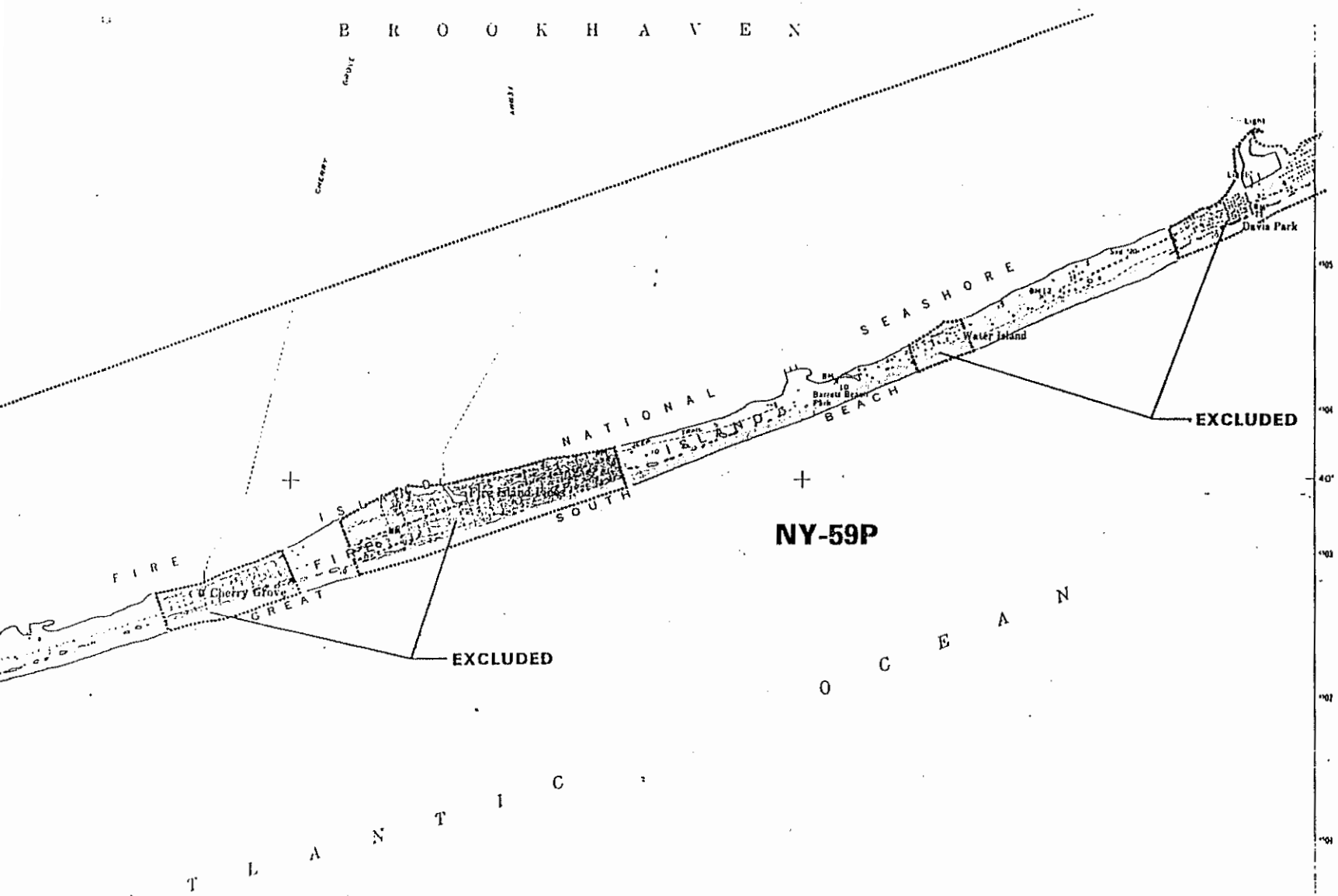
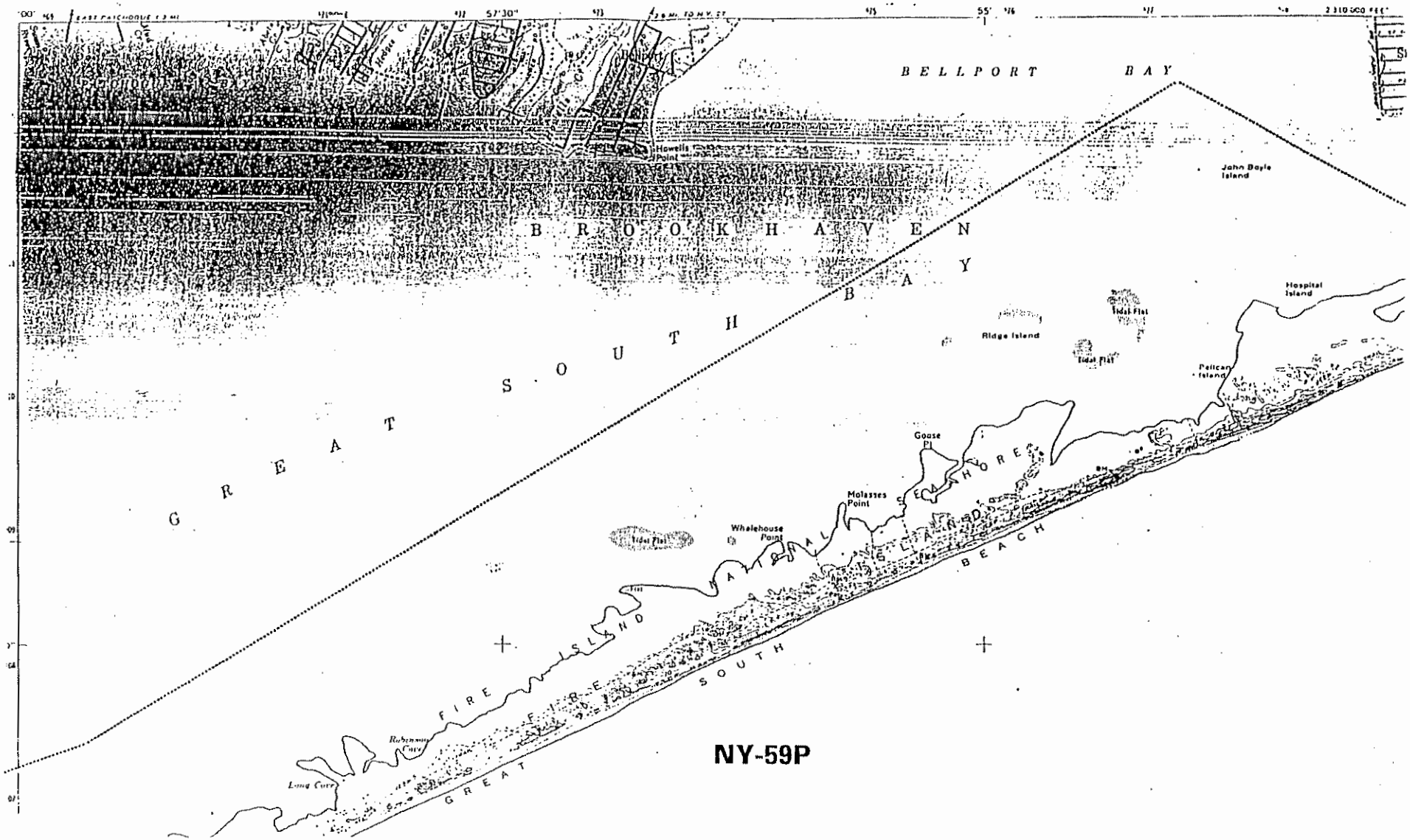


COASTAL BARRIER RESOURCES SYSTEM

Solid lines depict unit



B R O O K H A V E N
Light
Davis Park
Water Island
Barrett Beach Park
S E A S H O R E
N A T I O N A L
I S L A N D
B E A C H
S O U T H
Fire Island Inlet
F I R E
I S L A N D
F I R E
Cherry Grove
G R E A T
EXCLUDED
EXCLUDED
NY-59P
O C E A N
A T L A N T I C


BELLPORT BAY
BROOKHAVEN
GREAT SOUTH BAY
Howells Point
John Boyle Island
Hospital Island
Tidal Flat
Ridge Island
Tidal Flat
Pelican Island
Goose Pt
Molasses Point
Whalehouse Point
Tidal Flat
FIRE ISLAND NATIONAL SEASHORE
FIRE ISLAND
SOUTH BEACH
GREAT
Robinson Cove
Long Cove

NY-59P

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

August 30, 1995

REPLY TO ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Ms. Lorna Salzman
29 Middagh Street
Brooklyn, New York 11201

Dear Ms. Salzman:

The U.S. Army Corps of Engineers, New York District, has reviewed your letter regarding the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan dated June 23, 1994. We wish to take this opportunity to respond to your comments. The District responses are attached (Attachment 1).

If you have any questions or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Attch.

ATTACHMENT 1

Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan

Response to Comment 1. Guidance Letter No. 7 states, in paragraph 5, that "Subsection 103(d) [of the WRDA 1986] precludes Federal participation in costs assigned to benefits to privately-owned shores where the use of such shores is limited to private interests. The Breach Contingency Plan considers only the benefits attributed to the protection of mainland properties; the intent of closing breaches is to maintain the integrity of the barrier islands which provide storm damage protection to the mainland.

Engineering regulations define public use, which is a requirement for providing storm damage reduction to shoreline communities, as "use by all on equal terms." The plan finds that the beaches of Fire Island, the Village of Westhampton Dunes, and the vicinity of Shinnecock Inlet, areas that are vulnerable to breaching, are equally accessible to all.

Response to Comment 2, 1st para. The District is coordinating with the U.S. Fish and Wildlife Service (USFWS) to avoid and minimize impacts to Federally threatened and endangered non-marine species. The District is presently engaged in Formal Consultation with the USFWS for the piping plover and seabeach amaranth to minimize impacts to those species. The EA will contain the USFWS' Biological Opinion which will include coordinated protection measures in addition to the measures described in the draft EA. The minimization and avoidance measures support the District's finding that the proposed plan will have no significant impact.

Response to Comment 2, 2nd para. The Corps of Engineers is committed to undertake efforts to maintain the barrier system, at least until final action upon an authorized reformulation project along the shoreline from Fire Island to Montauk Point. The Breach Contingency Plan allows for expedited procedures, as delay in response can allow a minor overwash to become a substantial breach, adding to Federal expense.

Response to Comment 2, para 3. Dredging, if required, will occur in existing navigation channels and designated offshore borrow areas, not in bay bottoms and near-shore areas.

Response to Comment 2, para 4. During the evaluation of effects of the breach at Westhampton, estimated damage was compared to flood insurance claims data obtained for the December 1992 storm. This comparison showed a high correlation between predicted and actual damages for the Moriches Bay area. Since similar assumptions were used in the current analysis, the plan is expected to accurately characterize Great South Bay and Shinnecock Bay as well as Moriches Bay.

Responses to Comment 2, para 5. There is insufficient evidence as yet to conclude that breaches are better or worse for shellfish.

However, as stated in paragraphs 7.17 and 7.18 of the draft EA, the changes associated with a breach occurrence would affect the shellfish food source and the quantity of salinity-controlled predators.

Response to Comment 2, para 6. The closing of breaches is intended to protect property and infrastructure critical to the economic well-being of the region. The project's goal is to prevent property damage without causing significant effects upon the environment. All comments including those relating to environmental effects are being taken into consideration in reaching a final determination.

Response to Comment 2, para 7. The cost-benefit analysis discussed in the report is based on methodology required by federal regulation. Damages representative of actual claims were utilized. The benefits and costs shown in the report are based on current and available data.

29 Middagh St.
Brooklyn NY 11201
June 23, 1995

Dept. of the Army
NY District, Corps of Engineers
26 Federal Plaza
New York, NY 10278

Re: Draft Executive Summary/EA for proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, NY, Breach Contingency Plan.

The following comments are submitted regarding the above by Lorna and Eric Salzman, property owners and taxpayers in Southampton Town, Suffolk County, New York.

This contingency plan was clearly prepared so as to justify policy decisions that have already been made regarding the Long Island south shore barrier beach. These decisions were clearly made as a result of pressure from private property owners and special interests. Such pressures have regrettably influenced the Army Corps to such a degree that the breach contingency plan is being pushed through for the sole purpose of justifying taxpayer expenditures using the flimsy excuse of preventing property damage which is entirely speculative. The decision to spend millions of dollars of taxpayer money based on purely speculative benefits, without assessing the true environmental impact, shows indefensible contempt for the entire environmental impact process enacted into law over two decades ago.

This contingency plan does not even minimally conform to explicit statutes and agency mandates. Specifically:

1. The Army Corps Guidance Letter #7, Cost Sharing for Shore Protection Projects, states, in paragraph 5, that: "HSDR (Hurricane storm damage reduction) projects must contain an item of local cooperation that assures the realization of public use throughout the economic life of the project. Lack of sufficient parking facilities for the general public (including non-resident users) located reasonably nearby, and with reasonable public access to the project, will constitute <u>de facto</u> restriction on public use, thereby precluding eligibility for Federal participation".

Since this plan includes the entire barrier beach in the newly formed Village of Westhampton Dunes, within Southampton Town, and other privately owned areas, and since it does not include any drawings, maps or description of how such public access and parking will be assured within the Village, Federal participation must be

precluded.

2. The plan includes a wholly unjustified negative declaration of environmental impact, despite the clear warning from the Fish and Wildlife Service about the possible impact on Federally endangered and threatened species, notably the Piping Plover and the Least Tern, the Roseate Tern, and the Northeast beach tiger beetle, plus Seabeach amaranth. Nonetheless, the plan states that construction scheduling "may necessitate fill placement during the shorebirds' nesting season (April-August)", leading to the statement by the US Fish & Wildlife Service that "the proposed Breach Contingency Plan is likely to adversely affect the piping plover and seabeach amaranth", and that there will also be "indirect impacts resulting from the project area being potentially re-developed and re-occupied once closure is completed".

In addition, the readiness of the Federal government to make large expenditures of money and agency time to repair breaches may well encourage additional development of the barrier island as well as areas around the bays, encouraged by a false sense of security and the knowledge that the risks they take by living in a flood plain will be financially covered by US taxpayers. Such increased development would put even greater pressures on all of the indigenous barrier beach species and communities. The plan does not even address this issue of facilitated growth.

Additionally, the proposed dredging of the near-shore area and rich bay bottoms will disrupt bay bottom and estuarine systems, including commercial fishing and shellfishing harvests, and could also alter the near-shore ocean bottom profile and adversely affect long-shore drift patterns which could lead to increased beach erosion and thus require additional intervention. This alone would justify a positive declaration of environmental impact.

Most disturbing of all is the fact that the entire plan with its emphasis on prevention of property damage (at the expense of ecological damage) contains no scientific evidence whatsoever to indicate that any significant property damage has occurred from the recent breaches. Reference is made to higher tides but no evidence is presented indicating that any properties along the bayfront of the mainland have suffered any damage whatsover.

Additionally, the report refers to potential damage to shellfisheries in the bay from permanent or repeated breaches. The Army Corps needs to be reminded that the Brookhaven Town baymen instituted legal action to stop the repair of breaches and are opposed to such action. Furthermore, the Corps has completely ignored the fact

that inlet creation and breaches, temporary or permanent, have been a regular occurrence along the barrier beaches, and that no evidence has turned up indicating any harm to shellfish. In fact, such bay shellfish communities have obviously become completely adapted to such intermittent events which temporarily increase salinity and tide levels. Were they not adapted, the shellfish and bay life would already have disappeared. Simple facts like these are apparently being ignored by the Corps, which has yet to produce one shred of scientific evidence indicating that inlet creation and breaches are harmful in any way to the ecology of the bays. I repeat, there is not one shred of evidence; were there any, it most certainly would have been touted loudly in the report. Instead what the plan presents are glittering generalities and sweeping assumptions, devoid of any technical basis. The Corps should be ashamed of itself.

The Army Corps has made the ill-advised decision to put the "defense" of private property and the "prevention" of flood damage above the protection of the integrity of the barrier island ecosystem. In brief, economics and political pressures have once again prevailed over science, common sense, the democratic process and the preservation of barrier island integrity. This decision is deplorable and indefensible. It is time for this kind of unaccountable and irresponsible behavior to end.

The use of the discredited and manipulable "cost-benefit" ratio is flimsy and the whole effort collapses upon examination. The claim that the plan is cost-effective is based entirely on the assumption that breaches and inlet creation will damage property and bay bottom habitats, even though such damage has never materialized after previous breaches. Apparently the Corps has added up the costs of this speculative damage to expensive homes and bay bottoms and concluded that the contingency plan will cost less than the "damages, an outrageous and insupportable manipulation, based on fantasy and speculation. Unless and until the Corps can produce hard evidence of property damage from past breaches, and hard evidence of damage to bay bottoms and shellfish, it has no business making such claims or asserting that the plan costs are justified.

Once again the Federal government has been beaten into submission and once again it has been forced to throw science, truth and the democratic process on the scrap heap, to appease the demands and greed of special interests. This perversion of the political process has apparently become a secret mandate of the Army Corps. It needs to be exposed and stamped out.

Lorna Salzman

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

August 30, 1995

REPLY TO ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Mr. Gerard Stoddard
Fire Island Association, Inc.
263 West 20th Street
New York, New York 10011

Dear Mr. Stoddard:

The U.S. Army Corps of Engineers, New York District, has reviewed your letter regarding the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan dated June 26, 1994. Please find attached the District's response to your comments (Attachment 1).

If you have any questions or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Attch.

ATTACHMENT 1

Atlantic Coast of Long Island, New York
Fire Island Inlet to Montauk Point
Draft Breach Contingency Plan

1. No response required.

2. One of the objectives of the Breach Contingency Plan (BCP) is to maintain the integrity of the barrier islands, in order to prevent ocean storm damages to the mainland communities. While the plan provides for emergency measures to restore lands lost during a breaching event, it is important to note the BCP is intended to provide emergency repair on a short term basis pending reformulation of an earlier plan encompassing the Long Island shore from Fire Island to Montauk.

3. Stockpiling of sand would be done as local dredging makes sand available. The three sites identified are anticipated to be sufficient for breaches along Fire Island, as dredging would be implemented for multiple breaches. The plan does not call for stockpiling material, but states that stockpiling sand would be beneficial for use to close breaches. As material may become available for stockpiling, the FIA, and others who have expressed interest, will be notified.

4. Since the BCP is a form of Emergency Response, only small amounts of material are anticipated to be required from any offshore borrow area for breach closures. Other analyses, such as wave refraction, are being considered for the other plans such as the Reformulation Effort.

5. The language of the Environmental Assessement was intended to point out that the existing barrier island topography in the developed areas is not pristine. The Final EA will contain revised language where appropriate.

(516) 583-5069

June 26, 1995

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Stuart Piken, P.E.
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
Jacob J. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken:

Attached please find comments of the Fire Island Association on the Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan.

While it may fall short of being a substantive comment, we would like to draw your attention to the inaccurate content and irritating tone of some sections of the Environmental Assessment. See, e.g., Comment 5.

Some government employees concerned primarily with environmental questions tend to assume that all government actions with respect to the environment are correct and beneficial while those of private owners are invariably wrong and detrimental. As you know, this is far from the case.

Certainly Fire Island property owners have been extremely diligent in protecting the dunes and beaches adjacent to their communities, and there has been no recorded instance of deliberate destruction of any natural feature since the Seashore was established in 1964. Moreover, private owners have spent many hours and large amounts of money to nurture and protect Fire Island dunes and beaches. The existence of a dozen erosion control taxing districts is evidence of this. It would be appreciated if future Corps documents reflected this.

Thank you for the opportunity to comment.

Sincerely,

G B Stoddard

Gerard Stoddard

Enclosure

BOARD OF DIRECTORS: Mayors, Villages of Ocean Beach and Saltaire; Presidents, Property Owner Associations: Atlantique, Cherry Grove, Corneille Estates, Davis Park, Dunewood, Fair Harbor, Fire Island Pines, Fire Island Summer Club, and Year Round Residents, Kismet, Lonelyville, Ocean Bay Park, Ocean Beach, Point O'Woods, Robbins Rest, Saltaire, Seaview, Water Island.

Draft Executive Summary
Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point
Breach Contingency Plan

Comments by the Fire Island Association

1. General

The Association commends all those agencies and individuals who helped in the Plan's development and would like to see it implemented at the earliest possible date. No comment submitted here should be deemed a request that implementation of the plan be delayed.

2. Design Sufficiency (p.13)

The Plan states its "main consideration" is to "maintain the integrity of the protective barrier islands..." against a storm "having a five-year return period." Yet the design calls for a berm elevation of 8 feet NGVD, with an additional one foot tolerance, based on the Westhampton experience. But that "experience" has shown that a berm height of 8-9 feet NGVD has not been sufficient to prevent serious overwashes from lesser storms than of five-year-return magnitude. This has caused extra expenditures by non-federal partners that could have been avoided by building the berm to 10 feet NGVD.

3. Stockpile Locations

The Plan calls for sand stockpiles of 200,000 cubic yards at Democrat Point (already in place) and of 50,000 cyds at Sailors Haven and Old Inlet. FIA questions whether this is sufficient stockpiling to permit prompt action following a severe storm that overwashes the barrier in a number of locations. Following page BA-22 of Appendix F a list of Fire Island stockpile areas appears. Apparently the Corps' studies have shown that offshore dredging will be needed to close virtually <u>any</u> breach, given the seriousness of the threat. FIA would like to see stockpiles in the 15 indicated locations as local dredging makes sand available. Even if it is of the wrong grain size, quick availability of this material could help a prompt response to an emergency. FIA fully agrees that a combination of trucked sand from stockpiles and dredged sand from offshore is the approach most likely to contain potentially devastating breaches.

4. Borrow Source Locations

In reaches 7-9 the proximity of active borrow sites to the shore line has raised concerns in the past. To forestall expressions of concern in the connection with the Plan, it should specify that wave refraction and other analyses, together with close monitoring of contractors, will help

assure that dredging activity will have no effect on adjacent shorelines.

5. Environmental Assessment Sec. 5.09 (p. EA 10); 7.07 (p.EA 24)

It is incorrect to suggest that present owners of barrier island property have "a history of topographical disturbance." While it is true that dunes were leveled to improve vistas in the distant past, no such disturbance has been permitted or occurred in 30 years. Similarly, Section 7.07 states: "many natural physical factors of the barrier island have been intentionally removed ... to allow for construction and desired landscaping." This language is ill chosen, if an accurate and current physical description is intended. Meanwhile, the choice of words makes clear that the writer's own sense of propriety has been offended. His concern is misplaced. Cavalier destruction of resource values by property owners is by now little more than discredited folklore. It has no place in a present day technical document.

The "recent beach nourishment" was not undertaken to restore recreational beaches but to protect communities from the consequences of past human intervention (by government; not civilians) in natural coastal processes. It is this disruption as much as anything that accounts the non-existence of "natural barrier island topography" and human intervention is certainly the reason for "natural resource disruptions" in the developed communities.

Finally, the description should note that some of the area's most critical washover locations are in areas that never were developed. This would suggest that offshore bathymetry is at least as important to potential breach formation as upland development.

The sensitivity of island property owners to what appear to be unfair assessments of blame for a deteriorated environment should not be underestimated, especially given government's own inconsistent past performance. Nor should involved agencies lose sight of the key role that property owners and their associations can play in obtaining real estate rights of entry and in gaining political support and funding for worthwhile projects.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

August 30, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Joe Zysman
President
Fire Island Wilderness Committee
325 Beaverdam Road
Brookhaven, NY 11719

Dear Mr. Zysman:

Attached are responses to comments provided by your committee in a letter dated June 30, 1995, pertaining to the U.S. Army Corps of Engineers (Corps) "Fire Island Inlet to Montauk Point, Long Island, New York - Draft Breach Contingency Plan." The Corps appreciates your input on the draft document and looks forward to your committee's participation in the review process regarding other projects on Fire Island.

If you have any questions or require further assistance, please contact Mr. Peter Weppler or Mr. Steve Papa of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Attachment

ATTACHMENT 1

Atlantic Coast of Long Island, New York
Fire Island Inlet to Montauk Point
Draft Breach Contingency Plan
Response to Comments

Mapping

Maps depicting the sand stockpile locations will be standardized for each section of the document, i.e., environmental assessment, biological assessment, and executive summary. Based on consultation with the National Park Service, the proposed Breach Contingency Plan will not incorporate sand stockpiles in the Fire Island Wilderness Area or other natural areas within the Fire Island National Seashore. Therefore, any map or text reference to stockpiles in the Wilderness Area or other natural areas will be revised to refer to Watch Hill instead in the final document.

Consideration of Environmental Concerns

In this section, the Fire Island Wilderness Committee expresses the need for an environmental assessment regarding the placement of stockpiles in the wilderness area on Fire Island. As discussed with personnel with the Fire Island National Seashore, the Executive Summary and Environmental Assessment are being revised to state that NEPA documentation will be prepared upon the Corps' creation of stockpiles. Since sand stockpiles will not be placed in the wilderness area or other natural areas, an assessment of the potential impacts in these locations due to sand stockpiling is not warranted.

The Need for Stockpiling at Old Inlet

As indicated above, the proposed plan has been modified to eliminate potential sand stockpile areas within the natural areas within the Fire Island National Seashore.

Although the probability of a breach or formation of a permanent inlet varies along the length of the barrier island due to a number of physical factors, all areas of the barrier island are vulnerable to overwash events, breaching, and inlet formation during major storm events. Therefore, it is important to ensure that all sections of the barrier island are accounted for in terms of breach filling response. Since Reach 6 represents about 10% of the length of the project shoreline from Fire Island Inlet to Southampton, it was deemed reasonable to anticipate the potential siting of sand in areas adjacent to this reach for emergency response activities.

Alternatives to Stockpiling

The feasibility determination has been modified to account for the stockpile at Watch Hill instead of the wilderness area. Breaches in Reach 5 would be closed using available stockpiles; breaches in Reach 6 would be closed using the Watch Hill stockpile and upland sources, transported via the bridge leading into Smith Point County Park. The Corps will also consider the recommendations provided by the Fire Island Wilderness Committee regarding potential stockpile locations as suitable material becomes available.

An Engineering Consideration

Stockpiles for reach 6 will not be placed in the wilderness area or within other natural areas within the Fire Island National Seashore.

Unless two breaches formed and created a new barrier island from Fire Island, vehicle and equipment access could be from Robert Moses Causeway in the west. This is not the preferred response method but could be used nonetheless since it is a justified means to protect the mainland's south shore communities. In addition, barges could be used to transport emergency vehicles to the vicinity of the breach site.

Alternative Stockpile locations

The Corps will coordinate with Federal and state environmental agencies to examine the potential locations of multiple sand stockpile sites along the beach from Fire Island Inlet to Southampton. The Corps will also consider the recommendations provided by Fire Island Wilderness Committee regarding potential stockpile locations as plans are further developed.

Environmental Assessment

The Environmental Assessment will be revised to include a generic discussion of the potential impacts of stockpiling sand on the barrier island, in the process addressing issues identified by the Fire Island Wilderness Committee. The Environmental Assessment will not examine impacts of sand stockpiling on the Fire Island Wilderness Area or other natural areas since sand stockpiling will not occur at these sites.

Compliance with Protection Statutes, etc.

The Environmental Assessment will address compliance of the Breach Contingency Plan with various environmental statutes.

FIRE ISLAND WILDERNESS COMMITTEE
325 Beaverdam Road Brookhaven, N.Y. 11719

June 30, 1995

Mr. Stuart Piken, Chief of Planning
New York District
Department of the Army, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278
(Att: Mr. Peter Weppler)

Dear Mr. Piken;

Submitted herewith are the comments of the Fire Island Wilderness Committee on the U.S. Army Corps of Engineers' 'Fire Island to Montauk Point Long Island, New York Draft Breach Contingency Plan,' of December 1994, revised May 1995. Our comments are directed at those aspects of the plan affecting Fire Island, and in particular Reach 6, which encompasses the 8-mile zone between Smith Point and Watch Hill, and the federal wilderness area within it.

We wish to note at the outset that restrictions that may be imposed on activities in this area that relate to the repair of breaches by virtue of its inclusion in the National Wilderness Preservation System were addressed in the legislation establishing this wilderness area, P.L. 96-585. The legislation provides that while repair of such breaches is not required, it is also, under appropriate circumstances, not precluded.

Overview

The focus of our concern is the specific proposal for the stockpiling of closure material at a site to the west of Old Inlet, in Reach 6. The plan proposes a volume of 60,000 cubic yards for this stockpile, which amounts to an area 235 feet square by 30 feet high on all sides; as such a cnfiguration is physically not feasible, the actual stockpile would be considerably higher-- perhaps 50 feet.

This will result in a man-made mountain that would at once be the highest structure on Fire Island (along with the other stockpiles), and would be visible for miles from any direction. This is being proposed in area- the 8-mile zone- that has been set aside in the enabling legislation for the Fire Island National Seashore to be left as nearly as possible in its natural state, and at a site in the heart of a federal wilderness in which the imprint of man's work is mandated to be "substantially unnoticeable."

Mapping

While the text of the plan identifies Old Inlet as one of three stockpile sites on Fire Island (p. 17), there is some inconsistency

in locating the stockpile at this site on the maps. Following p. 9 of the Executive Summary, there is a series of "Reach Delineation and Borrow Source Location" maps, and the one covering Reach 6 indicates a stockpile siting at Old Inlet. This is repeated in Figure 2(c) of the U.S. Fish & Wildlife Coordination Act Report, included in Appendix C of the document, which appears to be identical to the above mentioned maps, and similarly show a stockpile location at Old Inlet.

There are, however, two other sets of maps in the document that do not show such a site. Figure 2 of the Environmental Assessment is a series of maps similarly identified as "Reach Delineation and Borrow Source Location," however the map covering Reach 6 does not indicate a stockpile site at Old Inlet. And following page BA-22 of the Biological Assessment, there is a list, accompanied by maps, which identify 15 separate stockpile sites on Fire Island, none of which is at Old Inlet. These appear to be the same maps and stockpile locations that were included in the National Park Service's Interim Breach Management Plan for Fire Island of August 1994.

This inconsistency is confusing, and certainly needs to be clarified, however until such clarification is made, we are compelled to treat the mapping in the Executive Summary and the text, which both identify a stockpile site at Old Inlet, as governing.

Consideration of Environmental Concerns

In the decision-making matrix, and all aspects of the text that deal with it, there is a modification of the decision-making process for breach repair if the breach occurs in the wilderness area. This consists of monitoring the breach for signs of natural closure for a limited period of time before undertaking any closure construction action. Ostensibly, this modified policy has been adopted to delay any adverse impacts resulting from construction activity, which might be completely avoided if natural closure is taking place.

At the same time that the plan takes cognizance of these adverse impacts in an environmentally sensitive area, it affords no consideration whatsoever to the potential impacts of stockpiling closure material in the same area. This is inconsistent, and ironic since there is no legislative or regulatory requirement for a waiting period (though it certainly is well-advised), but there are such requirements that would apply to stockpiling in the area.

The Need for Stockpiling at Old Inlet/Reach 6

Before examining the suitability of locating a breach material stockpile at Old Inlet as opposed to other possible locations, or other methods of breach closure, the question first arises as to the need for any stockpiling at all in this area.

The plan defines breaching as "the condition where severe overwashing erodes a new inlet which permits exchange of ocean and bay waters under normal tidal conditions" (emphasis added). A series of maps identify approximately 20 locations in the project area as vulnerable to breaching, and assigns a rough assessment of the likelihood of breaching at these locations as low, medium, or high (or a combination

of these). Old Inlet is the only one identified as being vunerable to breaching, and the only one having 'High' vulnerability.(The other, at Long Cove, is rated as 'Low').

No assessment, however, is made here (or for any other location) of the likelihood of a breach becoming a permanent inlet. Since the decision-making process was modified for this area specifically to permit a waiting period to see if a breach here would likely form an inlet, or close naturally, such an assessment, based on geologic and hydrodynamic conditions, would seem to be essential. Given these factors as they exist at Old Inlet, particularly the shallow water depths in the adjoining area of the Great South Bay, the likelihood of a breach becoming a permanent inlet here would seem to be low.

A tacit acknowledgment of this is made in the discussion, on p. 10 of the plan, of quantitative adjustments made to the 'Level of Protection' table for Old Inlet (along with Atlantique, in Reach 8):

> "This adjustment was due to existing island widths and relatively shallow water depths leeward of the most-likely breach locations, where these factors act to reduce tidal-induced current velocities with an attendant reduction in breach scouring."

History

The existence of these geological conditions seems to be reflected and made manifest in the actual history of breaching and inlet formation in the area. Where this history is examined in the plan (p. 8), the statement is made that "numerous breaches resulting from major storm events have occurred along the project shoreline." Many of these are enumerated, however on examination, they are all found to have taken place in association with either Moriches Bay or Shinnecock Bay, and none with the Great South Bay, where Old Inlet is located.

This writer has been familiar with the area for a period of 30 years, and the Fire Island National Seashore has confirmed my understanding that there has been neither breaching nor inlet formation in this area since the establishment of the Seashore in 1964, though there certainly have been periodic overwashes. Far beyond this, we are unaware of any evidence indicating that there has ever been a breach (or inlet) at the location of Old Inlet at any time since the waterway that gave the area its name closed up circa 1830.

Viewed in this persepctive, the projection, in Table 1 of the plan, of the likelihood of a breach at Old Inlet of .20 annually, or once every five (5) years, would seem to be exaggereated, and the proposal to stockpile breach closure material nearby for such a contingency is perhaps unnecessary.

Alternatives to Stockpiling

Even though there may not have been such an occurence in 150 years at Old Inlet, a hurricance of the magnitude of that of 1938 is certainly a possibility at any time in the future, and if the Corps of Engineers wishes to be able to respond to the consequences of such an event promptly, there may be alternatives other than the creation

of a sand stockpile that may be cost effective, and at the same time avoid the adverse environmental consequences of stockpiling at this location.

Aside from stockpiling, the plan identifies two other methods of delivering closure material to a breach-- offshore dredging and upland trucking. Dredging is considered, in most parts of the project area, as a supplementary procedure to the other methods, once breach filling is initiated. Upland trucking, however, while proposed for areas fronting Moriches and Shinnecock Bays, is categorically rejected for areas fronting Great South Bay, including Old Inlet, because road access to those areas is presumed to be difficult.

The logistical conditions in Reach 6 are not significantly from those in Reaches 1-4, and while the rejection of upland trucking may be valid for most of the rest of Fire Island, it does not seem to be the case for dealing with a breach at Old Inlet, for the following reasons:

- -assuming there is a pre-positioned stockpile of closure material west of Old Inlet, there is no discussion anywhere in the plan of how that material would be moved from the stockpile to the actual location of a breach.
- -this will obviously have to be effected by trucks (or other earth moving equipment) which, if not stored somewhere on Fire Island awaiting a breach (hardly a cost-effective option), would have to get to the stockpile from somewhere on the mainland.
- -it is difficult to see why the considerations for getting such empty trucks to a stockpile location are significantly different than getting loaded trucks to the same or nearby location.

Delivery of upland material from sources on the south shore to Reach 6 is not significantly different, logistically, than delivery from upland sources in Reaches 1-4, and could readily be effected via the Smith Point bridge.

Perhaps most significant, the plan actually recommends using upland sources for getting breach-filling material to Reach 5 (Fire Island east of Smith Point) via the Smith Point Bridge. Once over the bridge at Smith Point, the trucks transporting this material would still have to traverse a sand road to the east.

There is absolutely no difference between the logistical factors for Reach 5 and for Reach 6-- the sources and access routes are either identical or similar. The only difference between the two reaches is in the level of environmental protection afforded to the 8-mile zone/wilderness area in Reach 6 by federal legislation. It seems paradoxical that the Corps should be proposing a more environmentally sound and acceptable method of dealing with closure of a potential breach in a part of the project area in which there is no legislatively mandated protection.

Environmental Assessment

While our comments are principally concerned with the contents of the plan per se, as set forth in the Executive Summary, we make the following observations regarding the accompanying Environmental Assessment (EA):

While the EA is extensive (42 pages, plus a 22 page Biological Assessment, and several appendices, there are only 2 brief sentences adressing the potential impacts of the use of heavy equipment to effect a breach closure. This discussion is hardly adequate.

No mention whatsoever is made of the the potential effects of the following:

- -creating the stockpile initially (whether by trucking or dredging)
- -the impacts on vegetation on the area that the stockpile would cover, since there is no part of the Old Inlet area, other than where a breach itself would take place, that is not covered with vegetation.
- -the visual/aesthetic impact of creating a 30-50 foot mountain in a natural area.

The total absence of discussion of these issues necessarily renders this document totally inadequate to meet minimal NEPA requirements. Given the special protection ostensibly afforded this area by the enabling legislation for the Seashore, and by its inclusion in the wilderness system, a far more extensive degree of environmental documentation is called for.

Compliance With Protection Statutes, etc.

Table 1 of the Environmental Assessment (p. 38a) contains a list of Federal laws with which this plan is under constraints to comply, as well as a statement of whether such compliance has been made.

Since a large part of the project area lies within a unit of the National Park System, and a large part of that unit-- and the focus of our concerns-- has been designated as a federal wilderness area, and otherwise afforded special protection, there seem to be several significant omissions from this last. These are:

1. The Organic Act establishing the National Park System (1916)
2. The Enabling Legislation authorizing the establishment of the Fire Island National Seashore (P.L. 88-587)
3. The Wilderness Act (P.L. 88-577)
4. The Fire Island Wilderness Act (P.L. 96-585)

We find it hard to understand how legislation of such overriding significance affecting such large part of the project area has been omitted from this complaince survey, and trust that this will be corrected in the final plan. We note here our belief that the proposal to stockpile sand at Old Inlet may in fact not be in com-

The location shown on the relevant maps for the Reach 6 stockpile is just to the west of the actual site of the pre-1830 inlet, and 1/4 mile or more to the west of the location designated as being the likely location of a new breach.

Therefore, in the event of such a breach, there would seem to be no way for any trucks or other equipment to get from the mainland to the stockpile in order to get the stockpiled material to the breach-- the breach would block access to it!

Alternative Stockpile Locations

As indicated above, the 1994 Fire Island National Seashore Interim Breach Management Plan for Fire Island, and some of the maps included in this document, identified 15 stockpile sites on Fire Island. Two of these-- at Watch Hill and Smith Point-- are located relatively close the potential breach site at Old Inlet, and individually or separately (particularly the Smith Point site) would be more suitable, from both an environmental and engineering perspective, than the proposed Old Inlet stockpile site:

- -a stockpile at Smith Point, east of the potential breach site, would afford access to the material by transport equipment.
- -the plan recommends filling a breach from two sides; locating stockpiles at Smith Point and Watch Hill would serve this purpose; the existing proposal does not.
- -while either of these alternative sites are further away from the potential breach location, they are both within a reasonable distance, and far closer than the other 2 propsed sites are to other potential breach locations:
    - -while Smith Point is less than 2 miles from the possible Old Inlet breach, the proposed Sailor's Haven stockpile is 3½ miles from the Barrett Beach potential breach site, and over 4 miles from the Water Island site, both in Reach 7.
    - -the potential breach location at Atlantique is 7½ miles from the existing stockpile at Democrat Point, and there is no proposal to create a closer stockpile.
- -as the sites at Watch Hill and Smith Point are already disturbed (dredge spoil at the former, an abandoned trailer park at the latter), there would be no adverse impacts on vegetation that would otherwise be buried under a stockpile
- -establishing 2 stockpiles, on either end of Reach 6, would permit the stockpiles to be smaller and thus mitigate their visual/aesthetic impacts.

-pliance with some ...

Summary

We believe that the specific proposal in this draft plan to stockpile breach closure material at Old Inlet in Reach 6 should be withdrawn because it will result in significant adverse impacts on the immediate and surrounding natural area, and that there are other, more viable alternatives to this proposal that will better serve the stated purposes of this plan. Specifically, either a combination of upland trucking and dredging, or the alternative of stockpile siting at Smith Point and/or Watch Hill, are preferable alternatives, if a decision is made to close a breach in the area.

We thank you for the opportunity to comment on this proposal, and will follow its finalization with great interest.

Yours very truly,

FIRE ISLAND WILDERNESS COMMITTEE
Joe Zysman, President

cc: Hon. Daniel P. Moynihan, United States Senate
Hon. Alfonse M. D'Amato, United States Senate
Hon. Michael Forbes, U.S. House of Representatives
Jack Hauptman, Superintendent,
Fire Island National Seashore

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

August 30, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. J. Lee Snead, Esq.
Twomey, Latham, Shea and Kelley
Attorneys at Law
33 West Second Street
P.O. Box 398
Riverhead, New York 11901

Dear Mr. Snead:

The U.S. Army Corps of Engineers, New York District (Corps), has reviewed your letter regarding the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan dated June 30, 1994. Thank you for taking the time to review and comment on the draft plan. Your concerns will be addressed in the final document.

If you have any questions or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

In his letter of 30 June 1995, Mr. Snead writes as counsel for the Brookhaven Baymen's Association, the Bluepoints Company and the Environmental Defense Fund. Brookhaven and Bluepoints are plaintiffs represented by Mr. Snead, and Environmental Defense Fund is an intervenor, in litigation brought against the Corps of Engineers, currently pending in the US District Court for the Eastern District of New York. The substance of Mr. Snead's letter involves issues related to the litigation.

In light of this pending litigation, New York District has determined that a letter addressed to Mr. Snead, containing an item-by-item response to issues raised in his letter, was not appropriate.

The issues raised in Mr. Snead's letter are, however, addressed at various portions in the final Environmental Assessment, as follows:

Issues	Location
Project Authorization and History	Executive Summary P. 3-6; EA-8
Interim Purpose of Breach Closure	Executive Summary P. 1
Time Prior to Closure	Executive Summary P. 23; EA-1
Bay Water Quality	EA-26
Closure Design	Executive Summary P. 14
Stockpiling	Executive Summary P. 15
Endangered Species Habitat	EA, Appendix G; EA-33
Coastal Zone Management	EA Appendix E
Agency Coordination	EA-37

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June 30, 1995

BY TELEFAX:
BY FEDERAL EXPRESS:

Mr. Stuart Piken, P.E.: Chief, Planning Division
United States Army Corps of Engineers,
New York District
Jacob J. Javits Federal Building
New York, New York 10278-0090

Re: U.S. Army Corps of Engineers, N.Y. District: North Atlantic Division Public Comment: Fire Island to Montauk Point Long Island, New York Draft Breach Contingency Plan: Executive Summary and Draft Environmental Assessment - Rev. May 1995
Issue Date: May 31, 1995
Comment Date: June 30, 1995

Mr. Piken:

Our firm submits herewith, on behalf the Brookhaven Baymen's Association; the Bluepoints Company; the Great South Bay Audubon Society; the Group for the South Fork; and the Environmental Defense Fund, a Public Comment in the above referenced matter, in opposition to the Breach Contingency Plan ("the proposed plan" or "plan"), for the filling of breaches to the barrier island known as "Fire Island" between the Moriches and Fire Island Inlets prior to the preparation of an Environmental Impact Statement ("EIS").

Each of the above named entities has a special and particularized interest in the area in and around the barrier island forming the location affected by the proposed plan, and may be adversely affected by the approval of this plan without appropriate environmental review.

In this light, it should be noted that a full Environmental Impact Statement on this project is requested by the Commenters herein, with a full and open Public Comment period to be provided, as required by the National Environmental Policy Act ("NEPA").

Very Truly Yours,

J. Lee Snead

Distribution List:

cc:

Hon. Alfonse D'Amato, U.S. Senator, New York,
Hon. D. Patrick Moynihan, U.S. Senator, New York
Hon. Michael Forbes, U.S. Representation, New York,
Hon. Lazio, U.S. Representative, 2nd Cong. District, NY
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P. Weppler, USCOE - EA Coordinator, Federal Building, NY
Hon. Ceasar Trunzo, N.Y. State Senator,
J. LaMura, Town Supervisor, Town of Brookhaven,
P. McGowan, Town Supervisor, Town of Islip, Islip, NY
Ms. D. Mazzarelli, N.Y. State Assemblywoman
3rd Assembly Dist., 240 Jennings Avenue, Patchogue, NY
Mayor Frank Trotta, Village of Bellport

Description of Commenters:

The Commenters herein consist of the following:

1. The Brookhaven Baymen's Association - is a not-for-profit association of finfishers and shellfishers who harvest the marine resources of Moriches and Great South Bays. The Association comprises roughly 243 members who are active as baymen within the Town of Brookhaven.

2. The Bluepoints Company is a New York Corporation engaged in the aquacultural growth and harvesting of Hard Clams and Oysters from bay-bottom lands owned by the Company within the Great South Bay. The Bluepoints Co. is located in West Sayville, New York and employ roughly 41 residents of the Towns of Brookhaven and Islip.

3. The Great South Bay Audubon Society - is one of seven local Audubon Society chapters on Long Island. The chapter is headquartered in East Islip, New York and is comprised of approximately 1100 members, the bulk of which come from the Towns of Babylon, Brookhaven, and Islip.

4. The Group for the South Fork - is a not-for-profit environmental protection organization concerned with protecting the environmental, cultural quality of the South Fork of Long Island's East End. The Group is comprised of 3000 households within the Towns of East Hampton, Southampton and Shelter Island, and maintains its offices in Bridgehampton, New York.

5. The Environmental Defense Fund - is a not-for-profit association of Citizens, Economists, Scientists and others concerned about responsible protection of the environment. The Environmental Defense Fund is comprised of approximately 2000 members in the Long Island region, approximately 200,000 members nationally, and maintains its national headquarters in New York City.

Short Statement of Opposition:

The Commenters herein are uniformly opposed to the approval of the proposed plan to fill in breaches, covering a 32 mile expanse of relatively unspoiled barrier island, without having adequately explored in a rational and scientific manner, whether or when barrier island breaches should be filled; and the potential alternatives thereto; all before the public has adequately been apprised of the Applicant's plans or have been given the opportunity to comment thereon.

Accordingly, and because of the known and suggested significant environmental impacts attendant to the existence of barrier island breaches, the creation of new inlets, their natural closure over time, 40 C.F.R. § 1508.27(b)(1),(2),(5) & (7); the proximity of the proposed project to federally designated wilderness areas and state designated significant fish and wildlife habitats, id., subsec. (3); the precedential effect that an approval of this permit would have on other reaches of Long Island's barrier islands, id., subsec. (6); the potential impacts to known federal and state protected species inhabiting this area, id., subsec. (9); and in the interests of fostering a fully informed and participative public debate on an issue of significant local concern, id., subsec. (4), the Commenters request that open public hearings be held on this issue to collect information necessary to consider the proposed plan, and that ultimately, an Environmental Impact Statement be prepared, pursuant to the National Environmental Policy Act (NEPA) and pursuant to the New York State Environmental Quality Review Act (SEQRA), to study both the significant and the cumulative impacts of the proposed project. See, 40 C.F.R. § 1508.7; 6 N.Y.C.R.R. Part 617.

Requested Relief:

a. that the proposed plan be required to undergo public hearing for its effects on interested parties;

b. that the proposed plan be reviewed for its cumulative impact on: the water quality impacts on the Moriches and Great South Bays; the potential loss of wetlands area; the impacts upon present federally protected wilderness areas; and upon the ability of the barrier island to enhance and foster the development of both federally designated "endangered" or "threatened" species and State designated "special concern" species; and,

c. that, in lieu of redrafting the Draft Environmental Assessment a full environmental impact statement, as required by the National Environmental Policy Act, be prepared prior to the review of decision on this proposed plan.

I. Introduction:

Pursuant to the National Environmental Policy Act ("NEPA"), 42 U.S.C. 4321 et seq., the reasonably foreseeable environmental impacts are to be assessed in light of their potential significance, 40 C.F.R. § 1508.27, and in contrast to potential alternatives to the proposed action. Thus, to determine whether or not the proposal may have a significant impact upon the human environment, it is necessary that an accurate picture exists on the present environmental background conditions, and that the proposed action be assessed in light of the known background.

The assumptions underlying the proposed Breach Contingency Plan are:

(1) That all breaches between the Fire Island Inlet to Shinnecock Inlet reaches of Long Island's South Shore will be closed, and;

(2) That closure of all breaches is necessary and preferred in the context of both human and environmental impacts.

The Commentors disagree with each of these assumptions and suggest, that while closure of barrier island breaches may be appropriate on a case-by-case basis, but a blanket decision to close all breaches as soon as they form is environmentally unsound as a policy, wasteful of scarce economic resources, and ultimately will work counter to the very aims of this proposed plan.

The present background conditions in the project area with reference to water quality, tidal flux, the factors affecting the onset of Brown Tides, the effects that breaches have on shellfish, fin fish and other estuarine populations and ecosystems, and the overall impact of the known increases in sea level over time are still not well known within the project area. Accordingly, these effects should be studied prior to the approval of this plan in an effort to foster both informed debate on the issue, and in an effort to ensure that well-informed decisions are made on a range of alternatives.

In essence, the simple breach closing policy of the proposed plan will affect a complex series of events having significant ramifications upon the overall health of one of the world's premier estuary systems, and may in fact work counter to the proposal's stated aim to protect mainland shores, by preventing the widening of the barrier island due to the prevention of the known siltation/mud-flat/marsh landform creation processes initiated by natural breach closures.

A long-term view should be taken in assessing the desirability of the proposed plan. It is understandable that shoreline property owners desire to protect their property from the ravages of nature, and their concerns should be addressed.[2] Nevertheless, other entities use, depend upon and enjoy the natural, land and estuarine resources that will be affected by this plan and their concerns should be given equal consideration.

For these reasons the Commenters herein request that the present application be denied in favor of a public hearing on the proposal, and that an Environmental Impact Statement be prepared to assess the potential impacts and alternatives that will address the universe of concerns impacted by this proposal, and will ultimately lead to an informed decision on the alternatives to be implemented.

II. Discussion:

The Commenters believe that the present plan contains insufficient information to warrant authorizing a blanket plan to immediately fill in barrier island breaches in the absence of an environmental impact review.

Moreover, the Executive Summary to the Plan shows quite clearly that the purpose of both the Plan and the DEA are not to determine whether it is environmentally sound to close breaches but rather, that "the overall objective of this report is to show that it is of [sic] sound engineering, cost effective, and environmentally advisable to close breaches as soon as they occur." See Executive Summary, page 6.

The Corp's Plan fails to take a "hard look" at each of the relevant factors underlying appropriate environmental review. The Plan suffers initially from the flaw of an assumed premise -- that immediate breach closures are both necessary and desirable. Furthermore, the Corp's Plan erroneously suggests that damage to shellfish is caused by breach formation and natural breach closure. Third, the Corp's Plan and draftier fail to assess, in any meaningful way, the beneficial aspects of breaches on back bay water quality caused by an increased flushing of these bays. Rather, the Corp's Plan and DEA focus solely on the environmental consequences attendant to the simple dredge and fill operations which they assume will be required in any event. In this light, it is notable that the Corp's DEA fails to adequately assess a "no action" alternative, because its no

[2] It is also true that mainland Long Island property owners will be impacted by such storms. These effects have been occurring for hundreds of years.

action alternative is in reality closure of the breaches by dredging based on an assumed 11-month time frame.

The Corp's DEA notes many economic benefits, and few environmental detriments as a result of its preferred Plan. Those environmental detriments noted are usually of an unspecified or speculative nature, e.g., the back bay area would be vulnerable to additional impacts. See EA-23, §7.01. It is noted that no present breach condition exists, nor are any reasonably predicted in the immediate future. Also, in recent breach/inlet creation events not one life was lost as a result of flooding. Accordingly, the need to fully assess the environmental impacts of the proposed action, while time allows for such review, militates toward a public hearing and EIS on this proposal. The plan and Environmental Assessment should be reviewed for its cumulative impacts upon the following environmental concerns.

Specific concerns noted from the Draft Plan and Draft Environmental Assessment ("DEA") are as follows:

A. The proposed breach filling plan will have significant environmental impacts upon the water quality of the Moriches and Great South Bays:

It is beyond cavil that the formation of new inlets in the barrier island system has significant beneficial impacts upon the environment of the bays which they will flush. Among the potential beneficial effects noted are the decrease in pollution within the bays as a result of increased "flushing" caused by new breaches and inlets, the reduction of coliform bacteria in the bays pursuant to this flushing, and the creation of new wetlands areas as a result of barrier island breaching. These affects are noted in the DEA. See, DEA §7.19; see generally FWS Coordination Report, p. 7-14.

These impacts are also documented in several recent studies which are available to the Corps, but which appear unreviewed by them. Specifically noted among these references are: the *Final Environmental Impact Statement for the Fire Island Inlet to Montauk Point, New York, Beach Erosion and Hurricane Protection Project* ("EIS"), dated September, 1977, at § 6; *Supplement No. 2 to the General Design Memorandum* for the same project ("Supplement 2"), dated 1980, at E-10, § E24; and, *The Environmental Impacts of Barrier Island Breaching with Particular Focus on the South Shore of Long Island, New York* ("Task Force Study"), prepared by an independent consultant for the Governor's Coastal Erosion Task Force, September, 1993, at 6.

1. These impacts will have a significant effect upon commercial and recreational use of fish and wildlife resources.

Contrary to the Corp's assertions, the water quality impacts noted in the above studies will cause a significant beneficial impact upon the commercial and recreational use of fish and wildlife resources. Accordingly, the proposed plan should be denied at this time, in favor of a full environmental impact statement being prepared.

As noted in the Proposed Plan and DEA provided by the Corp., shellfish and finfishing opportunities presently exist in the project area. See FWS Report, pp. 11-14. Indeed, what was formerly the world's premier Hard Clam, Mercenaria mercenaria, fishery was centered in the bays which the project area encompasses. In recent years Hard Clams and other marine invertebrates have been harshly impacted by the Brown Tides seen within these bays. Both anecdotal and scientific evidence exists which suggests that the opening of breaches and inlets will have a beneficial impact upon both shellfish and finfish populations within these bays by removing pollutants and coliform bacteria. See generally, EIS, § 6; Supplement 2, § E-10, at E24; Task Force study at 6.

Indeed, and with respect to the lessening of pollution in the back bays, the Eastern District of New York found that the existence of Little Pike's Inlet[3] in Moriches Bay both affected the flushing of that bay and resulted in a "decrease in pollutants which occurred during the period that the waters of the Atlantic entered Moriches Bay[.]" See, Brookhaven Baymen's Ass'n v. Corps of Engineers, CV 93-3841, at 12 (E.D.N.Y. 1993)(memorandum order). Similarly, the impact that increased circulation and flushing might have on the attenuation of the Brown Tides within the south shore bays is suggested in the Task Force study at page 21. In addition, the Suffolk County Department of Health's, *BTCAMP Shoreline Sampling Study*, containing data from January, 1992 through August, 3, 1993 ("BTCAMP Study"), is highly suggestive that during the period in which Little Pike's Inlet grew -- March through July, 1993 -- that Brown Tide populations were dramatically reduced within both Great South Bay (zero population in April through July), and Moriches Bay.

Indeed, the only adverse impact upon shellfish or finfish that has been suggested is that an influx of ocean water to the bays might affect shellfish recruitment, and may change the structure of the finfish population. To the

[3]Created as a result of the 1992 November nor'easter and 1993 March storms.

extent that this is true it is obviously a factor to be weighed. Nevertheless, a Suffolk County Department of Health study has indicated that the overall impact of ocean water influx is statistically insignificant. See, Suffolk County Department of Health Services, *A Brief Description of Moriches Bay Salinity before and After the December 1, 1993 Storm,* dated March, 1993. This lack of significant impact upon bay communities is specifically noted in the FWS Coordination, p. 11, yet the Corp's plan asserts that salinity change will be a deleterious environmental impact. See, DEA, § 7.18.

Moreover, the Department of the Interior has officially recognized the important nature of shellfish harvesting within this region and supports efforts to protect this industry.

> "Of course shellfishing is not destructive of seashore values. Instead it is entirely harmonious with the conservation objectives of [the Fire Island Wilderness Act]. . . . [W]e regard this as a traditional use which contributes to the seashore atmosphere that we expect to perpetuate."

Letter to Hon. O.G. Pike, Representative-New York, from S.L. Udall, Secretary of the Interior, dated 8/13/64; published in 164 Cong. Rec. H.R. 19995 (1964)(emphasis added).

Because of these noted and projected significant impacts to the water quality and the shellfish and finfish ecology of the back-bays that would be caused by the routine closure of barrier island breaches, the Corp's answer provided in the DEA, §7.17-18, appears suspect. Moreover, any actions which may be deleterious to shellfishing in this area would contravene the Department of the Interior's pledge to honor the traditional nature of shellfishing and to perpetuate its existence. Every effort to ameliorate such consequences, to include allowing barrier island beaches to flush the bays, should therefore be undertaken.

Accordingly, a full EIS is warranted both under the National Environmental Policy Act and under the State Environmental Quality Review Act. Furthermore, a public hearing is warranted in this regard to obtain information upon which the Administrator, Environmental Protection Agency or his designee may make a determination pursuant to Clean Water Act § 404(c), 42 U.S.C. 1344(c).

B. The proposed breach filling permit would affect natural coastal processes which are crucial to the formation of new tidal wetlands:

An additional area of concern centers on the fact that the N.Y. State Coastal Management Program Consistency determination ("determination") forwarded by the State suggests that the filling of barrier island breaches is consistent with each Coastal Policy identified as potentially impacted. See determination, p. EA-E-1.

A more questionable statement on the nature of the proposed project could not be made. The breaching of barrier islands is an absolutely natural coastal process which has occurred along the south shore of Long Island -- as it has every where else -- since pre-history. There has been no serious dispute on this issue. To this point, the Task Force Study specifically notes that breaching and inlet formation is a natural process aiding in wetlands formation, and notes other references to substantiate the point. Id., at 35.

It is noted that the consistency determination addresses only the immediate effects of closing breaches in terms of dredge and fill activities, not the long term water quality impacts that will be created as a result of the lessened flushing of the back bays, nor is the issue of the loss of potential wetlands creation addressed. As well, it is noted that the Corp's preferred alternative for filling breaches within the Fire Island wilderness area is the use of stockpiled sand and trucking in sand from upland sources. Such activities are specifically prescribed by the Wilderness Act. Moreover, the location of the sand stockpile noted at the Reach Delineation & Borrow Source Location Map within Reach 6 is located to the west of where a potential breach is postulated. One questions how the Corps of Engineers plans to reach the sand stockpile by truck with the sand stockpile in this location. Moreover, the visual effects of such a sand stockpile in any location of the wilderness area would be anathema.

Accordingly, the State Consistency Determination should be viewed as unresponsive to the overall environmental impact of the plan, and the present DEA and plan should be denied in favor of a more complete environmental impact statement being produced.

C. The proposed breach filling plan would adversely affect the natural state of federally protected wilderness area:

Fire Island National Seashore was created by Act of Congress in 1964, P.L. 88-587, and the Fire Island Wilderness was created by Congressional Act in 1980, P.L. 95-585. Under the Fire Island Wilderness Act 1381 acres of designated lands are protected in conformance with the provisions of the National Wilderness Act, P.L. 88-577.

1) Berm Construction

It is noted in the overall plan to fill breaches that sand berms, built to a height of 9.0' NGVD and 150 feet in width, will be placed not along the line of the existing dune line, but rather, significantly inland of the existing dune toe along the centerline of the barrier island.[4] Aside from the disruption to the natural state of the barrier island in general, this plan has significant importance for that portion of the project area which is designated as a federally protected wilderness area.

The Wilderness Act requires that wilderness areas are to be left essentially unspoiled and will retain their "primeval character and influence." The purpose of the Wilderness Act is to preserve natural conditions in a state which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." Wilderness Act of 1964, § 2(c). A 150 foot wide, 9 foot high trapezoidal berm placed in the center of a pristine wilderness is hardly "unnoticeable".

(2) Stockpiling of Sand within the Wilderness Area:

A second impact which is violative of the Wilderness Act is the stackpiling of sand within the Wilderness area. The "Reach Delineation & Borrow Source Location Map" for Reach 6 notes that a sand and stockpile is planned in this area. Moreoever, the planned site is West of the potential breach site noted at Old Inlet Beach. Aside from the significant visual impact of a wholly man-made pile of sand within a natural area, our questions how the Corp's plans to reach the stockpile with trucks.

Because of the visual impacts of the proposed project, because the proposal runs counter to the aim of the Wilderness Act, as well as for other reasons mentioned in this comment, alternatives to the filling of breaches and the placement of berms within the heart of a wilderness area should be explored.

D. The proposed plan would impact critical nesting habitat for federally protected endangered or threatened species:

[4]The plan for breach repair construction is contained in the Draft Interim Breach Management Plan, prepared by joint applicants USCOE, NYSDOS, NYSDEC, dated August 25,1994.

(1) Piping Plover, Least Tern and Seabeach Amaranth:

It is well established that the existence of new breach and overwash areas enhance the ability of at least two presently endangered or threatened bird species to nest and rear hatchlings. These species are the Least Tern, Sterna antillarum, and Piping Plover, Charadrius melodus. In addition, a federally "threatened" plant, the Seabeach Amaranth, Amaranthus pumilus, is noted along these stretches of beach. Any disruption or loss of what would be known or designated nesting areas for the bird species noted would violate § 2 of the Endangered Species Act. 16 U.S.C. § 1531.

The potential impacts on these federally listed species are noted by the Corps in the plan and Draft EA. In addition, during the recent breach and inlet creation at Little Pike's Inlet, the U.S. Fish and Wildlife Service ("FWS") as part of its coordinating responsibilities informed the USACOE that Piping Plover and Least Terns had been showing courtship behavior and actively nesting in the western beach area of the Inlet. See, FWS letter of June 23, 1993 to B. Bergmann, USACOE.

Indeed, in its June 23, 1993 letter on the impacts of the filling of Little Pike's Inlet the FWS specifically informed the USACOE that:

> "It is the Service's opinion that the proposed project may result in substantial and unacceptable impacts to resources of National importance as defined in paragraph one, Part IV of the 1992 Memorandum of Agreement between the Department of the Interior and the Department of the Army regarding Section 404(q) of the Clean Water Act."

Id., at p. 6 ("Conclusion")(emphasis original). This statement is contained in the plan, p. 29.

It is quite likely that should breach occur in the barrier island that such a location would be prime nesting habitat for both Least Terns and Piping Plovers. The former example of these "listed" species breeding in the breach area of Little Pike's Inlet points directly to the benefits to endangered species, and the potential significant impact of not allowing these breaches to form, remain open, and then close naturally. Moreover, the FWS is on record noting the potential significant impact.

In what is probably the Corp's most questionable review of the environmental impacts attendant to its breach closure Plan, the Corps suggests that allowing breaches to be created and then filled in will create piping plover and least turned

colony breeding areas. See DEA, §5.57. The Corps mysteriously argues that a breach closure 11 to 12 months after breach creation "may impact the shorebirds that begin to utilize the newly formed habitat." See DEA, §7.50. This argument is ridiculous. The Corps suggests that by closing breaches it is creating nesting habitat, rather than admitting that the closure of these breaches in essence destroys isolated and already used and existing nesting habitats.

As the Fish and Wildlife Service is an agency with "special expertise" pursuant to NEPA, 40 C.F.R. § 1508.26, its opinion as to whether a potential significant impact is projected should be controlling in any final determination on whether an EIS is warranted. In light of the statements by the FWS on the impact that filling barrier island breaches will have on Least Terns, Piping Plovers and Seabeach Amaranth; and due to the Joint Applicant's recognition of this fact, the present application should be denied in favor of a more complete environmental impact statement being produced.

E. The proposed construction would impact a Significant Wildlife Habitat and effect State Threatened or Special Concern Species:

It is noted that the area impacted by the permit application borders on Moriches and Great South Bays which are considered to be "Significant Coastal Fish and Wildlife Habitat" portions of which are included within the "South Shore Estuary Reserve".

In addition, several species of animal life are regularly observed along this reach of Fire Island which are afforded protection under State preservation laws. Among these are the Northern Harrier, Circus cyaneus, a State "Threatened" species, and the Diamondback Terrapin, Malaclemys terrapin, which is a State "Special Concern" species.[5] Undoubtedly, other species which are presently afforded protection under either federal or State law inhabit the application area.

Under the New York State wetlands regulations, the adjacent area ("AA") and the tidal wetlands are considered to be a single "integrated natural system" for purposes of assessing impacts upon wetlands. See generally, 6 NYCRR Part 661.2. Under SEQRA, cumulative impacts are to be taken into account when an agency reviews a particular application. See

[5]Neither of these species are mentioned in the Corps Draft EA or the Proposed Plan. Therefore, the EA is deficient in this regard.

also, § 617.11(b). Accordingly, the cumulative impacts on these wetlands, the recognized environmental stature of this area, and the impact to threatened species must be taken into account by any lead or coordinating agency. See 6 NYCRR § 617.11(a)(2), (5) & (8). Such cumulative impacts are also required to be reviewed pursuant to NEPA. See, 40 C.F.R. § 1508.7. Accordingly, the present application should be denied in favor of a more complete environmental impact statement being produced.

F. Approval of this application would set a precedent for the filling of breaches in other reaches of barrier islands along Long Island's south shore:

Under both NEPA and SEQRA, actions that would set a precedent for the conduct of similar future actions in other locations are potentially significant in character. Because the granting of a blanket approval in along the reach of Fire Island between Moriches and Fire Island Inlets would set a precedent for applications to be made on all other barrier island areas the potentially significant nature of the proposal is clear. Accordingly, this plan should be reviewed for its significance in this light. See, 40 C.F.R. § 1508.27(b)(6); 6 N.Y.C.R.R. § 617.

G. Approval of this application would disregard the central mandates of the Coastal Zone Management Act and the State's Waterfront Revitalization and Coastal Resources Law, which require full review of environmental impacts before the authorization of projects which will affect the coastal zone:

The impact of barrier island breaching on water quality, ecological diversification and supportability, wetlands production are required to be reviewed pursuant to both the Coastal Zone Management Act ("CZMA"), 16 U.S.C. §§ 1451 et seq., and pursuant to the New York State Executive Law, Article 42. As noted previously, the proposed plan both assumes that breaches will be filled, and fails to assess impacts other than those caused immediately by the fill of breaches.

Indeed, in creating the CZMA, the Congress made specific findings that the increasing and competing demands made upon the public commons has "resulted in the loss of living marine resources, wildlife, nutrient rich areas, [and] permanent and adverse changes to ecological systems" comprising the coastal zone. CZMA § 302(c). Moreover, the Congress noted that "the coastal zone, and the fish, shellfish, and other living marine resources, and wildlife therein, are ecologically

fragile and consequently extremely vulnerable to destruction by man's alterations." Id., § 302(d).

As a result of these and other effects the Congress declared a national policy "to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone." CZMA § 301(1). Congress pledged support and assistance to the various states in "exercising effectively their responsibilities in the coastal zone through the development and implementation of management programs . . . giving full consideration to ecological, cultural, historic, and esthetic values as well as to the needs of economic development[.]" Id., § 303(2). the full consideration required in the CZMA includes "the protection of natural resources including wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat, within the coastal zone." CZMA § 303(2)(A)(emphases added throughout paragraph).

The Congressional goals and policies embodied in the CZMA are incumbent upon the Corps of Engineers pursuant to requiring the preservation and enhancement of the ecology of the coastal zone. Thus, it is abundantly clear that both the CZMA and NEPA contemplate a thorough review of environmental as well as other factors in making policy decisions applicable to the coastal zone. In light of the previous discussion surrounding the potential impacts of routine breach closure on the back-bay water quality, ecological supportability, and upon the potential loss of wetland and endangered species nesting areas, a complete review is warranted. Accordingly, a review of the impacts of closing inlets on the back-bays, as well as any potential alternatives available, must necessarily be undertaken in any fulsome discussion of a proposed application that would provide a blanket authorization for their closure.

INCORPORATED VILLAGE OF SALTAIRE
SALTAIRE, NEW YORK

OFFICE OF THE MAYOR

MAILING ADDRESS:
P.O. BOX P-551
BAY SHORE, NEW YORK 11706
(516) 583-5566
FAX (516) 583-5986

July 7, 1995

Stuart Piken, P. E. Chief
Planning Division New York District
Corps of Engineers
26 Federal Plaza
New York, N. Y. 10278-0090

RE: BREACH CONTINGENCY PLAN
FIRE ISLAND INLET TO MONTAUK POINT
LONG ISLAND, NEW YORK

Dear Chief Piken:

On behalf of the Village of Saltaire permit me to express our gratitude to the District for enabling Joseph Vietri to attend our Village Annual summer meeting on Saturday, July 1, 1995. Mr. Vietri's remarks were extremely informative and the large number of our taxpayers who attended the meeting were uniformly pleased with his knowledgeable expression of the Corps' concern for the maintenance of the integrity of the Fire Island barrier.

The meeting resolved to furnish you with the enclosed communication from our taxpayers, signed by substantially all of those in attendance.

The Village of Saltaire would welcome any opportunity to assist in advancing the adoption of, and implementation of the Breach Contingency Plan. We hope it might be modified to increase the proposed berm height to 10 feet, and to increase the number of sand stockpiles.

Sincerely yours,

Martin M. Berger

Martin M. Berger

Enclosure

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

July 26, 1995

Planning Division
Coastal Section

Martin M. Berger, Mayor of Saltaire
P.O. Box P-551
Bay Shore, New York 11706

Dear Mr. Berger:

This is in response to your letter dated July 7, 1995, regarding the Breach Contingency Plan. Thank you for your interest in promoting the acceptance of the Breach Contingency Plan in your community. We are currently continuing work towards implementing the plan in time for breaches which may occur during the upcoming storm season.

Regarding your comment on increasing the berm height from +9 ft to +10 ft NGVD; the Breach Contingency Plan is intended only as an emergency response, and is therefore limited to rebuilding the beach to the approximate elevation of the existing conditions. This 9 ft elevation has been determined to characterize existing conditions.

In response to your comment on stockpiling, the stockpiles have been determined to be economically beneficial, but the Corps will only create stockpiles as material becomes available, and not as a prerequisite to implementing the Breach Contingency Plan. Separate documentation will be prepared to provide details and impacts of stockpile creation.

If you have any further questions regarding the Breach Contingency Plan, please contact me or Mr. Clifford Jones III, study manager at (212) 264-9079.

Sincerely,

STUART PIKEN, P.E.
CHIEF, PLANNING DIVISION

Encls.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

August 30, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Steven L. Machovec
Resources Planning Staff Leader
Natural Resources Conservation Service
The Galleries of Syracuse
411 S. Salina St., Suite 354
Syracuse, NY 13202-2450

Dear Mr. Machovec:

The attached responds to comments provided by the Natural Resources Conservation Service in a letter dated July 3, 1995, on the U.S. Army Corps of Engineers (Corps) proposed plan entitled "Draft Breach Contingency Plan, Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York."

Thank you for taking the time to review the above referenced plan. If you have any questions or additional comments, please feel free to contact Mr. Peter Weppler or Mr. Steven Papa of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Attch.

cc: USFWS
NYSDOS-CZM
NYSDEC-Region I
NPS-FINS

ATTACHMENT 1

Atlantic Coast of Long Island, New York
Fire Island Inlet to Montauk Point
Draft Breach Contingency Plan
Response to Comments

1) The Corps of Engineers also recognizes the efforts of individual communities to protect the shoreline. In the case of The Breach Contingency Plan where mainland communities were also deemed to be at risk, congressional and municipal officials all requested the assistance of the Corps in developing a plan to provide a rapid response to breaches.

2) Although it is the local and state governments which primarily regulate development in the coastal zone, it is important to realize that breach closure is recommended for protection of mainland structures. The National Park Service prohibits development in the Wilderness Area; however, this section of the barrier island is still vulnerable to breaching. The 1980 and 1992 breaches indicated a need for assistance in closure of breaches within the limits of a previously authorized project; this plan is intended to accelerate the response time. Questions regarding land use management should be directed to the local and state environmental planning departments, which regulate development in those portions of the barrier island under their jurisdictions.

3) Finally, we are interested in learning more about the technological developments your agency has made in the area of dune reclamation and stabilization. I will have my staff contact the representatives mentioned in your letter.

United States
Department of
Agriculture

Natural Resources
Conservation
Service

The Galleries of Syracuse
411 S. Salina St., Suite 354
Syracuse, New York 13202-2450

July 3, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
Department of the Army
New York District, Corps of Engineers
Jacob J. Javits Federal Building
New York, NY 10278-0090

Re: Fire Island to Montauk Point, Long Island: Draft Breach Contingency Plan

Dear Mr. Piken,

The U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service) is in receipt of the above cited document and offers comments below.

1) The development of a self taxing erosion control district as that cited for the Fire Island community on page 4 underscores an excellent effort on the part of local control and responsibility for dealing with breach occurrences. It should be noted that development of state and local taxes to fund soil and water conservation efforts in states like Missouri have been successful in treating many associated resource problems.

2) What efforts are being made to control, curtail, and/or prohibit continued development on the barrier beaches? Such efforts on flood plains have reduced potential damages and loss of life and property and subsequent tax dollars diverted to disaster relief.

3) The NRCS has developed technologies and plant materials proven effective in dune stabilization and reclamation. Information can obtained through our field office in Riverhead, New York or through the Plant Materials Specialist in Syracuse, New York. The addresses are listed below:

Mr. Allan S. Connell, District Conservationist
USDA - Natural Resources Conservation Service
Riverhead County Center
300 Center Drive, Room E-16
Riverhead, New York 11901-3160

Tel: 516-727-2315 FAX: 516-727-3160

Mr. John A. Dickerson, Plant Materials Specialist
USDA - Natural Resources Conservation Service
The Galleries of Syracuse
411 S. Salina St., Suite 354
Syracuse, New York 13202-2450

Tel: 315-477-6535 FAX: 315-477-6550

Thank you for the opportunity to review the document. If the NRCS can be of any additional assistance please feel free to contact me at 315-477-6527.

S. L. Machovec

STEVEN L. MACHOVEC
Resources Planning Staff Leader

par/PAR

cc: R. Swenson, State Conservationist, NRCS, Syracuse, NY
P. Ray, Resource Conservationist, NRCS, Syracuse, NY
A. Connell, District Conservationist, NRCS, Riverhead, NY
G. Sisco, Area Conservationist, NRCS, Middletown, NY
J. Dickerson, Plant Materials Specialist, NRCS, Syracuse, NY

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

August 30, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Michael Ludwig
Assistant Coordinator
Habitat and Protected Resources Division
National Marine Fisheries Service
Milford, CT 06460

Attn: Ms. Diane Rusanowky

Dear Mr. Ludwig:

The enclosed responds to comments provided by the National Marine Fisheries Service (NMFS) in a letter dated July 7, 1995, on the U.S. Army Corps of Engineers (Corps) proposed plan entitled "Draft Breach Contingency Plan, Executive Summary, Draft Environmental Assessment, Atlantic Coast of Long Island, Fire Island to Montauk Point, New York." The Corps is appreciative of your input and comments on the draft plan and looks forward to working with the NMFS on future projects.

If you have any questions or require further assistance, please contact Mr. Peter Weppler or Mr. Steven Papa of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

ATTACHMENT 1

Atlantic Coast of Long Island, New York
Fire island Inlet to Montauk Point
Draft Breach Contingency Plan

1) The Corps of Engineers feels that a seasonal window restriction conflicts with the goal of the plan, which is to provide a timely response to breaches. Appendix A of the Environmental Assessment provides the monitoring protocol for protecting Federally listed marine species such as endangered sea turtles at the off shore borrow areas during hopper dredge operations. Pursuant to section 7 of the Endangered Species Act of 1973, the Corps will further consult with NMFS if it is determined that any aspect of the project is likely to adversely affect species under NMFS' jurisdiction.

2) The Corps will be investigating the physical and biological characteristics of potential borrow areas as part of the larger Reformulation Study of the Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York. Some biological surveys were conducted in the offshore borrow areas between Moriches and Shinnecock Inlets in 1994. Results of these surveys will be available sometime in August 1995, and will assist the Corps in examining potential mitigative measures for these sites.

3) The Corps' standard construction procedures address the use of best handling mangement practices.

4) In regard to the Fish and Wildlife Coordination Act Report, you stated that substantial comments were not included in the draft report transmitted to the Corps. In order to address the concerns of your agency at this time, we suggest that you furnish a synopsis of your comments so we can attach them as an addendum to the final FWCA report in the Environmental Assessment. We request that you forward these as soon as possible to enable us to meet scheduling requirements.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat and Protected
Resources Division
212 Rogers Avenue
Milford, CT 06460

July 7, 1995

Stuart Piken, P.E.
Chief, Planning Division
Department of the Army
New York District, Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Piken:

Reference is made to your request for the National Marine Fisheries Service to review and comment on the Draft Environmental Assessment for the proposed Atlantic Coast of Long Island, Fire Island Inlet to Montauk Point, New York, Breach Contingency Plan (BCP). We have completed our assessment of the BCP and note that this breach closure plan has great potential to be implemented with a higher degree of environmental protection and at a lower cost than the present, reactive response mode. As such, the proposed plan is responsive to guidance from both the federal Executive Branch (National Performance Review) as well as the New York Governor's Taskforce on Coastal Erosion. Provided that the final implementation plan incorporates measures that ensure aquatic resources receive adequate protection, we will not oppose the proposed breach closure program.

The proposed BCP endorses the use of pre-selected upland sources or strategically placed stockpiles of suitable fill material as the preferred alternatives for breach closure in much of the Fire Island Inlet to Montauk Point region. By implementing either alternative, impacts to living aquatic resources can be avoided entirely or mitigated by appropriate management practices. For most resources under the jurisdiction of this agency, mitigation would likely incorporate: 1) seasonal working windows or dredging plant selection, 2) a requirement to perform baseline and subsequent, periodic benthic surveys of topography and community structure to assess topographic changes and ensure that borrow areas are depauperate of benthic organisms and 3) use of best material handling management practices. Depending on the individual borrow area, mitigation measures may be necessary to protect federally listed species, harvested fishery resources and their forage or a combination of these species. My staff will be happy to coordinate with your project manager on this aspect of the final plan formulation.

Our only major concern with the Draft Environmental Assessment is with the Draft Fish and Wildlife Coordination Report. We submitted a number of editorial comments on this portion of the assess-

ment to the US Fish and Wildlife Service's Long Island Field Office. We believe the recommended changes will improve the assessment of both the aquatic zone resources and discussion of the physical dynamics of barrier islands and coastal habitats. While we would not expect these comments to be reflected in your draft EA, we request that they be incorporated in the final documentation for the BCP. A synopsis of these comments is available upon request.

As the biological assessment is completed and project plans are finalized, my staff is available for consultation. Should you wish to discuss this matter further, please contact Diane Rusanowsky at (203) 783-4228.

Sincerely yours,

Diane Rusanowsky

for Michael Ludwig
Assistant Coordinator
Habitat Program

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

August 30, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Andrew L. Raddant
Regional Environmental Officer
U.S. Department of the Interior
Office of Environmental Policy and Compliance
408 Atlantic Avenue - Room 142
Boston, MA 02210-3334

Dear Mr. Raddant:

The enclosed responds to your letter dated July 11, 1995, which provided the Department of Interior's (DOI) comments on the U.S. Army Corps of Engineer's (Corps) proposed plan entitled "Atlantic Coast of Long Island, Fire Island to Montauk Point, New York, Draft Breach Contingency Plan."

The Corps is appreciative of the DOI for providing comments and technical assistance on the proposed plan throughout its development. If you have any questions or require further assistance, please contact Mr. Peter Weppler of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

General Comments section

Response: The goal and time frame of the plan, in the context of the larger reformulation and interim studies, is specifically addressed in the "Introduction" section of the Executive Summary. While the Corps agrees that the plan to close breaches is interim to the overall storm damage reduction plan, identifying it as the Interim Breach Contingency Plan implies that the Corps would develop a full breach plan. This is not the case.

Findings of other agencies regarding the impacts of man-made structures should be incorporated into reports for the Reformulation effort. The final version of the Breach Contingency Plan (BCP) will contain an expanded discussion on the environmental impacts of breaches on barrier island habitats.

It would be inaccurate to characterize the proposed Breach Contingency Plan (BCP) as an "irrevocable plan of action." As the BCP will utilize soft measures only, it is not irrevocable or irreversible.

Specific Comments

Response to #2/3. The construction of up to 50 groins remains an authorized portion of the project.

Response to #7

a. The following has been added to Section 7.24 of the Environmental Assessment: "No material was collected from the peat layer exposed during the 1992 storm. Because of time constraints, no testing was conducted in this area."

b. The issue of impacting cultural resources by sand placement has been addressed in Section 7.56 of the Environmental Assessment. The following has been added to Section 7.54 of the Environmental Assessment: "However, the use of heavy equipment also has the potential to damage exposed sites located adjacent to breach areas."

c. The Executive Summary will be edited to include a discussion of known historic sites and sensitive archaeological sites and areas.

Response to #9. Documentation concerning damage and changed conditions in Moriches Bay is provided and cited in "Final Environmental Assessment for the Emergency Breach Closure, Westhampton Beach, New York," dated February 1994, specifically in paragraphs 5.16-5.18. The revised BCP will discuss changes in environmental conditions which may have resulted, as opposed to damages.

Response to #10. In the problem description, the distinction is

made between overwashing, breaching, and inlet formation.

Response to #11. The increase in storm surge elevation was reported by residents. Detailed computations used to estimate damages due to a breach event are available for review at the New York District.

Response to #12. The Environmental Assessment states that the potential for barrier breaching is qualitative. The risk was quantified using the procedures developed for the Westhampton Interim Shore Protection Project, and not the Westhampton/Moriches Breach parameters (refer to para. 1 on pg. 10). As stated on page 25, natural closure is expected to occur at Old Inlet. Furthermore, the Decision Matrix shown in Figure 6 includes monitoring of the Wilderness Area before Federal action is undertaken.

Response to #13. The BCP is based on the uncertainty of breaching and provides for quick response in the event of a breach, at the least possible expense in federal funds. The BCP proposes that breaches in natural areas be monitored prior to Federal action.

Response to #14. The stockpile areas considered in the revised report have been coordinated with the Department of Interior.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
408 Atlantic Avenue - Room 142
Boston, Massachusetts 02210-3334

ER 95/458

July 11, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, N.Y. 10278-0090

Dear Mr. Piken:

The Department of the Interior has reviewed the Draft Breach Contingency Plan, Executive Summary and Draft Environmental Assessment, Fire Island Inlet to Montauk Point, Long Island, New York, and has the following comments.

GENERAL COMMENTS

The Department recommends that the Plan be retitled as an "*Interim* Breach Contingency Plan" (emphasis added). The new title would more accurately reflect the Army Corps of Engineers' continuing re-examination of storm protection measures along the South Shore of the Long Island barrier system, being conducted under the title "Fire Island to Montauk Point Reformulation Plan." It must be recognized that the filling of breaches is a selective interim measure proposed by the Corps for the 10 year period during which the Reformulation Plan will be completed.

The change in title would also recognize that ongoing but unreferenced research on the real and perceived threats of barrier island breaching upon the cultural and natural resources of the islands, estuaries, and estuarine-margins, may provide subsequent guidance for substantial changes in the plan. For instance, reference should be made in the Plan to the studies being conducted by the National Biological Service on the impacts of man-made structures on Fire Island erosion.

While the National Park Service Policy on shoreline management is to normally allow natural processes to proceed unabated, in cases where human influence may well have interrupted the natural processes, and where there is serious threat to lives and significant loss of developed properties outside Seashore boundaries, it is deemed reasonable and responsible to consider exception to standing National Park Service policy.

Finally, the tone of the document seems to indicate that filling a breach will have positive or beneficial impacts on all aspects of a barrier island system, whether they be natural, cultural, physical, sociological or economical. It can be argued that there are also positive impacts to leaving a breach open, which this plan does not really explain. It is important then, that the document not simply equate change with damages or benefits. Reduction of the present level of uncertainty regarding breach impacts should be accomplished by ongoing and planned research sponsored by several different agencies, which in turn should be taken into account before adopting an irrevocable plan of action.

SPECIFIC COMMENTS

Please note that comments 1 through 8 were presented to the Corps in a meeting held on June 28, between staff of the Corps and the National Park Service, Fire Island National Seashore. Responses by the Corps follow each comment. Additional specific comments not benefiting from prior discussion with Corps personnel are also included below.

1. Executive Summary, page 6, paragraph 1.

One example of the aforementioned biased tone of the document appears in the Executive Summary, on page six, first paragraph: "...causing severe coastal damage... and environmental damage to the Moriches Bay." There are differing opinions as to whether or not leaving open or closing a breach would cause severe environmental damage to Moriches or any of the other bays behind Fire Island.

Corps: The "tone" of the document will be edited in various areas (especially the Executive Summary) to reflect a balanced discussion. In the example mentioned above, the Corps will change the statement to read "...causing impacts to the south shore of Long Island and Moriches Bay."

2. Executive Summary, page 2, paragraph 3: "The project authorizes construction of 50 groins subject to the actual need based on experience."

3. Page 3, paragraph 1: "All remaining, uncompleted portions of the authorized project are anticipated to be constructed as continuation of construction, subject to the availability of construction General funds and matching nonfederal share of project costs."

Since this project Environmental Impact Statement was not approved, the two statements noted above should be deleted from the document. Otherwise, confusion may result, leaving the public with the impression that the groins may still be

exposed or the extent of Section 110 documentation in the exposed areas. Further discussion must recognize that immediate filling of the breach may adversely effect the prehistoric remains by burying or damaging by vehicles.

Additionally, the discussion in the Executive Summary is limited to prehistoric sites and areas. Discussion should include known historic sites and sensitive archaeological sites and areas.

Corps: These discussions will be added to the document.

8. Page EA-23.

The Corps will include the following statements:

> If peat layers, that may contain prehistoric remains, are exposed, there should be opportunity given (as is feasible under project conditions and as long as there is no time delay added to closing the breach) to conduct, at a minimum, pedestrian surveys. Any area with potential remains should be surveyed and documented.
>
> Considering the almost total absence of any archeological materials from pre and post contact on Fire Island, at a minimum, the breach area should be surveyed by qualified archeologist prior to any filling, as is feasible under project conditions and as long as there is no time delay added to closing the breach.

9. Page 6.

Similar to comment 1, we are unaware of technical documentation of either the claimed environmental damage in Moriches Bay following the Westhampton breach or the claimed improvements in estuarine habitat conditions and both fin- and shell-fish populations which led to an unsuccessful legal challenge to breach closure. Clarification and justification regarding change as different from damage should be added to the context of the problem.

10. Page 7.

Overwashing is a normal geological process which does not cause "severe shoreline damage" except to developed areas--where there are structures in the overwash path. Although the concept of a breach being a temporary state after a storm is defined on p. 7, in several places it is also used to describe a more permanent state, such as an inlet.

11. Page 12.

Similar to comment 9, above, the claims of a two foot increase in

storm surge elevation during the March 1993 storm should be technically substantiated, as should the damages from such a surge increase.

12. Pages 8-12.

The breach vulnerability section (pp. 8-12) is highly qualitative for such a major action and it is most unlikely that parameters developed for the Westhampton/Moriches breach are applicable to the Fire Island/Great South Bay system. Whereas the geomorphic variables identified are reasonable, threshold values are questionable elsewhere. Other conditions, such as bay/ocean tidal phase differences, localized storm wave models, and rates of shoreline retreat and dune degradation, should be included in site vulnerability modeling before a long-term commitment to breach closure is made. For example, the Old Inlet site is stated to possess a high breach vulnerability yet available data suggests that its fronting shoreline position has not changed much, despite the recent storms, since the inlet closed in the early 19th century and overwash has occurred for far more than 60 years. Why is it now at such risk? The likelihood of a breach developing into an inlet is much greater adjacent to engineering structures such as groins or jetties than where substantial littoral drift is available to fill a breach naturally.

Although there is some quantitative modeling of both multiple inlet effects on existing inlet cross-sections and storm damage estimation from stage/frequency relationships, the Plan does not include any citation of the model types and sources, or presentation of calibration and validation parameters, and sensitivity testing is absent. A fundamental requirement to improving coastal land management is increased knowledge of the potential effects of breaching and inlet development upon the physical and biotic resources in and adjacent to estuaries.

13. Page 19, Benefit Analysis.

In addition to the aforementioned lack of information on stockpiling, the decision to use stockpiling plus dredging (rather than dredging only) for breach closure in natural areas is based upon analysis with, again, a great deal of uncertainty, and which suggests only moderate savings compared to dredging only.

14. Appendix C.

Additional literature, including papers from peer-reviewed publications and Technical Reports by both the National Park Service and the Corps, should be taken into consideration by the Corps. Examples include, but are not limited to, an environmental inventory (McCormick 1975), ecosystem analysis (Art, 1976 is referred to but not cited), and a vegetation

inventory (Stalter et al., 1986).

Several species are present but were not listed (e.g., gray squirrels in some communities). Also, there are several typographical errors (e.g. Canadian geese instead of Canada Geese, Morning Dove instead of Mourning Dove). The holly tree typical of Fire Island maritime forests (p.19) is American holly (Ilex opaca), not winterberry holly (I. verticillata) which grows as a shrub.

ENDANGERED SPECIES

Impacts to the Federally listed threatened species, the piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumulus*), are being addressed through a formal Endangered Species Act Section 7 consultation. The status of the compliance work and its probable accomplishment should be presented in the final version of the EA.

FISH AND WILDLIFE COORDINATION ACT

The U.S. Fish and Wildlife Service (Service) has provided the Corps with a final Fish and Wildlife Coordination Act Report dated June 14, 1995. That Report incorporates review comments provided by the Corps and the New York State Department of Environmental conservation, and adequately addresses Service concerns related to fish and wildlife resources (except for Federally listed species).

As discussed herein and in the Biological Opinion provided by the Service, the Corps should coordinate final location of proposed stockpile areas with the Department.

FIRE ISLAND NATIONAL SEASHORE: WILDERNESS AREA CONCERNS

The Corps made it clear that all dune construction will be to a height of 8+1 NGVD. They also stated that in the Wilderness Area, any filling of breaches will be constructed utilizing the pre-breach dune profile of the dunes in this area.

Concerning the language in the Wilderness Management Plan, "...prior to the repair of any breach within the Wilderness Area, a full Environmental Impact Statement will be prepared..", it is the position of the Corps that, based on the emergency provisions of 33 CFR, section 230.8, the Corps can fill breaches under the Breach Contingency Plan.

Within the next few months the National Park Service will be undertaking a planning process to amend the Wilderness Management Plan in order to change language now stating that "... prior to the repair of any breach within the Wilderness Area, a full Environmental Impact Statement will be prepared.." The intent of

new language for an Amended Wilderness Management Plan will be to state that "...prior to repair of any breach...Area, compliance with NEPA will be undertaken."

Thank you for the opportunity to comment on the draft Breach Contingency Plan.

Sincerely,

Andrew L. Raddant
Regional Environmental Officer

APPENDIX I

APPENDIX I

ENVIRONMENTAL COMMITMENTS/MITIGATION MEASURES SUMMARY

As a result of Section 7 of the Endangered Species Act coordination between the U.S. Army Corps of Engineers, New York District (District) and the U.S. Fish and Wildlife Service (USFWS) regarding the Federally-listed threatened piping plover (Charadrius melodus) and plant species, seabeach amaranth (Amaranth pumilus), conditions will be incorporated into the Plans and Specifications to minimize potential impacts to aforementioned species.

Attachment 1 contains the Protection Measures for the piping plover and seabeach amaranth proposed by the District in the Biological Assessment, dated March, 1995 and accepted by the USFWS in their Biological Opinion, dated July, 1995.

In addition to the measures already proposed by the District, USFWS identified other reasonable and prudent measures for the piping plover which are non-discretionary and found in **Attachment 2.** Terms and conditions for implementing the piping plover reasonable and prudent measures are described in **Attachment 2.** Incidental take is not defined for threatened species of plants, and, therefore no reasonable and prudent measures are provided for seabeach amaranth. **Attachment 3** contains Conservation Recommendations, which are discretionary agency activities utilized to minimize or avoid adverse effects of a proposed action, to help implement species recovery plan, and to develop information.

ATTACHMENT 1

11. The planting of vegetation will not occur in the breach fill or beach nourishment area.

12. The protection of piping plovers and seabeach amaranth in the project construction area(s) after project completion will be enhanced by actions taken both prior to and after project implementation. This will occur annually, for the life of the BCP and/or IBMP, by educating landowners, homeowner associations, and beach managers (as appropriate) in the project area of the recommendations in the Endangered and Threatened Species Protection Plan in Enclosure 2, and by seeking written Memoranda of Agreement with the Federal (FIIS), State (NYSDEC), and County (Suffolk County Parks) landowners in the project area to secure access for the purpose of protecting piping plovers during the nesting season and seabeach amaranth during the germination and growing seasons.

13. Activities described herein are designed to minimize the potential direct and indirect adverse impacts of the project, and as such are an integral part of the project design. As a result, the Corps and/or the NYSDEC, based on the same jurisdiction and authorization to carry out the emergency closure activities, will obtain the right of entry from all landowners:

    (1) within the project impact and buffer areas for the purpose of conducting pre- and concurrent activity endangered or threatened species surveys/monitoring, fencing, posting, and predator exclosure activities;

    (2) within the project impact monitoring area as will be determined under Enclosure 1 for the purpose of carrying out the post project monitoring activities to assess the indirect effects of the action;

    (3) within the project construction area(s) for the purpose of providing access after project completion in the construction area to post, symbolically fence and erect predator exclosures to avoid and/or minimize the indirect effects of the action.

14. The permit, issued to the NYSDEC by the Corps, will be for a duration of three (3) years, is considered interim, and will be re-evaluated following the results of the National Biological Service study and/or additional information on the impacts of the breach closure plan to Federally listed endangered or threatened species. Although the original permit will remain in effect for a period of no more than three years, with further consultation with the Service, it may be subject to renewal. Regardless of the ultimate duration of the NYSDEC permit, the Corps and/or NYSDEC will fulfill the performance standard for monitoring the indirect effects to the barrier island habitat for Federally listed species resulting from the proposed project (as described in 12 above). The Service will be notified of the start date and completion date of the proposed project.

15. In developed areas, where breach closure will facilitate potential residential, infrastructure, or associated construction and reconstruction activities, impacts may accrue from the resumption of recreational and/or residential use. The Corps and/or NYSDEC, through their respective regulatory powers, propose to establish

permit conditions that will attempt to eliminate or minimize direct and indirect impacts on piping plovers and seabeach amaranth. The permit conditions are premised on the identification of State and/or Federally listed species and/or essential habitat, and the establishment of three zones with associated time of year work restrictions to protect piping plovers and seabeach amaranth within the developed project areas. Prior to permit issuance, a qualified biologist will verify the presence or absence of State and/or Federally listed species and/or essential habitat. The three zones include; 1) Zone 1: Suitable Plover Habitat Zones, 2) Zone 2: No Plover Habitat Zone, and 3) Zone 3: Seabeach Amaranth Occupied Zone. The zone-specific management provisions are as follows.

a) Zone 1, Suitable Plover Habitat, Management Provisions: No regulated exterior work will be permitted between April 1 and June 30th, during which time the area will be surveyed and plover nesting and brood rearing areas symbolically fenced. By June 30th, exceptions to this work restriction on regulated exterior work may be authorized to commence in those areas outside of the designated nesting and brood rearing areas, while work will not be authorized within the designated nesting and brood rearing areas until after fledging.

b) Zone 2, No Plover Habitat, Management Provision: There will be no time of year work restriction imposed upon this area.

c) Zone 3, Seabeach Amaranth Occupied Zone, Management Provisions: No reconstruction or repair will be allowed that would result in the direct or indirect take of seabeach amaranth plants. Reconstruction activities may be allowed during the germination and growing seasons so long as all work will avoid seabeach amaranth plants and/or buffer areas will be established to protect the plants.

16. The flood tidal delta, overwash[3] fans, and sand spits, associated with breach opening or inlet formation, will not be utilized as a source of breach fill material. These sediments provide substrate for seabeach amaranth germination and intertidal substrate that may be used by piping plovers in addition to a variety of wading birds and shorebirds for foraging and brood rearing, and also may potentially serve as the basis for new salt marsh development.

17. As per the Fire Island Wilderness Act - Public Law 96-585, the repair of breaches in the Wilderness Area will occur only in cases where it is necessary to prevent loss of life, flooding, and other severe economic and physical change to the Great South Bay and surrounding areas.

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[3](Within the context of this Opinion) A process by which waves break through barrier island dunes carrying sediments inland, and, in severe circumstances, across the island to the bayside shoreline.

18. Artificial breach closure in the Wilderness Area will only occur following a post storm evaluation of the breach site by a qualified coastal geomorphologist which determined that the breach will not close relatively quickly on its own. This recommendation is consistent with the August 25, 1994 Draft IBMP prepared by the FIIS. The Draft FIIS Plan states that existing public policies and Federal legislation for the Wilderness Area of the FIIS, dictate a separate management plan and inlet response plan.

19. The Corps and/or NYSDEC will examine questions of ownership and the possibility of establishing conservation easements for areas where spits have developed or where overwash sediments have been deposited to protect these habitats for fish and wildlife use, including piping plover and seabeach amaranth.

D. Measures Proposed to Reduce the Adverse Effects on Other Aquatic and Terrestrial Resources

Aside from endangered and/or threatened species concerns, additional potential impacts from implementation of the proposed project have been identified. These include (1) the loss of newly created wetland habitats from dredging flood tidal deltas in the back barrier bays, (2) the loss in number and size of newly created habitats such as intertidal flats, sand spits, open vegetation and dunes via sediment transport resulting from overwashes, breaches and inlet formation, (3) reduced flushing rates resulting in reduced water quality, and (4) a reduction or modification of the benthic assemblages in the Atlantic borrow areas.

Consequently, the following measures will also be incorporated as part of the project design:

1. Project operations, including, but not limited to, staging, mobilization, corridor establishment and vehicle access, and demobilization will avoid or minimize impacts to both newly formed and pre-existing wetlands including vegetated, non-vegetated, intertidal, and subtidal habitats.

2. A site visit of the proposed stockpile locations and potential transportation routes between stockpile sites and potential breach locations will be conducted by the Corps, NYSDEC, FIIS, and the Service to ensure adequate consideration of impacts to significant cultural and/or natural resources such as wetlands, Federally designated Wilderness Area, Federal and State endangered and threatened species, etc.

3. Any actions on lands within the FIIS will be exercised in accordance with a plan that is mutually acceptable to the Secretary of the Interior and the Secretary of the Army and that is consistent with Public Law 88-587, the 1964 enabling legislation creating the Fire Island National Seashore.

4. The Corps and/or NYSDEC will ensure that impacts to natural and cultural resources in the proposed Atlantic borrow sites are avoided or minimized.

ATTACHMENT 2

C) The Corps, whether carrying out or permitting activities related to the non-emergency restoration of the design breach fill profile, shall implement the following measures to reduce the level of anticipated take.

1. All feasible attempts shall be made to complete the renourishment of the fill profile outside of the plover nesting season (April 1 to September 1).

2. If any of the fill profile renourishment activities are to occur during the piping plover nesting season, the Corps, or its applicant shall:

a. Retain Qualified Bird Monitor(s)

A qualified endangered species bird monitor(s), from a list[21] pre-approved by the Service, shall be retained prior to commencement of the proposed activity through project completion but not beyond September 1, or the date of last fledging; or not beyond July 1 if no piping plovers are detected in the action area during the "Concurrent Activity Survey" described in c. below. (Staging of equipment, dredge pipe installation and removal, stockpile sites, and machinery operation areas are all considered part of the project and/or action areas.) For the purpose of determining that chicks can evade machinery and circumvent barriers such as pipes, plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters (49.21 feet), whichever occurs first. The average incubation period is 27 days. The earliest probable hatch date is May 20.

b. Pre-activity Survey

No more than one week prior to April 1 or the commencement of any on-site project activity to renourish the fill profile, the monitor shall conduct at least four non-consecutive days[22] of surveys of the project area (landing, staging, operation, sand transport, and beach nourishment area, i.e. all areas affected by the fill profile renourishment activity) for the occurrence of territorial, courting or nesting piping plovers (pre-activity survey). Each day's monitoring shall consist of two separate surveys to be conducted during different times of the tidal cycle.

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[21]Developed by FIIS Natural Resources for monitors on the National Seashore.

[22]Nine hours per day, or the maximum that daylight allows.

c. Concurrent-Activity Survey / Monitoring

Following the "pre-activity" surveys of the project area as described in 2.b. above, surveys/monitoring shall continue from the initiation of on-site activity in the project area through July 1 at a frequency of at least four non-consecutive days per week/two times per day. During this phase, in addition to identifying and posting[23] areas where plovers are present, the monitor(s) shall also document any disturbance to plovers from project activities. If no piping plovers (territorial, courting, nesting, or brood rearing) are detected by July 1 in the project area then surveying/monitoring can cease. If any piping plovers are detected (territorial, courting or nesting) at any time during the "concurrent-activity survey", the frequency of surveys/monitoring shall be conducted daily/two times per day and shall continue through project completion but not beyond September 1, or the date of last fledging.

d. Notification of the Service / Survey / Monitoring Modifications

The Service's LIFO shall be notified within 24 hours (via phone (516) 581-2941 or fax (516) 581-2972) of piping plovers being detected during either the "pre-activity surveys" or "concurrent-activity surveys." Should it be determined that the prescribed frequency is insufficient, the monitor(s) shall increase the survey requirements prescribed in 2.b. and 2.c. above . This may include increasing the minimum weekly survey frequency. In particular, the monitor(s) shall make necessary adjustments to the daily/two times per day surveys/monitoring during the brood rearing stage such that the weekly and daily frequency and duration of brood surveys is adequate to clearly determine the mobility of the individual broods, accurately define and post brood rearing areas, and provide adequate protection from project related disturbance.

The monitor(s) shall maintain field notes which shall be provided to the Service's LIFO, NYSDEC, and FIIS on a weekly basis. The Corps and/or its applicant, in cooperation with the Service may modify the survey and monitoring specifications based on site specific considerations to reduce or avoid any adverse effects to Federally and State listed species from the project.

e. Posting and Buffer Zone Establishment / Impact Monitoring

(Refer to Section 3(C)(2)(e) in the Description of the Proposed Action for protocols on posting and the establishment of buffer zones.)

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[23]Posting includes symbolic fencing and appropriate signage.

Courtship areas, nests, and brood rearing areas (including chick feeding areas) shall be posted immediately (supervised by the monitor(s)), and for the duration of the courtship, nesting, incubation phases, no disturbance shall be permitted within 200 meters (650 feet) of the designated area. Based on frequent[24] monitoring, the size and location of the protected area shall be adjusted (increased or decreased) in response to the observed mobility of the brood. The boundaries of the protected areas shall be expanded should plovers regularly move outside the originally posted area. Similarly, if frequent observation demonstrates that plovers do not use the entire protected area, then it may be reduced, but in no case shall it be reduced to less than 100 meters (325 feet) on each side of the brood. Posting of courtship areas may be discontinued after July 1 in any given year.

Monitor(s) shall document any reactions to disturbance from the fill profile restoration activity to determine the effectiveness of the 200 meter (650 foot) buffer and increase the buffer if necessary.

f. System for Notification of Disturbance

A system of notification shall be established if it appears that disturbance of piping plovers is occurring despite implementation of the measures described in Section 4(C) herein. Notification shall include on-site contractors, the Corps and/or its applicant, the FIIS, and the Service's LIFO. The on-site contractors shall be notified immediately and activities adjusted or halted to avoid or minimize disturbance. The Service shall be notified by the close of business that day for further consultation.

g. Any dredge disposal pipe used in renourishment activities will be placed offshore to the maximum extent practical, to allow plover chicks unobstructed access to the wrackline, water's edge, and/or other foraging habitats. Where the pipeline crosses the beach, the Corps and/or its contractor will bury the pipeline a minimum of 38.5 centimeters (15 inches) (half its diameter), cover it with sand, and create a ramp whose slope is 10:1 so that piping plover chicks can negotiate the pipe and access the lower beach unimpeded. The Corps and/or its contractor will not remove the pipe until, at a minimum, the third week in June and only after notifying and receiving approval from the Service and FIIS (if pipelines are laid within the FIIS) based on the fledge status of any plover chicks.

h. Wrackline disturbance will not occur in the foraging area of unfledged chicks.

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[24]Refer to the frequency prescribed in 2(c).

i. All vehicle and/or equipment movement involved in the trucking of sand from stockpiled or upland sites, including mobilization and demobilization efforts shall occur outside established buffers and avoid disturbance to piping plovers as described in 2.e. above.

3. The contractor and their employees shall be adequately informed of Endangered Species Act concerns, including, but not limited to, the establishment of adequate buffers and procedures to follow in the event of a take (disturbance or mortality), and bid plans and specifications shall be written to include this requirement. The contractor shall be supplied with a copy of this Biological Opinion, and be equally responsible for its judicious implementation.

4. The sand deposition area(s) shall be finished to a natural grade and contoured to maintain suitable nesting and foraging habitat for piping plovers.

5. The dredged or trucked material to be used to restore the design fill profile shall conform with the already existing substrate on the beach and consist of material that is capable of maintaining suitable piping plover habitat.

6. The planting of vegetation shall not occur in the fill profile restoration area.

7. The protection of piping plovers in the project construction area(s) after project completion shall be enhanced by actions taken both prior to and after project implementation. This shall occur in each year that fill profile restoration occurs, for the life of the BCP and/or IBMP, by educating landowners, homeowner associations, and beach managers (as appropriate) in the project area of the recommendations in the Endangered and Threatened Species Protection Plan in Enclosure 2, and by seeking written Memoranda of Agreement with the Federal (FIIS), State (NYSDEC), and County (Suffolk County Parks) landowners in the project area to secure access for the purpose of protecting piping plovers during the nesting season as outlined in Enclosure 2.

8. Activities described herein are designed to minimize the anticipated level of take, and as such are an integral part of the project implementation. As a result, the Corps and/or its applicant shall obtain the right of entry from all landowners:

   (a) within the project impact and buffer areas for the purpose of conducting pre- and concurrent activity endangered species surveys/monitoring, fencing, posting and predator exclosure activities;

ATTACHMENT 3

E) Establishment of Beach Erosion Districts on Fire Island

In March of 1995, the Town of Brookhaven established six beach erosion districts along Fire Island allowing the Town to assist residents on Fire Island to maintain beaches during the winter months. Sand fence installation as well as beach grass plantings may be used to attempt to stabilize town beaches. Such activities have the potential to adversely affect seabeach amaranth and its habitat, although the type and extent of such effects would require annual evaluation.

F) Beach Scraping

Beach scraping, a technique to augment or construct artificial dunes, has been utilized by at least eight communities on Fire Island over the past three years. Such activity has the potential to adversely affect seabeach amaranth and their habitats; however, the status and distribution of seabeach amaranth within each community would need to be assessed on an annual basis in order to reach more definitive conclusions about the extent of those impacts. Beach scraping activities will most likely continue in residential communities as this is a more inexpensive method of dune stabilization than sand nourishment from an outside source.

6. BIOLOGICAL OPINION: Seabeach Amaranth

After reviewing the current status of seabeach amaranth (*Amaranthus pumilus*), the environmental baseline for the action area, the direct and indirect effects of the proposed Corps Breach Contingency Plan and FIIS Interim Breach Management Plan, and the cumulative effects of future non-Federal actions, it is the Service's biological opinion that while authorization and implementation of the Corps Breach Contingency Plan and/or the FIIS Interim Breach Management Plan, as proposed, will likely result in both the destruction of plants and seed and the adverse modification of existing habitat, it is not likely to jeopardize the continued existence of seabeach amaranth range-wide.

B. INCIDENTAL TAKE STATEMENT: Seabeach Amaranth

Sections 7 (b)(4) and 7 (o)(2) of the Act do not apply to the incidental take of Federally-listed plant species and, therefore, no incidental take statement, and subsequently no reasonable and prudent measures, nor terms and conditions will be provided in this report.

C. CONSERVATION RECOMMENDATIONS: Seabeach Amaranth

Section 7(a)(1) of the Endangered Species Act (Act) directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species, to help implement recovery plans, and to develop information.

1) The seabeach action area for the BCP covers approximately 50 miles of beach habitat, and contains approximately 33% of all the plants found in the 1994

Long Island population census. When combined with the additional seabeach amaranth habitat and 62% of the 1994 Island-wide population found within the action area of the recently initiated Fire Island Inlet and Shore Westerly to Jones Inlet, New York, Beach Erosion Control and Navigation Project, these two projects have the potential to affect 95% of all the known extant groupings of seabeach amaranth plants on Long Island.

Aside from private actions that may affect seabeach amaranth, these two Corps projects support the preliminary conclusions of the Service's draft *Recovery Outline for Amaranthus pumilus on Long Island, New York*, that the status of Long Island's population is subject to a high degree of threat, and is in imminent conflict with development or other economic projects (U.S. Fish and Wildlife Service 1995b). However, in 1994, 79% of all the land on Long Island which supported seabeach amaranth plants was within government ownership, and therefore, the potential to enact projects that would reverse amaranth's declining population status is high.

As a result, the Service recommends that the Corps pursue opportunities to cooperate with other government landowners to protect and enhance seabeach amaranth populations and the habitat upon which it depends. Specific strategies for recovery are described in detail in the Service's draft recovery outline. Those that the Corps should pursue might include: 1) Annually, conduct a comprehensive survey for seabeach amaranth in formerly occupied and/or suitable habitat on Long Island. Prior to implementation, surveys should be coordinated with the Service, NYSDEC, The New York Natural Heritage Program, and TNC to avoid duplication of effort; 2) develop a habitat characterization and use model; 3) develop protocols for seed collection, plant storage, greenhouse propagation, and successful seed sowing (redistribution); 4) delineate protection areas for seabeach amaranth, and identify appropriate protection and recovery actions to be implemented; 5) conduct studies to identify seed banks, determine seed viability, and investigate germination parameters; and 6) educate the public about the importance (environmental and economic) of seabeach amaranth.

2) During the course of breach formation, flood tidal deltas may also be created, and these sandy, sparsely vegetated spits may serve as habitat for seabeach amaranth. At Little Pike's beach, although the flood tidal delta created in 1992/93 is low-lying, it did support at least one pioneering seabeach amaranth plant in 1994. Two other plants were located in the overwash fan just to the west at the foot of the smaller flood tidal delta that formed at Pike's Inlet. Since these areas provide habitat for seabeach amaranth, and a variety of other rare and threatened beach strand species, and because the management of these newly created areas is not hampered by pre-existing human use or structural development, the Service recommends that these areas be protected in perpetuity as wildlife conservation areas. Management strategies to protect and enhance seabeach amaranth habitat should be developed through an ecosystem approach so that the areas can be managed for a maximum benefit to a variety of beach strand species, including threatened and endangered ones. Where human actions alter the natural processes which reshape and/or maintain flood tidal deltas, beach managers should consider

periodic maintenance activities (deposition of dredged material, etc.) that would benefit the long-term productivity of the area.

3) In this Biological Opinion, the Service extended the delineation of the seabeach amaranth action area, beyond the project area due to the potential impact of the loss of plants or seed productivity on the maintenance of connected outlying and/or founder populations. This is in part due to the current lack of understanding of the factors which affect the annual distribution and spatial variability of seabeach amaranth. To address these unknowns, the Service recommends that the Corps conduct a seed dispersion study. The study would involve planting seabeach amaranth in an isolated, protected area (ideally, with no known historical occurrence of seabeach amaranth), such as the Amagansett NWR or the TNC Mashomack Preserve, then watching for the subsequent appearance of plants along stretches of beach formerly unoccupied and out of the reach of other potential source populations. Over the long term, these studies may enhance our understanding of the factors controlling seabeach amaranth's dispersal pattern, and allow for better protection and management of recovery efforts.

4) Following the initial filling of any breach as a result of BCP implementation, the maintenance of the designed breach fill profile (beach nourishment, dredging, trucking of sand, and other associated construction activities) has the potential to affect seabeach amaranth. Therefore, in areas where seabeach amaranth is found or has regularly been found in the past, the Service recommends that the Corps and/or its applicant conduct all renourishment activities outside the seabeach amaranth growing season (May 1 to November 1)[26]. If the Corps and/or its applicant cannot avoid the amaranth growing season, then they should survey the area prior to the commencement of renourishment activities to determine if plants exist, or if plants can be avoided. Fill should not be placed in a way that results in the burial of seabeach amaranth plants. If fill is to be placed prior to July in an area that has historically supported amaranth plants, the Corps and/or its applicant, during the fall of the year prior to fill placement, and after having obtained the necessary approvals from the Service and NYSDEC, should collect seed, following the suggestions made in Brittingham (1994), store it, and then rebroadcast the seeds in the fill area (under the direction of the Service or DEC) for germination following the fill event[27]. If plants cannot be avoided, and after

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[26]Depending on climatic conditions, the growing season may begin sooner and end later.

[27] Note: It is important to recognize, as Murdock (1993) did, that simply cultivating the plants or planting seeds, even if successful in the wake of fill operations, will not alleviate all threats to seabeach amaranth. Therefore, the Service cautiously endorses these practices only as a means of enhancing natural productivity while primarily seeking to protect natural ecosystems and the storm-related barrier island dynamics upon which seabeach amaranth depends. Only by following that course would the requirements of the Act be met; the successful reestablishment of the

obtaining the necessary permits from the Service and NYSDEC, the Corps should relocate some of the plants out of the fill area to nearby suitable primary habitat (within the action area if possible), being careful not to damage sensitive stems and root systems, and allow some plants to be buried, mimicking natural dispersal strategies. In addition, the Corps and/or its applicant should collect seed for rebroadcasting as described above. If plant relocation cannot be accomplished, or if it has been proven not to be successful, then the Corps and/or its applicant should collect, store, and broadcast seed only.
Further studies and experimentation are needed to determine the best seasons and techniques for beach nourishment in seabeach amaranth habitat. Therefore, the effects of implementing the strategies described above should be monitored, documented, and analyzed for future application at this and other sites.

5) In an effort to determine the need to reinitiate consultation, the Corps and/or FIIS should annually update the seabeach amaranth section of their BCP/IBMP Biological Assessment to reflect changes in seabeach amaranth location, population abundance, and the direct and indirect effects of the BCP on the species. The updated Biological Assessment should be submitted to the Service's Long Island Field Office (LIFO) no later than February 1 in the calendar year following the subject amaranth growing season. If, for any reason, the Corps cannot meet the February 1 deadline, than they should contact the Service's LIFO to establish a new deadline.

6) The Corps should refer to the specific recommendations outlined in the Fire Island Inlet and Shore Westerly to Jones Inlet, New York, Beach Erosion Control and Navigation Project and Westhampton Interim Storm Damage Protection Project Biological Opinions and implement those which have not already been done, and/or adapt and implement those that are germane to this project, especially recommendations 1, 2, 3, 4a-d, and 6, and recommendations 1 and 5, respectively.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

VI REINITIATION

This concludes formal consultation on the effects of the proposed joint Corps Breach Contingency Plan and FIIS Interim Breach Management Plan (from Fire Island Inlet to the eastern end of the barrier spit at approximately Halsey Neck Lane in Southampton, New York) on piping plover and seabeach amaranth. As required by 50 CFR 402.16, reinitiation of formal consultation is required if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an adverse effect

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species in the wild.

BREACH CONTINGENCY PLAN
FIRE ISLAND INLET TO MONTAUK POINT
LONG ISLAND, NEW YORK
REFORMULATION STUDY

APPENDIX D

CONTRACTING PLAN

A. OVERVIEW - CONTRACTING PLAN FOR EMERGENCIES:

1. **AUTHORITIES:** Only a warranted Contracting Officer [hereinafter referred to as the "KO"], acting within the limitations of his/her authority, may obligate the United States Government. This includes peacetime, wartime and emergency situations.

2. **EMERGENCY/DISASTER CONDITION:** An emergency/disaster condition is defined as any situation where there is imminent risk of life, health or property. Such situations include those in which there is endangerment of property or public health by fire, flood, explosion, or other disaster, such as hurricanes.

3. **LIMITATION ON EMERGENCY:** Quantities of supplies/services shall be for the emergency situation only. The emergency situation may not be used to fill future requirements or to get well.

4. **SPECIAL EMERGENCY APPROVALS:** Any special approvals and authorities must be made available to the KO prior to obligating the U.S. Government. This includes any special permits, approval to perform certain types of work or obtain special types of equipment. For example, dredging permits, approval to lease a relocatable building at the site, Letter Contract, etc.

5. **DELEGATION OF PROCUREMENT AUTHORITY (DPA):** All appropriate DPA's shall be obtained, where required, prior to award of the contract.

6. **DECLARATION OF AN EMERGENCY CONDITION:**

a. Emergency contracting procedures shall be implemented following proper declaration of an emergency condition. Oral declarations shall be confirmed in writing within 48 hours.

b. In the absence of unusual and compelling emergency situations, full and open competition, including 30 days between the issuance of a solicitation and the opening of bids, is required.

7. **REGULATORY REQUIREMENTS:** There is no authority to circumvent or by-pass regulatory requirements during emergency situations.

8. **CONGRESSIONAL NOTIFICATION:** Congressional notification by Contracting Division of awards in excess of $5,000,000 is required.

9. **CERTIFIED COST & PRICING DATA:** Certified Cost & Pricing Data are required for negotiated contracts in excess of $500,000.

10. **AUDITS:** Are required for proposals over $500,000. Audits are performed on the actual proposal of the firm not the resultant negotiated price. Under no circumstances will audits be waived for cost reimbursement contracts. Where the nature of the emergency does not allow a pre-award audit, a post-award audit will be performed. However, special approval will be required for the use of an undefinitized contract (See paragraph A.13.a. below).

Audits and Certified Cost and Pricing Data are not required where adequate competition exists. See FAR Part 15 for exceptions.

11. **RESPONSIBILITIES:**

a. **Scope of Work (SOW):** It is the responsibility of the Requiring Activity; i.e. PPMD, Planning, Operations, Engineering, Real Estate Division, to submit a procurable technical data package to the KO. The SOW should be as defined as possible, under the circumstances, to protect the U.S. Government's interest. The nature of the SOW will determine the contract type. **PROCUREMENT ACTIONS MAY NOT BE COMMENCED WITHOUT THE SOW.**

b. **Funding and Special Approvals:** It is the responsibility of the Requiring Activity to obtain funds, any special approvals (other than those relating to contracting matters) and all permits.

c. **Contracting Officer and Office of Counsel:** It is the responsibility of the KO and Office of Counsel to provide guidance and process emergency requirements as expeditiously as possible and within the time constraints allowed to meet the emergency condition. This includes oral approvals where required. Where necessary, they shall assist the customer in writing/processing the necessary paperwork; i.e., J&A, Letter Contract, etc.

d. **North Atlantic Division Approvals:** The supporting office within the District (CT, OC, EN, PL, RE, OP, etc.) shall be responsible for coordinating with its cognizant "stove pipe" at NAD or USACE.

e. **Solicitation Review:** The Army Federal Acquisition Regulation Supplement (AFARS) 1.697 does not allow the KO to by-pass or circumvent the requirement to obtain a legal review prior to issuance of a solicitation or award of a contract or modification in excess of $100,000. However, such reviews must be conducted in a manner to fit the emergency condition.

12. **ORAL APPROVALS:** The Contracting Officer may grant oral approvals prior to award of a contractual instrument provided funds are available and all permits and approvals, including legal, have been obtained.

13. **TYPES OF CONTRACTS:** The FAR, Part 17, allows the Contracting Officer wide discretion in selection of contract types. Selection of contract type is basically determined by the emergency situation and how well the scope of work (SOW) can be defined.

The types of contracts available pursuant to the FAR range from the least desired, "cost reimbursement" types to the most preferred, Fixed Price contracts. The type of contract selected is a coordinated process between the KO, Counsel, and Requiring Activity. Below is a listing of some contract types and special approvals required for each type:

a. **Fixed Price Contract (FP):** Used when fair and reasonable prices can be established at the outset. Provides maximum incentive for contractor to control costs and perform effectively and imposes minimum administrative burden on both parties.

For each breach closure method, and, where appropriate, for each of the different Reaches or "zones", the contract may be written using a gradation of quantities as follows:

0001 ZONE 1:

0001AA Perform up to 90,000 cubic yards . . . $_____

0001AB Perform from 90,001 to 150,000 cubic yards . . .

0002 ZONE 2:

0002AA Perform up to 90,000 cubic yards . . .

0002AB Perform from 90,001 to 150,000 cubic yards . . .

etc.

In order to allow for contract adjustment which may be required due to the dynamic nature of a breach, the contract will include a Variation in Estimated Quantities Clause (FAR 52.212-11, EFARS 52.212-5001) in order to permit contract adjustment where actual quantities vary from those estimated. A closeout modification shall be executed to document final quantities and costs.

b. **Indefinite Delivery Contracts (IDC)**

1. **Indefinite Quantity (IDQT):** Depending on the type of service required, Indefinite Quantity type contracts may be established in advance to allow for the use of several different contractors in the event that one is not able to respond. Establishment in advance would allow for full and open competition.

Again, for each breach closure method, and, where appropriate, for each of the different Reaches or "zones", the contract may be written using a gradation of quantities.

However, EFARS 16.504 requires that each IDQT type contract must obligate the Government to order services not less than 2% of the stated maximum or $500,000, whichever is less. Use of this contract type under the unusual and compelling urgency exception is also feasible, but with the same restriction.

Additionally, if used, an Order of Use for each IDQT shall be specifically stated in the CBD as well as all IDQT contracts. Response time to the emergency condition will be stated in no uncertain terms and contractors will be expected to be able to mobilize in the time frame stated. At the time of a breach, all contractors will be contacted by Contracting Division to determine which of the contractors will be able to respond within the expected time frame. The KO will choose among those able to mobilize based on the Order of Use.

2. **Requirements Contract:** A requirements contract may be established in advance. In this type, each contractor must be able to fulfill all of the Government's requirements for the scope of work in his contract. For example, if the contract requires trucking of beachfill to an area encompassing a certain Reach (or more than one Reach), the contractor would be required to fulfill all the Government's needs for trucking of beachfill to fill a breach occurring in the area which his contract encompasses. Moreover, the contractor must be able to respond to the breach in a timely manner. As with any IDQT, the required response time would be stated in the contract in no uncertain terms.

Where such a contract is used, the Government must look only to that contractor for <u>all of its requirements</u> within that contractor's scope of work, so long as the contractor is able to meet those requirements. If established in advance, the advantage to this type contract is that it could permit the fastest response. Additionally, while there must be an estimated total quantity stated in the contract, the estimate is not a representation to the contractor that the estimated quantity will be required or ordered. Moreover, unlike the IDQT, there is no requirement for a minimum quantity.

c. **Cost-Plus-Fixed-Fee Contract (CPFF):** Cost type contracts are suitable for use only when uncertainties involved in contract performance do not permit costs to be estimated with sufficient accuracy to use any type of fixed-price contract. There are two types: "Term" and "Completion." For other types of cost reimbursement type contracts see FAR 16.3. For special clauses see FAR 16.307. The use of CPFF requires a Determination and Findings (D&F) approved by the Principal Assistant Responsible for Contracting (PARC). No cost-plus-fixed-fee contract shall be awarded unless ALL limitations in 16.301-3 are complied with, including the contractor having an adequate "accounting system" for determining costs applicable to the contract.

d. **Undefinitized Contractual Actions (UCA):** For emergency work, such as mobilizations, natural disasters or civil disturbances, which must commence immediately, the Engineer FAR Supplement (EFARS) authorizes Division Commanders to approve undefinitized contracts actions (new procurements) not exceeding $3,000,000. This authority is non-delegable. For this authority, an emergency/disaster is defined as any situation in which loss of life or property is imminent. The Division Commander must make a written determination that such an emergency exists and that no other contract type is suitable.

e. **Letter Contract:** A letter contract is a written preliminary contractual instrument that authorizes the contractor to begin immediately providing supplies or services. May be used when (1) the Government's interest demands that the contractor be given a binding commitment so that work can start immediately and (2) negotiating a definitive contract is not possible in sufficient time to meet the requirement. The letter contract may be competitively priced. Special definitization schedules and clauses shall be included in the contract as required by FAR 16.603.

Letter contracts shall not be used until receipt of approval from USACE except in emergency/disaster situations when the estimated value of the work does not exceed $3,000,000, per EFAR 16.603, and the Division Commander has made the proper determinations.

f. Cost-Plus-A-Percentage-of-Cost: Strictly PROHIBITED by law, 10 U.S.C. 2306.

B. PROCEDURES FOR USE OF EMERGENCY CONTRACTING AS PART OF THE BREACH CONTINGENCY PLAN:

1. **GENERIC STATEMENT OF WORK:** As part of this Breach Contingency Plan, the Requiring Activity will provide Contracting Division with generic statements of work (SOW),

including any plans and specifications (P&S) prepared by Engineering Division, for all breach closure activities for each method and Reach set forth in the Executive Summary (including upland trucking, stockpile trucking, dredging, sheet piling, and all necessary services and equipment). Should a breach occur before generic SOW's have been provided to Contracting Division, SOW's will be provided at the earliest possible time following the occurrence of the breach, consistent with the Breach Contingency Plan Schedule shown in Figure 5 of the Executive Summary, or consistent with such other Schedule as the circumstances and funding permit. **THE CONTRACTING PROCESS CANNOT PROCEED UNTIL SOW's HAVE BEEN PROVIDED**. Providing generic information prior to the occurrence of a breach will expedite the contracting process, in that only breach-specific information should have to be supplemented at the time of a breach.

2. **LIST OF QUALIFIED BIDDERS:** Contracting Division, in conjunction with Construction and Operations Division, will establish lists of Qualified Bidders with sufficient manpower and equipment to perform each of the breach closure activities identified in the Executive Summary. These lists shall be updated regularly and shall form the basic lists to be used in situations requiring emergency contracting and less than full and open competition. If a Requirements contract is in place at the time of the breach, these lists will be used only if that contractor is unable to perform. These lists will also be used to supplement any IDQT's that may be in place at the time of the breach (See paragraph A.13.e. above).

3. **NOTIFICATION OF BREACH POTENTIAL:** The Dispatch Field Team (Executive Summary, Figure 6, Phase 2) shall notify Contracting Division and Office of Counsel immediately upon identification of any washover having the potential to become a breach situation (If Contracting and Counsel representatives are not at that time part of the Field Team). Contracting Division will notify any contractor having a Requirements contract and will make a preliminary check of that contractor's availability. Reference to the contractors on the basic lists (and/or the IDQT Order of Use if IDQT's are in place), may be made if a Requirements contract is not in place for the necessary work, again, for the purpose of a preliminary check on availability.

4. **NOTIFICATION OF BREACH CONDITION:** Whether or not a breach is preceded by a washover, the Dispatch Field Team (Executive Summary, Figure 6, Phase 2) shall notify Contracting Division and Office of Counsel immediately upon identification of an actual breach (again, if Contracting and Counsel representatives are not at that time part of the Field Team). Contracting Division will contact the contractors as set forth in paragraph B.3. above and will determine their availability for response.

5. **EMERGENCY DECLARATION:** Contracting Division and Office of Counsel will be provided with a copy of the "Fact Sheet and Declaration of Emergency" (Appendix A) signed by the District Engineer or his designated representative. Emergency contracting procedures cannot be initiated until receipt of the Declaration of Emergency.

6. **BREACH-SPECIFIC STATEMENT OF WORK:** At the earliest possible time after the identification of a breach, Engineering Division will provide to Contracting Division a breach-specific statement of work for each and every breach closure activity required, including all information necessary to supplement the generic SOW's. Such information shall include, but not necessarily be limited to: required breach closure methods to be used for the breach in question (i.e., dredging, upland trucking, upland trucking and dredging, stockpile trucking and dredging, and other types of services to be used), manpower, equipment, quantities, and all site information. A copy of the breach-specific statement of work will also be provided to Office of Counsel at this time in order that proper wage rates may be determined for inclusion in contracts to be executed.

7. **PROVISION OF SPECIAL PERMITS AND APPROVALS:** The Breach Contingency Plan as set forth in the Executive Summary contemplates acquisition of as many required approvals and permits as possible prior to a breach. To the extent that these have not been obtained prior to the advent of a breach, all required permits and approvals (see Overview above) must be obtained.

8. **CONTRACT TYPE:** While the contracting method to be used may depend on the specific breach, contract types in order of preference or likelihood of use are as follows:

a. Requirements Contract (Most likely to be used only for trucking contracts)

b. Fixed Price Contract
c. IDQT Contract
d. Letter Contract

For all types of contracts, information as previously set forth in paragraphs one through eight shall be provided.

9. **COMPETITION UNDER CICA AND EMERGENCY SITUATIONS:**

a. The statutory requirements of the Competition in Contracting Act of 1994 may not be circumvented. The Unusual and Compelling Urgency Exception set forth at Federal Acquisition Regulation (FAR) 6.3 may be used when the condition precludes full and open competition and delay in the award of a contract would result in serious injury,

financial or other, to the U.S. Government. The FAR, Part 6 shall be used as guidance in determining the specific CICA authority.

b. The FAR, Part 6 requires a Justification and Approval (J&A) if a requirement is estimated to exceed $25,000 and the KO is unable to obtain full and open competition. Under emergency conditions, this document is prepared after contract award. The documentation to support the J&A will be provided by the Requiring Activity within two weeks after contract award.

c. Notification in the Commerce Business Daily (CBD) pursuant to FAR Part 5 is not applicable to emergency contracting if the KO determines that the U.S. Government would be seriously injured by complying with the requirement. However, at the KO's discretion, notification may be published in the CBD in an effort to obtain the maximum competition.

d. In an emergency situation, maximum practicable competition is required, and will be accomplished at a minimum by reference to competition for Requirements contracts set up in advance, the basic lists, or the IDQT Order of Use. Should a breach occur prior to the development of the basic contractor lists or prior to the award of any Requirements contracts or IDQT's, an effort will be made to consider as many contractors as possible under the circumstances of the particular breach.

10. **ORAL SOLICITATIONS:** After the Declaration of Emergency, oral solicitations may be used in support of any of the contracting types set forth in this plan, including delivery orders under a Requirements contract or an IDQT. However, oral solicitations should be used only for the most disastrous and urgent conditions. **SOW's MUST STILL BE PROVIDED PRIOR TO COMMENCEMENT OF WORK.** In the event of the use of oral solicitations, the following procedures will generally be followed:

a. Contracting Division will call or contact by FAX several contractors on the basic lists will ask them to visit the site of the breach in order that they may view the situation. Where FAX is used, there will be immediate follow-up with a telephone call.

b. Contractors will FAX their bids/proposals. To ensure the integrity of the system, the late bid rule applies even (especially) for emergencies. To ensure that all bidders receive the same instructions, written instructions and limitations will be FAXED.

c. The regulation does not allow award of contracts without a legal review even under emergency conditions,

therefore, FAX'd bids will be reviewed by Office of Counsel immediately.

d. Upon receipt of legal review and receipt of funds and any special approvals, the KO may give the contractor "oral" authorization to commence work. Contracting Division will execute a written contract not later than one week following the oral authorization.

11. Following contract award, Construction Division shall monitor and administer the contract and any modifications thereto; coordinating with the Contracting Division, Office of Counsel, and other Divisions as appropriate.

THIS DOCUMENT HAS BEEN REVIEWED AND CONCURRED BY OFFICE OF COUNSEL AS SHOWN BELOW:

Lorraine Lee
Concur, Office of Counsel

DATE: 6/12/95

Chief, Contracting Division

DATE: 6/12/95

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Lorraine Lee
Concur, Office of Counsel

DATE: 6/12/95

H. C. Cagle
Chief, Contracting Division

DATE: 6/12/95

BREACH CONTINGENCY PLAN
FIRE ISLAND INLET TO MONTAUK POINT
LONG ISLAND, NEW YORK
REFORMULATION STUDY

APPENDIX E

DRAFT PROJECT COOPERATION AGREEMENT

APPENDIX E

LOCAL COOPERATION AGREEMENT

The draft Local Cooperation Agreement was originally located in this Appendix for informational purposes. To avoid confusion with that ultimately approved and executed, it has been withdrawn from this report.