RARITAN BAY AND SANDY HOOK BAY
HURRICANE AND STORM DAMAGE REDUCTION PROJECT
PORT MONMOUTH, NEW JERSEY

VOLUME II
FINAL ENVIRONMENTAL IMPACT STATEMENT
APPENDICES

JUNE 2000

Prepared by: U.S. Army Corps of Engineers
New York District
Planning Division
26 Federal Plaza
New York, New York 10278-0090

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FEIS APPENDIX A

NEPA COMPLIANCE AND FEIS DISTRIBUTION LIST

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[Notices]
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DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Availability of the Draft Environmental Impact Statement for the Raritan Bay and Sandy Hook Bay, Hurricane and Storm Damage Reduction Study, **Port Monmouth, New Jersey**

AGENCY: U.S Army Amry Corps of Engineers, DoD.

ACTION: Notice of Availability.

SUMMARY: The **New** York District of the U.S. Army Corps of Engineers has prepared a Draft Environmental Impact Statement (DESI) for the Raritan Bay and Sandy Hook Bay, Hurricane and Storm Damage Reduction Study, **Port Monmouth, New Jersey**. The purpose of the study is to identify a plan that would protect the **Port Monmouth** community from damages caused by hurricanes and storm. The DEIS was prepared to evaluate those alternative identified in the Feasibility Report. Additional information on the study is provided the SUPPLEMENTARY INFORMATION section as indicated below.

DATES: The DEIS will be available for public review on or about March 10, 2000. The review period of the document will be for forty five days from the publication date of the DEIS. To request a copy of the DEIS please call (212) 264-4663.

FOR FURTHER INFORMATION CONTACT: For further information regarding the DEIS, please contact Mark Burlas, Project Wildlife Biologist, telephone (212) 264-4663, Planning Division, ATTN: CENAN-PL-EA, Corps of Engineers, **New** York District, 26 Federal Plaza, **New** York, **New** York 10278-0090.

SUPPLEMENTARY INFORMATION:

1. The Raritan Bay and Sandy Hook Bay (RBSHB), Hurricane and Storm Damage Reduction Study, **Port Monmouth, New Jersey** was authorized by the U.S. House of Representatives, Committee on Public Works and Transportation, adopted August 1, 1990, which states ``Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, that the Board of Engineers for Rivers and Harbors is requested to review the report of Chief of Engineers on RBSHB, **New Jersey**, published as House Document 464, Eighty-seventh Congress, Second Session, and other pertinent reports, to determine the advisability of modifications to the recommendations contained therein to provide erosion control and storm damage prevention for the RBSHB.''

2. The 1.8-square-mile Project area is located in **Port Monmouth**, Middletown Township, **Monmouth** County, **New Jersey**, along the RBSHB, bounded by Compton Creek to the east, Pews Creek to the west, and **New Jersey** State Highway 36 to the south. The Project was divided into three study area for plan formulation and impact assessment purposes: the Bay Shoreline Study Area (BSSA), the Pews Creek Study Area (PCSA), and the Compton Creek Study Area (CCSA). The BSSA is located along the

RBSHB, and comprises the shorefront, beach, and dune complex that has historically experienced significant erosion, and consequently provides limited tidal surge and flood protection to the adjacent **Port** Monmouth community. The PCSA is located in the western portion of the Project area, and is situated in a highly developed, residential portion of Middletown Township. The PCSA includes the Pews Creek channel, a tidal creek that drains to the north into the RBSHB, and is mostly tidal wetlands. The CCSA is located in the eastern portion of the Project area, and is associated with a high developed, residential portion of Middletown Township. The CCSA includes the Compton Creek channel, a tidal creek that drains to the north into RBSHB, and is mostly tidal wetlands.

3. The selected plan is comprised of levees, floodwalls, a storm gate, road closure gates, fortification of an existing dune, pump stations, stormwater retention basins, beach nourishment, periodic beach renourishment, environmental mitigation, and an offshore borrow area. The selected plan, which is the environmentally preferred plan, was determined to be the National Economic Development (NED) Plan. A NED Plan is one that is consistent with the objectives of contributing to NED through the reduction of flood hazards and associated flood damages while protecting the Nation's natural, cultural, biological, historic, and social resources.

a. The District determined that interior drainage facilities were required to safely store and discharge storm water runoff that would collect on the protected side of the CCSA levee. Specifically, these facilities were planned and evaluated separately from the line of protection (levees and floodwalls) and would provide adequate drainage at least equal to that of the existing infrastructure.

b. Throughout the planning process, the District formulated alternative plans to meet general and specific planning objectives while considering the preferences of various interested parties with regard to plan selection and

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design. The District has consulted and coordinated its planning efforts with the **New Jersey** Department of Environmental Protection (JNDEP), the non-Federal sponsor, and representatives of the Middletown Township and various **Monmouth** County agencies. The plan formulation process emphasized the avoidance and minimization of environmental impacts, especially to wetlands, and then mitigation was included to compensate for unavoidable habitat loss.

c. The selected plan consists of approximately: 7,000 linear feet (ft) of earthen levees average +14 ft National Geodetic Vertical Datum (NGVD); 3,600 ft of concrete floodwalls averaging about +8 ft NGVD; a 40-ft wide storm gate across Pews Creek with a flood water pump house; initial beach nourishment of about 378,500 cubic yards of sand, with periodic renourishment of approximately 125,000 cubic yards of sand at 10-year intervals; and , three interior drainage ponding areas each with primary and secondary drainage outlets.

2. The selected plan without mitigation would directly and indirectly impact approximately 14.89 acres (ac) of wetland and upland areas. The majority of these impacts would involve the conversion of native habitat types to maintained (grass-covered) levees, permanent floodwalls, and storm gate. Specifically, the selected plan would permanently impact several vegetation cover types. Finally, the selected plan would temporarily impact herbaceous, scrub/shrub, Phragmites wetlands, and high salt marsh habitats due to clearing and equipment operation in temporary work areas.

a. Less mobile aquatic and terrestrial wildlife species within the footprint of the selected plan would experience mortality due to construction. Furthermore, a short-term decrease in reproductive success of these species could occur due to construction activities. In the long-term, following habitat conversion, wildlife species would

lose or gain habitat resources based on their habitat requirements. No rare, threatened, or endangered species or their critical habitats would be adversely affected by the implementation of the selected plan.

b. The District conducted a Habitat Evaluation Procedures (HEP) analysis to assess the impacts of the selected plan. This HEP analysis concluded that impacts associated with the construction of the selected plan (without mitigation) will result in the loss of 2.04 black duck (Anas rubripes) and 3.14 marsh ren (Cistothorus palustris) habitat units (HUs) at the year of construction (Year 2002). At the year of 2052, black duck and marsh wren habitat quality would be reduced by 49.94 and 136.71 cumulative habitat units (CHUs). Similarly, the AAHU of the black duck and marsh wren decrease by 1.00 and 2.73 over the 50-year design life of the Project. In addition, the HEP analysis determined that 2.13 acres of upland habitat would be impacted, 7.13 acres of wetlands would be converted to upland, and additional 5.63 acres of wetland habitat would be indirectly impacted by the selected plan. Indirect impacts to wetlands involve the conversion, not the loss of non-Phragmites wetlands to Phragmites-dominated wetlands.

c. The selected plan is expected to have a direct, short-term impact on benthic resources. Beach nourishment is expected to smother benthic organisms causing their mortality. However, once buried, some mobile shellfish species and polycheate worms have the ability to burrow upwards and survive. The recovery of benthic resources to preconstruction conditions should occur shortly after construction. A benthic-monitoring plan will be conducted to quantify benthic recovery rates and the composition of the recolonized benthic community.

d. The District developed a tidal hydrodynamic model to compare the effects of a storm gate in Pews Creek to the existing conditions. The model projected that the selected 40-ft storm gate in the open position would lower the mean spring high tide by only 0.72 inches and all other normal tidal events would be unaffected. Accordingly, the effects to the daily tidal exchange are expected to be minute. A monitoring plan is proposed to support the prediction of the model. In addition, the storm gate is anticipated to increase peak ebb tidal velocities potentially allowing more suspended sediments to be transported out of the salt marsh into the RBSHB. As a result, the sedimentation rate of the salt marsh may be reduced.

e. In addition, the implementation of the selected plan can provide benefits to horseshoe crabs (Limulus polyphemus), migratory birds, and the federally threatened piping plover (Charadrius melodus). A wider sandy beach and improved intertidal habitat conditions may provide more suitable spawning habitat for the horseshoe crab, thus potentially increasing prey resources available for consumption by migratory birds. It is well documented that the timing of the spring migration for many species is linked to the spawning activity of the horseshoe crab. Furthermore, a much larger and wider sandy beach created by the construction of the selected plan should provide more roosting space for wintering waterfowl and increase the amount of potential nesting habitat for shorebirds, such as the piping plover.

f. No areas were identified as containing potential environmental contamination, or were considered to pose a great risk to human health. Subsurface testing was performed and evidence of Native American occupation was found in the vicinity of the selected plan's footprint. Further evaluation will be conducted and coordinated with the **New Jersey** Historic Preservation Office, as part of Section 106 of the National Historic Preservation Act compliance. Short-term negligible impacts to air quality and traffic are expected only during construction.

3. The District, in consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and NJDEP, developed an array of mitigation plans using HEP protocols. The selected mitigation plan proposes to restore approximately 12.80 acres of wetland Phragmites-dominated habitat to salt marsh habitat. As compared to the No-Action alternative, implementation of the selected plan and selected

mitigation plan would increase black duck habitat quality by 0.78 HUs and marsh wren habitat quality by 0.96 HUs at the year of construction. At the year of 2052, black duck and marsh wren habitat quality would increase by 157.83 and 106.55 CHUs. In addition, the AAHU of the black duck and marsh wren would increase by 3.16 and 2.13 over the Project's 50-year design life when compared to the No-Action alternative.

a. Based upon a Phragmites Encroachment Model (PEM) developed by the District specifically for the assessment of future conditions and impacts, the construction of the selected plan and selected mitigation plan would prevent the loss of about 15.27 acres of salt marsh habitat when compared to the No-Action alternative for the 50-year design-life of the Project. In summary, the comparison of the selected plan to the No-Action alternative suggests that implementation of the selected plan will provide long-term benefits to wildlife resources of the intertidal zone and the coastal marsh ecosystem at **Port Monmouth**.

b. Mitigation measures for cultural resources will be developed in conjunction with the **New Jersey** Historic Preservation Office, the Advisory Council on Historic Preservation (ACHP), and interested parties.

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4. Based on coordination with other federal and state agencies, an unresolved issue has been identified. A consensus to determine the appropriate level of compensatory mitigation to offset environmental impacts has not been reached. The District plans to continue its ongoing coordination effort with other federal and state agencies to secure an agreement concerning the amount of mitigation that is needed to appropriately compensate for environmental impacts. No other unresolved issues are known at this time, pending review of this DEIS.

Frank Santomauro,
Chief, Planning Division.
[FR Doc. 00-5839 Filed 3-9-00; 8:45 am]
BILLING CODE 3710-06-M

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare a Draft Environmental Impact Statement (DEIS) for the Raritan Bay-Sandy Hook Bay, Port Monmouth, New Jersey

AGENCY: U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: The New York District of the U.S. Army Corps of Engineers (Corps) is preparing a Draft Environmental Impact Statement (DEIS) for proposed measures to provide flood control and storm damage protection in Port Monmouth, New Jersey. For this Notice of Intent, the Corps is considering protection measures to reduce damages caused by flooding and coastal storms. The EIS will be prepared according to the U.S. Army Corps of Engineers procedures for implementing the National Environmental Policy Act of 1969, as amended, (NEPA) 42 U.S.C. 4332(2)(C), and consistent with the U.S. Army Corps of Engineers' policy to facilitate public understanding and scrutiny of agency proposals. This notice of intent is published as required by the President's Council on Environmental Quality regulations implementing the provisions of NEPA, 40 CFR Parts 1500–1508.

FOR FURTHER INFORMATION CONTACT: Questions regarding the action can be addressed to Mark H. Burlas, Project Environmental Manager, phone (212) 264–4663, U.S. Army Corps of Engineers, New York District, Planning Division, 26 Federal Plaza, New York, New York 10278–0090.

SUPPLEMENTARY INFORMATION:

1. *Authorization.* The Raritan Bay-Sandy Hook Bay flood control and shore protection project was authorized by the U.S. House of Representatives, Committee of Public Works and Transportation, adopted August 1, 1990.

2. *Location of the Proposed Action.* The project area is located in the Port Monmouth section of Middletown Township, Monmouth County, New Jersey. The study area is approximately 1.5 miles long and is bounded by Comptons Creek to the east, Pews Creek to the west, New Jersey State Highway 36 to the south and the Raritan Bay-Sandy Hook Bay to the north.

3. *Reasonable Alternative Actions.* In addition to the "No Action" alternative, the flood control component of the feasibility study will evaluate alternatives such as buy-outs, storm gates and floodwalls to avoid and minimize impacts to coastal wetlands, as well as various levee layouts and heights. The shore protection component will analyze alternatives such as the expansion of existing dunes and various improvements to existing beaches.

4. *Significant Issues Requiring In-Depth Analysis.* 1. Coastal Wetlands Impacts; 2. Impacts to Aquatic Resources; 3. Archaeological and Cultural Resources Impacts; 4. Hydrology Impacts; 5. Economic Impacts.

5. *Environmental Review and Consultation.* Review will be conducted as outlined in the Council on Environmental Quality regulations dated November 29, 1983 (40 CFR Parts 1500–108) and U.S. Army Corps of Engineers regulation ER 200–2–2 dated March 4, 1988.

6. *Estimated Date of DEIS Availability:* July 1998.

Gregory D. Showalter,

Army Federal Register Liaison Officer.

[FR Doc. 98–14852 Filed 6–3–98; 8:45 am]

BILLING CODE 3710–06–M

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare a Draft Environmental Impact Statement (DEIS) for the Truckee Meadows, Nevada General Reevaluation Report

AGENCY: U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: The U.S. Army Corps of Engineers (Corps), lead agency under the National Environmental Policy Act intends to prepare a draft EIS evaluating the environmental effects of flood control, environmental restoration, and recreation proposed for Truckee Meadows, Sparks, and downtown Reno. The Corps is working with Washoe County and the cities or Reno and Sparks to provide this protection.

FOR FURTHER INFORMATION CONTACT: Questions concerning the proposed action and draft EIS should be addressed to Ms. Patricia Roberson, Planning Division, Environmental Resources Branch, Corps of Engineers, 1325 J Street, Sacramento, California 95814–2922, telephone (916) 557–6705.

SUPPLEMENTARY INFORMATION:

1. *Project Location:* The Truckee River basin in eastern California and western Nevada encompasses about 3,060 square miles. The drainage area upstream from Reno includes 1,067 square miles of mountainous terrain on the eastern slope of the Sierra Nevada, the crest of which forms the western boundary of the basin. The primary study area includes the Truckee River in Washoe and Storey Counties, Nevada, at and below Reno, Sparks, and the Truckee Meadows. The Truckee Meadows encompasses an area along the Truckee River from the central part of Reno on the west to the Virginia and Pah Pah Mountain Ranges on the east, south along Steamboat Creek to Huffaker Hills, and includes Sparks to the north.

2. *Proposed Action and Alternatives:* Alternatives to address resource problems and needs identified to date will include: (1) flood control improvements along the Truckee River in the Truckee Meadows, (2) non-structural flood control measures through downtown Reno, (3) improving Lake Tahoe operation for flood control, (4) environmental restoration measures, and (5) recreation features.

3. *Scoping Process:*

a. "Scoping" is a process to identify the action, alternatives, and effects to be evaluated in an environmental document. The public is invited to assist the Corps and non-Federal sponsor in scoping this EIS. The process provides an opportunity for the public to identify significant resources with the study area that may be affected by the project. To facilitate this involvement, a public scoping meeting will be held in Reno, Nevada on June 10, 1998, from 5:30 to 7:30 p.m. at the Washoe County Department of Water Resources, 4930 Energy Way, Reno, Nevada. Individuals, organizations, and agencies are also encouraged to submit written scoping comments by July 10, 1998.

b. After the draft EIS is prepared, it will be circulated to all interested parties for review and comment. Public meetings will be held to receive verbal and written comments. All comments will be considered and responded to in the final EIS.

4. *Availability:* The draft EIS is scheduled to be distributed for public review and comment in spring 1999.

Gregory D. Showalter,

Army Federal Register Liaison Officer.

[FR Doc. 98–14851 Filed 6–3–98; 8:45 am]

BILLING CODE 3710–EZ–M

This report provides the names and addresses of the various agencies, groups, and individuals that may be directly and indirectly affected by the U.S. Army Corps of Engineers' proposed Flood Control and Shore Protection Project in Port Monmouth, Monmouth County, New Jersey. In particular, this report is divided into the following sections:

- Section 1.0 Elected Officials (page A-1);
- Section 2.0 Agencies (page A-4);
- Section 3.0 Easements, Utilities, and Railroads (page A-11);
- Section 4.0 Interested Parties (page A-13); and,

1.0 ELECTED OFFICIALS

.1 Federal Officials

The Honorable Frank Lautenberg
United States Senate
506 Hart Senate Office Building
Washington, DC 20510-3002

The Honorable Frank Pallone, Jr.
US House of Representatives
420 Cannon House Office Bldg.
Washington, DC 20515-0000

The Honorable Michael Pappas
US House of Representatives
1710 Longworth House Office Building
Washington, DC 20515-0000

The Honorable Robert Torricelli
United States Senate
113 Diksen Senate Office Building
Washington, DC 20515-0000

1.2 State Officials

Joseph Azzolina
New Jersey Assembly
1715 Highway 35
Middletown, NJ 07748

Senator Peter Inverso
New Jersey State Senate
900 Kuser Road
Hamilton Twp, NJ 07747

Paul Kramer
New Jersey State Assembly
900 Kuser Road
Hamilton Twp, NJ 07747

Senator Joseph Kyrillos
New Jersey State Senate
1 Arin Park Building
1715 Highway 35, Suite 107
Middletown, NJ 07748

Robert Shinn
401 E. State Street
P.O. Box 402
Trenton, NJ 08625

Joann Smith
New Jersey State Assem
2B Highway 34
Matawan, NJ 07747

Samuel D. Thompson
New Jersey Assembly
2B Highway 34
Matawan, NJ 07747

Barbara Wright
New Jersey State Assembly
7 Centre Drive, Suite 6
Jamesburg, NJ 08831

1.3 County Officials

Joseph Azzolina
Freeholder
1 Arin Park Building
1715 Highway.35, Suite 102
Middletown, NJ 07748

Robert J. Collins
County Administrator
Hall of Records, 1 E. Main
Freehold, NJ 07728

M. Claire French
County Clerk
Hall of Records, 1 E. Main
Freehold, NJ 07728

Theodore Giannechini
Engineer
Hall of Records Annex, 1 E. Main
Freehold, NJ 07728

Amy H. Handlin
Freeholder
Hall of Records, 1 E. Main
Freehold, NJ 07728

K. Thomas Kellers
Environmental Planner
Hall of Records, 1-E
Freehold, NJ 07728

Joseph M. Kyrillos, Jr., Freeholder
1 Arin Park Bdg.
1715 Highway 35, Suite 107
Middletown, NJ 07748

Harry Larrison, Jr.
Director, Board of Freeholders
Hall of Records, 1 E. Main
Freehold, NJ 07728

Theodore J. Narozanick
Freeholder
Hall of Records, 1 E. Main
Freehold, NJ 07728

Thomas J. Powers
Deputy Director
Hall of Records, 1 E. Main
Freehold, NJ 07728

Peter Stagg
Buildings & Grounds
250 Center Street
Freehold, NJ 07728

Edward J. Stominski
Freeholder
Hall of Records, 1 E. Main
Freehold, NJ 07728

Samuel D. Thompson
Freeholder
B Highway 34
Matawan, NJ 07748

1.4 Local Officials

Mayor Richard Brodsky
Town Hall
1 Kings Highway
Middletown, NJ 07748

Rosa Garcia, Town Clerk
Town Hall
1 Kings Highway
Middletown, NJ 04478

Rose Peters, Councilmember
Town Hall
1 Kings Highway
Middletown, NJ 04478

Joan Smith, Councilmember
Town Hall
1 Kings Highway
Middletown, NJ 07748

Patrick Perkinson, Councilmember
Town Hall
1 Kings Highway
Middletown, NJ 04478

Ray O'Grady, Councilmember
Town Hall
1 Kings Highway
Middletown, NJ 04478

2.0 AGENCIES

2.1 Federal Agencies

First Coast Guard District
U.S. Coast Guard
Governors Island, Building 135A
New York, NY 10040-5073

Clifford G. Day
U.S. Fish & Wildlife Service
927 N. Main Street
Building D 1
Pleasantville, NJ 08232-0000

John Dunnigan, Director
Atlantic States Marine Fisheries Commission
1444 Eye Street, NW
6th Floor
Washington, DC 20005-0000

Karen Greene
Habitat and Protected Resources Division
National Marine Fisheries Service
Sandy Hook Biological Laboratory
Highlands, NJ 07732-0000

Robert Hargrove, Chief
U.S. Environmental Protection Agency
Strategic Planning & Multimedia Programs Branch
Region II
New York, NY 10007-1866

Thomas Kane
Federal Emergency Management Agency
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26 Federal Plaza
New York, NY 10278-0000

J. Sidoti Anton
Federal Energy Regulation Commission
FERC
19 West 34th Street, Suite 400
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Robert Dieterich
U.S. Environmental Protection Agency
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Paula Halupa
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Gerad Hertel
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5 Radnor Corporate Center, Suite 200
Radnor, PA 19087-4585

Don Kilma, Director
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Avenue, NW #809
Washington, DC 20004-0000

Mike Ludwig
National Marine Fisheries Service
U.S. Department of Commerce
212 Rogers Avenue
Milford, CT 06460 6499

Victoria Martinez
Federal Highway. Administration
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Thomas McDowell
U.S. Fish & Wildlife Service.
927 N. Main Street
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Pleasantville, NJ 08232-0000

Robert McKeon
U.S. Maritime Administration
26 Federal Plaza
New York, NY 10278-0000

L. Grady Moore, District Chief
U.S. Geological Survey
425 Jordan Road
Troy, NY 12180-0000

Joe Piccianio, Division Chief
Federal Emergency Management Agency
Region II
26 Federal Plaza
New York, NY 10278-0000

Diane Rusanowski
National Marine Fisheries Service
U.S. Department of Commerce
212 Rogers Avenue
Milford, CT 06460-6499

Anthony Ward, Executive Coordinator
Military Ocean Terminal
Bayonne, NJ 07002

Office of Ecology and Conservation
National Oceanic & Atmospheric Administration
Department of Commerce
Room 5813, Commerce Building
Washington, DC 20230

Director
Office of Environmental Compliance
Department of Energy
1000 Independence Ave, SW
Room 4G064
Washington, DC 20585

U.S. Environmental Protection Agency
ATTN: Office of Federal Activities
EIS Filing Section [Mail Code A-104]
Room 2119 Waterside Mall
401 M Street, SW
Washington, DC 20460

Director, Office of Environmental Compliance
Department of Energy
1000 Independence Avenue SW
Room 4G064
Washington, DC 20585

Federal Emergency Management Administration
Room 713
500 C Street, SW
Washington, DC 20472

Director, Office of Environmental Affairs
Department of Interior
Main Interior Building, MS 2340
1849 C Street, NW
Washington, DC 20240

Executive Director
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW
Room 809
Washington, DC 20004

Director
Department of Health & Human Services
Room 537F, Humphrey Building
200 Independence Avenue, SW
Washington, DC 20201

Regional Director
Federal Emergency Mgmt. Administration
26 Federal Plaza
New York, NY 10278

Regional Environmental Officer
Dept. of Housing & Urban Development
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Thomas Bigford
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Douglas Beach
Habitat and Protected Species
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David E. Clark
Environmental Compliance Division
National Park Service
North Atlantic Region
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Boston, MA 02109

David Cottingham
Director
Ecology and Conservation Office
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CS/EC, Room 6222
Washington. DC 20230

Regional Administrator
Federal Highway Administration
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Maritime Environmental Protection Branch
Third Coast Guard District
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2.2 State Agencies

William Connolly, Jr.
Department of Community Affairs
State of New Jersey
P.O. Box 800
Trenton, NJ 08625-0800

Ruth Ehinger, Bureau Chief
Bureau of Coastal Regulation
NJ Department of Environmental Protection
501 E. State Street, CN401
Trenton, NJ 08625-0000

Andrew Fekete
NJ Department of Transportation
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Trenton, NJ 08625-0600

Howard Golub, Acting Director
Interstate Sanitation Commission
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Suite 201
New York, NY 10036-0000

Lonna R. Hooks
Secretary of State
State House
CN300
Trenton, NJ 08625-0000

Jane Kenny, Commissioner
Dept. of Community Affairs
101 S. Broad Street
CN800
Trenton, NJ 08625-0000

Frank McDonough, Director
Department of Commerce & Economic Development
State of New Jersey
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Bernie Moore, Administrator
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NJ Department of Environmental Protection
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NJ Department of Environmental Protection
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Office of State Planning
Department of the Treasury
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Trenton, NJ 08625

William E. Ward, Chief
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John Yencik
State of New Jersey
Dept. of Labor & Industry
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State Conservationist
US Department of Agriculture-SCS
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Room 771
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USDA, Forest Service
Northeast Area Director
5 Radnor Corporate Center
100 Matsonford Road
Radnor, PA 19087

Dr. Alan Mytelka
Interstate Sanitation Commission
Room 201
311 W. 43rd Street
New York, NY 10036

Mr. James Tripp
Environmental Defense Fund
257 Park Ave South
New York, NY 10016

2.3 County Agencies

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1 Kings Highway
Hall of Records Annex
Middletown, NJ 07748

Monmouth County Environmental Commission
Hall of Records Annex
1 East Main Street
Freehold, NJ 07728

Ken Sheinbaum
Monmouth County Library
125 Symes Road
Manalapan, NJ 07726

Laura Kirkpatrick
Monmouth County Park System
805 Newman Springs Road
Lincroft, NJ 07738

Leo Carlin
Public Works
250 Center Street
Freehold, NJ 07728

Robert W. Clark
Planning Board Director
Hall of Records, 1 E. Main
Freehold, NJ 07728

Martin Chomsky
Mosquito Extermination Commission
P.O. Box 162
Eatontown, NJ 07724

2.4 Local Agencies

Mike Fedosh, Chair
Town Hall, Environmental Commission
1 Kings Highway
Middletown., NJ 07748

Keith Henderson
Environmental Engineer
T & M Associates
11 Tindill Road
Middletown, NJ 04478

James Hinckley, Chair
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3.0 EASEMENTS, UTILITIES, AND RAILROADS

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James A. Shissias
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Mickey Bucci
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4.0 INTERESTED PARTIES

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Asbury Park Press
Attn: Todd Bates
3601 Highway 66, P.O. Box 1550
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Assoc of NJ Environmental Commissions
300 Mendham Road,Box 157
Mendham, NJ 07945

Baymen's Protective Association
Dennis Kavanaugh
8 Bay Street
Rumson, NJ 07718

Brown's Point Marina
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Keyport, NJ 07735

Captain Cove Marina
61 Park Avenue
Hazlet, NJ 07730-1338

Clean Action Ocean
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Highlands, NJ 07732

Garden State Audubon Council
c/o 325 South Shore Road
Absecon, NJ 08201

Home News Tribune
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Hudson River Foundation
40 West 20th Street, 9th Floor
New York, NY 10011

Jersey Shore Audubon Society
c/o 1916 Kenilworth Court
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Keansburg Borough
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Manomet Bird Observatory
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Monmouth County Audubon Society
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Redbank, NJ 07701

Monmouth County Citizens for Clean Air & Water
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Monmouth Conservation Foundation
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Friends of Clearwater
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New Jersey Audubon Society
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Franklin Lakes, NJ 07417

NJ Alliance for Action
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Raritan Plaza II
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NJ Conservation Foundation
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Morristown, NJ 07748

NJ Environmental Federal
Shore Office
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NJ Pinelands Commission
P.O. Box 7
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119 Somerset Street
New Brunswick, NJ 08901

NJ Sea Grant Marine
Advisory Service
c/o Institute of Marine
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New Brunswick, NJ 08903

NJ Water Environment Federation
44 Wesleyan Drive
Trenton, NJ 08690-1925

Save Our Bay Foundation
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50 Washington Avenue
Keansburg, NJ 07734

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483 Amboy Road
Keyport, NJ 07735-5004

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WCMX FM Radio
Attn: Jason Ulanet
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Cedar and Norwood Avenue
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WPRB
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Princeton, NJ 08542-0342

Pedersens Store &Marina
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Keyport, NJ 07735-1041

Trust for Public Land
NJ Field Office
1095 Mount Kemble Avenue
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WHSE-TV, Ch. 68
Attn: Barry Diller
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Newark, NJ 07107

WRSU Radio
"The Voice of Rutgers"
126 College Avenue
New Brunswick, NJ 08903

FEIS APPENDIX B

CLEAN WATER ACT SECTION 404(B)(1) GUIDELINES EVALUATION

CLEAN WATER ACT 404(B)(1) EVALUATION REPORT
COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT
PORT MONMOUTH, NEW JERSEY

I. GENERAL DESCRIPTION OF FILL MATERIAL

A. General Characteristics of Material

1. Areas impacted by the levee will consist primarily of compacted earth fill. Such fill is expected to be comprised of clay-loam or other clay containing soils as described in the Monmouth County Soil Survey.

2. Floodwalls have a smaller footprint than the levee. Floodwalls will be constructed of concrete material.

3. The Bay Shore dune, initial beach nourishment, and each beach renourishment will be constructed with fill comprised of sand.

B. Quantity of Materials

While the exact amount of material in cubic feet is yet to be determined, the selected plan is expected to directly and indirectly impact approximately 14.9 acres. The exact amount of fill material will be determined during the design and specifications phase of the Selected plan.

C. Source of Materials

Sources for fill material may include on-site and off-site substrate dependent upon the composition of soils at the site-specific locations. Rocks and concrete materials will be obtained from commercial sources proximal to the selected plan. The sand used to fortify the dune and berm will come from an existing permitted and approved offshore borrow area known as the Sea Bright offshore borrow area.

II. DESCRIPTION OF THE PROPOSED DISCHARGE SITE

A. The Selected plan is described in DEIS Section 1.4.

B. Levees within the Selected plan will be +14 ft in height and approximately 65 ft wide at the base. Such levees will be constructed with approximately 2.5:1 slopes.

C. Floodwalls will have a top elevation of +14 ft NGVD, but will only be approximately 2 feet wide.

D. The 14.89 acres of impact is broken down into habitat cover types as follows:

1. Upland Forest/Scrub Shrub –	0.01 acres
2. Upland Grass –	0.01 acres
3. Upland Herbaceous –	0.08 acres
4. Upland Herbaceous/Scrub Shrub –	0.23 acres
5. Upland Phragmites –	1.33 acres
6. Upland Phragmites/Scrub Shrub –	0.24 acres
7. Wetland Herbaceous/Scrub Shrub –	0.06 acres
8. Wetland Phragmites –	6.64 acres
9. Wetland Phragmites/Scrub Shrub –	1.24 acres
10. Salt Marsh –	3.59 acres
11. Wetland Scrub/Shrub –	0.32 acres
12. Open Water –	0.49 acres
13. Wetland Disturbed –	0.42 acres
14. Upland Disturbed –	0.23 acres

E. Time and Duration of Disposal/Fill Placement

The Selected plan will be constructed in various increments over a two-year period. Construction of the first elements of the selected plan is projected to begin in 2002.

F. Description of Disposal/Fill Placement Methods

Construction equipment such as bulldozers, backhoes, and dump trucks will be used. Soil and rocks will be obtained from quarries and suitable sources.

III. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

1. Substrate Elevation and Slope:

Levees will be constructed at 2.5:1 foot slopes. Floodwalls will have straight vertical rises.

2. Sediment Type:

Sediments similar to those present in the area will be utilized.

3. Dredged/Fill Material Movement:

Impacts to wetlands and streams will occur as a result of fill from levees.

4. Physical Effects on Benthos:

   Some benthic invertebrates may be buried/smothered by fill material. However, long-term effects are not anticipated. Monitoring the recovery of intertidal and subtidal benthos will be conducted.

5. Other Effects:

   No additional major impacts are anticipated from the Selected plan.

6. Actions Taken to Minimize Impacts:

   Selected plan design was modified to fill only areas necessary for a comprehensive flood control and shore protection project.

B. Water Circulation, Fluctuation and Salinity Determinations

1. Water Quality:

   (a) Salinity – Not Applicable (N/A).
   (b) Water Chemistry (pH, etc.) – No major impacts.
   (c) Clarity – Temporary increases in turbidity during localized hydraulic dredging during beach nourishment and the construction of the Pews Creek storm gate, and during other near-stream construction activities.
   (d) Color – Possible minor short-term change.
   (e) Odor – Not measurable.
   (f) Taste – N/A.
   (g) Dissolved Gas Levels - Possible short-term variations due to turbulence caused by construction activity.
   (h) Nutrients - Potential short-term increase.
   (i) Eutrophication – N/A.
   (j) Others as Appropriate – N/A.

2. Current Pattern and Circulation:

   (a) Current Pattern and Flow – Areas that normally flow directly into Pews Creek during storm events will be retained by the storm gate, and the creek will be emptied through use of the pump station. Normal flow will continue when the storm gate is open.
   (b) Velocity – Velocity of water will decrease compared to the natural state during storm events at the Pews Creek storm gate.
   (c) Stratification – N/A.

3. Normal Water Level Fluctuations:

   The proposed action will reduce the 100-year floodplain throughout most of the Selected plan.

4. Salinity Gradients:

   No impacts are anticipated.

5. Actions Taken to Minimize Impacts:

   Selected plan designed to minimize the number of levees and floodwalls. Revegetation plans will be incorporated onto levee and dune reconstruction designs. Wetland mitigation will be implemented to offset wetland impacts as a result of the selected plan.

C. Suspended Particulate/Turbidity Determinations

1. Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Construction Site(s):

   Temporary increases in turbidity due to construction activity.

2. Chemical and Physical Properties of the Water Column:

   (a) Light Penetration – Particles will settle fairly rapidly. Minor impacts are anticipated.
   (b) Dissolved Oxygen - Possible short-term affects due to in-stream disturbance of particulates.
   (c) Toxic Metals and Organics – No adverse effects are anticipated.
   (d) Pathogens – N/A.
   (e) Aesthetics – N/A.
   (f) Others as appropriate – Floodwalls will be constructed in a manner considered to be generally pleasing to the public.

3. Biota:

   (a) Primary Production, Photosynthesis-None
   (b) Suspension/Filter Feeders – Minor short-term impacts are anticipated.
   (c) Sight Feeders – Fish and motile invertebrates (such as dace, shiners, and dragonfly larvae) may be affected due to temporary increases in turbidity during construction. No trout production waters occur within the Selected plan. Short term effects to fish mobility during severe storm conditions will be experienced upon temporary closure of the storm gate in Pews Creek.

4. Actions taken to Minimize Impacts:

   In-stream construction activity has been reduced from original plans such that only the minimum amount of in-stream and near-stream construction necessary to complete the Selected plan will occur.

D. Contaminant Determinations

Testing of materials to be used for construction will be made prior to the initiation of the Selected plan. Only clean material will be used.

E. Aquatic Ecosystem and Organism Determinations

1. Effects on Plankton:

   No major impacts are anticipated.

2. Effects on Nekton:

   Temporary turbidity during in-stream or near-stream construction and dredging may block gills of nekton unable to escape or relocate to adjacent areas.

3. Effects on Benthos:

   Some benthic forms and the eggs/juveniles of nektonic species may be buried by dredging or other in-stream and/or shoreline operations.

4. Effects on Aquatic Food Web:

   Impacts to aquatic organisms due to increased turbidity caused by in-stream and near-stream construction activities would be temporary and minor.

5. Effects on Special Aquatic Sites:

   (a) Sanctuaries and Refuges – N/A.
   (b) Wetlands – Approximately 12.76 acres of wetlands will be impacted due to fill activities and removal of vegetation.
   (c) Mud Flat – No impacts.
   (d) Vegetated Shallows – N/A.
   (e) Intertidal and Subtidal – Monitoring program will be implemented to assess recolonization of benthic resources.

IV. FINDING OF COMPLIANCE OR NONCOMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

A. No significant adaptations of the guidelines were made relative to this evaluation.

B. Sixty-eight (68) alternatives to the alleviation of the flood damage problem in the study area were considered. There are no practicable alternatives under the jurisdiction of Section 404 (b)(1) guidelines (see DEIS Section 2).

C. The proposed action does not appear to violate applicable state water quality standards or effluent standards.

D. The proposed fill material placement will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

E. The proposal will have no adverse impact on endangered species or their critical habitats (Endangered Species Act of 1973).

F. The proposal will have no impact on marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972.

FEIS APPENDIX C

NEW JERSEY COASTAL ZONE MANAGEMENT CONSISTENCY STATEMENT

NEW JERSEY COASTAL ZONE MANAGEMENT EVALUATION OF PROPOSED FLOOD PROTECTION IMPROVEMENTS TO PORT MONMOUTH MIDDLETOWN TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

INTRODUCTION

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. §§1451-1464) was enacted by Congress in an effort to balance the often competing demands of growth and development with the protection of coastal resources. Its stated purpose is to "...preserve, protect, develop, where possible, to restore or enhance, the resources of the nation's coastal zone...". The Act established the framework for achieving this balance by encouraging the states to develop coastal zone management programs, consistent with minimum federal standards, designed to regulate land use activities that could impact coastal resources. The Coastal Zone Act Reauthorization Act Amendments of 1990 further strengthened the act by requiring the state programs to focus more on controlling land use activities and the cumulative effects of activities within designated coastal zones.

The State of New Jersey administers its Federally-approved coastal zone program through the Department of Environmental Protection, Division of Coastal Resources (NJDCR). Pursuant to the federal CZMA, New Jersey has defined its coastal zone boundaries and developed policies to be utilized to evaluate projects within the designated coastal zone, as set forth in New Jersey's Rules on Coastal Zone Management (CZM) (N.J.A.C. 7:7, 7:7E, dated July 18, 1994 and addendum to 7:7E-5 and 7:7E-8.7, dated August 19, 1996). The Waterfront Development Law (N.J.S.A. 12:5-3) and related requirements (N.J.A.C. 7:7-23) provide the authority for issuance of permits for, among other activities, the placement or construction of structures, pilings, or other obstructions in any tidal waterway. New Jersey's Rules on Coastal Zone Management are employed by the State's Land Use Regulation Program in the review of permit applications and coastal decision making; they address issues of location, use, and resources. New Jersey's rules provide for a balance between economic development and coastal resource protection, recognizing that coastal management involves explicit consideration of a broad range of concerns, in contrast to other resource management programs that have a more limited scope of concern.

The selected plan is located within the coastal zone of New Jersey. The following assessment identifies the coastal zone management policies relevant to the proposed combined flood control and shore protection project.

SUBCHAPTER 3 - SPECIAL AREAS

7:7E-3.2 SHELLFISH HABITAT

This policy generally limits disturbance of shellfish habitat. The selected plan, including beach nourishment, will not effect the mean low tide line; therefore, the selected plan is compatible with this policy.

7:7E-3.3 SURF CLAM AREAS

This policy prohibits development that would destroy or contaminate surf clam areas. The selected plan is not located in a surf clam area nor will it contaminate surface water; therefore, this policy is not applicable.

7:7E-3.4 PRIME FISHING AREAS

This policy prohibits sand or gravel submarine mining in prime fishing areas where the activity would not significantly alter the bathymetry. The selected plan does not involve submarine mining; therefore, this policy is not applicable.

7:7E-3.5 FINFISH MIGRATORY PATHWAYS

This policy prohibits development such as dams, dikes, spillways, channelization, tide gates, and intake pipes that would create physical barriers to migratory fish. Development that would lower water quality so as to interfere with fish movement is also prohibited.

Compton Creek is documented as a migratory run; however, the proposed construction of flood control measures (levee) will not create physical barriers to migratory fish.

Pew's Creek has not been documented as a migratory run. Therefore, construction of the stormgate will not create a physical barrier to migratory fish.

7:7E-3.6 SUBMERGED VEGETATION HABITAT

This policy prohibits or restricts permanent significant impacts to submerged vegetation habitats unless compensation/mitigation efforts are enacted. Direct and indirect impacts to 12.76 acres of wetlands will be associated with the construction of the selected plan. Impacts will be compensated through a wetland mitigation plan.

7:7E-3.7 NAVIGATION CHANNELS

This policy prohibits construction that would extend into a navigation channel that would result in the loss of navigability. The majority of Pew's Creek use is on the northern side of the Port Monmouth Bridge, from the marina to the bay. Navigability at Pew's Creek is slightly impeded

by the Port Monmouth Bridge at the northern portion of the creek. Construction of a storm gate will not further impede navigation of Pew's Creek.

Navigability of Compton Creek will not be affected by the selected plan.

7:7E-3.8 CANALS

This policy prohibits actions that would interfere with boat traffic in canals used for navigation. The selected plan does not contain a canal as defined by the New Jersey State Department of Environmental Protection; therefore, this policy is not applicable.

7:7E-3.9 INLETS

This policy prohibits filling and discourages submerged infrastructure in coastal inlets. The selected plan is not located in an inlet as defined by the NJDEP; therefore, this policy is not applicable.

7:7E-3.10 MARINA MOORINGS

This policy prohibits non-water dependent development in marina mooring areas. Construction of the selected plan would not involve development in any marina mooring areas nor is the selected plan non-water dependent; therefore, this policy is not applicable.

7:7E-3.11 PORTS

This policy prohibits actions that would interfere with port uses. The selected plan is not located in a significant shipping port; therefore, the selected plan would not interfere with port uses.

7:7E-3.12 SUBMERGED INFRASTRUCTURE ROUTES

This policy prohibits any activity that would increase the likelihood of submerged infrastructure damage, or interfere with maintenance operations. There are no submerged infrastructures in the selected plan; therefore, this policy is not applicable.

7:7E-3.13 SHIPWRECKS AND ARTIFICIAL REEFS

This policy restricts the use of special areas with shipwrecks and artificial reefs that would adversely affect the usefulness of the area as a fisheries resource. Also, construction of new or expanded artificial reefs by the deposition of weighted non-toxic material is conditionally acceptable provided that (1) it is demonstrated that the material will not wash ashore and interfere with either navigation or commercial fishing operations; and (2) placement of material and management of the habitat is coordinated with the NJDEP Division of Fish, Game, and Wildlife. The selected plan does not contain any known shipwrecks or artificial reefs, and new ones will not be constructed; therefore, this policy is not applicable.

7:7E-3.14 Wet Borrow Pits

This policy restricts the use and filling of wet borrow pits. The selected plan does not contain any known wet borrow pits; therefore, this policy is not applicable.

7:7E-3.15 Intertidal and Subtidal Shallows

This policy discourages disturbance of shallow water areas (i.e., permanently or twice daily submerged areas from the spring high tide to a depth of four feet below mean low water). The selected plan involves beach nourishment to stabilize and enhance intertidal and subtidal shallows. The filling of intertidal and subtidal shallows for beach nourishment will meet the requirements found under the filling rule (N.J.A.C. 7:7E-4.2 (j)) and the coastal engineering rule (7:7E-7.11 (d)); therefore, the selected plan would be consistent with this policy.

7:7E-3.16 Dunes

This policy protects and preserves ocean and bayfront dunes. The proposed dune restoration and enhancement, including construction of walkways across the dune, and planting of native vegetation to stabilize the dune, are acceptable activities; therefore, the selected plan would be consistent with this policy.

7:7E-3.17 Overwash Areas

This policy restricts development in overwash areas due to their sensitive nature. The creation of dunes or expansion of existing dunes and shore protection structures are acceptable activities; therefore, the selected plan would be consistent with this policy.

7:7E-3.18 Coastal High Hazard Areas

This policy restricts development in coastal high hazard areas (i.e., flood prone) as delineated on the FEMA maps. The selected plan involves construction of shore protection structures to increase protection to Coastal High Hazard Areas, thereby enhancing public use and enjoyment of the beach and ocean. Therefore, the selected plan would be consistent with this policy.

7:7E-3.19 Erosion Hazard Areas

This policy prohibits development in erosion hazard areas under most circumstances, to protect public safety. The selected plan involves acceptable shore protection activities including restoration of erosion hazard areas; therefore, the selected plan would be consistent with this policy.

7:7E-3.20 Barrier Island Corridor

This policy restricts new development on barrier islands. The selected plan does not contain a barrier island corridor; therefore, this policy is not applicable.

7:7E-3.21 Bay Islands

This policy restricts development on bay islands. The selected plan does not contain any bay islands; therefore, this policy is not applicable.

7:7E-3.22 Beaches

This policy restricts development on beach areas. The selected plan involves dune restoration and planting of vegetation for dune stabilization, construction of shore protection structures, and the placement of clean sand on beaches. These are all acceptable activities that will meet the conditions listed within this coastal zone management plan; therefore, the selected plan would be consistent with this policy.

7:7E-3.23 Filled Water's Edge

This policy seeks to promote water dependent uses at areas along the waterfront that have been previously filled. The selected plan does not contain any filled water edge sites; therefore, this policy is not applicable.

7:7E-3.24 Existing Lagoon Edges

This policy restricts development at lagoon edges because of potential water quality problems. The selected plan does not include any lagoon edges; therefore, this policy is not applicable.

7:7E-3.25 Flood Hazard Areas

This policy is designed to restrict development in flood hazard areas and ensure that the waterfront is not pre-empted by uses that could function equally well at inland locations. The goal of this rule is to reduce losses of life and property resulting from unwise development of flood hazard areas, and allow uses compatible with periodic flooding. The selected plan would involve construction of flood control and shore protection measures, thereby protecting life and property; therefore, the selected plan is compatible with this policy.

7:7E-3.26 (Reserved)

7:7E-3.27 Wetlands

This policy restricts disturbance in wetland areas and requires mitigation if wetlands are destroyed or disturbed. The selected plan would convert 7.13 acres of wetlands to upland and an additional 5.63 acres of wetland habitat would be indirectly impacted by the selected plan. Indirect impacts involve the conversion, not the loss, of non-*Phragmites* wetlands to *Phragmites*-dominated wetlands.

Construction of the project would comply with all applicable permit requirements, including any required post-construction monitoring/mitigation. Therefore, the project is consistent with this policy.

7:7E-3.28 WETLAND BUFFERS

This policy restricts development in wetland buffer areas in order to protect wetlands. Construction of the project would comply with all applicable permit requirements, including any required post-construction monitoring/mitigation. Therefore, the selected plan is consistent with this policy.

7:7E-3.29 (RESERVED)

7:7E-3.30 (RESERVED)

7:7E-3.31 COASTAL BLUFFS

This policy restricts development on coastal bluffs. The selected plan does not contain any coastal bluffs; therefore, this policy is not applicable.

7:7E-3.32 INTERMITTENT STREAM CORRIDORS

This policy restricts actions in intermittent stream corridors. The selected plan does not contain any intermittent stream corridors; therefore, this policy is not applicable.

7:7E-3.33 FARMLAND CONSERVATION AREAS

This policy seeks to preserve large parcels of land used for farming. There are no farmland conservation areas located within the selected plan; therefore, this policy is not applicable.

7:7E-3.34 STEEP SLOPES

This policy seeks to preserve steep slopes by restricting development in such areas. There are no steep slopes in the selected plan; therefore, this policy is not applicable.

7:7E -3.35 (RESERVED)

7:7E-3.36 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This policy protects the value of historic and archaeological resources and may require cultural resource surveys and other protective measures. Final results of cultural resource investigations for the Bay Shore, Pew's Creek, and Compton Creek Protection Areas have not yet been completed. However, the selected plan design for the Bay Shore Protection Area, consisting of a combination of new dune construction and seawall construction, has been modified to the maximum extent possible to prevent physical encroachment on the Spy House (a National Register property) grounds. Partial mitigation of the visual impacts to the Spy House may be necessary to make them compatible with the appearance of the historic and archeological resource. The project is taking protective measures to preserve historical and archeological resources; therefore, this project is consistent with this policy.

7:7E-3.37 Specimen Trees

This policy seeks to protect specimen trees. The selected plan does not contain any known specimen trees; therefore, this policy is not applicable.

7:7E-3.38 Endangered or Threatened Wildlife or Vegetation Species Habitats

This policy restricts development in endangered or threatened wildlife or vegetation species habitat areas. The NJNHP indicated that two states listed endangered or threatened species, the pied-billed grebe (*Podilymbus podiceps*) and the Cooper's Hawk (*Accipiter cooperii*) may occur in the selected plan. However, the selected plan is not expected to adversely affect these species. No Federally-listed species have been identified in the selected plan.

The USACE will continue to coordinate with the USFWS, NMFS, and/or NJDEP to assess project impacts and identify appropriate mitigation measures, as necessary.

7:7E-3.39 Critical Wildlife Habitats

This policy discourages development that would adversely affect critical wildlife habitat. The selected plan would not affect any critical habitats; therefore, the selected plan would be consistent with this policy.

7:7E-3.40 Public Open Space

This policy encourages new public open spaces and discourages development that might adversely affect existing public open space. The Spy House Museum and surrounding grounds are dedicated to permanent recreation and open space use as part of the Green Acres Local Assistance Program, sponsored by the NJDEP. The selected plan would serve to protect public open space from storms and floods; therefore, the selected plan would be consistent with this policy.

7:7E-3.41 Special Hazard Areas

This policy discourages development in hazard areas. The selected plan does not contain any special hazard areas; therefore, this policy is not applicable.

7:7E-3.42 Excluded Federal Lands

Federal lands are beyond the jurisdiction of the New Jersey Coastal Zone. New Jersey has the authority to review activities on Federal lands if impacts may occur in New Jersey's Coastal Zone. The project would not involve actions on or disturbance to Federal land; therefore, this policy is not applicable.

7:7E-3.43 Special Urban Areas

This policy seeks to encourage development that would help to restore the economic and social viability of certain municipalities that receive state aid. The project would not involve a Special Urban Area; therefore, this policy is not applicable.

7:7E-3.44 Pinelands National Reserve and Pinelands Protection Area

This policy allows the Pinelands Commission to serve as the reviewing agency for actions within the Pinelands National Reserve. The selected plan is not located within the Pinelands Area; therefore, this policy is not applicable.

7:7E-3.45 Hackensack Meadowlands District

This policy allows the Hackensack Meadowlands Development Commission to serve as the reviewing agency for actions within the Hackensack Meadowlands District. The selected plan is not located within the Hackensack Meadowlands District; therefore, this policy is not applicable.

7:7E-3.46 Wild and Scenic River Corridors

This policy recognizes the outstanding value of certain rivers in New Jersey by restricting development to compatible uses. The selected plan is not located within a wild and scenic river corridor; therefore, this policy is not applicable.

7:7E-3.47 Geodetic Control Reference Marks

This policy discourages disturbance of geodetic control reference marks. There are no known geodetic control reference marks in the selected plan; therefore, this policy is not applicable.

7:7E-3.48 Hudson River Waterfront Area

This policy restricts development along the Hudson River Waterfront and requires development, maintenance, and management of a section of the Hudson Waterfront Walkway coincident with the shoreline of the development property. The selected plan is not located within the Hudson River Waterfront Area; therefore, this policy is not applicable.

SUBCHAPTER 3A - STANDARDS FOR BEACH AND DUNE ACTIVITIES

7:7E-3A.1 STANDARDS APPLICABLE TO ROUTINE BEACH MAINTENANCE

Routine beach maintenance is part of the selected plan, and is therefore consistent with this policy.

7:7E-3A.2 STANDARDS APPLICABLE TO EMERGENCY POST-STORM BEACH RESTORATION

Restoration beyond the pre-storm beach condition is encouraged by the Department, but will not be considered "emergency post-storm beach restoration," pursuant to this section; therefore, this policy is not applicable.

7:7E-3A.3 STANDARDS APPLICABLE TO DUNE CREATION AND MAINTENANCE

All dune restoration activities will be conducted in accordance with the specifications found in Guidelines and Recommendations for Coastal Dune Restoration and Creation Projects (NJDEP, 1985), and/or Restoration of Sand Dunes Along the Mid-Atlantic Coast (Soil Conservation Service, 1992). Construction of dune walkover structures will be in accordance with the standards and specifications described in Beach Dune Walkover Structures (Florida Sea Grant, 1981). Therefore, the project is consistent with this policy.

7:7E-3A.4 STANDARDS APPLICABLE TO THE CONSTRUCTION OF BOARDWALKS

Boardwalks will not be constructed; therefore, this policy is not applicable.

SUBCHAPTER 3B - WETLAND MITIGATION PROPOSALS

7-7E-3B.1 MITIGATION PROPOSAL REQUIREMENTS

This section details the requirements of a wetland mitigation proposal. Any wetland mitigation proposals will conform to the mitigation proposal requirements listed in this policy; therefore, the selected plan is consistent with this policy.

SUBCHAPTER 3C - IMPACT ASSESSMENT FOR ENDANGERED AND THREATENED WILDLIFE SPECIES.

This section details the performance and reporting standards for impact assessments for endangered and threatened wildlife species. If required, based on updated relevant agency correspondence, habitat/impact assessments for endangered and threatened species will conform to the performance and reporting standards listed.

SUBCHAPTER 4 - GENERAL WATER AREAS

7:7E-4.2 ACCEPTABILITY CONDITIONS FOR USES

This section defines the important uses of general water areas and sets conditions or standards of acceptability for certain uses. Only those standards applicable to the selected plan are listed:

(j) Standards relevant to filling.

Filling is necessary for the construction of the selected plan. There is a demonstrated need for levee construction that cannot be satisfied by existing facilities, the minimum practicable area will be filled, and wetland mitigation measures will take place; therefore, the selected plan is consistent with this policy.

SUBCHAPTER 5 - GENERAL LAND AREAS

This rule defines the acceptability of development in general land areas. The selected plan is considered a linear development as defined in N.J.A.C. 7:7E-6.1. The requirements of this subchapter do not apply to linear developments; therefore, this policy is not applicable.

SUBCHAPTER 6 - GENERAL LOCATION RULES

7:7E-6.1 LOCATION OF LINEAR DEVELOPMENT

This rule sets conditions for acceptability of linear development (*e.g.*, roads, walkways, pipelines). The selected plan involves construction of an approximately 7,975 foot-long levee at the Compton Creek area, and a 6,000 foot-long dune in the Bay Shore area, which have a linear alignment. There is no prudent or feasible alternative alignment which would have less impact on sensitive areas, appropriate measures will be used to mitigate adverse environmental impacts to the maximum extent feasible, and there will be no long term or permanent loss of unique or irreplaceable areas; therefore, the selected plan is consistent with the rules on location of linear development.

7:7E-6.2 BASIC LOCATION

This rule states that the NJDEP may reject or conditionally approve a project for safety, protection of certain property, or preservation of the environment. The selected plan involves promoting public safety and welfare and protecting public and private property, through construction of flood control measures. An alternative and design analysis, in coordination with the NJDEP, has ensured that the selected plan is consistent under the location rule.

7:7E-6.3 SECONDARY IMPACTS

This rule sets the requirements for the secondary impact analysis. Additional development is not expected as a result of the selected plan; therefore, there will be no secondary impacts associated with the proposed combined flood control and shore protection project; therefore, this policy is not applicable.

SUBCHAPTER 7 - USE RULES

7:7E-7.2 HOUSING USE

These rules set standards for housing construction in the coastal area. The selected plan does not involve housing construction; therefore, this policy is not applicable.

7:7E-7.3 RESORT RECREATIONAL USE

This rule sets standards for resort and recreational uses in the coastal area. The selected plan does not involve resort recreational uses; therefore, this policy is not applicable.

7:7E-7.3A MARINA DEVELOPMENT

This rule sets standards for marina development in the coastal area. The selected plan does not involve marina development; therefore, this policy is not applicable.

7:7E-7.4 ENERGY USE

This rule sets standards for energy uses in the coastal area. The selected plan does not involve new construction that would require long-term energy use; therefore, this policy is not applicable.

7:7E-7.5 TRANSPORTATION USE

This rule sets standards for roads, public transportation, footpaths and parking facilities in the coastal area. The selected plan does not involve construction of roads, public transportation, footpaths, or parking facilities. Levee maintenance will be accomplished using the levee itself as the means of transportation, additional roads will not be constructed; therefore, the selected plan is compatible with this policy.

7:7E-7.6 PUBLIC FACILITY USE

This rule sets standards for public facilities (*e.g.*, solid waste facilities) in the coastal area. The selected plan does not involve construction of a public facility; therefore, this policy is not applicable.

7:7E-7.7 INDUSTRY USE

This rule sets standards for industrial uses in the coastal area. The selected plan does not involve construction of industrial facilities; therefore, this policy is not applicable.

7:7E-7.8 MINING USE

This rule sets standards for mining in the coastal area. The selected plan does not involve mining; therefore, this policy is not applicable.

7:7E-7.9 PORT USE

This rule sets standards for port uses and port-related development. The selected plan does not involve construction of a port; therefore, this policy is not applicable.

7:7E-7.10 COMMERCIAL FACILITY USE

This rule sets standards for commercial facilities such as hotels, and other retail services in the coastal zone. The selected plan does not involve construction of commercial facilities; therefore, this policy is not applicable.

7:7E -7.11 COASTAL ENGINEERING

This section sets standards to protect the shoreline, maintain dunes, and provide beach nourishment. Only those standards applicable to the selected plan areas are listed:

(c) Standards relevant to dune management

Dune restoration, creation, and maintenance projects as non-structural shore protection measures are encouraged. The selected plan is in accordance with Subchapter 3A; therefore, the selected plan is consistent with this policy.

(d) Standards relevant to beach nourishment

Beach nourishment projects, such as non-structural shore protection measures are encouraged provided that certain guidelines are met. The selected plan will meet the guidelines; therefore, the selected plan is consistent with this policy.

(e) Standards relevant to structural shore protection

The construction of new shore protection structures, including seawalls, to prevent tidal waters from reaching erodible material is acceptable if it meets certain conditions. The selected plan will meet the conditions listed in this policy; therefore, the selected plan is consistent with this policy.

7:7E-7.12 DREDGED MATERIAL DISPOSAL ON LAND

This rule sets standards for disposal of dredged materials. The selected plan does not involve any dredge material disposal; therefore, this policy is not applicable.

7:7E-7.13 National Defense Facility Use

This rule sets standards for the location of defense facilities in the coastal zone. The selected plan does not involve location of a defense facility; therefore, this policy is not applicable.

7:7E-7.14 High Rise Structures

This rule sets standards for high rise structures in the coastal zone. The selected plan does not involve construction of high rise structures; therefore, this policy is not applicable.

SUBCHAPTER 8 - RESOURCE RULES

7:7E-8.2 Marine Fish and Fisheries

This rule sets standards of acceptability so as to cause minimal feasible interference with the reproductive and migratory patterns of estuarine and marine species of finfish and shellfish. The selected plan will cause minimal feasible interference with the documented species of finfish and shellfish known to occur in the selected plan; therefore, the selected plan is consistent with this policy.

7:7E-8.3 (Reserved)

7:7E 8.4 Water Quality

This rule sets standards for coastal development to limit effects on water quality. Short-term water quality impacts resulting from construction activities would be localized proximal to the selected plan. In the long term, water quality in Pew's Creek is expected to be comparable to pre-construction quality. Following construction of flood control measures, water quality at Compton Creek during storm events is expected to improve. The construction of the levee/floodwall/berm will positively impact the interior drainage system during storm events by controlling flooding, thereby alleviating the current storm sewer back up problem, and improving water quality. No long-term impacts to the offshore or nearshore water quality are anticipated as a result of the selected plan. Therefore, the selected plan is consistent with this policy.

7:7E-8.5 Surface Water Use

This rule sets standards for coastal development so as to limit effects on surface water. The selected plan will protect the area from flooding, and will not involve the use of surface water; therefore, the selected plan will be consistent with this policy.

7:7E-8.6 Groundwater Use

This rule sets standards for coastal development so as to limit effects on groundwater supplies. The selected plan will not involve or effect future use of groundwater supplies; therefore, this policy is not applicable.

7:7E-8.7 STORMWATER MANAGEMENT

This rule sets standards for coastal development so as to limit effects of stormwater runoff. The selected plan is designed to improve storm water management by protecting the area from flooding; therefore, the selected plan will be consistent with this policy.

7:7E-8.8 VEGETATION

This rule sets standards for coastal development while protecting native vegetation. A permanent loss of native vegetation associated with the construction of levees on 12.76 acres of wetlands will be mitigated by creation of approximately 12.80 acres of salt marsh wetlands. Restoration of the sand dune along the bay shoreline will include planting of native vegetation to help stabilize the dune.

7:7E-8.9 (RESERVED)

7:7E-8.10 AIR QUALITY

This rule sets standards for coastal development with requirements that projects must meet applicable air quality standards. The selected plan is not anticipated to increase air emissions above existing levels. Therefore, the project would be consistent with this policy.

7:7E-8.11 PUBLIC ACCESS TO THE WATERFRONT

This rule requires that coastal development adjacent to the waterfront provide perpendicular and linear access to the waterfront to the extent practicable, including both visual and physical access. The dune restoration involves construction of walkways over the dune to allow public access to the beach. The selected plan will not impede public access to the waterfront; therefore, the project is consistent with this policy.

7:7E -8.12 SCENIC RESOURCES AND DESIGN

This rule sets standards that new coastal development be visually compatible with its surroundings. The proposed design for the Bay Shore project has been modified to the maximum extent possible to prevent physical encroachment on the Spy House grounds. Partial mitigation measures have been proposed to lessen the visual impacts associated with the project.

The aesthetic and scenic impacts from construction of the levee are expected to be of moderate significance to the Compton Creek study area.

Aesthetic and visual impacts resulting from construction of the pump station, storm gate, floodwall, and levee are expected to be of minimal significance to the Pews Creek study area.

7:7E-8.13 Buffers and Compatibility of Uses

This rule sets standards for adequate buffers between compatible land uses. The selected plan is compatible with adjacent land uses; therefore, it would be consistent with this policy.

7:7E-8.14 Traffic

This rule sets standards that restrict coastal development that would disturb traffic systems. The selected plan will make every effort possible to mitigate temporary impacts on traffic during construction activities. Traffic flow during flooding should improve, as the project's goal is to lessen the impact of flooding. The closure structures associated with the Compton Creek project may result in alternative evacuation routes if the structures are triggered to close due to high water. The selected plan is compatible with traffic systems; therefore, the selected plan would be consistent with this policy.

7:7E-8.15 through 8.20 (Reserved)

7:7E-8.21 Subsurface Sewage Disposal Systems

This rule sets standards for subsurface sewage disposal systems in the coastal zone. The selected plan does not involve sewage disposal; therefore, this policy is not applicable.

FEIS APPENDIX D

PERTINENT CORRESPONDENCE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL | # of pages ▸ 3

To Mark H. Burlas	From Raymond Rezy
Dept./Agency COE	Phone # 212-637-3748
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NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

MAY 01 2000

Mr. Frank Santomauro, P.E.
Chief, Planning Division
ATTN: Mark H. Burlas
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Class: EO-2

Dear Mr. Santomauro:

The Environmental Protection Agency (EPA) has reviewed the draft environmental impact statement (DEIS) for the Hurricane and Storm Damage Reduction Project, Port Monmouth (CEQ No.000075), located in Monmouth County, New Jersey. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C. 7609, PL 91-604 12(a), 84 Stat. 1709), and the National Environmental Policy Act (NEPA).

The project area has a bayshore of approximately 7,000 feet extending along the shoreline of Raritan Bay and Sandy Hook Bay. Pews Creek and Compton Creek represent the western and eastern limits of the project area, respectively. The southern limit is the existing inland 15-foot National Geodetic Vertical Datum (NGVD) contour line, which lies a short distance south of Route 36, approximately 6,000 feet (ft) from the bayshore. Port Monmouth is composed mainly of residential structures. There are 940 residential structures and 60 commercial structures in the study area; nearly all are affected by extreme coastal storm events.

Historically, northeasters and hurricanes impact the Raritan and Sandy Hook Bayshore (RSHB) area, especially the community of Port Monmouth. The Port Monmouth area experiences most of its problems from tidal inundation from Pews Creek and Compton Creek. A storm stage of ten feet NGVD causes severe flooding that strands most residents north of Route 36. This project has the following goals: a) to reduce the threat of potential future damages due to the effects of inundation and storm recession and related processes; b) to prevent or mitigate the effects of long-term erosion that is now being experienced; c) to enhance the recreation potential of the area; and d) to enhance the function of significant environmental resources.

To arrive at the overall preferred alternative, the DEIS considered four separate components of the study area, namely: Raritan Bay Shorefront, Pews Creek, Compton Creek, and interior drainage. The alternatives considered were: No Action, non-structural measures, and structural measures for a total of 68 permutations. The non-structural measures considered were buy-out plan, structural raising, and floodproofing. The structural measures evaluated included various

combinations of flood control and shore protection measures such as, floodwalls, levees, storm gates, shore stabilization, channelization, beach nourishment, beach nourishment with structures, and dune fortification.

The preferred alternative provides for a beach berm and dune system along the Sandy Hook Bayshore with a system of levees and floodwalls provided along Pews Creek and Compton Creek. The protection will extend continuously from the adjacent East Keansburg levee, across Pews Creek, along the bayshore, and then along undeveloped lands adjoining Compton Creek to higher existing elevation. The plan includes the following: levees and floodwalls that have a peak elevation of +14 ft NGVD with a beach fill along the Bay Shoreline which has a berm 50 ft wide at an elevation of +9 ft NGVD backed by a dune which has a 25-ft wide crest at an elevation of 16 ft NGVD; a storm gate across Pews Creek; three local road closure gates; one raising of Port Monmouth road; and pedestrian dune walkovers. The Bay Shoreline protection would require the initial placement of 378,500 cubic yards of sand and subsequent renourishment of approximately 117,800 cubic yards after 10 years and about 125,000 cubic yards of sand every 10 years thereafter for 50 years. The construction of the levees would require 107,800 cubic yards of fill. Based on our review, we offer the following comments.

The preferred alternative will result in the unavoidable loss of 7.11 acres of estuarine/emergent wetland, including 2.25 acres of salt marsh habitat. Additionally, 5.24 acres of wetlands will be indirectly impacted by hydrologic modifications that result from the project. The DEIS proposes to compensate for these losses and impacts through the conversion of 12.8 acres of Phragmites-dominated wetlands into a Spartina-dominated marsh. The mitigation plan is based on evaluations conducted pursuant to the Habitat Evaluation Procedure (HEP), using the black duck and marsh wren as indicator species. Unfortunately, because the compensation plan is based exclusively on the HEP analysis, we question whether other wetland values lost as a result of the proposed project will be adequately mitigated. For example, other lost values, such as primary production, nutrient export, and other benefits to estuarine species, will not be fully compensated for with the proposed mitigation plan. Moreover, as noted in the DEIS, Phragmites accretion may occur in the proposed mitigation site, which, over time, will reduce the value of the mitigated site as habitat for both indicator species used in the HEP. Consequently, we do not believe that the proposed mitigation plan will adequately compensate for the wetland losses and impacts associated with the project. As such, we strongly recommend that the acreage proposed in the mitigation plan be increased to a ratio of 3:1, which is more consistent with historical mitigation efforts. Alternatively, creation of Spartina-dominated wetland out of uplands, in the vicinity of the site, could also address the deficiency in the current mitigation plan.

In a related matter, the DEIS does not elaborate on the proposed enhancement making it difficult for EPA to determine whether the plan is feasible. Moreover, the proposed monitoring plan provides no specific information regarding duration, success criteria, or potential corrective actions that could be taken, should monitoring indicate a need for change. In a related matter, since levees constructed in wetlands are known to have the potential to provide conditions favorable to Phragmites growth, thereby acting as a refuge and a point of colonization into adjacent wetlands, we recommend that the monitoring plan includes a Phragmites control program to address any project-related increases in Phragmites growth.

An essential component of this project is the borrow areas, which will supply the fill material for the initial construction and for the subsequent nourishments for a period of 50 years. The draft feasibility study report (FS) indicates that the Sea Bright borrow source will be utilized for the initial construction, and that Amboy Aggregates will be the source for subsequent renourishment (Appendix D, **Borrow Areas**). The DEIS also indicates that the U.S. Army Corps of Engineer is currently investigating other potential offshore borrow areas for economic reasons. If the decision is made to use these other sources for the project, the characterization of such sources and the evaluation of their environmental impacts on critical environmental habitats and fishing ground should be presented in the FEIS or in supplemental NEPA documentation.

Section 4.1.22, **Cumulative Impacts**, discusses the cumulative effect of the project and the selected mitigation plan on black duck and marsh wren habitat values. However, it does not consider the potential cumulative impacts of this project and other erosion/storm damage protection projects on relevant environmental resources in the New Jersey coastline. To comply with the requirements of the National Environmental Policy Act (40 CFR 1508.25(a)(2) and (3) and (c)), the DEIS should include a discussion on how the project and other on-going similar projects within a geographically related area may cumulatively impact environmental resources of concern, such as water quality and intertidal/nearshore/offshore (borrow area) benthos.

The project is located in the New Jersey Coastal Plain Aquifer System, which was designated by EPA as a Sole Source Aquifer on June 24, 1988 (53 F.R. 2379). Our review indicates that the project would not adversely impact ground water and satisfies the requirements of Section 1424(e) of the Safe Drinking Water Act. Accordingly, the Safe Drinking Water Act should be included in Table 1. **Environmental Compliance Regulation.**

In conclusion, based on our review and in accordance with EPA policy, we have rated this DEIS as EO-2 indicating that we have environmental objections (EO) about the adequacy of the wetland mitigation being proposed, and additional information (2) should be presented in the final EIS to address the lack of information concerning the proposed mitigation plan, the monitoring plan to ensure success of the enhancement plan, potential borrow area sources, and cumulative effects data on environmental resources of concern.

My staff will be contacting your office shortly to schedule a meeting to discuss our environmental objections to the project. In the meantime, if you have any questions concerning our comments on the wetland mitigation plan, please contact Robert Montgomerie of the Wetlands Protection Section at (212) 637-3813; for other questions, you can call Raymond P. Reyes of my staff at (212) 637-3748.

Sincerely yours,

Grace Musumeci for

Robert W. Hargrove, Chief
Strategic Planning and Multi-Media Programs Branch

The District Response to USEPA DEIS Comments
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

USEPA Comment 1 (page 1, paragraphs 2, 3 and 4; page 2, paragraph 1): The USEPA describes the selected plan and the purpose and need for the project.

The District's Response 1: The District agrees with the USEPA comment.

USEPA Comment 2 (page 2, paragraph 2): The USEPA commented that the HEP analysis does not adequately measure other wetland values (*i.e.,* such as primary production and nutrient export) that may be lost as a result of the proposed project. As a result, the USEPA believes that the proposed mitigation plan will not adequately compensate for wetland losses associated with the proposed project. The USEPA recommends that the District revise the compensatory mitigation plan to provide 3 acres of wetland enhancement for every acre of wetland impact.

The District's Response 2: One of the goals of the HEP process was to assess potential impacts of the project to ecological communities by documenting changes in habitat quality and quantity. Through the HEP species selection process, wildlife species are chosen based on their significance and/or applicability to the proposed project. Careful selection of the appropriate species allows predicted impacts to be extrapolated to a larger segment of the wildlife community (USFWS 1980). At Port Monmouth, species were carefully selected based upon their associations with the habitats most likely impacted by the proposed project and that they represent a guild. Wetland communities were expected to receive the most impacts therefore the black duck, marsh wren, and clapper rail were chosen as evaluation species that represented different guilds and their various utilization within the coastal marsh ecosystem. These three species are commonly associated with wetland habitats and certain combinations of wetland habitat characteristics outlined within their respective HSI models will determine their abundance and distribution (USFWS 1980).

The habitat variables associated with the evaluation species used at Port Monmouth can be indirectly related to some common wetland functions and values used in other assessment techniques such as the Wetland Evaluation Techniques (WET [Adamus et al. 1987]) and the Evaluation for Planned Wetlands (EPW [Bartoldus et al. 1994]). Table 1 outlines the various habitat variables measured and their relationships to common wetland functions and values. In addition to the variable description, the relationship between the variable and the resulting suitability index is indicated. This relationship can be used to demonstrate that the model interpretation of the relationship between the habitat value of the variable to the particular species is equal to the interpretation of the relationship between the variable and particular wetland functions and values.

For example, Black Duck V6 is a positively correlated variable; habitat quality is increased in areas when the percent cover of submergent vegetation is increased. The function that submergent vegetation is playing on primary production also represents a positive correlation, since it is assumed that as submergent vegetation abundance increases so does the value of a wetland as a primary producer.

Table 1. HEP Species Habitat Variables and Their Relationship With Common Wetland Functions and Values

Species/ Variable	Variable Description	HSI Model Relationship	Wetland Function or Value	Function and Value Relationship
Black Duck V5	Percent of each emergent and forested wetland cover types occupied by open water	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Black Duck V6	Percent of open water substrate occupied by submergent vegetation	Positive	Primary production and nutrient retention	Positive
Black Duck V7	Percent of non–forested wetlands that supports > 750 snails/m^2	Positive	Water quality	Positive
Black Duck V8	Percent of total land and water area occupied by salt marsh	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Marsh Wren V1	Growth form class of emergent hydrophytes	NA	Primary production and sediment stabilization	NA
Marsh Wren V2	Percent herbaceous canopy cover	Positive	Primary production and sediment stabilization	Positive
Marsh Wren V3	Mean water depth	Positive	Hydrology and sediment stabilization	Positive
Marsh Wren V4	Percent shrub canopy cover	Negative	Sediment stabilization	Positive
Clapper Rail V1	Percent of emergent and scrub-shrub wetland shoreline that borders flat to gently sloping banks or tidal flats exposed at low tide	Positive	Shoreline bank erosion control and sediment stabilization	Positive
Clapper Rail V2	Percent of the total land and water area that is emergent or scrub-shrub wetland	Positive	Sediment stabilization and nutrient retention	Positive
Clapper Rail V3	Percent of emergent or scrub-shrub wetlands that is within 15 m of tidally influenced waterbodies	Positive	Shoreline bank erosion control and sediment stabilization	Positive

* a threshold value is reached where the relationship is inversed
NA not applicable

Due to the selected species' preference of wetland habitats and the characteristics of the habitat variables used in the HEP process, the District believes that an overall assessment of wetland functions and values is an inherent part of the HEP assessment. Through the use of the HEP process, the District was able to quantify project impacts and develop the appropriate mitigation plan.

The District used HEP to determine the appropriate mitigation effort needed to offset project associated impacts. Although the results of the HEP resemble a 1:1 acre mitigation ratio, the selected mitigation plan is not acre ratio based. The determined mitigation effort is solely driven by the HEP process. Through the HEP process, the District determined that 12.76 acres of direct and indirect wetland impacts during the year of construction would result in the loss of a total of 5.38 black duck and 5.40 marsh wren wetland HUs. In addition, the District determined that the indirect impacts would not result in permanently lost wetlands and that 1.91 black duck and 2.27 marsh wren wetland HUs would be returned. Therefore, the total loss of wetland habitat value associated with the project would be 3.47 black duck and 3.13 marsh wren HUs during the year of construction. The restoration/enhancement of 12.80 acres of wetland *Phragmites* into emergent salt marsh habitat during the year of construction would result in a gain of 7.68 (12.80 x 0.60 HSI for SM) black duck HUs and 9.22 (12.80 x 0.72 HSI for SM) marsh wren HUs. In terms of wetland HUs, the black duck is mitigated for at a 2.21:1 ratio (7.68 mitigated HUs for 3.47 impacted HUs) and the marsh wren at a 2.95:1 ratio (9.22 mitigated HUs for 3.13 impacted HUs), during the year of construction.

In addition, the District through habitat modeling and HEP calculations determined that 12.80 acres of mitigation would be needed to offset the impacts associated with the project by the year 2052. In order to select the appropriate mitigation effort, the District implemented a step-wise procedure to determine the level of mitigation needed to offset impacted HUs. Using a range of mitigation acreages, the District calculated the available HUs at year 2052 for six mitigation scenarios: 25.60 acres (200%), 16.00 acres (125%), 12.80 acres (100%), 10.24 acres (80%), 6.40 acres (50%), and 3.84 acres (30%). The District determined that at year 2052, marsh wren HUs were almost (-0.33) compensated for with 6.40 acres of mitigation and that a net gain of 1.87 black duck HUs was still observed at the lowest level of 3.84 acres. Based on this evaluation, the District determined that at the year 2052 in terms of HUs the marsh wren is mitigated for at approximately 2:1 ratio (12.80 acres instead of the minimum required 6.40 acres) and the black duck is mitigated for at a greater than 3:1 ratio (12.80 acres instead of the minimum required <3.24 acres). In addition, at year 2052, there is a net gain of 5.49 black duck and 3.57 marsh wren HUs resulting from the selected mitigation effort.

The District is unaware of any existing process or rationale that is uniformly accepted, used and/or agreed upon by regulatory and resource agencies that justifies an acreage based compensatory mitigation ratio. The results of the Mitigation Report (USACE 2000) and the rationale as discussed above, provide a quantitative assessment of habitat values that justify the appropriate acreage needed to offset direct and indirect wetland

impacts. Accordingly, the District believes that the selected mitigation plan adequately replaces the quality and quantity of immediate and long-term impacts to wetlands habitats.

USEPA Comment 3 (page 2, paragraph 3): The USEPA is concerned that the DEIS does not elaborate enough on the proposed mitigation enhancement/restoration making it difficult to determine feasibility.

The District's Response 3: The District will continue to coordinate with USEPA and other resource agencies during the development of the details of the Wetland Mitigation Plan to ensure its success. A detailed Wetland Mitigation Plan will be prepared in the next Pre-construction, Engineering and Design (PED) phase.

USEPA Comment 4 (page 3, paragraph 1): If the decision is made to use other offshore borrow areas other than the Sea Bright and Amboy Aggregates areas then the characterization of such sources and the evaluation of their environmental impacts on critical habitats and fishing grounds should be presented in the FEIS or in supplemental NEPA documentation.

The District Response 4: The characterization of the existing resources and impacts to other potential offshore sand sources will be addressed under a separate NEPA document. The Sea Bright borrow area is estimated to contain a sufficient amount of sand for the life of the project. To reduce overall project costs, the District is currently investigating other potential offshore borrow areas. The sand that was dredged by Amboy Aggregates was analyzed and found to be unsuitable because of incompatible grain size. Appropriately, Amboy Aggregates was eliminated from further consideration as a source of sand.

USEPA Comment 5 (page 3, paragraph 2): The DEIS does not address cumulative impacts beyond those calculated for the HEP. The DEIS should include discussion on how the project and other on-going similar projects within a geographically related area may cumulatively impact environmental resources such as water quality and intertidal/nearshore/offshore benthos.

The District's Response 5: The District has revised the cumulative impact sections. For further discussion, please see FEIS sections 4.1.22, 4.2.22 and 4.3.22

USEPA Comment 6 (page 3, paragraph 3): A Safe Drinking Water Act should be included in DEIS Table 1, Environmental Compliance Regulation.

The District's Response 6: The District agrees with the USEPA comment and has revised FEIS Table 1 to indicate full compliance with the Safe Drinking Water Act.

Reference List

Adamus, P.R., E.J. Clairain, R.D. Smith, and R. E. Young. 1987. Wetland Evaluation Technique, Volume II: Methodology. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi.

Bartoldus, C.C., E.W. Garbisch, and M.L. Kraus. 1994. Evaluation for Planned Wetlands (EPW). Environmental NJDEP, LURP Comment Inc., St. Michaels, Maryland. 327 pp. and appendices.

U.S. Army Corps of Engineers (USACE). 2000. Draft Project Mitigation Report. Raritan Bay and Sandy Hook Bay, Port Monmouth, New Jersey, Combined Flood Control and Shore Protection Project.

U.S. Fish and Wildlife Service. 1980. Ecological Service Manual: Habitat Evaluation Procedures (ESM 102). Division of Ecological Services. Washington, D.C. 59pp.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat Conservation Division
James J. Howard Marine
Sciences Laboratory
74 Magruder Road
Highlands, New Jersey. 07732

April 17, 2000

Mr. Frank Santomauro, Chief
Planning Division
New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0900

ATTN: Mark Burlas

Dear Mr. Santomauro:

We have reviewed the Draft Feasibility Report/Draft Environmental Impact Statement (EIS) included in the Raritan Bay and Sandy Hook Bay, New Jersey Feasibility Report for Hurricane and Storm Damage Reduction - Port Monmouth, New Jersey. Overall, we have no objections to the selected flood control plan. We have been involved in the development of the plan and the evaluation of its impacts for several years, and we recognize the work your office has done to minimize impacts to aquatic resources. However, there are a few outstanding issues that should be resolved as the plan is finalized and the final environmental impact statement is prepared. These issues are essential fish habitat, mitigation and monitoring.

Essential Fish Habitat

As you know, section 305 (b)(2) of the Magnuson-Stevens Act (MSA) requires that federal action agencies such as the Army Corps of Engineers (ACOE) consult with NMFS regarding actions they authorize, fund, or undertake that may adversely affect EFH. Because the proposed flood control project involves wetlands fill, beach nourishment and the installation of a storm gate across Pews Creek, EFH may be affected adversely. As a result, the ACOE must consult with us on this project. To do so, your staff must provide us with a written assessment of the effects this project will have on EFH. EFH assessments can be incorporated into NEPA documents such as a draft EIS, but they must be identified as such within the larger document. Since the draft EIS has already been prepared, we suggest that the ACOE prepare a separate EFH assessment, so that any conservation recommendations resulting from our review of the assessment can be included in the final EIS.

Mitigation

Although we have been involved in this project for several years, and have participated in the Habitat Evaluation Procedure (HEP) team, there are still some outstanding concerns about the mitigation proposed for this project. The selected plan will impact approximately 12.76 acres of wetlands. The proposed mitigation involves the enhancement of 12.80 acres of *Phragmites* dominated wetlands. The results of the HEP study indicate that this amount of enhancement will compensate for the habitat units lost for the selected evaluation species, black duck and marsh wren. However, because the HEP addresses only wildlife use, the mitigation may not compensate adequately for the losses of the other wetland functions and values. In the absence of a functional assessment with evaluates the proposed mitigation plan's ability to compensate for all wetland functions and values, an acreage basis should be used to select the appropriate size mitigation site. The typical ratio for creation is 2 acres of creation for each acre impacted. The typical ratio for enhancement is 3 :1. As currently proposed, the selected mitigation site is not large enough to accommodate the needed mitigation ratio, and additional mitigation is necessary.

Monitoring

Several type of monitoring are proposed as part of this project including monitoring of the mitigation site, the intertidal and subtidal areas and post-construction monitoring of the Pews Creek tidal marsh. We have a copy of the proposed mitigation monitoring plan, and we will be providing your office with comments separately. The draft EIS does not include details of the proposed intertidal and subtidal monitoring plan and the Pews Creek marsh monitoring plan. We request that copies of these plans be provided to us once they are completed.

Thank you for the opportunity to comment on this project. We look forward to continued coordination on this and the many other flood control projects being planned by your office. If you would like to discuss this matter further, please contact Ms. Karen Greene at (732) 872-3023.

Sincerely,

Stanley W. Gorski
Field Offices Supervisor

kmg:portmon.des

cf: FWS - Pleasantville
NJDEP - LURP, C. Dolphin

The District Response to NMFS DEIS Comments
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

NMFS Comment 1 (page 1, paragraph 2): A separate Essential Fish Habitat (EFH) assessment document should be prepared to be included in the FEIS.

The District's Response 1: The District is in the process of preparing an EFH report and will forward the report to NMFS upon its completion, which is expected in the very near future. The report includes discussion of designated essential fish habitats in the nearshore area, fish species of concern, and the potential direct and indirect effects that may result from project implementation.

NMFS Comment 2 (page 2, paragraph 1): NMFS is concerned that the HEP only addresses wildlife values of the impacted wetlands and that the wetland functions and values are not adequately addressed through the use of HEP. With the absence of a functional assessment of the impacted wetlands NMFS suggests that mitigation should be based upon typical mitigation ratios. The typical ratio for wetland enhancement is 3 acres to every 1 acre of impacts. NMFS states that the currently proposed mitigation is not large enough to accommodate the 3:1 ratio.

The District's Response 2: One of the goals of the HEP process was to assess potential impacts of the project to ecological communities by documenting changes in habitat quality and quantity. Through the HEP species selection process, wildlife species are chosen based on their significance and/or applicability to the proposed project. Careful selection of the appropriate species allows predicted impacts to be extrapolated to a larger segment of the wildlife community (USFWS 1980). At Port Monmouth, species were carefully selected based upon their associations with the habitats most likely impacted by the proposed project and that they represent a guild. Wetland communities were expected to receive the most impacts therefore the black duck, marsh wren, and clapper rail were chosen as evaluation species that represented different guilds and their various utilization within the coastal marsh ecosystem. These three species are commonly associated with wetland habitats and certain combinations of wetland habitat characteristics outlined within their respective HSI models will determine their abundance and distribution (USFWS 1980).

The habitat variables associated with the evaluation species used at Port Monmouth can be indirectly related to some common wetland functions and values used in other assessment techniques such as the Wetland Evaluation Techniques (WET [Adamus et al. 1987]) and the Evaluation for Planned Wetlands (EPW [Bartoldus et al. 1994]). Table 1 outlines the various habitat variables measured and their relationships to common wetland functions and values. In addition to the variable description, the relationship between the variable and the resulting suitability index is indicated. This relationship can be used to demonstrate that the model interpretation of the relationship between the habitat value of the variable to the particular species is equal to the interpretation of the relationship between the variable and particular wetland functions and values.

function that submergent vegetation is playing on primary production also represents a positive correlation, since it is assumed that as submergent vegetation abundance increases so does the value of a wetland as a primary producer.

Due to the selected species' preference of wetland habitats and the characteristics of the habitat variables used in the HEP process, the District believes that an overall assessment of wetland functions and values is an inherent part of the HEP assessment. Through the use of the HEP process, the District was able to quantify project impacts and develop the appropriate mitigation plan.

The District used HEP to determine the appropriate mitigation effort needed to offset project associated impacts. Although the results of the HEP resemble a 1:1 acre mitigation ratio, the selected mitigation plan is not acre ratio based. The determined mitigation effort is solely driven by the HEP process. Through the HEP process, the District determined that 12.76 acres of direct and indirect wetland impacts during the year of construction would result in the loss of a total of 5.38 black duck and 5.40 marsh wren wetland HUs. In addition, the District determined that the indirect impacts would not result in permanently lost wetlands and that 1.91 black duck and 2.27 marsh wren wetland HUs would be returned. Therefore, the total loss of wetland habitat value associated with the project would be 3.47 black duck and 3.13 marsh wren HUs during the year of construction. The restoration/enhancement of 12.80 acres of wetland *Phragmites* into emergent salt marsh habitat during the year of construction would result in a gain of 7.68 (12.80 x 0.60 HSI for SM) black duck HUs and 9.22 (12.80 x 0.72 HSI for SM) marsh wren HUs. In terms of wetland HUs' the black duck is mitigated for at a 2.21:1 ratio (7.68 mitigated HUs for 3.47 impacted HUs) and the marsh wren at a 2.95:1 ratio (9.22 mitigated HUs for 3.13 impacted HUs), during the year of construction.

In addition, the District through habitat modeling and HEP calculations determined that 12.80 acres of mitigation would be needed to offset the impacts associated with the project by the year 2052. In order to select the appropriate mitigation effort, the District implemented a step-wise procedure to determine the level of mitigation needed to offset impacted HUs. Using a range of mitigation acreages, the District calculated the available HUs at year 2052 for six mitigation scenarios: 25.60 acres (200%), 16.00 acres (125%), 12.80 acres (100%), 10.24 acres (80%), 6.40 acres (50%), and 3.84 acres (30%). The District determined that at year 2052, marsh wren HUs were almost (-0.33) compensated for with 6.40 acres of mitigation and that a net gain of 1.87 black duck HUs was still observed at the lowest level of 3.84 acres. Based on this evaluation, the District determined that at the year 2052 in terms of HUs the marsh wren is mitigated for at approximately 2:1 ratio (12.80 acres instead of the minimum required 6.40 acres) and the black duck is mitigated for at a greater than 3:1 ratio (12.80 acres instead of the minimum required <3.24 acres). In addition, at year 2052, there is a net gain of 5.49 black duck and 3.57 marsh wren HUs resulting from the selected mitigation effort.

Table 1. HEP Species Habitat Variables and Their Relationship With Common Wetland Functions and Values

Species/ Variable	Variable Description	HSI Model Relationship	Wetland Function or Value	Function and Value Relationship
Black Duck V5	Percent of each emergent and forested wetland cover types occupied by open water	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Black Duck V6	Percent of open water substrate occupied by submergent vegetation	Positive	Primary production and nutrient retention	Positive
Black Duck V7	Percent of non–forested wetlands that supports > 750 snails/m^2	Positive	Water quality	Positive
Black Duck V8	Percent of total land and water area occupied by salt marsh	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Marsh Wren V1	Growth form class of emergent hydrophytes	NA	Primary production and sediment stabilization	NA
Marsh Wren V2	Percent herbaceous canopy cover	Positive	Primary production and sediment stabilization	Positive
Marsh Wren V3	Mean water depth	Positive	Hydrology and sediment stabilization	Positive
Marsh Wren V4	Percent shrub canopy cover	Negative	Sediment stabilization	Positive
Clapper Rail V1	Percent of emergent and scrub-shrub wetland shoreline that borders flat to gently sloping banks or tidal flats exposed at low tide	Positive	Shoreline bank erosion control and sediment stabilization	Positive
Clapper Rail V2	Percent of the total land and water area that is emergent or scrub-shrub wetland	Positive	Sediment stabilization and nutrient retention	Positive
Clapper Rail V3	Percent of emergent or scrub-shrub wetlands that is within 15 m of tidally influenced waterbodies	Positive	Shoreline bank erosion control and sediment stabilization	Positive

* a threshold value is reached where the relationship is inversed
NA not applicable

The District is unaware of any existing process or rationale that is uniformly accepted, used, and/or agreed upon by regulatory and resource agencies that justifies an acreage based compensatory mitigation ratio. The results of the Mitigation Report (USACE 2000) and the rationale as discussed above, provide a quantitative assessment of habitat values that justify the appropriate acreage needed to offset direct and indirect wetland impacts. Accordingly, the District believes that the selected mitigation plan adequately replaces the quality and quantity of immediate and long-term impacts to wetlands habitats.

NMFS Comment 3 (page 2, paragraph 2): NMFS is concerned that the current DEIS does not include details of the proposed intertidal and subtidal monitoring plan nor the Pews Creek marsh monitoring plan. NMFS is requesting that copies of these plans be provided to their office upon completion.

The District's Response 3: Based on the District's hydrodynamic model of Pews Creek, the placement of a storm gate in Pews Creek will have minimal effect on the daily tidal cycle. Post-construction monitoring of the Pews Creek marsh is proposed to substantiate this position. The District will continue to coordinate with the NMFS and other resource agencies regarding the development of monitoring details, sampling methodologies and impact threshold levels. A detailed Pews Creek monitoring plan will be prepared in the next Pre-construction, Engineering and Design (PED) phase. Please refer to FEIS section 2.7.5 for additional discussion.

In addition, the District proposes to monitor the effects of beach nourishment in the intertidal and subtidal zones. The District will continue to coordinate with the NMFS and other resource agencies during the development of monitoring details and sampling methodologies. A detailed intertidal and subtidal monitoring plan will be prepared in the next PED. Please refer to FEIS section 2.7.4 for additional discussion.

Reference List

Adamus, P.R., E.J. Clairain, R.D. Smith, and R. E. Young. 1987. Wetland Evaluation Technique, Volume II: Methodology. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi.

Bartoldus, C.C., E.W. Garbisch, and M.L. Kraus. 1994. Evaluation for Planned Wetlands (EPW). Environmental Concern, Inc., St. Michaels, Maryland. 327 pp. and appendices.

U.S. Army Corps of Engineers (USACE). 2000. Draft Project Mitigation Report. Raritan Bay and Sandy Hook Bay, Port Monmouth, New Jersey, Combined Flood Control and Shore Protection Project.

U.S. Fish and Wildlife Service. 1980. Ecological Service Manual: Habitat Evaluation Procedures (ESM 102). Division of Ecological Services. Washington, D.C. 59pp.

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

April 18, 2000

ER 00/191

Colonel William H. Pearce
District Engineer
U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, NY 10278

Dear Colonel Pearce:

The Department is in receipt of the Draft Feasibility Report, Draft Environmental Impact Statement and Appendices for the Raritan Bay, Sandy Hook Bay, Hurricane and Storm Damage Reduction Project, Port Monmouth, Monmouth County, New Jersey. We appreciate the opportunity to provide comment on this multiple volume document. Due to the breadth and complexity of the document, the Department will not be able to meet the April 24 due date for comments. However, our need for a comment extension is modest, and we anticipate providing you with comments by or before May 1, 2000.

Please do not hesitate to contact me at (617) 223-8565, or at the above noted address, if there are questions concerning this correspondence.

Sincerely,

Andrew L. Raddant
Regional Environmental Officer

cc: C. Day, FWS/NJFO
F. Santomauro, USACOE/NY

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

May 1, 2000

ER 00/0191

Colonel William H. Pearce
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Colonel Pearce:

The Department of the Interior (Department) has reviewed the U.S. Army Corps of Engineers' (Corps) Draft Environmental Impact Statement (DPEIS) entitled, *Raritan Bay and Sandy Hook Bay Hurricane and Storm Damage Reduction Project; Port Monmouth, New Jersey; Middletown Township, Monmouth County* and is providing the following comments. The proposed project includes the following actions: construction of approximately 7,070 linear feet of levee; construction of 3,585 linear feet of flood wall; nourishment of 4,640 linear feet of beach; fortification of 2,640 linear feet of existing dune; construction of a storm gate on Pews Creek; construction of two pumping stations; raising of three roads; and construction of interior drainage structures including detention basins.

WETLAND IMPACTS

The proposed flood control project would adversely impact 12.76 acres of wetlands. Approximately 7.13 acres of wetlands would be filled and approximately 5.63 acres of wetlands would be indirectly impacted through altered hydrology. The Corps proposes to compensate for these impacts to wetlands by enhancing 12.80 acres of *Phragmites*-dominated wetlands. The amount of compensatory mitigation proposed for wetland impacts is unacceptable to the Department. Specifically, a 1:1 ratio involving enhancement of existing wetlands is inadequate to compensate for the net loss of wetland acreage due to the project.

The amount of compensatory mitigation proposed for the project is based upon the results of a Habitat Evaluation Procedures (HEP) study that was conducted by the Corps in conjunction with the U.S. Fish and Wildlife Service (Service), the National Marine Fisheries Service, and the New Jersey Department of Environmental Protection. The HEP is a method, developed by the Service, to assess the value of an area (including uplands and wetlands) to selected species or guilds of wildlife. The HEP does not assess all of the functions and values (e.g., water quality maintenance, aquatic productivity, aesthetics) of wetlands, and therefore is not an appropriate

tool for determining compensatory mitigation ratios independent of other assessment techniques, when other than species - specific compensation must be evaluated.

The Department also notes that the proposed compensatory mitigation ratio of 1:1 is not consistent with current compensatory mitigation requirements of the Corps Regulatory programs throughout the nation. In the Hackensack Meadowlands in Northeastern New Jersey, for example, compensatory mitigation ratios for projects requiring Corps authorization, pursuant to the Clean Water Act (33 U.S.C. 1344 *et seq.*), typically require from 3:1 to 4:1 ratios if the method of compensatory mitigation is wetland enhancement, as the Corps has proposed for this project.

Considering that HEP does not assess all wetland functions and the proposed compensatory mitigation ratio is not consistent with current trends, the Department recommends that the Corps revise the compensatory mitigation plan to provide 3 acres of wetland enhancement for every 1 acre of wetland to be filled and to provide 1 acre of wetland enhancement for every 1 acre of wetland indirectly impacted. Such a compensatory mitigation ratio would result in a compensatory mitigation plan to enhance approximately 27 acres of wetlands.

Throughout the DEIS (e.g., Abstract, Summary, page 21) and associated feasibility report (e.g., page 77), the Corps states that an array of mitigation plans using HEP protocol was developed "...in consultation with the U.S. Fish and Wildlife Service..." Such statements are misleading as they imply that the Service supports the currently proposed compensatory mitigation plan. The DEIS and the Feasibility Report must be clarified to avoid indicating that the Service supports the Corps currently proposed, 12.8-acre compensatory mitigation plan.

DUNE IMPACTS

The proposed project would adversely affect 18.46 acres of dune vegetation along the Raritan and Sandy Hook Bay shoreline. From review of project plans it appears that the existing dune system would be fortified, resulting in an engineered structure lacking the physical and vegetative variability of natural dune systems. Dunes on the southern shore of Raritan Bay have been documented as valuable habitat for songbirds and some hawks (Kane and Kerlinger, 1994). The Department recommends that the Corps re-evaluate the proposed project in an effort to identify opportunities to avoid and minimize impacts to dune systems. For example, it may be possible to avoid or minimize impacts by exploring alternative alignments, or fortifying the existing dune in only limited areas. The DEIS should be modified to include a discussion regarding dune avoidance and minimization.

Also, the Corps should quantify in the DEIS the type of vegetation that would be impacted by the proposed dune fortification and more thoroughly assess such impacts over time. Such a discussion should include consideration of any expected dune maintenance. The Department understands that vegetation to be eliminated by dune fortification includes both herbaceous and scrub-shrub communities. Although the Corps proposes to replant the fortified dune, a net loss of habitat value will occur over time for wildlife resources, particularly migratory songbirds and hawks. Such impacts would include loss of habitat during construction, loss of scrub shrub

communities over time, and loss of habitat heterogeneity. Should impacts to dune communities remain after avoidance and minimization, the Corps will need to provide compensatory mitigation in advance of project impacts at a ratio of 1:1.

BORROW AREAS

The Corps proposes to use the offshore Sea Bright borrow area as the material source for beach nourishment and dune fortification. However, the Corps notes that other sources of material are under investigation and would require separate National Environmental Policy Act review (83 Stat. 852; 42 U.S.C. 4321 *et seq.*). The Department has no comment regarding use of the Sea Bright borrow area. However, the Department finds that the Corps' intent to evaluate a second potential sand source under a separate NEPA review poses potential segmentation problems. The Final EIS (FEIS) should, therefore, include a quantitative description of the limitations of the Sea Bright borrow area as a source of material for this proposal over its projected life, and any consequences to this project in the event that a subsequent sand source is not identified. The Department will provide comments on other potential source areas.

INTERIOR DRAINAGE

The DEIS does not contain a discussion on the impacts (e.g., water quality, fish and wildlife habitat, vegetative communities) of interior drainage facilities, including detention ponds. Additionally, it is difficult to determine from the DEIS and Feasibility Report where storm water outfalls associated with interior drainage facilities would be located. These outfalls should be placed in locations such that impacts to adjacent salt marsh are minimized. For example, it would seem beneficial to discharge storm water to ditches within salt marshes and not directly to the high marsh. Locating outfalls within existing ditches would be more likely to reduce erosion of the marsh and minimize adverse impacts to salt marsh vegetation.

PEWS CREEK STORM GATE

The Corps claims that the storm gate on Pews Creek would decrease the mean spring high tide by 0.72 inch and increase peak ebb tidal velocities, thereby enhancing sediment transport from the existing salt marsh into Raritan and Sandy Hook Bay. This enhanced sediment transport would appear to reduce the salt marsh sedimentation rate, which could result in long term impacts to coastal wetlands within Pews Creek. The Corps indicates that these predicted impacts would not have an adverse impact on the ecology of the Pews Creek coastal wetlands; however, the Corps proposes to monitor the effects of the proposed storm gate. The Department recommends that the Corps state in the FEIS that compensatory mitigation will be provided for any adverse effect on coastal wetlands associated with installation and operation of the Pews Creek storm gate. The Corps should confirm in the FEIS that funds are available for mitigation of impacts should they occur.

CONTAMINANTS

The U.S. Geological survey has commented that contaminated sediments have been identified offshore of the proposed project area in Raritan and Sandy Hook Bays. The disturbance of contaminated sediments during project activities could adversely affect water quality and aquatic biota. The Department recommends that the Corps evaluate the potential for contaminant remobilization and include such a discussion in the FEIS.

ALTERNATIVES

The Department recommends that the Corps continue to evaluate a non-structural alternative that would focus on removing structures from flood-prone areas. Such an alternative appears to be the only way to provide permanent protection from flooding and would provide valuable open space to the community. Open space would improve the quality of life in Port Monmouth and would provide exceptional opportunities for restoration of fish and wildlife habitats. From review of the DEIS and Feasibility Report, it does not appear that the economic benefits of open space and wildlife were fully considered by the Corps prior to discounting buy-out plans.

CONCLUSIONS

The Department concludes that, as proposed, the project would have substantial and unacceptable cumulative adverse impacts to wetlands and wildlife resources. As currently proposed, the Department does not support implementation of the proposed project. The Department recommends that the Corps re-evaluate the proposed project with the objective of further minimizing adverse impacts to wetlands and wildlife resources and fully mitigating for unavoidable adverse impacts.

Thank you for the opportunity to provide these comments. Should you have any questions regarding the above comments and recommendations, please contact Clifford G. Day of the U.S. Fish and Wildlife Service, New Jersey Field Office, 927 North Main Street, Building D, Pleasantville, New Jersey 08232, (609) 646-9310.

Sincerely,

Andrew L. Raddant
Regional Environmental Officer

Reference

Kane, R. and P. Kerlinger. 1994. Raritan Bay Wildlife habitat report; with recommendations for conservation. New Jersey Audubon Society. Bernardsville, New Jersey.

DOI Comment 1 (page 1, paragraphs 2 and 3; page 2, paragraphs 2 and 3): The amount of compensatory mitigation proposed for wetland impacts is unacceptable to the USFWS. Specifically, a 1:1 ratio involving enhancement of existing wetlands is inadequate to compensate for the net loss of wetland acreage due to the project. It is the USFWS position that the HEP does not assess all of the functions and values of wetlands, and therefore is not an appropriate tool for determining the compensatory mitigation ratios independent of other assessment techniques. USFWS recommends that the District revise the compensatory mitigation plan to provide 3 acres of wetland enhancement for every acre of wetland impact and to provide 1 acre of wetland enhancement for every 1 acre of wetland indirectly impacted.

The District's Response 1: One of the goals of the HEP process was to assess potential impacts of the project to ecological communities by documenting changes in habitat quality and quantity. Through the HEP species selection process, wildlife species are chosen based on their significance and/or applicability to the proposed project. Careful selection of the appropriate species allows predicted impacts to be extrapolated to a larger segment of the wildlife community (USFWS 1980). At Port Monmouth, species were carefully selected based upon their associations with the habitats most likely impacted by the proposed project and that they represent a guild. Wetland communities were expected to receive the most impacts therefore the black duck, marsh wren, and clapper rail were chosen as evaluation species that represented different guilds and their various utilization within the coastal marsh ecosystem. These three species are commonly associated with wetland habitats and certain combinations of wetland habitat characteristics outlined within their respective HSI models will determine their abundance and distribution (USFWS 1980).

The habitat variables associated with the evaluation species used at Port Monmouth can be indirectly related to some common wetland functions and values used in other assessment techniques such as the Wetland Evaluation Techniques (WET [Adamus et al. 1987]) and the Evaluation for Planned Wetlands (EPW [Bartoldus et al. 1994]). Table 1 outlines the various habitat variables measured and their relationships to common wetland functions and values. In addition to the variable description, the relationship between the variable and the resulting suitability index is indicated. This relationship can be used to demonstrate that the model interpretation of the relationship between the habitat value of the variable to the particular species is equal to the interpretation of the relationship between the variable and particular wetland functions and values.

For example, Black Duck V6 is a positively correlated variable; habitat quality is increased in areas when the percent cover of submergent vegetation is increased. The function that submergent vegetation is playing on primary production also represents a positive correlation, since it is assumed that as submergent vegetation abundance increases so does the value of a wetland as a primary producer.

Table 1. HEP Species Habitat Variables and Their Relationship With Common Wetland Functions and Values

Species/ Variable	Variable Description	HSI Model Relationship	Wetland Function or Value	Function and Value Relationship
Black Duck V5	Percent of each emergent and forested wetland cover types occupied by open water	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Black Duck V6	Percent of open water substrate occupied by submergent vegetation	Positive	Primary production and nutrient retention	Positive
Black Duck V7	Percent of non–forested wetlands that supports > 750 snails/m^2	Positive	Water quality	Positive
Black Duck V8	Percent of total land and water area occupied by salt marsh	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Marsh Wren V1	Growth form class of emergent hydrophytes	NA	Primary production and sediment stabilization	NA
Marsh Wren V2	Percent herbaceous canopy cover	Positive	Primary production and sediment stabilization	Positive
Marsh Wren V3	Mean water depth	Positive	Hydrology and sediment stabilization	Positive
Marsh Wren V4	Percent shrub canopy cover	Negative	Sediment stabilization	Positive
Clapper Rail V1	Percent of emergent and scrub-shrub wetland shoreline that borders flat to gently sloping banks or tidal flats exposed at low tide	Positive	Shoreline bank erosion control and sediment stabilization	Positive
Clapper Rail V2	Percent of the total land and water area that is emergent or scrub-shrub wetland	Positive	Sediment stabilization and nutrient retention	Positive
Clapper Rail V3	Percent of emergent or scrub-shrub wetlands that is within 15 m of tidally influenced waterbodies	Positive	Shoreline bank erosion control and sediment stabilization	Positive

* a threshold value is reached where the relationship is inversed
NA not applicable

Due to the selected species' preference of wetland habitats and the characteristics of the habitat variables used in the HEP process, the District believes that an overall assessment of wetland functions and values is an inherent part of the HEP assessment. Through the use of the HEP process, the District was able to quantify project impacts and develop the appropriate mitigation plan.

The District used HEP to determine the appropriate mitigation effort needed to offset project associated impacts. Although the results of the HEP resemble a 1:1 acre mitigation ratio, the selected mitigation plan is not acre ratio based. The determined mitigation effort is solely driven by the HEP process. Through the HEP process, the District determined that 12.76 acres of direct and indirect wetland impacts during the year of construction would result in the loss of a total of 5.38 black duck and 5.40 marsh wren wetland HUs. In addition, the District determined that the indirect impacts would not result in permanently lost wetlands and that 1.91 black duck and 2.27 marsh wren wetland HUs would be returned. Therefore, the total loss of wetland habitat value associated with the project would be 3.47 black duck and 3.13 marsh wren HUs during the year of construction. The restoration/enhancement of 12.80 acres of wetland *Phragmites* into emergent salt marsh habitat during the year of construction would result in a gain of 7.68 (12.80 x 0.60 HSI for SM) black duck HUs and 9.22 (12.80 x 0.72 HSI for SM) marsh wren HUs. In terms of wetland HUs, the black duck is mitigated for at a 2.21:1 ratio (7.68 mitigated HUs for 3.47 impacted HUs) and the marsh wren at a 2.95:1 ratio (9.22 mitigated HUs for 3.13 impacted HUs), during the year of construction.

In addition, the District through habitat modeling and HEP calculations determined that 12.80 acres of mitigation would be needed to offset the impacts associated with the project by the year 2052. In order to select the appropriate mitigation effort, the District implemented a step-wise procedure to determine the level of mitigation needed to offset impacted HUs. Using a range of mitigation acreages, the District calculated the available HUs at year 2052 for six mitigation scenarios: 25.60 acres (200%), 16.00 acres (125%), 12.80 acres (100%), 10.24 acres (80%), 6.40 acres (50%), and 3.84 acres (30%). The District determined that at year 2052, marsh wren HUs were almost (-0.33) compensated for with 6.40 acres of mitigation and that a net gain of 1.87 black duck HUs was still observed at the lowest level of 3.84 acres. Based on this evaluation, the District determined that at the year 2052 in terms of HUs the marsh wren is mitigated for at approximately 2:1 ratio (12.80 acres instead of the minimum required 6.40 acres) and the black duck is mitigated for at a greater than 3:1 ratio (12.80 acres instead of the minimum required <3.24 acres). In addition, at year 2052, there is a net gain of 5.49 black duck and 3.57 marsh wren HUs resulting from the selected mitigation effort.

The District is unaware of any existing process or rationale that is uniformly accepted, used and/or agreed upon by regulatory and resource agencies that justifies an acreage based compensatory mitigation ratio. The results of the Mitigation Report (USACE 2000) and the rationale as discussed above, provide a quantitative assessment of habitat values that justify the appropriate acreage needed to offset direct and indirect wetland

habitat impacts. Accordingly, the District believes that the selected mitigation plan adequately replaces the quality and quantity of immediate and long-term impacts to wetlands habitats.

DOI Comment 2 (page 2, paragraph1): The DOI notes the proposed compensatory mitigation of 1:1 is not consistent with current compensatory mitigation requirements of the Corps Regulatory programs throughout the nation.

The District's Response 2: The Corps' Regulatory program is consistent with institutional policies of other agencies to mitigate based only on acres of wetland impacted regardless of wetland functions and value. The District is unaware of any existing process or rationale that is uniformly accepted, used, and/or agreed upon by regulatory and resource agencies that justifies an acreage based compensatory mitigation ratio. The results of the Mitigation Report (USACE 2000) and the rationale as discussed above, provide a quantitative assessment of habitat values that justify the appropriate acreage needed to offset direct and indirect wetland impacts. Accordingly, the District believes that the selected mitigation plan adequately replaces the quality and quantity of immediate and long-term impacts to wetlands habitats.

DOI Comment 3 (page 2, paragraph 3): The DEIS and Feasibility Report must be clarified to avoid statements (i.e., ... in consultation with the USFWS) indicating that the USFWS supports the District's currently proposed 12.8-acre compensatory mitigation plan.

The District's Response 3: The language as stated in the DEIS is appropriate because the District did consult with the USFWS regarding mitigation. In addition, the language does not state that the USFWS supports the selected mitigation.

DOI Comment 4 (page 2, paragraphs 4 and 5): The USFWS is concerned that the impacts to the dune system along the Raritan and Sandy Hook Bay shoreline are not thoroughly discussed and should be reevaluated to avoid and minimize impacts.

The District's Response 4: Because only short-term impacts to vegetation and wildlife are expected, the District views the discussion in the DEIS as adequate. The restored dune will be replanted with dune grasses and shrubs. The implementation of the selected plan is expected to provide long- and short-term benefits to the existing dune complex. Placement of sand is expected to provide immediate and long-term protection by preventing further erosion. In addition, the increased area of the fortified and revegetated dune will potentially provide more wildlife habitat when compared to the No-action alternative. As a result, mitigation efforts are not planned.

The originally preferred dune plan was much larger than the selected dune plan. The District reevaluated the originally preferred dune plan and identified opportunities to minimize impacts to the dune and Green Acres property

DOI Comment 5 (page 3, paragraph 1): The USFWS is concerned about the District's use of other sources of material for beach nourishment and dune fortification other than the offshore Sea Bright borrow area. USFWS is requesting that the FEIS include a quantitative description of the limitations of the Sea Bright borrow area as a source of material over the life of the project, and any consequences to this project in the event that a subsequent sand source is not identified.

The District's Response 5: The Sea Bright borrow area is estimated to contain a sufficient amount of sand for the life of the project. To reduce overall project costs, the District is currently investigating other potential offshore borrow areas. The characterization of the existing resources and impacts to other potential offshore sand sources will be addressed under a separate NEPA document. This position is in accordance NEPA regulations 40 CFR Parts 1500 – 1508, and is not considered a segmentation issue.

DOI Comment 6 (page 3, paragraph 2): The USFWS is concerned that the DEIS does not thoroughly discuss the impacts to interior drainage facilities, including detention ponds. In addition, the location of stormwater outfalls is not described or discussed.

The District's Response 6: The District completed an interior drainage analysis for the proposed plan alignment. The approach included consideration of minimum facility drainage outlets, pumps and ponds for identified drainage basins. In the draft main report, pages 73, 74 and 75 discuss the required outlet structures along with approximate locations. There are three primary and eleven secondary drainage outlets proposed at the Compton Creek Basin area. For the Pews Creek interior area, there are two outlets that function when the gate is closed: the pump discharge pipe and gravity outlets. In the draft report, page F-48 and Sub-Appendix F1 contain further information on formulation of interior drainage and selected plan details. Excavation of ponds for the proposed plan is not required.

Although temporary impacts to the function of water quality drainage facilities are expected due to implementation of the proposed project, the District anticipates no long-term impacts to these facilities. In addition, the District anticipates improvement to existing structures directly impacted by construction.

DOI Comment 7: (page 3, paragraph 3): The USFWS is concerned that the District will not provide compensatory mitigation if any adverse effect is noted on coastal wetlands associated with the installation and operation of the Pews Creek storm gate.

The District's Response 7: Based on the District's hydrodynamic model of Pews Creek, the placement of a storm gate in Pews Creek will have minimal effect on the daily tidal cycle. Post-construction monitoring of the marsh is proposed to substantiate this position. The District will continue to coordinate with DOI and other resource agencies during the development of the monitoring details, sampling methodologies and impact threshold levels. A detailed Pews Creek monitoring plan will be prepared in the next Pre-construction, Engineering and Design (PED) phase. The District will take appropriate corrective action, if needed, based on the results of the monitoring program.

DOI Comment 8 (page 4, paragraph 1): The USFWS is concerned that activities associated with the project could disturb offshore contaminants that have been identified by the U.S. Geological Survey. The USFWS recommends that the District evaluate the potential for contaminant remobilization and include such a discussion in the FEIS.

The District's Response 8: The potential to disturb contaminants located offshore would be directly associated with activities in the borrow area. The District's preferred borrow area neither contains nor is associated with contaminants, and has been permitted through the NEPA process. Accordingly, the potential for contaminant remobilization has been previously addressed. In addition, if contaminants are within the sand placement footprint, the implementation of the selected plan would benefit water quality and aquatic resources. The placement of sand would secure contaminants potentially eliminating the remobilization.

DOI Comment 9 (page 4, paragraph 2): The USFWS is concerned that the DEIS and Feasibility Report does not fully consider the benefits of open space, restoration of fish and wildlife habitats, and the permanent protection from flooding, provided for by buy-out plans.

The District's Response 9: The District has considered an array of alternatives, including non-structural solutions during the plan formulation process. Corps policy limits the extent to which recreation benefits of open space may be applied. There is currently no means to quantify, in terms of dollar value, the restoration of fish and wildlife resources. In a similar vein, the feasibility report does not quantify social benefits associated with avoiding relocations. Non-structural alternatives are discussed in detail in Appendix A, Volume III-1. The non-structural alternatives, including buyouts, were significantly more costly relative to comparable structural solutions.

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State of New Jersey
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MAY 17 2000

Frank Santomauro, P.E.
Planning Division
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

RE: Raritan Bay Sandy Hook Bay
Combined Flood Control and Shoreline Protection
Project
Port Monmouth, New Jersey
Middletown, Monmouth County

Dear Mr. Santomauro:

The New Jersey Department of Environmental Protection, Land Use Regulation Program has reviewed the Draft Feasibility Report, the Draft Environmental Impact Statement, the Draft Port Monmouth Mitigation Report and the Draft Port Monmouth Habitat Evaluation Procedures Report. The Program offers the following comments to assist your agency in its preparation of the Final Documents for the project and for submission to this office for a Federal Consistency Determination and Water Quality Certificate.

Draft Mitigation Report / Draft Habitat Evaluation Procedures Report

As proposed the project would affect 12.76 acres of wetlands. Your agency (ACOE) proposes to mitigate these impacts through enhancement procedures that would convert 12.8 acres of Phragmites dominated wetlands to a Spartina dominated salt marsh. However, the Program requires enhancement mitigation at a ratio of 3 acres of enhancement for each acre of wetlands impact.

The ACOE employed the Habitat Evaluation Procedure (HEP) to evaluate impacts to wildlife in the project area. HEP is a model designed to estimate gains and losses of wildlife habitat units (HUs). It is our understanding that

the ACOE believes that the conclusions drawn from the HEP model suffice as reflections of gains and losses of wetlands values and functions as well. In previous discussions with the ACOE, the Program expressed a willingness to consider the adequacy of the HEP analysis for this project. We have concluded that for the sake of permitting and subsequent mitigation of wetland impacts that HEP is not sufficiently robust to encompass all the wetlands values and functions considered by the Program. Additional consideration of the loss of wetlands functions and values must be provided and mitigated for.

The HEP analysis for the proposed project, evaluated habitat value for the marsh wren, the black duck and the clapper rail. Accordingly, the mitigation was designed to replace HUs for the marsh wren, the species with the greatest predicted project impacts.

Wetlands affected by the project fall into two categories; those impacted by the levee footprint and those behind the levee that would be impacted by a loss of hydrology. In the Comptons Creek marsh, the levee footprint destroys 6.71 acres of wetlands and changes in hydrology will impact 5.63 additional acres of wetlands. At Pews Creek, the levee footprint would destroy 0.42 acres of wetlands and no changes in hydrology would occur to affect additional wetland areas.

For the black duck, 2.29 HUs would be lost by the isolation of the wetlands behind the levee in the Comptons Creek wetlands. However, 3.25 HUs would be created by predicted Phragmites encroachment in the wetlands and also by the establishment of upland grass habitat on the levee. For the marsh wren, 2.18 HUs would be lost by isolation of wetlands behind the levee. However the prediction is that 2.27 HUs would result from the encroachment of Phragmites in the wetlands. Upland grass habitat on the levee does not represent HUs for the marsh wren.

A conclusion from the HEP model is that marsh wren habitat lost to isolation of wetlands would be adequately compensated by the predicted encroachment of Phragmites. Black duck habitat lost to the project would be compensated for by the encroachment of Phragmites and by habitat creation on the levee.

The Program maintains that the HEP does not adequately assess the impacts associated with the isolation of wetlands. These small isolated areas located adjacent to residential properties would be fragmented remnants,

physically separated by the levee from the main body of wetlands. Further, most of the isolated wetland areas would be modified to serve as stormwater drainage facilities. Each of these aspects of the wetlands isolated by the project, would contribute to degradation of habitat not accounted for in the HEP study. The marsh wren behavioral aspect of the model, which indicates that the Habitat Suitability Index (HSI) for marsh wrens is 0 if the extent of contiguous wetlands is less than 1 acre, supports our concern. As a result, the Program concludes that the isolated wetlands should not be credited as beneficial HUs.

Additionally, it is our position that even if the HEP were to be used to determine the replacement of wetland values and functions, the HUs attributed to the levee itself, have no meaning in terms of wetlands functions and values. The mitigation must reflect the replacement of direct and indirect wetlands values and functions in terms of wetlands, not in terms of non-wetlands habitat.

The Pews Creek marsh has higher HSI values than the Comptons Creek marsh. The HEP analysis indicates that the Comptons Creek marsh has a lower capability to produce habitat units than the Pews Creek marsh. The Program concludes that habitat units lost at the Comptons Creek marsh without replacement within the Comptons Creek wetlands system will result in a compounding of the diminished capability of the Comptons Creek system. The Rules on Coastal Zone Management requires that mitigation be performed onsite to the maximum extent practicable. Consequently, any loss in the Comptons Creek system should be compensated for in the Comptons Creek system if at all possible.

The Program has additional concerns regarding the HSI values provided for proposed enhanced areas. The HEP model does not demonstrate that enhanced marsh would have the equal habitat quality to that of the existing marsh. This concern is especially acute in areas where the proposed mitigation is thatching and herbicidal treatments. Specifically, one of the habitat variables for the marsh wren is mean water depth. It appears unlikely that without excavation the specified mean water depth aspect would occur in areas where only thatching and herbicidal treatment takes place. Put in other terms, the mean water depth would remain at the Phragmites community preference value.

According to the HEP report, use of marsh wren habitat may over-represent the importance of Phragmites to the overall wildlife community. The HEP report references literature indicating that in terms of avifauna species

richness and diversity Phragmites habitats are generally more than 20% lower than salt marsh habitats. To account for this diminished capacity, the HEP team multiplied the HU values for the Wetland Phragmites (WPH) cover type by a Relative Value Index (RVI) of 0.80. This resulted in adjusted HU values for the Phragmites Wetland habitats. Although the Program accepts that habitats consisting predominantly of Phragmites exhibit diminished richness and diversity, the Program questions the extent to which the RVI was applied in this study. Specifically, the study defined the WPH cover type as including areas with ≥ 30% coverage of Phragmites and ≤ 30% shrub cover. The Program questions the applicability of applying the RVI in instances other than where the cover is predominantly Phragmites.

In an effort to elucidate long-term gains and losses of habitat units, the ACOE and HEP team developed a Phragmites Encroachment Model. The Phragmites Encroachment Model establishes an encroachment rate of 2% per year. The rate is based on published ecological studies and the applicability of the encroachment rate at the Pews Creek and Comptons Creek wetlands is assumed. Although the Program accepts that the model may serve as a useful tool for predicting long-term changes in habitat for the purposes of determining HUs, the model is not useful from the perspective of regulatory wetlands mitigation. In determining appropriate mitigation, the Program relies on the baseline data provided with the application for the project area, which in this case, is the 1997 survey data.

Finally, the wetlands line indicated in the DEIS is not the wetland line agreed upon by the ACOE and the Program. This must be corrected. Use of the verified wetlands line will alter the HEP figures.

Mitigation Design

As stated above, it is our position that mitigation for project impacts in the Comptons Creek drainage system should occur within the Comptons Creek drainage system. That aside, the Program has the following comments on the mitigation proposal as presented.

The Program is concerned by the anticipated changes in the tidal flushing in Pews Creek. According to the reports, the tide gate installation may reduce the duration of tidal inundation in the Pews Creek Marsh. Additionally, proposed changes in the existing ditch system within the Pews Creek wetlands may also reduce the duration of inundation. The Program is concerned that an outcome of this change may be an increase in Phragmites encroachment that was not

accounted for with a concomitant reduction in the success of the proposed enhancement.

Mitigation consisting solely of thatching and herbicidal treatments is not adequate, because the existing physical conditions will remain that favor the dominance of Phragmites unless other means of altering the conditions are employed, such as lowering the elevation of the area (i.e. increasing tidal inundation). Also we can not subscribe to a mitigation program that requires long term maintenance and application of herbicides. The mitigation must be self-perpetuating at the end of the monitoring period, which is three years.

In order to evaluate the mitigation proposal, the Program will need site specific information regarding soils and the proposed hydrologic regime for the project site.

In designing the mitigation site, a minimum six-inch layer of topsoil (A-Horizon) must be provided. For Reference, if natural topsoil is used then at least 8% organic carbon content (by weight) must be incorporated into the A-horizon for sandy soils and 12% organic content for all other soil types. If manmade topsoil is used it must consist of equal volumes of organic and mineral materials. Soil test must be provided to demonstrate success.

Minimization and Avoidance

Based on the information provided to us, the Program believes that additional opportunities to minimize impacts to wetlands exist. It does not appear that the proposed Comptons Creek levee has been located at the edge of wetlands to the maximum practicable extent thereby minimizing impacts to the wetlands. Also, it is our understanding that many of the wetland areas that would remain behind the levee would serve for the short-term storage of stormwater. In order to demonstrate that avoidance and minimization has been achieved, please provide site plans that show the footprint of the levees and all proposed ponding areas between the proposed levees and the uplands. It is our position that wetland areas dedicated to stormwater storage or drainage capture are subject to periodic maintenance and increased impacts such as pollutant loading. Consequently, we consider these impacts as direct impacts to wetlands.

The Documents indicate that some of the ponds will be excavated to a depth not to exceed elevation 3.5. Groundwater elevation is 3. Please discuss potential impacts to groundwater.

Please elaborate on what is considered the levee footprint. This elaboration should include consideration of all permanent structures or grading associated with the levee construction. Also, any construction accessways or overburden placed in wetlands that remains in place for 6 months or more must be considered as a permanent impact.

It does not appear that project impacts associated with the elevation of Port Monmouth Road have been fully discussed or addressed.

Mitigation Monitoring

The Program will require that the mitigation site be monitored for a period at least three full growing seasons following completion of the mitigation plantings. The mitigation shall be considered successful, if the ACOE demonstrates that the site meets the following:

That the site has an 85 percent survival and 85 percent areal coverage of mitigation plantings and or target hydrophytes that are species native to the area and similar to species identified in the mitigation-planting plan.

That the site is occupied by less than 10 percent invasive or noxious species such as but not limited to *Phalaris arundinacea* (Reed canary grass), *Phragmities australis* (Common reed grass), *Pueraria montana* (Kudzu), *Typha latifloia* (Broad-leaved cattail), *Typha angustifolia* (Narrowed leaved cattail), *Lythrum salicaria* (Purple loosestrife), *Ailanthus altissima* (Tree-of-heaven), *Berberis thunbergi* (Japanese barberry), *Berberis vulgaris* (Common barberry), *Elaeagnus angustifloia* (Russian olive), *Elaeagnus umbellata* (Autumn olive), *Ligustrum obtusifolium* (Japanese privet), *Ligustrum vulgare* (Common privet) and *Rosa multiforia* (Multiflora rose).

That the appropriate hydrological regime for the site has been provided.

That appropriate top soil was used in the construction of the mitigation site.

The Program has checklists prepared for assessing the success of the mitigation site. These checklists will be provided under separate cover.

Other Issues

Water quality drainage facilities were installed to treat stormwater runoff when the Township and County reconstructed Port Monmouth Road. The function of these

facilities must be maintained by either avoiding or replacing the water quality stormwater facilities.

The reports indicate that the tidal flow velocities in Pews Creek will increase creating the potential for additional sediment to be carried out of the marsh. Please discuss the potential for increased sedimentation in the existing marina basin and navigation channel.

The proposed beachfill may reduce water depth at the end of the existing fishing pier. Please discuss potential impacts to the pier such as the diminution or elimination of ability to fish from the pier.

Although the Program accepts the alignment of the levee from the proposed dune to Port Monmouth Road, there is a proposal to construct townhouse units in this area. This may have an impact to your acquisition costs.

If you have any questions regarding this letter, please contact Mr. Christopher Dolphin of my staff at (609) 242-9017. Thank you for your continued attention to and cooperation with New Jersey's Coastal Management Program.

Sincerely,

Ruth Ehinger
Assistant Director
Bureau of Coastal Regulation

RE/CMD/KRK

NJDEP, LURP Comment 1 (page 1, paragraph 2): The proposed project offers a mitigation effort, in the form of enhancement, of 12.8 acres for 12.76 acres of wetland impacts. LURP requires an enhancement mitigation ratio of 3 acres of enhancement for each acre of impacted wetlands.

The District's Response 1: The District used HEP to determine the appropriate mitigation effort needed to offset project associated impacts. Although the results of the HEP resemble a 1:1 acre mitigation ratio, the selected mitigation plan is not acre ratio based. The determined mitigation effort is solely driven by the HEP process. Through the HEP process the District determined that 12.76 acres of direct and indirect wetland impacts during the year of construction would result in the loss of a total of 5.38 black duck and 5.40 marsh wren wetland HUs. In addition, the District determined that the indirect impacts would not result in permanently lost wetlands and that 1.91 black duck and 2.27 marsh wren wetland HUs would be returned. Therefore, the total loss of wetland habitat value associated with the project would be 3.47 black duck and 3.13 marsh wren HUs during the year of construction. The restoration/enhancement of 12.80 acres of wetland *Phragmites* into emergent salt marsh habitat during the year of construction would result in a gain of 7.68 (12.80 x 0.60 HSI for SM) black duck HUs and 9.22 (12.80 x 0.72 HSI for SM) marsh wren HUs. In terms of wetland HUs, the black duck is mitigated for at a 2.21:1 ratio (7.68 mitigated HUs for 3.47 impacted HUs) and the marsh wren at a 2.95:1 ratio (9.22 mitigated HUs for 3.13 impacted HUs), during the year of construction.

In addition, the District through habitat modeling and HEP calculations determined that 12.80 acres of mitigation would be needed to offset the impacts associated with the project by the year 2052. In order to select the appropriate mitigation effort, the District implemented a step-wise procedure to determine the level of mitigation needed to offset impacted HUs. Using a range of mitigation acreages, the District calculated the available HUs at year 2052 for six mitigation scenarios: 25.60 acres (200%), 16.00 acres (125%), 12.80 acres (100%), 10.24 acres (80%), 6.40 acres (50%), and 3.84 acres (30%). The District determined that at year 2052, marsh wren HUs were almost (-0.33) compensated for with 6.40 acres of mitigation and that a net gain of 1.87 black duck HUs was still observed at the lowest level of 3.84 acres. Based on this evaluation, the District determined that at the year 2052 in terms of HUs the marsh wren is mitigated for at approximately 2:1 ratio (12.80 acres instead of the minimum required 6.40 acres) and the black duck is mitigated for at a greater than 3:1 ratio (12.80 acres instead of the minimum required <3.24 acres). In addition, at year 2052, there is a net gain of 5.49 black duck and 3.57 marsh wren HUs resulting from the selected mitigation effort.

The District is unaware of any existing process or rationale that is uniformly accepted, used and/or agreed upon by regulatory and resource agencies that justifies an acreage based compensatory mitigation ratio. The results of the Mitigation Report (USACE 2000) and the rationale as discussed above, provide a quantitative assessment of habitat values that justify the appropriate acreage needed to offset direct and indirect wetland

impacts. Accordingly, the District believes that the selected mitigation plan adequately replaces the quality and quantity of immediate and long-term impacts to wetlands habitats.

NJDEP, LURP Comment 2 (page 1, paragraph 3): It is LURP's understanding that District believes that the conclusions drawn from the HEP suffice as reflections of gains and losses of wetlands values and functions. LURP previously expressed a willingness to consider the adequacy of the HEP analysis for this project. LURP has concluded that for the sake of permitting and subsequent mitigation of wetland impacts that the HEP is not sufficiently robust to encompass all the wetlands values and functions considered by the program. The consideration of the loss of wetlands functions and value must be provided and mitigated for.

The District's Response 2: One of the goals of the HEP process was to assess potential impacts of the project to ecological communities by documenting changes in habitat quality and quantity. Through the HEP species selection process, wildlife species are chosen based on their significance and/or applicability to the proposed project. Careful selection of the appropriate species allows predicted impacts to be extrapolated to a larger segment of the wildlife community (USFWS 1980). At Port Monmouth, species were carefully selected based upon their associations with the habitats most likely impacted by the proposed project and that they represent a guild. Wetland communities were expected to receive the most impacts therefore the black duck, marsh wren, and clapper rail were chosen as evaluation species that represented different guilds and their various utilization within the coastal marsh ecosystem. These three species are commonly associated with wetland habitats and certain combinations of wetland habitat characteristics outlined within their respective HSI models will determine their abundance and distribution (USFWS 1980).

The habitat variables associated with the evaluation species used at Port Monmouth can be indirectly related to some common wetland functions and values used in other assessment techniques such as the Wetland Evaluation Techniques (WET [Adamus et al. 1987]) and the Evaluation for Planned Wetlands (EPW [Bartoldus et al. 1994]). Table 1 outlines the various habitat variables measured and their relationships to common wetland functions and values. In addition to the variable description, the relationship between the variable and the resulting suitability index is indicated. This relationship can be used to demonstrate that the model interpretation of the relationship between the habitat value of the variable to the particular species is equal to the interpretation of the relationship between the variable and particular wetland functions and values.

For example, Black Duck V6 is a positively correlated variable; habitat quality is increased in areas when the percent cover of submergent vegetation is increased. The function that submergent vegetation is playing on primary production also represents a positive correlation, since it is assumed that as submergent vegetation abundance increases so does the value of a wetland as a primary producer.

Table 1. HEP Species Habitat Variables and Their Relationship With Common Wetland Functions and Values

Species/ Variable	Variable Description	HSI Model Relationship	Wetland Function or Value	Function and Value Relationship
Black Duck V5	Percent of each emergent and forested wetland cover types occupied by open water	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Black Duck V6	Percent of open water substrate occupied by submergent vegetation	Positive	Primary production and nutrient retention	Positive
Black Duck V7	Percent of non–forested wetlands that supports > 750 snails/m^2	Positive	Water quality	Positive
Black Duck V8	Percent of total land and water area occupied by salt marsh	Positive/Negative*	Sediment stabilization and nutrient retention	Positive/Negative*
Marsh Wren V1	Growth form class of emergent hydrophytes	NA	Primary production and sediment stabilization	NA
Marsh Wren V2	Percent herbaceous canopy cover	Positive	Primary production and sediment stabilization	Positive
Marsh Wren V3	Mean water depth	Positive	Hydrology and sediment stabilization	Positive
Marsh Wren V4	Percent shrub canopy cover	Negative	Sediment stabilization	Positive
Clapper Rail V1	Percent of emergent and scrub-shrub wetland shoreline that borders flat to gently sloping banks or tidal flats exposed at low tide	Positive	Shoreline bank erosion control and sediment stabilization	Positive
Clapper Rail V2	Percent of the total land and water area that is emergent or scrub-shrub wetland	Positive	Sediment stabilization and nutrient retention	Positive
Clapper Rail V3	Percent of emergent or scrub-shrub wetlands that is within 15 m of tidally influenced waterbodies	Positive	Shoreline bank erosion control and sediment stabilization	Positive

* a threshold value is reached where the relationship is inversed
NA not applicable

Due to the selected species' preference of wetland habitats and the characteristics of the habitat variables used in the HEP process, the District believes that an overall assessment of wetland functions and values is an inherent part of the HEP assessment. Through the use of the HEP process, the District was able to quantify project impacts and develop the appropriate mitigation plan.

NJDEP, LURP Comment 3 (page 2; paragraphs 2, 3, 4, 5 and 6): LURP is not satisfied with the HEP analysis of the isolated wetlands behind the proposed levee. LURP expresses concern that the HEP analysis probably overestimates the value of these isolated wetlands to black duck and marsh wrens. Also, LURP does not agree that the majority of these wetlands would be filled with wetland *Phragmites*, suggesting that most of the areas should be modified to serve as stormwater drainage facilities.

The District's Response 3: A total of 5.63 acres of wetland habitat will be isolated by the proposed levee. Of this 5.63 acres of isolated wetland habitat, 3.93 acres or 70% is currently dominated by wetland *Phragmites* cover types and is expected to remain unchanged. Colonization of the remaining 1.7 acres of salt marsh (SM), open water (OW), and wetland scrub-shrub (WSS) by wetland *Phragmites* cover types (WPH and WPHS) is expected due to disruption of existing tidal hydrology. Many studies have documented colonization of *Phragmites* where tidal flushing is interrupted in salt marshes (Roman *et al.* 1984, Hellings and Gallagher 1992, Rozsa and Orson 1993, Warren 1994, Chambers *et al.* 1999). The net effect of these cover type changes on wildlife would be a 23% reduction in black duck HUs (from 2.49 to 1.91 HUs) and a 10% reduction in marsh wren HUs (from 2.53 to 2.27).

The selected plan intends to use the isolated wetlands as temporary stormwater storage areas. In addition, the District believes that the encroachment of *Phragmites* into these isolated wetlands (stormwater storage areas) is a reasonable assumption and that these reductions accurately portray the loss in habitat value as a result of levee construction.

NJDEP, LURP Comment 4 (page 3, paragraph 2): It is LURP's position that even if the HEP were to be used to determine the replacement of wetland functions and values, the HUs attributed to the levee itself have no meaning in terms of wetland functions and values. The partial return of black duck HUs by the habitat created by upland grass growing on the levees should not be calculated as returned black duck HUs.

The District's Response 4: The District agrees that if the HEP is to be used to determine the replacement of wetland values and functions the return of black duck HUs provided by the upland grass habitat on the constructed levee should not be considered as returned wetland HUs. However, as indicated by Response 1, appropriate mitigation is achieved when only HUs attributed to wetland habitats are considered. HUs provided by the levee's upland grass is attributed to the replacement of impacted upland HUs.

NJDEP, LURP Comment 5 (page 3, paragraph 3 and page 4, paragraph 4): The HEP analysis indicates that Compton Creek marsh has a lower capability to produce habitat units than the Pews Creek marsh. LURP concludes that HUs lost at the Compton Creek marsh without replacement within the Compton Creek wetlands will result in a compounding of the diminished capability of the Compton Creek system. The rules of Coastal Zone Management require that mitigation be performed onsite to the maximum extent practical.

The District's Response 5: The HEP considered the impacts (loss of HUs) regardless of where the HUs were lost. To maintain consistency in the HEP, the selected mitigation plan replaces all of the HUs lost regardless of where the HUs were lost. Accordingly, Pews Creek is within the Project site and therefore is onsite. In addition, the District determined that the Compton Creek study area contributes 4% less black duck HUs, 11% less marsh wren HUs, and 2% less clapper rail HUs, when compared to the Pews Creek study area. The District believes that these differences are not enough to conclude that there is a significant difference between the capability of Compton Creek and Pews Creek to produce HUs. In addition, the selection of feasible mitigation sites in Compton Creek would be difficult due to the lack of large continuous areas of wetland *Phragmites*. The closest suitable area for mitigation is located in the Pews Creek study area, which is considered to be within the Project site and therefore is on-site. Finally, it is not possible to meet the mitigation goal established by the interagency HEP team to convert WPH to saltmarsh in the Compton Creek Study Area, because the HSI values of the WPH and SM cover types at the Compton Creek Study Area are the same.

NJDEP, LURP Comment 6 (page 3, paragraph 4): LURP is concerned that solely thatch removal and herbicidal treatment of existing *Phragmites* areas is not adequate enough to promote a self perpetuating salt marsh community, specifically high marsh. Therefore, the habitat value of these areas is probably overestimated. In addition, LURP cannot subscribe to a mitigation program that requires long-term maintenance and application of herbicides. The mitigation effort must be self-perpetuating at the end of the monitoring period, which is three years.

The District's Response 6: Encroachment of *Phragmites* into areas formerly dominated by salt marsh vegetation is a documented result of reduced salinity and disturbance that occurs following the removal of tidal influences from coastal marshes (Roman *et al.* 1984, Sinicrope *et al.* 1990). The removal of *Phragmites* through mowing, disking, and burning have been found to be ineffective, and actually facilitate the plants spread and propagation (Garbisch 1986). Herbicidal treatment and subsequent thatch removal through burning has been shown to be an effective means of *Phragmites* control (Garbisch 1986, Jones and Lehman 1987). The Delaware Division of Fish and Wildlife (DFW) has found that a multiple herbicidal treatment and burn approach is necessary to control robust stands of *Phragmites*. The DFW has documented 83-99% control following only one application of the gylphosate herbicide Rodeo, but indicated that up to five annual treatments may be necessary (Jones 2000). Although, repeated applications

may be needed to maintain control, the amount and extent of the application is greatly reduced or the need may be eliminated over the long term. The DFW recommends and has had success with reducing herbicide treatment concentrations by 50% for 2nd and 3rd year applications (Marks *et al.* 1993). Since the remaining thatch can persist for years and can shade out planted or newly colonizing desirable salt marsh species, thatch removal is recommended in order to increase the probability of success (Jones 2000).

It is the District's position that through improved tidal ditching, herbicidal treatment, thatch removal, and the planting of desirable salt marsh species the salinity, hydrology, and proper growing conditions will be provided that will promote high marsh vegetation. In addition, the details of the District's application of herbicides over the long term will be outlined in a detailed Wetland Mitigation Plan, that will be prepared in the next phase which is the Pre-construction, Engineering and Design (PED) phase. The District plans to conduct 3 years of post-construction monitoring to ensure vegetation success.

NJDEP, LURP Comment 7 (page 3, paragraph 5): LURP is concerned that the RVI was applied to habitats not necessarily dominated by *Phragmites*. The argument is that the wetland *Phragmites* (WPH) cover type was defined as areas with greater than 30% cover and they question the applicability of the RVI to habitats not predominantly dominated with *Phragmites*.

The District's Response 7: The District examined the raw data from sample plots identified as the WPH cover type: 84% of the plots contained ≥40% coverage by *Phragmites*, 74% of the plots contained ≥50% coverage and 58% of the plots contained >75% coverage. Based on this analysis, the District believes that the WPH cover type was accurately characterized as areas predominately vegetated with *Phragmites*, therefore the application of the RVI was appropriate. The definition to define the WPH cover type was agreed to by the interagency HEP team.

NJDEP, LURP Comment 8 (page 4, paragraph 2): LURP suggested that baseline data (1997 survey data) be used to determine the appropriate amount of mitigation. LURP does not agree with the use of the *Phragmites* encroachment model (PEM) to estimate impacts during 2001 and using those impacts to determine appropriate mitigation. LURP is concerned that this may reduce the amount of mitigation necessary by increasing the amount of *Phragmites* habitats impacted.

The District's Response 8: Since no District action was proposed to be undertaken between 1997 and 2001, acreage changes estimated by the PEM are exactly the same for both the no-action and with project scenarios. As projected by the PEM, *Phragmites* dominated habitats are expected to increase between 1997 and 2001. The District and the interagency HEP team believe that the PEM is a suitable model for estimating changed habitat conditions at Port Monmouth. It is the District's position that using the 1997 cover type acreages to estimate mitigation would be inappropriate and less precise than using the modeled 2002 data. In addition, the District determined that the acreages

impacted by the construction of the levee in 2002 were not significantly different from acreage impacts estimated for 1997. For example, the SM cover type in Compton Creek was reduced by only 0.13 acres from 2.39 in 1997 to 2.26 in 2002, and the WPH cover type was increased by 0.54 acres from 3.04 in 1997 to 3.58 in 2002. In terms of HUs, the SM cover type in Compton Creek was reduced by only 0.08 black duck and 0.08 marsh wren HUs; and the WPH cover type was increased by 0.20 black duck and 0.25 marsh wren HUs between 1997 and 2002. Similar results were calculated for the Pews Creek study area. In addition, impacts to total wetland acreages would remain the same regardless of baseline year.

NJDEP, LURP Comment 9 (page 4, paragraph 3): The wetlands line indicated in the DEIS is not the wetlands line agreed upon by the District and LURP. LURP request that the wet line be corrected and HEP figures should be updated.

The District's Response 9: The District is currently working with the LURP to resolve this issue.

NJDEP, LURP Comment 10 (page 4, paragraph 5 and page 5, paragraph 1): LURP is concerned that District did not account for the reduction in the duration of tidal inundation resulting from installation of a tide gate and changes to the existing ditch system in Pews Creek. LURP anticipates increased *Phragmites* encroachment as a result of this reduction. LURP is concerned that this aspect is not incorporated into calculating the success of the proposed enhancement.

The District's Response 10: Based on the District's hydrodynamic model of Pews Creek, the placement of a storm gate in Pews Creek will have minimal effect on the daily tidal cycle. Post-construction monitoring of the marsh is proposed to substantiate this position. The District will continue to coordinate with LURP and other resource agencies regarding the development of monitoring details, sampling methodologies and impact threshold levels. A detailed Pews Creek monitoring plan will be prepared in the next PED phase. The District will take appropriate corrective action, if needed, based on the results of the monitoring program.

NJDEP, LURP Comment 11 (page 5, paragraph 2): In order to evaluate the mitigation proposal, LURP will need site-specific information regarding soils and the proposed hydrologic regime for the project area.

The District's Response 11: The District will discuss site-specific information such as soils and the hydrologic regime in a detailed Wetland Mitigation Plan that will be developed in the next PED phase.

NJDEP, LURP Comment 12 (page 5, paragraph 3): LURP requires that a minimum six-inch layer of topsoil be provided at the mitigation site.

The District's Response 12: The District will discuss topsoil acquisition, characteristics, and placement design in a detailed Wetland Mitigation Plan that will be developed in the next PED phase.

NJDEP, LURP Comment 13 (page 5, paragraph 4): LURP is concerned that the proposed Compton Creek levee is not located at the edge of wetlands to the maximum practical extent, thereby, minimizing impacts to wetlands. Also, LURP is concerned about the wetlands isolated behind the levee. It is LURP's understanding that these areas would serve as short-term storage of stormwater. It is LURP's position that wetland areas dedicated to stormwater storage or drainage capture are subject to periodic maintenance and increased impacts such as pollutant loading. Consequently, LURP considers these impacts as direct impacts to wetlands.

The District's Response 13: During the planning process LURP reviewed and commented on the placement of the proposed levee at Compton Creek. The District responded to LURP's comments by moving the levee as suggested. The levee is located at the edge of the wetlands to the maximum practical extent.

Although identified as indirect impacts, the isolated wetlands behind the levee were considered as impacted wetlands and were considered in the formulation of mitigation during the District's planning process.

NJDEP, LURP Comment 14 (page 5, paragraph 5): The mitigation plan indicates that some of the ponds will be excavated to a depth not to exceed an elevation of 3.5 feet. Ground water elevation is at 3 feet. LURP is requesting that the potential impacts to ground water be discussed.

The District's Response 14: In the DEIS, the District indicates that there will be no impact to ground water. The selected interior drainage plan does not call for excavation of the natural low areas to be used as ponding areas. This position is substantiated by the U.S. Environmental Protection Agency that stated, "their review indicates that the project would not adversely impact ground water and satisfies the requirements of Section 1424(e) of the Safe Drinking Water Act". Please see USEPA letter dated May 1, 2000, page 3 in the Pertinent Correspondence Appendix in Volume II.

NJDEP, LURP Comment 15 (page 6, paragraph 1 and 2): LURP would like an elaboration on what is considered the levee footprint. Project impacts associated with the elevation of the Port Monmouth Road have not been discussed or addressed.

The District's Response 15: The project has a levee length of about 7,070 feet, a top elevation of +14 ft NGVD, and a crest width of 10 ft and side slopes of 2.5/1. The levee footprint also includes a 10 ft wide drainage ditch on the protected side, a 10 ft wide permanent easement on each side and a 10 ft wide temporary easement on the protected side. Figure 22 in the main report depicts these details.

In order to maintain the integrity of the line of protection and provide for continued access, the road raising is included as a plan component. The road raising would be accomplished within the existing rights of way and disturbed uplands areas. For further discussion regarding the road raising, please see paragraph 238 in the Main Report. Finally, the selected mitigation plan replaces more HUs than HUs lost, to include those HUs lost due to the road raising.

NJDEP, LURP Comment 16 (page 6, paragraph 3): LURP would like to see LURP's checklists and criteria for monitoring and assessing mitigation success incorporated into the mitigation monitoring plan.

The District's Response 16: The District will continue to coordinate with LURP and other resource agencies during the development of the Wetland Mitigation Plan, to include LURP requirements. A detailed Wetland Mitigation Plan will be prepared in the next PED phase.

NJDEP, LURP Comment 17 (page 6, paragraph 4): LURP would like to see that the function of water quality drainage facilities associated with Port Monmouth Road be maintained by either avoiding or replacing the water quality stormwater facilities.

The District's Response 17: The District agrees with this comment. As detailed designs are completed during the next PED phase, the existing water quality facilities will be avoided where possible. If necessary, replacement facilities will be developed. The District intends to continue our on-going coordination with LURP in the next PED phase.

NJDEP, LURP Comment 18 (page 7, paragraph 1): LURP would like to see a discussion on the potential increased sedimentation in the existing marina and navigation channel as a result of increased tidal flow velocities at Pews Creek.

The District's Response 18: No additional sedimentation would be induced by the project, as the small velocity increase in the gate area would tend to keep the area from excessive build up of sediment. Flow through the creek would keep the entranceway clear for flows through the wetlands and drainage ditches. Preliminary indications are that significant shoals would not be realized. Storm events in which gate closure will be maintained are anticipated to be limited in nature, but some temporary transport build-up may not be precluded at these times, particularly in direct vicinity of the closed gate.

NJDEP, LURP Comment 19 (page 7, paragraph 2): LURP would like to see a discussion of the potential impacts to the existing fishing pier as a result of reduced water depth caused by the proposed beach fill.

The District's Response 19: The District expects minimal affects to recreational fishing from the pier because the selected plan cost has a provision to extend the fishing pier based on the beach fill template.

NJDEP, LURP Comment 20 (page 7, paragraph 3): LURP is concerned that acquisitions costs may be influenced by the proposal to construct townhouse units.

The District's Response 20: The acquisition costs for project cost estimates are based on current appraisal costs and valuations. Land acquisition costs will be the responsibility of the Local Sponsor and will be counted as credits against the local share of total project costs at the time of acquisition.

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State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

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May 23, 2000

Mr. Mark H. Burlas
Senior Wildlife Biologist
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

RE: **Draft EIS Review Comments**
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey
Middletown Township, Monmouth County

Dear Mr. Burlas:

The Office of Program Coordination of the New Jersey Department of Environmental Protection (NJDEP) has completed its review of Draft Environmental Impact Statement (EIS) for the Raritan Bay and Sandy Hook Bay, Hurricane and Storm Damage Reduction Project, Port Monmouth (Middletown Township), Monmouth County, New Jersey. We offer the following comments regarding natural resources, cultural resources, parkland, and regulatory requirements.

NATURAL RESOURCES

Dunes

The Department's Division of Fish and Wildlife (DFW) supports the proposed new dunes, however the Draft EIS does not contain detailed design characteristics of the fore slopes of the dunes. The DFW would like to see an irregular design on the design of the face and not just a straight bank. More

importantly, they do not agree with the proposal to create piping plover habitat at this location, since this is not a barrier island; the resource would be more vulnerable to predation at this location. If the plover population was a higher level, then marginal habitat for recruitment maybe of some value. The new beach will benefit terns and should be monitored as per the plan for their presence. As an alternative however, the DFW strongly recommends that five nesting structures for ospreys be built as part of the mitigation. This need is demonstrated by the nesting attempt on the 5th pole south of Church Street on Compton's Creek. Kathy Clark from the DFW's Endangered and Non-Game Species Program (ENSP) should be contacted at 609-628-2436 for details; she will be happy to work on specific locations and platform designs.

Additionally, the DFW has some concerns about the source of the material. We agree on the use of the Sea Bright Borrow site and/or the use of Sandy Hook Channel dredging. The use of these sites should have minimal impacts on the finfish resource. The use of suitable dredge spoils from the mouth of both creeks in the area should also be explored. Their use would require timing restrictions of 2/1 – 3/30 to protect glass eels during migration; Compton Creek would require a timing restriction of 4/1 – 6/30 to protect anadromous fish during migration and spawning.

While the presence of horseshoe crabs was mentioned in other locations, if they are present on the beach a timing restriction of 5/1 – 8/1 would be necessary for their protection and their benefits to the shorebird resources.

Concerns exist about the water depth under the fishing pier at the completion of this project. Will the beach replenishment decrease this water depth (presently about 2 feet at MLW) and result in a reduction in angling recreation? Will an extension be added?

Levee

Levees present some unique opportunities to address the black duck concerns found in the HEP study. If a levee is constructed the DFW has long-term concerns about its effect on salt marsh vegetation. The levee to the north of Pews Creek appears to be adding to the spread of phargmites by hindering salt water flushing. We are suggesting that this levee be planted in warm seasonal grasses (see attached) for their value to wildlife. No walking or bicycle paths should be constructed on the top of the levee. Additionally, the Pews Creek levee and the dredge spoil bank to the south of Compton Creek should be planted in warm seasonal grasses and native shrubs (see attached, "Landscaping for Birds"). The use of silt fence during the construction of the new levee is recommended to prevent silting of Compton Creek during construction. If the silting can not be contained then a timing restriction of 4/1 – 6/30 would be required to protect anadromous fish. To protect the levee, the trapping of muskrats is strongly recommended.

Department as the project proceeds through planning, design, permitting, construction, and operation stages.

Thank you for the opportunity to comment on the Draft EIS for this important project.

Sincerely,

Lawrence Schmidt
Director
Office of Program Coordination

Attachments

C: Kathy Clark, NJDEP
Don Wilkinson, NJDEP
Andrew Didun, NJDEP
Mike Heenehan, NJDEP
Chris Dolphin, NJDEP
Deborah Fimbel, NJDEP
Bernard Moore, NJDEP

Flood Wall Ponding

No mention was made of any contact with the local mosquito commission. The DFW has concerns about the design encouraging the proliferation of freshwater mosquitoes. The location of this project next to New York City may aid in the spread of the West Nile like virus. While various pumps are mentioned, no mention of any kind of screening is mentioned to prevent beneficial fishes from being entrapped. This possible problem area should be addressed. Great care should be taken not to impact the salinity of the existing marsh.

Phragmites Treatment Plan

The treatment of Phragmites was covered in the plan. We feel this should be incorporated into a monitoring and treatment plan that may run as long as five years. The current attempts by PSE&G are pointing to a five-year plan that involves an initial broad treatment with subsequent spot treatments over the next four years to eradicate this species. The follow up spraying should occur around 9/15 of each year as long as the head is tasseled and it is before the first frost. This timing will achieve the most benefit from the spray. Great care should also be given to not introduce any purple loosestrife in the disturbed areas. This species can be treated with the Phragmites. Warm seasonal grasses should be planted in the upland areas and the spartina alternaflora should reseed by its self. Spartina patens may have to be replanted to achieve reestablishment if none are present in the area. The entire project area should be treated including the area around the MUA. The mosquito commission may assist with helping to restore tidal flows. All existing creeks and ditches should be cleaned of human trash (old boats, etc.).

Pews Creek Gate

The construction of these gates should not interfere with the migration of glass eels up the creek 2/1 – 3/30. Coffer dams maybe used as long as they are constructed prior to 2/1. We have concerns about the long-term effects on salt marsh vegetation. Will this passage allow for the current volume of salt water to remain and not be limited and cause intrusion by freshwater species? Perhaps this should be monitored.

Restoration Concerns

Two areas on Port Monmouth Road, one just south of Pews Creek, almost across from the marina entrance, and the other at the junction of Church Street should be restored to previous, lower elevations. Restoration of spartina patens and open water marsh management ditches will be needed to restore tidal flow.

Additional Concerns

What happens if power is interrupted? Can gates and floodwalls be opened manually?

Please contact Don Wilkinson (856-785-0455) of the DFW if you have any questions regarding the above comments on potential impacts to natural resources.

CULTURAL RESOURCES

Most cultural resource issues associated with the project have been previously addressed. However, our Department's Historic Preservation Office looks forward to receiving the results of:

- Phase II testing at the prehistoric Late Woodland archaeological site (28 MO 272), and
- Phase I testing (with subsequent assessment and treatment if sites are identified) of areas not previously tested archaeologically within the C2 ponding/interior drainage facility area.

They also look forward to receiving the opportunity to review any environmental mitigation areas and borrow areas, which may be identified in the future and have not yet been assessed for archaeological and historic site potential.

If you have any questions regarding cultural resources issues, please contact Deborah Fimbel (609-984-6019) at the Historic Preservation Office.

PARKLAND

Approvals may be required, through our Department's Green Acres Program, for project construction activities that would cause a diversion from conservation and/or recreation use or negatively impact parkland parcels that come under the jurisdiction of the Green Acres Program. We acknowledge that the proposed undertaking is a cooperative project between the federal government and the NJDEP. The Draft EIS states that there will not be negative impacts to parkland. A definitive determination will have to be made on each parkland parcel in the area of the project. Thus each municipal, county and State owned parcel in the project area must be identified and a determination made as to its status as parkland. If a diversion exist, compensation in the form of replacement land may have to be provided.

REGULATORY REQUIREMENTS

The Draft EIS notes pending approvals with our Department. We encourage continued coordination with the various appropriate programs of our

The District Response to NJDEP, OPC DEIS Comments
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

NJDEP, OPC Comment 1 (page 1, paragraph 2): The Division of Fish and Wildlife (DFW) is concerned that the DEIS does not contain detailed design characteristics of the fore slopes of the proposed dune. In addition, the DFW would like to see an irregular design of the face and not just a straight bank. The DFW does not agree with the proposal to create piping plover habitat within the dune area. The DFW strongly recommends that five nesting structures for ospreys be built as part of the mitigation.

The District's Response 1: Detailed design features of the dune and berm will be developed in the next Pre-construction, Engineering and Design (PED) phase. However, the feasibility level design is shown on Figure 24 in the Main Report. The District will coordinate with the NJDEP to determine the feasibility of implementing local preferences regarding the dune face.

The implementation of the selected bayshore plan is to provide shore protection. The creation of potential piping plover nesting habitat is indirect. Over the past few years, piping plovers have nested on new beaches along the Atlantic coastline that were constructed by the District. Monitoring of these non-barrier island beaches have found that piping plovers had the highest nesting productivity in the state. The District proposes to implement a piping plover monitoring program similar to the existing monitoring programs along the Atlantic coast. At this time, nesting platforms for ospreys are not proposed. However, the District will continue to coordinate with the NJDEP to explore their construction.

NJDEP, OPC Comment 2 (page 2, paragraph 2): The DFW has some concerns about the source of material. The DFW agrees with the use of the Sea Bright Borrow site and/or the use of Sandy Hook channel dredging. The use of suitable material from the mouth of Pews Creek and Compton Creek should be explored and time restrictions adhered to.

The District's Response 2: The District has explored the possibility of using the material at the mouth of both Pews Creek and Compton Creek. The results of the analysis conclude that the material was not suitable because of incompatible grain size. Local dredging practices however, are likely to continue with beach disposal which could somewhat reduce the amount of offshore material needed for the project.

NJDEP, OPC Comment 3 (page 2, paragraph 3): If horseshoe crabs are present on the beach during dune construction then a timing restriction of 5/1-8/1 would be necessary for their protection and their benefits to shorebird resources.

The District's Response 3: The width of the existing beach is narrow and suggests that either minimal or no horseshoe crab mating occurs. Consequently, a timing restriction is not warranted. The District does acknowledge that the implementation of the selected plan may improve the mating and spawning habitat of the horseshoe crab. A timing

restriction for subsequent renourishment efforts may be warranted, depending upon the future number of horseshoe crabs spawning at the project area.

NJDEP, OPC Comment 4 (page 2, paragraph 4): The DFW is concerned about the water depth under the fishing pier at the completion of the project. Will the beach replenishment decrease this water depth and result in a reduction of angling recreation. Is a pier extension planned?

The District's Response 4: The District expects minimal affects to recreational fishing from the pier because the selected plan cost has a provision to extend the fishing pier based on the beach fill template.

NJDEP, OPC Comment 5 (page 2, paragraph 5): If a levee is constructed the DFW has a long-term concern about its effect on salt marsh vegetation. The levee to the north of Pews Creek appears to be adding to the spread of *Phragmites* by hindering salt water flushing. In addition, DFW has the following recommendations:

- The levee should be planted in warm seasonal grasses for its wildlife value.
- No walking or bicycle paths should be constructed on the levee.
- Pews Creek levee and the dredge spoil bank should be planted in warm seasonal grasses and native shrubs.
- The use of silt fence during construction of the new levee is recommended to prevent silting of Compton Creek.
- If silting can't be contained then a timing restriction of 4/1 – 6/30 would be required to protect anadromous fish.
- To protect the levee the trapping of muskrats is strongly recommended.

The District's Response 5: The District agrees that the wetlands on the protected side of the levee will likely be converted into *Phragmites*. This indirect impact to wetlands was included as a component of the impact assessment and development of mitigation.

The District will coordinate with the NJDEP and other resource agencies regarding the possibility of planting vegetation that is not normally planted on Corps levees. A detailed levee planting plan will be developed in the next PED phase. A component of the levee monitoring plan is to ensure the successful growth of planted species. The use of recreational pathways on top of the levee is at the discretion of the non-Federal sponsor and local municipality. A Soil Erosion and Sediment Control permit will be secured from the County Soil Conservation District prior to the initiation of construction. Best management practices to minimize erosion and runoff will be implemented during construction. Therefore, a timing restriction is not needed. The District does not intend to trap muskrats. Rodent control is the responsibility of the non-Federal sponsor and will be identified in the O&M manual.

NJDEP, OPC Comment 6 (page 3, paragraph 1): The DFW is concerned that the local mosquito commission was not contacted. Also, the DFW is concerned about the design encouraging the proliferation of freshwater mosquitoes and its relationship to the West Nile virus.

The District's Response 6: The local mosquito commission was contacted and attended meetings that the District had with the local officials. The District will continue to coordinate with the local mosquito commission to ensure that they are aware of these new freshwater wetlands, so appropriate control measures are implemented.

NJDEP, OPC Comment 7 (page 3, paragraph 1): While various pumps are mentioned, there is no mention of any kind of screening to prevent beneficial fishes from being entrapped. This potential problem should be addressed.

The District's Response 7: The District coordinated with the NJDEP, DFW and the NMFS to determine the importance of finfish use in Pews Creek. The results of the coordination concluded that the finfish use in Pews Creek was minimal and that sampling was not justified. Accordingly, it is anticipated that pumps will have little or no impact to finfish. In addition, the species selection process conducted by the interagency HEP team determined that no long-term adverse impacts to finfish would result from the implementation of the selected plan.

NJDEP, OPC Comment 8 (page 3, paragraph 2): The treatment of *Phragmites* should be detailed and recommendations for treatment are provided by the DFW. Great care should also be given to prevent the introduction of purple loosestrife into disturbed areas.

The District's Response 8: The District will continue to coordinate with the NJDEP and other resource agencies during development of the details of the Wetland Mitigation Plan to ensure its success. A detailed Wetland Mitigation Plan will be prepared in the next PED phase.

NJDEP, OPC Comment 9 (page 3, paragraph 3): The DFW is concerned that the construction of the Pews Creek tide gate could interfere with the migration of glass eels up the creek from 2/1-3/30. Coffer dams maybe used as long as constructed prior to 2/1. Will the Pews Creek passage allow for the current volume of salt water to remain and not be limited and cause the intrusion by freshwater species? Perhaps this should be monitored.

The District's Response 9: The District agrees with the recommendation to monitor the Pews Creek wetland. Based on the District's hydrodynamic model of Pews Creek, the placement of a storm gate in Pews Creek will have minimal effect on the daily tidal cycle. Post-construction monitoring of the marsh is proposed to substantiate this position. The District will continue to coordinate with the NJDEP and other resource agencies regarding the development of monitoring details, sampling methodologies and

impact threshold levels. A detailed Pews Creek monitoring plan will be prepared in the next PED phase. The District will take appropriate corrective action, if needed, based on the results of the monitoring program. In addition, coordination with the NJDEP, DFW and NMFS suggest that glass eels do not use Pews Creek. Therefore impacts to glass eels are not a concern and a timing restriction is not justified.

NJDEP, OPC Comment 10 (page 3, paragraph 4): Two areas on the Port Monmouth Road, one just south of Pews Creek, almost across from the marina entrance, and the other at the junction of Church Street should be restored to previous elevations. Restoration of *Spartina patens* and open water marsh management ditches will be needed to restore tidal flow.

The District's Response 10: The purpose of the present study is for hurricane and storm damage reduction. Restoration concepts are generally considered under separate Corps study authorities or resolutions that indicate restoration as a study purpose. The District could potentially investigate these sites under separate authority.

NJDEP, OPC Comment 11 (page 4, paragraph 1): DFW is concerned that if the power is interrupted whether or not the tide gates can be operated manually.

The District's Response 11: The flood control system will be activated by dedicated personnel from the local municipality. The three road closure gates will each require a two-person crew to operate. These gates will be operated manually. The sector gate at Pews Creek will be operated by an electric motor, which requires no warm up, and which must be activated by an onsite operator. The sector gate was selected because of its ease of operability and maintenance. Provisions will be investigated for the capability to have an alternate power source in case of power failure. These design features will be refined during the Pre-construction, Engineering and Design phase.

NJDEP, OPC Comment 12 (page 4, paragraph 2): The OPC's, Historic Preservation Office looks forward to receiving the results of:

- Phase II testing at the prehistoric Late Woodland archaeological site (28 MO272) and
- Phase 1 testing of areas not previously tested archaeology within the C2 ponding/interior drainage facility area

The District's Response 12: The District will continue to coordinate with the NJSHPO regarding the results of further testing at: 1) Areas not previously tested at the Phase I level of effort within the C2 ponding/interior drainage facility area (i.e., potential natural storage area) and 2) The prehistoric Late Woodland archaeological site (28 Mo 272) (Phase II testing).

NJDEP, OPC Comment 13 (page 4, paragraph 3): Approvals may be required, through the OPC's, Green Acres Program, for project construction activities that would cause a

diversion from conservation and/or recreation use or negatively impact parkland parcels that come under jurisdiction of the Green Acres Program. A definitive determination will have to be made on each parkland parcel in the area of the project. Thus, each municipal, county and State owned parcel in the project area must be identified and a determination made as to its status as parkland. If a diversion exists, compensation in the form of replacement land may have to be provided.

The District's Response 13: No Green Acres diversion is expected because the plan formulation process included measures to extend the beach berm and dune further seaward in order to avoid any impacts or diversions from conservation or recreation.

NJDEP, OPC Comment 14 (page 4, paragraph 3): The OPC recommends continued coordination with various programs at the NJDEP during the next phases.

The District's Response 14: The District agrees with the OPC comment and intends to coordinate with the appropriate offices of the NJDEP throughout the project.

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 22, 2000

Environmental Assessment Section
Environmental Analysis Branch

Ms. Dorothy P. Guzzo
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625-0404

Attention: Deborah Fimbel

Dear Ms. Guzzo:

The U.S. Army Corps of Engineers, New York District (Corps), has received and responded to comments from the Office of Program Coordination with respect to the cultural resources section of the Draft Feasibility Report and Draft Environmental Impact Statement entitled *Raritan Bay and Sandy Hook Bay Hurricane and Storm Damage Protection Project, Port Monmouth, Middletown Township, Monmouth County, New Jersey* as follows:

Response to NJDEP, OPC Comment 12: The New York District will coordinate with NJSHPO regarding the results of further testing at:

- Areas not previously tested at the Phase I level of effort within the C2 ponding/interior drainage facility area (i.e., potential natural storage area) and

- The prehistoric Late Woodland archaeological site (28 Mo 272) (Phase II testing)

Thank you for your comments. If you have any questions or comments, please contact John Killeen, Project Archaeologist at (212) 264-0473.

Sincerely,

Roselle E. Henn
Acting Chief, Environmental Analysis Branch

cc: Paul Sabalis, Study Manager, ACOE
Mark Burlas, Project Biologist, ACOE

THE TOWNSHIP OF MIDDLETOWN

Environmental Commission

One Kings Highway
Middletown, NJ 07748-2594
Tel: (732) 615-2000
Fax: (732) 957-9090

Organized December 14, 1667
"Pride in Middletown"

May 23, 2000

Mr. Mark H. Burlas
Senior Wildlife Biologist
CENAN-PL-EA
26 Federal Plaza
New York, N.Y. 10278-0090

Re: Draft EIS
Feasibility Report for Hurricane &
Storm Damage Reduction
Port Monmouth, New Jersey

Dear Mr. Burlas:

The Middletown Township Environmental Commission has reviewed the subject document and will present the following comments. The comments cite and follow the numbered paragraphs presented in the document and are not ranked by importance.

60. The Monmouth County Parks System as a wetland mitigation task associated with the construction of the Church Street bridge over Compton Creek has removed the railroad embankment.

65. The paragraph insinuates that "natural" wetland filling is bad. Is the Corps intending to fight the natural wetland cycle? If so, how will wetland filling be fought and where will the sedimentation occur?

68. Much of the dune berm has been damaged by Middletown authorities not enforcing dune protection ordinances. ATV activity has been witnessed by a Commission member in company with a local police officer who, when reminded, took no action to stop the dune grass destruction.

Table 2 on page 30 documents 300 structures in the Compton Creek basin, which will remain, unprotected after the proposed project is constructed.

102. One area can not be favored over another. The Port Monmouth side of the Compton Creek basin is being favored over the Belford side, which has no protection.

108. Zoning changes can reduce future growth and limit the people exposed to flood damage. Project construction can provide a sense of security and promote further growth, which would be negatively impacted in the future when the project can not be maintained or the effects of sea level rise can not be stopped.

109. It says that floodproofing generates a false sense of security. The same is true about levees.

113. Where will the Monmouth County marina place its dredged material since a proposed flood control structure is within the current disposal area? Past sediment analyses have revealed toxin levels exceeding NJDEP Criteria for beach placement.

114. No high ground on the right bank of Compton Creek is claimed yet it is the location of the Monmouth County ferry docks.

165. A structure should not be designed based on information obtained from borings 175 feet from the proposed structure location. Borings should be performed within the structure footprints and should be more closely spaced than the previous 1,500 foot frequency.

168. The proposed structures cut across the Henry Hudson Rail-Trail Park. Trail re-grading or flood gates, like in the existing Pews Creek Flood structure, are required to maintain the trail right-of-way.

202. Nourishment is a perpetual requirement. Who will fund the task after 50 years? Also, beach nourishment will mean longshore sand movement resulting in faster shoaling rates in either/or the Pews Creek or Compton Creek channels. Where will the funding come from for the more frequent dredging tasks? Monmouth County and the Army Corps of Engineers are responsible for dredging the Pews Creek or Compton Creek channels, respectively. Proposed daily ferry service out of Compton Creek would not be tolerant to shoaling.

242. What is the lifetime and reserve capacity of the Sea Bright borrow area? Sub-aqueous sand mining is becoming an unfavorable venture off this area of the New Jersey coast. Also, is sand grain size being considered as part of the sand source evaluation? Mis-matched grain sizes could result in the accelerated disappearance of the placed dunes of beach nourishment.

253. Salt marsh restoration by eradicating Phragmites with herbicides was attempted by the Little Silver Environmental Commission. Vocal opposition by the neighboring residents killed the project. There are many residents close to the proposed marsh restoration areas who may also oppose herbicide applications.

279. Since when will levee/floodwall "features" in someone's backyard enhance their property?

284. Of the 50% state share of the project cost, what is Middletown Twp. committed to pay and does that include initial cost over-runs and unplanned beach nourishments?

Yellow DEIS Page 25 – The Geology section is TOTALLY wrong. From what state was the author of this section?

Volume III-1 Page A-44 – The different shorelines need to be denoted with either patterned lines or colors.

The above comments address specific paragraphs of the Draft EIS document. A general and most important concern of the Environmental Commission is the impact the proposed project will have on the Belford community. When the project is finished and functional, flood water will still enter Compton Creek with the intention of flooding the low lying areas. However, <u>now</u> the flood storage capacity has been reduced by the levees blocking the formerly flooded low areas of the Compton Creek basin in Port Monmouth. The volume of water needs to go somewhere yet is blocked by the levees in a Compton Creek basin of lower flood storage capacity. This could lead to higher flood water levels on the east side of the Compton Creek basin in Belford and farther upstream areas. The modeling of the project's impact on increased water levels only addressed the Raritan Bayshore where, when compared to the volume of water, the project's impact was infinitesimal. The model did not, and should, focus specifically on the Compton Creek basin and the effects of the project on water levels within the watershed. Belford is getting in position for a triple hit: 1) Project-displaced Bay flood waters from Port Monmouth to Belford, 2) increased upland runoff from continued development coinciding with nor'easter flooding, and 3 continued sea level rise. The project's impact on Belford concerns us.

Very truly yours,

Middletown Environmental Commission

Michael S. Fedosh

Michael S. Fedosh
Chairman

cc: Middletown Township Committee
Monmouth County Parks System

The District Response to Middletown Township DEIS Comments
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

Middletown Township Comment 1 (page 1, paragraph numbered60): The Monmouth County Parks System as a wetland mitigation task associated with the construction of the Church Street Bridge over Compton Creek has removed the railroad embankment.

The District's Response 1: The sentence in the report reads: "including the former fill embankment" The selected mitigation plan to offset impacts to wetlands and wildlife resources is proposed to take place in the Pews Creek study area and is not associated with the old railroad embankment in the Compton Creek study area.

Middletown Township Comment 2 (page 1, paragraph numbered65): The paragraph insinuates that "natural" wetland filling is bad. Is the Corps intending to fight the natural wetland cycle? If so, how will wetland filling be fought and where will the sedimentation occur?

The District's Response 2: A *Phragmites* encroachment model was utilized in this study as a means of projecting deleterious effects of natural filling of salt marsh by *Phragmites*. Wetland filling in this circumstance means creation of a lower value cover type as compared to salt marsh for the indicator Habitat Evaluation Procedure (HEP) species. As part of the selected mitigation plan, an ancillary long-term benefits associated with salt marsh preservation is anticipated. The conversion of *Phragmites* to salt marsh at Pews Creek will slow the encroachment of *Phragmites* into the salt marsh. In addition, the proposed levee at Compton Creek will serve as a protective barrier against the spread of *Phragmites*.

Middletown Township Comment 3 (page 1, paragraph numbered68): Much of the dune berm has been damaged by Middletown authorities not enforcing dune protection ordinances. ATV activity has been witnessed by a Commission member in company with a local police officer who, when reminded, took no action to stop the dune grass destruction.

The District's Response 3: The report cites that "much of the dune's protective berm has been lost." It may be that other, local factors have contributed to accelerated loss of berm, but this is a local, non-Federal issue for resolution. Dune walkovers are included as project features. There are sufficient contingencies on all costs, and if any additional fill quantities are ultimately required to restore the design fill templates, this should not pose a problem. However, once a project is turned over to the State upon construction, the operation, maintenance, repair, rehabilitation and replacement responsibilities contractually fall to the local jurisdictions in accordance with a project cooperation agreement.

Middletown Township Comment 4 (page 1, paragraph 5): Table 2 on page 30 documents 300 structures in the Compton Creek Basin, which will remain, unprotected after the proposed project is constructed.

The District's Response 4: Response: Concur. Paragraph 153 in the main report discusses screening on an alternative alignment on the Compton Creek side. However, formulation is based on the National Economic Development (NED) plan, the one that affords the most net excess benefits. Structures in these Compton Creek damage reaches would have significant damage as frequently as structures in other parts of the study area. The annual benefit for protecting these structures does not justify the added annual cost of the protective measures.

Middletown Township Comment 5 (page 1, paragraph numbered102): One area can not be favored over another. The Port Monmouth side of the Compton Creek Basin is being favored over the Belford side, which has no protection.

The District's Response 5: One area is not being favored over another. Both areas were studied. The decision on plan alignment is based on benefit cost analysis.

Middletown Township Comment 6 (page 1, paragraph numbered108): Zoning changes can reduce further growth and limit the people exposed to flood damage. Project construction can provide a sense of security and promote further growth, which would be negatively impacted in the future when the project can not be maintained or the effects of sea level rise can not be stopped.

The District's Response 6: A Project Cooperation Agreement (PCA) will outline project construction responsibilities. Zoning changes may be an effective future local measure in conjunction with the selected plan of improvement. The PCA requires local floodplain management practices.

Middletown Township Comment 7 (page 1, paragraph numbered109): It says that floodproofing generates a false sense of security. The same is true about levees.

The District's Response 7: All protection plans have limits.

Middletown Township Comment 8 (page 1, paragraph numbered113): Where will the Monmouth County marina place its dredged material since a proposed flood control structure is within the current disposal area? Past sediment analyses have revealed toxin levels exceeding NJDEP criteria for beach placement.

The District's Response 8: The disposal area is located on the west side of Pews Creek, outside of the proposed project area. The implementation of the selected plan will not impact the disposal area.

Middletown Township Comment 9 (page 1, paragraph numbered114): No high ground on the right bank of Compton Creek is claimed yet it is the location of the Monmouth County ferry docks.

The District's Response 9: Extending the project to cross over Compton Creek near the ferry dock would be extremely costly requiring a major gate closure across a busy waterway, and the annual storm damage reduction benefits would not justify such an expenditure.

Middletown Township Comment 10 (page 2, paragraph numbered 165): A structure should not be designed based on information from borings 175 feet from the proposed structure location. Borings should be performed within the structure footprints and should be more closely spaced than the previous 1,500-foot frequency.

The District's Response 10: The District agrees with this comment. Additional borings will be taken during the next Pre-construction, Engineering and Design phase.

Middletown Township Comment 11 (page 2, paragraph numbered 168): The proposed structures cut across the Henry Hudson Rail-Trail Park. Trail regrading or flood gates, like in the existing Pews Creek Flood structure, are required to maintain the trail right-of-way.

The District's Response 11: The District agrees with this comment. Trail regrading will occur as part of the project.

Middletown Township Comment 12 (page 2, paragraph numbered 202): Nourishment is a perpetual requirement. Who will fund the task after 50 years? Also, beach nourishment will mean longshore sand movement resulting in faster shoaling rates in either/or Pews Creek or Compton Creek channels. Where will the funding come from for the more frequent dredging tasks? Monmouth County and the Army Corps of Engineers are responsible for dredging Pews Creek or Compton Creek channels, respectively. Proposed daily ferry service out of Compton Creek would not be tolerant to shoaling.

The District's Response 12: After 50 years, renourishment would become a non-Federal responsibility. Beyond 50 years, only a Reevaluation or Reformulation type study could possibly allow for additional Federal involvement in beach nourishment. The potential increase in channel maintenance dredging is recognized, and as such annualized project costs on page 87 include $40,000 annualized to account for this contingency. The Corps Operation and Maintenance authority would still fund maintenance associated with the Federal project at Belford Harbor/Compton Creek. The new jetties at Pews Creek would minimize any increase in shoaling.

Middletown Township Comment 13 (page 2, paragraph numbered 242): What is the lifetime and reserve capacity of the Sea Bright borrow area? Sub-aqueous sand mining is becoming an unfavorable venture off this area of the New Jersey coast. Also, is sand grain size being considered as part of the sand source evaluation? Mis-matched grain sizes could result in the accelerated disappearance of the placed dunes of beach nourishment.

The District's Response 13: The reserve capacity of the Sea Bright borrow source is ample for the requirements of this project. After initial fill, subsequent renourishments every 10 years of 127,300 CY would be accomplished through trucking. Sand grain sizes were considered in the evaluation. Compatibility analyses have been performed to determine borrow versus in-situ soil suitability.

Middletown Township Comment 14 (page 2, paragraph numbered 253): Salt marsh restoration by eradicating Phragmites with herbicides was attempted by the Little Silver Environmental Commission. Vocal opposition by the neighboring residents killed the project. There are many residents close to the proposed marsh restoration areas who may also oppose herbicide applications.

The District's Response 14: The District appreciates this comment and is sensitive that the use of a herbicide may be a concern by area residents. The District plans to initiate coordination with the local residence regarding the use of a herbicide in the next Pre-construction, Engineering and Design (PED) phase.

Middletown Township Comment 15 (page 2, paragraph numbered 279): Since when will levee/floodwall "features" in someone's backyard enhance their property?

The District's Response 15: Noted. The paragraph meant to indicate that there will be enhancements, which will include an expanded Henry Hudson Trail and vegetated levees.

Middletown Township Comment 16 (page 2, paragraph numbered 284): Of the 50% state share of the project cost, what is Middletown Twp. Committed to pay and does that include initial cost overruns and unplanned beach nourishments?

The District's Response 16: The Federal government will cost share the PED phase and construction with the State of New Jersey at 65% Federal and 35% non-Federal for initial construction. Renourishment cost sharing will be 50% Federal and 50% non-Federal. Scheduled emergency and post storm rehabilitation costs, as indicated on page 93, would be cost shared equally between the Federal government and the State of New Jersey. The local share of costs would generally be about 25% of the State share of costs. The State of New Jersey will have a separate sub-agreement with local jurisdictions and will sign the PCA with the Federal government.

Middletown Township Comment 17 (page 2, paragraph Yellow DEIS Page 25: The geology section is TOTALLY wrong. From what state was the author of this section?

The District's Response 17: ***The District's Response 1:*** The geology description presented in Section 3.1.1 (page 25) of the DEIS was more regional based. Accordingly, the District has rewritten this section to be more site-specific and will update the FEIS to incorporate the following new text:

"The Port Monmouth Project area is located in the Coastal Plain Physiographic Province, which forms the eastern margin of the North American continent. Its surface has a gentle slope to the southeast that generally does not exceed 5 or 6 feet to the mile (Wilber and Johnson 1940).

The major rock unit in the Port Monmouth Project area consists of the Englishtown Sand (Ket) of the Cretaceous (NJDEP 1999). This unit consists of white or yellow quartz sand with some mica and is sparingly glauconitic. Some beds of this unit have been cemented by iron oxide into massive stone. Thin laminae of fine clay can also be found in some locals. The thickness of the unit decreases from 140 feet near the Atlantic Highlands to less than 20 feet thick in southern portions of the state (Wilber and Johnson 1940)."

Middletown Township Comment 18 (page 2, paragraph Volume III-1 Page A-44)): The different shorelines need to be denoted with either patterned lines or colors.

The District's Response 18: The District agrees with this comment and will revise the profile lines so that the different shorelines can be identified.

Middletown Township Comment 19 (page 2, last paragraph): Final concerns cited by the Commission focused on: displaced flood waters, increased upland runoff from continued development, and sea level rise.

The District's Response 19: Storage loss was minimal on the Compton side with the levee in place. Sea level rise has been incorporated into the design for the period of analysis of the project. Continued development is an issue of concern, but floodplain management is locally executed. The PCA requires floodplain management planning.

Reference List

Wilber, C.P. and M.E. Johnson. 1940. The Geology of New Jersey. Department of Conservation and Development, State of New Jersey, Geologic Series, Bulletin 50. Trenton, NJ. 203 pp.

NJDEP. 1999. GIS Resource Data Series 1- Volume 2. New Jersey Department of Environmental Protection, Bureau of Geographic Information & Analysis, Office of Information Resources Management.

U.S. Department of Transportation
United States Coast Guard

Commander
First Coast Guard District

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16591/PEWS, COMPTON CREEKS/NJ

March 24, 2000

Mr. Mark H. Burlas
Senior Wildlife Biologist
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Burlas:

We have reviewed the Main Report and Draft Environmental Impact Statement (DEIS) for the proposed Raritan Bay and Sandy Hook Bay, Hurricane and Storm Damage Reduction Project for Port Monmouth and Middletown Township, New Jersey.

Since no bridge will be directly impacted by the project, we will have no objection or concern regarding the proposal.

Sincerely,

Gary Kassof
Bridge Administrator
First Coast Guard District
By direction of the District Commander

The District Response to the USCG DEIS Comment
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

USCG Comment 1 (page 1, paragraph 2): Since no bridge will be directly impacted by the project, we have no objection or concern regarding the proposal.

The District's Response 1: The District agrees with this comment.

FEIS APPENDIX E

DRAFT U.S. FISH AND WILDLIFE COORDINATION ACT 2b 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

February 25, 1999

Environmental Analysis Branch
Environmental Assessment Section

Mr. Clifford G. Day
Supervisor, New Jersey Field Office
U.S. Fish and Wildlife Service
Ecological Services, Region 5
927 North Main Street
Building D1
Pleasantville, New Jersey 08232

Re: Raritan Bay and Sandy Hook Bay
Port Monmouth, New Jersey

Dear Mr. Day:

The U.S. Army Corps of Engineers, New York District (District) would like to thank the U.S. Fish and Wildlife Service (Service) for the opportunity to respond to the Service's draft Fish and Wildlife Coordination Act 2b report. Attached are our comments to recommendations made by your office (see Attachment 1). The District intends to distribute the DEIS for public and agency review in the near future.

If you have any questions or need additional information, please contact Mark Burlas of my staff at 212-264-4663. The District looks forward to continuing our coordination.

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Attachment

Copy Furnished:
Mr. Bernard Moore, P.E.; NJDEP

USFWS (Service) Recommendation 1: Continue to work together with the HEP team to revise the HEP study to include the June 1998 plan revisions and/or any future alternative designs.

District Response: The District concurs. The District will continue to work with the interagency HEP team and coordinate the assessment of impacts for all revisions to the selected plan with the interagency HEP team.

Service Recommendation 2: Continue Section 7 consultation with the Service, due to changes in the proposed project plan for beach fortification and nourishment and potential impacts (adverse and beneficial) to the piping plover.

District Response: The District concurs. The District feels that the continuation of informal coordination of Section 7(a)(2) of the Endangered Species Act (ESA) with the Service is appropriate. The District has consulted and coordinated with several individuals from the Service throughout the project, and looks forward to its continuation.

The fortification of the existing dune will result in more sandy beach habitat. The expanded sandy beach can provide additional suitable habitat for shorebirds to nest, to include the Federally-listed threatened piping plover (*Charadrius melodus*). The District and the Service have mutually agreed upon that beach nourishment can provide benefits to both Federal- and State-listed endangered and threatened species, as well as non-designated shorebird species. This conclusion was documented as a result of a partnership between the District and the Service to monitor shorebirds as a component of the biological monitoring program along 20-plus miles of nourished Atlantic coast shoreline in northern New Jersey.

The District feels that there is another opportunity to form a similar partnership with the Service, and suggests that we develop a limited post-construction shorebird monitoring effort to determine nesting utilization of shorebirds on the restored sandy beach. This component should target only those shorebird species that have a significant designation.

Service Recommendation 3: Survey the proposed area of beach fortification and nourishment for beach nesting birds prior to project implementation; following construction, monitor the area during the nesting season.

District Response: The District concurs to post-construction monitoring (see the District's response to Service Recommendation 2 above). However, the District does not agree with the need to conduct pre- and during-construction

monitoring of nesting shorebirds at the existing beach, because the existing beach is very narrow and often during high-tide. The District would like to request the Service to define the time period that is associated with "nesting season". The "nesting season" should be linked to only those shorebird species that have a significant designation.

Service Recommendation 4: Continue to coordinate with the NMFS to fulfill consultation requirements pursuant to Section 7 (a)(2) of the Endangered Species Act.

District Response: The District concurs. The District has consulted with the National Marine Fisheries Service (NMFS). This consultation concluded that no adverse impacts to threatened and/or endangered sea turtles and finfish are expected at the sand placement site. The District has consulted with the NMFS to assess the affects of dredging at the offshore borrow area to threatened and endangered sea turtles. This consultation resulted in the issuance of a Biological Opinion by the NMFS to the District regarding offshore dredging using a hopper dredge for the purpose of beach restoration. The District will adhere to all requirements, as defined in the subject Biological Opinion, during construction. Finally, coordination with the NMFS will continue because a representative from the NMFS is part of the interagency HEP team.

Service Recommendation 5: Continue to consider candidate species and State-listed species during project planning.

District Response: The District concurs. The District will continue to consider Federal- and State-listed threatened and endangered species, as well as, Federal candidate species. The District has consulted with the NJDEP, Natural Heritage Program regarding State-listed species. The outcome of this coordination concluded that the implementation of the project is not expected to adversely effect any State-listed species.

Service Recommendation 6: Determine the potential impacts (positive and negative) as a result of proposed dune fortification and beach nourishment to ensure that any adverse environmental effects of the selected plan are minimized to the maximum extent possible, and that appropriate and practicable measures to compensate for any unavoidable impacts are included in the plan.

District Response: The District concurs. The implementation of the selected bay shore protection plan will provide substantial benefits by decreasing damages caused by hurricanes and wave attack, and provide additional habitat for

shorebirds to nest. (see the District's response to Service Recommendation 2 above). The initial bay shore protection plan was the construction of a secondary dune behind the existing dune. However, late in the study phase it was discovered that the footprint of a secondary dune would encroach onto NJDEP "Green Acres" property. Consequently, the District reevaluated the secondary dune alternative and decided to formulate a bay shore protection plan that would not involve real estate that is designated as NJDEP "Green Acres" property. This decision was made to avoid the many restrictions imposed on land that is designated as NJDEP "Green Acres" property.

The selected bay shore protection plan involves the fortification of the existing dune to a height of +16.0 feet NGVD. The fortification of the existing dune could only be expanded into the intertidal zone, because of restrictions imposed by the NJDEP "Green Acres" property designation.

The footprint of the design template of the proposed fortified dune will directly impact about 14.2 acres of intertidal zone; however no net-loss of intertidal habitat is expected. The District proposes to monitor the impact of the selected bay shore protection plan to mitigate for unavoidable effects to intertidal resources. The District does not intend to provide compensatory mitigation, because no net-loss of intertidal habitat is expected. The District proposes to monitor the recovery of intertidal infauna, epibenthic and finfish resources, finfish feeding habits, water quality, grain size and shorebird use. Except for the shorebird component, sampling for all of the monitoring components will involve 2 years of pre-construction, 1 year of during-construction and 2 years of post-construction. The shorebird component will be conducted only in the post-construction phase and only target shorebird species that have a special significance, such as the piping plover and least tern.

Service Recommendation 7: Follow the recommendations that were provided within the Service's planning aid letter (U.S. Fish and Wildlife the Service, 1998) (Appendix A) to modify the draft HEP study report to ensure an adequate assessment of the potential impacts of the proposed project on wildlife.

District Response: The District concurs. The District and the Service met on October 15, 1998 to discuss concerns of the Service as outlined in the subject planning aid letter. Based upon discussions at the meeting, the District is under the impression that the Service does not foresee any significant outstanding or unresolvable differences at the Pews Creek Study Area (PCSA) and Compton Creek Study Area (CCSA). In addition, the Service indicated that all of their concerns, as defined in the subject planning aid letter, have been appropriately addressed, pending their review of the DEIS that includes a revised HEP report.

The District believes that Service Recommendation 7 has been appropriately addressed and implemented based upon our October 15, 1998 meeting.

Service Recommendation 8: Continue to work with the HEP team to reach consensus on how to apply the hydrodynamic model (Pews Creek) and how to apply the Phragmites encroachment model, prior to application of either model to predict future habitat conditions for the HEP study. Use the revised and agreed-upon models to determine potential project-related impacts to evaluation species and other wildlife.

District Response: The District concurs. The District will continue to coordinate with the interagency HEP team. The District believes that Service Recommendation 8 has been appropriately addressed and implemented based upon our October 15, 1998 meeting. For further discussion, please see the District's response to Service Recommendation 7 above.

The hydrodynamic model developed for Pews Creek projected that the difference in daily tidal flow is negligible when comparing the no-action alternative to the with project with the storm gate in the open position. The District proposes to monitor the effects of the storm gate at the PCSA to confirm the projection of the hydrodynamic model. The PCSA monitoring program involves the placement of tidal gauges at strategic locations within the coastal saltmarsh ecosystem. The collection of data will involve: 1) two years of pre-construction to identify the ambient conditions; 2) during-construction; and, 3) at least 3 years of post-construction.

Service Recommendation 9: Re-analyze HEP study to determine cumulative project-related impacts to wildlife following prescribed HEP methodology as recommended in the Service's planning aid letter to the Corps (see Appendix A).

District Response: The District concurs. The District recalculated the future conditions of the no-action alternative and the project without mitigation using the Phragmites encroachment model and the equation for the sum of Cumulative habitat units (HUs). The results are the same as the Services' results as discussed in the subject planning aid letter. (see Appendix A, page 8 of the Service's draft 2b report). The District believes that Service Recommendation 9 has been appropriately addressed and implemented based upon our October 15, 1998 meeting. For further discussion, please see the District's response to Service Recommendation 7 above.

Service Recommendation 10: Investigate the feasibility of a partial buy-out of flood-prone structures to reduce the size of levees and floodwalls or to provide space for re-locating these structures to reduce adverse impacts to estuarine emergent wetlands.

District Response: During the preliminary plan screening process, non-structural measures were investigated as alternatives, including buyouts, road raisings and relocations. Generally, these measures are more expensive and less reliable methods of protection as compared to structural improvements. It became clear that these methods taken separately would not meet project goals.

Plan formulation sought to avoid impacts, and many initial plans, which had large footprint areas in the wetlands, were ruled out. Direct impacts are largely associated with the Compton Creek portion of the current alignment, which consists of a series of levees, floodwalls and road closure gates. The current alignment closely follows the edge of development. There are additional considerations with regard to site specific minimization of impacts along this alignment. Relocations and buyouts would add cost, in addition to having potentially adverse social impacts. The current alignment also allows for interior ponding storage. Shifts in the alignment could be problematic in terms of interior runoff and readily available easement locations. Additional shifts in alignment could also impact areas that may be sensitive from a cultural resources viewpoint.

The levee and floodwall heights are related to the level of protection, with risk and uncertainty considerations incorporated. Slight shifts in the alignment would likely not affect the required heights. For levees, the height, along with required side slopes, dictates the required base footprints. Partial relocations were considered, but in view of plan siting efforts already taken to avoid wetland impacts, additional relocations would increase project costs and reduce interior runoff storage and were not found to be feasible.

Service Recommendation 11: Coordinate with the NJDFG&W, the LURP and the Service to develop water management plans for any necessary pounding areas.

District Response: The District concurs. The District has met several times with the NJDEP, LURP and will continue to coordinate with the NJDEP, LURP as part of our acquisition of state permits. The District will continue to coordinate with the Service. The District does not feel that it's necessary to develop water management plans at the pounding areas, because the pounding areas consist

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April 26, 2000

Paul Sabalis
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Sabalis,

As a lifelong resident of the Middletown, NJ bayshore area and member of the area's oldest Real Estate firm I applaud the efforts in engineering the Port Monmouth storm damage reduction program.

The project falls short, though, in accomplishing what the prior work of the East Keansburg leeve did for homeowners protected by that "Hurricane Berm". Specifically that is to have removed those homes from the need to purchase flood protection insurance. These insurance premiums result in an average monthly expense of $40. per household. Not knowing the cost of raising the height of the project berm sufficiently to offer such flood protcction I can only posc thc qucstion: Why can't thc projcct bc built so as to relieve the protected homes from having to buy flood insurance?

I'll appreciate a response and your suggestions as to appropriate contacts to communicate this issue.

Sincerely,

Brian T. Compton

The District response to J. Crawford Compton, Inc.
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

District response:

The U.S. Army Corps of Engineers (Corps) has conducted a feasibility study for the purpose of hurricane and storm damage reduction at Port Monmouth. This study has been executed in partnership with the State of New Jersey, our local non-Federal partner. During a feasibility study, plans are screened for suitability to reduce potential storm damages. Additionally, from a Federal perspective. a selected plan must be the National Economic Development (NED) plan. This NED plan is considered optimum for investment versus anticipated benefits. Locally preferred plans or components may be recommended. but these incremental costs above the NED level are the responsibility of the non-Federal sponsor.

Several levee heights were investigated during the optimization process for Port Monmouth. The NED plan was determined to be a line of protection at +14 feet NGVD. This height does not meet FEMA requirements for certification. The increased incremental cost in selecting a +15.2 foot high line of protection, as a locally preferred plan, would be about $3 million dollars. This cost would not be cost shared by the Corps and would have to be borne by the local Sponsor. Accordingly, you should contact Middletown Township and the State of New Jersey, Department of Environmental Protection.

Oceans and Atmosphere
Washington, D.C. 20230

MFR: RCVD 3/28/00
HHB

March 22, 2000

Mr. Mark H. Burlas
Senior Wildlife Biologist
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Burlas:

Enclosed are comments on the Draft Environmental Impact Statement for Raritan Bay and Sandy Hook Bay, New Jersey Feasibility Report for Hurricane and Storm Damage Reduction Port Monmouth, New Jersey. We hope our comments can assist you. Thank you for giving us an opportunity to review this document.

Sincerely,

Susan Fruchter

Susan B. Fruchter
Acting NEPA Coordinator

Enclosure

MEMORANDUM FOR: Susan B. Fruchter
Acting NEPA Coordinator

FROM: Charles W. Challstrom
Director, National Geodetic Survey

SUBJECT: DEIS-0003-03 Raritan Bay and Sandy Hook Bay, New Jersey
Feasibility Report for Hurricane and Storm Damage Reduction
Port Monmouth, New Jersey

The subject statement has been reviewed within the areas of the National Ocean Service's (NOS') responsibility and expertise and in terms of the impact of the proposed actions on NOS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in the subject area is contained on the National Geodetic Survey (NGS) home page at the following Internet World Wide Web address: http://www.ngs.noaa.gov. After entering the NGS home page, please access the topic "Products and Services" and then access the menu item "Data Sheet." This menu item will allow you to directly access geodetic control monument information from the NGS data base for the subject area project. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

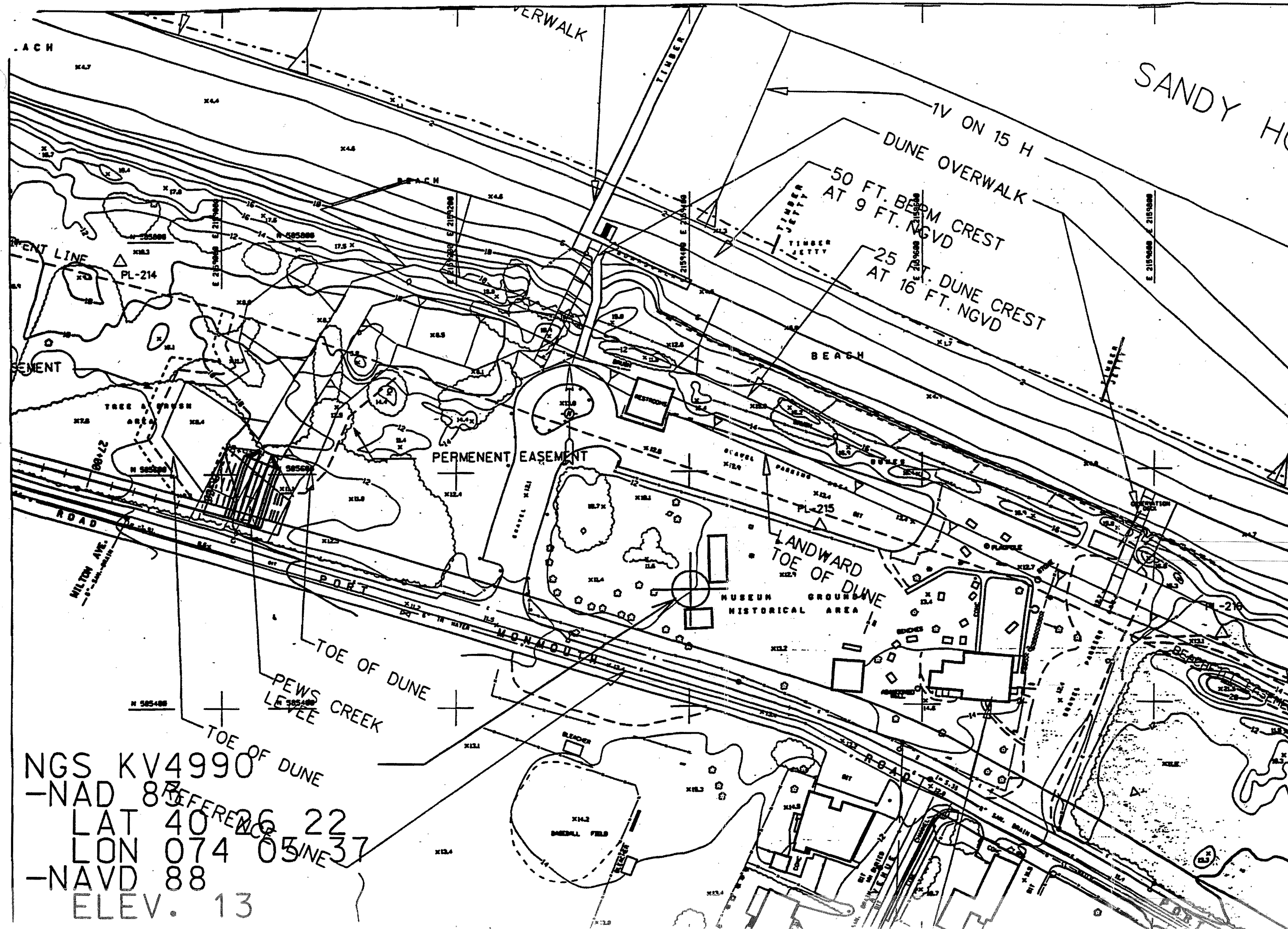
If there are any planned activities which will disturb or destroy these monuments, NGS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation. NGS recommends that funding for this project includes the cost of any relocation(s) required.

For further information about these geodetic monuments, please contact Rick Yorczyk; NOAA, NOS, National Geodetic Survey, N/NGS; SSMC3 8636, 1315 East West Highway; Silver Spring, Maryland 20910; telephone: 301-713-3230 x142; fax: 301-713-4175.

The identified plan provides for a 3,585 foot long flood wall and a 7070 foot levee along with beach fill and replenishment. There are also outlet structures (storm draining out falls). The resulting shoreline changes should be reflected on nautical charts. The out falls are chartable features affecting the safety of navigation. The Office of Coast Survey would like US Army

Corps Engineers as built drawings and surveys of this project upon completion so that any related changes can be accurately detailed on future editions of affected National Ocean Service nautical charts.

For further information about these charting activities, please contact Howard Danley; NOAA, NOS, Office of Coast survey, N/CS28; SSMC3 7458; 1315 East West Highway; Silver Spring, Maryland 20910; telephone: (301)713-2732 x105.


SANDY H
DUNE OVERWALK
TIMBER
1V ON 15 H
DUNE OVERWALK
50 FT. BERM CREST
AT 9 FT. NGVD
25 FT. DUNE CREST
AT 16 FT. NGVD
TIMBER JETTY
BEACH
PL-214
PL-215
PL-216
EASEMENT
TREE & BRUSH AREA
PERMENENT EASEMENT
RESTROOMS
LANDWARD
TOE OF DUNE
MUSEUM GROUNDS
HISTORICAL AREA
ROAD
PORT
MONMOUTH
MILTON AVE.
TOE OF DUNE
PEWS CREEK
LEVEE
TOE OF DUNE
REFERENCE LINE
BASEBALL FIELD
NGS KV4990
-NAD 83
LAT 40 26 22
LON 074 05 37
-NAVD 88
ELEV. 13

1" = 80'

NGS KV6226
-NAD 83
LAT 40 25 53
LON 074 05 43
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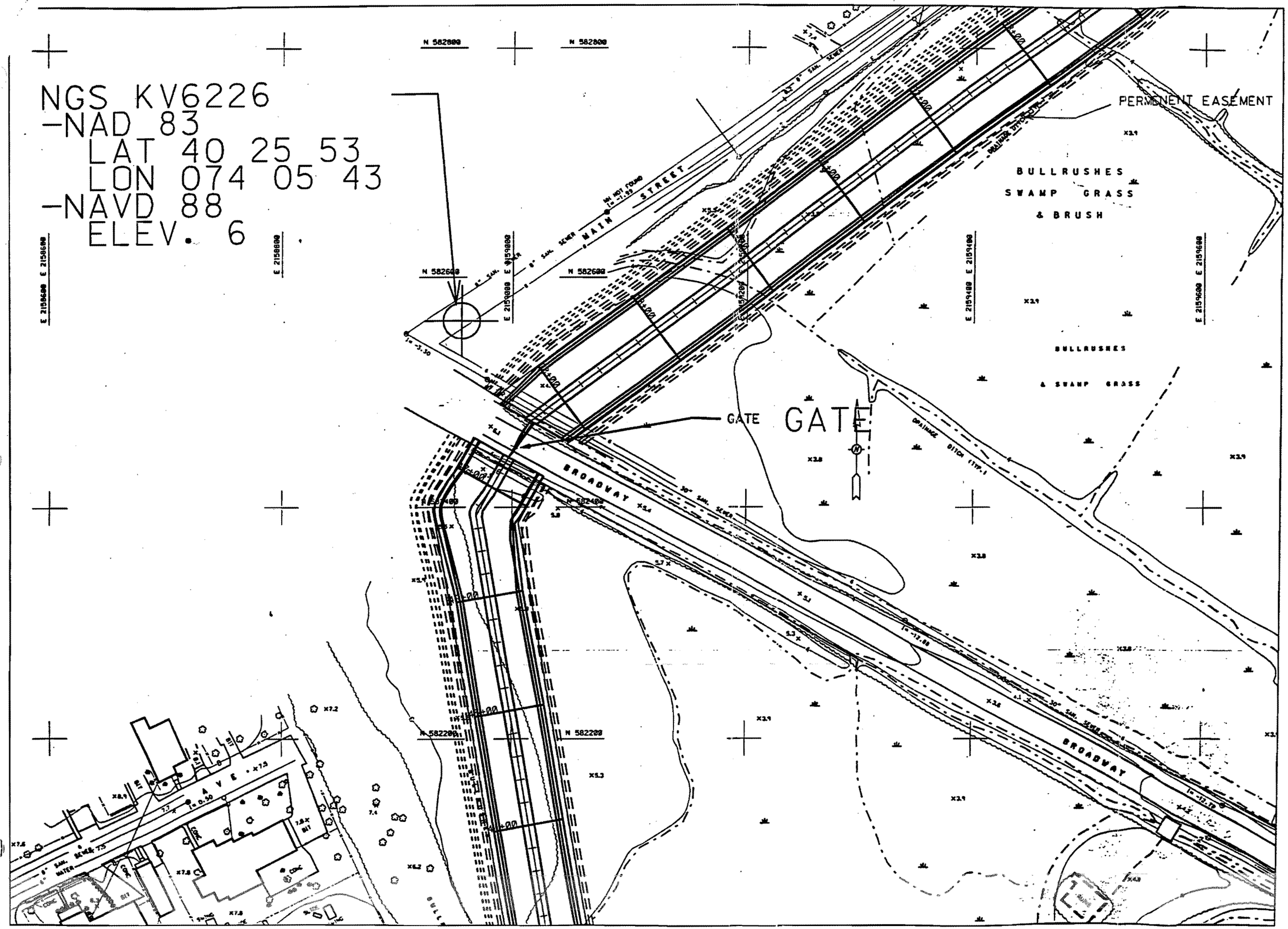
ELEV. 6 .



1" = 80'

B

The District Response to US Department of Commerce Comments
Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

District response:

Review of the National Geodetic Survey (NGS) geodetic control monument information for the study area verifies that no existing NGS control monuments are situated within the footprint of the proposed project improvements. There are two NGS monuments that are in the vicinity of the proposed alignment (KV 6226 and KV 4990). However, as indicated on the attached plans, they will not require relocation. As-built drawings for the project would be provided for updating of nautical charts.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

June 11, 1998

REPLY TO ATTENTION OF

Planning Division

Mr. Kurt Kalb
New Jersey Department of Environmental Protection
Bureau of Land Use Regulation
501 East State, 2nd Floor
Trenton, New Jersey 08625-0439

Re: Raritan Bay – Sandy Hook Bay
Combined Flood Control and Shoreline Protection Project
Port Monmouth, New Jersey
Middletown Township, Monmouth County

Dear Mr. Kalb:

Pursuant to our field visit, the District has flagged, surveyed and plotted the minor wetland boundary changes at the Compton Creek study area. These revisions have been incorporated into the electronic CAD/GIS files for the Port Monmouth Project, and are reflected on the enclosed Figures. Please replace the original Figure 4.5.1 provided in the Wetland Delineation Report (December 1997) with the revised Figure. I have enclosed three copies of the Figure for distribution at your office.

In addition, we have replaced the floodwall that was proposed in front of the Spy House with a dune. We hope that the placement of a dune in front of the Spy House resolves the visual aesthetic and CZM concern raised by your agency. The District expects to distribute the project's Draft Environmental Impact Statement to the public and agencies for their review in the near future. At that time we will officially apply for a Water Quality Certificate, Coastal Zone Management Consistency and a Tidal Wetland Permit.

If you require any additional information please contact Mr. Mark Burlas at either mark.h.burlas@nan02.usace.army.mil or 212-264-4663.

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Enclosures

CF: Mr. Bernard Moore, NJDEP

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
Planning Division

May 19, 1998

Mr. Kurt R. Kalb
Land Use Regulation Program
New Jersey Department of Environmental Protection
P.O. Box 439
501 East State, 2nd Floor
Trenton, NJ 08625-0439

Dear Mr. Kalb:

Thank you for participating in the coordination meeting with my staff on 11 March 1998 and for your letter dated 2 April 1998 in which you provided my office with preliminary comments on the Raritan Bay, Sandy Hook Bay, NJ feasibility study plans and findings.

Enclosed please find a package that addresses your comments. As discussed at the coordination meeting, we are scheduled to prepare a draft feasibility report in June 1998. At that time we will forward your office a copy of the report for further comment as part of the NEPA process.

I appreciate the cooperation of your staff in helping to formulate suitable plans to alleviate the flood problems in the Port Monmouth community. Your preliminary concerns and comments will assist in arriving at a plan that meets its required functional goals with avoidance and minimization of environmental and cultural resources impacts, and with acceptable consensus on mitigation.

We look forward to working with your office further in order to progress the project and continue to foster a positive working relationship as we strive to maintain the critical balance between project purposes and environmental resource stewardship.

If you have any questions, please contact Mr.Mark Burlas of my staff at (212) 264-4663.

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Enclosures

cc:
Bernard J. Moore, NJDEP, Div. of Engineering and Construction
Theodore A. Giannechini, Monmouth County Engineer
Spencer H. Wickham, Monmouth County Park System, Chief, Acquisition and Design
Joseph Leo, Middletown Township Administrator

NJDEP Comment Response

Comment #1: " At the March 11 meeting, you referred to a plan that differs from the November 1997 " Preliminary Plan Layout" previously furnished to us by your office. For instance, the dune location on the plan at our disposal differs from the location of the dune shown on your plan that you brought to the meeting. Please provide us with a plan that reflects the current design."

Response #1: Noted. Enclosed please find a 1"= 200' scale layout drawing which is the most current and representative of the layout that was discussed at your office on March 11 1998.

Comment #2: " Provide information on the relative costs of installing a floodwall vs. a levee for several representative heights under consideration for this project.

Response #2: Elevations of 14 ft and 15.2 ft are selected as typical comparison heights. On a per linear foot basis, the cost for the floodwall alignment at elevation 14 ft would be on the order of $264/LF more expensive than earthen levee with vinyl sheeting and $275/LF more expensive for the 15.2 ft elevation. Use of the floodwall could constitute a 40-50% increase in per linear foot costs for these representative heights. Plan optimization is still in progress and cost calculations are subject to revision. These ranges are only a rough current approximation; derived figures would be provided along with the draft report.

Comment #3: " Provide the reasons why the levee crest is designed to be ten feet wide."

Response#3: Corps of Engineers design criteria generally requires that crest widths be 10 feet wide. This dimension is primarily to allow where active levee inspection and emergency repairs or augmentation may be necessary.

Comment #4: " Provide a contour map of the tidal wetlands and show the extent of tidal inundation at spring high tide and for various storm events to the stage that the entire tidal wetlands are inundated. Based on this information and the elevation chosen for flood gate closure and estimated closure frequency, review the effects of floodgate closure on tidal wetlands."

Response #4: Enclosed are tidal wetland contour maps, which also show spring high tide inundation. It appears that the 5-ft stage elevation would be the critical closure elevation. The final elevation, closure frequency and effect on tidal wetlands are being assessed and will be presented along with the draft report to your office upon completion. Preliminary assessments indicated potential closings at 1 to 2 times a month as a worst case scenario with a tidal overlap of several cycles. More typical operation is likely to be 5-8 closure per year, depending on storm coincidence with

predicted astronomical tide. Some such freshwater intrusion could actually be beneficial. A full environmental assessment and EIS with mitigation proposed plans developed in accordance with HEP will be provided to your office as part of the draft feasibility report.

Comment #5: " We accept the conceptual flood gate aspect of the project. When the design is finalized, please provide justification for the gate and associated levee location (i.e.: How environmental impacts are minimized at the site of the floodgate)."

Response #5: Noted. Upon completion of the draft report and documentation, this information will be forwarded to your office. As discussed at the coordination meeting, direct levee footprint impacts would be reduced for the gate alternative as compared to the levee alternative. The storm gate also afford potential for additional storm damage prevention benefits for areas that would have fallen outside the levee alignment previously proposed for Wilson Ave. The indirect impacts associated with the gate alternative are being assessed formally through the HEP and will be presented in the EIS.

Comment #6: " Provide a theoretical ecological discussion of the application of and utility of the habitat unit procedure (HEP) and how the procedure is used in developing mitigation alternatives."

Response #6: The enclosed attachment entitled " The Applicability and Utility of the Habitat Evaluation Procedures in Identifying Impacts and Developing Mitigation", describes the HEP and how it is implemented in developing mitigation alternatives.

Comment #7: " We disagree that the proposed use of sheet pile seawall/ floodwall, that the Spy House Historic Site and public fishing pier property would be consistent with the New Jersey Coastal Management Program. The preferred alternative that would be consistent with the Coastal Management program would involve beach fill in the vicinity of these properties. Creation of a secondary dune could supplement the beach fill, as long as the dune creation did not involve the disturbance of the existing primary dune."

Response #7: The initial seawall was proposed as a means of preventing retreat of fast land in vicinity of the historic complex. Existing elevations in the proximity of the potential structure are close to the required 16 to 17 ft NGVD heights for protection against storm surges. Any structure that would be visible would be only 1-3 ft above existing grade. It is proposed therefore to bury the wall with sand and include appurtenant aesthetic features such as vegetative plantings to maintain the character of the area. A shoreline and dune face renourishment with trucked in sand at an approximate 10-year cycle would constitute part of the plan. This would allow for adequate cover. The wall would likely not be exposed except for storm events, which exceed a 25-year frequency of recurrence. Such an event would likely trigger a renourishment program. Thus, in essence, this component is comprised of

a fortified dune, which would afford greater protection than a completely "soft" solution. By remaining land ward of the existing dune, fill and renourishment requirements become significantly smaller with little or no requirement for beach fill as part of initial construction. A dune and beach fill only plan would require the northward advancement of the shoreline not just in front of the Spy House, but for a significant added length of the shore to avoid an alignment irregularity which could accelerate erosion. Notwithstanding, the current plan of improvement includes a limited renourishment component in order to maintain the integrity of the flood control system. The Coastal Management Program may therefore find this measure to be acceptable as it would provide project design protection and not impair the character of the shoreline and historic Spy House complex. The bay waters would continue to interact solely with a beach and dune except for relatively strong storm events. Renourishment following the event would minimize any wall exposure. Enclosed is a current plan view of the proposed alignment in vicinity of the Spy House along with an elevation view of the potential typical profile.

Board of Recreation Commissioners

805 Newman Springs Road, Lincroft, NJ 07738-1695, Phone: (732) 842-4000
FAX: Administration (732) 842-4162, Acquisition & Design (732) 842-3640

MEMORANDUM

TO: Spence Wickham, Chief, Land Acquisition
Theodore Giannechini, County Engineer

FROM: Gail Hunton, Principal Historic Preservation Specialist

DATE: April 3, 1998

RE: **Port Monmouth Flood Control Project**
Impacts on Seabrook Wilson House

The Environmental Analysis Branch of the Army Corps of Engineers requested my review of the proposed seawall at Port Monmouth for impacts on the Seabrook Wilson House, which is listed on the State and National Registers of Historic Places. In order to coordinate the County's comments to Corps of Engineers, I am addressing this review to you. Below are my preliminary comments, subject to receipt of more complete information on the seawall profiles and construction design at the Seabrook Wilson House.

Impacts on Archaeological Resources. Previous investigations (*Archaeological Data Recovery within the Front Yard of the Whitlock/Seabrook Wilson House*, Rutgers, 1996) indicate that the Seabrook Wilson House is "surrounded by a zone of archaeological sensitivity." If the proposed seawall is to be constructed, it should be located north of the existing fishing pier parking lot (roughly as shown on a recent undated draft ACOE plan) to minimize disturbance of potential archaeological resources associated with the house. The alternative alignment of the proposed seawall, cross-cutting the rear yard of the house, is objectionable because of disturbance to archaeological resources, as well as costly investigation and potential mitigation.

Impacts on Historical Landscape. Although the landscape setting of the Seabrook Wilson House has been altered over time, a seawall across the rear yard of the house is objectionable because of adverse impacts on the historic character of the house and its remaining historic landscape. As the imminent owner of the Seabrook Wilson House, the Monmouth County Park System will be making a significant investment in the preservation and enhancement of the site in the years to come; visitors will come to not only to the see the house but also to enjoy its shoreline setting and views. A seawall across the back yard of the site would undermine these preservation objectives. The revised location of the seawall, generally along the north side of the

fishing pier parking lot, would appear to minimize adv[illegible]mpacts on the historic landscape. My understanding is that the seawall is to be constructed o[illegible]l sheet piles and poured concrete encased in sand, with a footprint not to exceed 3 feet and a typical wall height of 4 to 5 feet above existing grade. In general, the sand-encased seawall, with dune stabilization plantings, should represent a naturalistic dune in its finished appearance. Also, the location of overwalks should be coordinated with the Park System's plans for use of the site and park. However, impacts on the landscape can not be fully evaluated until additional information is provided. A sectional view at the house, extending from the road to the beach, showing existing/proposed elevations and construction details of the seawall and reconstructed dune, is requested from the Corps of Engineers in order to complete this review.

c: John Sassi, P.E., Chief, Planning Division, ACOE
Wendy Harris, Project Archaeologist, ACOE
Mike Gregg, Historic Preservation Office, NJDEP

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State of New Jersey

ne Todd Whitman
.ior

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Land Use Regulation Program
PO Box 439
501 East State, 2nd Floor
Trenton, NJ 08625-0439
Tel. # (609) 292-1235 Fax # (609) 292-8115

2 April 1998

John Sassi, Chief of Planning Division
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, New York 10278-0090

Re: Port Monmouth-Combined Flood Control and Shore Protection
Middletown Township, New Jersey

Dear Mr. Sassi:

Thank you for providing us with an opportunity to review the plan selection information on the referenced project. Following our 11 March 1998 meeting with you, we discussed the information and have several comments and questions concerning the project.

Our comments and requests are as follows:

- at the 11 March meeting, you referred to a plan that differs from the November 1997 "Preliminary Plan Layout" previously furnished to us by your office. For instance, the dune location on the plan at our disposal differs from the location of the dune shown on your plan you brought to the meeting. Please provide us with a plan that reflects the current design.

- provide information on the relative costs of installing a floodwall vs. a levee for several representative heights under consideration for this project.

- provide the reasons why the levee crest is designed to be ten feet wide.

- provide a contour map of the tidal wetlands and show the extent of tidal inundation at spring high tide and for various storm events to the stage that the entire tidal wetlands are inundated. Based on this information and the elevation chosen for flood gate closure and estimated closure frequency, review the effects of floodgate closure on the tidal wetlands.

- we accept the conceptual flood gate aspect of the project. When the design is finalized, please provide justification for the gate and associated levee location (i.e. how environmental impacts are minimized at the site of the floodgate).

- provide a theoretical ecological discussion of the application of and utility of the habitat unit procedure (HEP) and how the procedure is used in developing mitigation alternatives.

- we disagree that the proposed use of sheetpile seawall/floodwall at the Spy House Historic Site and public fishing pier property would be consistent with the New Jersey Coastal Management Program. The preferred alternative that would be consistent with the Coastal Management Program, would involve beachfill in the vicinity of these properties. Creation of a secondary dune could supplement the beachfill, as long as the dune creation did not involve the disturbance of the existing primary dune.

If you have any questions regarding this request, please contact me at the above address, by telephone at (609) 984-0184 or by email: KKALB@dep.state.nj.us.

Sincerely,

Kurt R. Kalb
Section Chief

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 18, 1998

Environmental Analysis Branch
Environmental Assessment Section

Ms. Gail Hunton
Principal Historian Preservation Specialist
Monmouth County Parks System
805 Newman Springs Road
Lincroft, New Jersey 07738

Dear Ms. Hunton

The New York District Corps of Engineers (Corps) has recently undertaken Feasibility Phase cultural resources investigations as part of Section 106 compliance for a project that will involve levee and floodwall/seawall construction in Port Monmouth, Middletown Township, Monmouth County, along portions of the Raritan Bay shoreline, Comptons Creek, and Pews Creek (Attachment 1). One component of this project will entail the construction of a seawall along the northern, western, and eastern borders of a parcel and structure listed on the National Register of Historic Places – the Whitlock/Seabrook Wilson House. This action may affect archaeological remains associated with the site. An archaeological data recovery project undertaken within the southern section of the site uncovered numerous artifacts and an intact 18th century ground surface. These are described in a report published in May 1996, entitled *Archaeological Data Recovery within the Front Yard of the Whitlock/Seabrook Wilson House, Middletown Township, Monmouth County, New Jersey*, prepared by Carolyn L. Hartwick and T. Cregg Madrigal of the Rutgers Center for Public Archaeology. In correspondence dated August 18, 1994 the New Jersey Historic Preservation Office noted the contribution that such deposits may make to the property's eligibility. The seawall may also affect the sites's historic landscape as well.

We have attached a description and plans for the seawall (Attachments 2 and 3), as well as a proposal for an archaeological testing program to be conducted by the Corps' archaeological staff (Attachment 4). In order for us to fully incorporate your comments and suggestions into our plans, we ask that you respond as soon as possible. If you have any questions or require additional information, please contact Wendy Harris, Project Archaeologist, Environmental Analysis Branch, at (212) 264-0473 or 264-4748.

The Corps greatly appreciates your cooperation in this matter.

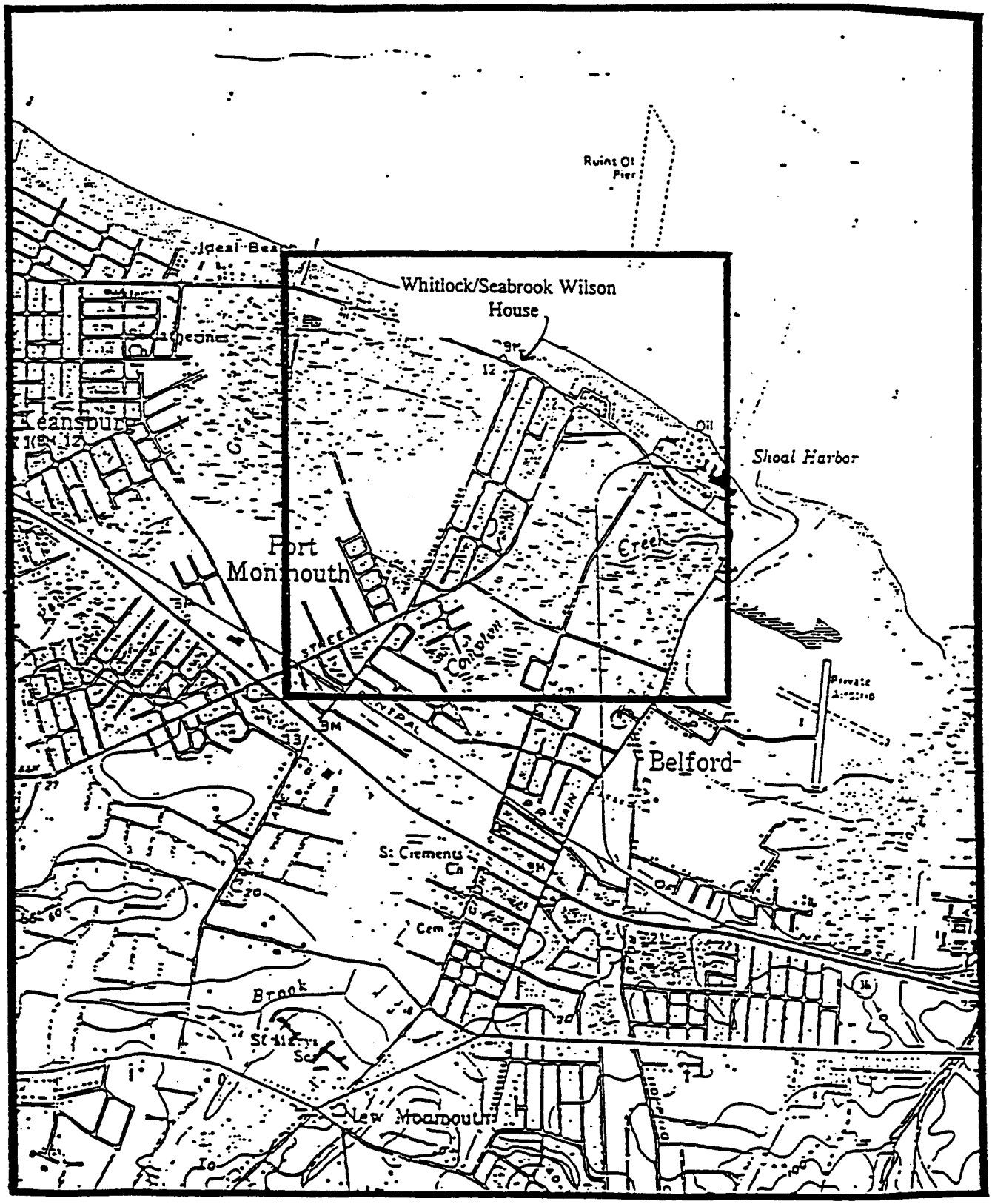
Sincerely,

for John Sassi, P.E.
Chief, Planning Division

Enclosures

Copy Furnished: Michael Gregg, New Jersey Historic Preservation Office

Attachment 1



Detailed Location of Project Area. Source: USGS Sandy Hook Quadrangle.

Attachment 2

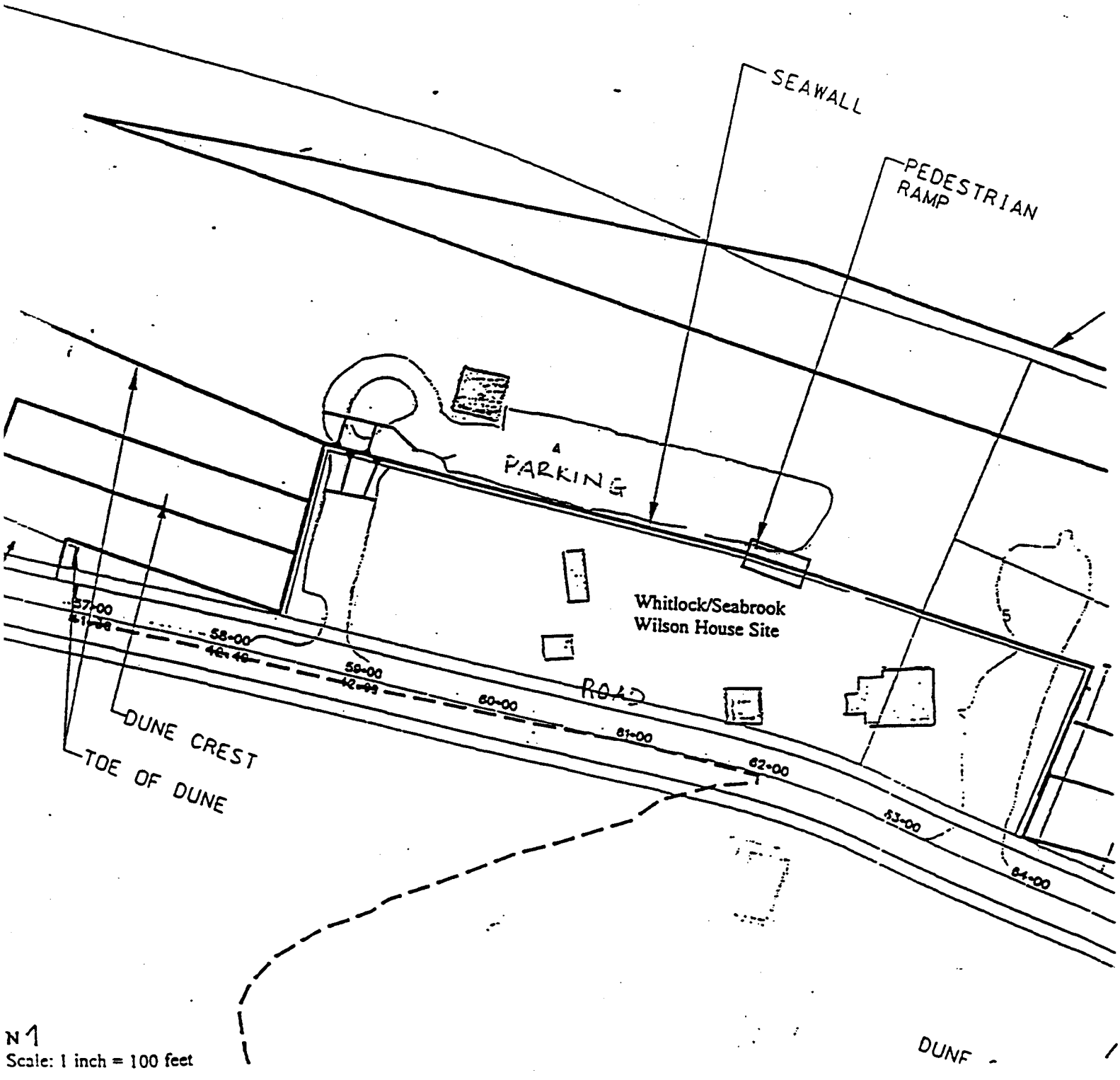
SEAWALL DESCRIPTION

Seawall foundations will have a maximum depth of five feet. Construction will involve the installation of steel sheeting, wood forms, and poured concrete. In the area of the Whitlock/Seabrook Wilson House, the seawall will be encased in sand, which may minimize effects to the historic landscape. The seawall footprint will not exceed three feet.

The proposed alignment of the seawall is shown in Attachment 3. Please note however, that the Corps is considering shifting the segment of the seawall that extends through the rear yard (northern section of the property) approximately 100 feet to the north. Moving the seawall's location towards the beach may minimize effects to archaeological deposits associated with the historic occupation of the house. The Corps is also considering shifting the western and eastern segments of the seawall further away from the house, actions that may further minimize effects to historic period archaeological deposits.

A more detailed description of the seawall is being developed, which will include such information as the precise height of the structure and its exact location relative to the house. This will be provided as soon as it is available.

Attachment 3



Attachment 4

Whitlock/Seabrook Wilson House Seawall
Proposed Archaeological Testing Program

Earlier investigations (Rutgers Center for Public Archaeology 1996) have established the presence of a buried 18th century ground surface that extends over a section of the Whitlock/Seabrook Wilson House's front (southern) yard for a distance of at least 130 linear feet. This suggests that the house is surrounded by a zone of extreme archaeological sensitivity. The following program is suggested:

If the alignment shown in Attachment 3 is adopted by the Corps of Engineers, the Area of Potential Affect (APE) for the northern segment of the seawall will crosscut the backyard (or northern section) of the site, passing at some points as close as 100 feet of the house. Within such portions of the APE, located closest to the house, it is recommended that data recovery be undertaken at later phases of project planning.

Within portions of the APE located 100 feet or more from the house, it is recommended that shovel tests be placed at 25 to 50 feet intervals. This includes the portion of the APE encompassing the western two-thirds of the seawall's northern segment, as well as its western segment. This testing interval is also recommended for the APE of the proposed realignment of the northern seawall, assuming it is shifted approximately 100 feet closer to the beach. If the eastern segment of the seawall remains in the alignment depicted in Attachment 3 (paralleling the eastern driveway), it is recommended that data recovery be conducted here during later phases of project planning. It is also recommended that shovel tests be placed at 50 foot intervals to the east of the proposed eastern seawall segment, on an axis extending from Port Monmouth Road to the beach, in order to test the APE of the proposed realignment.

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Division of Parks & Forestry
Historic Preservation Office
PO Box 404
Trenton, N.J. 08625-0404
TEL: (609)292-2023
FAX: (609)984-0578

Robert C. Shinn, Jr.
Commissioner

April 21, 1998

Mr. John Sassi, 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. Sassi:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the *Federal Register* on 2 September 1986 (51 FR 31115-31125), I am providing consultation comments for a portion of the following proposed undertaking, as indicated below:

Monmouth County, Middletown Township
Port Monmouth Flood Control Project Activities at the Seabrook Wilson House

These comments are in response to your letter of March 18, 1998, regarding possible levee and floodwall/seawall construction on the Seabrook Wilson House property. These comments do not pertain to any aspects of this proposed undertaking beyond the limits of this property.

800.4 Identifying Historic Properties

The Seabrook Wilson House was listed in the National Register of Historic Places on October 29, 1974.

800.5 Assessing Effects

I concur with your assessment that construction of the floodwall in the rear yard of the property would affect character defining features of the historic setting, and would be likely to affect contributing archaeological deposits. I encourage your plan to consider a shift of the segment of the levee and floodwall/seawall that extend through the rear yard

to a location northward beyond the yard and into the current beach zone. I also encourage your plan to consider shifting adjacent eastern and western segments further away from the house. These shifts would result in avoiding effects to contributing archaeological deposits, and minimizing visual effects to the historic setting. I encourage all reasonable efforts to avoid and minimize effects to this historic property.

Additional Comments

I am in accord with comments on this proposed undertaking offered by Gail Hunton, on behalf of the Monmouth County Board of Recreation Commissioners, in her memorandum to Spence Wickham and Theodore Giannechini, dated April 3, 1998, and copied to Wendy Harris of your staff. Please call Mike Gregg of my staff (609 633 2395) with questions regarding archaeology or Dan Saunders (609 633 2395) regarding historic architecture and landscape considerations.

Sincerely,

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG:MLG
MLG:C:\letters\Army Corps Spy House

c: Wendy Harris, NY District ACOE
Gail Hunton, Monmouth County

CENAB-EN-HN

19 October 1995

MEMORANDUM FOR Commander, U.S. Army Engineer District, New York,
ATTN: CENAN-PL-ES (Burlas), Jacob K. Javits
Federal Building, New York, NY 10278-0090

SUBJECT: Raritan Bay and Sandy Hook Bay Shore Protection and Flood Control Project, Port Monmouth, New Jersey

1. References:

a. FONECON on 12 September 1995, between John Brzezenski, CENAB-EN-HN and Mark Burlas, CENAN-PL-E, subject: Geotechnical Sampling and Testing at the subject site; and

b. Meeting and site visit, 22 May 1995, subject: Strategy to Perform a Combined RIRW and Geotechnical Sampling Project.

2. Initially, CENAB was requested to conduct a site investigation (SI) to characterize the project site. In addition, CENAN requested CENAB to conduct a geotechnical investigation to assist in the design process.

3. The Reconnaissance Study prepared in February 1993, indicated there was an area near the project site with potential contamination. However, upon visiting the project site in 1b, there did not appear to be a significant threat beyond the areas of suspected contamination. This area lies outside the flood protection project boundaries. Therefore, it was decided not to conduct the SI and continue only with the geotechnical investigation.

4. In the interim there has been communications between CENAB Geotechnical Branch and CENAN project designers regarding the investigation. Enclosed for your review is a work proposal and an estimate of costs to perform the geotechnical investigation.

5. If there are any questions please contact the Design Manager Mr. John Brzezenski at (410) 962-0030.

Christina E. Corraale
Chief, Hazardous, Toxic, and
Radioactive Waste Branch
Engineering Division

Enclosures

CF:
CENAB-EN-GG (Flaherty)

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

Tel: 609-646-9310
FAX: 609-646-0352

IN REPLY REFER TO:

ES-98/14

February 9, 1998

Mr. Mark Burlas
U.S. Army Corps of Engineers
New York District (CENAN-PL-EA)
26 Federal Plaza
New York, New York 10278-0090

Re: **Threatened and Endangered Species Review for U.S. Army Corps of Engineers Port Monmouth Feasibility Study (1926-00B7) in Monmouth County, New Jersey**

Dear Mr. Burlas:

As requested during the January 29, 1998 meeting with U.S. Fish and Wildlife Service (Service) staff, the New Jersey Field Office has reviewed the above-referenced project for the presence of federally listed endangered and threatened species.

AUTHORITY

This response is provided pursuant to Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of federally listed endangered and threatened species and does not address all Service concerns for fish and wildlife resources. These comments do not preclude separate review and comments by the Service as afforded by the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*), if any permits are required from the U.S. Army Corps of Engineers pursuant to the Clean Water Act of 1977 (33 U.S.C. 1344 *et seq.*), nor do they preclude comments on any forthcoming environmental documents pursuant to the National Environmental Policy Act of 1969 as amended (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

FEDERALLY LISTED SPECIES

The piping plover *(Charadrius melodus)*, a federally listed (threatened) species, is known to nest within 6 miles of the project area. These small shorebirds are territorial and may nest on sand beaches, gently sloping foredunes, blowout areas behind primary dunes, washover areas cut into or between dunes, ends of sandpits, or on sites with deposits of suitable

dredged or pumped sand or sandy gravel. Piping plover nests consist of only a shallow scrape in the sand, frequently lined with shell fragments. Nests are often found near small clumps of vegetation. Piping plovers feed primarily on marine macroinvertebrates such as marine worms, fly larvae, beetles, and crustaceans. Feeding areas include intertidal portions of ocean beaches, ocean washover areas, mudflats, sandflats, wrack lines (organic ocean material left by high tide), shorelines of coastal ponds, lagoons, and salt marshes.

The piping plover is susceptible to a variety of impacts including: beach stabilization and renourishment projects; disturbance from humans, which can cause parent birds to desert the nests and prevent juvenile birds from feeding during critical periods in their development; harassment from pets, especially dogs; and, loss of nests, eggs, and young to predators such as foxes, gulls, raccoons, and domestic cats. Beach activities such as jogging, walking dogs, flying kites, fireworks displays, sunbathing, and driving vehicles on the beach can adversely affect piping plovers. Development of the Atlantic Coast shoreline and increasing public demand for beach recreation has limited the availability of piping plover nesting habitat. Ensuring the continued protection of documented nesting areas is critical to the survival and recovery of the piping plover.

The peregrine falcon (*Falco peregrinus*), a federally listed (endangered) species, is known to nest within 10 miles of the project site. The peregrine falcon has recently expanded its range and is now found nesting and hunting near urban areas. In New Jersey, peregrines nest on man-made structures such as tall buildings near a water course, high bridges spanning large rivers, and nest platforms or towers within coastal marshes. Peregrines may be expected to forage for prey within the project site and generally feed on songbirds, gulls, terns, shorebirds, and wading birds.

Endangered species and their habitats are afforded protection under the ESA. Pursuant to Section 7(a)(2) of the ESA, every federal agency, in consultation with the Service, is required to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. An assessment of potential direct, indirect, and cumulative impacts is required for all federal actions that may affect listed species. Regarding the above-referenced project, the Service has determined that the proposed activities are not likely to adversely affect piping plovers or peregrine falcons. However, if piping plovers are present during project activities, the U.S. Army Corps of Engineers will need to inform the Service and reinitiate consultation pursuant to Section 7(a)(2) of the ESA to ensure that activities do not adversely affect the piping plover.

Other than the aforementioned species and an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed threatened or endangered flora or fauna are known to occur within the vicinity of the project area.

Enclosed are current summaries of the federally listed and candidate species in New Jersey. The addresses of State agencies that may be contacted for current site-specific information regarding federal candidate and State-listed species are also enclosed. We have also enclosed information on the piping plover, peregrine falcon, and the federal endangered species program in New Jersey. Please contact Lisa Arroyo of my staff if you have any questions or require further assistance regarding federally listed threatened or endangered species.

Sincerely,

John C. Staples
Assistant Supervisor

Enclosures

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN NEW JERSEY

An ENDANGERED species is any species that is in danger of extinction throughout all or a significant portion of its range.

A THREATENED species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

	COMMON NAME	SCIENTIFIC NAME	STATUS
FISHES	Shortnose sturgeon*	*Acipenser brevirostrum*	E
REPTILES	Bog turtle	*Clemmys muhlenbergii*	T
	Atlantic Ridley turtle*	*Lepidochelys kempii*	E
	Green turtle*	*Chelonia mydas*	T
	Hawksbill turtle*	*Eretmochelys imbricata*	E
	Leatherback turtle*	*Dermochelys coriacea*	E
	Loggerhead turtle*	*Caretta caretta*	T
BIRDS	American peregrine falcon	*Falco peregrinus anatum*	E
	Bald eagle	*Haliaeetus leucocephalus*	T
	Piping plover	*Charadrius melodus*	T
	Roseate tern	*Sterna dougallii dougallii*	E
MAMMALS	Eastern cougar	*Felis concolor couguar*	E÷
	Indiana bat	*Myotis sodalis*	E
	Gray wolf	*Canis lupus*	E÷
	Delmarva fox squirrel	*Sciurus niger cinereus*	E÷
	Blue whale*	*Balaenoptera musculus*	E
	Finback whale*	*Balaenoptera physalus*	E
	Humpback whale*	*Megaptera novaeangliae*	E
	Right whale*	*Balaena glacialis*	E
	Sei whale*	*Balaenoptera borealis*	E
	Sperm whale*	*Physeter macrocephalus*	E

Revised 11/97

FEDERAL CANDIDATE AND STATE-LISTED SPECIES

Candidate species are species under consideration by the U.S. Fish and Wildlife Service (Service) for possible inclusion on the List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the Service encourages federal agencies and other planners to consider federal candidate species in project planning.

The New Jersey Natural Heritage Program maintains the most up-to-date information on federal candidate species and State-listed species in New Jersey and may be contacted at the following address:

Mr. Thomas Breden
Natural Heritage Program
Division of Parks and Forestry
CN 404
Trenton, New Jersey 08625
(609) 984-0097

Additionally, information on New Jersey's State-listed wildlife species may be obtained from the following office:

Mr. Larry Niles
Endangered and Nongame Species Program
Division of Fish, Game and Wildlife
CN 400
Trenton, New Jersey 08625
(609) 292-9400

If information from either of the aforementioned sources reveals the presence of any federal candidate species within a project area, the Service should be contacted to ensure that these species are not adversely affected by project activities.

Revised 11/96

FEDERAL CANDIDATE SPECIES IN NEW JERSEY

CANDIDATE SPECIES are species that appear to warrant consideration for addition to the federal List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the U.S. Fish and Wildlife Service encourages federal agencies and other planners to give consideration to these species in the environmental planning process.

SPECIES	SCIENTIFIC NAME
Bog asphodel	*Narthecium americanum*

Note: For complete listings of taxa under review as candidate species, refer to Federal Register Vol. 62, No. 182, September 19, 1997 (Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species).

Revised 10/97

SUCCESS

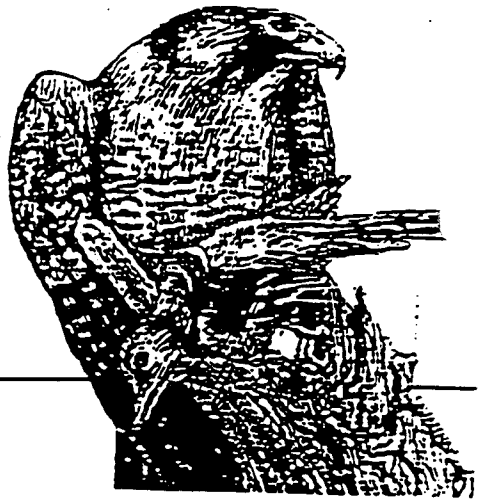
ENDANGERED SPECIES

This Species is Protected Under the Endangered Species Act of 1973

STORY

PEREGRINE FALCON

Falco peregrinus anatum.
Falco peregrinus tundrius.
Falco peregrinus pealei



The peregrine falcon is one of nature's swiftest and most beautiful birds of prey. The name comes from the latin word *peregrinus*, meaning "foreigner" or "traveller." It is noted for its speed, grace, and aerial skills. There are three subspecies of the peregrine falcon in North America: the American, Arctic, and Peale's.

Peregrine falcons are medium-sized hawks with long pointed wings. Adults have slate blue-gray wings and backs barred with black; pale undersides; white faces with a black stripe on each cheek; and large, dark eyes. Younger birds are darker below and browner.

Peregrine falcons are roughly crow-sized—about 15 to 21 inches long—with a wingspan of about 40 inches. As with many *raptors*, or birds of prey, females are larger than males.

Peregrine falcons live mostly along mountain ranges, river valleys, and coastlines. Historically, they were most common in parts of the Appalachian Mountains and nearby valleys from New England south to Georgia, the upper Mississippi River Valley, and the Rocky Mountains. Peregrines also inhabited mountain ranges and islands along the Pacific Coast from Mexico north to Alaska and in the Arctic tundra.

Peregrine falcons are found in other parts of the world. Most peregrines from northern Alaska, Canada, and Greenland migrate in the fall to Central and South America. On the way, they often hunt along the barrier islands on the Atlantic and Gulf of Mexico Coasts. Peregrines that nest south of Canada migrate lesser distances, and some may not migrate at all.

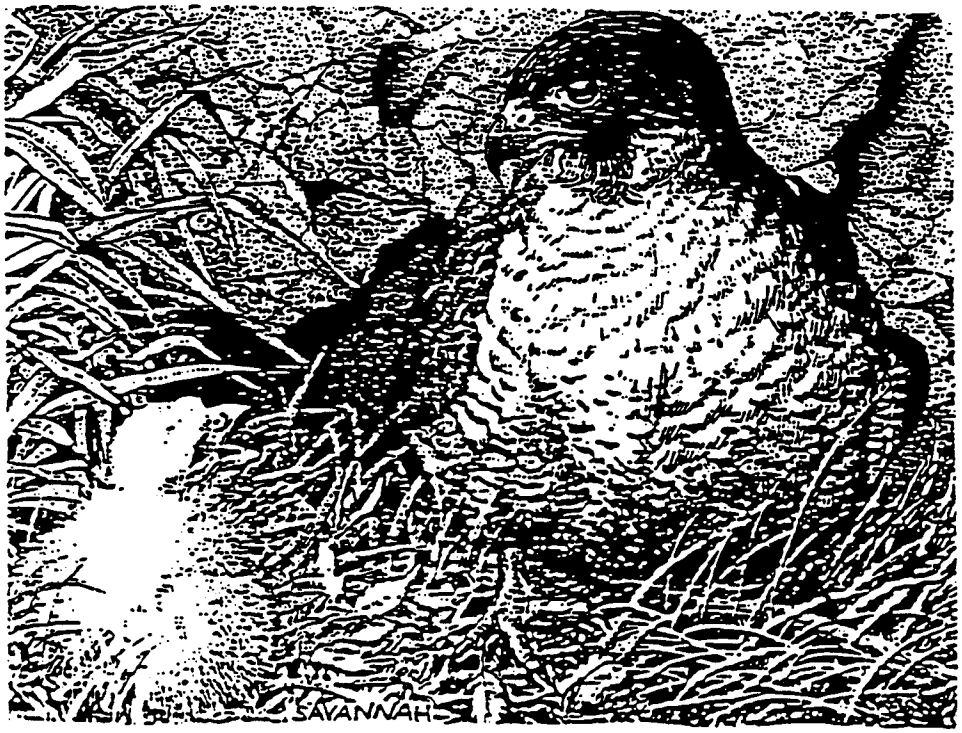
Peregrine falcons generally reach breeding maturity at 2 years of age. Usually, the male arrives at a nesting site and begins a series of aerial acrobatic displays to attract a mate. An average clutch of four eggs is laid in the spring, hatching about a month later. Peregrines vigorously defend their nests, although they may abandon them if severely or continuously harassed.

The nest is a scrape or depression dug in gravel on a cliff ledge. Rarely, peregrines will nest in a tree cavity or an old stick nest. Unlike many other animals that cannot coexist with urbanization, some peregrines have readily accepted man-made structures as breeding habitat. For example, skyscraper ledges, tall towers, and bridges serve as the ecological equivalent of a cliff ledge. In 1988, 21 nesting pairs of peregrines present in various urban areas throughout North America successfully fledged more than 40 young.

Peregrine falcons feed primarily on other birds, such as songbirds, shorebirds, ducks, and in urban areas, starlings and pigeons. Flying high above their intended prey, peregrines will "stoop" or dive and strike in mid-air, killing the prey with a sharp blow. Scientists estimate the speed of a diving peregrine to be more than 200 mph.

Peregrine falcons have never been very abundant. Studies in the 1930s and 1940s estimated about 500 breeding pairs of peregrine falcons in the eastern United States and about 1,000 pairs in the West and Mexico. Then, beginning in the late 1940s, peregrine falcons suffered a devastating and rapid decline. By the mid-1960s, the species had been eliminated from nearly all of the eastern U.S. Although less severe, the decline spread west, where peregrine populations were reduced by 50 to 90 percent by the mid-1970s. At that time, only those populations with Peale's falcons nesting along the north Pacific Coast in Alaska and British Columbia appeared to be stable.

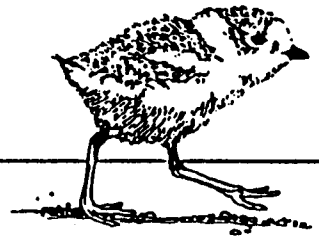
Scientists at the Patuxent Wildlife Research Center near Laurel, Maryland investigating the peregrine's decline



Peregrine falcon populations rapidly declined due to the accumulation of DDT in their tissues which interfered with eggshell formation. As a result, falcons laid eggs with shells so thin they often broke during incubation or otherwise failed to hatch

Things You Can Do To Help Protect the Piping Plover

- Respect all areas fenced or posted for protection of wildlife.
- Do not approach or linger near piping plovers or their nests.
- If pets are permitted on beaches used by plovers, keep your pets leashed.
- Don't leave or bury trash or food scraps on beaches. Garbage attracts predators which may prey upon piping plover eggs or chicks.



The piping plover is protected under the Endangered Species Act.

For further information, contact:

Office of Endangered Species
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, Massachusetts 01035-9589

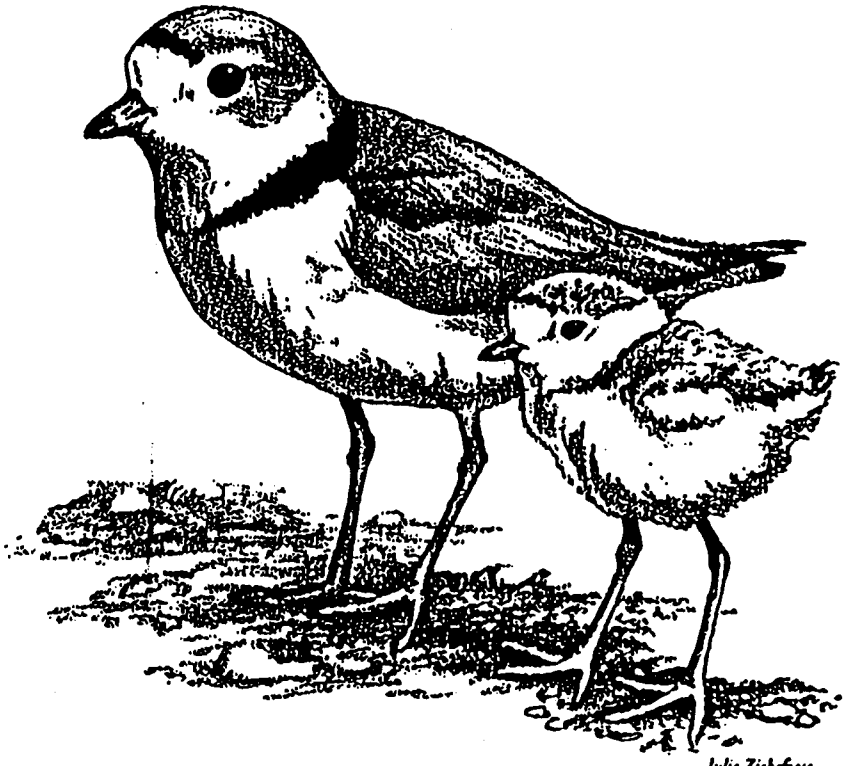
or contact your State Natural Resource Agency.

Illustrations by Julie Zickefoose.

Prepared by the U.S. Fish and Wildlife Service, Region 5
January 1994

You Can Help Protect

The Piping Plover



Julie Zickefoose

Thank you for the opportunity to contribute to the efforts of the interagency HEP team. Naturally, we would be interested in seeing any results from this and other studies on this project. If we can assist you in any other way, or if you have questions concerning our species recommendations, please have your staff contact Robert Witte of my staff at (212) 637-3750.

Sincerely yours,

Brad Musumeci for

Robert W. Hargrove, Chief
Strategic Planning and Multi-Media Programs Branch

Enclosures

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

11/6/97

DEC 2 0 1996

Mr. Stuart Piken, P.E.
Chief, Planning Division
US Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, N.Y. 10278

Dear Mr. Piken:

This is in response to your November 22, 1996 letter concerning the Port Monmouth, New Jersey Combined Flood Control and Shore Protection Project. You requested our participation in selecting species to be used to evaluate the impacts of the proposed project through a Habitat Evaluation Procedure (HEP) analysis.

We welcome this opportunity to provide some input in this regard. Enclosed you will find a number of completed Species Nomination Forms that we hope will provide useful recommendations. Our rationale in the selection of these species was to consider the habitats present in the area, and select species that are appropriate for each. The avian species were nominated based on information on the Compton Creek wetlands presented in the Raritan Bay Wildlife Habitat Report, published by the New Jersey Audubon Society.

Considering the increasing encroachment of development upon the Raritan Bay coastal wetlands, we consider it essential that your analysis of the potential environmental impacts resulting from this project considers as wide a range of species as possible, and also considers secondary, long-term, impacts as well as those primary impacts resulting from construction. We believe that studying these species will contribute to a better understanding of the effects of the project on the ecosystem as a whole.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

With Grace

November 22, 1996

REPLY TO ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Mr. Bob Hargrove, Chief
U.S. EPA Region II
Strategic Planning & Multimedia Programs Branch
290 Broadway
New York, NY 10007

Project: Port Monmouth, New Jersey Combined Flood Control and Shore Protection

Subject: Selection of Evaluation Species for Habitat Evaluation Procedures

Dear Mr. Hargrove:

The U.S. Army Corps of Engineers, New York District (District) is the lead Federal agency for the Port Monmouth, New Jersey Combined Flood Control and Shore Protection project. The project area is located north of Route 36 between Compton Creek and Pews Creek in Middletown Township, Monmouth County, New Jersey (see enclosed map). Currently, numerous residential and commercial structures in the area are experiencing flooding caused by coastal storm inundation. The project is intended to identify shore protection and flood control measures for Compton Creek and Pews Creek to alleviate flooding. Although various alternatives are under consideration, the project will most likely involve the construction of measures such as levees, floodwalls, tide gates and beach nourishment structures. Implementation of such structures will result in some impacts to habitats in the project area.

A team of biologists representing the District, the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) has been assembled to assess and quantify impacts of the flood control measures on fish and wildlife resources within the project area using a Habitat Evaluation Procedure (HEP). In short, HEP is an accepted methodology that rates the habitat quality of a specific area for a given animal species. The types of habitat that exist within the project area are intertidal estuary, vegetated dunes, tidal salt marsh dominated by *Spartina* ssp., upland meadows dominated by *Phragmites* ssp., wet and dry shrubland, and small areas of upland/wetland forest.

One of the underlying principles of HEP is a cooperative approach to the selection of evaluation species. The interagency HEP team has identified your organization as one that has a working knowledge of the project area and may have an interest in identifying potential evaluation species that are known to frequent the area. Of particular interest are species that are sensitive to changes in habitat and water quality, are commercially or recreationally important, migratory and/or that winter in the area.

Enclosed to this letter is a species nomination form. If you are interested in participating, please complete one form for each species and mail or fax the form to the address given below by December 5, 1996. Your proposed evaluation species, along with those submitted by other respondents, will be reviewed and considered by the interagency HEP team. Your input will assure that the most appropriate evaluation species will be nominated for possible selection.

If you have any questions, please contact:

Mr. Mark H. Burlas, Wildlife Biologist
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090
phone: 212-264-4663
fax: 212-264-6494
e-mail: Mark.H.Burlas@nan01.usace.army.mil

The interagency HEP team thanks you in advance for your interest in the project and participation in the species selection process.

Sincerely,

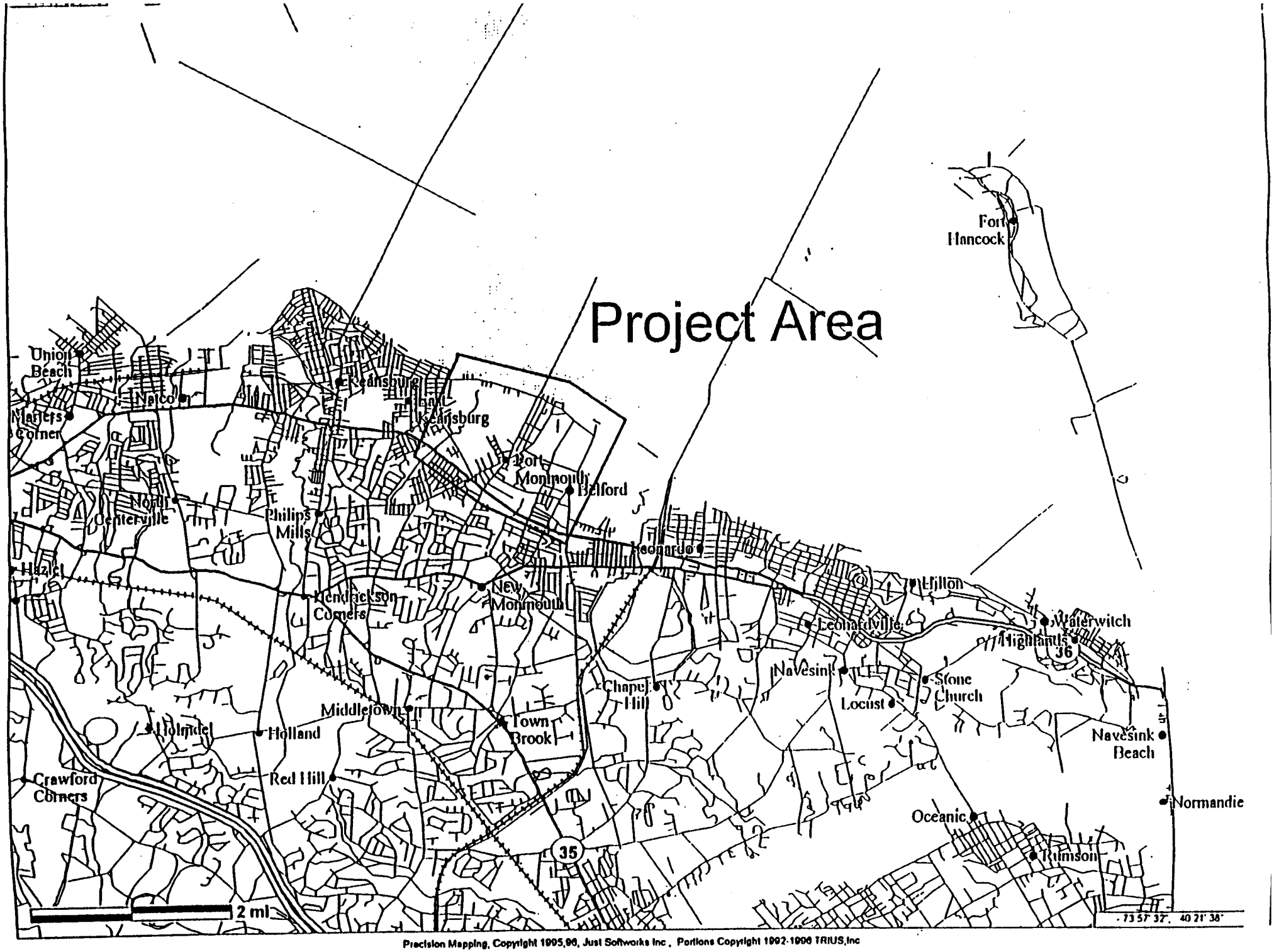
Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Enclosures

Copy Furnished:

Mr. Bernard Moore, NJDEP
Mr. Thomas McDowell, USFWS
Ms. Karen Greene, NMFS



PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Robert Witte

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: Atlantic Silversides (Menidia menidia)
Atlantic Croaker (Micropogonias undulatus)

Reasons for Nomination: Silversides are plankton eaters, and form a good portion of the diet of both predator fish and seabirds. They are strictly coastal, living mostly in bays and estuaries. While they can withstand salinity changes, they do need a high D.O. level. Croakers are schoolfishes that utilize pilings and rock habitats, are omnivores, so will pick up PCBs and other contaminants in their diet. The young of both species are users of the estuarine nursery habitats.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Robert Wirre

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: White Perch (Morone americana)
Striped Bass (Morone saxatilis)

Reasons for Nomination: White Perch are brackish water dwellers, so they would be typical for estuarine situations. However, I'm not sure if there is much of apopulation in Raritan Bay waters; they are in the Hudson River area. Striped Bass spend much of their juvenile stage in fresh water areas, so may not be quite as useful in terms of understanding potential impacts. However, they do like to utilize rocks and pilings habitats. Both species are candidates because of the commercial and recreational fishing industry they support. Also, they are predators, thus occupying a higher trophic level than the forage fish also recommended.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Robert Wirth

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: Blue Crab (Callinectes sapidus)
Mud Fiddler Crab (Uca pugnax)

Reasons for Nomination: The Blue Crab is commercially and recreationally important, and is found in all parts of the estuary. Easy to study, there is a great deal of information in the literature, and growth and other parameters are easy to quantify.

The Mud Fiddler lives on mud flats and in themud of Spartina marshes, so it is a good species to use because it needs tidal conditions. Projects such as this one destroy these conditions, thereby limiting available habitat.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Robert Witte

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: Black Rail (Laterallus jamaicensis)
Clapper Rail (Rallus longirostris)

Reasons for Nomination: Clapper rail is probably more practical than the Black, due to latter's rarity. However, both are excellent indicator species because of the need for particular habitat - high, dense vegetation in marshlands. Also, these two species have been observed in the Compton Creek - Pew's Creek wetlands.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Robert Witte

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: Roseate Tern (Sterna dougallii)
Least Tern (Sterna albifrons)

Reasons for Nomination: Roseate Tern is on the federal T&E species list. The Least Tern is, I believe, state-listed. In either case, destruction of feeding or breeding habitat could have serious ramifications, both ecologically and legally. Also, these birds are restricted in their diet, unlike gulls, and are dependent on small food fishes that use the marshes and shallows as nursery grounds. Also, these tern species nest on sand beaches, and may be utilizing the already limited beach habitat in the study area. You may also wish to consider a raptor species such as the Marsh Harrier or Kestrel, to deal with the terrestrial food chain analysis.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

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SPECIES NOMINATION FORM

Name: Robert Witte

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: Meadow Vole (Microtus pennsylvanicus)
Muskrat (Ondatra zibethicus)

Reasons for Nomination: These two species are rather obvious choices for the mammalian candidates. The muskrat utilizes the aquatic portions of the wetlands, while the Meadow Vole is found in the higher elevations of the open terrestrial habitats. Both are herbivores with short life-cycles. Both are preyed upon by raptors, foxes, raccoons, etc. Incidentally, Study of a predatory mammal would be useful, but we would suggest that raccoons and opossums not be considered, since their adaptation to scavenging in the vicinity of human -occupied areas makes them too generalist in their feeding habits.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Robert Witte

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: Savannah Sparrow (Passerculus sandwichensis)
Northern Harrier (Circus cyaneus)

Reasons for Nomination: Savannah Sparrow can utilize upland meadow, scrub-shrub, and salt marsh habitats. A state-listed species. The Northern Harrier is a raptor, feeding on mammalian and bird species as available. A characteristic species for this habitat.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Robert Witte

Organization/Agency: USEPA

Address: Strategic Planning and Multi-Media Programs Branch
25th Floor
290 Broadway
New York, N.Y. 10007

Telephone Number: (212) 637-3750

Candidate Species: Southern Leopard Frog (Rana sphenocephala)
Spring Peeper (Hyla crucifer)

Reasons for Nomination: We suggest the Leopard Frog if there is a need to model one amphibian species in both wooded and shrubby vegetation, provided there is sufficient permanent fresh water habitat. The Spring Peeper, on the other hand, would be a better species if the habitat is primarily wooded, but the fresh water consists mostly of vernal ponds. An amphibian species provides a trophic level between the invertebrates and mammalian predators.

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

MIDDLETOWN TOWNSHIP
ENVIRONMENTAL COMMISSION
1 KINGS HIGHWAY
MIDDLETOWN, NJ 07748

January 6, 1997

U.S. Army Corps of Engineers, NY District
Jacob Javits Federal Building
26 Federal Plaza
New York, N.Y. 10278-0090
Att. Mr. Mark Burlas
CENAN-PL-EA

Re: Port Monmouth, New Jersey
Species Evaluation Nomination

Dear Mr. Burlas:

This Commission received the subject letter from your office after the December 5, 1996 submission deadline. We have worked within the subject area and have produced the general public information booklet " Coastal Habitats of the Middletown Bayshore" of which I have enclosed one copy.

We have completed the Nomination Form for the diamondback terrapin which is impacted statewide by habitat loss and roadkills. We are concerned for the other turtles although this Commission in not aware of their reported presence off the subject beach.

In general, this Commission is concerned with the reduction of tidal flushing of the wetlands by the construction of levees such as the one along the west side of Pews Creek. The limited small openings hinders the passage of water and species through the levee. We would be scrutinizing any first order pre-design environmental data and the construction designs which would pertain to our concern.

Thank you for your time and consideration.

Very truly yours,

Middletown Environmental Commission

Michael S. Fedosh

Michael S. Fedosh
Chairman

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION PROJECT

SPECIES NOMINATION FORM

Name: Michael S. Fedosh Chairman

Organization/Agency: Middletown Environmental Commission

Address: Town Hall
1 Kings Hwy.
Middletown, N.J. 07748

Telephone Number: (A) 291-366-9500

Candidate Species: diamondback terrapin

Reasons for Nomination: habitat reduction
potential impacts from levee construction

Please mail or fax this form to:

Mark Burlas
U.S. Army Corps of Engineers, New York District
Jacob Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090
Phone: (212) 264-4663
Fax: (212) 264-5472

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat and Protected
Resources Division
One Blackburn Drive
Gloucester, MA 01930

November 6, 1992

Mr. Bruce A. Bergmann
Chief, Planning Division
New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Bergmann:

This is in response to your letters dated October 1, 1992 requesting a list of threatened or endangered species in the area of the Raritan Bay-Sandy Hook Bay Reconnaissance and the New Jersey Section 934 beach renourishment project in those bays.

Species that may be present include threatened loggerhead turtles (Caretta caretta), endangered Kemp's ridley (Lepidochelys kempi) and green (Chelonia mydas) turtles and endangered shortnose sturgeon (Acipenser brevirostrum). Shortnose sturgeon are found in the Hudson River, and information regarding their presence in estuarine waters is scarce. Six sturgeon were caught in Sandy Hook Bay in 1970 (Dadswell et al, 1984 from Wilk and Silverman, 1976), but we have no information regarding recent takes in that area. There is similarly no current information regarding the distribution of listed sea turtles in the project area. Historically, the Kemp's ridley was considered the most prevalent species of sea turtle in New York waters and specimens were taken commonly by the New York Aquarium in the Lower New York Bay (DeSola, 1931). Kemp's ridley and loggerhead sea turtles were taken in pound nets in Raritan and Sandy Hook Bays 20 to 25 years ago (T. Azarovitz, pers. comm.). Current research indicates that the northeast embayments, including the Long Island Sound and the Delaware Bay, provide important summer foraging habitats for juvenile loggerhead, ridley and green turtles.

While it is not clear what beach renourishment activities will be considered for the Raritan and Sandy Hook Bay beaches, I assume plans will include dredging and disposal on the beaches, by hopper, hydraulic or pipeline dredges. Because hopper dredges are known to kill sea turtles (Slay, 1988) and shortnose sturgeon (Slay, pers comm, 1992), they should not be employed in these embayments during the summer and early fall months. Formal consultation pursuant to Section 7(a)(2) of the Endangered Species Act of 1973, as amended will be required if a hopper dredge will be used in these embayments from June through

November. Observer and sampling surveys for sea turtles, as well as shortnose sturgeon, should be considered in the Raritan and Sandy Hook Bays during the summer and early fall months if formal consultation will be required. Endangered species permits may be needed to conduct these studies.

Please contact Colleen Coogan (508 281-9291) if you have any questions about the above information, or as additional information regarding project plans becomes available, to continue informal consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended.

Sincerely,

Tom Bigford

Thomas E. Bigford
Division Chief

cc: F/NE02 - Gorski
F/PR2 - Ziobro, Williams
COE NY - Burlas

REFERENCES

Azarovitz, T. 1992 pers comm. NMFS, NEFC, Woods Hole, MA

Dadswell, M.J., B.D. Taubert, T.S.Squiers, D. Marchette and J. Buckley. 1984. Synopsis of Biological Data on Shortnose Sturgeon, Acipenser brevirostrum LeSeur 1818. FA) Fisheries Synopsis No. 140

De Sola, C.R.1931. The Turtles of the Northeastern States. Bull. New York Zool. Soc. Vol. XXXIV. September, October, 1931.

Slay, C. 1992 pers comm. New England Aquarium Right Whale Research Project

Slay, C.K and J.I. Richardson. 1988. King's Bay, Georgia: Dredging and Turtles. pp 109-111 in Proceedings of the Eighth Annual Workshop on Sea Turtle Conservation and Biology 1988. NOAA-TM-NMFS-SEFC-214.

United States
Department of
Agriculture

Soil
Conservation
Service

1370 Hamilton Street
Somerset, NJ
08873

October 28, 1992

Bruce A. Bergmann
New York District, Corps of Engineers
Environmental Assessment Section
Environmental Analysis Branch
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: Raritan Bay - Sandy Hook Bay Reconnaissance

Dear Mr. Bergmann:

We have reviewed the work limits of the above project and have determined that no prime, unique, or important farmland exists within these limits. Therefore the Farmland Protection Policy Act does not apply to the above project.

Thank you for providing us an opportunity to review the project.

Sincerely,

CECIL B. CURRIN
State Conservationist

cc: Mark Burlas
David Smart, SCS

State of New Jersey
Department of Environmental Protection and Energy
Division of Parks and Forestry
Office of Natural Lands Management
CN 404 Trenton New Jersey 08625-0404
(609) 984-1339
FAX (609) 984-1427

:ott A. Weiner
ommissioner

Thomas F. Hampton
Administrator

May 27, 1992

Mark Burlas
Army Corps of Engineers
Environmental Analysis Branch
26 Federal Plaza
New York, NY 10278-0090

Re: Raritan Bay-Sandy Hook Bay Project Area

Dear Mr. Burlas:

Thank you for your data request regarding rare species information for the above referenced project in Monmouth and Middlesex Counties.

The Natural Heritage Data Base has records for a number of occurrences of rare species and natural communities which may be present on, or in the immediate vicinity of the area you have outlined. The attached list provides additional information about these occurrences. Additionally, enclosed are lists of rare vertebrates of Monmouth and Middlesex Counties together with descriptions of their habitats. If suitable habitat is present within the study area, these species would have potential to be present. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend you contact the Division of Fish, Game and Wildlife Endangered and Nongame Species Program.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and natural communities. One of these sites is located within the area you have outlined. Please refer to the enclosed Priority Site Map of the Sandy Hook USGS quadrangle for the location and boundary of this site. Also attached is a report describing the significance of this Priority Site, and the rare species and natural communities documented from within it.

In order to red flag the general locations of documented occurrences of rare and endangered species and natural communities, in 1988 we prepared computer generated Natural Heritage Index Maps. Enclosed please find these maps for the Sandy Hook, Keyport, and South Amboy USGS quadrangles.

PLEASE SEE THE ATTACHED 'CAUTIONS AND RESTRICTIONS ON NHP DATA'.

Thank you for consulting the Natural Heritage Program. The fee to cover the cost of processing this data request is $40.00. Payment should be made payable to Treasurer, State of New Jersey and mailed to Office of Natural Lands Management, DEPE Div. of Parks and Forestry, CN404, Trenton, NJ 08625-0404. To

ensure that your payment is properly credited, please provide a copy of this letter with your remittance. Feel free to contact us again regarding any future data requests.

Sincerely,

Thomas F. Breden
Coordinator/Ecologist
Natural Heritage Program

cc: JoAnn Frier-Murza
Thomas Hampton

CAUTIONS AND RESTRICTIONS ON NATURAL HERITAGE DATA

The quantity and quality of data collected by the Natural Heritage Program is dependent on the research and observations of many individuals and organizations. Not all of this information is the result of comprehensive or site-specific field surveys. Some natural areas in New Jersey have never been thoroughly surveyed. As a result, new locations for plant and animal species are continuously added to the data base. Since data acquisition is a dynamic, ongoing process, the Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of New Jersey. Information supplied by the Natural Heritage Program summarizes existing data known to the program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. The attached data is provided as one source of information to assist others in the preservation of natural diversity.

This office cannot provide a letter of interpretation or a statement addressing the classification of wetlands as defined by the Freshwater Wetlands Act. Requests for such determination should be sent to the DEP Division of Coastal Resources, Bureau of Freshwater Wetlands, CN 402, Trenton, NJ 08625.

This cautions and restrictions notice must be included whenever information provided by the Natural Heritage Database is published.

MAY 1992

ON OR IN THE IMMEDIATE VICINITY OF THE PROJECT SITE
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN
THE NEW JERSEY NATURAL HERITAGE DATABASE

ME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
* Vertebrates								
ARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??	Y
ARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??	Y
ARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??	Y
ARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??	Y
NDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??	Y
.NDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??	Y
.NDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??	Y
.NDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??	Y
.NDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??	Y
.NDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??	Y
'NCHOPS NIGER	BLACK SKIMMER		E		G5	S2	1986-SUMMR	Y
'ERNA ANTILLARUM	LEAST TERN		E		G4	S2	1986-SUMMR	Y
;ERNA ANTILLARUM	LEAST TERN		E		G4	S2	1986-SUMMR	Y
:ERNA ANTILLARUM	LEAST TERN		E		G4	S2	1986-SUMMR	Y
** Ecosystems								
)ASTAL DUNE WOODLAND	COASTAL DUNE WOODLAND				G3?	S1	1986-02-04	
\RITIME FOREST	MARITIME FOREST				G3?	S1	1986-02-04	
** Other types								
IGRATORY SHOREBIRD	MIGRATORY SHOREBIRD				G?	S?	1982-10-??	Y
)NCENTRATION SITE	CONCENTRATION SITE				G?	S?	1982-10-??	Y
IGRATORY SHOREBIRD	MIGRATORY SHOREBIRD				G?	S?	1982-10-??	Y
)NCENTRATION SITE	CONCENTRATION SITE				G?	S?	1982-10-??	Y
IGRATORY SHOREBIRD	MIGRATORY SHOREBIRD				G?	S?	1982-10-??	Y
ONCENTRATION SITE	CONCENTRATION SITE				G?	S?	1982-10-??	Y
IGRATORY SHOREBIRD	MIGRATORY SHOREBIRD				G?	S?	1982-10-??	Y
ONCENTRATION SITE	CONCENTRATION SITE				G?	S?	1982-10-??	Y

MAY 1992

ON OR IN THE IMMEDIATE VICINITY OF THE PROJECT SITE
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN
THE NEW JERSEY NATURAL HERITAGE DATABASE

E	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
RATORY SHOREBIRD CENTRATION SITE	MIGRATORY SHOREBIRD CONCENTRATION SITE				G?	S?	1982-10-??	Y
Vascular plants								
EMISIA CAMPESTRIS SSP DATA	WILD WORMWOOD				G5T4	S2	1980-09-27	Y
IX LUCIDA	SHINING WILLOW				G5	S2	1897-10-??	?

Records Processed

Site Basic Record Code Explanations

BIODIVERSITY SIGNIFICANCE 89/10/31

A rating that describes the significance of the site in terms of its biological diversity.

B1 - Outstanding significance, generally of a "last of the least" type, such as only known occurrence of any element (species or natural community), the best or an excellent (A-ranked) occurrence of a G1 element, or a concentration (4+) of high-ranked (A or B ranked) occurrences of G1 or G2 elements. Site should be viable and defensible for elements and ecological processes contained.

B2 - Very high significance, such as the most outstanding occurrence of any community element (regardless of its element rank). Also includes areas containing any other (B, C, D ranked) occurrence of a G1 element, a good (A or B ranked) occurrence of a G2 element, an excellent (A ranked) occurrence of a G3 element, or a concentration (4+) of B ranked G3 or C ranked G2 elements.

B3 - High significance, such as any other (C or D ranked) occurrence of a G2 element, a B ranked occurrence of a G3 element, an A ranked occurrence of any community, or a concentration (4+) of A or B ranked occurrences of (G4 or G5) S1 elements.

B4 - Moderate significance, such as a C-ranked occurrence of a G3 element, a B ranked occurrence of any community, an A or B ranked or only state (but at least C ranked) occurrence of a (G4 or G5) S1 element, an A ranked occurrence of an S2 element, or a concentration (4+) of good (B ranked) S2 or excellent (A ranked) S3 elements.

B5 - Of general biodiversity interest or open space.

Site Report
SANDY HOOK

Identifiers:

SITECODE: S.USNJHP1 * 475

SITENAME: SANDY HOOK

Location:

COUNTYNAME: Monmouth

QUADNAME: SANDY HOOK

MUNICIPALITY: MIDDLETOWN TWP.

Site Description/Design:

DESCRIPTION: The site contains extensive beach and undeveloped dune natural communities along the Sandy Hook spit.

BOUNDARY

JUSTIFICATION: Secondary bounds include all undeveloped dune and beach communities on the Sandy Hook spit. Developed portions of Fort Hancock and marshes immediately north of Horseshoe Cove are excluded.

Site Significance:

BIODIVERSITY

SIGNIFICANCE: B2

COMMENTS: Contains excellent populations of a globally rare State Endangered bird species, good stands of two globally rare natural communities, populations of two additional State Endangered bird species, and a migratory shorebird concentration site.

Species and Natural Communities on Site:

NAME	COMMON NAME	FEDERAL STATUS:	STATE STATUS:	REGION. STATUS:	GRANK:	SRANK:	DATE OBSERVED
ARTEMISIA CAMPESTRIS SSP CAUDATA	WILD WORMWOOD				G5T4	S2	1980-09-27
CHARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??
CHARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??
CHARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??
CHARADRIUS MELODUS	PIPING PLOVER	LT	E		G3	S1	1987-07-??
COASTAL DUNE WOODLAND	COASTAL DUNE WOODLAND				G3?	S1	1986-02-04
MARITIME FOREST	MARITIME FOREST				G3?	S1	1986-02-04
MIGRATORY SHOREBIRD CONCENTRATION S	MIGRATORY SHOREBIRD CONCE				G?	S?	1982-10-??
PANDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??
PANDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??
PANDION HALIAETUS	OSPREY		T/T		G5	S3	1987-??-??
RYNCHOPS NIGER	BLACK SKIMMER		E		G5	S2	1986-SUMMR
SALIX LUCIDA	SHINING WILLOW				G5	S2	1897-10-??
STERNA ANTILLARUM	LEAST TERN		E		G4	S2	1986-SUMMR
STERNA ANTILLARUM	LEAST TERN		E		G4	S2	1986-SUMMR

NATURAL HERITAGE

PRIORITY SITE MAPS

The Priority Site Maps identify boundaries of some of the most important sites in the State for endangered and threatened plants, animals and ecosystems. These maps do not contain all of the important areas in the State for endangered biological diversity. They only depict the boundaries of priority sites which have been delineated by the Office of Natural Lands Management to date. These areas should be considered to be top priorities for the preservation of biological diversity. If these areas are allowed to be degraded or destroyed, we may lose some of the most unique components of our natural heritage.

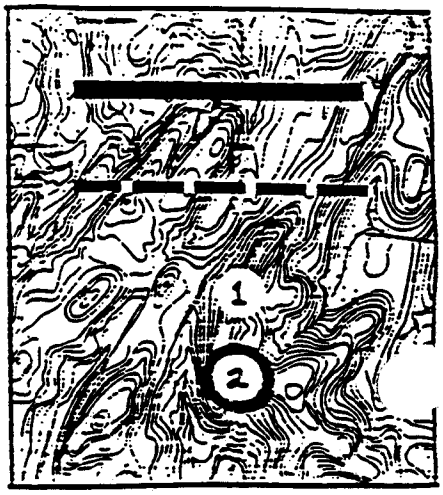
MAP KEY

STANDARD SITE BOUNDARY LINE
(sites smaller than 3,200 acres)

MACROSITE BOUNDARY LINE
(sites larger than 3,200 acres)

SITE LOCATOR DOT

LOCATOR DOT FOR SITES SMALLER THAN DOT

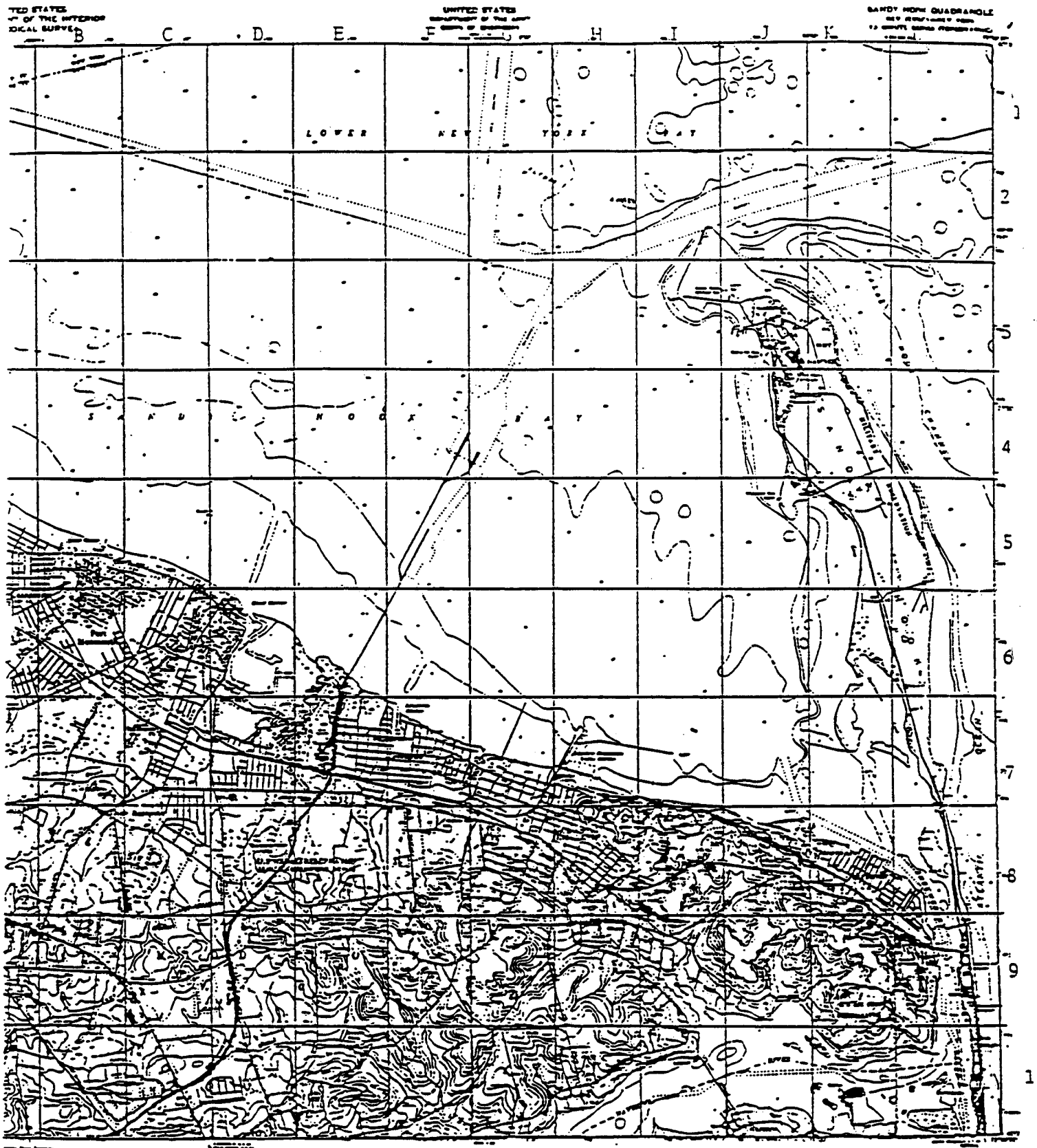


PRIORITY SITE MAP

NATURAL HERITAGE INDEX MAPS

The Natural Heritage Database contains several thousand records of individual occurrences of endangered and threatened species and ecosystems. Many of these occurrences either have not been documented in recent years or have not had habitat boundaries delineated. Because much work remains to be done to delineate habitat boundaries and determine current status for these occurrences, Natural Heritage Index Maps were devised to red flag general areas in which the occurrences are located. The index maps are meant to be used as a tool to point to areas which may be of significance for endangered biological diversity. These maps do not depict all endangered species habitat in the State, but merely general areas which contain documented occurrences. Many additional areas may contain unidentified or poorly documented occurrences.

The maps have been produced using a computer generated grid which shades a grid cell approximately 330 acres in size if an endangered or threatened species or ecosystem has been documented anywhere within the cell. To use these maps, we suggest that you first find the location to be checked on the quad maps and then refer to the same grid location of the Natural Heritage Index Maps. The Natural Heritage Program can be contacted for additional information as specific projects are planned.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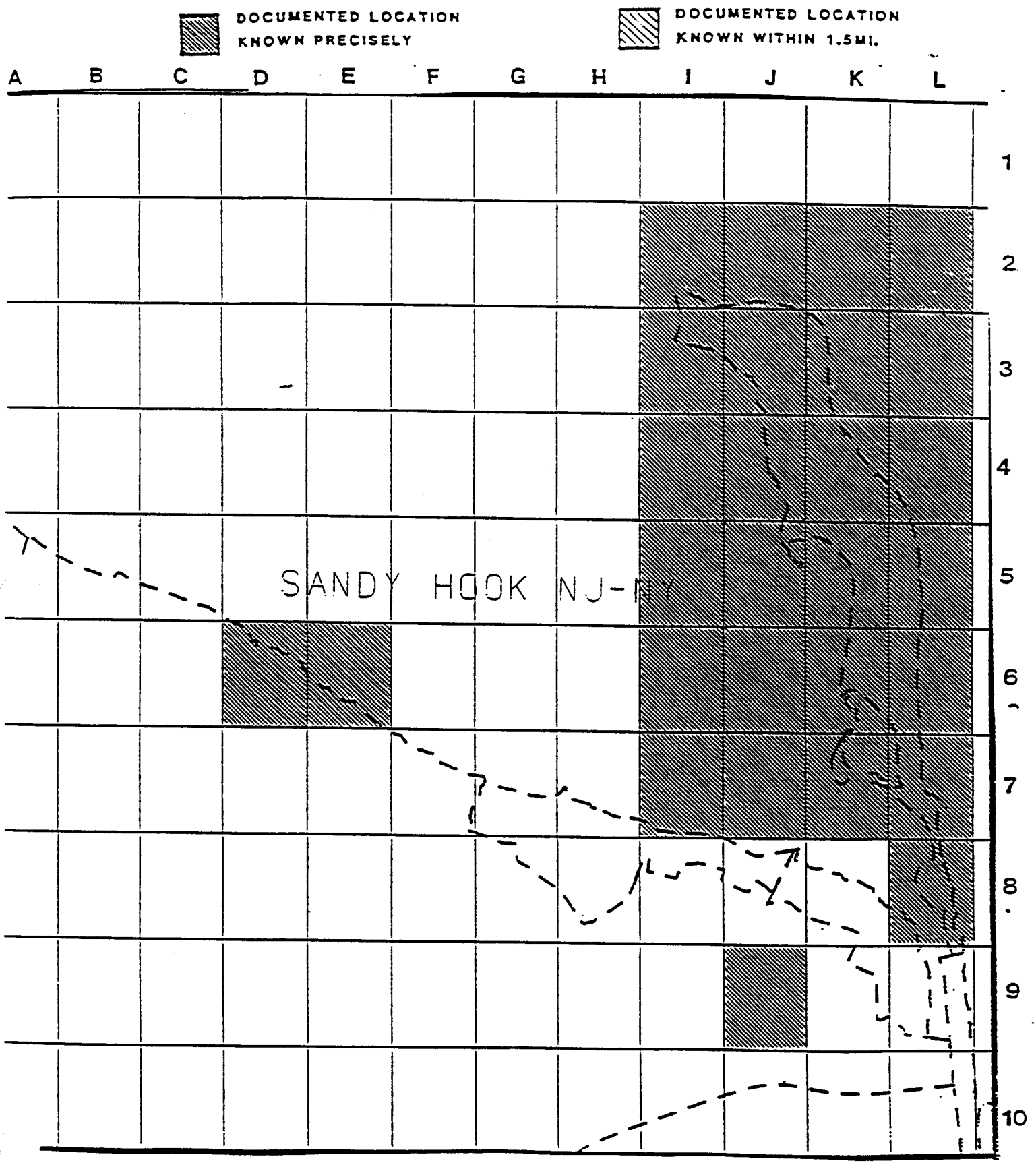
NATURAL HERITAGE DATA

GENERALIZED LOCATIONS FOR RARE & ENDANGERED ELEMENTS OF NATURAL DIVERSITY



NOTE: THIS IS NOT A COMPLETE MAP OF RARE AND ENDANGERED SPECIES HABITAT FOR THIS AREA. IT REFLECTS DATA OF KNOWN OCCURRENCES COMPILED AS OF THE ABOVE DATE. IT INCLUDES BOTH HISTORICALLY AND RECENTLY DOCUMENTED OCCURRENCES. ADDITIONAL OCCURRENCES MAY BE FOUND ON UNSURVEYED HABITAT. FOR MORE INFORMATION, CONTACT THE OFFICE OF NATURAL LANDS MANAGEMENT, CN404, TRENTON NJ 08625.

MAY 1988

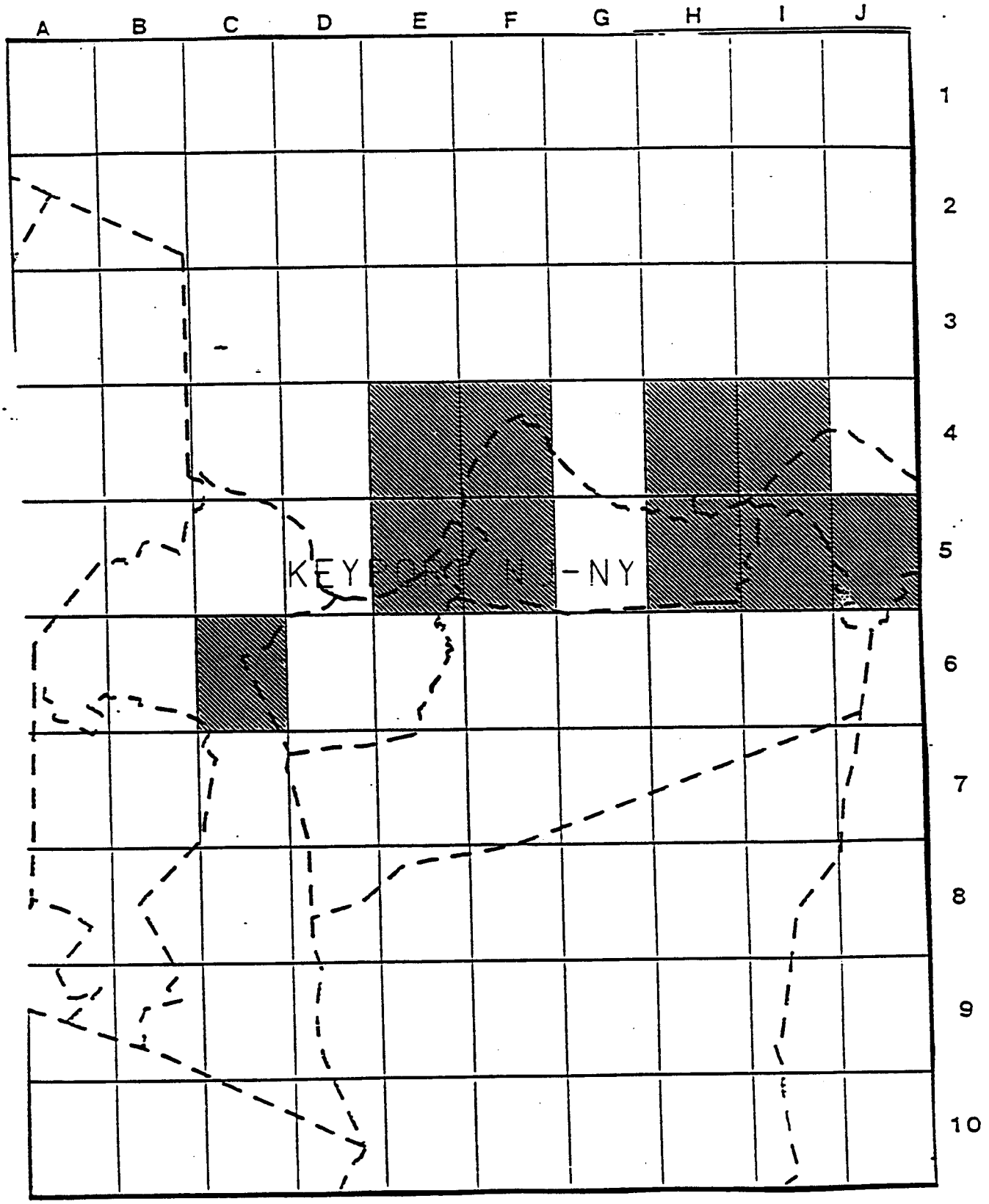
UPDATED SEMIANNUALLY

NATURAL HERITAGE DATA

GENERALIZED LOCATIONS FOR RARE & ENDANGERED ELEMENTS OF NATURAL DIVERSITY

DOCUMENTED LOCATION KNOWN PRECISELY

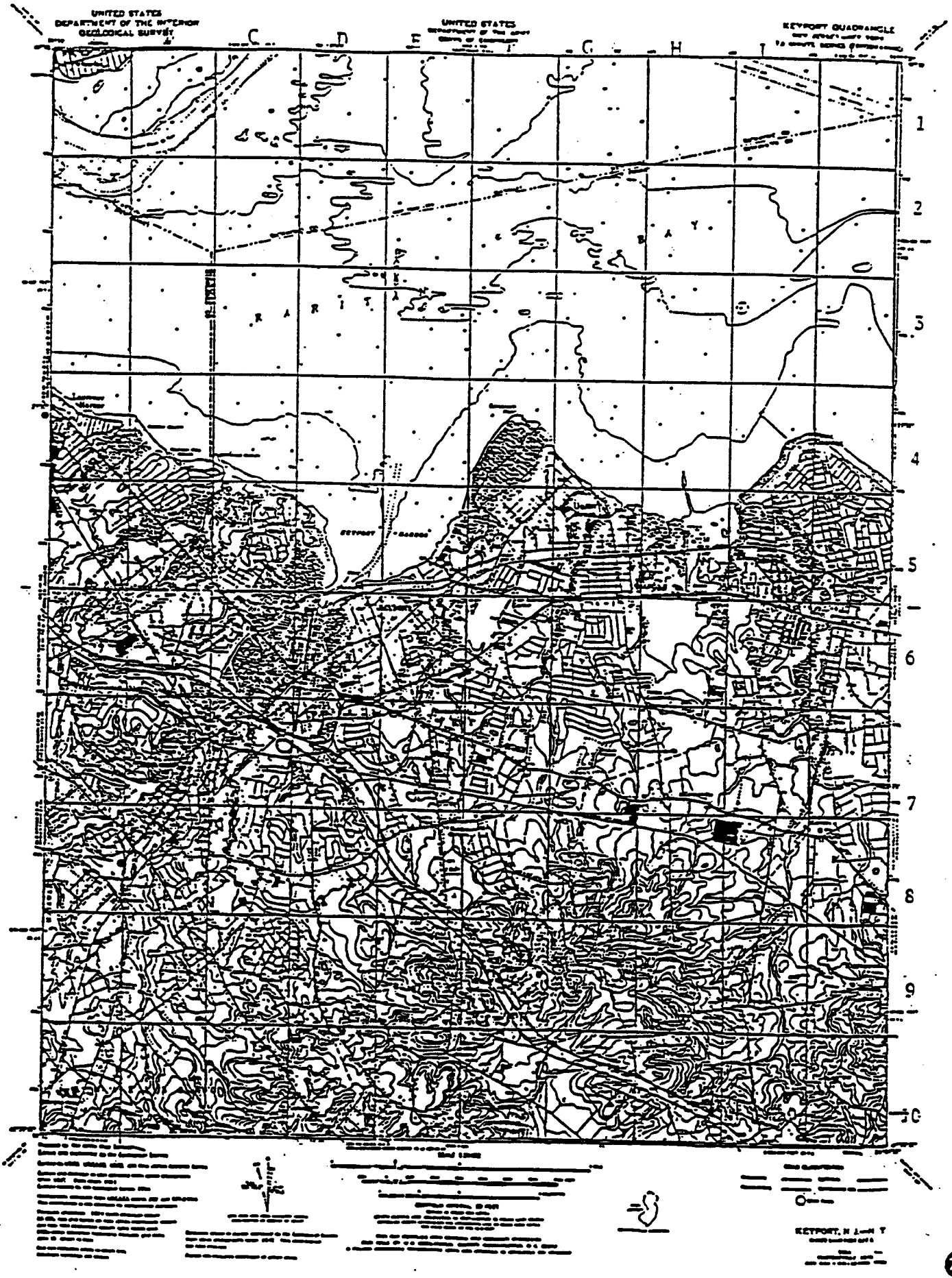
DOCUMENTED LOCATION KNOWN WITHIN 1.5MI.



NOTE: THIS IS NOT A COMPLETE MAP OF RARE AND ENDANGERED SPECIES HABITAT FOR THIS AREA. IT REFLECTS DATA ON KNOWN OCCURRENCES COMPILED AS OF THE ABOVE DATE. IT INCLUDES BOTH HISTORICALLY AND RECENTLY DOCUMENTED OCCURRENCES. ADDITIONAL OCCURRENCES MAY BE FOUND ON UNSURVEYED HABITAT. FOR MORE INFORMATION, CONTACT THE OFFICE OF NATURAL LANDS MANAGEMENT, CN404, TRENTON NJ 08625.

MAY 1988

UPDATED SEMIANNUALLY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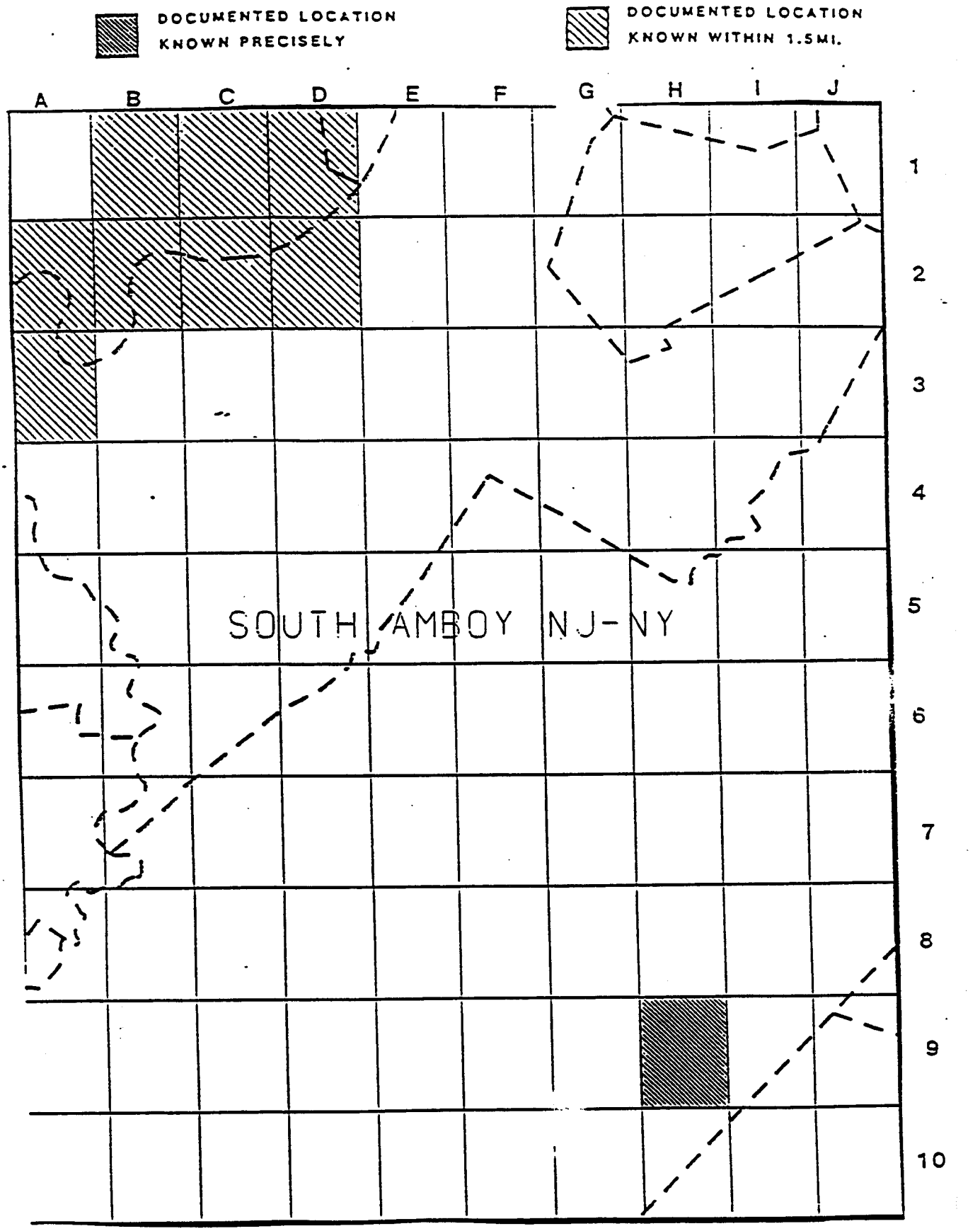
NATURAL HERITAGE DATA

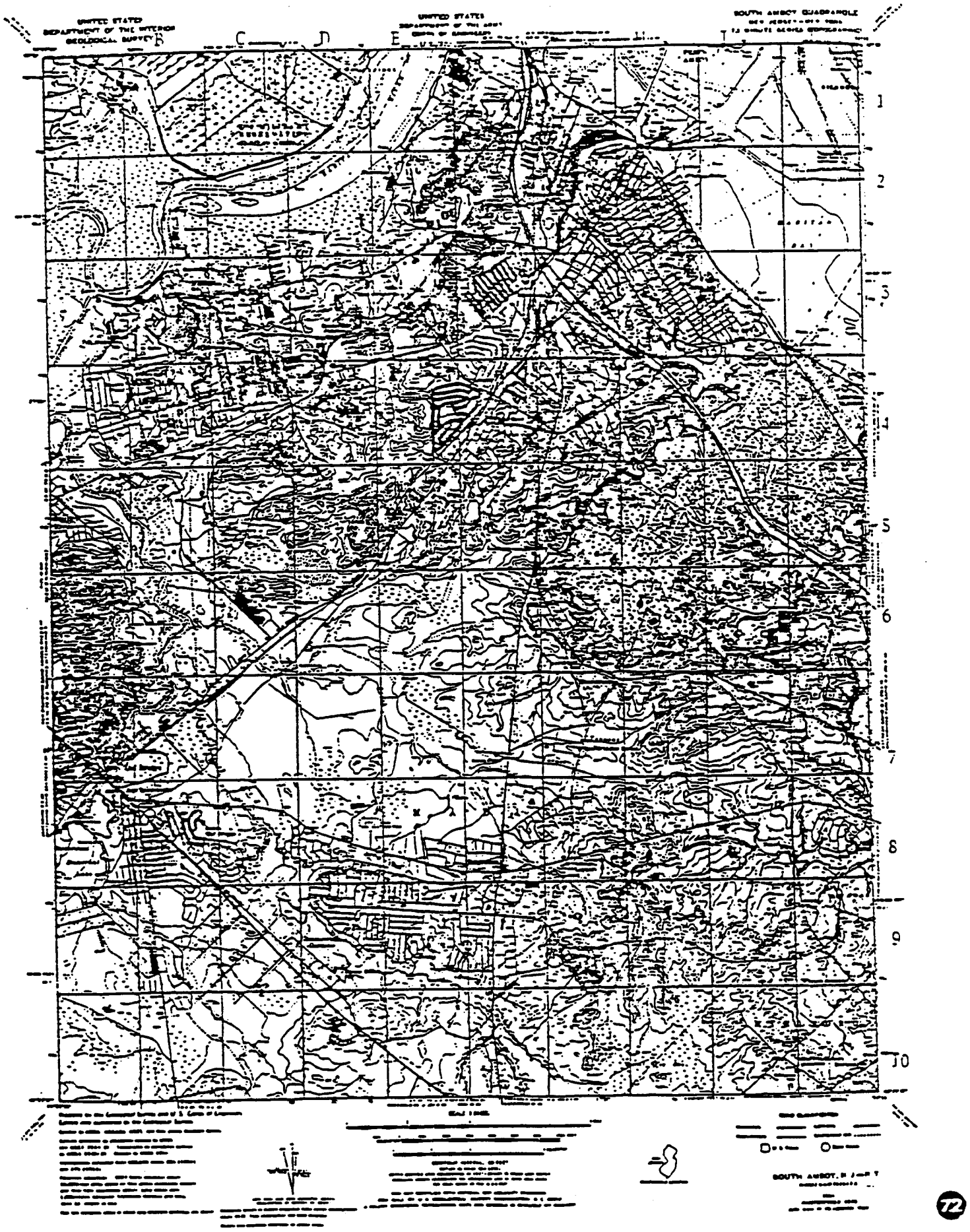
GENERALIZED LOCATIONS FOR RARE & ENDANGERED ELEMENTS OF NATURAL DIVERSITY



NOTE: THIS IS NOT A COMPLETE MAP OF RARE AND ENDANGERED SPECIES HABITAT FOR THIS AREA. IT REFLECTS DATA ON KNOWN OCCURRENCES COMPILED AS OF THE ABOVE DATE. IT INCLUDES BOTH HISTORICALLY AND RECENTLY DOCUMENTED OCCURRENCES. ADDITIONAL OCCURRENCES MAY BE FOUND ON UNSURVEYED HABITAT. FOR MORE INFORMATION, CONTACT THE OFFICE OF NATURAL LANDS MANAGEMENT, CN404, TRENTON NJ 08625.

MAY 1988

UPDATED SEMIANNUALLY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5\18\87

NEW JERSEY NATURAL HERITAGE PROGRAM
POTENTIAL THREATENED AND ENDANGERED VERTEBRATE SPECIES
IN MIDDLESEX COUNTY

AMERICAN BITTERN
BOTAURUS LENTIGINOSUS
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: Y

HABITAT COMMENTS
Fresh water bogs, swamps, wet fields, cattail and bulrush marshes, brackish and saltwater marshes and meadows.

BARRED OWL
STRIX VARIA
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: ?

HABITAT COMMENTS
Dense woodland and forest (conif. or hardwood), swamps, wooded river valleys, cabbage palm-live oak hammocks, especially where bordering streams, marshes, and meadows.

BOBOLINK
DOLICHONYX ORYZIVORUS
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: ?

HABITAT COMMENTS
Tall grass areas, flooded meadows, prairie, deep cultivated grains, alfalfa and clover fields. In migration and winter also in rice fields, marshes, and open woody areas.

BOG TURTLE
CLEMMYS MUHLENBERGII
FEDERAL STATUS: C2
STATE STATUS: LE
COUNTY OCCURRENCE: ?

HABITAT COMMENTS
Slow, shallow rivulets of sphagnum bogs, swamps, and marshy meadows; sea level to 1200 m in Appalachians. Commonly basks on tussocks in morning in spring and early summer. Hibernates in subterreanean rivulet or seepage area.

COOPER'S HAWK
ACCIPITER COOPERII
FEDERAL STATUS:
STATE STATUS: LE
COUNTY OCCURRENCE: W*

HABITAT COMMENTS
Primarily mature forest, either broadleaf or coniferous, mostly the former; also open woodland and forest edge.

GREAT BLUE HERON
ARDEA HERODIAS
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: N*

HABITAT COMMENTS
Freshwater and brackish marshes, along lakes, rivers, bays, lagoons, ocean beaches, mangroves, fields, and meadows.

SAVANNAH SPARROW
PASSERCULUS SANDWICHENSIS
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: W*

HABITAT COMMENTS
"Open areas, especially grasslands, tundra, meadows, bogs, farmlands, grassy areas with scattered bushes, and marshes, including salt marshes in the BELDINGI and ROSTRATUS groups (Subtropical and Temperate zones)".

SHORT-EARED OWL
ASIO FLAMMEUS
FEDERAL STATUS:
STATE STATUS: LE/S
COUNTY OCCURRENCE: W*

HABITAT COMMENTS
Open country, including prairie, meadows, tundra, moorlands, marshes, savanna, dunes, fields, and open woodland. Roosts by day on ground or on low open perches.

UPLAND SANDPIPER
BARTRAMIA LONGICAUDA
FEDERAL STATUS:
STATE STATUS: LE
COUNTY OCCURRENCE: B

HABITAT COMMENTS
Grasslands, especially prairies, dry meadows, pastures, and (in Alaska) scattered woodlands at timberline; very rarely in migration along shores and mudflats.

WOOD TURTLE
CLEMMYS INSCULPTA
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: Y

HABITAT COMMENTS
Vicinity of streams and rivers. In streams and in wooded areas and fields adjacent to streams in summer. In streams in spring and fall. Hibernates in banks or bottoms of streams in winter.

5\21\87

NEW JERSEY NATURAL HERITAGE PROGRAM
POTENTIAL THREATENED AND ENDANGERED VERTEBRATE SPECIES
IN MONMOUTH COUNTY

AMERICAN BITTERN BOTAURUS LENTIGINOSUS	FEDERAL STATUS: STATE STATUS: LT	COUNTY OCCURRENCE: ?

HABITAT COMMENTS
Fresh water bogs, swamps, wet fields, cattail and bulrush marshes, brackish and saltwater marshes and meadows.

BALD EAGLE HALIAEETUS LEUCOCEPHALUS	FEDERAL STATUS: LELT STATE STATUS: LE	COUNTY OCCURRENCE: T*

HABITAT COMMENTS
Primarily near seacoasts, rivers, and large lakes.

BARRED OWL STRIX VARIA	FEDERAL STATUS: STATE STATUS: LT	COUNTY OCCURRENCE: Y

HABITAT COMMENTS
Dense woodland and forest (conif. or hardwood), swamps, wooded river valleys, cabbage palm-live oak hammocks, especially where bordering streams, marshes, and meadows.

BLACK RAIL LATERALLUS JAMAICENSIS	FEDERAL STATUS: STATE STATUS: LT	COUNTY OCCURRENCE: B

HABITAT COMMENTS
Salt, brackish, and freshwater marshes, wet meadows, and grassy swamps.

BLACK SKIMMER RYNCHOPS NIGER	FEDERAL STATUS: STATE STATUS: LE	COUNTY OCCURRENCE: B

HABITAT COMMENTS
Primarily coastal waters, including bays, estuaries, lagoons and mudflats in migration and winter.

BOBOLINK DOLICHONYX ORYZIVORUS	FEDERAL STATUS: STATE STATUS: LT	COUNTY OCCURRENCE: B

HABITAT COMMENTS
Tall grass areas, flooded meadows, prairie, deep cultivated grains, alfalfa and clover fields. In migration and winter also in rice fields, marshes, and open woody areas.

MERLIN
FALCO COLUMBARIUS
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: W

HABITAT COMMENTS
During the breeding season inhabits coniferous or deciduous open woodlands, wooded prairies. At other times of the year found in a wide variety of habitats including: marshes and deserts, seacoasts, open woodlands, fields, etc.

MUD SALAMANDER
PSEUDOTRITON MONTANUS
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: ?

HABITAT COMMENTS
Muddy springs, slow floodplain streams, and swamps along slow streams. Nonlarval forms usually found beneath logs and rocks, in decaying vegetation, and in muddy stream-bank burrows. Occasionally disperses from wet muddy areas.

NORTHERN HARRIER
CIRCUS CYANEUS
FEDERAL STATUS:
STATE STATUS: LE
COUNTY OCCURRENCE: Y

HABITAT COMMENTS
Marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts.

OSPREY
PANDION HALIAETUS
FEDERAL STATUS:
STATE STATUS: LT
COUNTY OCCURRENCE: B

HABITAT COMMENTS
Primarily along rivers, lakes, and seacoasts, occurring widely in migration, often crossing land between bodies of water.

PIED-BILLED GREBE
PODILYMBUS PODICEPS
FEDERAL STATUS:
STATE STATUS: LE
COUNTY OCCURRENCE: Y

HABITAT COMMENTS
Lakes, ponds, sluggish streams, and marshes; in migration and in winter also in brackish bays and estuaries.

PINE BARRENS TREEFROG
HYLA ANDERSONII
FEDERAL STATUS: C2
STATE STATUS: LE
COUNTY OCCURRENCE: Y

HABITAT COMMENTS
Swamps, ponds, cranberry bogs, and other wetland habitat. Post-breeding habitat the surrounding woodlands.

TIMBER RATTLESNAKE
CROTALUS HORRIDUS

FEDERAL STATUS:
STATE STATUS: LE

COUNTY
OCCURRENCE: Y

HABITAT COMMENTS
Wooded rocky hillsides in north; swampy areas, canebrake thickets, and floodplains in south. Near streams in late summer in some areas (B83DEG01NA). Often hibernates in burrows and crevices of rock outcroppings.

UPLAND SANDPIPER
BARTRAMIA LONGICAUDA

FEDERAL STATUS:
STATE STATUS: LE

COUNTY
OCCURRENCE: B

HABITAT COMMENTS
Grasslands, especially prairies, dry meadows, pastures, and (in Alaska) scattered woodlands at timberline; very rarely in migration along shores and mudflats.

VESPER SPARROW
POOECETES GRAMINEUS

FEDERAL STATUS:
STATE STATUS: LE

COUNTY
OCCURRENCE: Y

HABITAT COMMENTS
"Plains, prairie, dry shrublands, savanna, weedy pastures, fields, sagebrush, arid scrub and woodland clearings".

WOOD TURTLE
CLEMMYS INSCULPTA

FEDERAL STATUS:
STATE STATUS: LT

COUNTY
OCCURRENCE: Y

HABITAT COMMENTS
Vicinity of streams and rivers. In streams and in wooded areas and fields adjacent to streams in summer. In streams in spring and fall. Hibernates in banks or bottoms of streams in winter.

EXPLANATIONS OF CODES USED IN NATURAL HERITAGE REPORTS

FEDERAL STATUS CODES

The following U.S. Fish and Wildlife Service categories and their definitions of endangered and threatened plants and animals have been modified from the U.S. Fish and Wildlife Service (F.R. Vol. 5 No. 188; Vol. 55, No. 35; F.R. 50 CFR 17.11 and 17.12). Federal Status codes reported for species follow the most recent listing.

LE Taxa formally listed as endangered.

LT Taxa formally listed as threatened.

PE Taxa already proposed to be formally listed as endangered.

PT Taxa already proposed to be formally listed as threatened.

C1 Taxa for which the Service currently has on file substantial information on biological vulnerability and threat(s) to support the appropriateness of proposing to list them as endangered or threatened species.

C1* Taxa which may be possibly extinct (although persuasive documentation of extinction ha not been made--compare to 3A status).

C2 Taxa for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on fil to support the immediate preparation of rules.

C3 Taxa that are no longer being considered for listing as threatened or endangered species. Such taxa are further coded to indicate three subcategories, depending on the reason(s) for removal from consideration.

3A Taxa for which the Service has persuasive evidence of extinction.

3B Names that, on the basis of current taxonomic understanding, do not represent taxa meeting the Act's definition of "species".

3C Taxa that have proven to be more abundant or widespread than was previously believed

S Stable species-a species whose population is not undergoing any long-term increase/decrease within its natural cycle.

U Undetermined species-a species about which there is not enough information available tc determine the status.

Status for animals separated by a slash(/) indicate a duel status. First status refers to the state breeding population, and the second status refers to the migratory or winter population.

Plant taxa listed as endangered are from New Jersey's official Endangered Plant Species List N.J.S.A. 131B-15.151 et seq.

E Native New Jersey plant species whose survival in the State or nation is in jeopardy.

REGIONAL STATUS CODES FOR PLANTS

LP Indicates taxa listed by the Pinelands Commission as endangered or threatened within their legal jurisdiction. Not all species currently tracked by the Pinelands Commission are tracked by the Natural Heritage Program. A complete list of endangered and threatened Pineland species is included in the New Jersey Pinelands Comprehensive Management Plan.

EXPLANATION OF GLOBAL AND STATE ELEMENT RANKS

The Nature Conservancy has developed a ranking system for use in identifying elements (rare species and natural communities) of natural diversity most endangered with extinction. Each element is rankec according to its global, national, and state (or subnational in other countries) rarity. These ranks are used to prioritize conservation work so that the most endangered elements receive attention first. Definitions for element ranks are after The Nature Conservancy (1982: Chapter 4, 4.1-1 through 4.4.1.3-3).

area of the state. Also included are elements which were formerly more abundant, but because of habitat destruction or some other critical factor of its biology, they have beer demonstrably reduced in abundance. In essence, these are elements for which, even with intensive searching, sizable additional occurrences are unlikely to be discovered.

S2 Imperiled in New Jersey because of rarity (6 to 20 occurrences). Historically many of these elements may have been more frequent but are now known from very few extant occurrences, primarily because of habitat destruction. Diligent searching may yield additional occurrences.

S3 Rare in state with 21 to 100 occurrences (plant species in this category have only 21 to 50 occurrences). Includes elements which are widely distributed in the state but with small populations/acreage or elements with restricted distribution, but locally abundant. Not yet imperiled in state but may soon be if current trends continue. Searching often yields additional occurrences.

S4 Apparently secure in state, with many occurrences.

S5 Demonstrably secure in state and essentially ineradicable under present conditions.

SA Accidental in state, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded; examples include european strays or western birds on the East Coast and visa-versa.

SE Elements that are clearly exotic in New Jersey including those taxa not native to North America (introduced taxa) or taxa deliberately or accidentally introduced into the State from other parts of North America (adventive taxa). Taxa ranked SE are not a conservation priority (viable introduced occurrences of G1 or G2 elements may be exceptions).

SH Elements of historical occurrence in New Jersey. Despite some searching of historical occurrences and/or potential habitat, no extant occurrences are known. Since not all of the historical occurrences have been field surveyed, and unsearched potential habitat remains, historically ranked taxa are considered possibly extant, and remain a conservation priority for continued field work.

.1 Elements documented from a single location.

Note: To express uncertainty, the most likely rank is assigned and a question mark added (e.g., G2?). A range is indicated by combining two ranks (e.g., G1G2, S1S3).

IDENTIFICATION CODES

These codes refer to whether the identification of the species or community has been checked by a reliable individual and is indicative of significant habitat.

Y	Identification has been verified and is indicative of significant habitat.
BLANK	Identification has not been verified but there is no reason to believe it is not indicative of significant habitat.
?	Either it has not been determined if the record is indicative of significant habi the identification of the species or community may be confusing or disputed.

mainly of *Phragmites* and are expected to remain in this condition after construction of the project.

Service Recommendation 12: Resolve any discrepancies within the HEP study to determine and identify all unavoidable project-related adverse impacts. Once the full impacts are known, use additional HEP analyses to identify the sites within the vicinity of the project area that have the best potential for providing compensatory mitigation for unavoidable project-related impacts.

District Response: The District concurs. The District believes that all unavoidable project-related impacts at the PCSA and CCSA have been identified and quantified. In addition, an array of 31 mitigation plans were developed and analyzed using HEP methodology. Based upon the discussion at the October 15, 1998 meeting, the District is under the impression that the Service has determined that the selected mitigation plan is sufficient to compensate for the loss of HUs for the most impacted (Marsh wren) evaluation species. The District believes that Service Recommendation 12 has been appropriately addressed and implemented based upon our October 15, 1998 meeting. For further discussion, please see the District's response to Service Recommendation 7 above.

Service Recommendation 13: Consider the method of and source of materials for beach fortification and nourishment so that the potential adverse impacts to water quality, infaunal and benthic communities, and other wildlife will be avoided or minimized.

District Response: The District concurs. The sand source for dune fortification and renourishment is the Sea Bright borrow area. This borrow area was identified as the sand source for the Atlantic Coast of New Jersey, Sandy Hook to Barnegat Inlet, Section 1 – Sea Bright to Deal, Monmouth County, New Jersey, Beach Erosion Control Project. The District intentionally over-sized this borrow area to compensate for inaccuracies that are associated with forecasting future sand requirements due to the unknown frequency and severity of future storms. An analysis has determined that an extra 10 million cubic yards of sand lay within the footprint of the borrow area. All of the impacts that are associated with the removal of sand at this borrow area were addressed in the EIS that was written for the above-mentioned project. The District believes that this position is accurate, because the sand will come from within the footprint of the existing borrow area and will not result in the removal of more material than was permitted.

Service Recommendation 14: Avoid beach fortification and nourishment activities during periods of shorebird migration.

District Response: The District does not agree that it is necessary to impose a "placement window" for when the construction of initial dune fortification can occur to avoid a shorebird migration concern. The existing beach conditions, which are very narrow and inundated during high-tide, offer poor habitat for shorebirds to nest and forage. The deposition of sand at the placement area is expected to generate minimal, short-term adverse conditions in water quality that are expected to be confined to the immediate placement area. The District concurs to continue to coordinate with the Service and implement reasonable measures, if necessary, to minimize impacts of construction activities to shorebird species of significance, such as piping plovers and/or least terns, during renourishment phases.

Service Recommendation 15: Consider a monitoring program for areas of beach fortification and nourishment following construction to include: water-quality, beach infaunal assemblages, nearshore fish assemblages, and shorebird use.

District Response: The District concurs. The District proposes to monitor the impact of the selected bay shore protection plan to compensate for unavoidable effects to intertidal resources. The District proposes to monitor the recovery of intertidal infauna, epibenthic and finfish resources, finfish feeding habits, water quality, grain size and shorebird use. Except for the shorebird component, sampling for all of the monitoring components will involve 2 years of pre-construction, 1 year of during construction and 2 years of post-construction. The shorebird component will be conducted only in the post-construction phase and only target shorebird species that have a special significance, such as the piping plover and least tern.

Service Recommendation 16: Should the proposed beach fortification and nourishment create nesting habitat for beach-nesting birds, ensure proper protection, management, and monitoring, including avoidance of any future nourishment activities during the nesting, brood-rearing, or migration periods.

District Response: The District concurs with only part of the recommendation. The District proposes to implement a post-construction shorebird monitoring component that will only target shorebird species that have a special significance, such as the piping plover and/or least tern. During renourishment phases, the District and the Service will implement reasonable conservation

measures, if necessary, to avoid and minimize impacts of construction to shorebird species with special significance. The District does not agree to implement this recommendation for shorebird species that are not designated with a special significance.

Service Recommendation 17: In re-establishing dunes, concentrate on the bay shore areas where natural dunes are lacking and provide mechanisms to ensure long-term protection and success of the dune system (i.e., natural vegetation, education signs, restricted access through fencing.

District Response: The District concurs. The fortification of the existing dune is to protect it from continued erosion and build a dune in locations where a dune is currently absent. The District proposes to monitor the success of dune plantings for the first 2 years after construction to ensure a 90% vegetative success rate. The selected bay shore protection plan involves the construction of 3 wood dune cross-over structures to restrict access and limit damage to the dune. The non-Federal sponsor (the NJDEP, Monmouth County and Middletown Township) are obligated to maintain the dune cross-over structures, as well as provide and maintain access for the handicapped and "Keep off the Dune" signs.

State of New Jersey

...stine Todd ...itman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Division of Fish, Game and Wildlife
PO Box 400
Trenton, NJ 08625-0400

January 6, 1999

Clifford G. Day, Administrator
US Fish and Wildlife Service
927 North Main Street (Bldg. D1)
Pleasantville, NJ 08232

Dear Mr. Day:

This serves to inform you that the NJ Division of Fish, Game and Wildlife concurs with the USFWS Draft Fish and Wildlife Coordination Act Report entitled, "Assessment of the Raritan Bay and Sandy Hook Bay Combined Flood and Shoreline Protection Project, Port Monmouth, New Jersey". The assessment constitutes the Service's report on fish and wildlife impacts that can be expected to result from the US Army Corps of Engineers' proposed plan to construct flood control and shoreline protection structures and was prepared pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 USC 662 et. seq.).

Thank you for the opportunity to comment.

Sincerely,

Robert McDowell
Director

LW/slw

c: Andy Didun
Lee Widjeskog

DOCUMENT: DAY

Burlas, Mark H NAN02

From: paula_halupa@mail.fws.gov
nt: Wednesday, October 21, 1998 4:45 PM
mark.h.burlas@nan02.usace.army.mil
: john_staples@mail.fws.gov; clifford_day@mail.fws.gov
ubject: Port Monmouth project

Mark,

I thought our meeting (October 15, 1998) was very productive in resolving the majority of questions and concerns over the assumptions and calculations involved with the HEP study. The presentation given of the Phragmites encroachment model was particularly illustrative and helpful for predicting future conditions of the project site. In addition, our independent spot-checking of the calculations provided an added level of confidence in the HEP study results.

Based upon the discussion at our October 15 meeting, it appears that the selected mitigation plan will be sufficient to compensate for the habitat units lost for the evaluation species (black duck, marsh wren, clapper rail) as a result of the project at Pews Creek and Compton Creek. At this time, I do not forsee any significant outstanding or unresolvable differences for the project at Pews Creek and Compton Creek. However, if the project changes or if new information becomes available, issues may arise. In addition, I trust that concerns over the dune establishment and beach renourishment components of the project will be resolved through continued on-going coordination with both our agency and NMFS.

John Staples mentioned that you will be forwarding us a copy of the meeting minutes when completed. When you send them, please let us know if you need official comments / concurrence for your files.

Thanks again for having the meeting in Pleasantville. It saved us time in travel to Sandy Hook.

-Paula

Draft
FISH AND WILDLIFE COORDINATION ACT
SECTION 2(b) REPORT

ASSESSMENT OF THE RARITAN BAY AND SANDY HOOK BAY COMBINED FLOOD CONTROL AND SHORELINE PROTECTION PROJECT, PORT MONMOUTH, NEW JERSEY

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
New Jersey Field Office
Pleasantville, New Jersey 08232

September 1998

FISH AND WILDLIFE SERVICE
Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

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EPLY REFER TO:
FP-98/41

September 16, 1998

Colonel William H. Pearce
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Colonel Pearce:

This is the draft report of the U.S. Fish and Wildlife Service (Service) on anticipated impacts on fish and wildlife resources from the U.S. Army Corps of Engineers' (Corps) proposed Raritan Bay and Sandy Hook Bay combined flood control and shoreline protection project, Port Monmouth, New Jersey. This draft report was prepared pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) and is provided in accordance with our Fiscal Year - 1994 interagency agreement. This report is based on plans and information provided by the Corps.

The piping plover (*Charadrius melodus*), a federally listed (threatened) species is known to exist within 6 miles of the project area and the peregrine falcon (*Falco peregrinus*), a federally listed (endangered) species, is known to nest within 10 miles of the project site. Pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA), in a February 9, 1998 letter to the Corps, the Service had determined that the proposed activities are not likely to adversely affect piping plovers or peregrine falcons. However, since our letter of February 1998, the proposed project has changed to include fortification of existing dunes and beach nourishment. Due to this change in project plans and/or if piping plovers are present during project activities, further consultation with the Service pursuant to Section 7(a)(2) of the ESA will be necessary to ensure that activities do not adversely affect the piping plover. Aside from the aforementioned species and occasional transient individuals, no federally listed or proposed threatened or endangered species under Service jurisdiction are known to occur within the project area. Appendix D provides federally listed and candidate species in New Jersey.

A copy of this draft report was forwarded to the New Jersey Division of Fish, Game and Wildlife (NJDFG&W) for review. The Service is currently awaiting NJDFG&W's response.

Additional information regarding this report can be provided by John Staples or Paula Halupa of my staff. The Service would appreciate any written comments on this report within 30 calendar days.

Sincerely,

Clifford G. Day
Supervisor

Enclosure

Draft
FISH AND WILDLIFE COORDINATION ACT
SECTION 2(b) REPORT

ASSESSMENT OF THE RARITAN BAY AND SANDY HOOK BAY COMBINED FLOOD CONTROL AND SHORELINE PROTECTION PROJECT, PORT MONMOUTH, NEW JERSEY

Prepared for:

U.S. Army, Corps of Engineers
New York District
New York, New York

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
New Jersey Field Office
Pleasantville, New Jersey 08232

Preparer: Paula J. Halupa
Assistant Project Leader: John C. Staples
Project Leader: Clifford G. Day

September 1998

EXECUTIVE SUMMARY

The U.S. Fish and Wildlife Service (Service) reviewed project plans and other information supplied by the U.S. Army Corps of Engineers (Corps) regarding the Raritan Bay and Sandy Hook Bay Combined Flood Control and Shore Protection project for Port Monmouth, New Jersey. Presented here is the Service's draft Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*), Section 2(b) report on the fish and wildlife resources and supporting ecosystems in the project area.

This draft FWCA report is based on existing project plans and the results of recently completed fish and wildlife studies in the project area. As stated in previous Service reports, it is our view that floodplain reclamation would provide the most effective flood prevention in the project area with the least adverse impacts to fish and wildlife resources. The focus of the Service throughout the current phase of the study has been to ensure that the adverse environmental effects of the selected plan are minimized to the maximum extent possible, and that appropriate and practicable measures to compensate for any unavoidable adverse impacts are included in the proposed plan. The information presented in this report: documents the fish and wildlife resources in the project area; provides a preliminary assessment of the effects of the proposed project on fish and wildlife resources; and, provides preliminary recommendations to mitigate adverse impacts to those resources.

According to the description provided within the Corps' draft Habitat Evaluation Procedures Report, the proposed project would involve: (1) construction of a 2,150-foot-long earthen levee and floodwall combination along the shoreline from the existing dune to the Keansburg Levee with a storm gate and pump station spanning Pews Creek to control flooding from tidal and fluvial flows; (2) construction of a 6,000-foot-long earthen levee and 950-foot-long floodwall, extending along the west side of the Compton Creek basin parallel to the creek; and, (3) fortification of an approximately 2,300-foot-long existing dune and beach nourishment (U.S. Army Corps of Engineers, 1998c). The proposed project would result in the direct loss or disturbance or 12.35 acres of wetlands and aquatic habitat and disturbance of 2,300 linear feet of existing beach and dunes. However, additional indirect effects (i.e., changes to hydrodynamics of the marsh; associated shifts in vegetation) as a result of the storm gate at Pews Creek will require further evaluation. The Service continues to have reservations regarding some of the assumptions for the hydrodynamic and *Phragmites* encroachment models that were used in the Habitat Evaluation Procedures (HEP) study (U.S. Fish and Wildlife Service, 1998; Appendix A). Similarly, cumulative impacts to fish and wildlife through the life of the project (i.e., 50 years) require evaluation (U.S. Fish and Wildlife Service, 1998; Appendix A). In addition, the potential effects of the proposed dune fortification and beach nourishment were not included in the HEP study and will require more detailed analysis. Consequently, a detailed determination of impacts to evaluation species and other fish and wildlife from all features of the project has not been completed to date.

Service review of the project, including preliminary HEP results, has concluded that implementation of the selected plan for the Port Monmouth project would potentially result in substantial adverse impacts to fish and wildlife resources. Since information provided for the dune fortification and beach nourishment activities is preliminary and limited in detail, it is not possible at this time to determine the degree of adverse or beneficial impacts to fish and wildlife that would result from this component of the proposed project. To determine adverse impacts, avoid and minimize impacts, and compensate for unavoidable adverse impacts that may result from the Corps' proposed project, the Service provides 17 recommendations, based on preliminary findings and information. These include: re-analysis of existing data from the HEP study, using modified models and following prescribed HEP methodology to determine indirect and cumulative impacts to fish and wildlife resources; continued coordination among resource protection agencies with regard to potential effects to listed species; determination of potential impacts (positive and negative) as a result of dune fortification and beach nourishment; investigation of the feasibility of a partial buy-out of flood-prone structures to protect and restore the floodplain and minimize impacts to wetlands; development of site-specific compensatory mitigation plans (using HEP) to offset the loss of wetland and aquatic habitat; avoidance of beach fortification and nourishment during periods of shorebird migration; implementation of a monitoring program following project beach construction; and, protection, management, and monitoring of fortified dunes and nourished beaches if habitat for beach-nesting birds is created as a result of the project.

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APPENDICES

I. INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has reviewed project plans and other information supplied by the U.S. Army Corps of Engineers (Corps) regarding the proposed Raritan Bay and Sandy Hook Bay Combined Flood Control and Shore Protection project (project), Port Monmouth, New Jersey. This is the Service's draft Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*), Section 2(b) report on the fish and wildlife resources and supporting ecosystems in the project area. This report is provided in accordance with a Fiscal Year-1994 scope-of-work agreement with the Corps New York District.

This draft FWCA report is based on proposed project plans and the preliminary results of recently completed fish and wildlife studies in the project area. This report documents the fish and wildlife resources in the project area, provides a preliminary assessment of the effects of the proposed project on fish and wildlife resources, and provides preliminary recommendations to mitigate adverse impacts to those resources.

II. METHODS

The Service has been involved in the planning of the Port Monmouth combined flood control and shore protection project for 4 years and has provided planning aid to the Corps on the proposed project in the form of a planning aid letter (U.S. Fish and Wildlife Service, 1998) (Appendix A). In addition, the Service has provided planning aid to the Corps for the general Raritan Bay / Sandy Hook Bay project vicinity in the form of a planning aid report (U.S. Fish and Wildlife Service, 1992). The information and findings presented in this report are based on the review of previous reports and proposed project plans and other information provided by the Corps, including a hydrodynamic model for the Pews Creek study area (U.S. Army Corps of Engineers, 1998a) and the Port Monmouth Project Mitigation Report (U.S. Army Corps of Engineers, 1998b). The content of this report is also based on: review of Service files and material, including significant habitat and habitat complexes within the New York Bight watershed (U.S. Fish and Wildlife Service, 1996), coordination with the New Jersey Department of Environmental Protect, Division of Fish, Game and Wildlife (NJDFG&W) (Appendix B); and, site visits conducted by Service personnel during current and previous field investigations.

The field investigations discussed in this report include a Habitat Evaluation Procedures (HEP) study of fish and wildlife resources in the Port Monmouth project area. This study was conducted in accordance with standard HEP methodology (U.S. Fish and Wildlife Service, 1980). The HEP study of terrestrial wildlife resources was conducted by the Service, the Corps, and the National Oceanic and Atmospheric Administration - National Marine Fisheries Service. The NJDFG&W declined participation in the study due to staffing constraints (Appendix B). A detailed discussion of the methods, results, and conclusions of that study is provided in the draft HEP study report (U.S. Army Corps of Engineers, 1998c)

and will not be repeated here. Briefly, the purpose of the HEP study was to assess the value of wetlands and uplands of the Port Monmouth project area from Pews Creek to Compton Creek to wildlife and to assess the effects of the proposed project on those natural resources.

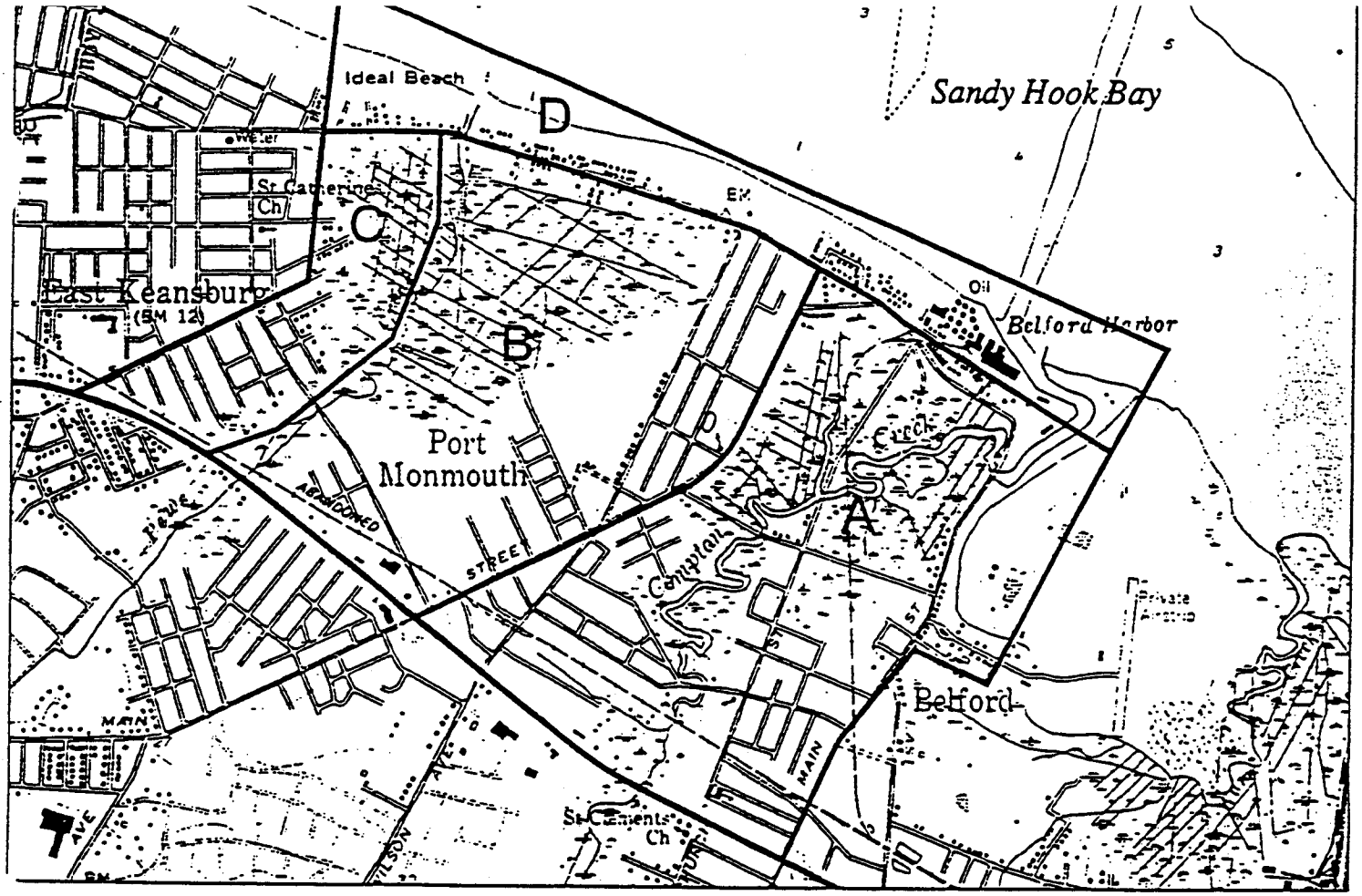
The evaluation species selected in the HEP study included: black duck (*Anas rubripes*), used to evaluate estuarine emergent wetlands; clapper rail (*Rallus longirostris*), used to evaluate estuarine emergent wetland; and, marsh wren (*Cistothorus palustris*), used to evaluate estuarine and palustrine emergent and scrub-shrub wetlands. In addition, the eastern cottontail (*Sylvilagus floridanus*) was selected to evaluate a variety of forested, scrub-shrub, and mixed cover types. However, data relating to this species were not used in the draft HEP report due to changes within the Corps' proposed project plan (U.S. Army Corps of Engineers, 1998d). Changes in the Corps' proposed project occurred after completion of the field work for the HEP study. Consequently, evaluation species were not used to address the potential with-project effects of the Corps' proposed plan of beach fortification and nourishment. This FWCA report provides Service comments on the preliminary conclusions of the draft HEP report (U.S. Army Corps of Engineers, 1998c). Specific comments on the draft HEP report were provided in a planning aid letter to the Corps, dated August 14, 1998 (U.S. Fish and Wildlife Service, 1998). This planning aid letter is provided in Appendix A.

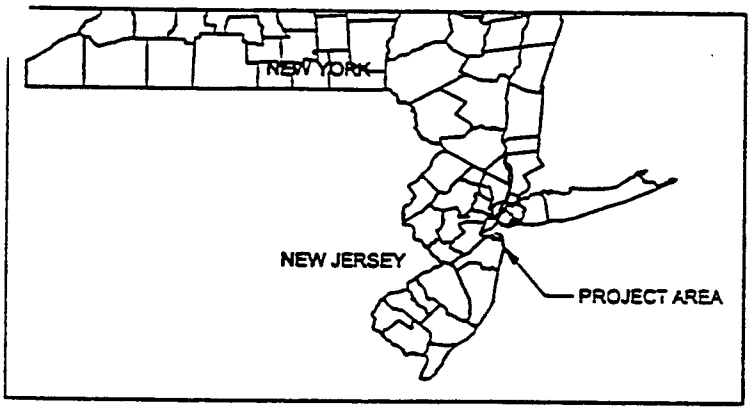
This FWCA report provides: existing information on fish and wildlife resources, based on the preliminary results of recently completed field investigations; a preliminary assessment of the effects of the proposed project on fish and wildlife; and, preliminary recommendations to mitigate adverse effects of the project on those resources.

III. THE PHYSICAL ENVIRONMENT

The Port Monmouth project area is within the Raritan Bay / Sandy Hook Bay complex, a large embayment measuring 109 square miles with a surface area of approximately 69,188 acres (U.S. Fish and Wildlife Service, 1996) (Figure 1). Inshore portions of the complex comprise an area of 33,500 acres (U.S. Fish and Wildlife Service, 1996). Divided between the states of New Jersey and New York, the Raritan and Sandy Hook Bays receive direct inflow from the Raritan, Shewsbury, and Navesink Rivers and smaller tributaries along Staten Island and New Jersey. The bays receive indirect inflow from the Hudson through lower New York Bay and the Passaic and Hackensack Rivers via Newark Bay and the Arthur Kill (U.S. Fish and Wildlife Service, 1996). The bays are relatively shallow, usually less than 20 feet in depth, except for dredged channels (U.S. Fish and Wildlife Service, 1992). This estuary complex is broad, shallow, well-mixed, and unstratified (Stemlie and Caracciolo-Ward, 1989).

The bays drain a watershed of approximately 1,400 square miles, not including the Hudson, Hackensack, or Passaic Rivers (U.S. Fish and Wildlife Service, 1996). Though the majority of the Raritan River watershed drains from the Piedmont physiographic province, the Raritan





LEGEND:

A - Compton Creek Study Area (CCSA)
B - Pews Creek Study Area (PWSA)
C -*Pews Creek Mitigation Study Area (PCMSA)
D -*Bay Shore Study Area (BSSA)

*Eliminated from HEP analysis.

SOURCE:

U.S.G.S. 7.5 Minute Series
Sandy Hook NJ-NY 1954
Photorevised 1981

SCALE:

1" = 2,000'

N

Figure 1. Project area for Raritan Bay and Sandy Hook Bay combined flood control and shore protection, Port Monmouth, Monmouth County, New Jersey.

and Sandy Hook Bays and their shorelines are located within the Coastal Plain physiographic province (U.S. Fish and Wildlife Service, 1996). This province is typified by gently southeastward dipping unconsolidated marine and fluvial deposits of clay, silt, sand, and gravel of Late Cretaceous and Tertiary age and interglacial fluvial deposits of Quaternary age (Wolff, 1977).

The Port Monmouth project area comprises approximately 1.8 square miles within the bay shore area Town of Port Monmouth, in Middletown Township, Monmouth County, New Jersey. The project area is bordered by: Raritan Bay / Sandy Hook Bay to the north; Pews Creek to the west; Compton Creek to the east; and, the 15-foot National Geodetic Vertical Datum (NGVD) contour line to the south (near Route 36) (U.S. Army Corps of Engineers, 1998c) (Figure 1). For the HEP study, the Port Monmouth project area was ultimately divided into three study areas, including: (1) Pews Creek, (2) Compton Creek, and (3) bay shore area (Areas B, A, and D on Figure 1).

The Pews Creek marsh complex has been extensively ditched, the Compton Creek marsh has been partially ditched, and the bay shore is partially developed. Few natural waterways within the project area exist. However, the Service has identified Pews Creek and Compton Creek as important tidal creeks within the Raritan Bay / Sandy Hook Bay complex (U.S. Fish and Wildlife Service, 1996). Additionally, the Service has identified the bay shore areas within the Raritan Bay / Sandy Hook complex as among the most natural remaining shorelines within the New York / New Jersey Harbor Estuary (U.S. Fish and Wildlife Service, 1996). Similarly, wildlife habitat reports for the Raritan Bay, Kane and Kerlinger (1993, 1994) stress the vulnerability of the wetlands and associated uplands within the Pews Creek and Compton Creek marsh complexes, emphasizing the need for conservation of these remaining natural areas.

IV. PROJECT DESCRIPTION

The Raritan Bay and Sandy Hook Bay Combined Flood Control and Shore Protection Project, authorized by House Document No. 464 of the 87th Congress (2nd Session), is intended to develop a flood control system to reduce the threat of damage and destruction to private, commercial, and public properties that presently occur due to tidal flooding and storm surges (U.S. Army Corps of Engineers, 1998c). According to the Corps, extratropical storms, "northeasters," and hurricanes produce tides and waves causing extensive erosion and flooding along the Port Monmouth shorelines. These tidal surges cause physical alterations, block existing storm drainage systems, and result in prolonged and extensive flooding in several developed areas. According to the Corps, the flooding experienced in low-lying residential and commercial structures from coastal storm inundation has progressively worsened in recent years due to the loss of protective beaches and increased urbanization.

The Corps' proposal for reducing flood damage to the community of Port Monmouth includes three components. According to the Corps' (1998c) draft HEP report, these components include: (1) construction of a 2,150-foot-long earthen levee and floodwall combination along the shoreline from the existing dune to the Keansburg Levee, with a storm gate and pump station spanning Pews Creek to control flooding from tidal and fluvial flows; (2) construction of a 6,000-foot-long earthen levee and 950-foot-long floodwall, extending along the west side of the Compton Creek basin parallel to the creek; and, (3) fortification of an approximately 2,300-foot-long existing dune and beach nourishment along the Port Monmouth shoreline between Pews Creek and Compton Creek (U.S. Army Corps of Engineers, 1998c) (Figure 2). However, the most recent Corps' plan description (U.S. Army Corps of Engineers, 1998d), provided directly to the Service in June 1998, differs substantially from the project description provided in the draft HEP report (U.S. Fish and Wildlife Service, 1998; Appendix A). The June 1998 plan proposes the following: (1) construction of a 3,100-foot-long earthen levee and floodwall combination with storm gate and pumping station at Pews Creek; (2) construction of a 6,600-foot-long earthen levee and 1,250-foot-long floodwall at Compton Creek; and, (3) fortification of 2,300 feet of existing dune with periodic nourishment (U.S. Army Corps of Engineers, 1998d). For the purposes of this report, the Service addresses potential impacts to wildlife habitat as a result of the project using the alternative plan description (e.g., measurements and footprint of levees) and preliminary HEP analysis provided within the draft HEP report (U.S. Army Corps of Engineers, 1998c). Due to the recent changes in the proposed plan, it appears necessary for the Corps and the HEP team to revise the HEP study and include the June 1998 plan revisions and any future alternative designs.

A. PEWS CREEK

The proposed flood control system at Pews Creek consists of a levee, floodwall, storm gate, and pump station (Figure 2). A detailed description of the locations and specifications for the structures was provided in the Corps June 1998 plan description (U.S. Army Corps of Engineers, 1998d). However, as noted above, this description differed from that provided in the draft HEP report (U.S. Army Corps of Engineers, 1998c; U.S. Fish and Wildlife Service, 1998).

The proposed construction of the 2,150-foot-long earthen levee and floodwall combination along the shoreline from the existing dune to the Keansburg Levee, with a storm gate and pump station spanning Pews Creek, will result in the direct loss of 0.50 acres of wetlands and uplands (0.41 acres of wetlands, 0.09 acres of uplands).

B. COMPTON CREEK

The proposed flood control system at Compton Creek consists of a levee and floodwall (Figure 2). A detailed description of the locations for the structures was provided in the Corps' June 1998 plan description (U.S. Army Corps of Engineers, 1998d). However, as stated above, this description has changed from that provided in the draft HEP report (U.S. Army Corps of Engineers, 1998c; U.S. Fish and Wildlife Service, 1998).

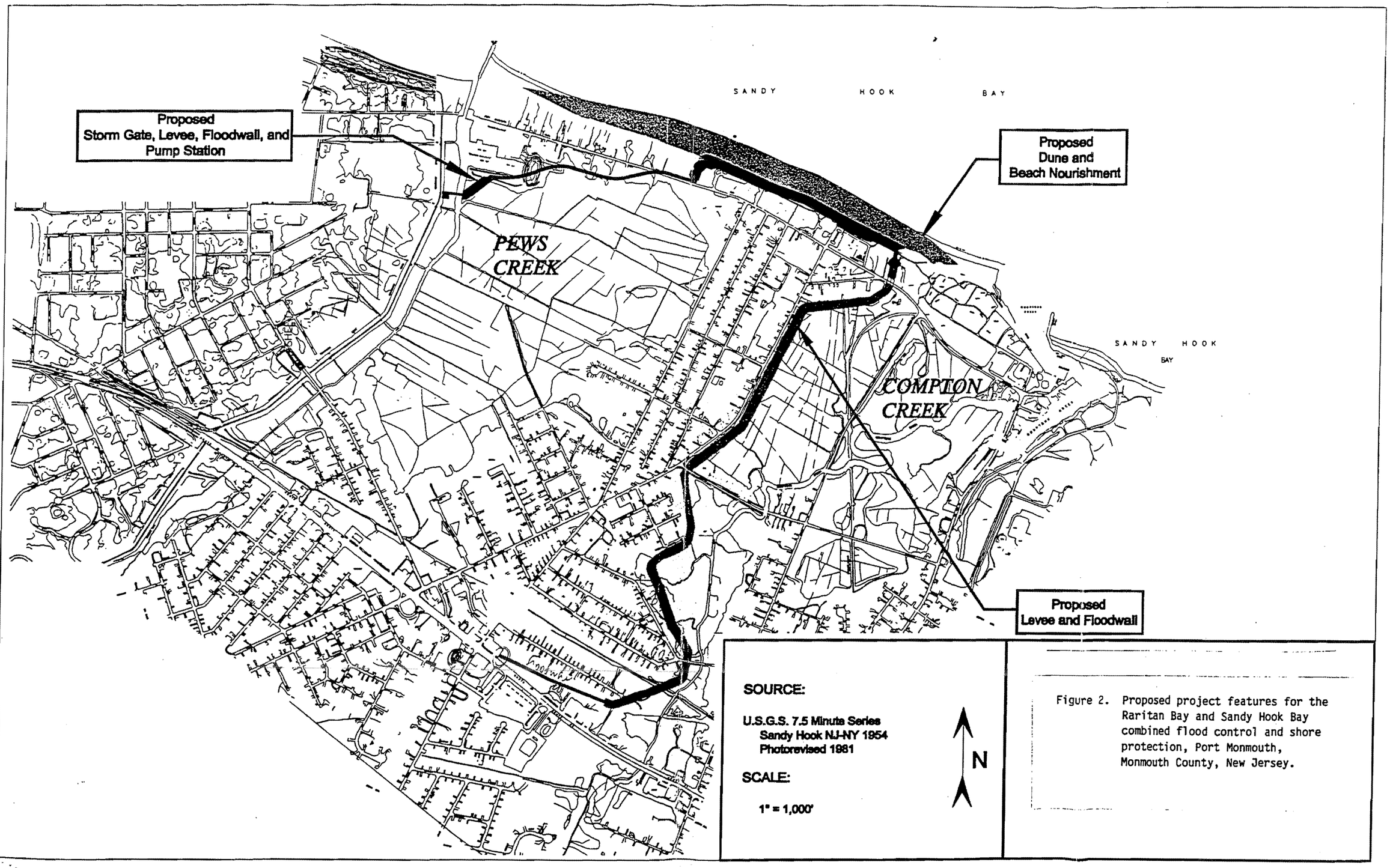


Figure 2. Proposed project features for the Raritan Bay and Sandy Hook Bay combined flood control and shore protection, Port Monmouth, Monmouth County, New Jersey.

Construction of the proposed 14-foot high, 6,000-foot-long earthen levee and 950-foot-long floodwall, extending along the west side of the Compton Creek basin parallel to the creek, will cause the disturbance of 13.93 acres of wetlands and uplands (11.94 acres of wetlands, 1.99 acres of uplands). Of the projected area of disturbance, a total of 6.70 acres of wetlands would be lost due to construction of the levee; an additional 1.99 acres of uplands will be lost due to construction of the levee (U.S. Army Corps of Engineers, 1998c). The remaining disturbance to 5.23 acres of wetlands is anticipated due to the indirect effects to areas on the landward side of the levee, which will lose hydrologic influence (U.S. Army Corps of Engineers, 1998c).

C. BAY SHORE

The proposed flood control and shore protection along the bay shore consists of fortification of approximately 2,300-foot-long section of existing dune and beach nourishment along the Port Monmouth shoreline between Pews Creek and Compton Creek (Figure 2). According to the Corps' 1998 plan, a dune crest of 25 feet to design height of +16 ft NGVD was designed. Dune sections will be stabilized with dune grass and fencing; wood overwalks will be provided (U.S. Army Corps of Engineers, 1998d). According to the Corps' 1998 plan description, advance fill will be placed during initial construction, with periodic nourishment to follow approximately 10 years after construction and continue at a 10-year cycle. Total initial fill would be approximately 350,000 to 400,000 cubic yards. Material for initial construction would be taken from the Sandy Hook Channel borrow source; material for renourishment would be taken from an unidentified upland source (U.S. Army Corps of Engineers, 1998d).

The effects of the beach fortification of existing dunes and periodic beach nourishment were not addressed in the HEP study (U.S. Army Corps of Engineers, 1998c). Changes in the proposed project plan occurred after the HEP study was completed (U.S. Fish and Wildlife Service, 1998).

V. FISH AND WILDLIFE RESOURCES

A. VEGETATIVE AND AQUATIC COVER TYPES

As part of the interagency HEP study team, the Corps prepared detailed maps of the vegetative cover types within the total 525.6-acre project area (i.e., Pews Creek, Compton Creek, and bay shore study areas) that would be potentially affected by the proposed project. Cover type maps were prepared for the following study areas: Pews Creek, Compton Creek, bay shore areas landward of existing dunes, and the Pews Creek Mitigation. However, the latter two study areas were eventually dropped from analysis due to changes in plan selection and design. A total of 18 cover types, including 8 wetland / aquatic cover types and 10 non-wetland cover types were used. The draft HEP report provides a thorough description of the

extent of the various cover types identified for the Pews Creek and Compton Creek study areas (U.S. Army Corps of Engineers, 1998c).

1. Wetlands

Approximately 53 percent of the total project area (276.5 acres) consists of estuarine emergent wetlands. The majority of the project area (38 percent or 200.8 acres) is comprised of *Spartina*-dominated salt marsh, consisting of low emergent, high emergent, and transition zones between low and high marsh. Low emergent marsh areas are dominated by tall form smooth cordgrass (*Spartina alterniflora*), receiving near-daily tidal inundation. High emergent marsh areas are dominated by saltmeadow cordgrass (*Spartina patens*), spike grass (*Distichlis spicata*), and short form *Spartina alterniflora*, receiving tidal inundation during spring tides and storm tides. Another 14 percent of the project area (75.7 acres) is dominated by common reed (*Phragmites australis*), which occurred in near monospecific stands. In addition, smaller areas of wetlands (3 percent or 17.8 acres) are vegetated by *Phragmites* interspersed with marsh elder (*Iva frutescens*), groundsel tree (*Baccharis halimifolia*), and common blackberry (*Rubus allegheniensis*).

Approximately 3 percent of the project area (13.6 acres) consists of estuarine and palustrine scrub-shrub wetlands. Estuarine scrub-shrub wetlands are dominated by marsh elder, groundsel tree, and common blackberry. Palustrine scrub-shrub wetlands are dominated by multiflora rose (*Rosa multiflora*), common blackberry, and southern arrowwood (*Viburnum dentatum*). In addition, smaller areas of scrub-shrub / herbaceous wetlands (5.2 acres) are vegetated by shrub species of arrowwood, elderberry, blackberry and herbaceous species including, royal fern (*Osmunda regalis*), *Glyceria* spp., *Panicum* spp., and sensitive fern (*Onoclea sensibilis*).

Forested wetland / scrub-shrub comprised only 0.2 percent of the project area (1.3 acres). Tree species included red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), gray birch (*Betula populifolia*) and sweetgum (*Liquidambar styraciflua*). Shrub species included arrowwood, elderberry, and multiflora rose. These early successional woodlands likely established due to the removal of tidal influences west of the Pews Creek levee or along salt marsh edges (U.S. Army Corps of Engineers, 1998c).

In addition, approximately 4.6 acres of wetlands within the project area have been disturbed and remain unvegetated or sparsely vegetated.

2. Open Water

Approximately 24.8 acres of open water (5 percent of the project area) occur within the project area. Areas of open water consisted mainly of sparsely vegetated to unvegetated creek and ditch channels. The majority of these waterways have been altered or maintained by dredging. The HEP study team determined depths of channels to range from less than 1 foot in mosquito ditches to 14 feet in creek mouths, which are maintained for navigation.

Bank vegetation along creeks and ditches is dominated by *Phragmites* in the upper reaches and tall form *Spartina* in the lower reaches.

3. Uplands

The majority of uplands within the project area (39.5 acres) were identified as scrub-shrub / herbaceous. Shrub species include bayberry (*Myrica pensylvanica*), black cherry (*Prunus serotina*), Japanese knotweed (*Polygonum cuspidatum*), winged sumac (*Rhus copallinum*), common blackberry, multiflora rose, and beach plum (*Prunus maritima*). Herbaceous species include switchgrass (*Panicum virgatum*), mugwort (*Artemisia vulgaris*), sandbur (*Cenchrus longispinus*), goldenrods (*Solidago* spp.), wild carrot (*Daucus carota*), orchard grass (*Dactylis glomerata*), crabgrass (*Digitaria sanguinalis*), and lamb's quarters (*Chenopodium album*).

Approximately 23.4 acres of uplands were identified as forest / scrub shrub. Eastern cottonwood (*Populus deltoides*), black locust (*Robinia pseudoacacia*), sassafras (*Sassafras albidum*), tree-of-heaven (*Ailanthus altissima*), black cherry, and willow oak (*Quercus phellos*) predominate. An additional 18.2 acres of the project area were identified as upland *Phragmites*. Located in transitional and disturbed areas, these areas showed low plant diversity, found in association with blackberry, winged sumac, and elderberry.

Approximately 25.7 acres of open, undeveloped beach comprise the project area. Of this area, 21.4 acres are unvegetated sand. A portion of the undeveloped beach (4.3 acres) was vegetated by beachgrass (*Ammophila breviligulata*), with seaside goldenrod (*Solidago sempervirens*), sea rocket (*Cakile edentula*), and sandbur.

A significant portion (45.2 acres) of uplands within the project area have been disturbed or developed. Approximately 32.3 acres within the 82-acre bay shore area (39 percent) have been disturbed or developed.

B. TERRESTRIAL WILDLIFE

Habitat for terrestrial wildlife is limited due to the highly developed condition of the Raritan Bay / Sandy Hook Bay complex. Remaining habitat is limited to existing open marshes, undeveloped beaches, and upland and wetland scrub-shrub and forest fragments.

The remaining estuarine emergent wetlands, estuarine and palustrine shrub-shrub wetlands, remnant forested wetlands, and existing upland scrub-shrub and forested areas continue to provide valuable habitat for a variety of migratory birds. Migratory birds are a federal trust resource responsibility. Waterfowl observed using the Pews Creek and Compton Creek marshes during the HEP study include: American black duck, bufflehead (*Bucephala albeola*), Canada goose (*Branta canadensis*), common merganser (*Mergus merganser*), mallard (*Anas platyrhynchos*), and scaup (*Aythya* spp.). Wading birds and waterbirds

observed using the marshes during the field study include: American coot (*Fulica americana*), belted kingfisher (*Ceryle alcyon*), black-crowned night heron (*Nycticorax nycticorax*), clapper rail (*Rallus longirostris*), double crested cormorant (*Phalacrocorax auritus*), great blue heron (*Ardea herodias*), greater black-backed gull (*Larus marinus*), herring gull (*Larus argentatus*), laughing gull (*Larus atricilla*), marsh wren (*Cistothorus palustris*), pied-billed grebe (*Podilymbus podiceps*), and snowy egret (*Egretta thula*). Raptors observed using the project area include: American kestrel (*Falco sparverius*), Cooper's Hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*). Other notable avian species observed during the HEP field study include: downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), northern oriole (*Icterus galbula*), ruby-crowned kinglet (*Regulus calendula*), savannah sparrow (*Ammodramus sandwichensis*), yellow warbler (*Dendroica petechia*), yellow-rumped warbler (*Dendroica coronata*). A complete list of the avian species observed during the study is provided within the draft HEP report (U.S. Army Corps of Engineers, 1998c).

Although not observed during the field study, Kane and Kerlinger (1994) report that least terns (*Sterna antillarum*) use the Raritan Bay shoreline along Pews Creek for loafing and feeding and have attempted to nest in past years on beaches in adjacent Keansburg. Other residents of Pews Creek marsh include: green-backed heron (*Butorides striatus*), willet (*Catoptrophorus semipalmatus*), great egret (*Casmerodius albus*), and swamp sparrow (*Melospiza georgiana*) (Kane and Kerlinger, 1994). In winter, avian species using Pews Creek in addition to those listed above include: horned grebe (*Podiceps auritus*), common goldeneye (*Bucephala clangula*), and red-breasted merganser (*Mergus serrator*) (Kane and Kerlinger, 1994). At Compton Creek, additional summer residents include: tricolor heron (*Egretta tricolor*), osprey (*Pandion haliaetus*), northern bobwhite (*Colinus virginianus*), and sharp-tailed sparrow (*Ammodramus caudacutus*) (Kane and Kerlinger, 1994). In addition, marshes at Compton Creek provide suitable habitat for black rail (*Laterallus jamaicensis*), and oldsquaw (*Clangula hyemalis*) are regularly seen on the waterfront during migration and winter (Kane and Kerlinger, 1994). Similarly, additional species using the Compton Creek area during migration include: virginia rail (*Rallus limicola*), greater yellowlegs (*Tringa melanoleuca*), dunlin (*Calidris alpina*), spotted sandpiper (*Actitis macularia*), least sandpiper (*Calidris minutilla*), common nighthawk (*Chordeiles minor*), and a variety of swallows (Kane and Kerlinger, 1994). A complete list of avian species known to occur in the Raritan Bay / Sandy Hook Bay complex is provided in Appendix C.

Mammals observed using the project area during the HEP field study include: eastern cottontail (*Sylvilagus floridanus*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), and red fox (*Vulpes vulpes*). The diamondback terrapin (*Malaclemys terrapin*) was the only reptile observed to use the project area (i.e., carapace found at Pews Creek). Invertebrates observed during the HEP study included: Atlantic ribbed mussel (*Geukensia demissa*), eastern melampus (*Melampus bidentatus*), and mud snail (*Ilyanassa obsoletus*). Lists of terrestrial wildlife species known to occur in the Raritan Bay / Sandy Hook Bay complex are provided in Appendix C.

C. FISH AND OTHER AQUATIC SPECIES

The Raritan Bay / Sandy Hook Bay complex supports more than 90 species of fish (U.S. Fish and Wildlife Service, 1996). The most abundant estuarine species using the bay as permanent residence include: mummichog (*Fundulus heteroclitus*), white perch (*Morone americana*), and hogchoker (*Trinectes maculatus*). Recreational fisheries within the bay exist for the following: weakfish (*Cynoscion regalis*), blue fish (*Pomatomus saltatrix*), winter flounder (*Pleuronectes americanus*), summer flounder (*Paralichthys dentatus*), striped bass (*Morone saxatilis*), sea bass (*Centropristis striata*), tautog (*Tautoga onitis*), scup (*Stenotomus chrysops*), spot (*Leiostomus xanthurus*), and croaker (*Micropogonias undulatus*) (U.S. Fish and Wildlife Service, 1996; New Jersey Department of Environmental Protection and Energy, 1988). In addition, commercial fisheries exist for: American shad (*Alosa sapidissima*) and American eel (*Anguilla rostrata*) (U.S. Fish and Wildlife Service, 1996). During the field study, only two species of fish were observed within the project area: American eel and silverside (*Menidia* spp.) (U.S. Army Corps of Engineers, 1998c). Fish species known to occur in the Raritan Bay / Sandy Hook Bay complex are provided in Appendix C.

Several species of whales, dolphins, and marine turtles occasionally enter Raritan Bay. Dolphins, especially bottle-nosed dolphin (*Tursiops truncatus*), may be expected to feed in all parts of the bay. Whale species using the bay include: blue whale (*Balaenoptera musculus*), finback whale (*B. physalus*), sei whale (*B. borealis*), humpback whale (*Megaptera novaeangliae*), right whale (*Balaena glacialis*), and sperm whale (*Physeter catodon*) (U.S. Fish and Wildlife Service, 1993). Harbor seal (*Phoca groenlandica*), harp seal (*P.vitulina*), and ringed seals (*P. hispida*) have also been sighted within the Raritan Bay / Sandy Hook complex (U.S. Fish and Wildlife Service, 1996). In addition, loggerhead turtles (*Caretta caretta*) have been observed off the northern tip of Sandy Hook and Atlantic ridley sea turtles (*Lepidochelys kempii*) feed in Horseshoe Cove (U.S. Fish and Wildlife Service, 1996). A list of marine mammals and turtles known to occur Raritan Bay / Sandy Hook Bay complex is provided in Appendix C.

Raritan Bay supports at least 13 bivalve species and 7 decapod species (MacKenzie, 1992). Commercial fisheries exist for American lobster (*Homarus americanus*), blue crab (*Callinectes sapidus*), and horseshoe crab (*Limulus polyphemus*) (U.S. Fish and Wildlife Service, 1996). Although the bays are closed to direct market harvest of shellfish due to pollution, commercial quantities of northern quahog (*Mercenaria mercenaria*) and softshell clam (*Mya arenaria*) exist. In addition, there are areas of blue mussel (*Mytilus edulis*), eastern oyster (*Crassostrea virginica*), and Atlantic surf clam (*Spisula solidissima*) beds in the deeper waters north of Sandy Hook (U.S. Fish and Wildlife Service, 1996). Shellfish species known to occur in the Raritan Bay / Sandy Hook Bay complex are provided in Appendix C. In addition, recent sampling within the south shore of the Raritan Bay / Sandy Hook Bay has provided a comprehensive assessment of benthic macroinvertebrates within the area (Greeley-Polhemus, 1996). A previous study showed that protected fine sandy areas within Sandy Hook bay are dominated by the bivalve (*Gemma gemma*) and softshell clam

whereas exposed course sand beaches are characterized by oligochaetes and nematodes (Simeone, 1977).

D. FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES AND CANDIDATE SPECIES

Documented nesting sites for the federally listed threatened piping plover (*Charadrius melodus*) are located within 6 miles of the project area. Piping plovers nest on sandy beaches above the high tide line on mainland coastal beaches, sand flats, and barrier island coastal beaches. The nesting sites are typically located on gently sloping foredunes, blowout areas behind primary dunes, washover areas cut into or between dunes, ends of sandspits, and on sites with deposits of suitable dredged or pumped sand.

Food for adult plovers and chicks consists of invertebrates such as marine worms, fly larvae, beetles, crustaceans, and mollusks. Feeding areas include intertidal portions of ocean beaches, ocean washover areas, mudflats, sandflats, wrack lines (organic ocean material left by high tide), shorelines of coastal ponds, lagoons, and salt marshes.

Development along the coastal shoreline for residential and commercial uses has stabilized the once shifting and dynamic beach ecosystem. Seawalls, breakwaters, jetties, and groins have resulted in the destruction and alteration of natural coastlines to such an extent that many beaches no longer provide suitable habitat for the piping plover.

The peregrine falcon (*Falco peregrinus*), a federally listed (endangered) species, is known to nest within 10 miles of the project site. The peregrine falcon recently expanded its range and is now found nesting and hunting near urban areas. In New Jersey, peregrines nest on man-made structures such as tall buildings near water, high bridges spanning large rivers, and nest platforms and towers in coastal marshes. Peregrines may forage for prey within the project area and generally feed on songbirds, gulls, terns, shorebirds, and wading birds.

Federally listed species are afforded protection under the Endangered Species Act pursuant to Section 7(a)(2), which requires every federal agency, in consultation with the Service, to ensure that any action authorized, funded, or carried out is unlikely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. An assessment of potential direct, indirect, and cumulative impacts is required for all federal actions that may affect listed species. Therefore, any proposed activities that may directly or indirectly affect the piping plover or other federally listed species under the Service's jurisdiction require further Section 7 consultation with the Service. Beach nourishment or stabilization activities that may affect current known nesting areas of the piping plover or create additional nesting areas for this species will require further consultation with the Service. The Service provided the Corps with a review of threatened and endangered species by letter of February 9, 1998, which indicated that the proposed project activities are not likely to adversely affect piping plovers or peregrine falcons. However, the proposed project design has changed since February 1998 to include

beach nourishment and fortification of existing dunes. Therefore, due to the newly proposed plan for beach fortification and nourishment, continued informal consultation with the Service is warranted.

The Service expects that prior to beach fortification and nourishment activities, the likelihood of piping plovers nesting on the beaches within the Port Monmouth bay shore is low due to the narrow width of the beach. However, beach fortification and nourishment may create suitable nesting areas that piping plovers may use in future seasons. For example, recent beach renourishment projects in Monmouth Beach and Sea Bright, New Jersey resulted in the creation of piping plover nesting habitat that did not exist prior to project construction (U.S. Fish and Wildlife Service, 1997). Although the probability of disturbance prior to construction along the Port Monmouth bay shore is low, project implementation may attract nesting piping plovers that would require special management consideration. Therefore, the Service recommends that a survey of the proposed area of beach fortification and nourishment be conducted prior to project implementation; following construction, the area should be monitored during the nesting season.

Other than the aforementioned species and an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed threatened or endangered flora or fauna under Service jurisdiction are known to occur in the vicinity of the project area.

Principal responsibility for federally listed marine species, including whales and marine turtles, is vested with the National Marine Fisheries Service (NMFS). Therefore, the NMFS must be contacted to fulfill consultation requirements pursuant to Section 7(a)(2) of the Endangered Species Act:

National Marine Fisheries Service
Habitat and Protected Resources Division
Sandy Hook Laboratory
Highlands, New Jersey 07732
(732) 872-3023

Candidate species are species under consideration by the Service for possible inclusion on the List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the Service encourages federal agencies and other planners to consider candidate species in the project planning process. Current lists of federally listed and candidate species in New Jersey are provided in Appendix D.

The Service also encourages federal agencies and other planners to consider State-listed species in the project planning process. The Service performed a search of the State's Notable Information on New Jersey Animals (NINJA) database. According to the NINJA database search, State-listed species that occur within the general vicinity of the project site include: pied-billed grebe, American bittern (*Botaurus lentiginosus*), osprey, peregrine falcon, piping plover, and black skimmer (*Rynchops niger*). However, during field sampling

for the HEP study, additional State-listed species were observed to use the project area, including: great blue heron, Cooper's hawk, and savannah sparrow (U.S. Army Corps of Engineers, 1998c). Similarly, as previously noted, least terns (State-listed endangered) were also reported to use the project area (Kane and Kerlinger, 1994). Current lists of State-listed species in New Jersey are provided in Appendix D.

VI. IDENTIFICATION OF PROJECT-RELATED EFFECTS TO FISH AND WILDLIFE AND RECOMMENDED MITIGATIVE MEASURES

The Service's views and recommendations on this project are guided by its Mitigation Policy (Federal Register, Vol. 46, No. 15, January 23, 1981). This policy reflects the goal that the most important fish and wildlife resources should receive priority in mitigation planning. The Service defines "mitigation" as avoidance, minimization, and compensation. The Service's Mitigation Policy and the Section 404(b)(1) Guidelines of the Clean Water Act (33 U.S.C. 1344 *et seq.*) emphasize that avoidance and minimization precede compensation, which is to be considered solely for unavoidable adverse impacts on fish and wildlife resources and supporting ecosystems.

The Service's recommendations are also guided by Executive Order 11988 and 11990 (Federal Register, Vol. 42, No. 100, May 24, 1977). Executive Order 11988 states that "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains..." Flood protection by levees, channel modification, and detention basins offers one structural method of flood control. Other non-structural methods, including floodplain protection and preservation, should also be examined as alternatives to the proposed project pursuant to Executive Order 11988.

Executive Order 11990 states that "each agency shall provide leadership and shall take action to minimize destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for...providing federally undertaken, financed, or assisted construction and improvements." Pursuant to Executive Order 11990, federal projects shall avoid undertaking or providing assistance for new construction located in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize loss of or adverse impacts to wetlands.

In accordance with the Mitigation Policy and above-mentioned Executive Orders, the Service generally promotes non-structural alternatives such as floodplain acquisition and restoration, zoning restrictions, flood proofing, and early flood warning systems for flood protection in preference to structural solutions. Only floodplain reclamation offers permanent flood control. The current flooding problem in the Port Monmouth project area is the direct result of a long history of unwise development in the floodplain. Flooding will continue to be a

problem, and the aquatic and terrestrial ecosystems will continue to suffer adverse effects, as long as floodplain development persists.

An evaluation of the economic considerations that led to the selection of the current plan over non-structural alternatives is beyond the purview of the Service or the scope of this report. The Service must accept that the cost-benefit analysis conducted by the Corps was thorough and accurate, and that the proposed plan, as approved by Congress, represents the least-damaging practicable alternative. The Service's focus throughout the current phase of the study has been on ensuring that the adverse environmental effects of the selected plan are minimized to the extent possible, and that practicable measures to compensate for any unavoidable adverse impacts are included in the proposed plan.

To quantify the effects of the selected plan on fish and wildlife resources, the Corps, the NMFS, and the Service conducted a HEP study within the project area (U.S. Army Corps of Engineers, 1998c). Three evaluation species were used to represent the fish and wildlife resources within the project area: black duck, clapper rail, and marsh wren. However, as described above (see Methods), the Corps' proposed plan was modified after the completion of the HEP study. Consequently, evaluation species were not used to address the potential with project-effects of the newly proposed plan of dune fortification and beach nourishment. Therefore, the Service recommends determining the potential impacts (positive and negative) as a result of proposed dune fortification and beach nourishment. This will ensure that any adverse environmental effects of the selected plan are minimized to the maximum extent possible, and that appropriate and practicable measures to compensate for any unavoidable impacts are included in the proposed plan.

The HEP study conducted by an interagency team provided useful information on existing cover types and an appropriate determination of existing resource values of the project area (U.S. Army Corps of Engineers, 1998c). Sampling design was rigorous, and copious field data were collected. However, the draft HEP report is of limited utility in assessing with-project and cumulative impacts. As stated in the Service's planning aid letter to the Corps, the draft HEP report requires modifications regarding calculations, results, and discussion, particularly in regard to with-project impacts and future habitat conditions with and without the proposed project (U.S. Fish and Wildlife Service, 1998).

Recommendations were provided within the Service's planning aid letter (U.S. Fish and Wildlife Service, 1998) (Appendix A) to ensure an adequate assessment of the potential impacts of the proposed project on wildlife. In short, regarding the draft HEP report, the Service recommends the following: (1) provide a more detailed description of the proposed project and rectify any discrepancies between the project as currently proposed and that analyzed in the draft HEP report; (2) re-examine the assumptions used within the *Phragmites* encroachment model, due to the heavy emphasis of this model on predicting future with and without project habitat values; (3) re-examine the assumption that the storm gate and levee at Pews Creek will not change marsh hydrology; (4) incorporate the factor of time in determining future habitat values with and without the proposed project for each of the evaluation species; (5) remove all aspects of mitigation from the with-proposed-project

analysis (i.e., provide a comparison of the habitat value of the area without the proposed project and with the proposed plan as well as with separate mitigation alternatives); (6) re-examine potential changes in habitat suitability through time for each of the evaluation species; (7) provide a more thorough analysis of future habitat value for clapper rail with and without the proposed project; and, (8) provide a more complete interpretation of the results for each evaluation species with and without the proposed project. Once the aforementioned modifications are completed, a complete assessment of potential impacts to wildlife species can be achieved and appropriate mitigative measures can be determined. At present, only proposed project impacts to wildlife at Pews Creek and Compton Creek have been accurately determined for the first year of the project. These findings are presented below.

A. WETLANDS

Construction of project features, as proposed in the plans assessed during the HEP study, would result in direct adverse impacts to a total of 7.11 acres of wetlands and open water (i.e., 0.41 acres at Pews Creek, 6.70 acres at Compton Creek) (U.S. Army Corps of Engineers, 1998c). Of the wetlands areas, the majority of losses (6.76 acres) would occur in estuarine emergent wetlands (i.e., within *Spartina*-dominated, *Phragmites*-dominated, and *Phragmites* / scrub-shrub cover types). Approximately 0.38 acres of estuarine emergent wetlands would be lost at Pews Creek and approximately 6.38 acres of estuarine emergent wetlands would be lost at Compton Creek (U.S. Army Corps of Engineers, 1998c). A lesser amount of wetland losses (0.11 acres) would occur within the wetland scrub-shrub cover type (i.e., 0.02 acres at Pews Creek, 0.09 acres at Compton Creek) (U.S. Army Corps of Engineers, 1998c). Finally, approximately 0.02 acres of disturbed wetlands would be lost at Compton Creek (U.S. Army Corps of Engineers, 1998c).

Construction of levees and floodwalls in the tidal marsh will result in additional adverse impacts on wetlands by preventing tidal waters from reaching areas landward of the structures, thereby altering the hydrology of adjacent wetlands. According to the Corps, such indirect impacts to adjacent wetlands will only occur at Compton Creek and will total 5.24 acres of wetlands and open water (i.e., 5.02 acres of wetlands, 0.22 acres open water) (U.S. Army Corps of Engineers, 1998c). Of the wetlands, indirect impacts will occur to: 4.36 acres of estuarine emergent marsh, 0.26 acres of wetland scrub-shrub, and 0.40 acres of disturbed wetlands (U.S. Army Corps of Engineers, 1998c).

According to the Corps, construction of the levees, floodwall, and storm gate at Pews Creek would not result in any indirect effects to wetlands because hydrology of the area would not be altered (U.S. Army Corps of Engineers, 1998c). The Corps' determination was based upon its hydrodynamic model for the Pews Creek marsh (U.S. Army Corps of Engineers, 1998a). However, the Service does not agree with the Corps assessment because this model does not address the expected frequency of storm events (i.e., the number of times various areas of the marsh would not receive tidal inundation due to storm gate closure) in a typical year (U.S. Fish and Wildlife Service, 1998); consequently, potential changes to marsh vegetation cannot be determined. Review of the Corps' hydrodynamic model showed that

areas within the Pews Creek marsh will have lower low tides and remain exposed longer during spring tides than without the storm gate (U.S. Army Corps of Engineers, 1998a). Less tidal inundation at portions of the marsh during spring tides would likely cause a change in the marsh's vegetation composition. Tidal restrictions caused by roads, water impoundments, dikes, and tide gates have allowed *Phragmites* to invade many wetland systems along the Atlantic Coast (Marks *et al.*, 1994). Therefore, tidal restriction at the Pews Creek marsh due to the storm gate may make conditions more conducive for *Phragmites* growth and expansion, and thereby reduce habitat quality for fish and wildlife (U.S. Fish and Wildlife Service, 1998).

The interagency HEP team did not reach consensus on the possible indirect effects of the proposed flood control measures at Pews Creek. Consequently, only the areas subject to direct disturbance due to the construction of levees and floodwalls were considered in the HEP analysis. However, use of the storm gate at Pews Creek with the additional levee and floodwall may have significant adverse effects on the hydrology of adjacent wetlands. In particular, the Service is concerned about how the reduction in tidal inundation within the Pews Creek marsh will alter marsh vegetation composition and ecological processes (U.S. Fish and Wildlife Service, 1998; Appendix A). As explained in the Service's (1998) planning aid letter, the Service recommends that the Corps work with the HEP team to reach consensus on how to apply the hydrodynamic model and adjust the *Phragmites* encroachment model (if needed) accordingly. Agreement on both the hydrodynamic model and *Phragmites* encroachment model should be reached before the models are used to help predict proposed project-related impacts. Once agreement is reached, indirect effects of the proposed project and future impacts with and without the proposed project can be properly determined (U.S. Fish and Wildlife Service, 1998; Appendix A).

The loss of 7.11 acres and indirect impacts to a minimum of 5.24 acres of wetlands and open waters in the Raritan Bay / Sandy Hook Bay complex would have substantial adverse effects on fish and wildlife resources. The remaining wetlands within the project area are of particular value due to their scarcity in the region and vulnerability to land use changes. Urbanization in the watershed has resulted in the loss and fragmentation of wetlands and continues to place remaining wetlands under development pressure and the threat of further degradation. Therefore, the "value" of wetlands should not be measured solely on the quality of a given wetland area for wildlife habitat. Other ecological considerations such as habitat contiguity, habitat quantity, and habitat diversity, as well as non-ecological factors such as flood storage capacity, recreational, aesthetic, and educational value must also be considered. The Service views the remaining *Spartina*-dominated emergent wetlands and scrub-shrub wetlands in the project area to be of high value to fish and wildlife and to be a cover type that is becoming scarce in the eco-region; in accordance with the Service's Mitigation Policy, our planning goal is no-net-loss of in-kind habitat value. The Service views the *Phragmites*-dominated wetlands within the project area as high to medium value for fish and wildlife and to be abundant within the eco-region; in accordance with the Service's Mitigation Policy, our planning goal is no net loss of habitat value while minimizing loss of in-kind habitat value.

1. Potential Adverse Impacts

All three evaluation species were used in the HEP study to assess project-related effects to emergent wetlands: black duck, clapper rail, and marsh wren. These species represent the guild of wildlife species that utilize estuarine emergent wetlands to fulfill some or all of their life requisites. As demonstrated by the draft HEP study results, the estuarine emergent wetlands of the project area provide high value habitat for fish and wildlife. In general and as expected, of the estuarine emergent wetland types, *Spartina*-dominated areas provide the greatest habitat suitability for the evaluation species and *Phragmites*-dominated areas provide the least habitat suitability for the evaluation species (U.S. Army Corps of Engineers, 1998c).

Estuarine emergent wetlands within the project area provide the greatest suitability for clapper rail (of the HEP evaluation species). Both the Pews Creek and Compton Creek study areas provide near optimum habitat suitabilities (i.e., habitat suitability indices (HSI) of 0.92 and 0.90, respectively) for clapper rail (U.S. Army Corps of Engineers, 1998c). The influence of tidal creeks and channels and extent of vegetation of the marsh areas provide near optimal feeding conditions and highly suitable nesting conditions for clapper rail (U.S. Army Corps of Engineers, 1998c), as defined by the HSI model for that species (Lewis and Garrison, 1983).

Estuarine emergent wetlands within the project area provide moderate to high suitability for black duck. As expected, *Spartina*-dominated salt marshes within both the Pews Creek and Compton Creek study areas provide higher habitat suitability for black duck than *Phragmites*-dominated areas (U.S. Army Corps of Engineers, 1998c; Lewis and Garrison, 1984; Morton *et. al*, 1989). However, *Phragmites*-dominated areas within both study areas still provide moderate habitat suitability for black duck (HSIs varied between 0.32 and 0.54) (U.S. Army Corps of Engineers, 1998c). Moderate suitabilities for *Phragmites*-dominated areas are largely attributable to the availability of food sources, including the extent of submerged vegetation within creeks and amount of snails within the marsh (Lewis and Garrison, 1984).

Similarly, estuarine emergent wetlands within the project area provide moderate to high suitability for marsh wren. *Spartina* dominated marshes within the Pews Creek study area provide the greatest habitat suitability for marsh wren (U.S. Army Corps of Engineers, 1998c). However, *Phragmites*-dominated areas within the Compton Creek study area provide relatively comparable habitat suitabilities for marsh wren. Growth form of vegetation and canopy cover of the Pews Creek and Compton Creek study areas provide suitable cover and reproductive conditions; however, mean water depth appears to be the limiting variable in the HSI model for both study areas, especially within the Compton Creek marsh (Gutzwiller and Anderson, 1987; U.S. Army Corps of Engineers, 1998c).

Based upon current information, most of the project-related adverse impacts to estuarine emergent wetlands would be incurred at the Compton Creek study area. However, as indicated above, project-related adverse impacts to the Pews Creek wetlands have not been adequately determined by the HEP study team (U.S. Fish and Wildlife Service, 1998;

Appendix A) (i.e., indirect effects from the storm gate have not been adequately addressed). In addition, cumulative project-related impacts throughout the 50-year life of the project were not correctly determined for the evaluation species in either study area (U.S. Fish and Wildlife Service, 1998; Appendix A). The Service recommends that the Corps work with the HEP team and use the HEP methodology (U.S. Fish and Wildlife Service, 1980) to predict the cumulative project-related impacts to wildlife from the proposed project (U.S. Fish and Wildlife Service, 1998; Appendix A).

Project-related effects at the Compton Creek study area would account for approximately 7 percent of the loss of black duck habitat units and 8 percent of the loss of marsh wren habitat units in the estuarine emergent wetland cover type during the first year of the project. Project-related effects to the clapper rail at the Compton Creek study area as a result of the impacts to estuarine emergent cover types could not be exactly determined because the clapper rail HSI model does not differentiate among cover types (Lewis and Garrison, 1983). However, the proposed project at Compton Creek would result in approximately 3 percent of the loss of habitat units for clapper rail during the first year of the project (U.S. Army Corps of Engineers, 1998c).

At this time, only the minimum project-related effects at the Pews Creek study area could be determined for the evaluation species because only habitat units lost as a result of direct impacts to wetlands were calculated (U.S. Fish and Wildlife Service, 1998; Appendix C). Project-related losses would account for approximately 11 percent of the loss of black duck habitat units and 11 percent of the loss of marsh wren habitat units in the estuarine emergent wetland cover type during the first year of the project. Project-related effects to the clapper rail at the Pews Creek study area as a result of the direct impacts to estuarine emergent cover types are estimated to be negligible.

Adverse impacts to black duck, clapper rail, and marsh wren would result primarily from the direct loss of habitat for foraging and cover due to the construction of levees and floodwalls. Black ducks are surface-feeding ducks that feed primarily in shallow water or on land; their food source must be on or near the water surface or buried shallow in the substrate (Lewis and Garrison, 1984). Project-related adverse impacts to black duck will be due mainly to the direct loss and indirect degradation of foraging habitat. Clapper rails use mud flats and the gently sloping banks of creeks, ditches, or shorelines for feeding and dense cover near tidal creeks, usually in areas of tall form *Spartina*, for nesting (Lewis and Garrison, 1983). Adverse impacts to clapper rail will be mainly in the loss and degradation of habitat for foraging and nesting. Marsh wrens use a variety of herbaceous wetlands types for nesting and cover, although the species tends to avoid areas of abundant woody vegetation (Gutzwiller and Anderson, 1987). Adverse impacts to marsh wren will be mainly in the direct loss of habitat for cover and nesting.

The Service recognizes that the Corps has previously assessed the feasibility of conducting a buy-out of the structures located in the floodplain as an alternative to the proposed structural flood control plan (U.S. Army Corps of Engineers, 1996). However, given the amount of residential development in Port Monmouth, the Corps determined that a monetary "buy-out"

of existing structures was prohibitively expensive and socially unacceptable, and therefore eliminated this alternative from further consideration (U.S. Army Corps of Engineers, 1996). While the cost of a complete buy-out would be prohibitive, the Service suggests examining the option of a partial buy-out. A partial buy-out may provide additional space for any ponding areas necessary to reduce the size or extent of levees and floodwalls or locate levees to minimize the extent of impact on the existing marsh. Constructing levees and floodwalls as far away from the existing marsh system as possible would preserve more of the remaining integrity of the marsh, reduce adverse impacts to emergent wetlands and associated fish and wildlife, and provide additional flood storage capacity within the levee system. The Service recommends that the Corps investigate the feasibility of a partial buy-out alternative to provide space for relocating levees and floodwalls further away from the existing marsh than currently proposed.

In addition, to ensure that use of any ponding areas does not significantly alter the hydrology of the estuarine emergent wetlands, it may be necessary to develop detailed water management plans for the areas. Such plans would include operating protocols for pump stations, and size criteria for water control structures. The Service recommends that the Corps coordinate closely with the Service, NJDFG&W, and the State Land Use Regulation Program (LURP) to develop any ponding area management plans.

Nearly all project-related adverse impacts to emergent wetlands are due to the construction of levees and floodwalls, which are proposed within these wetland areas. Adverse impacts to emergent wetlands could be substantially reduced or eliminated by reducing the size and need of the levees and floodwalls, or locating the proposed levee closer to the upland-wetland transition.

2. Compensatory Mitigative Measures

The Corps has identified 10 potential mitigation sites to compensate for project-related adverse impacts (U.S. Army Corps of Engineers, 1998b). However, determination of compensatory mitigative measures for wetlands will require determination of the direct and indirect impacts to fish and wildlife as a result of the proposed project.

As indicated above, the draft HEP study report (U.S. Army Corps of Engineers, 1998c) requires revision to determine with-project and cumulative impacts for the evaluation species (U.S. Fish and Wildlife Service, 1998; Appendix C). Therefore, the Service recommends that the Corps work with the HEP study team to resolve any discrepancies to determine all unavoidable (direct and indirect) project-related adverse impacts to fish and wildlife. Once project-related adverse impacts are accurately determined, the Service recommends using the HEP analysis to identify the site(s) with the best potential for providing adequate compensatory mitigation for unavoidable project-related adverse impacts.

B. BAY SHORE

The upland bay shore study area comprises the existing dune and beach from Pews Creek to Compton Creek. This bay shore area provides valuable habitat to terrestrial and aquatic wildlife and enhances the value of nearby and adjacent wetland areas by increasing habitat diversity. The Service considers the beaches and dunes within the project area to be of high value habitat for wildlife and to be a cover type that is relatively scarce or becoming scarce on a national basis or in the eco-region. In accordance with the Service's Mitigation Policy, the planning goal is no net loss of in-kind habitat value for this habitat type.

As described above, the proposed flood control and shore protection along the bay shore consists of fortification of an approximately 2,300-foot-long section of existing dune and beach nourishment along the Port Monmouth shoreline between Pews Creek and Compton Creek (Figure 2). However, few specifics involving the fortification and nourishment project have been provided (U.S. Army Corps of Engineers, 1998d). In particular, information is lacking on the exact location, height, timing, and source and extent of material for renourishment (U.S. Army Corps of Engineers, 1998d). Therefore, the Service recommends that the Corps provide additional information regarding its proposed activities of beach fortification and nourishment. As stated above, the Service also recommends that the Corps determine the potential impacts (positive and negative) as a result of this component of the proposed project. This will ensure that any adverse environmental effects of the selected plan are minimized to the maximum extent possible, and that appropriate and practicable measures to compensate for any unavoidable impacts are included in the proposed plan.

1. Potential Adverse Impacts

As previously explained, evaluation species were not used to determine impacts to fish and wildlife due to the late addition of this component to the project plans. Therefore, absent quantitative HEP predictions, potential adverse impacts to fish and wildlife that may result from the proposed fortification of the approximately 2,300-foot-long existing dune and periodic beach nourishment are presented in general terms below.

A short-term degradation of water quality may occur as suspended solids are generated from beach fortification and nourishment activities. According to the project description (U.S. Army Corps of Engineers, 1998d), fill material would come from the Sandy Hook borrow source for initial construction and an unidentified upland source for renourishment. The presence of large amounts of organic matter in the fortification or nourishment material could reduce dissolved oxygen levels, particularly during summer months (U.S. Fish and Wildlife Service, 1994). In addition, the amount of suspended solids discharged to adjacent bay waters are likely to increase as grain size of material decreases. Therefore, the Corps should consider the method of nourishment and type of materials used as these factors will influence the extent of degradation that occurs (U.S. Fish and Wildlife Service, 1994).

The major impact to macroinvertebrates from beach fortification and nourishment will most likely be associated with burial of beach infaunal communities and near-shore organisms.

Benthic communities downcurrent of the proposed fortification and nourishment sites may also be adversely affected by reduced water quality and possible siltation (U.S. Fish and Wildlife Service, 1994). Because beach infaunal organisms are sensitive to even slight changes in sand grain-size distribution and substrate porosity, the species composition of the infaunal community prior to nourishment could differ from the post-project community (Fenchel, 1969; Martore *et al.*, 1991). For nourishment, the Corps should use sand as similar as possible to the sand that is currently on the beaches with respect to grain size distribution, clay content, and organic matter (U.S. Fish and Wildlife Service, 1994).

Similarly, beach fortification and nourishment activities may cause adverse impacts to shellfish, especially to those populations nearest the nourishment sites that may be buried or affected by reduced water quality and siltation. Potential impacts to near-shore fish assemblages are not known. However, a study by Holland *et al.* (1980) in Florida found a temporary increase in fish abundance along newly created beaches, possibly due to the sudden and large-scale die-off of infaunal organisms from beach nourishment. Impacts may occur to marine turtles, because these species are known to occur in the littoral zones within Raritan / Sandy Hook Bay.

Beach fortification and nourishment activities may cause adverse impacts to avian species using the bay shore and surrounding waters. As indicated above, the project area is extensively used by waterfowl, waterbirds, and shorebirds. In particular, Raritan Bay has been identified as a critical area for migrating shorebirds (Burger, 1983). Adequate biomass and diverse species composition of infaunal communities are critical for supplying the nutritional needs of migrating shorebirds. However, studies examining the effects of beach fortification and nourishment projects on migratory shorebirds are generally lacking in the scientific literature. The Service is concerned that shorebirds migrating across newly created beaches would be at risk of not meeting their nutritional needs, which are particularly high during migration. The amount of time needed for infaunal communities to completely recover following burial from beach fortification and nourishment projects is not known. Adverse impacts would occur to migrating shorebirds if too many sterile (recently buried) areas were encountered or if preferred prey were unavailable (U.S. Fish and Wildlife Service, 1994). Therefore, the Service recommends avoiding beach fortification and nourishment activities during migration periods.

As available scientific literature is limited, the Service recommends that the Corps consider a monitoring program for the areas of beach fortification and nourishment following project implementation. Monitoring should include: measurements on water-quality, beach infaunal assemblages, near-shore fish assemblages, and shorebird use. The Corps is directed to the recommendations provided in previous Service reports (e.g., U.S. Fish and Wildlife Service, 1994).

2. Potential Beneficial Effects

As previously indicated, the Service has not yet received complete information regarding the specifics of the proposed beach fortification and nourishment. However, as described above,

the proposed beach fortification and nourishment activities may create suitable nesting areas for the federally listed threatened piping plover. Other migrating and State-listed shorebirds may also benefit from an expanded beach area for foraging or nesting. Therefore, the Service recommends that the Corps monitor the beach to evaluate shorebird usage following project implementation. Monitoring should be conducted prior to beach fortification and nourishment and during each migration period thereafter. Should the proposed project create habitat for beach nesting birds, the area may be subject to various federal and State regulations and require special management considerations. In addition, the proposed periodic beach nourishment (following initial fortification) should be avoided during times of nesting, brood-rearing, or migration (i.e., mid-March through mid-September).

Dune systems are a natural alternative to shoreline protection that may provide benefits over hard-structures. However, attempts to build additional dunes in areas with well developed dune systems may actually reduce available habitat and provide little additional storm protection (U.S. Fish and Wildlife Service and New Jersey Department of Environmental Protection, 1987). Therefore, if the proposed bay shore project is to be implemented for flood control and shoreline protection, the Service recommends that the Corps establish dunes in areas where natural dunes are lacking or eroding. When establishing dunes, the Service recommends that the Corps use native vegetation and make suitable provisions for the long-term success of the dune system. The public should be discouraged from walking on the vegetated areas; public access to the beaches can be provided by building raised boardwalks over the dunes. In addition, these areas can be further protected with educational signs, which describe the sensitivity of the dunes to disturbance and the importance of dunes to wildlife and shoreline protection, and by restricting access to the dunes with fences (U.S. Fish and Wildlife Service, 1994).

VII. CONCLUSIONS AND SUMMARY RECOMMENDATIONS

The Service continues to have substantial concerns regarding the effects of the proposed project on fish and wildlife resources. Pending revisions to the HEP study, the entire potential impacts from the proposed project at Pews Creek and Compton Creek are not fully known (i.e., indirect effects of the proposed storm gate at Pews Creek). Furthermore, the cumulative effects to fish and wildlife as a result of the proposed project have not been addressed. Additionally, the potential effects of the proposed beach fortification and nourishment project along the bay shore were not addressed within the HEP study and have not been quantified to date.

The Service concludes that implementation of the selected plan for the Raritan Bay / Sandy Hook Bay Combined Flood Control and Shore Protection project could result in substantial adverse impacts to fish and wildlife resources. If implemented, the proposed project would result in the elimination or disturbance of 12.35 acres of wetlands and disturbance of 2,300 linear feet of beach that currently provide valuable fish and wildlife habitat. Adverse environmental impacts could be reduced by implementing a non-structural flood control alternative such as floodplain reclamation. Floodplain reclamation, including wetland

restoration, would produce net gains for fish and wildlife resources. Therefore, the Service continues to recommend that the Corps reconsider the feasibility of non-structural alternatives.

The Service recommends that the Corps examine the functional components of the Raritan Bay / Sandy Hook ecosystem, the interactions among these components, and the effects of human presence on these components and interactions. The flood control project resulting from such a perspective would consider and accommodate the needs of all stakeholders by meeting the social need to reduce flood damage coincident with improving the quality of the environment. Such a plan would accommodate human use within a functioning ecosystem, rather than further modifying the ecosystem to accommodate floodplain encroachment.

The goal of the Service throughout this phase of project planning has been to ensure that the adverse environmental effects of the selected plan are minimized to the maximum extent possible and that appropriate mitigative measures are incorporated into the final plan. The recommendations contained in this report contribute toward that end. In summary, the Service recommends that the Corps:

1. Continue to work together with the HEP team to revise the HEP study to include the June 1998 plan revisions and / or any future alternative designs.

2. Continue Section 7 consultation with the Service, due to the change in the proposed project plan for beach fortification and nourishment and potential impacts (adverse and beneficial) to the piping plover.

3. Survey the proposed area of beach fortification and nourishment for beach nesting birds prior to project implementation; following construction, monitor the area during the nesting season.

4. Continue to coordinate with the NMFS to fulfill consultation requirements pursuant to Section 7(a)(2) of the Endangered Species Act.

5. Continue to consider candidate species and State-listed species during project planning.

6. Determine the potential impacts (positive and negative) as a result of proposed dune fortification and beach nourishment to ensure that any adverse environmental effects of the selected plan are minimized to the maximum extent possible, and that appropriate and practicable measures to compensate for any unavoidable impacts are included in the proposed plan.

7. Follow the recommendations that were provided within Service's planning aid letter (U.S. Fish and Wildlife Service, 1998) (Appendix A) to modify the draft HEP study report to ensure an adequate assessment of the potential impacts of the proposed project on wildlife.

8. Continue to work with the HEP team to reach consensus on how to apply the hydrodynamic model (Pews Creek) and how to modify and apply the *Phragmites* encroachment model, prior to application of either model to predict future habitat conditions for the HEP study. Use the revised and agreed-upon models to determine potential project-related impacts to evaluation species and other wildlife.

9. Re-analyze HEP study data to determine cumulative project-related impacts to wildlife following prescribed HEP methodology as recommended in the Service's planning aid letter to the Corps (see Appendix A).

10. Investigate the feasibility of a partial buy-out of flood-prone structures to reduce the size of levees and floodwalls or to provide space for re-locating these structures to reduce adverse impacts to estuarine emergent wetlands.

11. Coordinate with the NJDFG&W, the LURP, and the Service to develop water management plans for any necessary ponding areas.

12. Resolve any discrepancies within the HEP study to determine and identify all unavoidable project-related adverse impacts. Once full impacts are known, use additional HEP analyses to identify the sites within the vicinity of the project area that have the best potential for providing compensatory mitigation for unavoidable project-related impacts.

13. Consider the method of and source of materials for beach fortification and nourishment so that potential adverse impacts to water quality, infaunal and benthic communities, and other wildlife will be avoided or minimized.

14. Avoid beach fortification and nourishment activities during periods of shorebird migration.

15. Consider a monitoring program for areas of beach fortification and nourishment following construction to include: water-quality, beach infaunal assemblages, near-shore fish assemblages, and shorebird use.

16. Should the proposed beach fortification and nourishment create nesting habitat for beach-nesting birds, ensure proper protection, management, and monitoring, including avoidance of any future nourishment activities during the nesting, brood-rearing, or migration periods.

17. In re-establishing dunes, concentrate on the bay shore areas where natural dunes are lacking and provide mechanisms to ensure long-term protection and success of the dune system (i.e., natural vegetation, educational signs, restricted access through fencing).

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APPENDIX A

Service's planning aid letter to the Corps of Engineers, providing comments on the draft Habitat Evaluations Procedures study for the Raritan Bay and Sandy Hook Bay Combined Flood Control and Shore Protection project, Port Monmouth, Monmouth County, New Jersey

FISH AND WILDLIFE SERVICE
Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

Tel: 609-646-9310
FAX: 609-646-0352

REPLY REFER TO:

FP-98/42

August 14, 1998

Colonel William H. Pearce
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Colonel Pearce:

This is the U.S. Fish and Wildlife Service's (Service) planning aid letter for the Port Monmouth Feasibility Study (Feasibility Study), Port Monmouth, New Jersey. This letter is provided in accordance with the Fiscal Year-1994 scope-of-work agreement between the Service and the New York District, Corps of Engineers (Corps) and includes the Service's comments on the *Port Monmouth Draft Habitat Evaluation Procedures Report - Raritan Bay and Sandy Hook Bay Combined Flood Control and Shore Protection Project, Port Monmouth, New Jersey* (U.S. Army Corps of Engineers, 1998a), which was received by the New Jersey Field Office on July 9, 1998. Specifically, the Service has reviewed the technical components of the draft Habitat Evaluations Procedures (HEP) report. This report presents the outcome of a HEP study, conducted during the fall of 1997 and winter of 1998 by an interagency team, which included Service participation. In order to prepare technical comments on the draft HEP report, the Service reviewed supporting documents, including the Port Monmouth Project Mitigation Report (U.S. Army Corps of Engineers, 1998b) and a hydrodynamic model (U.S. Army Corps of Engineers, 1998c) that was provided upon request.

The Service encourages the use of habitat assessment techniques early in the planning process to assist the Corps when developing plans to provide for fish and wildlife habitat protection and enhancement.

AUTHORITY

This response is provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species and is provided as technical assistance regarding other fish and wildlife concerns. This letter is not the document required of the Secretary of Interior pursuant to Section 2(b)

of the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*). Planning aid is valid only for the described conditions and must be revised if significant environmental changes or changes in the proposed project take place prior to initiation.

STUDY AREA DESCRIPTION

The Port Monmouth study area (study area) is located in the bayshore area between Compton Creek and Pews Creek in the Raritan Bay and Sandy Hook Bay in the Town of Port Monmouth, Monmouth County, New Jersey. The tidal creeks, estuarine emergent wetlands, dunes, and remaining undeveloped uplands within Raritan / Sandy Hook Bay provide important habitat for migratory birds, especially waterfowl, shorebirds, and passerines (U.S. Fish and Wildlife Service, 1992). Raritan Bay supports a substantive recreational industry attributed to its large populations of bluefish (*Pomatomus saltatrix)*, fiddler crabs (*Uca spp.*), killifish (*Fundulus spp.*), and other marine organisms (Kane and Kerlinger, 1993). Sandy Hook is an important stopover on the Atlantic Flyway for migrating hawks, passerines, and waterfowl. The Sandy Hook peninsula is particularly important during spring migration for raptors (Kane and Kerlinger, 1994). The bay supports the largest concentration of greater scaup *(Aythya marila)* in New Jersey (winter surveys by the New Jersey Division of Fish, Game and Wildlife) and provides important habitat for other waterfowl. Mudflats and beaches within the area are important for shorebirds (Burger, 1983). In addition to the geographic location, the large variety of vegetative cover types present (beach and dune, upland forest / scrub shrub, wetland herbaceous / scrub shrub, salt marsh, and open water) within the study area provide habitat requirements for many bird species.

IDENTIFIED PROBLEMS AND FEASIBILITY STUDY PURPOSE

According to the Corps, low-lying residential and commercial structures bordering the south-shore of Raritan Bay and Sandy Hook Bay in Monmouth County are experiencing increasing flooding frequencies associated with rainfall and coastal storm surges. Flooding has become progressively severe due to the loss of protective beaches and increased urbanization. The purpose of the Corps' Feasibility Study is to determine the viability of federal participation in flood and storm damage reduction measures.

PROPOSED PROJECT DESCRIPTION / CHANGES IN PROJECT DESIGN

The Corps' proposal for reducing flood damage to the community of Port Monmouth includes three components. According to the draft HEP report, these components include: (1) construction of a 2,150-foot-long earthen levee and floodwall combination along the shoreline from the existing dune to the Keansburg Levee, with a storm gate and pump station spanning Pews Creek to control flooding from tidal and fluvial flows; (2) construction of a 6,000-foot-long earthen levee and 950-foot-long floodwall, extending along the west side of the Compton Creek basin parallel to the creek; and, (3) fortification of approximately 2,300-foot-long existing dune and beach nourishment along the Port Monmouth shoreline between Pews Creek and Compton Creek. However, beach nourishment was not identified as a

component of the project in the original 1994 scope-of-work and was not identified as a component of the project during the HEP study. Rather, throughout the HEP study process, construction of additional beach dunes landward of the existing dunes was proposed. In addition, the most recent Corps' plan description (U.S. Army Corps of Engineers, 1998d), provided to the Service in June 1998, differed substantially from the project description provided in the draft HEP report. The June 1998 plan proposed the following: (1) construction of a 3,100-foot long earthen levee and floodwall combination with storm gate and pumping station at Pews Creek; (2) construction of a 6,600-foot-long earthen levee and 1,250-foot-long floodwall at Compton Creek; and, (3) fortification of 2,300 feet of existing dune with periodic nourishment.

SERVICE MITIGATION POLICY

The Service's Mitigation Policy (Federal Register, Vol. 46, No. 15, Jan. 23, 1981) contains guidance to assist in developing consistent and effective recommendations to protect and conserve valuable fish and wildlife resources and to allow federal and private developers to anticipate Service recommendations and incorporate mitigative measures into the early stages of project planning. The Mitigation Policy defines four Resource Categories and establishes the Service's goal for each.

The Service classifies the upland and wetland scrub / shrub, beach and dune, and estuarine emergent marsh cover types of the study area as Resource Category 2. The areas provide high quality habitat for evaluation species and are relatively scarce or becoming scarce on a national basis or in the eco-region. The Service's mitigation goal for Resource Category 2 areas is no net loss of in-kind habitat value. The Service classifies the *Phragmites*-dominated sites within the study area as Resource Category 3. The habitat is of high to medium value for evaluation species. The Service's mitigation goal for Resource Category 3 habitat is no net loss of habitat value while minimizing loss of in-kind habitat value.

FEDERALLY LISTED SPECIES

Enclosed are current summaries of the federally listed and candidate species in New Jersey. Documented nesting sites for the federally listed threatened piping plover (*Charadrius melodus*) are located within 6 miles of the study area. Piping plovers nest on sandy beaches above the high tide line on mainland coastal beaches, sand flats, and barrier island coastal beaches. The nesting sites are typically located on gently sloping foredunes, blowout areas behind primary dunes, washover areas cut into or between dunes, ends of sandspits, and on sites with deposits of suitable dredged or pumped sand.

Food for adult plovers and chicks consists of invertebrates such as marine worms, fly larvae, beetles, crustaceans, and mollusks. Feeding areas include intertidal portions of ocean beaches, ocean washover areas, mudflats, sandflats, wrack lines (organic ocean material left by high tide), shorelines of coastal ponds, lagoons, and salt marshes.

Development along the coastal shoreline for residential and commercial uses stabilized the once shifting and dynamic beach ecosystem. Seawalls, breakwaters, jetties, and groins have resulted in the destruction and alteration of natural coastlines to such an extent that many beaches no longer provide suitable habitat for the piping plover.

The peregrine falcon (*Falco peregrinus*), a federally listed (endangered) species, is known to nest within 10 miles of the project site. The peregrine falcon recently expanded its range and is now found nesting and hunting near urban areas. In New Jersey, peregrines nest on man-made structures such as tall buildings near water, high bridges spanning large rivers, and nest platforms and towers in coastal marshes. Peregrines may forage for prey within the project site and generally feed on songbirds, gulls, terns, shorebirds, and wading birds.

Federally listed species are afforded protection under the Endangered Species Act pursuant to Section 7(a)(2), which requires every federal agency, in consultation with the Service, to ensure that any action authorized, funded, or carried out is unlikely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. An assessment of potential direct, indirect, and cumulative impacts is required for all federal actions that may affect listed species. Therefore, any proposed activities that may directly or indirectly affect the piping plover or other federally listed species under the Service's jurisdiction require further Section 7 consultation with the Service. Beach nourishment or stabilization activities that may affect current known nesting areas of the piping plover or create additional nesting areas for the piping plover will require further Section 7 consultation with the Service. The Service provided the Corps with a review of threatened and endangered species in a letter dated February 9, 1998, which indicated that the proposed project activities are not likely to adversely affect piping plovers or peregrine falcons. However, the project design has changed since February 1998 to include beach nourishment and fortification of existing dunes. Therefore, additional Section 7 consultation with the Service is warranted.

Other than the aforementioned species and an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed threatened or endangered flora or fauna under Service jurisdiction are known to occur in the vicinity of the study area.

Principal responsibility for federally listed marine species, including whales and marine turtles, is vested with the National Marine Fisheries Service (NMFS). Therefore, the NMFS must be contacted to fulfill consultation requirements pursuant to Section 7(a)(2) of the Endangered Species Act:

National Marine Fisheries Service
Habitat and Protected Resources Division
Sandy Hook Laboratory
Highlands, New Jersey 07732
(908) 872-3023

FEDERAL CANDIDATE AND STATE-LISTED SPECIES

Candidate species are species under consideration by the Service for possible inclusion on the List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the Service encourages federal agencies and other planners to consider candidate species in the project planning process.

The New Jersey Natural Heritage Program maintains the most up-to-date information on federal candidate and State-listed species in the New Jersey and may be contacted at the following address:

Mr. Thomas Breden
Natural Heritage Program
Division of Parks and Forestry
CN 404
Trenton, New Jersey 08625
(609) 984-0097

Additionally, information on New Jersey's State-listed wildlife species may be obtained from the following office:

Mr. Larry Niles
Endangered and Nongame Species Program
Division of Fish, Game and Wildlife
CN 400
Trenton, New Jersey 08625
(609) 292-9400

HABITAT ASSESSMENT STUDY OVERVIEW

The major resource objective of the habitat assessment portion of the Corps' Feasibility Study was to evaluate the effect of habitat loss, caused by proposed flood control measures, on fish and wildlife resources. The assessment gave special emphasis to evaluate existing habitat conditions and to project *future with and without project habitat conditions* for migratory bird and wetland-dependent species. The Service used HEP methodology (U.S. Fish and Wildlife Service, 1980) to evaluate habitat for evaluation species. Under HEP, surface area is multiplied by a habitat suitability index (HSI) for a given evaluation species to determine habitat units (HUs) for relative comparisons of different areas or of the same area over time. The formula is shown by: Area (acres) x HSI = HU. An interagency HEP team comprised of the Corps, NMFS, and the Service participated in the study. Evaluation

species included black duck (*Anas rubripes*), clapper rail (*Rallus longirostris*), and marsh wren (*Cistothorus palustris*).

SERVICE REVIEW AND COMMENTS REGARDING THE HEP STUDY

Overall, the HEP study provides a detailed description of existing cover types and an appropriate determination of existing resource values of the study area. Large scale maps provide a clear, detailed depiction of the existing cover types within the study area. Sampling design was rigorous, and copious field data were collected. However, the draft HEP report requires modifications regarding calculations, results, and discussion, particularly in regard to with-project impacts and future habitat conditions with and without the proposed project.

1. Project Description

The draft HEP report requires updating with an accurate and detailed description of the Corps' most current project plans. Any discrepancy between the project description in the draft HEP and the Corps' current project design should be addressed. At present, the draft HEP report and Corps' most recent project description presented to the Service show the following differences: (1) a shortage of 950 feet of earthen levee / floodwall at Pews Creek; and, (2) a shortage of 600 feet of earthen levee and 300 feet of floodwall at Compton Creek. In addition, Figure 2 of the draft HEP report (scale 1 inch = 1000 feet) appears to illustrate a larger proposed project (i.e., approximate 2,600-foot-long levee and floodwall at Pews Creek and 7,750-foot-long levee and floodwall at Compton Creek) than that described in the text. Accurate and current information is necessary to quantify the total HUs lost (or gained) as a result of the proposed project. Therefore, the Service recommends including a current and more detailed project description in the HEP study. The project description should include measurements and locations for any levees, floodwalls, storm gate, road closure gates, dune and berms with beach fill, pump stations, and plans for periodic renourishment.

In addition, the draft HEP report refers to overlays showing the proposed project on cover type maps. However, these overlays are not provided with the document. The final HEP report would be improved with overlays depicting proposed project plans on cover type maps.

2. Assumptions

Phragmites encroachment model

The *Phragmites* encroachment model used within the HEP study was a critical component in predicting future HUs with and without the project. The HEP team agreed upon a *Phragmites* encroachment rate of 2 percent per year based upon available scientific data. However, a consensus by the HEP team was not reached for the other assumptions used in the development of the *Phragmites* encroachment model. Consequently, the Service has reservations over some of the model assumptions (page 30) and projections.

First, the model assumes that *Phragmites* will not spread across a body of water more than 3 feet wide (assumption 1, page 30). This assumption is questionable due to the species highly invasive nature. Seed dispersal must be taken into account. In addition, *Phragmites* rhizomes can extend more than 1 foot per year in unconsolidated sediment and can spread a maximum of 30 feet per year (Thunhorst, 1993). Therefore, *Phragmites* could easily spread across a ditch greater than 3 feet wide.

In addition, the model assumes that *Phragmites* will not grow in areas of upland grass (maintained areas), upland forest / scrub shrub, or upland herbaceous scrub shrub (assumption 2, page 30). However, *Phragmites*, with an indicator status of facultative wetland, can grow in uplands (i.e., estimated 1 - 33 percent probability of occurrence in uplands). In fact, the HEP team differentiated *Phragmites*-uplands from other *Phragmites*-dominated wetland areas based upon field verification in the development of the cover type map for the study. The species ability to grow in a variety of habitats coupled with its seed dispersal mechanisms and vegetative reproduction enable *Phragmites* to aggressively invade new areas. Consequently, these upland areas and areas adjacent to them are not likely to act as barriers and are not impervious to *Phragmites* encroachment.

The *Phragmites* encroachment model is heavily used in projecting future habitat conditions with and without the project. Therefore, the Service recommends that the HEP team modify the model's assumptions to reflect the plant's characteristics before applying the model to predict future conditions and habitat values.

In addition, because the model is a fundamental component of the HEP analysis, the revised model should be presented in the appendices. At a minimum, a more detailed explanation of the model and its applicability is needed in the report. The draft HEP report provides projected acreages of cover types through time, which were determined using the model. The draft HEP report would be improved with a series of projected cover type maps (in appendices) for selected target years. Including these maps would better illustrate how the marsh is expected to change through time with and without the proposed project.

Hydrodynamic model

The draft HEP report states that the pump station, storm gate, and associated levee at Pews Creek would result in the direct disturbance of 0.49 acres, but would not result in indirect impacts because hydrology will not be altered (page 38). The assumption that hydrology will not change is questionable because the levee will impede natural tidal flow and the storm gate will be closed during flooding events.

The Corps' hydrodynamic model (U.S. Army Corps of Engineers, 1998c) does not address the expected frequency of storm events (i.e., the number of times various areas of the marsh would not receive tidal inundation due to storm gate closure) in a typical year. Review of the Corps' hydrodynamic model shows that areas within the Pews Creek marsh will have lower low tides and remain exposed longer during spring tides than without the storm gate. The extent of tidal inundation within a salt marsh varies greatly, from about twice daily at

low elevations to only a few times a year at higher elevations. Slight changes in the extent of tidal inundation can have profound effects on salt marsh composition and ecological processes. Less tidal inundation at portions of the marsh during spring tides would likely cause a change in the marsh's vegetation composition. Tidal restrictions caused by roads, water impoundments, dikes, and tide gates have allowed *Phragmites* to invade many wetland systems along the Atlantic Coast (Marks *et al.*, 1994). Therefore, tidal restriction at the Pews Creek marsh due to the storm gate may make conditions more conducive for *Phragmites* growth and expansion.

The Service recommends developing the hydrodynamic model to project the frequency of closure of the storm gate and the extent of area affected within the Pews Creek marsh. With this information, the HEP team can determine the potential indirect effects of the storm gate on the Pews Creek marsh. In addition, the *Phragmites* encroachment model may need modification based upon the new information from the hydrodynamic model. Notwithstanding, the model and its assumptions should be agreed upon by the HEP team, prior to its application. The hydrodynamic model should also appear in the appendices of the final HEP report.

3. Calculations and Results

The HEP methodology allows for the determination of: (1) baseline habitat values for evaluation species with and without the proposed project; (2) future habitat values for evaluation species with and without the proposed project through the life of the project; and, (3) adequate compensation to ensure that there will be no loss of habitat value for evaluation species as a result of the proposed project (U.S. Fish and Wildlife Service, 1980).

The draft HEP report appears to have several calculation errors relating to baseline and future habitat values with and without the proposed project. In addition, the draft report does not demonstrate how (or if) the HEP methodology was used to determine adequate compensation as a result of the project.

In accordance with HEP methodology (U.S. Fish and Wildlife Service, 1980), cumulative HUs and average annual HUs (AAHUs) should be calculated. Although tables within the draft HEP report provide HUs at agreed upon points of time for each of the species (i.e., +1, +5, +12, +25, +50 years), cumulative HUs are not included. Cumulative HUs are important to assess habitat value through time with and without the project. For example, using information from Table 8 of the draft HEP report and following HEP procedures, salt marsh and wetland *Phragmites* at Compton Creek will provide approximately 3,627 cumulative HUs for marsh wren without the project in the next 50 years (i.e., life of the project). These same areas would provide approximately 3,452 cumulative HUs for marsh wren with the project for the same time period. The proposed project would cause a net decrease of 175 cumulative HUs over the life of the project or approximately 3.5 AAHUs for marsh wren. The HEP report needs to accurately determine and discuss cumulative HUs and AAHUs for each evaluation species for the study area both with and without the proposed project. The factor of time is critical for determining cumulative impacts (gains and losses)

as a result of the project and adequate compensation. Therefore, the Service recommends that the factor of time be reflected in the calculations; tables showing cumulative HUs and AAHUs should be included within the text along with appropriate discussions based upon the new results.

Furthermore, the draft HEP report does not correctly determine baseline and future HUs for evaluation species as a result of the project. Components of the mitigation project (e.g., marsh restoration) were incorrectly included in the with-project alternative throughout the tables and text. Therefore, as written, it is not possible to discern the habitat losses (or gains) resulting from the project. Mitigative measures cannot be included as part of the project for the purposes of a HEP study, since one function of the HEP is to determine mitigation needed to offset adverse impacts. The Service's Mitigation Policy and the Section 404(b)(1) Guidelines emphasize that avoidance and minimization precede compensation, which is to be considered solely for unavoidable adverse impacts on fish and wildlife resources and supporting ecosystems. In addition, the HEP methodology provides a mechanism to determine adequate compensation so that there is no resulting loss of HUs for evaluation species. The Service recommends that the HEP methodology (U.S. Fish and Wildlife Service, 1980) be followed to determine appropriate compensation for habitat losses for any of the evaluation species as a result of the proposed project.

In addition, changes in habitat suitability indices (HSI) for some species do not appear to be correctly projected through time. For instance, in the HSI model for black duck, the percentage of area that is salt marsh (Variable 8) will change through time, depending upon the amount of *Phragmites*, which is based upon the *Phragmites* encroachment model. Habitat suitability for black duck and the other evaluation species may change through time based upon the variables of each model. Although the HSI for black duck is likely to change through time, Tables 7 and 10 of the draft HEP report show constant HSI values through time. In order to amend this, the Service recommends re-evaluating the HSI values for black duck and other evaluation species. If HSIs change through time, cumulative HUs and AAHUs should also be recalculated. In addition, the draft HEP report would be improved if the individual HSI models were included in the appendices with raw data for each of the variables within each model. This information would clarify marsh characteristics and their effects on habitat suitability for each species.

Finally, tables and a discussion showing future habitat values for clapper rail should be provided. Although differences among cover types cannot be quantified, because the HSI model does not differentiate among cover types, losses (or gains) in cumulative HUs and AAHUs as a result of the project should be provided and discussed.

4. Discussion and General Text

The draft HEP would benefit from a more complete interpretation of the results (i.e., how does existing habitat value change through time for black duck as a result of the project? for clapper rail? for marsh wren?). In general, the draft HEP report would benefit from a greater synthesis of results for each evaluation species.

Finally, the draft HEP report omits several references throughout the text. References should be provided for all literature cited. Similarly, numerous typographical and grammatical errors exist throughout the text.

RECOMMENDATIONS

1. Re-initiate informal Section 7 consultation with the Service regarding revised project plans; specifically, concerning beach re-nourishment.

2. Provide a more detailed description of the proposed project, rectifying any discrepancy between project plans presented in the draft HEP report and the actual proposed project plan. Provide the measurements and locations for any levees, floodwalls, storm gates, dunes, berms, fill, pump station, and plans for periodic beach nourishment so that impacts to baseline and future habitat value for evaluation species can be accurately determined. Include an overlay of the proposed project on the existing cover type map.

3. Re-examine the assumptions used in the *Phragmites* encroachment model with the HEP team and modify it when agreed upon by the team. Present the revised model in the appendices. If possible, incorporate maps showing projected changes in cover type as predicted by the model at selected target years.

4. Re-examine the assumption that the storm gate and levee at Pews Creek will not change marsh hydrology with the HEP team and modify as agreed upon by the team. Further develop the hydrodynamic model for Pews Creek so potential changes in vegetation resulting from restricted tidal flow can be better predicted by the HEP team. Incorporate modifications into the *Phragmites* encroachment model if necessary. Include the hydrodynamic model in the appendices.

5. Incorporate the factor of time in determining future habitat value with and without the proposed project for each of the evaluation species. Calculate cumulative HUs and AAHUs for each evaluation species, and present modified results in tables and discuss accordingly.

6. Remove all aspects of the mitigation from the with-proposed-project analysis. Recalculate baseline and future HUs with the proposed project (sans mitigative measures) to determine impacts as a result of the project. Use the HEP methodology to determine adequate compensation for any habitat losses for any evaluation species resulting from the proposed project only after avoidance and minimization. Modify results (including Tables) and discussion accordingly.

7. Re-examine potential changes in HSIs through time for each of the evaluation species. Provide raw data and suitability indices for individual variables for each evaluation species within the appendices. Modify the results and discussion as necessary.

8. Provide a more thorough analysis of future habitat value for clapper rail with and without the proposed project. Modify results and discussion accordingly.

9. Provide a more complete interpretation of the results for each evaluation species with and without the project. Discuss the findings of the habitat assessment.

The above comments on the draft HEP study report are intended to assist the Corps in its planning. The Service looks forward to working with the New York District during continuing phases of the Port Monmouth Feasibility Study. Should you have any questions regarding these comments, please contact Paula Halupa or John Staples of my staff.

Sincerely,

Clifford G. Day
Supervisor

Enclosure

REFERENCES

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APPENDIX B

Coordination with the New Jersey Division of Fish, Game and Wildlife

FISH AND WILDLIFE SERVICE
Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

Tel: 609-646-9310
FAX: 609-646-0352

REPLY REFER TO:

September 16, 1998

Robert McDowell, Director
New Jersey Division of Fish, Game and Wildlife
CN 400
Trenton, New Jersey 08625

Dear Mr. McDowell:

Enclosed is the U.S. Fish and Wildlife Service's (Service) draft Fish and Wildlife Coordination Act Report entitled, "Assessment of the Raritan Bay and Sandy Hook Bay Combined Flood Control and Shoreline Protection Project, Port Monmouth, New Jersey." This constitutes the Service's draft report on fish and wildlife impacts that can be expected to result from the Army Corps of Engineers (Corps) proposed plan. This report has been 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 for inclusion in the Corps forth-coming draft Environmental Impact Statement.

The Service's report contains an assessment of the proposed plan and recommendations for protection of fish and wildlife resources. The Service provided the New Jersey Division of Fish, Game and Wildlife (Division) with an opportunity to participate on the Habitat Evaluation Procedures (HEP) team by letter dated October 6, 1997 (the Division declined due to staffing constraints). Appendix B of the enclosed draft report includes a copy of the Division's response.

Please review the enclosed draft report and provide a letter of comment including indication of concurrence, or lack thereof, within 20 calendar days from the date of this letter. If there are any questions concerning this report, please contact John Staples or Paula Halupa of my staff. Thank you for your assistance in this matter.

Sincerely,

Clifford G. Day
Supervisor

Enclosure

FISH AND WILDLIFE SERVICE
Ecological Services
927 North Main Street (Bldg. D1)
Pleasantville, New Jersey 08232

Tel: 609-646-9310
FAX: 609-646-0352

IN REPLY REFER TO:

October 6, 1997

Robert L. McDowell, Director
New Jersey Division of Fish, Game and Wildlife
CN 400
Trenton, New Jersey 08625

Dear Bob McDowell:

The U.S. Fish and Wildlife Service (Service) would like to invite the New Jersey Division of Fish, Game and Wildlife (Division) to participate in a Habitat Evaluation Procedures (HEP) study that is being undertaken as a component of the U.S. Army Corps of Engineers, New York District (Corps) Port Monmouth Flood Control Feasibility Study (feasibility study) in Port Monmouth, Monmouth County, New Jersey. The information gained from this HEP study will be incorporated into the Service's upcoming Fish and Wildlife Coordination Act (FWCA), Section 2(b) report to the Corps.

As you know, the Service's upcoming FWCA report on the Corps selected alternative will document potential impacts to fish and wildlife resources and provide recommendations to minimize those impacts. The FWCA report must address the Division's concerns regarding the Corps selected flood control plan. Therefore, the Service invites a Division representative to participate in the subject HEP study to ensure that the State's concerns regarding wildlife resources in the Port Monmouth area are sufficiently addressed. The HEP team now consists of representatives from the Service, Corps, and National Marine Fisheries Service.

The Division's involvement in the HEP study would include: participation in meetings; assistance in the selection of an evaluation species to assess impacts of beach dune nourishment; calibration of HEP models for selected evaluation species; evaluation of compensatory wetland mitigation sites in the vicinity of the project area; and, review of the HEP report to be prepared by the Corps consultant, Northern Ecological Associates of Canton, New York.

The Division's participation would likely require 10 to 15 staff days. The New Jersey Department of Environmental Protection, Division of Coastal Engineering (DCE) has the State lead as the non-federal sponsor of the proposed project. Therefore, the Division should be able to be reimbursed from the DCE to cover the cost of participation in this study. I would like to be informed if this reimbursement cannot be arranged.

The purpose of the Corps feasibility study is to evaluate methods to minimize flooding caused by coastal storm inundation in the town of Port Monmouth (see enclosed project-area map). Flooding along Pews and Comptons Creeks and beach

erosion are the primary concerns to be addressed. Currently, the Corps is evaluating the feasibility of constructing: a storm gate across the mouth of Pews Creek that would close during coastal storms; and, a levee east of the creek. According to the Corps, only one of these two options for flood attenuation would be constructed to address flooding along Pews Creek. In the area of Comptons Creek, the Corps is evaluating the feasibility of constructing a levee on the west side of the Creek. The Corps plans levee construction on the least valuable habitats. Finally, the Corps is evaluating the feasibility of constructing additional beach dunes landward of the existing dunes along Raritan Bay. Areas that would be impacted by dune construction consist of a disturbed scrub / shrub community.

Thus far, the HEP team has selected three evaluation species based upon the resource values for the area and the Corps' proposed project alternatives. The evaluation species are: black duck (*Anas rubripes*), clapper rail (*Rallus longirostris*), and marsh wren (*Cistothorus palustris*). As mentioned above, the team is considering an additional evaluation species to quantify impacts associated with dune replenishment.

We would appreciate the benefit of having the Division represented on the HEP team. Please respond to this invitation to participate on the HEP team by October 20. Should you or your staff have any questions regarding this invitation or about the feasibility study, please contact me or John Staples or Thomas McDowell of my staff.

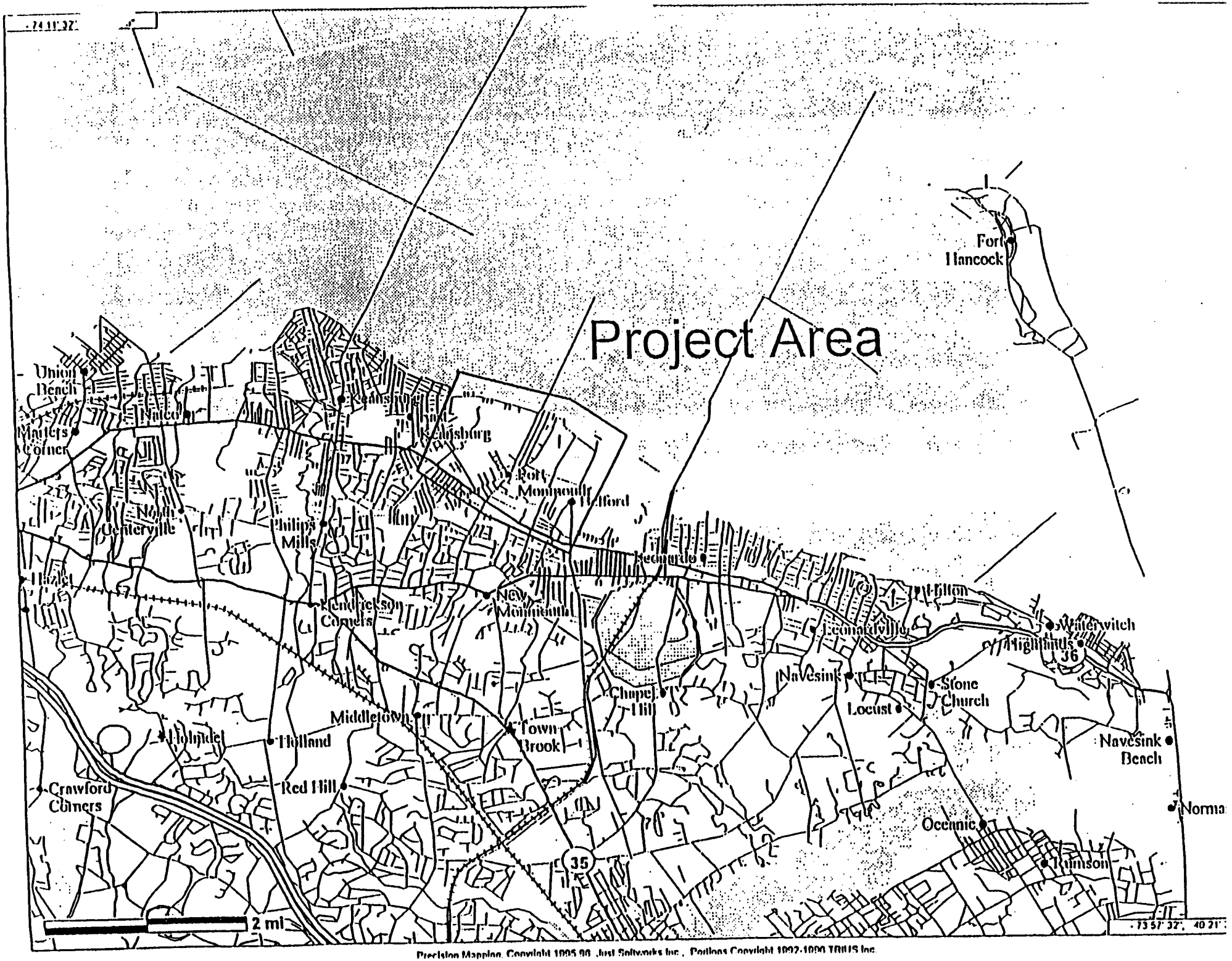
We look forward to hearing from you.

Sincerely,

Clifford G. Day

Clifford G. Day
Supervisor

Enclosure



State of New Jersey
Department of Environmental Protection
Division of Fish, Game and Wildlife
P.O. Box 400
Trenton, NJ 08625-0400

Christine Todd Whitman
Governor

Robert C. Shinn, J.
Commissioner

October 14, 1997

Clifford G. Day, Administrator
US Fish and Wildlife Service
927 N. Main St., Bldg. D1
Pleasantville, NJ 08232

Dear Mr. Day:

Reference is made to your October 6, 1997 letter inviting the Division of Fish, Game and Wildlife to participate in a Habitat Evaluation Procedure [HEP] study for the Port Monmouth Flood Control Feasibility Study. Please know that Division staff is fully committed at this time and we cannot participate in the HEP. However, we will provide whatever other assistance / recommendations we can given our work constraints; please contact Lee Widjeskog of our Environmental Review Section [609-785-0455] regarding the assistance you may need.

Sincerely,

Robert McDowell, Director
Division of Fish, Game and Wildlife

c. L. Widjeskog
A. Didun

APPENDIX C

Fish and wildlife resources recorded within
the Raritan Bay / Sandy Hook Bay Complex, New Jersey

Table C1. Invertebrates recorded within the Raritan Bay / Sandy Hook Bay complex.

Scientific Name	Common Name(s)
MOLLUSCA	
Aequipecten irradians	bay scallop
Crassostrea virginica	eastern oyster
Mercenaria mercenaria	northern quahog
Mya arenaria	softshell clam
Mytilus edulis	blue mussel
Spisula solidissima	Atlantic surfclam
ARTHROPODA	
INSECTA	
Cicindela d. dorsalis	northeastern beach tiger beetle[1]
Asterocampa clyton	tawny emperor
Incisalia henrici	Henry's elfin
CRUSTACEA	
Callinectes sapidus	blue crab
Homarus americanus	American lobster
MEROSTOMATA	
Limulus polyphemus	horseshoe crab

Source:

U.S. Fish and Wildlife Service. 1996. Significant Habitats and Habitat Complexes of the New York Bight Watershed. U.S. Fish and Wildlife Service, Department of the Interior, Southern New England - New York Bight Coastal Ecosystems Program, Charlestown, Rhode Island.

[1]rare

Table C2. Fish recorded within the Raritan Bay / Sandy Hook Bay complex.

Scientific Name	Common Name(s)
Mustelus canis	smooth dogfish
Raja eglanteria	clearnose skate
Raja erinacea	little skate
Squalus acanthias	spiny dogfish
Acipenser oxyrhynchus	Atlantic sturgeon
Ammodytes americanus	American sandlance
Anguilla rostrata	American eel
Menidia menidia	Atlantic silverside
Opsanus tau	oyster toadfish
Paralichthys dentatus	summer flounder
Scophthalmus aquosus	windowpane
Alosa aestivalis	blueback herring
Alosa pseudoharengus	alewife
Brevoortia tyrannus	Atlantic menhaden
Clupea harengus	Atlantic herring
Dorosoma cepedianum	gizzard shad
Myoxocephalus aenaeus	grubby sculpin
Fundulus heteroclitus	mummichog
Anchoa mitchilli	bay anchovy
Gadus morhua	Atlantic cod
Merluccius bilinearis	silver hake
Microgadus tomcod	Atlantic tomcod
Tautoga onitis	tautog
Tautogolabrus adspersus	cunner
Lophius americanus	goosefish
Mugil cephalus	striped mullet
Morone saxatilis	striped bass
Pomatomus saltatrix	bluefish
Cynoscion regalis	weakfish
Leiostomus xanthurus	spot
Menticirrhus saxatilis	northern kingfish
Micropogonias undulatus	Atlantic croaker
Scomber scombrus	Atlantic mackerel
Centropristis striata	black sea bass
Trinectes maculatus	hogchoker
Stenotomus chrysops	scup

Table C2. Fish recorded within the Raritan Bay / Sandy Hook Bay complex (continued).

Scientific Name	Common Name(s)
Syngnathus fuscus	northern pipefish
Prionotus carolinus	northern searobin
Prionotus evolans	striped searobin

Source:

U.S. Fish and Wildlife Service. 1996. Significant Habitats and Habitat Complexes of the New York Bight Watershed. U.S. Fish and Wildlife Service, Department of the Interior, Southern New England - New York Bight Coastal Ecosystems Program, Charlestown, Rhode Island.

Table C3. Reptiles recorded within the Raritan Bay / Sandy Hook Bay complex.

Scientific Name	Common Name(s)
Heterodon platyrhinos	eastern hognose snake
Caretta caretta	loggerhead sea turtle
Clemmys guttata	spotted turtle
Dermochelys coriacea	leatherback sea turtle
Kinosternon subrubrum	eastern mud turtle
Lepidochelys kempii	Atlantic (=Kemp's) ridley sea turtle
Malaclemys t. terrapin	northern diamondback terrapin
Terrapene c. carolina	eastern box turtle

Source:

U.S. Fish and Wildlife Service. 1996. Significant Habitats and Habitat Complexes of the New York Bight Watershed. U.S. Fish and Wildlife Service, Department of the Interior, Southern New England - New York Bight Coastal Ecosystems Program, Charlestown, Rhode Island.

Table C4. Birds recorded within the Raritan Bay / Sandy Hook Bay complex.

Scientific Name	Common Name(s)
Gavia immer	common loon
Gavia stellata	red-throated loon
Podiceps auritus	horned grebe
Phalacrocorax auritus	double-crested cormorant
Phalacrocorax carbo	great cormorant
Ardea herodias	great blue heron
Casmerodius albus	great egret
Egretta caerulea	little blue heron
Egretta thula	snowy egret
Ixobrychus exilis	least bittern
Nycticorax violaceus	yellow-crowned night-heron
Nycticorax nycticorax	black-crowned night-heron
Plegadis falcinellus	glossy ibis
Branta canadensis	Canada goose
Branta bernicla	brant
Chen caerulescens	snow goose
Anas americana	American wigeon
Anas clypeata	northern shoveler
Anas crecca	green-winged teal
Anas discors	blue-winged teal
Anas platyrhynchos	mallard
Anas rubripes	American black duck
Anas strepera	gadwall
Aythya valisineria	canvasback
Aythya marila	greater scaup
Bucephala clangula	common goldeneye
Bucephala albeola	bufflehead
Clangula hyemalis	oldsquaw
Lophodytes cucullatus	hooded merganser
Melanitta nigra	black scoter
Melanitta fusca	white-winged scoter
Melanitta perspicillata	surf scoter
Mergus serrator	red-breasted merganser
Oxyura jamaicensis	ruddy duck
Accipiter cooperii	Cooper's hawk
Accipiter striatus	sharp-shinned hawk
Buteo lineatus	red-shouldered hawk
Buteo lagopus	rough-legged hawk
Buteo platypterus	broad-winged hawk

Table C4. Birds recorded within the Raritan Bay / Sandy Hook Bay complex (continued).

Scientific Name	Common Name(s)
Circus cyaneus	northern harrier
Falco columbarius	merlin
Falco peregrinus	peregrine falcon
Pandion haliaetus	osprey
Porzana carolina	sora
Rallus elegans	king rail
Rallus limicola	Virginia rail
Rallus longirostris	clapper rail
Charadrius melodus	piping plover
Charadrius semipalmatus	semipalmated plover
Pluvialis squatarola	black-bellied plover
Haematopus palliatus	American oystercatcher
Arenaria interpres	ruddy turnstone
Calidris alba	sanderling
Calidris alpina	dunlin
Calidris canutus	red knot
Calidris minutilla	least sandpiper
Calidris pusilla	semipalmated sandpiper
Catoptrophorus semipalmatus	willet
Larus philadelphia	Bonaparte's gull
Rynchops niger	black skimmer
Sterna antillarum	least tern
Sterna forsteri	Forster's tern
Sterna hirundo	common tern
Coccyzus americanus	yellow-billed cuckoo
Coccyzus erythropthalmus	black-billed cuckoo
Asio flammeus	short-eared owl
Asio otus	long-eared owl
Tyto alba	common barn-owl
Caprimulgus vociferus	whip-poor-will
Chordeiles minor	common nighthawk
Archilochus colubris	ruby-throated hummingbird
Chaetura pelagica	chimney swift
Contopus virens	eastern wood-pewee
Empidonax traillii	willow flycatcher
Myiarchus crinitus	great crested flycatcher
Tyrannus tyrannus	eastern kingbird
Eremophila alpestris	horned lark
Progne subis	purple martin

Table C4. Birds recorded within the Raritan Bay / Sandy Hook Bay complex (continued).

Scientific Name	Common Name(s)
Riparia riparia	bank swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Certhia americana	brown creeper
Cistothorus palustris	marsh wren
Catharus fuscescens	veery
Catharus guttatus	hermit thrush
Catharus ustulatus	Swainson's thrush
Hylocichla mustelina	wood thrush
Polioptila caerulea	blue-gray gnatcatcher
Sialia sialis	eastern bluebird
Dumetella carolinensis	gray catbird
Vireo griseus	white-eyed vireo
Dendroica caerulescens	black-throated blue warbler
Dendroica coronata	yellow-rumped warbler
Dendroica discolor	prairie warbler
Dendroica fusca	blackburnian warbler
Dendroica magnolia	magnolia warbler
Dendroica palmarum	palm warbler
Dendroica striata	blackpoll warbler
Dendroica virens	black-throated green warbler
Helmitheros vermivorus	worm-eating warbler
Icteria virens	yellow-breasted chat
Mniotilta varia	black-and-white warbler
Parula americana	northern parula
Seiurus aurocapillus	ovenbird
Seiurus motacilla	Louisiana waterthrush
Seiurus noveboracensis	northern waterthrush
Setophaga ruticilla	American redstart
Vermivora pinus	blue-winged warbler
Vermivora ruficapilla	Nashville warbler
Wilsonia canadensis	Canada warbler
Piranga olivacea	scarlet tanager
Pheucticus ludovicianus	rose-breasted grosbeak
Ammodramus caudacutus	sharp-tailed sparrow
Ammodramus maritimus	seaside sparrow
Junco hyemalis	dark-eyed junco
Melospiza georgiana	swamp sparrow
Passerculus sandwichensis	savannah sparrow
Pipilo erythrophthalmus	rufous-sided towhee

Table C4. Birds recorded within the Raritan Bay / Sandy Hook Bay complex (continued).

Scientific Name	Common Name(s)
Zonotrichia albicollis	white-throated sparrow
Dolichonyx oryzivorus	bobolink
Icterus spurius	northern oriole
Sturnella magna	eastern meadowlark
Carduelis pinus	pine siskin

Source:

U.S. Fish and Wildlife Service. 1996. Significant Habitats and Habitat Complexes of the New York Bight Watershed. U.S. Fish and Wildlife Service, Department of the Interior, Southern New England - New York Bight Coastal Ecosystems Program, Charlestown, Rhode Island.

Table C5. Mammals recorded within the Raritan Bay / Sandy Hook Bay complex.

Scientific Name	Common Name(s)
Balaenoptera borealis	sei whale
Megaptera novaeangliae	humpback whale
Phocoena phocoena	harbor porpoise
Physeter catodon	sperm whale
Tursiops truncatus	bottle-nosed dolphin
Cystophora cristata	hooded seal
Phoca groenlandica	harp seal
Phoca vitulina	harbor seal

Source:

U.S. Fish and Wildlife Service. 1996. Significant Habitats and Habitat Complexes of the New York Bight Watershed. U.S. Fish and Wildlife Service, Department of the Interior, Southern New England - New York Bight Coastal Ecosystems Program, Charlestown, Rhode Island.

APPENDIX D

Federally listed endangered and threatened species
and candidate species in New Jersey.

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN NEW JERSEY

An **ENDANGERED** species is any species that is in danger of extinction throughout all or a significant portion of its range.

A **THREATENED** species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

	COMMON NAME	SCIENTIFIC NAME	STATUS
FISHES	Shortnose sturgeon*	*Acipenser brevirostrum*	E
REPTILES	Bog turtle	*Clemmys muhlenbergii*	T
	Atlantic Ridley turtle*	*Lepidochelys kempii*	E
	Green turtle*	*Chelonia mydas*	T
	Hawksbill turtle*	*Eretmochelys imbricata*	E
	Leatherback turtle*	*Dermochelys coriacea*	E
	Loggerhead turtle*	*Caretta caretta*	T
BIRDS	American peregrine falcon	*Falco peregrinus anatum*	E
	Bald eagle	*Haliaeetus leucocephalus*	T
	Piping plover	*Charadrius melodus*	T
	Roseate tern	*Sterna dougallii dougallii*	E
MAMMALS	Eastern cougar	*Felis concolor couguar*	E+
	Indiana bat	*Myotis sodalis*	E
	Gray wolf	*Canis lupus*	E+
	Delmarva fox squirrel	*Sciurus niger cinereus*	E+
	Blue whale*	*Balaenoptera musculus*	E
	Finback whale*	*Balaenoptera physalus*	E
	Humpback whale*	*Megaptera novaeangliae*	E
	Right whale*	*Balaena glacialis*	E
	Sei whale*	*Balaenoptera borealis*	E
	Sperm whale*	*Physeter macrocephalus*	E

Revised 2/98

FEDERAL CANDIDATE SPECIES IN NEW JERSEY

CANDIDATE SPECIES are species that appear to warrant consideration for addition to the federal List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the U.S. Fish and Wildlife Service encourages federal agencies and other planners to give consideration to these species in the environmental planning process.

SPECIES	SCIENTIFIC NAME
Bog asphodel	*Narthecium americanum*

Note: For complete listings of taxa under review as candidate species, refer to Federal Register Vol. 62, No. 182, September 19, 1997 (Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species).

Revised 10/97

	COMMON NAME	SCIENTIFIC NAME	STATUS
INVERTEBRATES	Dwarf wedgemussel	*Alasmidonta heterodon*	E
	Northeastern beach tiger beetle	*Cicindela dorsalis dorsalis*	T
	Mitchell saytr butterfly	*Neonympha m. mitchellii*	E+
	American burying beetle	*Nicrophorus americanus*	E+
PLANTS	Small whorled pogonia	*Isotria medeoloides*	T
	Swamp pink	*Helonias bullata*	T
	Eastern prairie fringed orchid	*Platanthera leucophaea*	T+
	Knieskern's beaked-rush	*Rhynchospora knieskernii*	T
	American chaffseed	*Schwalbea americana*	E
	Sensitive joint-vetch	*Aeschynomene virginica*	T
	Sea-beach pigweed	*Amaranthus pumilus*	T+

STATUS:			
E	endangered species	PE	proposed endangered
T	threatened species	PT	proposed threatened
+	presumed extirpated		

* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service.

Note: for a complete listing of Endangered and Threatened Wildlife and Plants, refer to 50 CFR 17.11 and 17.12.

For further information, please contact:

U.S. Fish and Wildlife Service
New Jersey Field Office
927 N. Main Street, Building D
Pleasantville, New Jersey 08232
Phone: (609) 646-9310
Fax: (609) 646-0352

APPENDIX E

State-listed endangered and threatened species in New Jersey

ENDANGERED AND THREATENED WILDLIFE OF NEW JERSEY

Endangered Species are those whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. Assistance is needed to prevent future extinction in New Jersey.

Threatened Species are those who may become endangered if conditions surrounding them begin to or continue to deteriorate.

BIRDS

Endangered

Pied-billed Grebe,* *Podilymbus podiceps*
Bald Eagle, *Haliaeetus leucocephalus***
Northern Harrier,* *Circus cyaneus*
Cooper's Hawk, *Accipiter cooperii*
Red-shouldered Hawk, *Buteo lineatus* (Breeding)
Peregrine Falcon, *Falco peregrinus***
Piping Plover, *Charadrius melodus***
Upland Sandpiper, *Bartramia longicauda*
Roseate Tern, *Sterna dougallii*
Least Tern, *Sterna antillarum*
Black Skimmer, *Rynchops niger*
Short-eared Owl,* *Asio flammeus*
Sedge Wren, *Cistothorus platensis*
Loggerhead Shrike, *Lanius ludovicianus*
Vesper Sparrow, *Pooecetes gramineus*
Henslow's Sparrow, *Ammodramus henslowii*

Threatened

American Bittern*, *Botaurus lentiginosos*
Great Blue Heron*, *Ardea herodias*
Little Blue Heron, *Egretta caerulea**
Yellow-crowned Night Heron, *Nyctanassa violaceus*
Osprey, *Pandion haliaetus*
Northern Goshawk, *Accipiter gentilis*
Red-shouldered Hawk, *Buteo lineatus* (Non-breeding)
Black Rail, *Laterallus jamaicensis*
Long-eared Owl, *Asio otus*
Barred Owl, *Strix varia*
Red-headed Woodpecker, *Melanerpes erythrocephalus*
Cliff Swallow,* *Hirundo pyrrhonota*
Savannah Sparrow, *Passerculus sandwichensis*
Ipswich Sparrow, *Passerculus sandwichensis princeps*
Grasshopper Sparrow, *Ammodramus savannarum*
Bobolink, *Dolichonyx oryzivorus*

*Only breeding population considered endangered or threatened
**Federally endangered or threatened

REPTILES

Endangered

Bog Turtle, *Clemmys muhlenbergi*
Atlantic Hawksbill, *Eretmochelys imbricata***
Atlantic Loggerhead, *Caretta caretta***
Atlantic Ridley, *Lepidochelys kempi***
Atlantic Leatherback, *Dermochelys coriacea***
Corn Snake, *Elaphe g. guttata*
Timber Rattlesnake, *Crotalus h. horridus*

Threatened

Wood Turtle, *Clemmys insculpta*
Atlantic Green Turtle, *Chelonia mydas***
Northern Pine Snake, *Pituophis m. melanoleucus*

**Federally endangered or threatened

ENDANGERED AND NONGAME SPECIES PROGRAM

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY
DIVISION OF FISH, GAME AND WILDLIFE

AMPHIBIANS

Endangered

Tremblay's Salamander, *Ambystoma tremblayi*
Blue-spotted Salamander, *Ambystoma laterale*
Eastern Tiger Salamander, *Ambystoma t. tigrinum*
Pine Barrens Treefrog, *Hyla andersonii*
Southern Gray Treefrog, *Hyla chrysoscelis*

Threatened

Long-tailed Salamander, *Eurycea longicauda*
Eastern Mud Salamander, *Pseudotriton montanus*

MAMMALS

Endangered

Bobcat, *Lynx rufus*
Eastern Woodrat, *Neotoma floridana*
Sperm Whale *Physeter, macrocephalus*••
Fin Whale, *Balaenoptera physalus*••
Sei Whale, *Balaenoptera borealis*••
Blue Whale, *Balaenoptera musculus*••
Humpback Whale, *Megaptera novaeangliae*••
Black Right Whale, *Balaena glacialis*••

INVERTEBRATES

Endangered

Mitchell's Satyr (butterfly), *Neonympha m. mitchellii*••
Northeastern Beach Tiger Beetle, *Cicindela d. dorsalis*
American Burying Beetle, *Nicrophorus americanus*••
Dwarf Wedge Mussel, *Alasmidonta heterodon*••

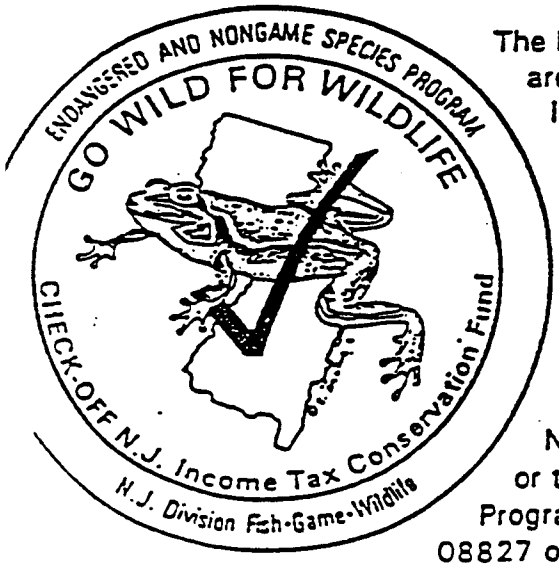
••Federally endangered

FISH

Endangered

Shortnose Sturgeon, *Acipenser brevirostrum*••

List revisions: March 29, 1979
January 17, 1984
May 6, 1985
July 20, 1987
June 3, 1991

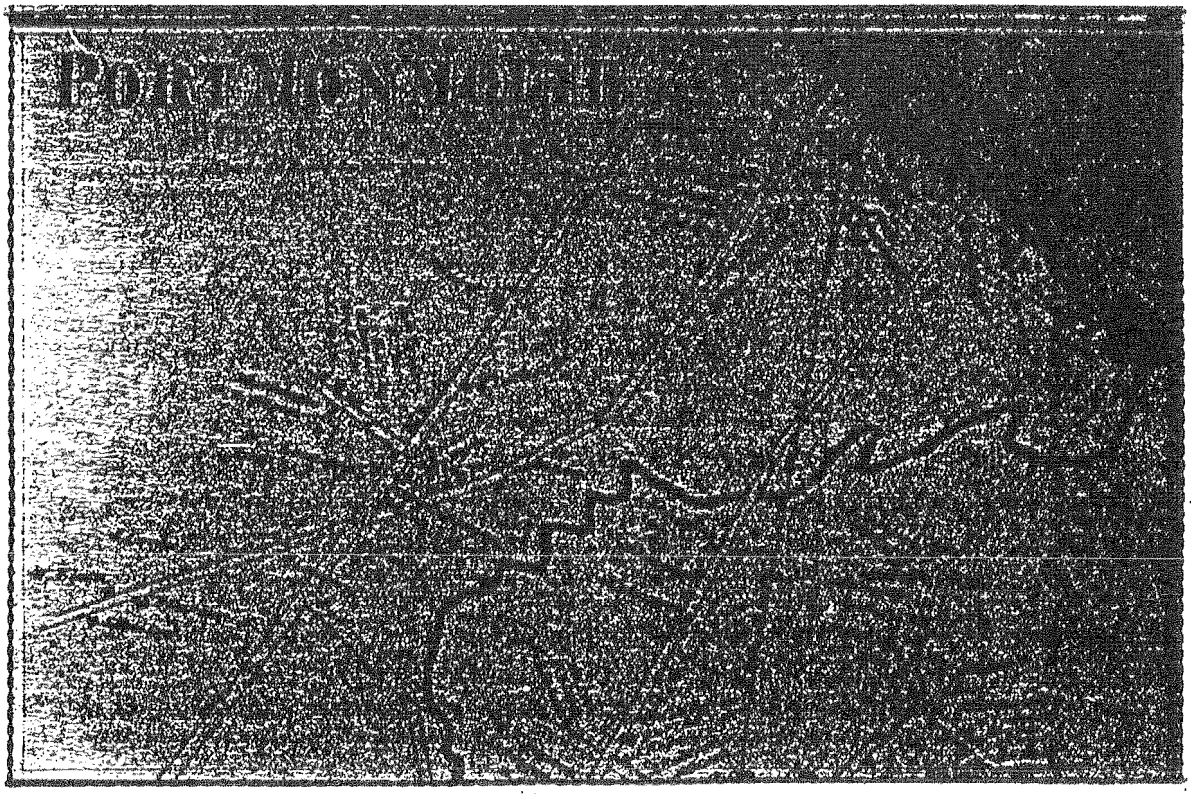


The lists of New Jersey's endangered and nongame wildlife species are maintained by the DEP&E's Division of Fish, Game and Wildlife's, Endangered and Nongame Species Program. These lists are used to determine protection and management actions necessary to insure the survival of the State's endangered and nongame wildlife. This work is made possible only through voluntary contributions received through the Wildlife Check-off on the New Jersey State Tax Form. The Wildlife Check-off is the only major funding source for the protection and management of the State's endangered and nongame wildlife resource. For more information about the Endangered and Nongame Species Program or to report a sighting of endangered or threatened wildlife contact: Endangered and Nongame Species Program, Northern District Office, Box 383 R.D. 1, Hampton, N.J. 08827 or call (908) 735-8975.

FEIS APPENDIX F

CULTURAL RESOURCES

US Army Corps
of Engineers
New York District

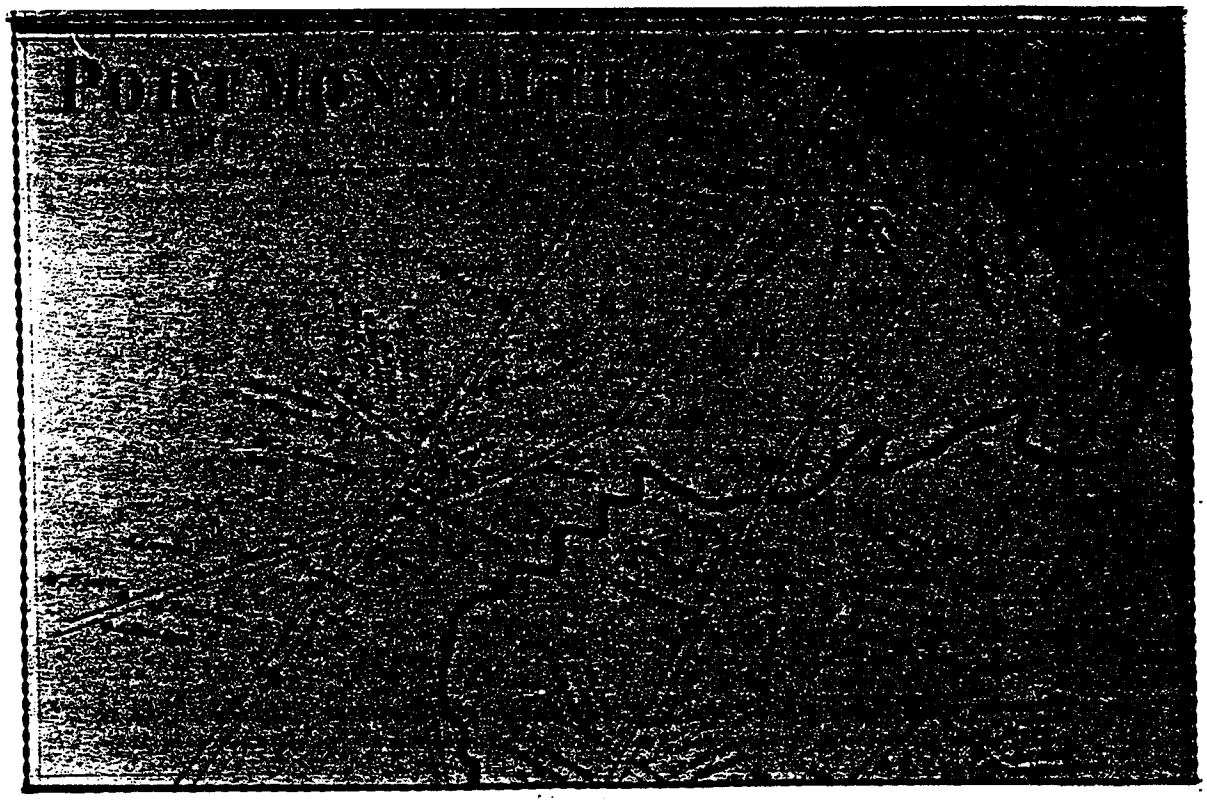


CULTURAL RESOURCES APPENDIX
DRAFT ENVIRIONMENTAL IMPACT STATEMENT
PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY

PORT MONMOUTH, NEW JERSEY
MIDDLETOWN TOWNSHIP
MONMOUTH COUNTY

PREPARED BY
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT

US Army Corps
of Engineers
New York District



CULTURAL RESOURCES APPENDIX
DRAFT ENVIRIONMENTAL IMPACT STATEMENT
PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY

PORT MONMOUTH, NEW JERSEY
MIDDLETOWN TOWNSHIP
MONMOUTH COUNTY

PREPARED BY
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I. INTRODUCTION

The Port Monmouth Combined Flood Control and Shore Protection Project is a storm damage protection system located in Port Monmouth, Monmouth County, New Jersey. The system, which is being developed by the New York District Corps of Engineers (Corps), is presently in the Feasibility Phase of project planning. It consists of four separate components: dune/beach fill improvements along the Raritan Bay shorefront, levee/floodwalls along Pews Creek, levee/floodwalls along Compton Creek, and interior drainage features along Compton Creek. A fifth component, environmental mitigation, is being refined for the Final Environmental Impact (FEIS). The local sponsor for this project is the New Jersey Department of Environmental Protection.

This cultural resources appendix describes cultural resources activities undertaken by the Corps. Wendy Elizabeth Harris, RPA, New York District Corps Senior Archaeologist, served as the Principal Investigator for the cultural resources investigation. A more detailed account of the investigation appears in "Cultural Resources Investigation: The Port Monmouth Combined Flood Control and Shore Protection Feasibility Study, Port Monmouth, Town of Middletown, Port Monmouth, New Jersey" (1999). The latter document (on file at the Corps' New York City office, the New Jersey Historic Preservation Office [NJHPO] in Trenton, and the Monmouth County Parks System [MCPS] office in Lincroft) was prepared by Ms. Harris, with the assistance of Nikoleta Katsakiori, also a member of the Corps' cultural resources staff. The goal of cultural resources activities has been to bring the plans proposed as part of the Feasibility Study into compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended through 1992, and the National Environmental Policy Act (NEPA). Documentary research, field investigations, report preparation, and consultation with agencies, including NJHPO and MCPS) have followed the Advisory Council on Historic Preservation's regulations for implementing the NHPA (36 CFR Part 800).

Investigative efforts have focused upon terrain that may be affected as a result of the construction of project elements. Such locations are termed Areas of Potential Effect (APEs). Research and fieldwork have thus sought to identify above ground or archaeological cultural resources within APEs. Identified resources within or adjoining APEs include the Seabrook-Wilson House, a National Register listed property located along the bayshore in Port Monmouth, a segment of the National Register eligible Raritan and Delaware Bay Railroad main line fill embankment, and Site 28-Mo-272, a Woodland Period Native American archaeological site. More detailed descriptions of these properties appear below, as well as assessments of the potential effects to them that may occur as a consequence of the project's construction.

The Corps has consulted with NJHPO and MCPS regarding potential effects and the outcome of consultation is reflected in this appendix. Copies of agency correspondence are also included.

II. PROJECT LOCATION

The Port Monmouth project area is located in Monmouth County, Middletown Township, New Jersey and consists of approximately 7,000 feet of shoreline in Monmouth County in central New Jersey, extending along the shoreline of Raritan Bay and Sandy Hook Bay (Figure 1). Pews Creek and Compton Creek are waterways that represent the western and eastern limits of the project area, respectively. The southern limit of the project area is the existing inland 15 foot NGVD contour line, which lies a short distance south of Route 36, approximately 6000 feet from the bayshore. To the west the study area is East Keansburg. To the east is Belford, with Belford Harbor at the mouth of Compton Creek (Figure 2).

The Port Monmouth wetlands form the drainage basins of Pews and Compton Creeks, covering a combined area of 5.0 square miles and 8.5 river miles. To the west of Pews Creek is a levee with nominal crest elevation of 15 feet that runs south or inland, from the mouth of the creek for a distance of 6,000 feet. The levee is part of the Raritan Bay and Sandy Hook Bay Beach Erosion and Hurricane project for Keansburg. From its 7,000 foot maximum east-west dimension at the shoreline, the width of Port Monmouth reaches a minimum of about 5,000 feet, as defined by the separation between the bordering creeks. The shoreline consists of a small beach and dune system fronting an extensive low-lying marshland (Figure 2).

III. PROJECT DESCRIPTION

A. Introduction

The Port Monmouth Combined Flood Control and Shore Protection Project consists of four separate components: dune/beach fill improvements along the Raritan Bay shorefront, levee/floodwalls along Pews Creek, levee/floodwalls along Compton Creek, and interior drainage features along Compton Creek (Figures 3a-i). An additional component, consisting of environmental mitigation, is being refined for the FEIS.

B. Compton Creek Alignment: Floodwall and Levee (Figures 3d-h)

The alignment for flood protection from Compton Creek starts out as an I-type floodwall approximately 250 feet southeast of the intersection of Wilson Avenue and State Highway 36 and proceeds easterly along the rear property line of the homes fronting Willow Avenue. The I wall will span approximately 1250 feet to the last rear yard of Wilson Avenue at an elevation of +14 ft NGVD. This floodwall section ranges from one-half to six feet above existing grade.

The alignment transitions from an I-type floodwall to an earthen levee and proceeds easterly for about 600 feet where it crosses an existing drainage ditch located between Campbell Avenue and Willow Avenue. The levee then turns north and

approaches Campbell Avenue perpendicularly about 100 feet east of the intersection of Campbell Avenue and Creek Road. A road closure swing gate is proposed for the Campbell Avenue crossing. The gate will be approximately 40 feet wide and 8.5 feet high to provide flood protection to elevation + 14 Ft NGVD.

The levee than continues from the Campbell Avenue crossing in a northerly direction through the wetlands nearly parallel to Creek Road for approximately 1,100 feet. The levee height for this reach varies between 10 feet and 11 feet above existing grade. The levee then continues northeast, paralleling Woodstock Avenue for 400 feet and then proceeds northward for 800 feet to meet Broadway about 100 feet east of the intersection of Main Street and Broadway, at which point there will be a road closure swing gate to span across Broadway. The gate will be approximately 40 feet wide and 8 feet high to provide flood protection to elevation + 14 feet NGVD.

The alignment continues as an earthen levee in a northeasterly direction parallel to Main Street for about 2,100 feet, at which point it changes course and proceeds east for approximately 700 feet along the rear property lines of the homes which from Park Avenue. The levee then proceeds northerly meeting Port Monmouth Road about 800 feet southeast of the intersection of Main Street and Port Monmouth Road. Port Monmouth Road will be elevated to design elevation + 14 feet NGVD where the levee meets the road. The levees will be covered with a layer of topsoil and then seeded with grass. The levee picks up again at the north side of Port Monmouth Road and proceeds north towards the bay front where it will tie into the dune.

C. **Bayshore Protection: Dune Reconstruction** (Figures 3c-d)

The selected plan for tidal flood control along the bay shore consists of a fortified dune, which generally follows the layout of the existing dune. The design dune crest extends landward from the crest of the seaward most existing dune. The eastern limit of the fortified dune ties into the Compton Creek alignment near the intersection of Park Avenue and Port Monmouth Road. From its eastern terminus, the dune extends about 2,640 feet to the west to join the Pews Creek alignment west of the Seabrook-Wilson House property (known locally as the Spy House).

A dune crest of 25 feet to design height of +16 ft NGVD was selected. The landward dune slope is 1 vertical on 5 horizontal whereas the bayside slope is 1 vertical on 10 horizontal up to the +9 ft NGVD contour line. Thence a 50 ft wide berm will extend seaward to be followed by a 1 vertical on 15 horizontal slope to existing grade contour. The dune section will be stabilized with dune grass and fencing, and wood overwalks will be provided. Advance fill will be placed upon construction, with periodic nourishment to follow approximately 10 years after construction and continue at a 10 year cycle. Total initial fill would be approximately 357,000 CY. Material would be utilized from the Sandy Hook Channel borrow source and available upland sources.

D. Pews Creek: Various Structural Elements (Figure 3a)

(Note: This portion of the Pew's Creek component has been eliminated from the project design. The description is included because prior to its elimination, preliminary investigations were initiated within several of its APEs. This information may provide useful contextual background for other aspects of the investigation.)

From its southernmost point, the alignment for flood protection from Pew's Creek proceeds northwesterly from a point near the intersection of Bray Avenue and Main Street. The alignment skirts the edge of the wetlands, running to the west of Shoal Harbor Court, Plymouth Avenue, Suffolk Avenue, and Lydia Place. North of Lydia Place, the alignment proceeds northerly, paralleling the backyards of Wilson Street structures but within the wetlands. At a point approximately 400 feet to the south of the intersection of Wilson Avenue and Port Monmouth Road, the alignment breaks away from this course and proceeds in a northwesterly direction along the margins of the wetlands, crossing Port Monmouth Road at a point approximately 700 feet to the west of the Port Monmouth Road, Wilson Avenue intersection. On the north side of Port Monmouth Road, the alignment ties into shoreline protection elements.

E. Selected Pews Creek Alignment: Port Monmouth Road and Bayshore Sections (Figures 3b-c)

From the terminus of the fortified dune, approximately 700 feet northwest of the intersection of Wilson Avenue and Port Monmouth Road, a levee section will span between the dune and Port Monmouth Road. The levee section will abut the beginning of the proposed floodwall along the north side of Port Monmouth Road. This floodwall will be approximately four feet high at a design elevation of 14 feet NGVD. The floodwall continues at a design elevation of +14 ft NGVD westerly along the northern portion of Port Monmouth Road for about 600 feet until it reaches the intersecting ramp to the Monmouth County Marina. A closure structure approximately 40 feet long by 4 feet high will bridge this gap. The alignment then continues for about 1500 feet as a floodwall along Port Monmouth Road. This floodwall is an I-type floodwall and continues up to a point perpendicular to an area of the new Port Monmouth Road (that becomes an elevated highway bridge) which is at design height. A transition earthen levee will be placed between the floodwall and the roadway to bridge the gap. The alignment incorporates a section of Port Monmouth Road that is at or above design height and connects to a proposed levee south of the new Port Monmouth Road. The levee proceeds about 300 feet southwest up to the east bank of Pews Creek.

A storm gate is to be constructed across Pews Creek at a point about 300 feet south of the Pews Creek Bridge. The sector gate size opening will be 40 feet wide and 21 feet high. The storm gate will connect to a concrete pile supported T-wall wall on the east side of Pews Creek for about 150 feet where it will join the existing Keansburg levee. A pump station will be located adjacent to the east side of the East Keansburg levee and

will incorporate the concrete wall between the East Keansburg levee and the storm gate at its north wall.

F. Interior Drainage Areas/Ponding Areas (Figures 3e-g)

(Note: Cultural resource investigations were conducted based upon earlier design plans which called for excavated ponding areas. At the time of the investigations, it was assumed that reductions in surface elevations resulting from excavation and grading posed threats to archaeological sites. The ponding area design has since been revised. The present project design description no longer relies upon ponding areas created through grading and excavation, but upon naturally occurring lower elevation interior drainage areas that temporarily impound waters behind the adjacent levees.)

Interior drainage facilities are required to safely store and discharge storm water runoff, which collects on the protected side of dunes, berms, levees and floodwalls associated with flood control projects. An "interior drainage area" is a distinct land area, which drains to one primary outlet location behind the proposed line-of-protection.

The proposed Compton Creek plan includes three interior drainage sub-basins (C1, C2, C3) which parallel the line of protection works and are located along the west bank of Compton Creek.

Interior drainage area C1 is located along the left (west) bank of Compton Creek from south of Route 36 area near Chestnut Street to the north between Campbell and Collins Avenues. The area extends west beyond Wilson Avenue to Main Street in the New Street area. Interior drainage area C2 is located along the left (west) bank of Compton Creek. A segment of proposed levee and Main Street form the east and west boundaries of the interior drainage area. Interior drainage area C3 is located to the west of Main Street.

The selected facility for sub-basin C1 consists of a primary and secondary outlet, both provided with a sluice gate and trash rack. The outlets are also provided with flap gates to prevent tidal surges from entering the protected areas. Ditches will be constructed along the landward side of the levee to direct runoff toward either the primary or secondary outlet.

The selected facility for sub-basin C2 consists of a primary outlet and five secondary outlets. Both the primary and secondary outlets are being provided with a flap gate, sluice gate, and trash rack. Drainage ditches will direct runoff along the protected side of the levee to a nearby outfall.

A 120 cfs pump station will be located in the immediate vicinity of the Creek, on the left bank, for interior puming conditions for the gate closed position.

G. Levee Construction (Figure 3i)

In general levees will be positioned to minimize impacts to wetlands. Foundation preparation of the levees will consist of clearing, and removal of unsuitable bearing materials (including organic soils near streams). The site will be proof-rolled with a 10-ton (minimum) roller to identify any soft pockets near the surface, which will then be remediated. An exploration or inspection trench will be located at the centerline of the levee. In general, trenches should have depths of 5 to 6-feet.

Stripped topsoil materials will be stockpiled and reused to cover the levee. The levee will be constructed out of common soil borrow. Sideslopes of the levee will be 2.5 H:1V. The height of the completed levees will range from 4.5 feet to 10.5 feet above grade, with base width at grade extending approximately 75 feet. Their elevations will at + 14 NGVD. A low maintenance grass will be established on the levees with a 6-inch thick topsoil layer. Vehicle access will be accommodated on the levee crest by a 9-inch thick crushed stone roadway underlain by a separation/reinforcement geotextile.

H. Floodwall and Seawall Construction

Like the levees, floodwalls will be positioned to minimize damage to wetlands. Floodwall foundations will have a maximum depth of 5 feet. The floodwalls consist of vertically driven sheet piles with a concrete cap. When completed the floodwalls will extend from 2 to 6 feet above grade. A rock revetment will be provided at the base of the wall to protect against scour.

I. Dune Reconstruction

Dunes will be reconstructed along the bay shoreline at landward locations. The crest width of the dunes will be 25-feet. The design dune elevation is 16-feet NGVD, which is similar to the average existing dune elevation of 17 NGVD. The landward slope of the reconstructed dune will be 1 vertical on 5 horizontal whereas the bayside of the dune has a flatter slope of 1 vertical on 10 horizontal. This design profile is similar to the existing profile in the area. The dune section will be stabilized with dune grass and fencing. Wood overwalks will be provided to protect dune vegetation from pedestrian damage.

The existing dunes will not be removed but will be allowed to erode in future years as long term erosion continues. However, starting approximately 10 years after construction, and at 10 year intervals, nourishment will be required to maintain the new dune's integrity. Fill for both the initial dune construction and periodic nourishment will be trucked to the site from an upland source. Initial construction will utilize material from the Seabright offshore borrow source, which has been investigated and permitted.

IV. ENVIRONMENTAL SETTING

The project area lies on the southern shore of Raritan/Sandy Hook Bay, at the interface of the Inner and Outer Coastal Plain subprovinces of the New Jersey Coastal Plain (Figure 4). A discontinuous line of hilly, relict landforms known as "cuestas" divide the Inner and Outer Coastal Plains, extending in a southwesterly direction from the adjacent Atlantic Highlands to the lowlands of the Delaware River in southern New Jersey. Another feature distinguishing the Coastal Plains from one another are the soils – the soils of the Inner Coastal Plain being far more fertile than those of the sandier and well drained sediments of the Outer Coastal Plain.

The project area is characterized by a beach and dune complex along its northern edge and expanses of tidal marsh. Upland areas and tidal creeks are also present. Project area soils include Sulfaquents and Sulfihemists (tidal marsh) as well as Udorthents (fill land). The tidal marsh series include sea level flats that are flooded twice daily by the normal tide. Bedrock lies fifty feet below grade while the seasonal high water table is located at zero feet. Soil textures are either silt, loam, or muck. This series – consistently characterized by hydric conditions – are considered Group 1 hydric soil. The Udorthent series, which is present within roadways and former rail lines – is characterized as fill material.

Project area elevations range from 0 to 15 feet above sea level, however the major part of the terrain lies below 10 feet. This latter portion is subjected to monthly tidal flooding and is a flood hazard zone. The area been designated as Coastal Wetlands by the New Jersey Department of Environmental Protection under the Wetlands Act of 1970 and the Freshwater Wetlands Protection Act (Laws of 1987, Chapter 156) and by the United States Environmental Protection Agency under Section 404 of the Clean Water Act "33 U.S.C. 1344." These wetlands are classified as Estuarine.

Saltmarsh vegetation includes Salt Hay, Black Grass, Salt Grass, Sea Myrtle, High-tide Bush, and Common Reed. Upland vegetation includes Planetree Maple, Mimosa, Sweetgum, Cherry, Black Locust, Weeping Willow, Sassafras, Smooth Sumac, Pokeweed, White Clover, Virginia Creeper, and Poison Ivy.

Until the mid-19th century, land use within the Port Monmouth area was dominated by agriculture, exploitation of maritime resources, and small scale commercial shipping. With the exception of the Seabrook-Wilson House (the Spy House) and its associated holdings, the area was unsettled. During the mid to late 19th century, the area became the focus of a regional transportation network involving the installation of steamboat service, a plank road, and the Raritan and Delaware Bay Railroad. Commercial fishing activities, including fish processing, expanded in Belford. At the present time, the project area is characterized by residential, recreational, and commercial land uses (Porter *et al.* 1994: 8-10).

V. PREVIOUS RESEARCH

Much of the terrain adjacent to and containing the floodwall, seawall, levee, and ponding area/interior drainage facilities APEs (areas of potential effect) has been previously evaluated for cultural resources (Harris and Reyes 1991; Mounier and Kalb 1976; Porter and Cavallo 1992; Porter *et al.* 1994; Hartwick and Madrigal 1996). In addition to documentary research, these researchers also conducted two pedestrian surveys (Mounier and Kalb 1976; Porter and Cavallo 1992) and one survey that included subsurface testing (Porter *et al.* 1994).

More recently, mitigation-level investigations have been conducted within the project area including one at the Seabrook-Wilson House property (Hartwick and Madrigal 1996) and another along the Raritan and Delaware Bay Railroad (NPS Project #1530, HAER No. NJ-117: June 1997).

None of the studies cited above resulted in the identification Native American archaeological sites. Porter *et al.* (1994:46, 56, 66-69) reported the presence of prehistoric artifacts in the vicinity of Church Street/Compton Creek Bridge, but in a disturbed context. Excavations within the front yard of the Seabrook-Wilson House revealed significant archaeological deposits. As the data recovery effort was confined to a 130 x 25 foot corridor, the actual extent of these remains is unknown (Hartwick and Madrigal 1996: 58). Sections of the Raritan and Delaware Bay Railroad embankment were found within the APE of the levee element of the Compton Creek project component, in the vicinity of Park Avenue. Several of these railway features, including the former fill embankment, were determined eligible for listing on the National Register of Historic Places (Porter *et al.* 1994:i). As result, a data recovery effort consisting of a HABS/HAER recordation, was undertaken (NPS Project #1530, HAER No. NJ-117: June 1997).

VI. HISTORIC BACKGROUND

A. Native American Prehistory: An Overview

Cultural resources within the project vicinity include archaeological sites containing cultural material associated with Native American occupations. In general, Native American occupations are divided into three cultural periods based upon differences in their technologies and in their responses to regional environmental and social changes through time. These periods are: Paleo-Indian (circa 12,000 – 8500 Before Present or B.P.), Archaic (8500 B.P. – 5000 B.P.), and Woodland (5000 B.P. – 400 B.P.). The Archaic and Woodland Periods are further divided into Early, Middle, and Late sub-periods.

Thorough overviews of New Jersey prehistory with special emphasis upon the project area and Monmouth County appear in a number of previous reports including

Harris and Reyes (1991:12-18), Porter and Cavallo (1992:3/1-3/5) and Porter *et al.* (1994:13-16). The Paleo-Indian and Archaic Periods are represented in archaeological sites located along the county's Raritan Bay and Atlantic Ocean shorelines and associated drainages. Evidence of Paleo-Indian occupation includes Clovis-like points discovered at the Earle Naval Weapon Station and at several locations within the Manasquan drainage. A large Late Archaic Site, the Red Valley Site, on Ivanhoe Creek in Freehold Township, contained over 2200 stone artifacts. Woodland Period sites, marked by the presence of ceramics, are rarer. However, the collection of an avocational archaeologist, active in Atlantic Highlands, contained large quantities of ceramic sherds, believed to have originated from prehistoric sites close to the project area (Porter *et al.*1994:13-16). Site 28-Mo-272, discovered within the project area near Compton Creek during the present investigation, contained ceramic sherds, and thus may date to the Woodland Period.

B. Historic Period: An Overview

The cultural resources of the project area also include archaeological sites and above-ground structures dating to the historic period. Details of this history can be found in a chronology of the project area compiled by Porter and Cavallo (1992:4/1- 4/22). A narrative account appears in Porter *et al.* (1994:18-42)

Middletown Township is one of Monmouth County's oldest townships. European settlement of the project area vicinity dates to the late 17th century. The first recorded owner of property here, was Thomas Whitlock, who in 1676 was recognized by the Proprietors of East Jersey as having rights to lands in Middletown, including acreage at what was then known as "Shoal Harbor." A road connecting Whitlock's bayshore property to King's Highway was opened in 1687, occupying the general corridor of Wilson Avenue. Sometime between 1687 and 1688, Whitlock built a residence on his Shoal Harbor property. It is unknown whether this is the present Seabrook-Wilson House (known locally as the Spy House) which today stands between the shoreline and the intersection of Wilson Avenue and Port Monmouth Road. The latter structure dates to this period, and appears to have been constructed no later than the first two decades of the eighteenth century (Hartwick and Madrigal 1996: 9-11).

As noted in Porter *et al.* (1992:18), the Seabrook-Wilson House remained the "dominant cultural feature" within this section of the bayshore from the 18th century until the mid-19th century. An 1844/5 United States Coast and Geodetic Survey Map (Figure 5) shows the area between Pews and Compton Creek as virtually uninhabited. Although the fields immediately surrounding the Seabrook-Wilson House are shown as under cultivation, the remainder of the terrain is composed of forest, grasslands, and salt marsh. The first major changes to this landscape occurred during the early 1850s when a series of critical transportation features were introduced. The first of these was the construction of the Port Monmouth Steamboat and Sloop Transportation Company Pier, a structure that extended from the northern end of the present Church Street more than 2000 feet into the bay in order to provide access to vessels moored in deep water. Company vessels carried produce and passengers from Monmouth County to the New York City

waterfront. Another significant feature was the plank road constructed at the base of the pier by the Port Monmouth and Middletown Plank Road Company. Running within the corridor of what is today Church Street, it provided an important connection between the new port facilities and the interior farms and villages. Perhaps the most important transportation related development here was the 1856 construction of a rail line extending from Raritan Bay to Delaware Bay by the Raritan and Delaware Railroad Company. After the Civil War, rail-based and maritime shipping, as well as a nascent commercial fish industry centered at Compton Creek, supported the economies of the growing communities of Port Monmouth and Belford (Porter *et al.* 1994:18-26). Depictions of the project area in the second half of the 19th century appear in a series of maps including, Beers 1873 (Figures 6 and 7), U.S. Coastal and Geodetic Survey 1875 (Figure 8), and Wolverton 1889 (Figure 9).

VII. FIELD INVESTIGATIONS

A. Previously Identified Cultural Resources

The cultural resource investigations cited above evaluated large portions of Port Monmouth and Belford, including much of the terrain adjacent to and containing the floodwall, seawall, levee, and ponding area/interior drainage facilities APEs (Harris and Reyes 1991; Mounier and Kalb 1976; Porter and Cavallo 1992; Porter *et al.* 1994). In addition to documentary research, these researchers also conducted two pedestrian surveys (Mounier and Kalb 1976; Porter and Cavallo 1992) and one survey that included subsurface testing (Porter *et al.* 1994). As a result of the latter investigation, mitigation-level archaeological excavations were undertaken at the National Register-listed Seabrook-Wilson House on Port Monmouth Road (Hartwick and Madrigal 1996).

Because of these investigations, it was possible for the Corps to identify known National Register listed or National Register eligible cultural resources within the project's APEs prior to initiating its own field investigations. These earlier investigations also provided information that became the basis for evaluating areas not examined during the previous surveys. Using data from earlier reports, and supplementing the data with additional research, it was possible to predict overlaps between project APEs and areas sensitive for Native American or historic period archaeological sites or areas that might contain historic structures (Figure 10).

Coordination with state and county agencies and with local historians provided further background information on cultural resources that might fall within or adjoin project APEs. The NJHPO and the MCPS advised the Corps concerning potential impacts to the National Register-listed Seabrook-Wilson House. Randall Gabrielan, a local historian based in Middletown, contributed important information on historic structures.

B. Archaeologically Sensitive Areas: Identification and Evaluation Methodologies

As discussed in the Introduction, the Port Monmouth Combined Flood Control and Shore Protection Project (Project) consists of four separate components: dune/beach fill improvements along the Raritan Bay shorefront, levee/floodwalls along Pews Creek, levee/floodwalls along Compton Creek, and interior drainage features along Compton Creek. In evaluating the archaeological sensitivity of each project component's APE, the present investigation follows the methodology and criteria presented by Porter and Cavallo (1992: 1-2) for ranking areas as low, moderate and high as to the probability of encountering buried evidence of Native American or historic period occupations. The rankings were determined following a review of earlier investigations, analysis of historic maps including the U.S. Coastal and Geodetic Survey 1844/5 (Figure 5), Beers 1873 (Figure 7), U.S. Coastal and Geodetic Survey 1875 (Figure 8), and Wolverton 1889 (Figure 9), as well as pedestrian reconnaissance of the entire project area.

Areas of high ground adjacent to Pew's and Compton Creeks are clearly locations where there is a high to moderate potential for Native American prehistoric sites. Within these areas, "undisturbed soils adjacent to productive habitat settings," have been selected for subsurface testing (Porter and Cavallo 1992:6/1. Within such environments the likelihood of finding buried historic period remains is also high to moderate. Proximity to structures depicted on historic maps is a factor favoring the presence of historic period archaeological materials. Areas of moderate probability for Native American and historic sites include higher dry ground, not necessarily bordering waterways, but indicated on historic maps such as the 1844/45 Coastal and Geodetic Survey Map (Figure 6). These areas have also been the subjects of subsurface testing.

Several areas characterized as highly to moderately sensitive for historic period archaeological sites fell within or adjoined the APEs of project components. The remains of former outbuildings and buried 18th century ground surfaces associated with the National Register listed Seabrook-Wilson House adjoined the APEs of Shoreline Protection project components. These were initially selected for subsurface testing (Porter *et al.* 1994.: Appendix A). Portions of these deposits were previously the subjects of data recovery/mitigation level efforts (Hartwick and Madrigal 1996). However, following consultation with the NJHPO and MCPS, a proposed seawall was replaced with a reconstructed dune and shifted beachward in order to avoid impacts to the structure and its grounds. The NJHPO has issued a determination of "no effect," thus eliminating the need for testing (see NJHPO correspondence, 8/7/98).

Low-lying areas, especially within tidal salt marshes and areas where land modification activities (filling or grading) have occurred are considered less likely to contain cultural materials. Such low probability areas have not been subjected to subsurface testing. Areas subjected to subsurface testing during previous investigations and in which no buried cultural material was found, were also determined to be low probability areas. These areas were not tested during the present investigation.

A detailed map of project components, indicating the locations of areas subjected to subsurface testing, is included as figure 10. The various project components and their rankings appear in the table below:

Project Components/Elements	Archaeological Sensitivity/Comments
Shoreline protection elements: Levee adjoining Pews Creek, floodwall alignment located on north side of Port Monmouth Road and extending from Pews Creek east to beginning of shoreline protection elements (Figures 3b-c).	**Low Probability.** Wetlands and fill (Figure 11). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate vast areas of salt marsh. Mounier and Kalb (1976:6-7) evaluation indicates dredging and filling. Subsurface testing by Porter *et al.* (1994:57, Figures 6.1.H and 6.1.I) yielded no cultural material.
Shoreline protection elements: Reconstructed dune and levee segment located to west of fishing pier parking lot (Figure 3c).	**Low probability.** Beachfront, wooded area and fill associated with new Port Monmouth road embankment (Figure 12). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land under cultivation. Limited subsurface testing by Porter *et al.* (1994:57, Figures 6.1.H and 6.1.I) in this vicinity yielded no cultural material.
Shoreline protection elements: reconstructed dune at northern (bayshore) edge of Seabrook-Wilson House property (Figure 3c).	**Low probability.** Beachfront and fill (Figure 13). Although alignment adjoins National Register-listed Seabrook-Wilson House property, elements relocated beachward so as to not impact buried 18th century ground surfaces.
Shoreline protection elements: reconstructed dune extending along bayshore from eastern edge of Seabrook/Whitlock Wilson House property to northern terminus of Compton Creek alignment (Figure 3c-d).	**Low Probability.** Beachfront and wooded area with some visible surface disturbance dunes (Figure 14). Subsurface testing by Porter *et al.* (1994:56,57, Figures 6.1.F, 6.1.G and 6.1.I) in this vicinity indicated disturbance and yielded no cultural material.
Compton Creek alignment: northern terminus of levee extending across Port Monmouth Road, levee running along rear of Park Ave. homes to northern terminus of levee that parallels Main St. (Figures 3d-e).	**Low Probability (with exception of Raritan and Delaware Bay Railroad associated features).** Wetlands (Figure 15). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate salt marsh. Subsurface testing by Porter *et al.* (1994:56, Figure 6.1.E) in this vicinity indicated disturbance and yielded no cultural material. Previous impacts to railway features have been mitigated by Monmouth County (NPS Project #1530, HAER NO. NJ-117)
Compton Creek alignment: levee paralleling west side of Main St. between intersection with Park Avenue and intersection with Broadway (Figures 3e-f).	**Low Probability.** Wetlands (Figure 16). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate salt marsh. Possible historic houses along east side of Main St. (Figure 17).
Compton Creek alignment: levee extending from Main Street and Broadway intersection, paralleling northernmost C2 ponding area/interior drainage	**Moderate Probability.** Southwest margin of alignment is fast land with grass cover (Figure 18). Interior of alignment is wetlands. Nineteenth

facility, extending southeast to vicinity of southernmost C2 ponding area/interior drainage facility, near the southeast terminus of Broad Street (Figure 3f).	century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land/saltmarsh margin.
Compton Creek alignment: levee extending from southernmost C2 ponding area/interior drainage facility, parallel to Creek Locks Road, to intersection with Campbell Avenue (Figures 3f-g)	**Low Probability.** Wetlands with possible historic house located on Creek Locks Road, to southwest of alignment (figure 19). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate saltmarsh
Compton Creek alignment: levee extending from Campbell Avenue to eastern terminus of floodwall, paralleling C1 ponding area/interior drainage facility, in the vicinity of eastern terminus of Willow Street (Figures 3g-h).	**Low Probability.** Mixed disturbance and wetlands (figure 20). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate mixed fast land and salt marsh.
Compton Creek alignment: floodwall running to rear of homes on southern side of Willow Avenue (Figure 3h).	**Low Probability.** Visible surface disturbance (Figure 21). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land.
C3 ponding area/interior drainage facility (between Brainard and Main Streets, north of Renfew Place) (Figure 3e).	**Low Probability.** Visible surface disturbance (Figure 22). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land.
Northernmost C2 ponding area/interior drainage facility (adjoins Compton Creek levee that extends from Main Street and Broadway intersection) (Figure 3f).	**High Probability.** Fast land with grass cover (Figure 18). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land.
Southernmost C2 ponding area/interior drainage facility (adjoins Compton Creek levee that extends from Main Street and Broadway intersection, in the vicinity of southern terminus of Woodstock Avenue) (Figure 3f).	**Moderate Probability.** Wooded with some visible surface disturbance (Figure 23). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land.
C1 ponding area/interior drainage facility (adjoins Compton Creek levee that extends south from Campbell Avenue to eastern terminus of floodwall, in the vicinity of eastern terminus of Willow Street) (figure 3g).	**Low Probability.** Visible surface disturbance (Figure 20). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land.
Pews Creek alignment: northern terminus of levee/floodwall, immediately south of Port Monmouth Road and opposite the Seabrook-Wilson House property, extending diagonally from west to east across Greg W. Butler Park towards Wilson Avenue (Figure 3a).	**High Probability.** Fast land with grass cover (Figure 24). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate fast land.
Pews Creek Alignment: levee/floodwall paralleling Wilson Avenue, extending to west of western ends of Lydia Place, Suffolk Avenue, Plymouth Avenue, Gordon Court, Shoal Harbor Court, and terminating in the vicinity of the intersection of Bray and Main Street (Figure 3a).	**Moderate to Low Probability.** Mixture of wetlands, fast land, and areas of visible surface disturbance (Figure 25). Nineteenth century maps (U.S. Coastal and Geodetic Survey 1844/5, Beers 1873, U.S. Coastal and Geodetic Survey 1875, Wolverton 1889) indicate mixture of salt marsh, deciduous forest, and grass lands. Adjoining streets contain historic houses (Figures 26, 27, 28, 29,30, 31).

C. Subsurface Testing Methodology

Subsurface testing was conducted by Corps staff archaeologists. In areas of moderate and high probability, testing consisted of shovel tests excavated to sterile subsoil. In many cases it was not possible to excavate below the water table or levels of impenetrable fill and debris. Soils were excavated in accordance with natural stratigraphy and screened through a ¼ inch mesh screen. Cultural material was bagged separately by stratum. Modern materials and construction debris were noted, sampled, and discarded in the field. Each test was recorded on a separate provenience sheet that described stratigraphy, field conditions, and artifacts encountered.

Moderate probability areas were tested at intervals of 100 feet, with the provision that should cultural material of possible historic significance occur, the interval would be decreased to 50 feet. High probability areas were tested at intervals of 50 feet between shovel tests. When cultural material suggestive of an archaeological site occurred, the interval was modified to 25 feet between shovel tests.

D. Results of Field Investigations:

Testing was conducted within moderate to high probability areas. The numbered shovel tests referred to below are graphically located in figures 10a and b. Stratigraphic data and an artifact inventory are provided in appendices to "Cultural Resources Investigation: The Port Monmouth Combined Flood Control and Shore Protection Feasibility Study, Port Monmouth, Town of Middletown, Port Monmouth, New Jersey" (1999).

Test Results within APE of Compton Creek Levee Extending Southeasterly from Main Street and Broadway Intersection, Paralleling Northernmost C2 Ponding area/interior drainage facility, to Vicinity of Southernmost C2 Ponding area/interior drainage facility, and within APE of Northernmost C2 Ponding area/interior drainage facility (Figure 10a)

The above APEs adjoin one another. Nineteenth century maps, including the U.S. Coastal and Geodetic Survey 1844/5 (Figure 5), Beers 1873 (Figure 6), U.S. Coastal and Geodetic Survey 1875 (Figure 8), and Wolverton 1889 (Figure 9), indicate that this area has been fast land and fast land/saltmarsh margin throughout the historic period. At the present time, the area is a grassy field and contains some wooded areas towards the southern end of alignment. Its northern and eastern margins are wetlands. Main Street forms its western border. A housing development bounds it to the south. Local fishermen use the site to dry and repair fishnets. There are no visible signs of disturbance here although some dumping has occurred along the property's margins. In light of these factors, this area was felt to have a moderate probability for containing archaeological resources.

Two parallel lines of shovel tests, consisting of a total of twenty-four tests (ST7 through ST30) were placed here. Within each line, the distance between tests was fifty feet. This distance was decreased to 25 feet whenever significant cultural material was encountered. One line of tests was placed to bisect the field at a distance of approximately 75 to 100 feet northeast of the fenceline that separated the field from an adjoining housing development. These tests are within the center of the northernmost C2 ponding area/interior drainage facility APE. The second line of tests, located to the northeast of the first line and ultimately converging with it, is located on the fastland portion of the Compton Creek levee APE.

Native American lithic debitage and pottery appeared within shovel tests located within the central portion of the field. This cultural material consisted of jasper flakes, including two retouched flakes, and several sherds of sand-tempered pottery. The presence of pottery suggests a Woodland Period occupation, which is rare in this region. The site's Smithsonian Site Program Registration Number is 28-Mo-272. Determining its boundaries and eligibility for National Register listing would require further testing. Although many of the tests contained historic period ceramics, the concentration of these artifacts was too light to suggest sustained occupation

Test Results within APE of Northern Terminus of Pews Creek Levee/Floodwall, Immediately South of Port Monmouth Road, Within Greg W. Butler Park (Figure 10b)

The northern terminus of the Pews Creek levee/floodwall crosscuts the Greg W. Butler Park, which is located within a triangular shaped grassy field between Port Monmouth Road and the expanse of wetlands that surround Pews Creek. Nineteenth century maps, including the U.S. Coastal and Geodetic Survey 1844/5 (Figure 5), Beers 1873 (Figure 6), U.S. Coastal and Geodetic Survey 1875 (Figure 8), and Wolverton 1889 (Figure 9), indicate that this area has been fast land throughout the historic period. It also adjoins the Seabrook-Wilson House property, which is located directly to the north.

The above factors suggested that the area had a high probability for containing archaeological resources. Two parallel lines of shovel tests were planned 50 feet apart, with tests placed at 100 foot intervals, thus providing a staggered pattern of coverage for the entire APE. One line of tests adjoined the fastland/wetland boundary. The testing yielded dense, and often impenetrable, quantities of modern debris. Some of this material was embedded in layers of clay and sand. The hypothesis that this area had been the site of a garbage dump was confirmed by subsequent interviews with local residents. It was reported that the area had been wooded during the 1950s, prior to its conversion to a dump. Before the present grass cover was planted, the dump was bulldozed and capped with sand and topsoil. Because the area was determined to be disturbed, the second line of tests was not implemented.

E. Historic Structures

In addition to identifying and ranking archaeologically sensitive areas, historic structures within and adjoining project component APEs were evaluated. Coordination with agencies and local historians resulted in the identification of one property that is National Register listed and one property that is National Register eligible. Several other properties were identified that will require further evaluation in order to determine whether they are eligible.

The Seabrook-Wilson House (figure 32) adjoins the APEs of several elements of the Shoreline Protection project component. It is located near the shoreline, on Port Monmouth Road, to the north of its intersection with Wilson Avenue. The structure was listed on the National Register of Historic Places in 1974. Its construction dates to the late 17th or early 18th century. The property's history is discussed above in the overview of the project area's historic period cultural resources. Detailed accounts of the Seabrook-Wilson House appear in Appendix A of Porter *et al.* (1994) and in Hartwick and Madrigal (1996). The property is also archaeologically significant (Hartwick and Madrigal 1996; Porter *et al.* 1994: Appendix A).

Small sections of the Raritan and Delaware Bay Railroad embankment fall within the APE of the levee element of the Compton Creek project component, in the vicinity of Park Avenue (figure 15). Several of the railway features, including the former fill embankment, have been determined eligible for listing on the National Register of Historic Places (Porter *et al.* 1994:i). The railway line, constructed between 1856 and 1860, originally extended south from the bayshore. A spur was added in 1944, breaking off from the Main line slightly to the south of Park Avenue and curving towards the east. A detailed account of the railway's history appears in Porter *at al.* (1996:34-45). Subsurface archaeological investigations of portions of the mainline embankment, slightly to the south of Park Avenue, were conducted by Porter *et al.*(1996:75). A data recovery effort, consisting of a HABS/HAER recordation has also been conducted (NPS Project #1530, HAER No. NJ-117).

In addition to National Register listed and National Register eligible properties, two properties located on Wilson Avenue are listed in the New Jersey Historic Sites Inventory. These do not directly adjoin any project elements. They include 94 Wilson Avenue (Figure 27; Historic Sites Inventory Number 1331-109) and 119 Wilson Avenue (Figure 28; Historic Sites Inventory Number 1331-110). The former structure is located on the western side of the street. Its construction date is 1870-1880. Classified as a "vernacular Victorian," it is described in the state inventory form, as "illustrat[ing] the use of relatively expensive building materials (terra-cotta and brick) on a simple house form." The latter is located on the eastern side of the street. Constructed in 1860-1873, it is classified in the inventory as a "5-bay with Italianate elements." According to the state inventory form, "this large but stylistically simple house is the dominant feature of the village of Port Monmouth." It is depicted in the 1873 Beers Atlas (figure 6) as belonging to "J. Jiles." A 1915 photograph of the structure appears in Gabrielan (1995, Vol. II: 89). In the 1873 Beers Atlas (figures 6 and 7), it is labeled "W.V. Wilson." a local clergyman.

Wilson was linked by marriage to the Seabrook family, and is known to have purchased the Seabrook-Wilson House in 1855. He was also active in local shipping. Wilson died in 1908 (Newsletter of the Middletown Township Historical Society III[2]: 2; IV [2]: 2).

A number of dwellings are located on nearby streets and although not listed on the State Inventory, may be of historic significance and should be further evaluated. Among them is 108 Wilson Avenue (Figure 29), located on the western side of the street. It has been known as "the Taylor Cottage" and is said to have been occupied by a Wilson who was a potter. The structure's terra-cotta decorative elements may be evidence of this (Gabrielan 1995:85). An undated late nineteenth/early twentieth photograph of the structure appears in Gabrielan's book. Examples of other Port Monmouth structures which appear to date from the late 19th and early 20th centuries are 78 Wilson Street (Figure 29) and 6 Division Street (Figure 31).

VIII. PROJECT EFFECTS UPON NATIVE AMERICAN ARCHAEOLOGICAL SITES

Prior to the present field investigations, no Native American archaeological sites were known to exist within any or adjoining APEs of project components. Porter *et al.* (1994:46,56, 66-69) found prehistoric material in the vicinity of Church Street/Compton Creek Bridge and Broadway. However this material was in a disturbed context and was not considered to constitute an archaeological site warranting further evaluation. Present project efforts were thus directed towards identifying unknown sites.

During subsurface testing conducted for this project, evidence of Native American occupation was found in an area that crosscuts the APEs of the northernmost C2 ponding area/interior drainage facility and the portion of the Compton Creek levee that parallels it, extending southeast from the intersection of Main Street and Broadway. These project elements were evaluated as high and moderate probability areas, respectively. The artifacts recovered included lithic material and several sherds of sand-tempered pottery. The presence of pottery suggests that this site, assigned Smithsonian Site Registration program number 28-Mo-272, may be a Woodland Period site. Such sites are rare in Monmouth County (Porter *et al.* 1994:16).

The site's extent is unknown. Further evaluation is required in order to assess its size and National Register eligibility. Construction of a levee or ponding area at this location would adversely affect the site. At the present time, the Corps has replaced the C2 ponding area with an interior drainage facility. The effect of temporarily impounded water upon the site has yet to be determined. However, the Compton Creek levee is still in place. All further work at this location will be coordinated with the NJHPO, as part of Section 106 compliance for the project. Their recommendations appear below.

IX. PROJECT EFFECTS UPON HISTORIC PERIOD STRUCTURES AND ARCHAEOLOGICAL SITES

Cultural resources investigations were directed towards identifying previously unknown sites and structures. These efforts also sought to evaluate known sites and structures located within the APEs of project components. The latter included the National Register listed Seabrook-Wilson House and a segment of the Raritan and Delaware Bay Railroad.

Initially, the shore protection component of the project called for the construction of a seawall in the vicinity of the Seabrook-Wilson House. Early versions of the project proposed a seawall that would crosscut the rear yard of the house approximately 25 feet from the structure's northern wall. The seawall would also have enclosed the western and eastern boundaries of the property. Such plans, it was recognized, would adversely affect archaeological deposits associated with the historic occupation of the house, as well as the historic landscape. As part of Section 106 compliance, these plans were forwarded by the Corps to the NJHPO and to Gail Hunton, Historic Preservation Specialist, MCPS for review and comment (see copies of Section 106 correspondence which are included in the Cultural Resources Appendix). Correspondence accompanying the plans explained that the Corps was considering revising the plans in order to minimize impacts to cultural resources.

Comments were received from the Historic Preservation Office and from the MCPS. The former were dated April 21, 1998. In their comments, the Historic Preservation Office concurred that "construction of the floodwall in the rear yard of the house would affect character defining features of the historic setting and would be likely to affect contributing archaeological deposits." Furthermore, the Historic Preservation Office supported the Corps' proposed revision of the original plan, which, in their words, would entail "a shift of the segment of the levee and floodwall/seawall that extend through the rear yard to a location beyond the yard and into the current beach zone." They also supported the Corps' plan to "consider shifting adjacent eastern and western segments further away from the house [because] these shifts would result in avoiding effects to contributing archaeological deposits, and minimizing visual effects to this historic property."

The MCPS's comments were in the form of a memorandum drafted by Gail Hunton, Historic Preservation Specialist, dated April 3, 1998. Her concerns were similar to those of the Historic Preservation Office. She also recommended shifting the alignment of the seawall to a point north of the existing fishing pier parking lot. This revision, she explained, would minimize impacts to both the archaeological deposits and the historic landscape. Her letter contained comments on the appearance of proposed seawall. She stated that these were based upon a description of a structure "constructed of steel sheet piles and poured concrete encased in sand, with a footprint not to exceed 3 feet and a typical wall height of 4 to 5 feet above existing grade." Because the structure would be "sand-encased" with "dune stabilization plantings," she concluded that it would "represent a naturalistic dune in its finished appearance." Ms. Hunton requested that the

overwalks' locations be coordinated with the Parks Systems plans. She cautioned that "impacts on the landscape cannot be fully evaluated until additional information is provided." The requested items include "a sectional view at the house, extending from the road to the beach, showing existing/proposed elevations and construction details of the seawall and reconstructed dune."

The most recent plans developed by the Corps have eliminated the seawall element of the shore protection plan. The new plan (Figure 3c) includes a reconstructed dune located beachward of the northern limits of the Seabrook-Wilson House's yard. The western limit of the reconstructed dune includes a north/south aligned segment that ties into a levee associated with the Port Monmouth Road floodwall. This portion of the shore protection plan is located more than 200 feet west of the fishing pier parking lot. Adverse effects are thus not anticipated here. The eastern limit of the reconstructed dune also includes a north/south aligned segment that ties into the northern terminus of the Compton Creek levee. This element is located more than 1600 feet east of the Seabrook-Wilson House. No adverse effects are anticipated. In correspondence dated August 7, 1998, the NJHPO concurred with this finding.

A small segment of the National Register eligible Raritan and Delaware Bay Railroad main line fill embankment falls within the APE of a section of the Compton Creek levee. The latter extends along the rear property lines of a series of homes located on the southern edge of Park Avenue. In its entirety, the railroad embankment is a uniform linear feature measuring approximately 4500 feet. It has been subject to archaeological excavation in the course of Section 106 compliance for projects conducted by other agencies (Porter *et al.* 1994:69-82). Above ground features have been the subjects of HABS/HAER level mitigation recordation (NPS Project #1530, HAER No. NJ-117). No adverse effects are anticipated. In correspondence dated August 7, 1998, the NJHPO concurred with this finding.

X. SUMMARY AND CONCLUSION

All APEs designated as high to moderate sensitivity for archaeological resources were targeted for subsurface testing. Among these were the APEs of the northernmost and southernmost C2 ponding area/interior drainage facility - terrain that adjoins the APEs of portions of the Compton Creek levee (Figure 10a). Several APEs within the Pews Creek levee/floodwall were also designated as high or moderate probability (Figure 3a). Among these was the Pews Creek levee/floodwall's northern terminus, located within the bounds of the Greg W. Burton Park, near the intersection of Port Monmouth Road and Wilson Avenue. During the present investigation shovel testing at three APEs was completed. These efforts include the APE of the northernmost C2 ponding area/interior drainage facility (Figure 10a), the APE of the Compton Creek levee that adjoins the northernmost C2 ponding area/interior drainage facility (Figure 10a), and the APE of the Pews Creek levee/floodwall's northern terminus (Figure 10b). Evidence of a prehistoric site (Smithsonian Site Registration Program Number 28-Mo-272) was found during the testing of the first two APEs, which adjoin one another. The third APE was found to be the site of a garbage dump. Testing of the Compton Creek levee APE

adjoining the southernmost C2 ponding area/interior drainage facility APE was not completed. This work should be undertaken during subsequent phases of the project.

As a result of reformulation of the project's design during the investigation, the Pews Creek levee/floodwall (Figure 3a) was eliminated so that any effects to cultural resources have been avoided. Thus although the APE of the northern terminus of this element was tested during the present investigation (Figure 10b), no further evaluation is necessary.

A summary of the evaluation status for all APEs designated as moderate to high probability for archaeological resources appears in the following table:

Project Component	Archaeological Evaluation Status
Compton Creek alignment: levee extending from Main Street and Broadway intersection, paralleling northernmost C2 ponding area/interior drainage facility, extending southeast to vicinity of southernmost C2 ponding area/interior drainage facility, near the southeast terminus of Broad Street (Figure 3f).	**Prehistoric Site Present in Portions of APE.** Subsurface testing completed within portion that adjoins the northernmost C2 ponding area/interior drainage facility. Evidence of prehistoric site (Smithsonian Site Registration Program Number 28-Mo-272) detected. More intensive testing recommended to determine the site's extent and National Register eligibility. Subsurface testing for portion adjoining the southernmost C2 ponding area/interior drainage facility has not been completed and should be undertaken during upcoming project phases.
Northernmost C2 ponding area/interior drainage facility (adjoins Compton Creek levee that extends from Main Street and Broadway intersection) (Figure 3f).	**Prehistoric Site Present in Portions of APE.** Prehistoric site (Smithsonian Site Registration Program Number 28-Mo-272) detected. More intensive testing recommended to determine the site's extent and National Register eligibility.
Southernmost C2 ponding area/interior drainage facility (adjoins Compton Creek levee that extends from Main Street and Broadway intersection, in the vicinity of southern terminus of Woodstock Avenue) (Figure 3f).	**Moderate probability.** Subsurface testing for portion adjoining the southernmost C2 ponding area/interior drainage facility has not been completed and should be undertaken during upcoming project phases.
Pews Creek alignment: northern terminus of levee/floodwall, immediately south of Port Monmouth Road and opposite the Seabrook-Wilson House property, extending diagonally from west to east across Greg W. Butler Park towards Wilson Avenue (Figure 3a).	**Disturbed.** Subsurface testing completed prior to element's elimination indicated that entire area disturbed due to the presence of a former garbage dump.

A number of APEs contained or adjoined significant historic structures. Most notable among these is the Seabrook-Wilson House, a National Register-listed property located along the beachfront, adjoining the APE of the shore protection plan's reconstructed dune element. Construction of this element will not adversely affect the structure, the historic landscape, or associated buried ground surfaces and archaeological

deposits. Although a small segment of the National Register eligible Raritan and Delaware Bay Railroad main line fill embankment falls within the APE of a section of the Compton Creek levee alignment, any adverse effects have been mitigated through a series of previous data recovery efforts conducted by other agencies. The NJHPO concurs with these findings (see correspondence date August 7, 1998).

XI. RECOMMENDATIONS

It is recommended that additional excavations be conducted within the portion of the Compton Creek levee and northernmost C2 ponding area/interior drainage facility APEs located immediately to the south of the intersection of Main and Broadway. The area contained evidence of a prehistoric site (Smithsonian Site Registration Program Number 28-Mo-272). The presence of pottery among the artifacts recovered suggests that the site may date to the Woodland Period and may thus be significant because of the paucity of such sites within coastal New Jersey. Data generated as a result of the additional excavations must be sufficient to evaluate site's eligibility for listing on the National Register of Historic Places. In a letter dated August 7, 1998, the NJHPO concurred with this recommendation, stating that " [t]his site should be the subject of Phase II archaeological work sufficient to determine the site limits and enable a well founded assessment of the National Register eligibility." It is also recommended that shovel testing be conducted to the south of this area, within the APEs of the southernmost C2 ponding area/interior drainage facility and the portion of the Compton Creek levee that adjoins it, areas that were not tested during the present investigation.

As stated above, several APEs of the Pews Creek levee/floodwall project element adjoined historic houses and contained areas that were archaeologically sensitive. The element was eliminated from the project design after the investigations had been initiated. If any further revisions to the project design occur, or if these elements or components are reincorporated, additional studies will be conducted.

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Wolverton, Chester and Forsey Breou
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FIGURES

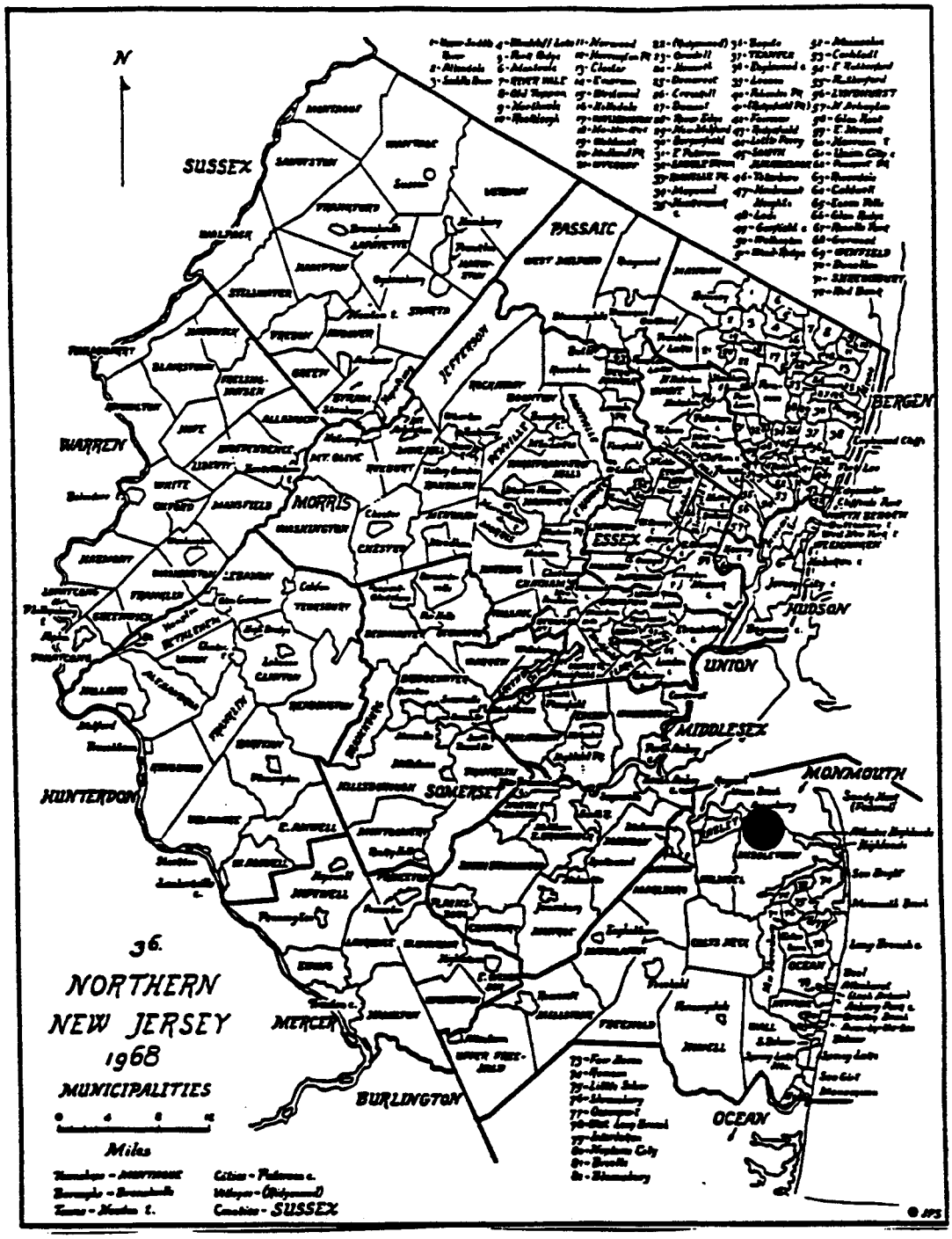


Figure 1 General Location of Project Area. Source: Snyder 1969:256.

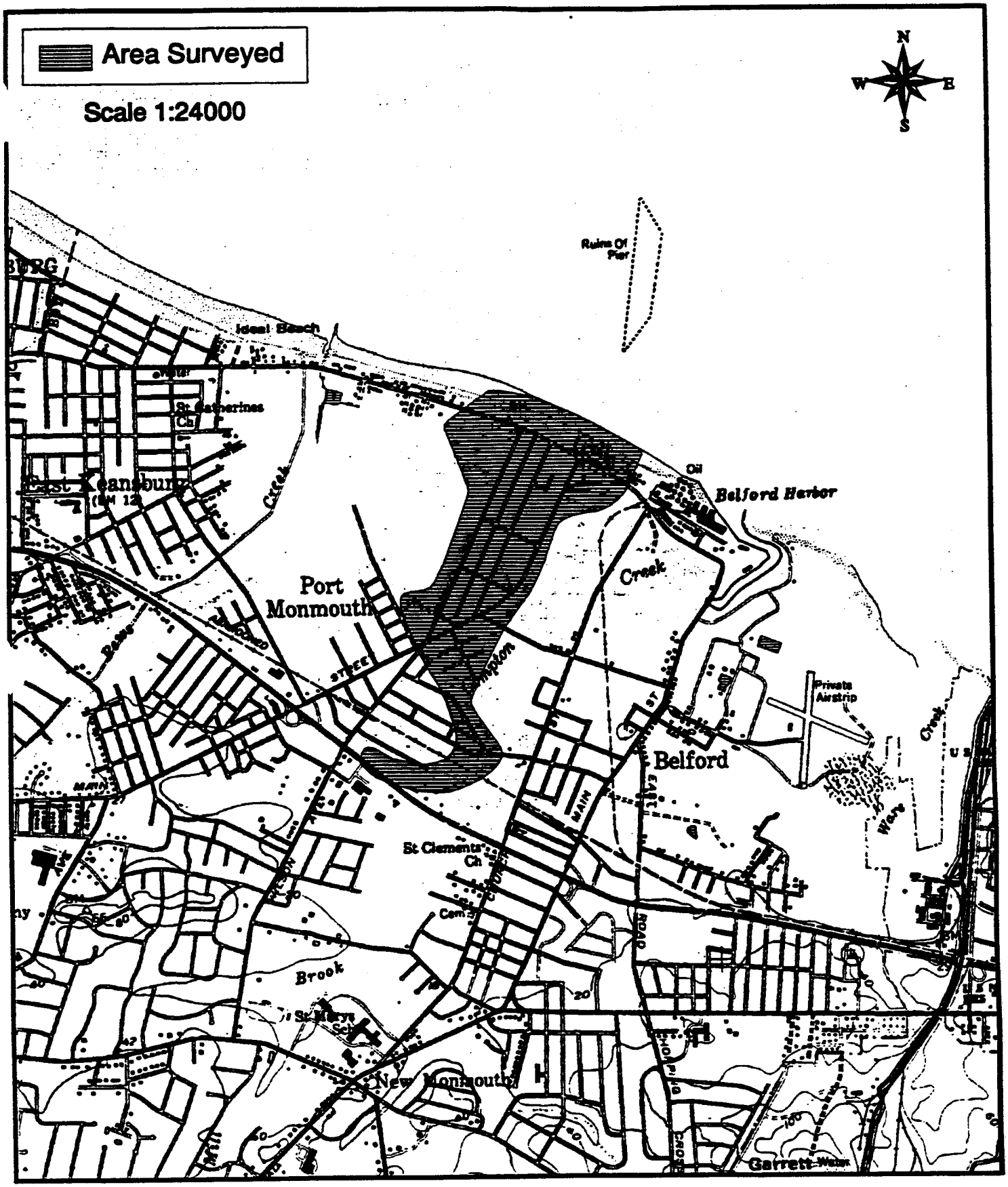


Figure 2: Project Overview Map.
Source: USGS, Sandy Hook Quadrangle.

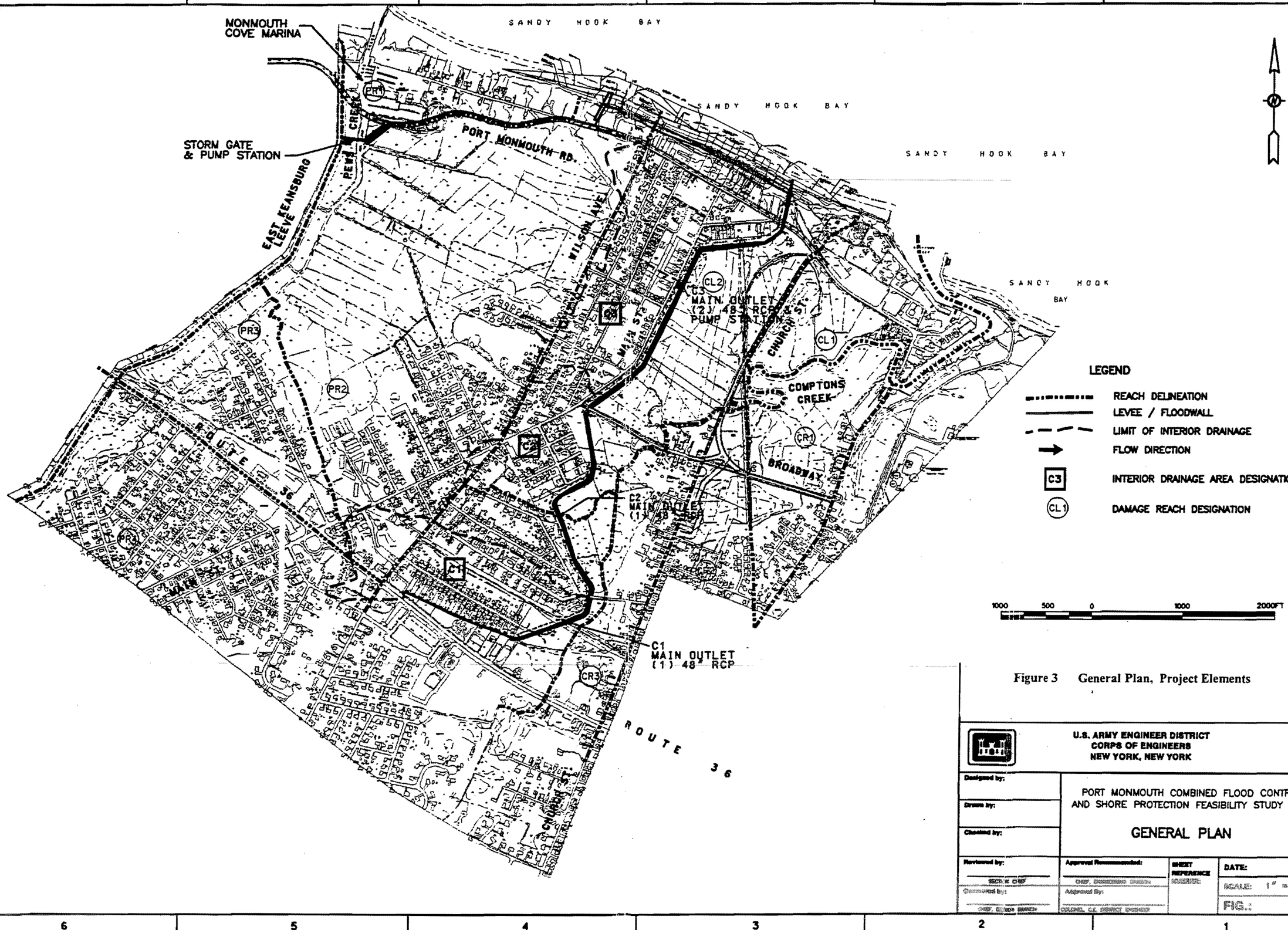


Figure 3 General Plan, Project Elements

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

Designed by:	PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY		
Drawn by:			
Checked by:	GENERAL PLAN		
Reviewed by:	Approval Recommended:	SHEET REFERENCE NUMBER:	DATE:
Approved by:	Approved by:		SCALE: 1" = 1000'
			FIG.:

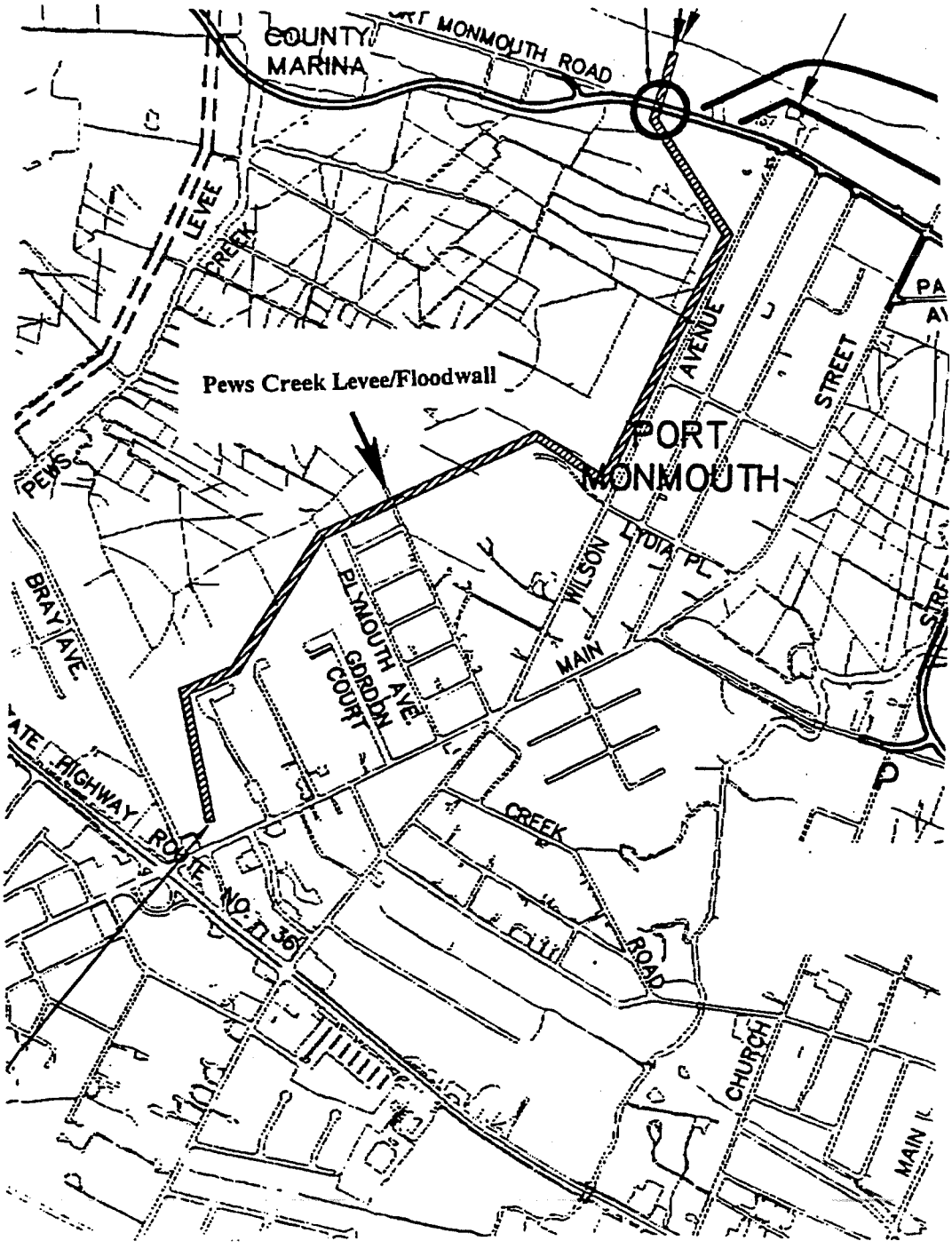
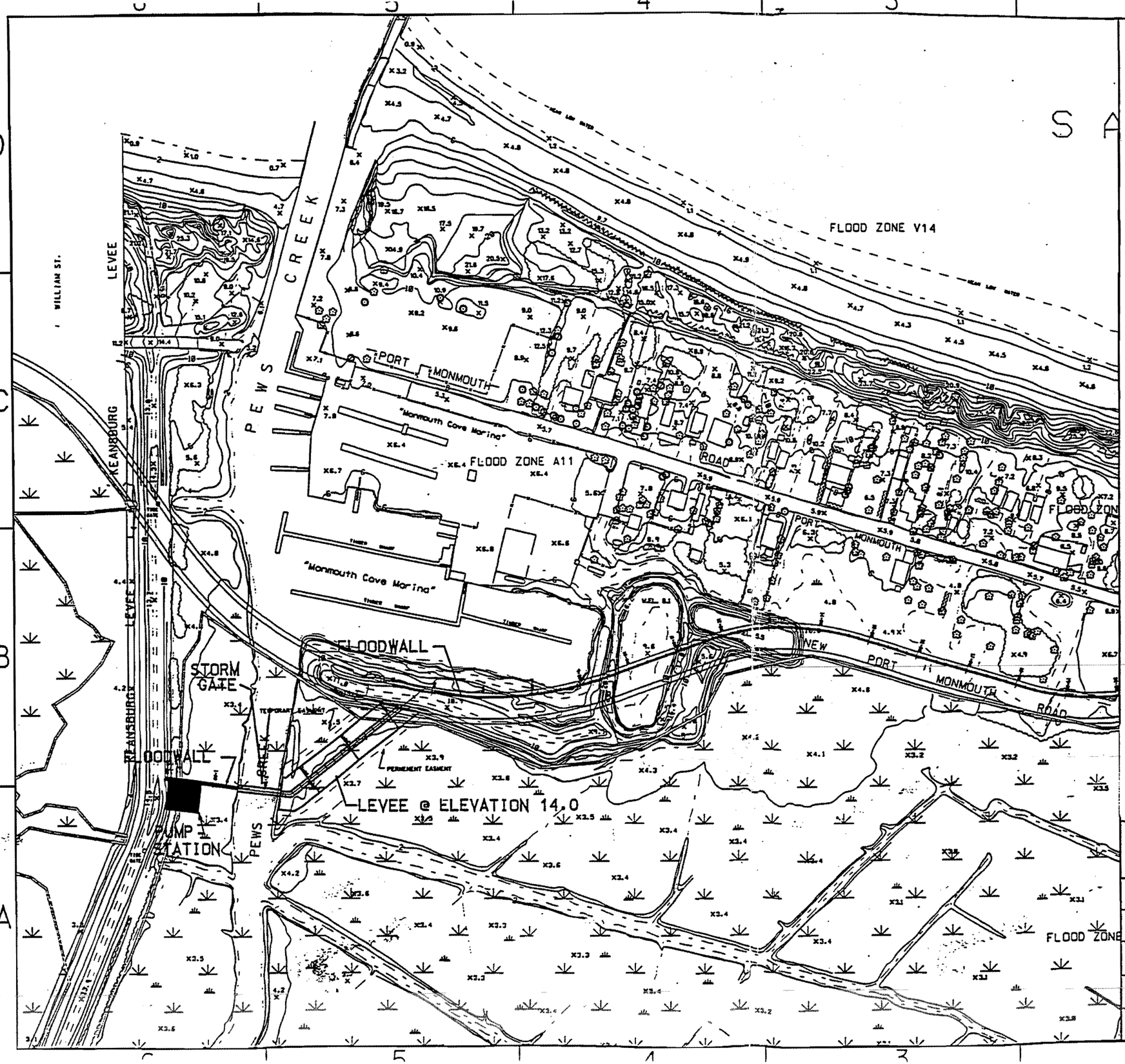
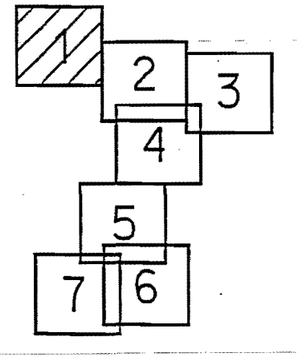


Figure 3a - Pews Creek: Various Structural Elements



SHEET LEGEND

- BUILDING
- ROAD, PARKING AREA
- FENCE
- WOODED AREA
- STANDARD LEVEE
- ROAD RAISING
- STANDARD FLOODWALL
- (C2) INTERIOR DRAINAGE AREA DESIGNATION
- PUMP STATION
- INTERIOR DRAINADE OUTLET
- DRAINAGE SWALE
- CLOSURE GATE



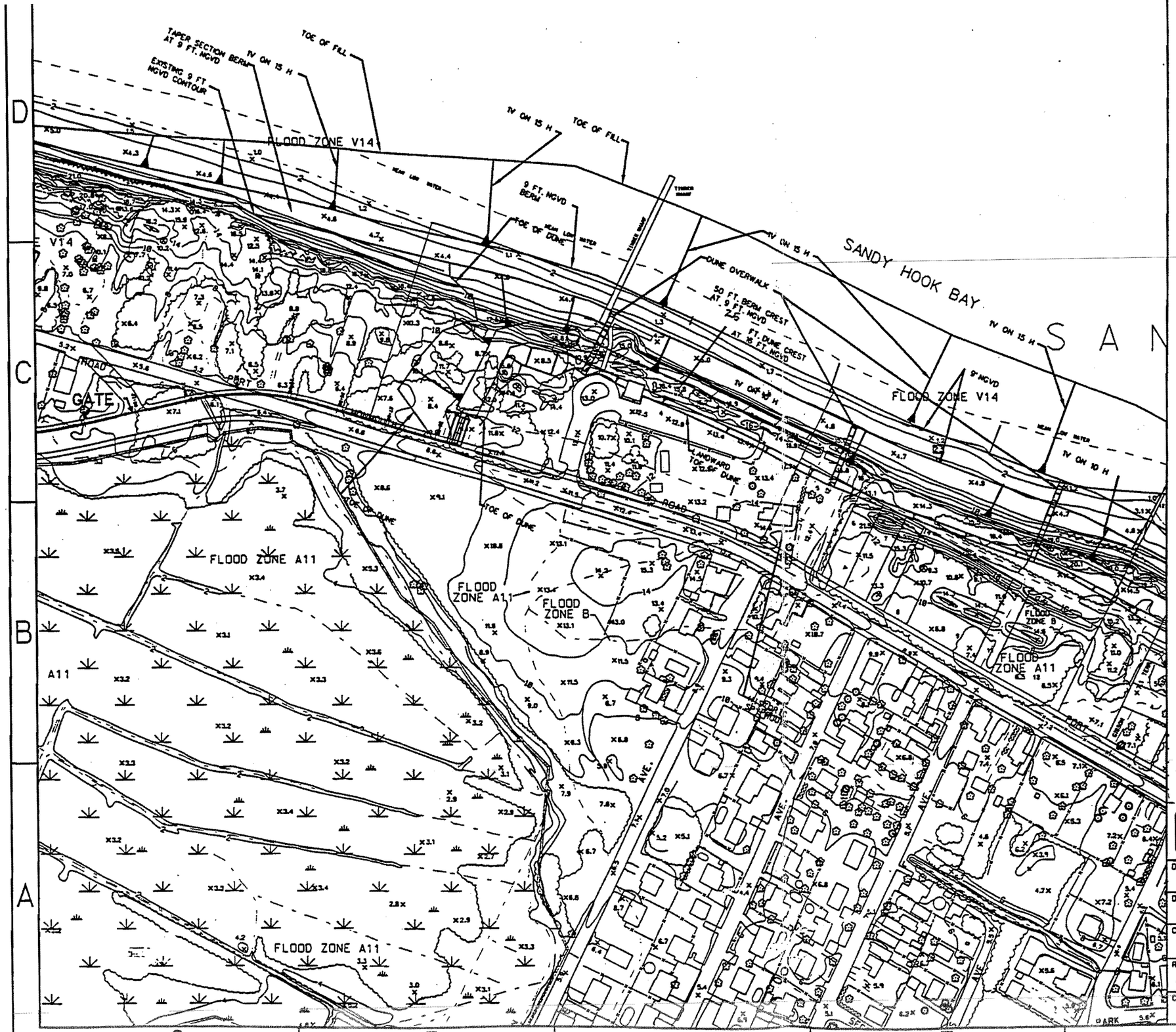
200 100 0 200 400FT

Figure 3b - Bayshore protection and Comptons Creek Levee

FIG. 3b

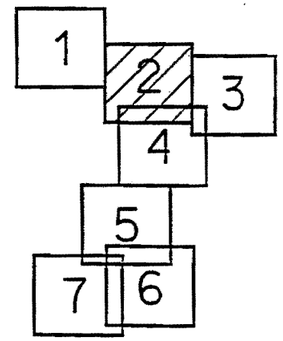
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

DESIGNED BY:	PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY LEVEL OF PROTECTION @ ELEVATION 14.0	
DRAWN BY: -		
CHECKED BY:		
REVIEWED BY: (SECTION CHIEF)	APPROVAL RECOMMENDED: (CHIEF, ENGINEERING DIVISION)	SHEET REFERENCE NUMBER: / DATE:
CONCURRED BY: (CHIEF, DESIGN BRANCH)	APPROVAL BY: (COLONEL, C.E. DISTRICT ENGINEER)	SCALE: 1" = 200' / FIG.:



SHEET LEGEND

- BUILDING
- ROAD, PARKING AREA
- FENCE
- WOODED AREA
- STANDARD LEVEE
- ROAD RAISING
- STANDARD FLOODWALL
- (C2) INTERIOR DRAINAGE AREA DESIGNATION
- PUMP STATION
- INTERIOR DRAINADE OUTLET
- DRAINAGE SWALE
- CLOSURE GATE



200 100 0 200 400FT

Figure 3c - Pews Creek: Port Monmouth Road and Bayshore Sections (Whitlock/Seabrook/ Wilson House Property)

FIG. 3c

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

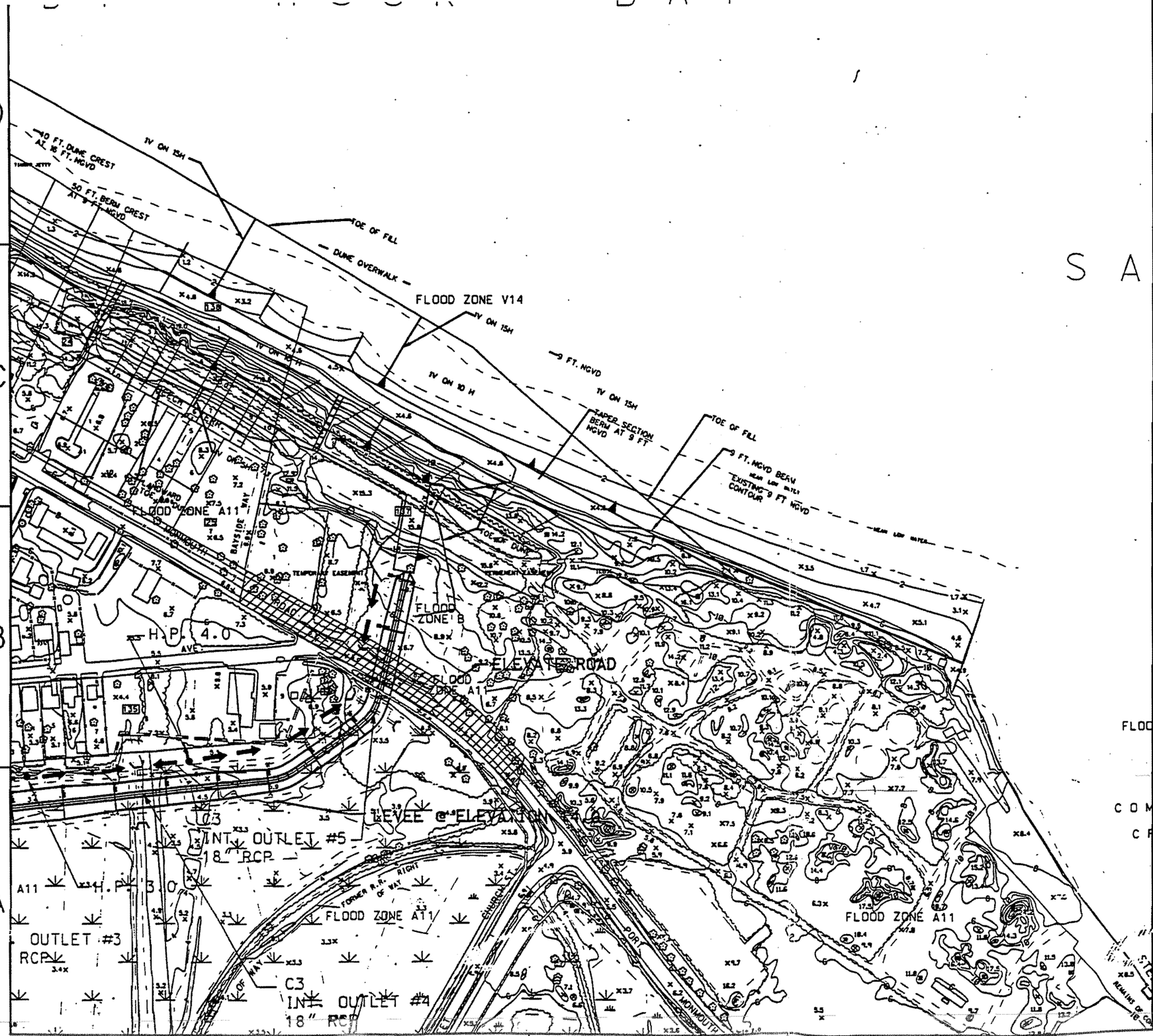
DESIGNED BY:
DRAWN BY:
CHECKED BY:
REVIEWED BY:
SECTION CHIEF
CONCURRED BY:
CHIEF, DESIGN BRANCH

PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY
LEVEL OF PROTECTION @ ELEVATION 14.0

APPROVAL RECOMMENDED:
CHIEF, ENGINEERING DIVISION
APPROVAL BY:
COLONEL, C.E. DISTRICT ENGINEER

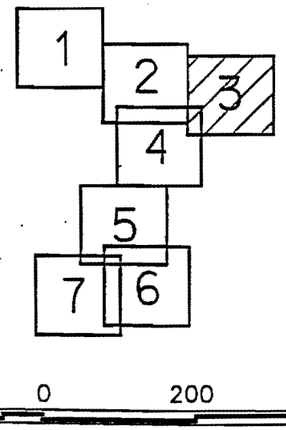
SHEET REFERENCE NUMBER:

DATE:
SCALE: 1" = 200'
FIG.:



SHEET LEGEND

- BUILDING
- ROAD, PARKING AREA
- FENCE
- WOODED AREA
- STANDARD LEVEE
- ROAD RAISING
- STANDARD FLOODWALL
- (C2) INTERIOR DRAINAGE AREA DESIGNATION
- PUMP STATION
- INTERIOR DRAINADE OUTLET
- DRAINAGE SWALE
- CLOSURE GATE



200 100 0 200 400FT

Figure 3d - Bayshore protection and Comptons Creek Levee

FIG. 3d

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

DESIGNED BY:	PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY LEVEL OF PROTECTION @ ELEVATION 14.0		
DRAWN BY:			
CHECKED BY:			
REVIEWED BY: SECTION CHIEF	APPROVAL RECOMMENDED: CHIEF, ENGINEERING DIVISION	SHEET REFERENCE NUMBER:	DATE:
CONCURRED BY: CHIEF, DESIGN BRANCH	APPROVAL BY: COLONEL, C.E. DISTRICT ENGINEER		SCALE: 1" = 200'
			FIG.:

SHEET LEGEND

- BUILDING
- ROAD, PARKING AREA
- FENCE
- WOODED AREA
- STANDARD LEVEE
- ROAD RAISING
- STANDARD FLOODWALL
- (C2) INTERIOR DRAINAGE AREA DESIGNATION
- PUMP STATION
- INTERIOR DRAINADE OUTLET
- DRAINAGE SWALE
- CLOSURE GATE

1 2 3 4 5 7 6

200 100 0 200 400FT

Figure 3e - Comptons Creek Levee and C3 Ponding Area

FIG. 3e

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

DESIGNED BY:	PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY LEVEL OF PROTECTION @ ELEVATION 14.0		
DRAWN BY:			
CHECKED BY:			
REVIEWED BY: SECTION CHIEF	APPROVAL RECOMMENDED: CHIEF, ENGINEERING DIVISION	SHEET REFERENCE NUMBER:	DATE:
CONCURRED BY: CHIEF, DESIGN BRANCH	APPROVAL BY: COLONEL, C.E. DISTRICT ENGINEER		SCALE: 1" = 200'
			FIG.:

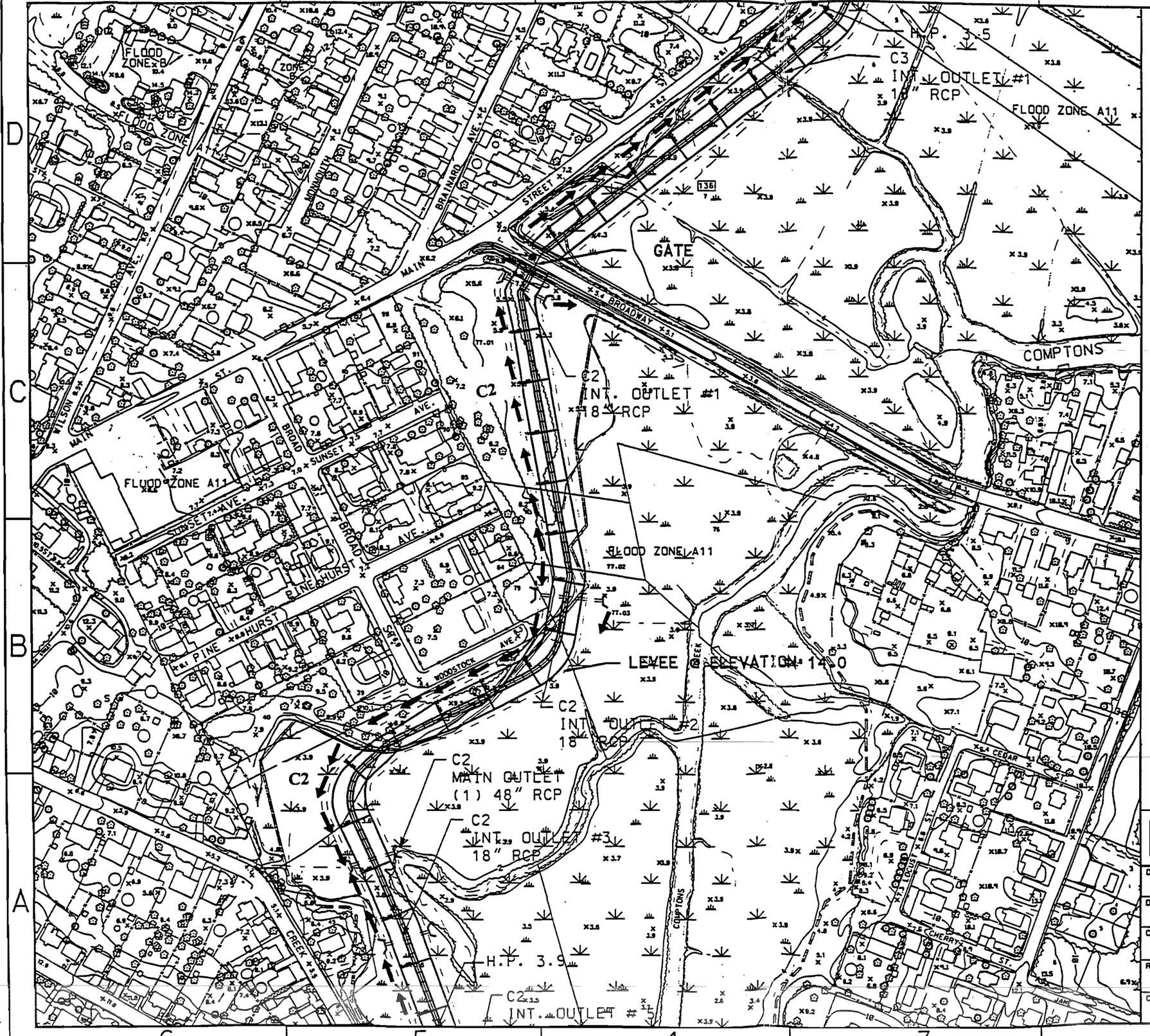


Figure 3f - Comptons Creek levee and C2 Ponding Areas

FIG. 3f

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

DESIGNED BY:	PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY LEVEL OF PROTECTION @ ELEVATION 14.0		
DRAWN BY:			
CHECKED BY:			
REVIEWED BY: SECTION CHIEF	APPROVAL RECOMMENDED: CHIEF, ENGINEERING DIVISION	SHEET REFERENCE NUMBER:	DATE:
CONCURRED BY: CHIEF, DESIGN BRANCH	APPROVAL BY: COLONEL, C.E. DISTRICT ENGINEER		SCALE: 1" = 200'
			FIG.:

Figure 3g - Comptons Creek Levee

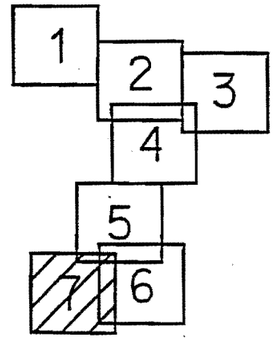
FIG. 3g

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

DESIGNED BY:	PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY LEVEL OF PROTECTION @ ELEVATION 14.0		
DRAWN BY:			
CHECKED BY:			
REVIEWED BY: SECTION CHIEF	APPROVAL RECOMMENDED: CHIEF, ENGINEERING DIVISION	SHEET REFERENCE NUMBER:	DATE:
CONCURRED BY: CHIEF, DESIGN BRANCH	APPROVAL BY: COLONEL, C.E., DISTRICT ENGINEER		SCALE: 1" = 200'
			FIG.:

SHEET LEGEND

- BUILDING
- ROAD, PARKING AREA
- FENCE
- WOODED AREA
- STANDARD LEVEE
- ROAD RAISING
- STANDARD FLOODWALL
- (C2) INTERIOR DRAINAGE AREA DESIGNATION
- PUMP STATION
- INTERIOR DRAINADE OUTLET
- DRAINAGE SWALE
- CLOSURE GATE



200 100 0 200 400FT

Figure 3h - Comptons Creek Floodwall

FIG. 3h

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

DESIGNED BY:	PORT MONMOUTH COMBINED FLOOD CONTROL AND SHORE PROTECTION FEASIBILITY STUDY LEVEL OF PROTECTION @ ELEVATION 14.0		
DRAWN BY:			
CHECKED BY:			
REVIEWED BY: (SECTION CHIEF)	APPROVAL RECOMMENDED: (CHIEF, ENGINEERING DIVISION)	SHEET REFERENCE NUMBER:	DATE:
CONCURRED BY: (CHIEF, DESIGN BRANCH)	APPROVAL BY: (COLONEL, C.E. DISTRICT ENGINEER)		SCALE: 1" = 200'
			FIG.:

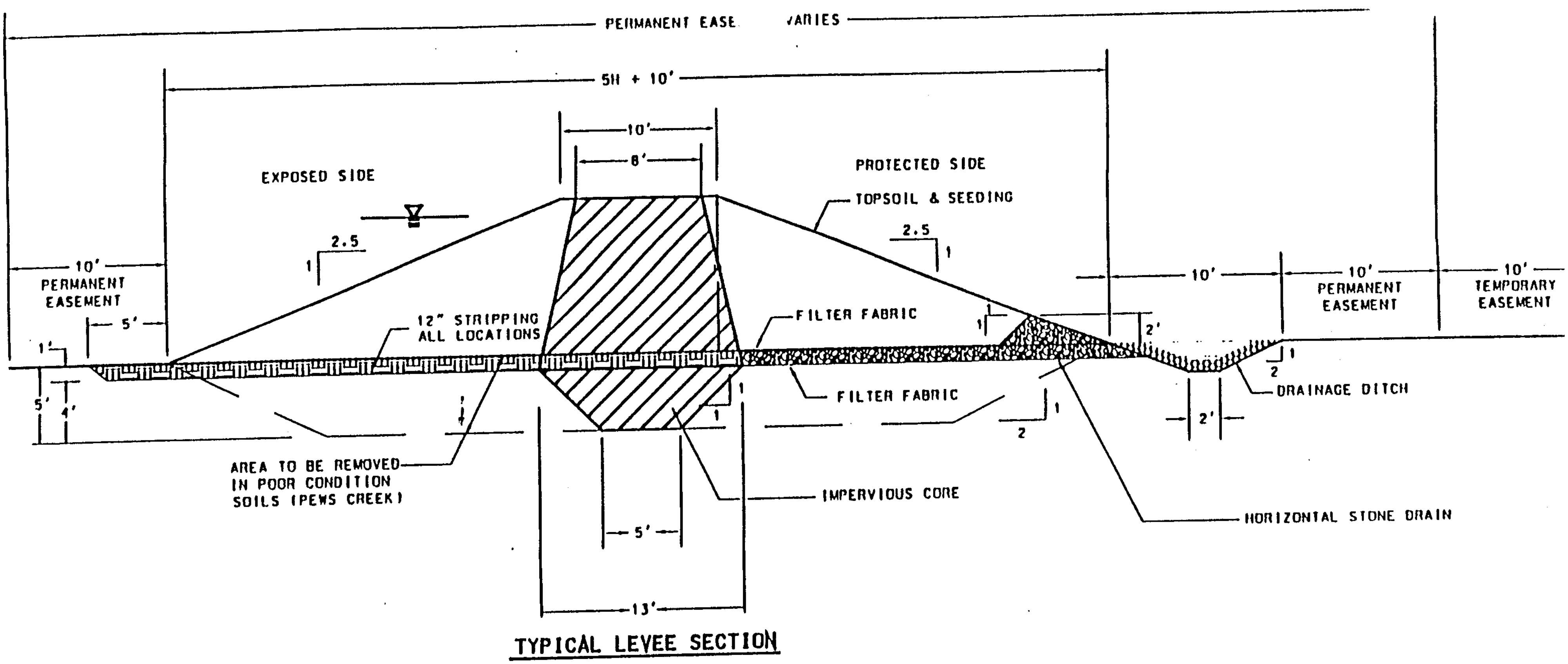


Figure 3i - Typical Levee Section

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK

PORT MONMOUTH COMBINED FLOOD CON
AND SHORE PROTECTION FEASIBILITY ST

TYPICAL LEVEE SECTION
PEWS CREEK
COMPTONS CREEK

Designed by:			
Drawn by:			
Checked by:			
Reviewed by: SECTION CHIEF	Approval Recommended: CHIEF, ENGINEERING DIVISION	SHEET REFERENCE NUMBER:	DATE:
Concurred by: CHIEF, DESIGN BRANCH	Approval By: COLONEL, C.E. DISTRICT ENGINEER		SCALE: 1" =
			FIG.:

Jun. 09, 1998 10:58:41

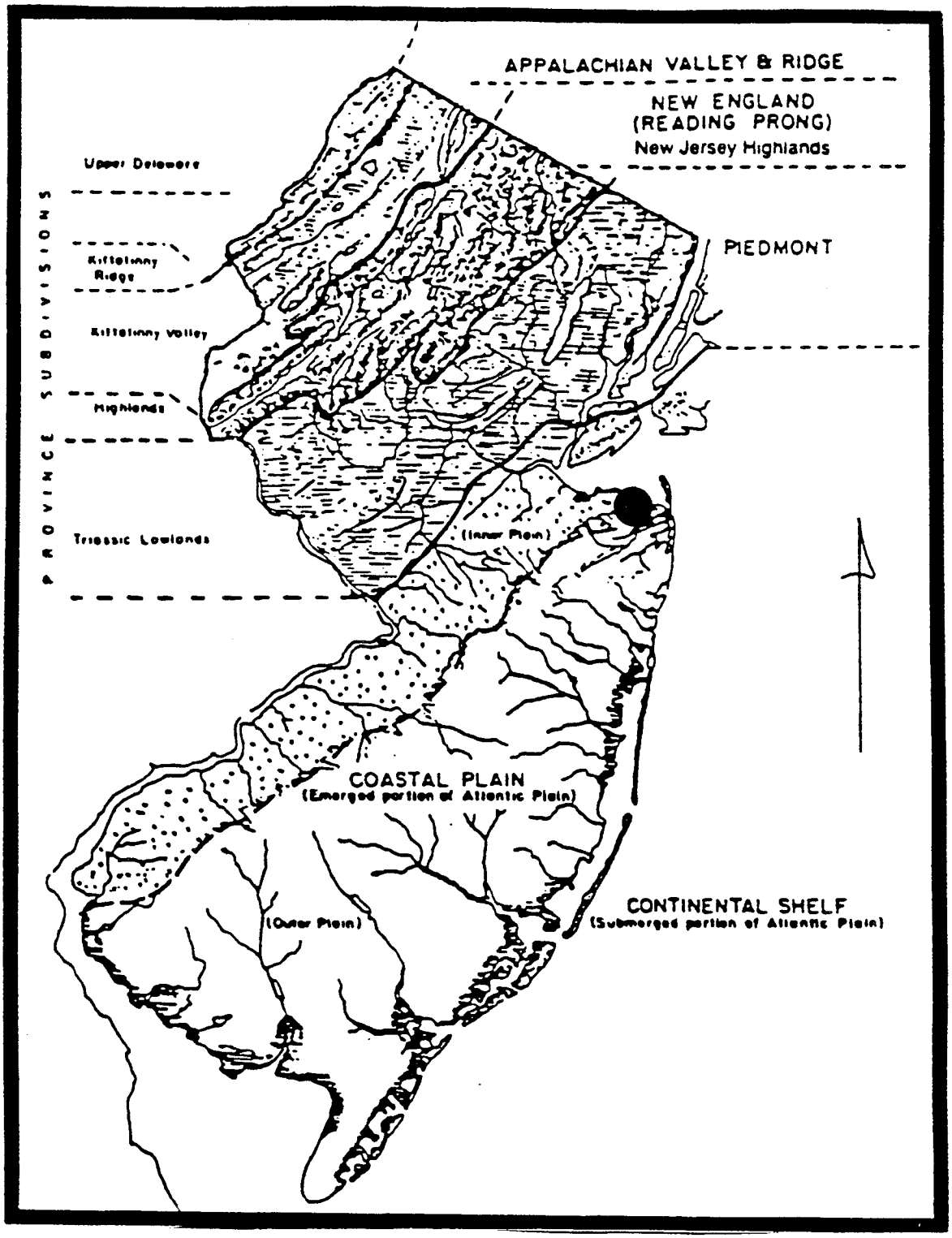


Figure 4 **Physiographic Location of Project Area. Source: Wolfe 1977:205.**

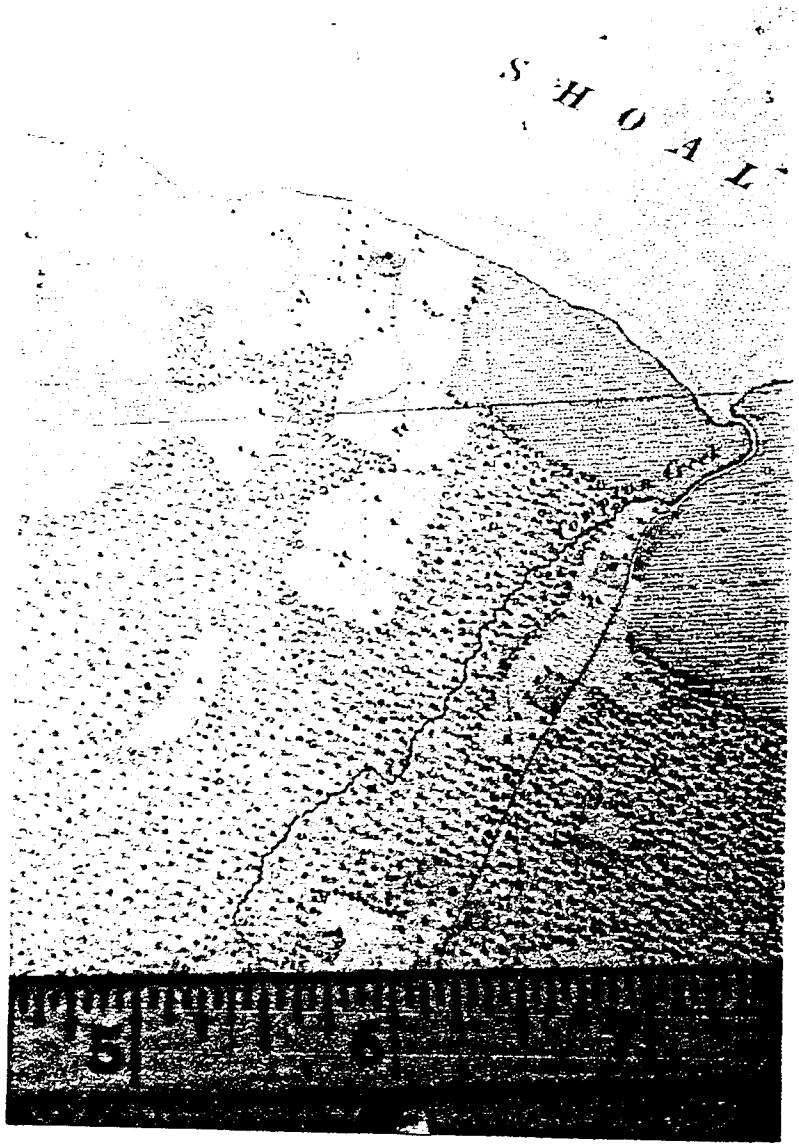


Figure 5 **United States Coast and Geodetic Survey Chart. Raritan Bay Area. 1844/5. Scale: 1/30,000.**

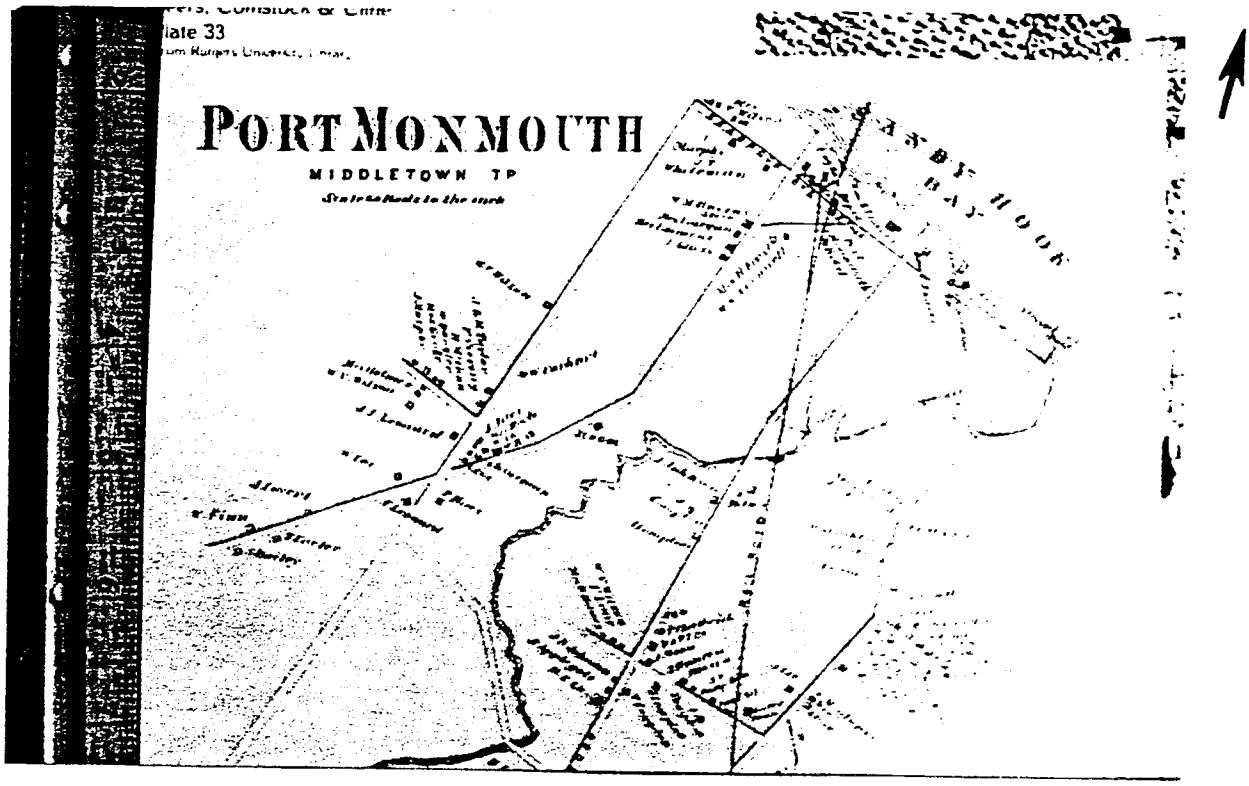


Figure 6 **Beers, Comstock, and Cline. Port Monmouth, Middleton Township. Atlas of Monmouth County. 1873. Plate 33. Scale: 60 rods = 1 inch.**

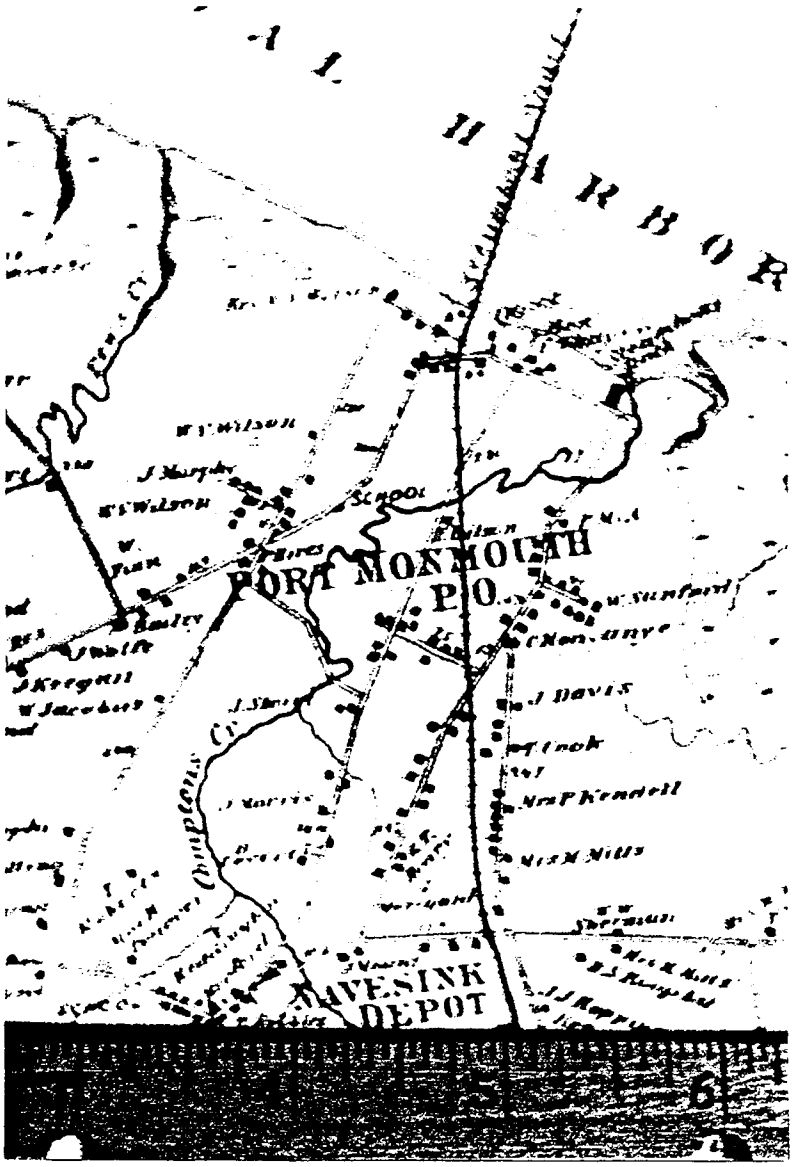


Figure 7 **Beers, Comstock, and Cline. Portions of Middletown And Ocean Townships. Atlas of Monmouth County. 1873. Plate 52. 160 rods = 1 inch.**

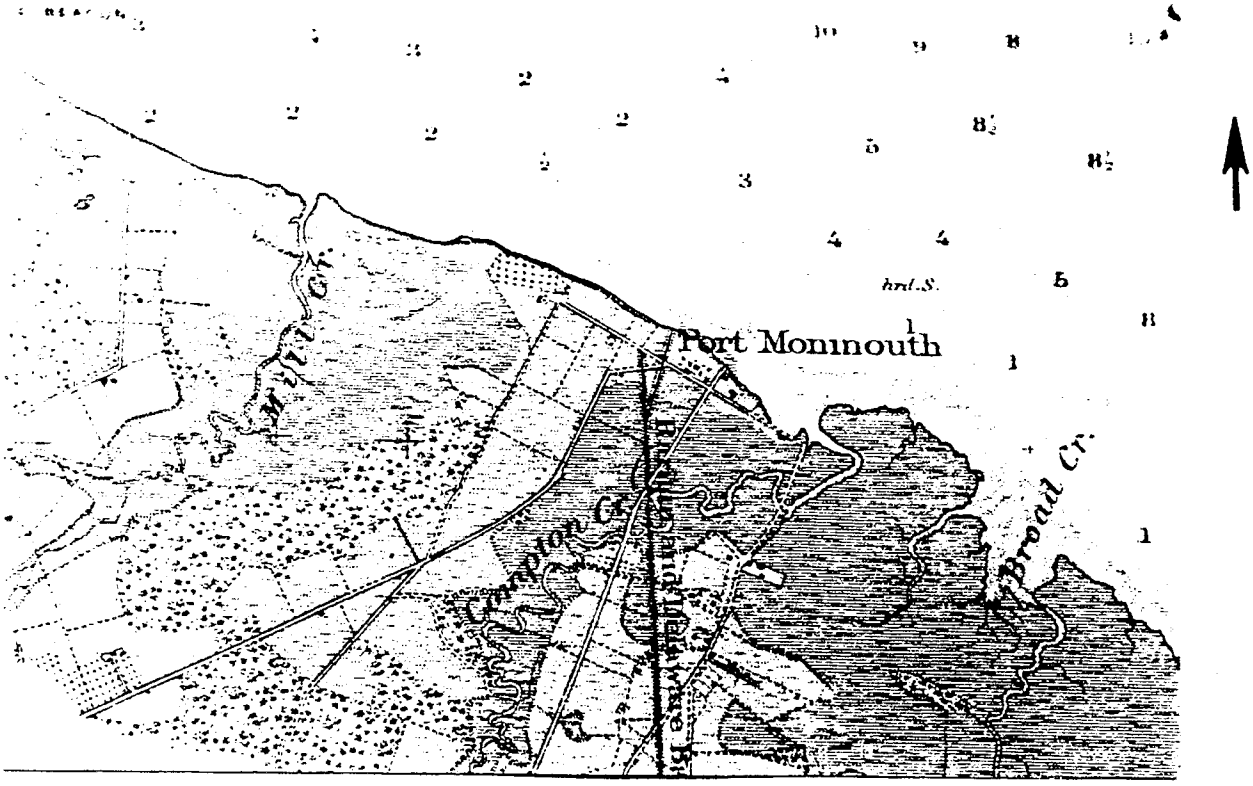
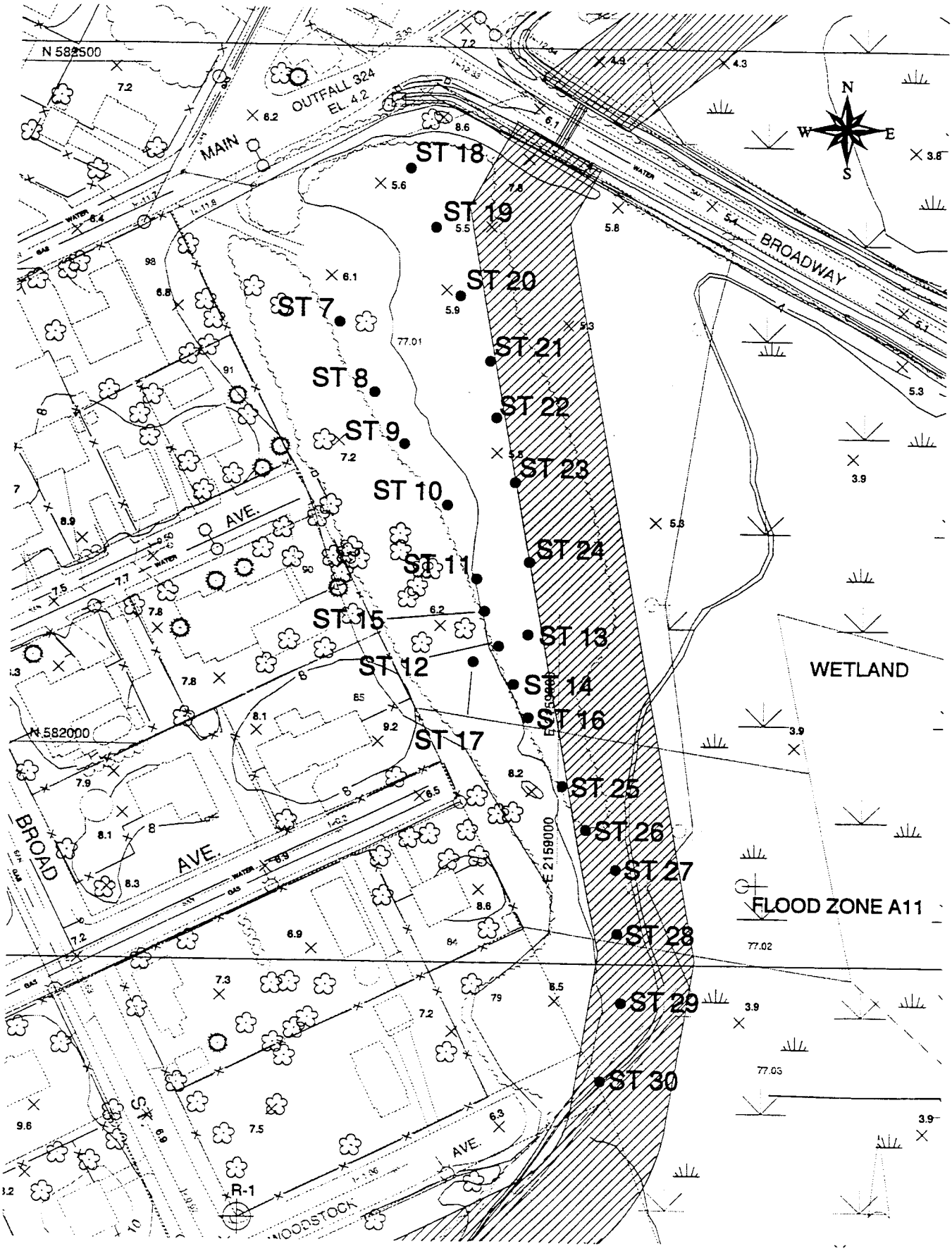


Figure 8 **United States Coast and Geodetic Survey Chart. Raritan Bay Area. 1875. Scale 1/40,000.**

Figure 9 **Chester Wolverton and Forsey Breu. Wolverton`s Atlas Of Monmouth County. Plate 30. 1889. Scale 1 mile = 3 inches.**

FIGURE 10
SUBSURFACE TESTING AREAS
KEY TO PHOTOGRAPHS
(34 inches x 44 inches)
available upon request
contact: Wendy Elizabeth Harris
Archaeologist, NY District
(212) 264-0189

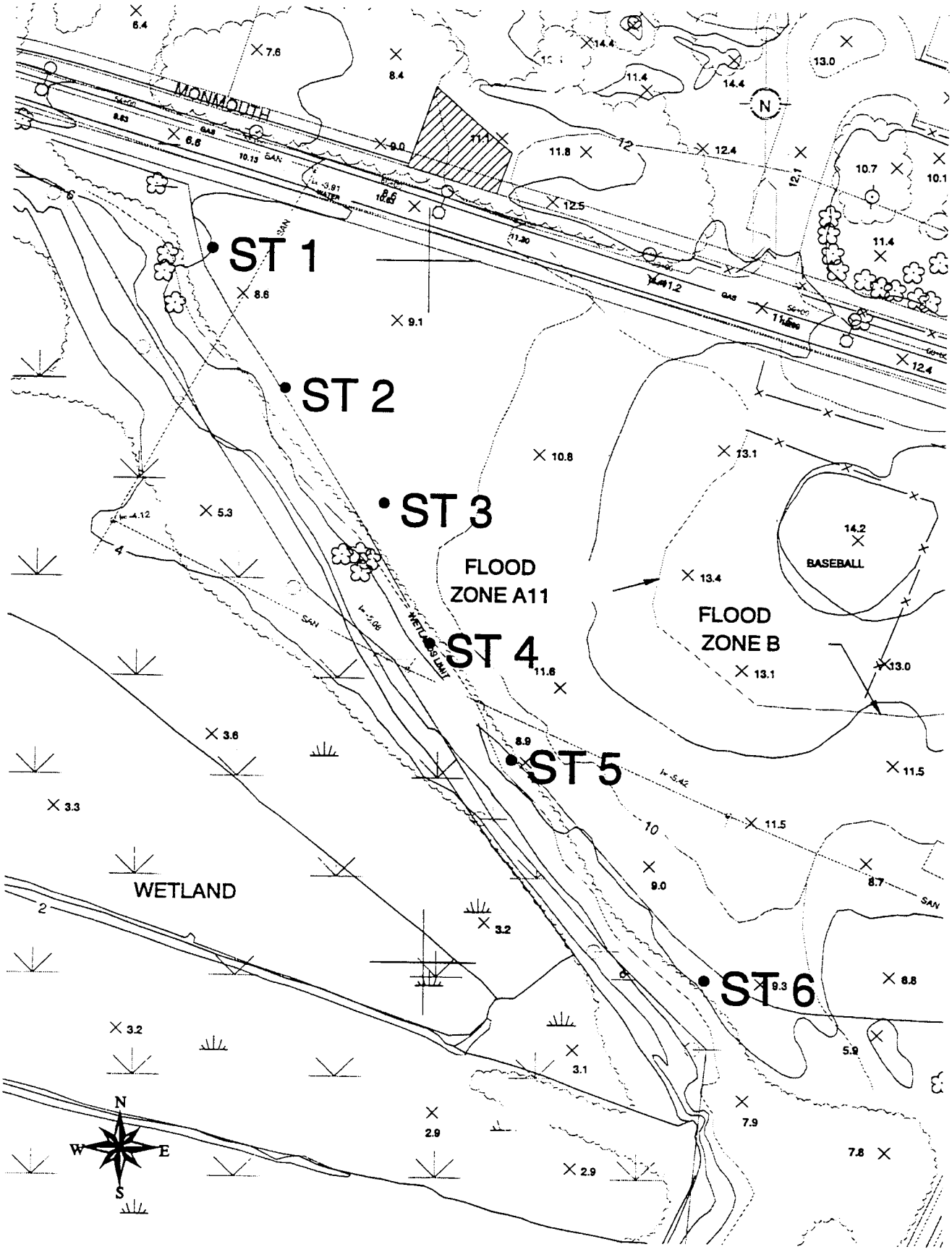
Figure 10a - Subsurface Testing Within APEs of Northernmost C2 Ponding Area and Comptons Creek Levee South of Main St/Broadway Intersection



Scale 1:1200

40 0 40 80 Feet

Figure 10b - Subsurface Testing Within APEs of Pew's Creek Levee/Floodwall, South of Port Monmouth Road, Greg W. Butler Park



Scale 1:1200

50 0 50 Feet

Figure 11 **Berm carrying new alignment of Port Monmouth Road through wetlands, east of Pews Creek. Site of Port Monmouth floodwall. View to west. Photographer: Wendy Harris, June 1998.**

Figure 12 **Beachfront west of fishing pier parking lot. Site of reconstructed dune. View to north.**
Photographer: Wendy Harris, June 1998.

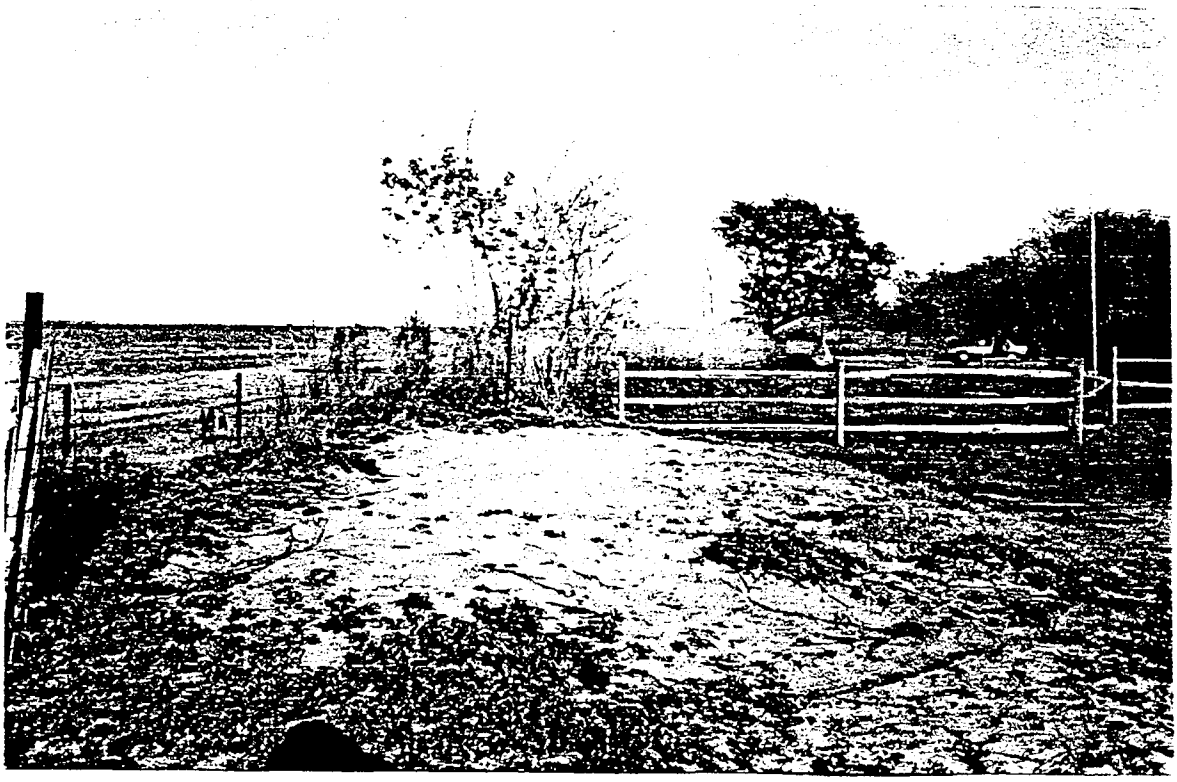


Figure 13 **Northern (bayshore) portion of Whitlock/Seabrook Wilson House property. Site of reconstructed dune. View to east. Photographer: Wendy Harris, April 1998**

Figure 14 **Area along bayshore to east of Whitlock/Seabrook Wilson House property, west of Bayside Way. Site of reconstructed dune. View to west. Photographer: Wendy Harris, June 1998.**

Figure 15 **Area to south of Park Avenue, vicinity of Raritan and Delaware Bay Railroad alignment. Site of Comptons Creek levee. View to west.**
Photographer: Wendy Harris, June 1998.

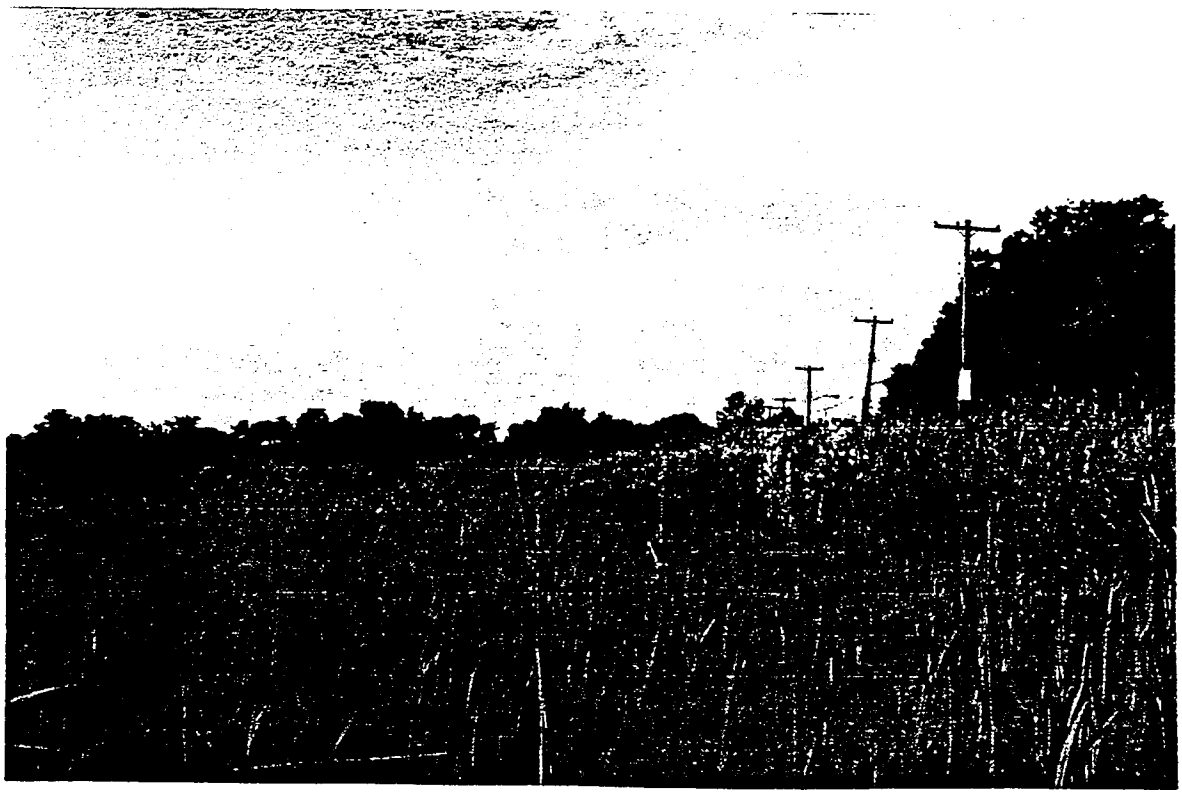


Figure 16 **Area between Main Street and Comptons Creek, north of Broadway. Site of Comptons Creek levee. View to south. Photographer: Wendy Harris, June 1998.**

Figure 17 **Possible historic house on west side of Main Street, immediately south of Lydia Place. View to west. Photographer: Wendy Harris, June 1998.**

Figure 18 **Area between Main Street and Comptons Creek, south of Broadway. Site of northernmost C2 ponding area and Comptons Creek levee. View to southeast. Photographer: Wendy Harris, June 1998.**

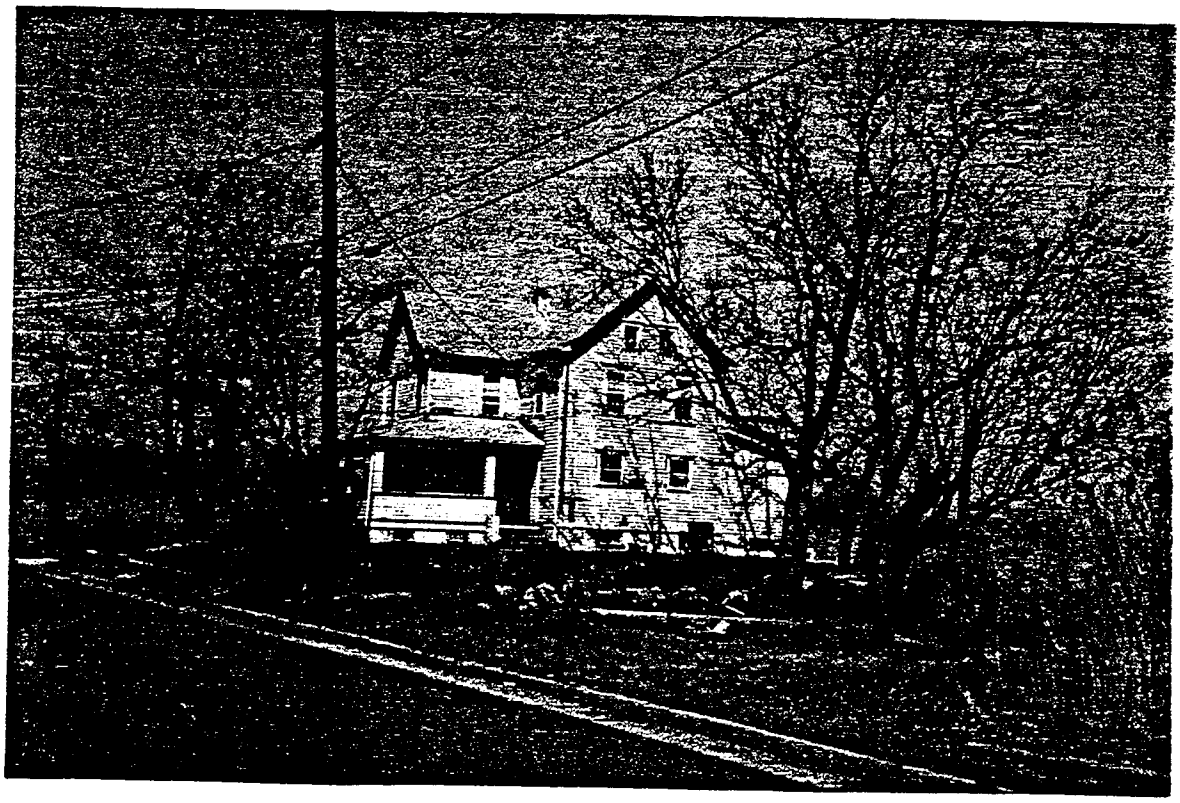


Figure 19 **Possible historic house on northeastern side of Creek Locks Road, adjoined by wetlands. Located to southeast of Comptons Creek levee. View to west. Photographer: Wendy Harris, April 1998**

Figure 20 **Area south to Campbell Avenue, vicinity of eastern terminus of Willow Street. Site of Comptons Creek levee and C1 ponding area. View to northeast. Photographer: Wendy Harris, June 1998.**

Figure 21 Area in rear of homes located on southern side of Willow Street. Site of Comptons Creek floodwall.
View to southeast. Photographer: Wendy Harris, June 1998.

Figure 22 **Area between Brainard and Main Streets, north of Renfew Place. Site of C3 ponding area. View to south. Photographer: Wendy Harris, June 1998.**

Figure 23 **Area in the vicinity of southern terminus of Woodstock Avenue. Site of southernmost C2 ponding area and Comptons Creek levee. View to southeast. Photographer: Wendy Harris, June 1998.**

Figure 24 **Field located to west of intersection of Port Monmouth and Wilson Avenue, Greg W Butler Park. Site of Pews Creek alignment. View southeast. Photographer: Wendy Harris, June 1998.**

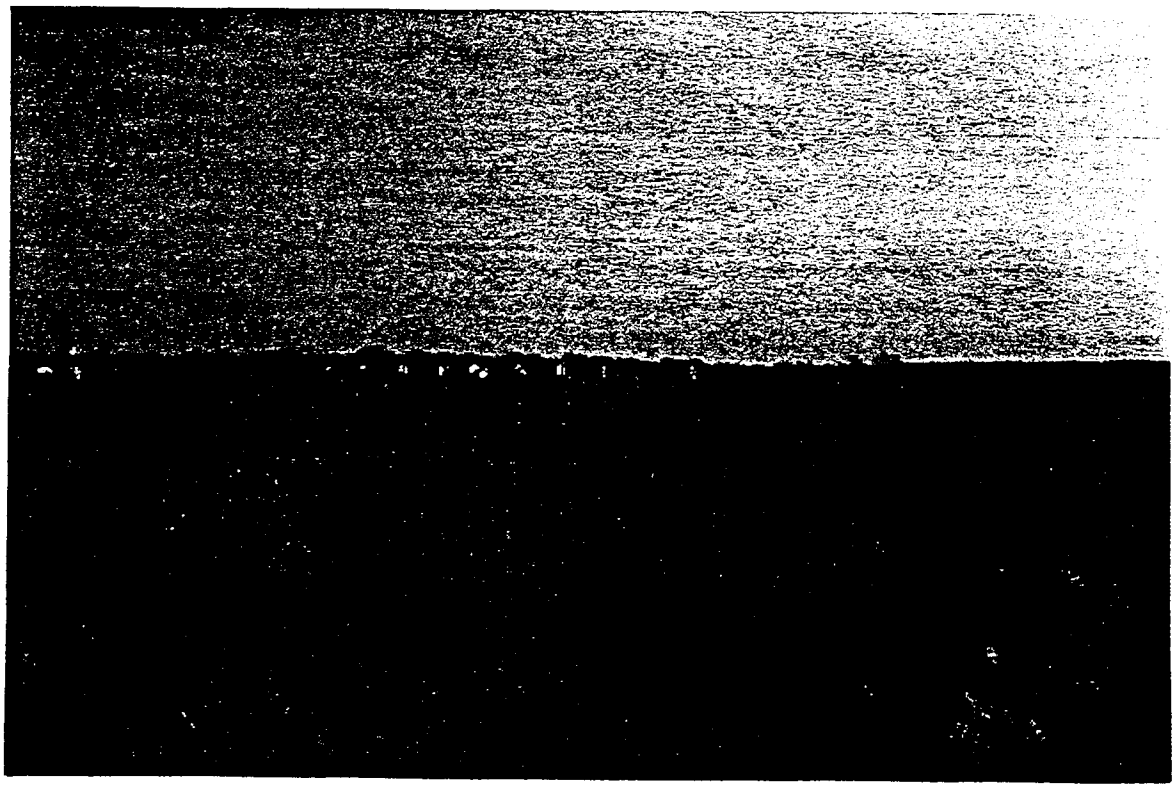


Figure 25 **Wetlands to south of Port Monmouth Road, with Lydia Place houses in distance. Site of Pews Creek levee/floodwall. View to south. Photographer: Wendy Harris, April 1998**

Figure 26 **Intersection of Main Street and Wilson Avenue, looking north on Wilson Avenue. Near site of Pews Creek levee/floodwall.**
Photographer: Wendy Harris, April 1998

Figure 27 **94 Wilson Avenue. NJDEP Historic Sites Inventory Number 1331-109. Photographer: Wendy Harris, April 1998**

Figure 28 **119 Wilson Avenue. NJDEP Historic Sites Inventory Number 1331-110. Photographer: Wendy Harris, April 1998**

Figure 29 **108 Wilson Avenue. Photographer: Wendy Harris, April 1998**

Figure 30 78 Wilson Avenue. Photographer: Wendy Harris, April 1998

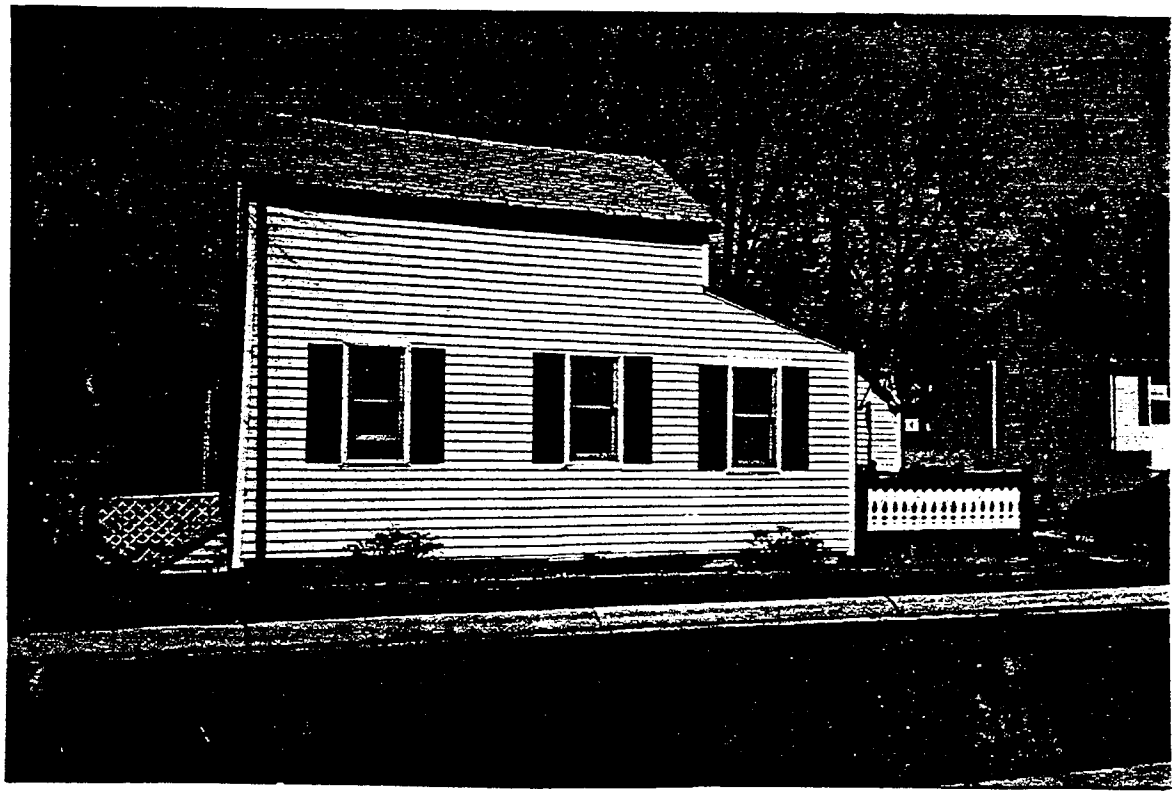


Figure 31 **6 Division Street. Photographer: Wendy Harris, April 1998**

Figure 32 **Whitlock/Seabrook Wilson House (the Spy House). Photographer: Wendy Harris, April 1998**

CORRESPONDENCE

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 18, 1998

Environmental Analysis Branch
Environmental Assessment Section

Ms. Dorothy Guzzo
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625
Attention: Michael Gregg

Dear Ms. Guzzo

The New York District Corps of Engineers (Corps) has recently undertaken Feasibility Phase cultural resources investigations as part of Section 106 compliance for a project that will involve levee and floodwall/seawall construction in Port Monmouth, Middletown Township, Monmouth County, along portions of the Raritan Bay shoreline, Comptons Creek, and Pews Creek (Attachment 1). One component of this project will entail the construction of a seawall along the northern, western, and eastern borders of a parcel and structure listed on the National Register of Historic Places – the Whitlock/Seabrook Wilson House. This action may affect archaeological remains associated with the site. An archaeological data recovery project undertaken within the southern section of the site uncovered numerous artifacts and an intact 18th century ground surface. These are described in a report published in May 1996, entitled *Archaeological Data Recovery within the Front Yard of the Whitlock/Seabrook Wilson House, Middletown Township, Monmouth County, New Jersey*, prepared by Carolyn L. Hartwick and T. Cregg Madrigal of the Rutgers Center for Public Archaeology. In correspondence dated August 18, 1994 your office has noted the contribution that such deposits may make to the property's eligibility. The seawall may also affect the sites's historic landscape as well.

We have attached a description and plans for the seawall (Attachments 2 and 3), as well as a proposal for an archaeological testing program to be conducted by the Corps' archaeological staff (Attachment 4). In order for us to fully incorporate your comments and suggestions into our plans, we ask that you respond as soon as possible. If you have any questions or require additional information, please contact Wendy Harris, Project Archaeologist, Environmental Analysis Branch, at (212) 264-0473 or 264-4748.

The Corps greatly appreciates your cooperation in this matter.

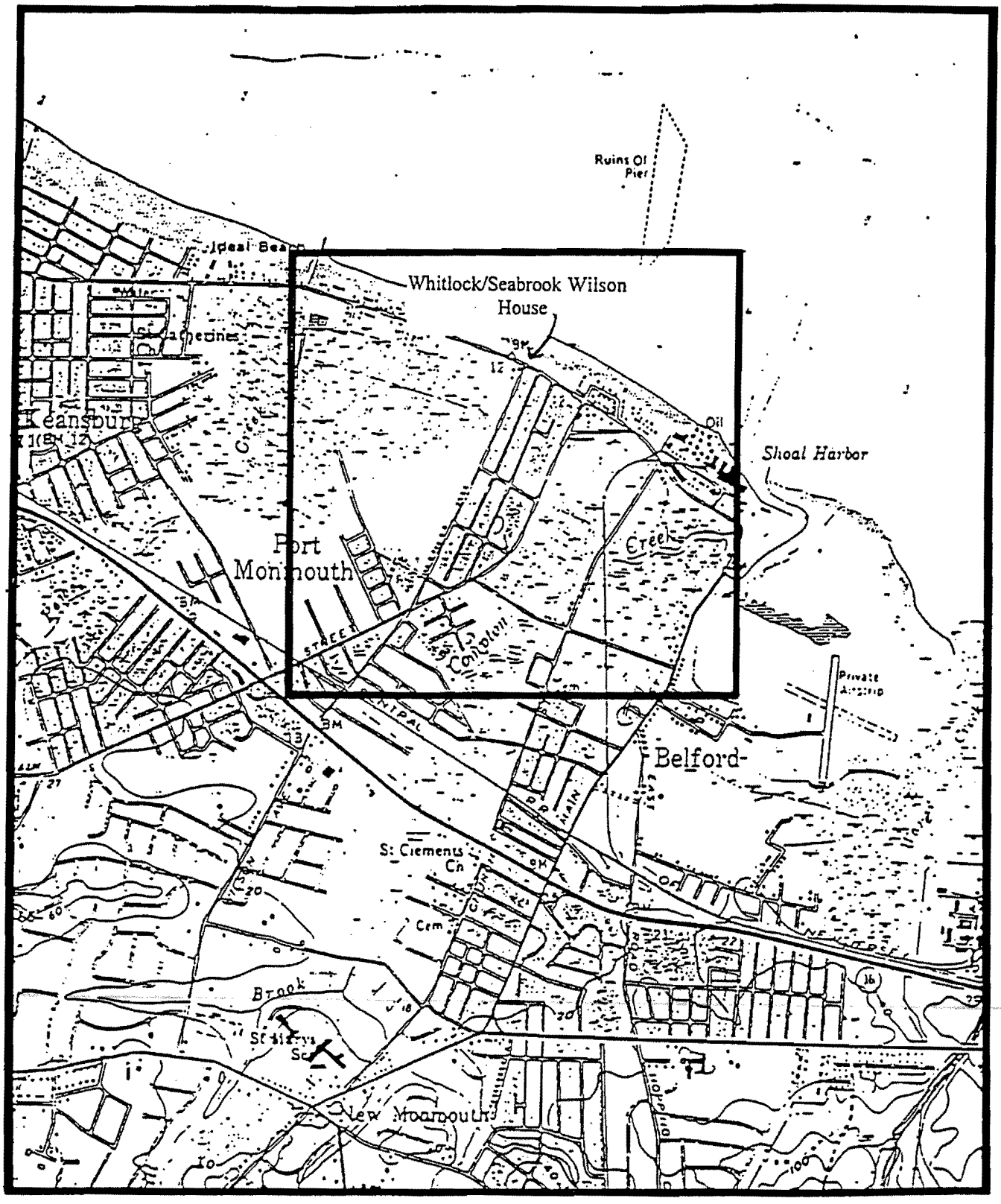
Sincerely,

for John Sassi, P.E.
Chief, Planning Division

Enclosures

Copy Furnished: Gail Hunton, Monmouth County Parks System

Attachment 1



Detailed Location of Project Area. Source: USGS Sandy Hook Quadrangle.

Attachment 2

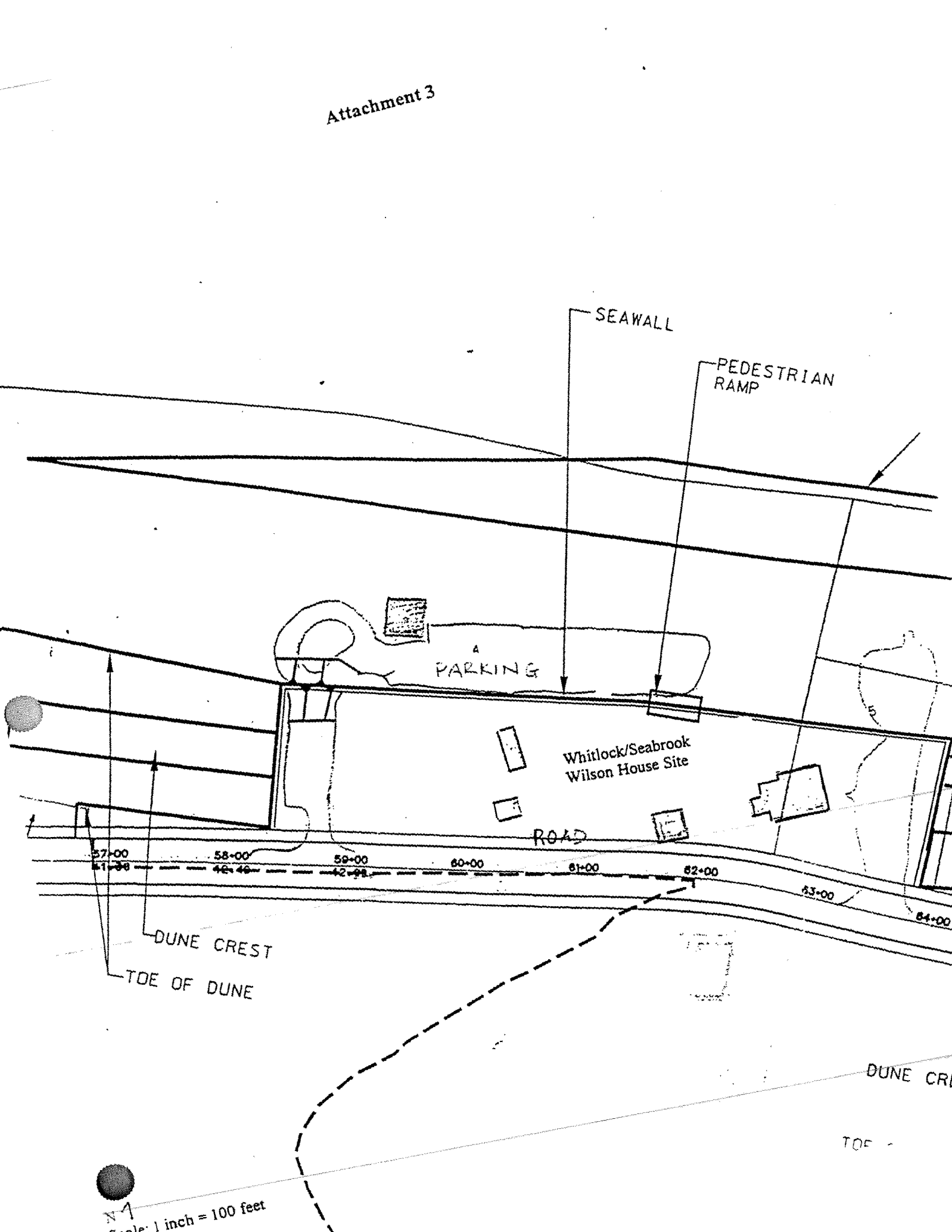
SEAWALL DESCRIPTION

Seawall foundations will have a maximum depth of five feet. Construction will involve the installation of steel sheeting, wood forms, and poured concrete. In the area of the Whitlock/Seabrook Wilson House, the seawall will be encased in sand, which may minimize effects to the historic landscape. The seawall footprint will not exceed three feet.

The proposed alignment of the seawall is shown in Attachment 3. Please note however, that the Corps is considering shifting the segment of the seawall that extends through the rear yard (northern section of the property) approximately 100 feet to the north. Moving the seawall's location towards the beach may minimize effects to archaeological deposits associated with the historic occupation of the house. The Corps is also considering shifting the western and eastern segments of the seawall further away from the house, actions that may further minimize effects to historic period archaeological deposits.

A more detailed description of the seawall is being developed, which will include such information as the precise height of the structure and its exact location relative to the house. This will be provided as soon as it is available.

Attachment 3



Attachment 4

Whitlock/Seabrook Wilson House Seawall
Proposed Archaeological Testing Program

Earlier investigations (Rutgers Center for Public Archaeology 1996) have established the presence of a buried 18th century ground surface that extends over a section of the Whitlock/Seabrook Wilson House's front (southern) yard for a distance of at least 130 linear feet. This suggests that the house is surrounded by a zone of extreme archaeological sensitivity. The following program is suggested:

If the alignment shown in Attachment 3 is adopted by the Corps of Engineers, the Area of Potential Affect (APE) for the northern segment of the seawall will crosscut the backyard (or northern section) of the site, passing at some points as close as 100 feet of the house. Within such portions of the APE, located closest to the house, it is recommended that data recovery be undertaken at later phases of project planning.

Within portions of the APE located 100 feet or more from the house, it is recommended that shovel tests be placed at 25 to 50 feet intervals. This includes the portion of the APE encompassing the western two-thirds of the seawall's northern segment, as well as its western segment. This testing interval is also recommended for the APE of the proposed realignment of the northern seawall, assuming it is shifted approximately 100 feet closer to the beach. If the eastern segment of the seawall remains in the alignment depicted in Attachment 3 (paralleling the eastern driveway), it is recommended that data recovery be conducted here during later phases of project planning. It is also recommended that shovel tests be placed at 50 foot intervals to the east of the proposed eastern seawall segment, on an axis extending from Port Monmouth Road to the beach, in order to test the APE of the proposed realignment.

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 18, 1998

Environmental Analysis Branch
Environmental Assessment Section

Ms. Gail Hunton
Principal Historian Preservation Specialist
Monmouth County Parks System
805 Newman Springs Road
Lincroft, New Jersey 07738

Dear Ms. Hunton

The New York District Corps of Engineers (Corps) has recently undertaken Feasibility Phase cultural resources investigations as part of Section 106 compliance for a project that will involve levee and floodwall/seawall construction in Port Monmouth, Middletown Township, Monmouth County, along portions of the Raritan Bay shoreline, Comptons Creek, and Pews Creek (Attachment 1). One component of this project will entail the construction of a seawall along the northern, western, and eastern borders of a parcel and structure listed on the National Register of Historic Places – the Whitlock/Seabrook Wilson House. This action may affect archaeological remains associated with the site. An archaeological data recovery project undertaken within the southern section of the site uncovered numerous artifacts and an intact 18th century ground surface. These are described in a report published in May 1996, entitled *Archaeological Data Recovery within the Front Yard of the Whitlock/Seabrook Wilson House, Middletown Township, Monmouth County, New Jersey*, prepared by Carolyn L. Hartwick and T. Cregg Madrigal of the Rutgers Center for Public Archaeology. In correspondence dated August 18, 1994 the New Jersey Historic Preservation Office noted the contribution that such deposits may make to the property's eligibility. The seawall may also affect the sites's historic landscape as well.

We have attached a description and plans for the seawall (Attachments 2 and 3), as well as a proposal for an archaeological testing program to be conducted by the Corps' archaeological staff (Attachment 4). In order for us to fully incorporate your comments and suggestions into our plans, we ask that you respond as soon as possible. If you have any questions or require additional information, please contact Wendy Harris, Project Archaeologist, Environmental Analysis Branch, at (212) 264-0473 or 264-4748.

The Corps greatly appreciates your cooperation in this matter.

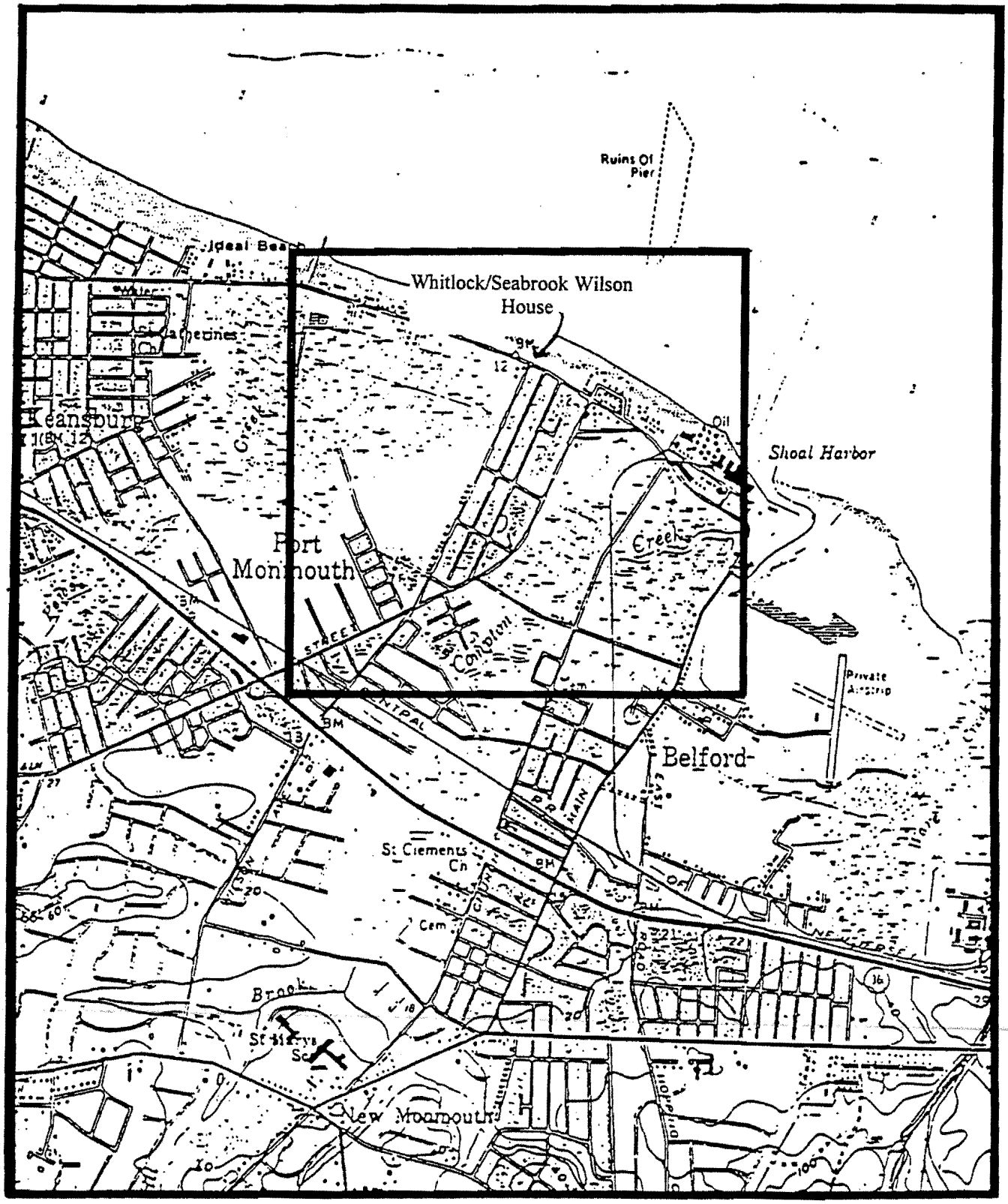
Sincerely,

for John Sassi, P.E.
Chief, Planning Division

Enclosures

Copy Furnished: Michael Gregg, New Jersey Historic Preservation Office

Attachment 1



Detailed Location of Project Area. Source: USGS Sandy Hook Quadrangle.

Attachment 2

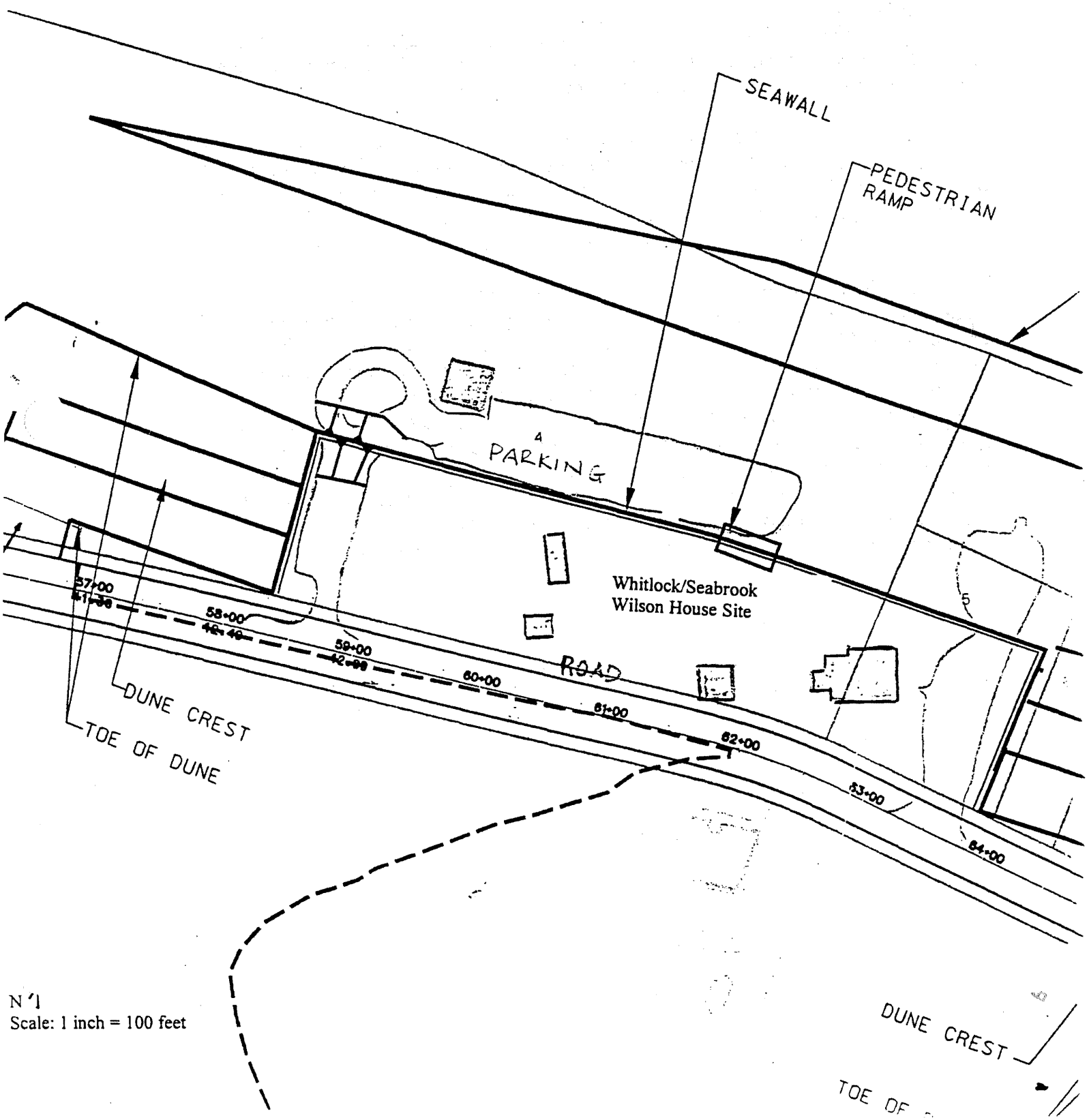
SEAWALL DESCRIPTION

Seawall foundations will have a maximum depth of five feet. Construction will involve the installation of steel sheeting, wood forms, and poured concrete. In the area of the Whitlock/Seabrook Wilson House, the seawall will be encased in sand, which may minimize effects to the historic landscape. The seawall footprint will not exceed three feet.

The proposed alignment of the seawall is shown in Attachment 3. Please note however, that the Corps is considering shifting the segment of the seawall that extends through the rear yard (northern section of the property) approximately 100 feet to the north. Moving the seawall's location towards the beach may minimize effects to archaeological deposits associated with the historic occupation of the house. The Corps is also considering shifting the western and eastern segments of the seawall further away from the house, actions that may further minimize effects to historic period archaeological deposits.

A more detailed description of the seawall is being developed, which will include such information as the precise height of the structure and its exact location relative to the house. This will be provided as soon as it is available.

Attachment 3



N
Scale: 1 inch = 100 feet

Attachment 4

Whitlock/Seabrook Wilson House Seawall
Proposed Archaeological Testing Program

Earlier investigations (Rutgers Center for Public Archaeology 1996) have established the presence of a buried 18th century ground surface that extends over a section of the Whitlock/Seabrook Wilson House's front (southern) yard for a distance of at least 130 linear feet. This suggests that the house is surrounded by a zone of extreme archaeological sensitivity. The following program is suggested:

If the alignment shown in Attachment 3 is adopted by the Corps of Engineers, the Area of Potential Affect (APE) for the northern segment of the seawall will crosscut the backyard (or northern section) of the site, passing at some points as close as 100 feet of the house. Within such portions of the APE, located closest to the house, it is recommended that data recovery be undertaken at later phases of project planning.

Within portions of the APE located 100 feet or more from the house, it is recommended that shovel tests be placed at 25 to 50 feet intervals. This includes the portion of the APE encompassing the western two-thirds of the seawall's northern segment, as well as its western segment. This testing interval is also recommended for the APE of the proposed realignment of the northern seawall, assuming it is shifted approximately 100 feet closer to the beach. If the eastern segment of the seawall remains in the alignment depicted in Attachment 3 (paralleling the eastern driveway), it is recommended that data recovery be conducted here during later phases of project planning. It is also recommended that shovel tests be placed at 50 foot intervals to the east of the proposed eastern seawall segment, on an axis extending from Port Monmouth Road to the beach, in order to test the APE of the proposed realignment.

Board of Recreation Commissioners

805 Newman Springs Road, Lincroft, NJ 07738-1695, Phone: (732) 842-4000
FAX: Administration (732) 842-4162, Acquisition & Design (732) 842-3640

MEMORANDUM

TO: Spence Wickham, Chief, Land Acquisition
Theodore Giannechini, County Engineer

FROM: Gail Hunton, Principal Historic Preservation Specialist

DATE: April 3, 1998

RE: **Port Monmouth Flood Control Project**
Impacts on Seabrook Wilson House

The Environmental Analysis Branch of the Army Corps of Engineers requested my review of the proposed seawall at Port Monmouth for impacts on the Seabrook Wilson House, which is listed on the State and National Registers of Historic Places. In order to coordinate the County's comments to Corps of Engineers, I am addressing this review to you. Below are my preliminary comments, subject to receipt of more complete information on the seawall profiles and construction design at the Seabrook Wilson House.

Impacts on Archaeological Resources. Previous investigations (*Archaeological Data Recovery within the Front Yard of the Whitlock/Seabrook Wilson House*, Rutgers, 1996) indicate that the Seabrook Wilson House is "surrounded by a zone of archaeological sensitivity." If the proposed seawall is to be constructed, it should be located north of the existing fishing pier parking lot (roughly as shown on a recent undated draft ACOE plan) to minimize disturbance of potential archaeological resources associated with the house. The alternative alignment of the proposed seawall, cross-cutting the rear yard of the house, is objectionable because of disturbance to archaeological resources, as well as costly investigation and potential mitigation.

Impacts on Historical Landscape. Although the landscape setting of the Seabrook Wilson House has been altered over time, a seawall across the rear yard of the house is objectionable because of adverse impacts on the historic character of the house and its remaining historic landscape. As the imminent owner of the Seabrook Wilson House, the Monmouth County Park System will be making a significant investment in the preservation and enhancement of the site in the years to come; visitors will come to not only to the see the house but also to enjoy its shoreline setting and views. A seawall across the back yard of the site would undermine these preservation objectives. The revised location of the seawall, generally along the north side of the

fishing pier parking lot, would appear to minimize adverse impacts on the historic landscape. My understanding is that the seawall is to be constructed of steel sheet piles and poured concrete encased in sand, with a footprint not to exceed 3 feet and a typical wall height of 4 to 5 feet above existing grade. In general, the sand-encased seawall, with dune stabilization plantings, should represent a naturalistic dune in its finished appearance. Also, the location of overwalks should be coordinated with the Park System's plans for use of the site and park. However, impacts on the landscape can not be fully evaluated until additional information is provided. A sectional view at the house, extending from the road to the beach, showing existing/proposed elevations and construction details of the seawall and reconstructed dune, is requested from the Corps of Engineers in order to complete this review.

c: John Sassi, P.E., Chief, Planning Division, ACOE
Wendy Harris, Project Archaeologist, ACOE
Mike Gregg, Historic Preservation Office, NJDEP

C:A&D/439/ghmswtg.doc

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Division of Parks & Forestry
Historic Preservation Office
PO Box 404
Trenton, N.J. 08625-0404
TEL: (609)292-2023
FAX: (609)984-0578

Robert C. Shinn, Jr.
Commissioner

April 21, 1998

Mr. John Sassi, 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. Sassi:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the *Federal Register* on 2 September 1986 (51 FR 31115-31125), I am providing consultation comments for a portion of the following proposed undertaking, as indicated below:

Monmouth County, Middletown Township
Port Monmouth Flood Control Project Activities at the Seabrook Wilson House

These comments are in response to your letter of March 18, 1998, regarding possible levee and floodwall/seawall construction on the Seabrook Wilson House property. These comments do not pertain to any aspects of this proposed undertaking beyond the limits of this property.

800.4 Identifying Historic Properties

The Seabrook Wilson House was listed in the National Register of Historic Places on October 29, 1974.

800.5 Assessing Effects

I concur with your assessment that construction of the floodwall in the rear yard of the property would affect character defining features of the historic setting, and would be likely to affect contributing archaeological deposits. I encourage your plan to consider a shift of the segment of the levee and floodwall/seawall that extend through the rear yard

to a location northward beyond the yard and into the current beach zone. I also encourage your plan to consider shifting adjacent eastern and western segments further away from the house. These shifts would result in avoiding effects to contributing archaeological deposits, and minimizing visual effects to the historic setting. I encourage all reasonable efforts to avoid and minimize effects to this historic property.

Additional Comments

I am in accord with comments on this proposed undertaking offered by Gail Hunton, on behalf of the Monmouth County Board of Recreation Commissioners, in her memorandum to Spence Wickham and Theodore Giannechini, dated April 3, 1998, and copied to Wendy Harris of your staff. Please call Mike Gregg of my staff (609 633 2395) with questions regarding archaeology or Dan Saunders (609 633 2395) regarding historic architecture and landscape considerations.

Sincerely,

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG:MLG
MLG:C:\letters\Army Corps Spy House

c: Wendy Harris, NY District ACOE
Gail Hunton, Monmouth County

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278–0090

July 9, 1998

REPLY TO
ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Mrs. Dorothy Guzzo
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625
Attention: Mr. Michael Gregg

Dear Ms. Guzzo:

The New York District Corps of Engineers (Corps) is pleased to provide you with the enclosed draft report describing cultural resources investigations conducted within the project area of the Port Monmouth Combined Flood Control and Shore Protection Project, located in portions of Port Monmouth, Middletown Township, Monmouth County, New Jersey. The report, which was prepared by the Corps's cultural resources staff, is entitled ***Cultural Resources Investigation, Port Monmouth Combined Flood Control and Shore Protection Project, Port Monmouth, Middletown Township, Monmouth County, New Jersey.*** The investigations described in this report were conducted as part of the Corp's compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

The project, which is presently in the Feasibility Phase of planning, originally consisted of five separate components: dune/beach fill improvements and a seawall along the Raritan Bay shorefront, levee/floodwalls along Pews Creek, levee/floodwalls along Comptons Creek, interior drainage features along Comptons Creek, and an environmental mitigation component. More recent versions of the project's design have eliminated the Raritan Bay seawall, some aspects of the interior drainage elements, and the Pews Creek levee/floodwall. The local sponsor for this project is the New Jersey Department of Environmental Protection. Intermediate as well as final versions of the project's design were addressed in the present investigations.

As a result of the present investigation, and based upon the findings of earlier studies by other agencies, a number of locations within the project area have been delineated as moderately to highly sensitive for Euro-American and Native American archaeological remains. Subsurface testing within one of these locations (a portion of the Comptons Creek alignment) yielded evidence of a Woodland Period Native American archaeological site. The Corps is recommending that further excavations be undertaken here during subsequent project phases in order to determine the site's extent and its

National Register eligibility. An additional untested portion of the Comptons Creek alignment will also require shovel testing during subsequent project phases.

As discussed in earlier correspondence between the Corps, the New Jersey Historic Preservation Office, and the Monmouth County Parks System, earlier versions of the project design would have affected the National Register-listed Whitlock/Seabrook Wilson House and grounds. However, several elements and components have been eliminated and adverse effects are no longer anticipated. The present bayshore protection component design calls for a reconstructed dune adjoining the house and property. Construction of this element will not adversely affect the structure, the historic landscape, or associated archaeological deposits. A small segment of the National Register eligible Delaware and Raritan Railroad main line embankment falls within a portion of the Compton Creek alignment. However, as agreed upon in discussions between your staff and the Corps, any adverse effects have been mitigated through a series of previous data recovery efforts conducted by other agencies.

Issues presented in this letter, and others, are addressed in greater detail in the enclosed report. We look forward to receiving your comments and suggestions. If you have any questions or require additional information, please contact Wendy Harris, Project Archaeologist, Environmental Analysis Branch, at (212) 264-0189.

The Corps greatly appreciates your cooperation on this project.

Sincerely,

Frank Santomauro, P.E.
Chief, Planning Division

Enclosures

Copies furnished w/enclosures:
Ms. Gail Hunton, Monmouth County Parks System
Mr. Bernie Moore, Division of Engineering and Construction, NJDEP
Mr. Randall Gabrielan, Middletown Township Historical Society

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Division of Parks & Forestry
Historic Preservation Office
PO Box 404
Trenton, N.J. 08625-0404
TEL: (609)292-2023
FAX: (609)984-0578

Robert C. Shinn, Jr.
Commissioner

August 7, 1998

Mr. Frank Santomauro, 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. Santomauro:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the *Federal Register* on 2 September 1986 (51 FR 31115-31125), I am providing **continuing consultation comments** for the following proposed undertaking:

Monmouth County, Middletown Township
Port Monmouth Combined Flood Control and Shore Protection Project

These comments are in response to your letter of July 9, 1998, regarding the results of your Phase I archaeological survey of the Area of Potential Effects (APE) of several alignments under consideration for some of the project elements. It is understood that as project planning develops, consultation will continue regarding identification of historic properties, assessment of effects on historic properties, and treatment for any historic properties that may be located within the final APE.

Summary: Two historic properties have thus far been identified within the Area of Potential Effects (APE) of various project feature alternatives: the Seabrook-Wilson house and the Raritan and Delaware Bay Railroad line. One Native American archaeological site has been located along the route of the proposed Comptons Creek levee. This site warrants further consideration in project planning. Consultation should continue regarding identification of archaeological historic properties and assessing effects.

The comments offered below are based on review of the following technical report that was transmitted with your letter:

Harris, Wendy Elizabeth, and Nikoleta Katsakiori
1998 *Cultural Resources Investigation, Port Monmouth Combined Flood Control and Shore Protection Feasibility Study* (draft report). U.S. Army Corps of Engineers, New York District, Planning Division. **HPO accession no. MON A 105d**

800.4 Identifying Historic Properties

Two historic properties have thus far been identified within the APE of various project feature alternatives: the Seabrook-Wilson house (listed in the National Register of Historic Places 10/29/1974) and the Raritan and Delaware Bay Railroad (SHPO opinion 8/8/1994). In addition, the above referenced cultural resources investigation has documented the occurrence of a Native American archaeological site within the footprint of the Comptons Creek Levee south of the intersection of Main and Broadway. This site should be the subject of Phase II archaeological work sufficient to determine site limits and enable a well founded assessment of National Register eligibility.

As project plans are refined, I look forward to continuing consultation with you regarding adequacy of efforts to identify historic properties within the APE of final construction locations and transects.

800.5 Assessing Effects

We appreciate your efforts to avoid affecting the Seabrook-Wilson house along the bayshore protection component by opting for dune reconstruction adjacent to the historic property rather than a flood wall through the property. I concur with your finding that the current design would result in **no effect** to the Seabrook-Wilson house. This finding warrants the review, comment, and concurrence of the Monmouth County Park System's Historic Preservation Specialist.

I also concur that a finding of **no adverse effect** is appropriate for the Raritan and Delaware Bay Railroad. The adverse effect has been mitigated by recently prepared HAER documentation (NPS Project #1530, HAER No. NJ-117) accepted by the NPS HABS/HAER Coordinator on June 5, 1997.

Effects may need to be assessed for the Native American site along Comptons Creek if it is found to be eligible for listing in the NR.

Report Review Comments

The draft report is well organized, clearly written, and well illustrated. Field investigations were appropriately focused in areas that had moderate and high probability to hold previously undiscovered archaeological remains that could be eligible for listing in the NR. The shovel testing interval was adequate. The discovery of a previously unrecorded Native American site attests to the quality of the survey effort. We request the following two additions to the final report:

1.. Please depict the locations of the surveyed transects on Figure 2, which is a portion of the USGS 7.5' Sandy Hook quadrangle map depicting the general project area.

2.. Please append a copy of the archaeological site registration form with Smithsonian Institution Trinomial System (SITS) number assignment for the newly discovered Native American site. (It is essential to include the SITS number in all artifact cataloging and labeling for this and all future work at the site.)

Additional Comments

I look forward to continuing consultation with you for this proposed undertaking as project plans develop, efforts to identify historic properties are renewed, and effects are assessed for subsequent and final project designs. Please call Mike Gregg of my staff (609 633 2395) with questions regarding archaeology or Dan Saunders (609 633 2397) regarding historic architecture and landscape considerations.

Sincerely,

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG:MLG
MLG:C:\letters\Army Corps Spy House

c: Wendy Harris, NY District ACOE
Gail Hunton, Monmouth County Parks System
Randall Gabrielan, Middletown Township Historical Society
Bernie Moore, Division of Engineering and Construction, NJDEP
Paul Boyd, Atlantic Highlands

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

03 NOV 1999

Environmental Analysis Branch
Environmental Assessment Section

Ms. Dorothy Guzzo
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625
Attention: Mr. Michael Gregg

Dear Ms. Guzzo:

The New York District Corps of Engineers (Corps) is pleased to provide you with the enclosed final report describing cultural resources investigations conducted within the project area of the Port Monmouth Combined Flood Control and Shore Protection Project, located in portions of Port Monmouth, Middletown Township, Monmouth County, New Jersey. The report, which was prepared by the Corps's cultural resources staff, is entitled ***Cultural Resources Investigation, Port Monmouth Combined Flood Control and Shore Protection Feasibility Study, Port Monmouth, Middletown Township, Monmouth County, New Jersey.*** The investigation described in this report was conducted as part of the Corps' compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. Research and fieldwork were undertaken between February and June 1998, addressing various versions of the project's design. In July 1998, the Corps sent your office a copy of a draft report, completed in June 1998, describing the results of the investigation. Your office responded with written comments on August 7, 1998. The present final report reflects these comments as well as additional verbal guidance, which your staff also provided.

As a result of the investigations described in this report, and based upon the findings of earlier studies by other agencies, a number of locations within the project area were delineated as moderately to highly sensitive for Euro-American and Native American archaeological remains. Subsurface testing within one of these locations yielded evidence of a Woodland Period Native American archaeological site, designated Smithsonian Site Registration Program Number 28-Mo-272. The Corps is recommending that further excavations be undertaken here during subsequent project phases in order to determine the site's extent and its National Register eligibility. If the site is determined eligible, the Corps will consult with your office in order to address adverse effects through either project redesign or mitigation measures. An additional untested portion of the project area will also require shovel testing during subsequent project phases.

Earlier versions of the project design would have caused impacts to the Seabrook-Wilson House (the Spy House) and possibly to other unidentified properties. However, as discussed in the report, several project elements and components were eliminated and adverse effects are no longer anticipated. The present shoreline protection component design calls for a reconstructed dune adjoining the house and property. Construction of this element will not adversely affect the structure, the historic landscape, or associated archaeological deposits. A small segment of the National Register eligible Raritan and Delaware Bay Railroad main line fill embankment falls within a portion of the project area. However, any adverse effects have been mitigated through a series of previous data recovery efforts conducted by other agencies.

If you have any questions or require additional information, please contact Wendy Elizabeth Harris, Project Archaeologist, Environmental Analysis Branch, at (212) 264-0189.

The Corps greatly appreciates your cooperation on this project.

Sincerely,

for Frank Santomauro, P.E.
Chief, Planning Division

Enclosure

Copy furnished w/ enclosure:
Ms. Gail Hunton, Monmouth County Parks System

Copy furnished w/o enclosure:
Mr. Bernie Moore, Division of Engineering and Construction, NJDEP

FEIS APPENDIX G

CLEAN AIR ACT STATEMENT OF CONFORMITY

CLEAN AIR ACT
STATEMENT OF CONFORMITY

Raritan Bay and Sandy Hook Bay
Hurricane and Storm Damage Reduction Project
Port Monmouth, New Jersey

Based on the conformity analysis in this subject report, I have determined that the proposed action conforms to the applicable State Implementation Plan (SIP). The U.S. Environmental Protection Agency (USEPA) has reviewed and provided comments to the DEIS. The USEPA had no adverse comments under their Clean Air Act authority. All air quality comments were fully addressed, and the project would not lead to adverse air emissions as compared to the no-action alternative; and thus, would comply with Section 176 of the Clean Air Act Amendments of 1990.

28 June 2000
Date

William Pearce
Colonel, Corps of Engineers
District Engineer