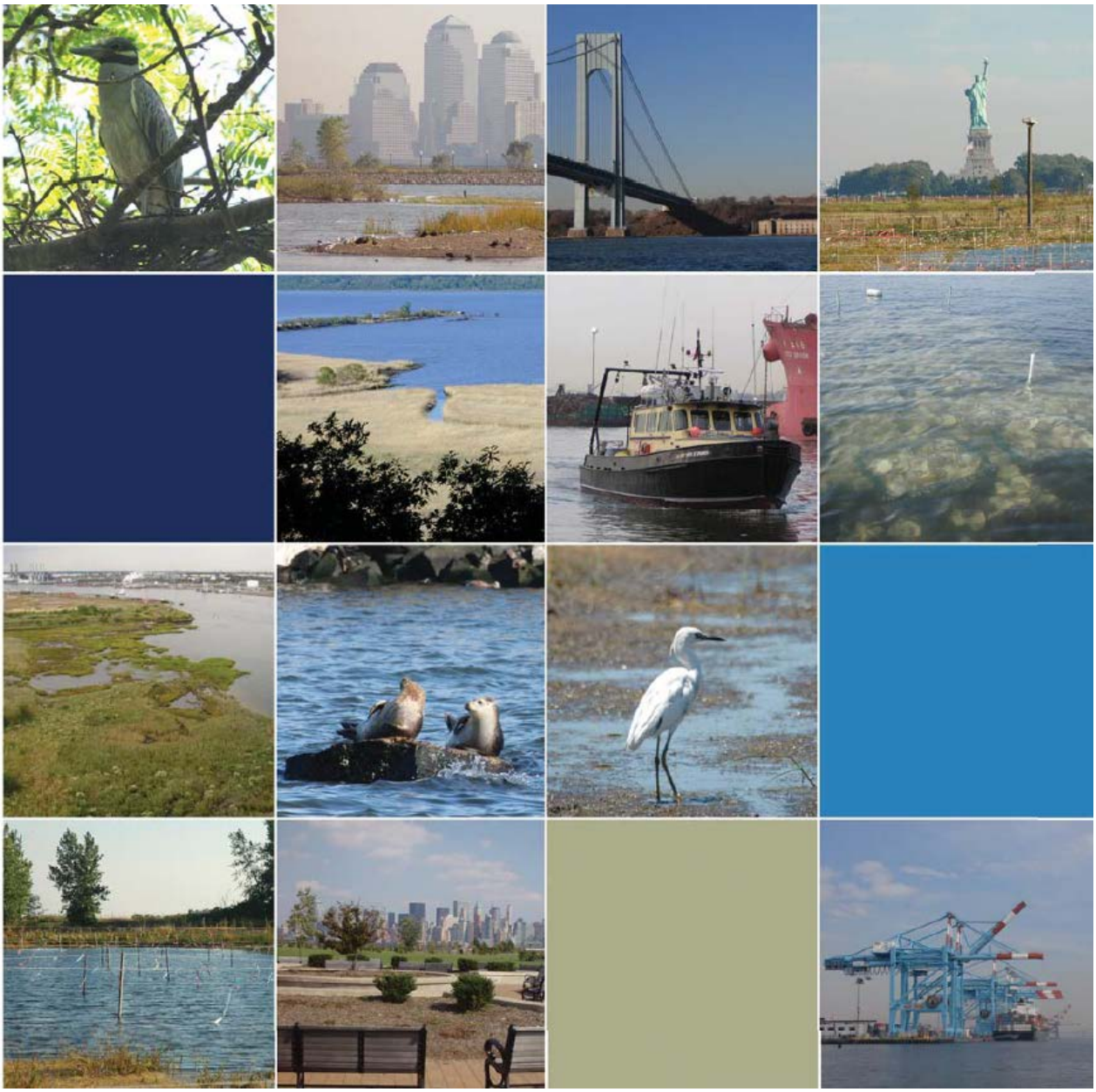
Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study

Appendix I
Cultural Resources Documentation

Draft Integrated Feasibility Report &
Environmental Assessment
February 2017

Prepared by the New York District, North Atlantic Division,
U.S. Army Corps of Engineers



U.S. Army Corps of Engineers
New York District

Cultural Resources Summary and Preliminary Case Report

Hudson-Raritan Estuary

Ecosystem Restoration Feasibility Study

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

November 2016

Carissa Scarpa
Project Archaeologist

Table of Contents **Page**

List of Figures **Page**

Appendices

Introduction

The US Army Corps of Engineers, New York District (District) has undertaken a feasibility study to identify environmental restoration and protection opportunities within the Hudson and Raritan Estuary (HRE). The HRE is located within the boundaries of the Port District of New York and New Jersey, and is situated within a 25 mile radius of the Statue of Liberty. The HRE is one of the largest estuaries on the east coast of the United States, comprising over 1,600 square miles (100 square kilometers) and almost 1,000 linear miles (1,600 kilometers) of shoreline, and is home to approximately 20 million people. In addition to residential land use, a large amount of the HRE study area is used for industry and commerce. The HRE study area has been broken down into the following eight Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay (Figure 1).

U.S. Congress recognized the New York-New Jersey Harbor as an estuary of national importance and accepted it into the National Estuary Program in 1988. The Assistant Secretary of the Army (ASA) designated it as an Ecosystem of National Significance in 2010. Significant impairments of the HRE have been defined as aquatic habitat loss, decrease in habitat and species diversity, increase in invasive species as well as shoreline and near-shore habitat modification and loss, water quality impairments, and high sedimentation caused by increased overland runoff, dredging, shoreline structure, and poor land management. The opportunities for improvement include restoring aquatic habitat, restoring and improving tributary connections, improving water quality, improving public access and protecting undeveloped habitat. The goal of the project is to bring restoration to water resources and sediment quality through creation, enhancement, and restoration of aquatic, wetland, and adjacent upland habitats.

Figure 1: HRE Planning Regions

Study History

Comprehensive restoration planning in the HRE was initiated in 1988 following its recognition by the United States Congress as an estuary of national importance and induction into the National Estuary Program. The New York-New Jersey Harbor Estuary Program (HEP), which brought together federal, state, local, and non-government organizations interested in improving ecological conditions within the HRE, was formed in conjunction with this designation. The HEP completed a Comprehensive Conservation and Management Plan in March 1996 that documented the condition of environmental resources and proposed a series of critical actions

to address the environmental threats facing these resources (USACE 1996). Included among its recommendations is the development of a comprehensive regional plan to restore and protect habitat within the HRE.

The Comprehensive Conservation and Management Plan's recommendation to restore the HRE received support from the region's stakeholders, including state and municipal regulators and policy makers, federal agencies, non-governmental organizations, and the general public. In response to this broad support, Congress authorized the USACE to investigate and identify opportunities to implement the plan's habitat goals within the estuary. A 2000 USACE reconnaissance study determined federal interest in restoration (USACE 2000). In 2001, the USACE in partnership with the non-federal sponsor and the Port Authority of New York and New Jersey (PANY/NJ), initiated the HRE Feasibility Study to facilitate the development of a comprehensive regional plan for habitat restoration in the HRE.

As part of the HRE Feasibility Study, a report entitled Draft Comprehensive Restoration Plan (CRP) was released in 2009 (USACE and PANY/NJ 2009) and is being updated for release in 2016. The CRP is the foundation for the Feasibility Study, outlining the water resource problems, goals, TECs (Target Ecosystem Characteristics), restoration opportunities and implementation strategies.

In 2015, in an effort to streamline restoration planning throughout the estuary, merge parallel efforts, and maximize efficiencies, resources, and benefits, the HRE Feasibility Study consolidated multiple parallel USACE ecosystem restoration feasibility studies. Each feasibility study was at a different stage prior to their consolidation into the HRE Feasibility Study in early 2015. The earlier feasibility studies are:

- HRE - Lower Passaic River Ecosystem Restoration Feasibility Study;
- HRE - Hackensack Meadowlands Ecosystem Restoration Feasibility Study;
- Flushing Creek and Bay Ecosystem Restoration Feasibility Study;
- Bronx River Basin Ecosystem Restoration Feasibility Study;
- Jamaica Bay, Marine Park, Plumb Beach Ecosystem Restoration Feasibility Study;

The District is preparing an integrated feasibility report and environmental assessment (FR/ES) for the HRE Ecosystem Restoration Feasibility Study at this time. The FR/EA recommends the following:

- Construction of a subset of sponsor-supported restoration opportunities that are designed at a feasibility level of detail.
- Possible future spin-off feasibility studies for restoration opportunities within each HRE planning region to be carried out under the same study authority.

Cultural Resources Investigations

A number of cultural resources investigations have been carried out for the individual ecosystem restoration feasibility studies prior being consolidated into the HRE Feasibility Study. These are:

Jamaica Bay, Marine Park, and Plumb Beach Ecosystem Restoration Feasibility Study (NYSOPRHP Project ID 02PR02030)

- Phase 1A Documentary Study for the Jamaica Bay Islands Ecosystem Restoration Project, Brooklyn (Kings) and Queens County, New York. Panamerican Consultants, Inc. April 2004.

- Cultural Resources Baseline Study, Jamaica Bay Islands Ecosystem Restoration Project, Kings, Queens, and Nassau Counties, New York. Panamerican Consultants, Inc. Hayward, Michelle H., Pickman, Arnold A., Steinback, Mark A., James, Stephen R., Curtin, Edward V., Cinquino, Michael A. July 2003.

- Phase IB Investigations of Bayswater State Park and Pardegat Basin, Jamaica Bay Ecosystem Restoration Project, Kings, Queens, and Nassau Counties, New York. Panamerican Consultants, Inc. Hayward, Michelle H., Button, Edwin W., Cinquino, Michael A. January 2006.

Flushing Bay Ecosystem Restoration Feasibility Study

- Cultural Resources Baseline Study, Flushing Bay Ecosystem Restoration Project, Queens County, New York. Panamerican Consultants, Inc. Pickman, Arnold, Hayward, Michelle H., Steinback, Mark A., Cinquino, Michael A. November 2003.

Bronx River Basin Ecosystem Restoration Feasibility Study

- Cultural Resources Baseline Study, Bronx River Ecosystem Restoration Study, Bronx and Westchester Counties, New York. U.S. Army Corps of Engineers, New England District, Atwood, Kathleen A., Paiva, Marcos A., Varghese, Saji. March 2007.

HRE - Hackensack Meadowlands Ecosystem Restoration Feasibility Study (NJSHPO Project ID 106-06-1376)

- Cultural Resources Investigation of Ten Sites in the Hackensack Meadowlands, Hackensack Meadowlands Restoration Project, Hudson and Bergen Counties, New Jersey. Hunter Research, Inc. August 2006.

- Historic Context Development, Hackensack Meadowlands Drainage Systems and Features, Hackensack Ecosystem Restoration Project, Hudson and Bergen Counties, New Jersey. Hunter Research, Inc. 2010.

HRE - Lower Passaic River Ecosystem Restoration Feasibility Study

- No cultural resources investigations were carried out for this study

Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study

In 2014 the District completed a report titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan*. The purpose of the survey was to collect a wide range of cultural resources background material on all of the sites comprising the consolidated HRE Ecosystem Restoration Feasibility Study. The resulting report and GIS database was created to inform the Cultural Resources Appendix to the Integrated Feasibility Study and Environmental Assessment.

The focal points of the survey were 301 restoration sites spread throughout the HRE planning regions. These restoration areas include onshore and offshore sites ranging in size from 2,102 acres to 0.3 acres, for a total of 31,932 acres. These sites are primarily located within sensitive ecological, estuarine, riverine and wetland environments; both coastal and upland. Given the vast size of the study area, the study was framed by focusing on researching the areas near the restoration sites. To begin compiling the overall cultural resources database, buffers of one-mile and one half-mile were added to the restoration sites to act as a survey boundary. It is within these buffers that the majority of the data collection effort was focused. However, background, environmental, and cultural resources data where readily available was collected for the entire planning region study area. The data collected from the individual feasibility study reports provided much of the background data where available.

Data collection consisted of visiting cultural resources archives, collecting data available online, requesting digital data from repositories, and utilizing in-house reports and libraries to aggregate a series of cultural resources data classes for the project area. Specific classes of information include archaeological site locations, archaeological site location sensitivity, National Register listed and eligible historic resources, cultural resource survey areas, and submerged cultural resources. These data were collected from paper maps, archival documents, cultural resource reports, and Geographic Information System (GIS) spatial data. The primary archives included the New Jersey Historic Preservation Office, New Jersey State Museum, New York State Office of Parks, Recreation, and Historic Preservation, New York Landmarks Preservation Commission, and National Oceanic and Atmospheric Administration.

Approximately 20,000 resources within the study area were mapped or noted. While, the vast majority of these data come from a single source, the New Jersey above ground historic resources GIS layer, over 3,000 additional survey areas, archaeological sites, NR listed and eligible resources, underwater obstructions, and archaeological sensitivity areas were also collected. The resulting report is extensive (comprising three volumes) and includes comprehensive tables listing the specific surveys, historic resources, AWOIS targets, archaeological sites and sensitivity areas found within the 300 restoration sites and within a mile radius of those sites. The report and GIS database make it possible, therefore, to quickly and easily retrieve existing cultural resources data pertaining to any potential restoration site in the HRE study area.

Selected Alternative and the APE

Approximately 300 potential restoration sites were evaluated and screened as part of the HRE Ecosystem Restoration Feasibility Study resulting in a subset of 31 sites to be recommended for near-term construction and two sites “Deferred” following EPA remediation (Figure 2). Of the 33 sites eight are located within New Jersey and 25 are located within New York State. There are five restoration sites located within the National Park Service Gateway National Recreation Area. The remaining sites that were not selected for this feasibility study will be recommended for future spin-off feasibility studies under the same authority.

Newark Bay, Hackensack River and Passaic River Planning Region

- Hackensack River (two sites): Meadowlark and Metromedia Marshes
- Lower Passaic River (three sites): Essex County Branch Brook Park, Dundee Island Park, Clifton Dundee Canal Green Acres
- Lower Passaic River “Deferred” (two sites): Kearny Point and Oak Island Yards

East River, Harlem River, Western Long Island Sound Planning Region

- Flushing Creek
- Bronx River (nine sites): Stone Mill Dam, Bronx Zoo and Dam, Shoelace Park, Muskrat Cove, River Park/West Farm Rapids Park, Westchester County Center, Bronxville Lake, Crestwood Lake, Garth Woods/Harney Road

Jamaica Bay Planning Region

- Perimeter sites (six sites): Fresh Creek, Hawtree Point, Dubos Point, Brant Point, Bayswater State Park, Dead Horse Bay
- Marsh Islands (five sites): Elders Center, Duck Point, Stoney Point, Pumpkin Patch East and Pumpkin Patch West

Upper Bay

- Liberty State Park - Previously authorized in WRDA 2007

Oyster Restoration (five sites)

- Governors Island, Naval Station Earle, Soundview Park, Bush Terminal and Jamaica Bay

A screening process has been carried out to develop alternative plans for each near-term restoration site based on existing conditions. The alternatives are a set of one or more measures functioning together to address one or more planning objectives. Depending upon whether the restoration site was a perimeter restoration site, oyster restoration or marsh island appropriate measures were assigned to improve the native habitat within each project site. The Tentatively Selected Plan (TSP) for each restoration site is detailed in Appendix A.

The Area of Potential Effect (APE) for the HRE Ecosystem Restoration Feasibility Study is defined as the horizontal and vertical boundaries of the undertaking at the 33 restoration sites as well as any staging areas if they are located outside site boundaries and the associated viewsheds. Drawing on data compiled in the cultural resources overview survey report, a table was created listing all previously recorded cultural resources data and surveys within the APE as well as resources and surveys located within a ½ mile and 1 mile buffer area. This table represents baseline data about the TSP sites, additional investigations will be required for each restoration site to complete the identification of historic resources (Appendix B).

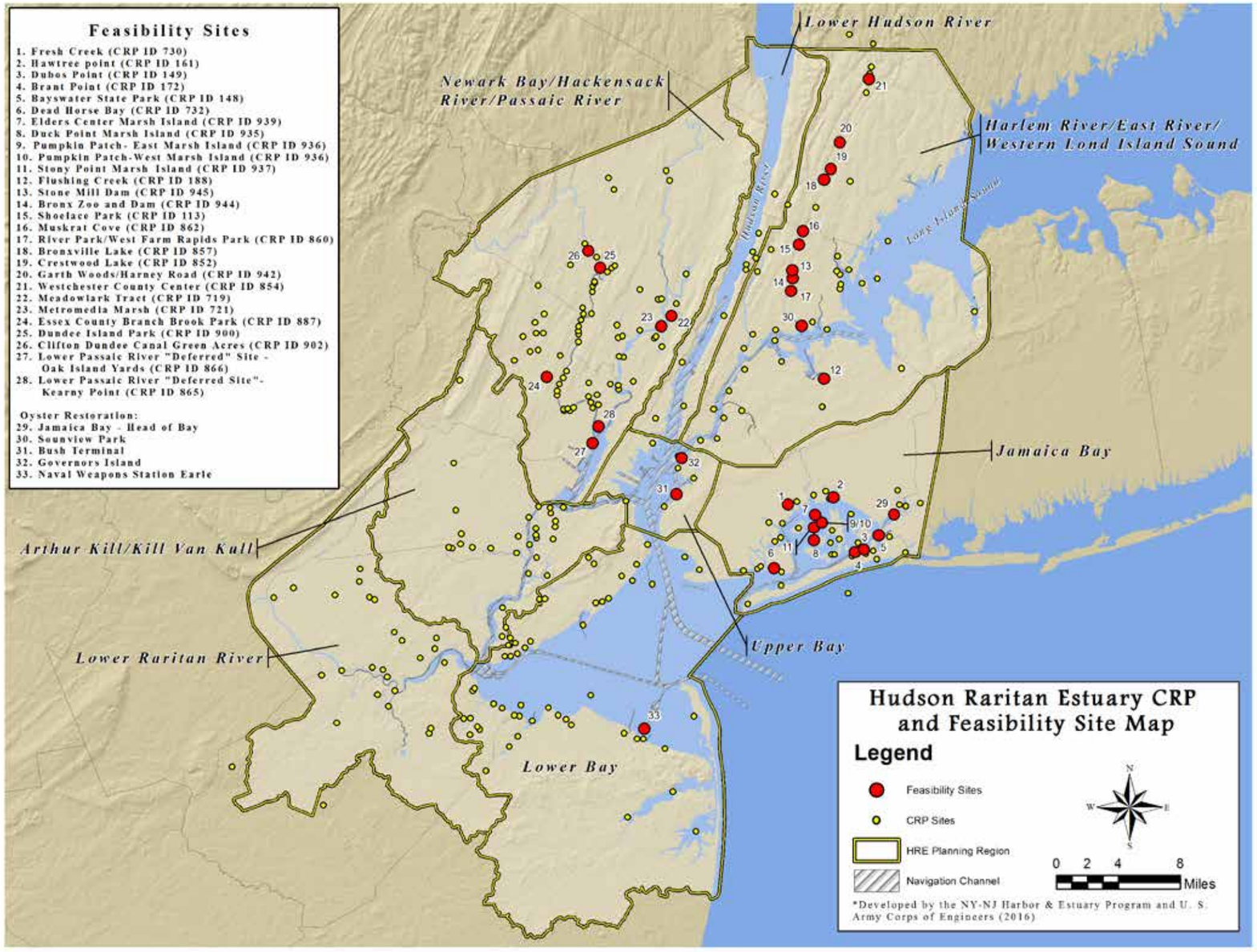


Figure 2: HRE Ecosystem Restoration Feasibility Sites

Section 106 Coordination

Prior to consolidation of the feasibility studies into the HRE Ecosystem Restoration Feasibility Study, significant Section 106 activities were carried out for the Jamaica Bay Ecosystem Restoration Project. The study comprised twelve restoration sites situated around Jamaica Bay. Many of the current TSP restoration sites within the Jamaica Bay Planning Region were among the twelve evaluated at the time. These are Fresh Creek, Hawtree Point, Dubos Point, Brant Point, Bayswater State Park, and Dead Horse Bay. The survey did not look at the marsh islands, Elders Center, Duck Point, Pumpkin Patch East and West, and Stony Point. The cultural resources assessment of Jamaica Bay focused on the twelve restoration sites but also looked at the region generally, describing the area's prehistoric and historic use and considering the potential for the planned activities to impact significant cultural resources. Recommendations were made for additional investigations and monitoring activities at the sites on an individual level (Panamerican Consultants, Inc. 2003). Additional studies that are relevant to the current project are a 2006 Phase IB of Bayswater State Park and Paerdegat Basin and a 2004 survey was completed for three marsh island sites that were subsequently constructed, Yellow Bar and Elders East and West (Panamerican Consultants, Inc.) Consultation was carried out in 2004 with the New York State Office of Parks Recreation and Historic Preservation (NYSOPRHP), federally recognized tribes, and other interested parties upon completion of a draft Programmatic Agreement for the perimeter Jamaica Bay sites. A final draft of the document was never executed (Appendix C - Section C.1).

Significant Section 106 compliance activities were also carried out for the HRE-Hackensack Meadowlands Ecosystem Restoration Feasibility Study in 2006 upon completion of a cultural resources survey of ten restoration sites in the Hackensack Meadowlands. Meadowlark Marsh and Metromedia Marsh, two current TSP sites, were among the sites evaluated at that time. The report identified a system of historic drainage features at a number of sites (including Metro Media and Meadowlark) as well as circa 1917-1930 fill material at Meadowlark Marsh that had the potential to yield significant cultural resources. The report also discussed, in a broader framework, the issue of determining archaeological potential in wetland environments and recommended a series of high-integrity cores be carried out as part of future investigations for the study to better understand the potential for prehistoric archaeological sites (Hunter Research, Inc. 2006). Later consultation occurred after the District carried out an evaluation of the drainage systems and features in the Hackensack Meadowlands. The survey focused on the Metro Media Site among others and recommended additional subsurface investigations before eligibility for the National Register of Historic Places could be determined. The District declared its intent to prepare a Programmatic Agreement at that time, however, in 2012 progress on the study was suspended and a draft PA was not fully developed (Appendix C – Section C.2).

Coordination for the HRE Ecosystem Restoration Project between the District, the New Jersey State Historic Preservation Office (NJSHPO) and the New York State Office of Parks, Recreation and Historic Preservation began in 2014 when the cultural resources overview survey was completed (URS 2014). The District declared its intent at that time to draft a Programmatic Agreement (Appendix C – Section C.3). The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. To simplify coordination moving forward, two Programmatic Agreements have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State (Appendix D).

The New York PA is to be entered into by the District, the New York State Office of Parks Recreation and Historic Preservation, and the New York City Landmarks Commission at a minimum. The National Parks Service, the Delaware Nation, the Delaware Tribe of Indians, the Shawnee and Eastern Shawnee Tribes of Oklahoma, the Stockbridge-Munsee Community, the Band of Mohicans, and the Shinnecock Nation are invited to participate in the New York PA as well. The New Jersey PA is to be entered into by the District, and the New Jersey State Historic Preservation Office at a minimum. The Delaware Nation, the Delaware Tribe of Indians, and the Shawnee and Eastern Shawnee Tribes of Oklahoma are invited to participate in the New Jersey PA. The Advisory Council on Historic Preservation will be invited to review and participate in both PAs. Additional public involvement will be conducted as part of the public review of the EIS and the PA under NEPA and will serve as the District's Section 106 public coordination. The final PA will incorporate comments on the draft document, as appropriate.

Bibliography

Hunter Research, Inc.
2006 Cultural Resources Investigation of Ten Sites in the Hackensack Meadowlands, Hackensack Meadowlands Restoration Project, Hudson and Bergen Counties, New Jersey.

Hunter Research, Inc.
2010 Historic Context Development, Hackensack Meadowlands Drainage Systems and Features, Hackensack Ecosystem Restoration Project, Hudson and Bergen Counties, New Jersey.

Panamerican Consultants, Inc.
2003 Cultural Resources Baseline Study, Jamaica Bay Ecosystem Restoration Project, Kings, Queens, and Nassau Counties, New York. Hayward, Michelle H., Pickman, Arnold A., Steinback, Mark A., James, Stephen R., Curtin, Edward V., Cinquino, Michael A. July.

Panamerican Consultants, Inc.
2003 Cultural Resources Baseline Study, Flushing Bay Ecosystem Restoration Project, Queens County, New York. Pickman, Arnold, Hayward, Michelle H., Steinback, Mark A., Cinquino, Michael A.

Panamerican Consultants, Inc.
2003 Phase IA Cultural Resources Investigation of the Hudson-Raritan Estuary Ecosystem Restoration Project, Liberty State Park, Jersey City, Hudson County, New Jersey.

Panamerican Consultants, Inc.
2004 Phase 1A Documentary Study for the Jamaica Bay Islands Ecosystem Restoration Project, Brooklyn (Kings) and Queens County, New York.

Panamerican Consultants, Inc.
2006 Phase IB Investigations of Bayswater State Park and Paerdegat Basin, Jamaica Bay Ecosystem Restoration Project, Kings, Queens, and Nassau Counties, New York., Hayward, Michelle H., Button, Edwin W., Cinquino, Michael A.

URS Corporation
2014 Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan. Vol's I-111.

U.S. Army Corps of Engineers, New England District
2007 Cultural Resources Baseline Study, Bronx River Ecosystem Restoration Study, Bronx and Westchester Counties, New York., Atwood, Kathleen A., Paiva, Marcos A., Varghese, Saji

U.S. Army Corps of Engineers, New York District
1996 New York-New Jersey Harbor Estuary Program, Including the Bight Restoration Plan, Final Comprehensive Conservation and Management Plan. New York/New Jersey Harbor Estuary Program, New York, New York.

U.S. Army Corps of Engineers, New York District
2000 Draft Expedited Reconnaissance Study: Hudson-Raritan Estuary Environmental Restoration.

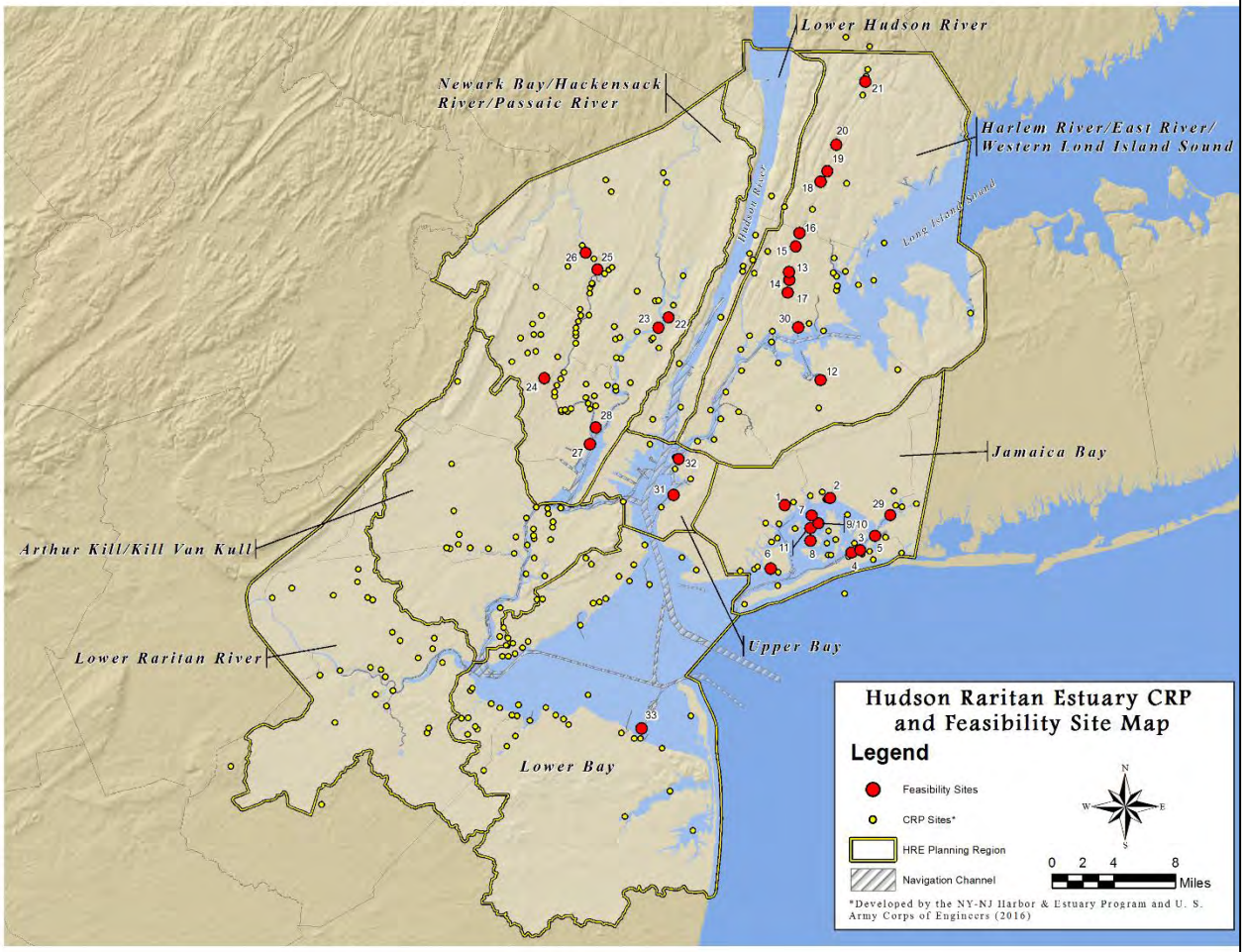
U.S. Army Corps of Engineers, New York District and Port Authority of New York and New Jersey

2009 Hudson-Raritan Estuary Comprehensive Restoration Plan, Draft, Vol.s I and II.

Appendix A – HRE Ecosystem Restoration TSP Sites

Hudson Raritan Estuary Ecosystem Restoration Feasibility Study
Report Synopsis
Appendix A

Restoration Site One-Pagers



Restoration Sites

1. Fresh Creek (CRP ID 730)
2. Hawtree Point (CRP ID 161)
3. Dubos Point (CRP ID 149)
4. Brant Point (CRP ID 172)
5. Bayswater State Park (CRP ID 148)
6. Dead Horse Bay (CRP ID 732)
7. Elders Center Marsh Island (CRP ID 939)
8. Duck Point Marsh Island (CRP ID 935)
9. Pumpkin Patch- East Marsh Island (CRP ID 936)
10. Pumpkin Patch-West Marsh Island (CRP ID 936)
11. Stony Point Marsh Island (CRP ID 937)
12. Flushing Creek (CRP ID 188)
13. Stone Mill Dam (CRP ID 945)
14. Bronx Zoo and Dam (CRP ID 944)
15. Shoelace Park (CRP ID 113)
16. Muskrat Cove (CRP ID 862)
17. River Park/West Farm Rapids Park (CRP ID 860)
18. Bronxville Lake (CRP ID 857)
19. Crestwood Lake (CRP ID 852)
20. Garth Woods/Harney Road (CRP ID 942)
21. Westchester County Center (CRP ID 854)
22. Meadowlark Tract (CRP ID 719)
23. Metromedia Marsh (CRP ID 721)
24. Essex County Branch Brook Park (CRP ID 887)
25. Dundee Island Park (CRP ID 900)
26. Clifton Dundee Canal Green Acres (CRP ID 902)
27. Lower Passaic River "Deferred" Site- Oak Island Yards (CRP ID 866)
28. Lower Passaic River "Deferred Site"- Kearny Point (CRP ID 865)

<u>Oyster Restoration:</u>

29. Jamaica Bay - Head of Bay
30. Soundview Park
31. Bush Terminal
32. Governors Island
33. Naval Weapons Station Earle

HRE- Jamaica Bay- Fresh Creek

Jamaica Bay Planning Region

★ Fresh Creek

• Other Jamaica Bay Restoration Recommendations

Baseline Conditions and Water Resource Problems

- **Loss of marsh habitat** – Jamaica Bay has lost over 2000 acres in the last century, 75% reduction from historic levels.
- Site **dominated by non-native, invasive plant species**, which is a threat to existing desirable wetland habitats
- **Poor benthic habitat**
- **Poor tidal flushing and circulation**
- Continuing **shoreline erosion**
- **Fill and hardened shorelines**
- **Landfill leachate, CSO and waste water discharges**
- Presence of a combined sewer overflow at the head of the basin
- **Poor water quality** at the head of Fresh Creek
- **Straightened and deepened creek** with no finger tributaries

Restoration Opportunities/Measures

- Habitat improvements
- Wetland restoration/creation
- Invasive species removal/native species plantings
- Channel modification/realignment
- Bank stabilization
- Stream geomorphology restoration
- Secondary benefits of water quality improvements
- Sediment load reduction
- Basin bathymetry reconfiguration to promote optimal circulation
- Beneficial re-use of material onsite
- Public education/access

Jamaica Bay, Marine Park and Plumb Beach Feasibility Study History

- ✓ Study Resolution in 1990, Recon Report in 1994, FCSA with NYCDEP in 1996
- ✓ 39 restoration opportunities identified in the "Jamaica Bay: Navigational Channels and Shoreline Environmental Surveys" Report in 1997
- ✓ 8 restoration sites recommended and approved at Alternative Formulation Briefing (AFB) December 2010 and included in the Nov 2010 Preliminary Draft Feasibility Report/Environmental Assessment.
- ✓ Sandy 113-2: Interim Report 2 identified study to be evaluated for CSRM
- ✓ Restoration opportunities considered in the East Rockaway to Rockaway - Jamaica Bay Reformulation Study; using Evaluation of Planned Wetlands to characterize functionality at each site (2015)
- ✓ Designs were optimized and were integrated in the "perimeter plan" alternative considered in the Reformulation Study
- ✓ Storm Surge Barrier selected as the coastal flooding measure for interior communities within Jamaica Bay as part of the Reformulation TSP
- ✓ Optimized restoration (Reformulation Study) recommended in HRE Feasibility Study (per strategy approved by Director of Civil Works, Aug 2014)
- ✓ Updated MII Micro-Computer Aided Cost Estimating System (MCASES) costs

Alternative	1	2	3	4	5
Description	✓ Invasive dominated areas restored to saltmarsh or native coastal shrub, grass or forest habitat by grubbing, regrading, and planting. ✓ ~ 6.3 acres of low marsh, 1.7 acres of high marsh, and 9.7 acres of transitional coastal shrub zone restored. ✓ ~4.5 acres of buffer maritime forest restored for sustainability of marsh restoration.	✓ Similar to Alt. 1, with addition of recontouring at head of the basin through half of the underwater community. ✓ This is expected to improve flushing at the head of the basin and improve dissolved oxygen. ✓ ✓ Vegetation plantings and acreages are same as in Alt. 1.	✓ Basin filling only at the head of creek, raising the level of the bottom to intertidal levels, creating marsh and tidal creek habitat resulting in decreased residence time of water at the head of the creek with increase wetland habitat. ✓ 2.1-acre channel created, along with 13.0 acres of low marsh and 2.4 acres of high marsh. ✓ Similar to Alt. 1, an incidental 4.5 acres of forest will be restored, and 11 acres of coastal shrub created. The amount of coastal shrub is increased slightly from previous alt. to create a transition zone in the northwest corner of the site.	✓ Alt. 4 maximizes water quality improvements by improving tidal prism throughout the basin. ✓ Recontouring would occur with bottom filled from head to Jamaica Bay including filling of an existing 19'deep dredged channel in the southern portion of the basin. ✓ Vegetation plantings and acreages are same as in Alt. 1.	**Recommended at AFB 2010 and Approved:** ✓ Combines Alts. 3 and 4. Habitat improvements are exactly the same as Alt. 3. ✓ The head of the basin will be filled to create tidal marshes and creeks; however, the basin will be recontoured to the mouth of Fresh Creek substantially improving flushing throughout the basin, improve DO, increase wetland, and cap contaminated sediment. ✓ Restoration of 33 acre tidal marsh system with protective buffers will be created, which includes 13 acres of low marsh, 2.4 acres of high marsh, 2.1 acres of creek/pool, 4.5 acres of maritime forest and 11 acres of coastal shrub. In addition, 60.1 acres of shallow water will be restored. ✓ Create small detention pond at the head of Fresh Creek as a means of filtering CSO output.
Average Annual Functional Capacity Units (AAFCUs)	88	119	126	208	246

Tentatively Selected Plan Design

East Rockaway to Rockaway- Jamaica Bay Reformulation Study Optimization:

- ✓ Restoration of ~29 acres tidal marsh system with protective buffers will be created, which includes 13.6 acres of low marsh, 2.5 acres of high marsh, 1.5 acres of creek/pool, 11.3 acres of maritime forest.
- ✓ 42.4 acres of shallow water through channel regrading will be restored.
- ✓ The head of the basin will be filled to create tidal marshes and creeks; however, the basin will be recontoured to the mouth of Fresh Creek substantially improving flushing throughout the basin, improve DO, increase wetland, and cap contaminated sediment.
- ✓ Create small detention pond at the head of Fresh Creek as a means of filtering CSO output.
- ✓ Reformulation Study would recommend a tide gate at Fresh Creek if the perimeter plan was the TSP.

Significance of Restoration in the Region and at the Site

- ✓ One of two last major parcels of contiguous wildlife habitat in NY Bight
- ✓ Major stopover point in the Atlantic Flyway for over 300 species of migratory shorebirds
- ✓ Valuable nursery and feeding area for many finfish species
- ✓ Designated by NYC as a Special Natural Waterfront Area (1999)
- ✓ Recognized as Critical Environmental Area by NYSDEC
- ✓ Highly productive habitat (1999) per USFWS
- ✓ USEPA's CCMP identified Jamaica Bay as only one of two sites in the HRE area targeted for special efforts to protect and restore ecological integrity and values.

Selected Alternative Map
Fresh Creek, Jamaica Bay, New York

Source: NYS GIS Clearinghouse 2014 Orthoimagery

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- EMERGENT WETLAND (LOW MARSH)
- EMERGENT WETLAND (HIGH MARSH)
- COASTAL AND MARITIME FOREST
- HABITAT FOR FISH, CRAB AND LOBSTER
- CHANNEL REGRADING
- RIP RAP

0 500 1,000 Feet

Key Map

Source: Esri World Topo Map

NYC Environmental Protection

NYC Parks

HRE- Jamaica Bay- Hawtree Park

Jamaica Bay Planning Region

★ Hawtree Point

• Other Jamaica Bay Restoration Recommendations

Baseline Conditions and Water Resource Problems

- **Loss of marsh habitat** – Jamaica Bay has lost over 2000 acres in the last century, a 75% reduction from historic levels.
- Sites is dominated **by non-native, invasive plant species**, which is a threat to existing desirable wetland habitats
- Continuing **shoreline erosion**
- **Filled wetlands**
- Historic structures and canal systems of Hamilton beach **under the fill**
- **All Terrain Vehicle use along shoreline** of project area

Restoration Opportunities/Measures

- Habitat improvements
- Wetland protection and expansion through improvement of surrounding habitats
- Invasive species removal/native species plantings
- Erecting barrier to off-road vehicles

Jamaica Bay, Marine Park and Plumb Beach Feasibility Study History

- ✓ Study Resolution in 1990, Recon Report in 1994, FCSA with NYCDEP in 1996
- ✓ 39 restoration opportunities identified in the "Jamaica Bay: Navigational Channels and Shoreline Environmental Surveys" Report in 1997
- ✓ 8 restoration sites recommended and approved at the Alternative Formulation Briefing (AFB) December 2010 and included in the Nov 2010 Preliminary Draft Feasibility Report/Environmental Assessment.
- ✓ Sandy 113-2: Interim Report 2 identified study to be evaluated for CSRM
- ✓ Restoration opportunities considered in the East Rockaway to Rockaway - Jamaica Bay Reformulation Study; using Evaluation of Planned Wetlands to characterize functionality at each site (2015)
- ✓ Designs were not optimized and were integrated in the "perimeter plan" alternative considered in the Reformulation Study
- ✓ Storm Surge Barrier selected as the coastal flooding measure for interior communities within Jamaica Bay as part of the Reformulation TSP
- ✓ Restoration recommended in HRE Feasibility Study (per strategy approved by Director of Civil Works, Aug 2014)
- ✓ Updated MII Micro-Computer Aided Cost Estimating System (MCASES) costs

Alternative	**1**
Description	**Recommended at AFB 2010 and Approved:** ✓ Within the limited confines of Hawtree Point, one solution was developed. ✓ Alternative 1 recovers 1.7 acres of coastal scrub shrub and grassland habitat from the existing invasive dominated areas. Some regrading and grubbing would remove the invasive species and native grasses and shrubs will be planted at the site. ✓ This alternative also includes the creation of a natural barrier to motorized vehicles. By placing boulders along the boundary of the restoration area, the newly created habitats as well as the preserved existing marshes will be protected. ✓ Through implementation of this project, an existing patch of salt marsh hay (0.07 acres) will be excavated and replaced. ✓ This area is currently being invaded by the surrounding invasives. Salt marsh hay will be planted in the location after the excavation and regrading of the surrounding land. The net amount of wetland habitat will be the same before and after project implementation.
Average Annual Functional Capacity Units (AAFCUs)	**6.5**

Tentatively Selected Plan Design

East Rockaway to Rockaway- Jamaica Bay Reformulation Study Optimization:

✓ Based on recent field observations, no optimization is recommended.

Significance of Restoration in the Region and at the Site

✓One of two last major parcels of contiguous wildlife habitat in NY Bight

✓Major stopover point in the Atlantic Flyway for over 300 species of migratory shorebirds

✓Valuable nursery and feeding area for many finfish species

✓Designated by NYC as a Special Natural Waterfront Area (1999)

✓Recognized as Critical Environmental Area by NYS Dept of Environmental Conservation

✓Singled out by USFWS as highly productive habitat (1999)

✓USEPA's CCMP identified Jamaica Bay as only one of two sites in the HRE area targeted for special efforts to protect and restore ecological integrity and values.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYC Environmental Protection

NYC Parks

HRE- Jamaica Bay- Dubos Point

Jamaica Bay Planning Region

★ Dubos Point

• Other Jamaica Bay Restoration Recommendations

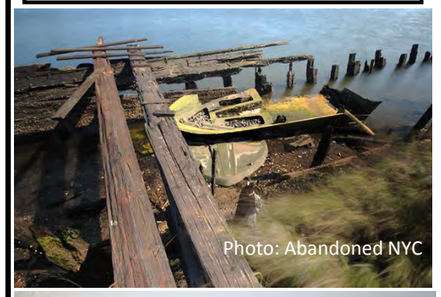


Photo: Abandoned NYC

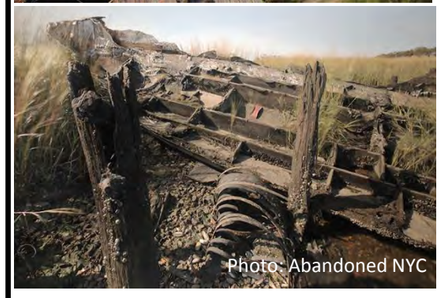


Photo: Abandoned NYC

Baseline Conditions and Water Resource Problems (EPW Report)

- **Loss of marsh habitat** – Jamaica Bay has lost over 2000 acres in the last century, a 75% reduction from historic levels.
- Site is **dominated by non-native, invasive plant species**, which is a threat to existing desirable wetland habitats.
- High energy littoral zone along western and northern shorelines.
- Continuing **shoreline erosion**.
- Dumped **trash and debris** throughout site.
- **Fill material** over historic marsh.

Restoration Opportunities/Measures

- Habitat improvements
- Wetland creation
- Invasive species removal/native species plantings
- Channel modification/realignment
- Shoreline stabilization
- Incorporate protective strategies against dumping.
- Beneficial use of material on site

Jamaica Bay, Marine Park and Plumb Beach Feasibility Study History

- ✓ Study Resolution in 1990, Recon Report in 1994, FCSA with NYCDEP in 1996
- ✓ 39 restoration opportunities identified in the "Jamaica Bay: Navigational Channels and Shoreline Environmental Surveys" Report in 1997
- ✓ 8 restoration sites recommended and approved at Alternative Formulation Briefing (AFB) December 2010 and included in the Nov 2010 Preliminary Draft Feasibility Report/Environmental Assessment.
- ✓ Sandy 113-2: Interim Report 2 identified study to be evaluated for CSRM
- ✓ Restoration opportunities considered in the East Rockaway to Rockaway - Jamaica Bay Reformulation Study; using Evaluation of Planned Wetlands to characterize functionality at each site (2015)
- ✓ Designs were optimized and integrated in the "perimeter plan" alternative considered in the Reformulation Study
- ✓ Storm Surge Barrier selected as the coastal flooding measure for interior communities within Jamaica Bay as part of the Reformulation TSP
- ✓ Optimized restoration (Reformulation Study) recommended in HRE Feasibility Study (per strategy approved by Director of Civil Works, Aug 2014)
- ✓ Updated MII Micro-Computer Aided Cost Estimating System (MCASES) costs

Alternative	1	2	3
Description	✓ Restoration of marsh by creating tidal channels of ~0.7 acres in an existing filled common reed stand and regrading the area to salt marsh elevations to create ~3.5 acres of low marsh and 0.6 acres of high marsh ✓ Tidal channels in the northern tip will also be reopened to allow salt water flushing and fish migration to alleviate the local overabundance of mosquitoes. ✓ By removing mugwort-dominated areas the project will incidentally restore 2.0 acres of maritime forest. Native canopy trees, understory trees, shrubs, forbs, and ferns will be planted here to prevent the spread of invasive species into the aquatic habitat. ✓ The existing pilings will remain and will continue to offer some protection to the salt marsh on the point.	✓ Similar to Alt.1, with the only difference being the amount of toe protection installed. This Alt. utilizes the existing piles, replacing only the ones that have failed. Restoration plans, vehicle barriers, and vegetation plantings are the same as in Alt. 1.	**Recommended at AFB 2010 and Approved:** ✓ Same as Alt. 1 and maximizes marsh habitat protection by implementing toe protection surrounding the entire western and northern shore. ✓ The north and west shorelines are exposed to high wave velocities from Jamaica Bay. Soldier piles were installed in the past, and still exist on the site but are beginning to fail. In the areas of failure, the erosion is quite obvious. Toe protection in this alternative includes the use of soldier piles or its equivalent, placed to the level of MLW, along the entire shoreline replacing all of the existing piles. ✓ A total of 6.8 acres will be restored at this site including, 3.5 of low marsh, 0.6 of high marsh, 0.7 of creek or pool, and 2 acres of maritime forest.
Average Annual Functional Capacity Units (AAFCUs)	24	27	**58**

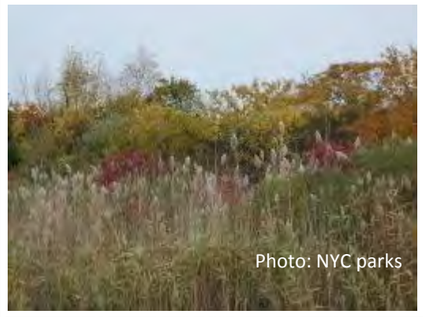


Photo: NYC parks


Photo: Abandoned NYC

Tentatively Selected Plan Design

East Rockaway to Rockaway- Jamaica Bay Reformulation Study Optimization:

- ✓A total of 7.1 acres will be restored at this site including, 3.3 of low marsh, 0.9 of high marsh, 0.7 of creek or pool, and 2 acres of maritime forest.
- ✓The north and west shorelines are exposed to high wave velocities from Jamaica Bay. Soldier piles were installed in the past, and still exist on the site but are beginning to fail. In the areas of failure, the erosion is quite obvious. Toe protection in this alternative includes the use of soldier piles or its equivalent, placed to the level of MLW, along the entire shoreline replacing all of the existing piles.
- ✓Reformulation Study would recommend a composite sea wall if the perimeter plan was the TSP. If this measure is implemented the cost would be borne by the local sponsor.

Significance of Restoration in the Region and at the Site

- ✓One of two last major parcels of contiguous wildlife habitat in NY Bight
- ✓Major stopover point in the Atlantic Flyway for over 300 species of migratory shorebirds
- ✓Valuable nursery and feeding area for many finfish species
- ✓Designated by NYC as a Special Natural Waterfront Area (1999)
- ✓Recognized as Critical Environmental Area by NYS Dept of Environmental Conservation
- ✓Singled out by USFWS as highly productive habitat (1999)
- ✓USEPA's CCMP identified Jamaica Bay as only one of two sites in the HRE area targeted for special efforts to protect and restore ecological integrity and values.

NYC Parks

NYC Environmental Protection

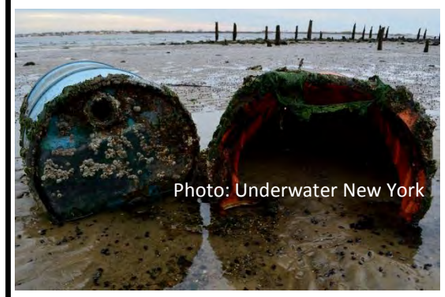
NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation

HRE- Jamaica Bay- Dead Horse Bay

Jamaica Bay Planning Region

★ Dead Horse Bay

● Other Jamaica Bay Restoration Recommendations



Baseline Conditions and Water Resource Problems

- **Loss of marsh habitat –** Jamaica Bay has lost over 2000 acres in the last century, a 75% reduction from historic levels.
- Site is **dominated by non-native, invasive plant species**, which is a threat to existing desirable wetland habitats
- **Poor benthic habitat**
- **Poor tidal flushing and circulation**
- **Fill and hardening of shorelines**
- **Landfill leachate, CSO and waste water discharges**
- **Erosion and exposure of the solid waste landfill**
- **Steep bathymetry** of the southwest and southern shorelines

Restoration Opportunities/Measures

- Habitat improvements
- Wetland creation
- Dune creation in high energy southern parcel
- Invasive species removal/native species plantings
- Channel modification/realignment
- Bank and landfill stabilization
- Shoreline protection stragegies
- Stream geomorphology restoration
- Secondary benefits of water quality improvements
- Sediment load reduction
- Public education/access
- Beneficially reuse the excavated fill onsite

Jamaica Bay, Marine Park and Plumb Beach Feasibility Study History

- ✓ Study Resolution in 1990, Recon Report in 1994, FCSA with NYCDEP in 1996
- ✓ 39 restoration opportunities identified in the "Jamaica Bay: Navigational Channels and Shoreline Environmental Surveys" Report in 1997
- ✓ 8 restoration sites recommended and approved at the Alternative Formulation Briefing (AFB) December 2010 and included in the Nov 2010 Preliminary Draft Feasibility Report/Environmental Assessment.
- ✓ Sandy 113-2: Interim Report 2 identified study to be evaluated for CSRM
- ✓ Restoration opportunities considered in the East Rockaway to Rockaway - Jamaica Bay Reformulation Study; using Evaluation of Planned Wetlands to characterize functionality at each site (2015)
- ✓ Designs were not optimized and were integrated in the "perimeter plan" alternative considered in the Reformulation Study
- ✓ Storm Surge Barrier selected as the coastal flooding measure for interior communities within Jamaica Bay as part of the Reformulation TSP
- ✓ Restoration recommended in HRE Feasibility Study (per strategy approved by Director of Civil Works, Aug 2014)
- ✓ Updated MII Micro-Computer Aided Cost Estimating System (MCASES) costs

Alternative	1	**2**	**3**	**4**
Description	✓ Replace existing *Phragmites* stands in the northern portion of the site with fringe marsh system and native maritime forest species. ✓ The eroding shoreline and landfill in the southern portion of the site will be covered with clean fill and sand from the northern portion of the site. The sand will be used to create dunes along the edge of the water. ✓ Creation of dunes on ~ 31 acres, restore 10 acres of low marsh, and 3 acres of high marsh. Additionally, 87 acres of maritime forest will be restored to act as a protective buffer and provide habitat for the species that utilize the area.	✓ Alt. 2 includes all the elements of Alternative 1. ✓ Removal of 31 acres of the landfill closest to the water which covers the old existing marsh. ✓ Geotubes will be used to stabilize the remaining landfill and to prevent future erosion along the southern bank.	✓ Alt. 3 maximizes marsh habitat by creating a tidal channel in the northern portion of the site and regrading this existing upland *Phragmites* stand to salt marsh elevations. ✓ A tidal channel of ~ 4 acres will be built in the northern parcel and ~31 acres of low marsh and 7 acres of high marsh will be restored. ✓ Clean fill and sand will be beneficially reused to create dunes, and to restore the maritime forest. ✓ Creation of ~ 28 acres of dunes on the site and consequently restores over 60 acres of maritime forest. ~9 acres of existing beach will be preserved in the north. ✓ Stabilize the tidal creek and protect the existing beach habitat, training structures will be created on the banks at the mouth of the creek.	**Recommended at AFB 2010 and Approved:** ✓ Alt. 4 includes all the elements of Alt. 3, and also includes removal of 31 acres of landfill in the southern portion. ✓ The area will also be stabilized with geotubes beneath the dunes to avoid erosion of the site back into the remaining landfill. ✓ Materials will be beneficially reused on site to create dunes along the edge of the water and to restore a buffer to the maritime forest. ✓ This alt. will remove landfill and create dunes on ~27.7 acres of the site and will restore 61 acres of maritime forest on the southern parcel of the project area. Roughly 9 acres of existing beach will be preserved in the north. ✓ To stabilize the tidal creek and protect the existing beach habitat, training structures will be created on the banks at the mouth of the creek.
Average Annual Functional Capacity Units (AAFCUs)	116	166	334	**413**

Tentatively Selected Plan Design

East Rockaway to Rockaway- Jamaica Bay Reformulation Study

✓ Based on recent field observations, no optimization is recommended.

Significance of Restoration in the Region and at the Site

- ✓One of two last major parcels of contiguous wildlife habitat in NY Bight
- ✓Major stopover point in the Atlantic Flyway for over 300 species of migratory shorebirds
- ✓Valuable nursery and feeding area for many finfish species
- ✓Designated by NYC as a Special Natural Waterfront Area (1999)
- ✓Recognized as Critical Environmental Area by NYS Dept of Environmental Conservation
- ✓Singled out by USFWS as highly productive habitat (1999)
- ✓USEPA's CCMP identified Jamaica Bay as only one of two sites in the HRE area targeted for special efforts to protect and restore ecological integrity and values.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYC Environmental Protection

NYC Parks

HRE- Jamaica Bay- Brant Point

Jamaica Bay Planning Region

★ Brant Point

• Other Jamaica Bay Restoration Recommendations

Baseline Conditions and Water Resource Problems

- **Loss of marsh habitat** – Jamaica Bay has lost over 2000 acres in the last century, a 75% reduction from historic levels.
- Sites are **dominated by non-native, invasive plant species**, which is a threat to existing desirable wetland habitats
- A grounded barge offshore has acted as an erosion control device and created high quality benthic habitat behind the structure.
- **Fill material** over historic marsh.
- Continuing **shoreline erosion and wetland loss**.
- **Fill and hardening of shorelines**.
- Extensive **dumping of soil, trash, and debris** in wetland and upland.

Restoration Opportunities/Measures

- Habitat improvements
- Wetland creation/preservation
- Invasive species removal/native species plantings
- Address chronic erosion with off shore breakwaters
- Incorporate protective strategies against dumping.
- Beneficial use of material on site

Jamaica Bay, Marine Park and Plumb Beach Feasibility Study History

- ✓ Study Resolution in 1990, Recon Report in 1994, FCSA with NYCDEP in 1996
- ✓ 39 restoration opportunities identified in the "Jamaica Bay: Navigational Channels and Shoreline Environmental Surveys" Report in 1997
- ✓ 8 restoration sites recommended and approved at Alternative Formulation Briefing (AFB) December 2010 and included in the Nov 2010 Preliminary Draft Feasibility Report/Environmental Assessment.
- ✓ Sandy 113-2: Interim Report 2 identified study to be evaluated for CSRM
- ✓ Restoration opportunities considered in the East Rockaway to Rockaway - Jamaica Bay Reformulation Study; using Evaluation of Planned Wetlands to characterize functionality at each site (2015)
- ✓ Designs were optimized and integrated in the "perimeter plan" alternative considered in the Reformulation Study
- ✓ Storm Surge Barrier selected as the coastal flooding measure for interior communities within Jamaica Bay as part of the Reformulation TSP
- ✓ Optimized restoration (Reformulation Study) recommended in HRE Feasibility Study (per strategy approved by Director of Civil Works, Aug 2014)
- ✓ Updated MII Micro-Computer Aided Cost Estimating System (MCASES) costs

Alternative	1	2
Description	✓ Protection of existing 1.2 acres of marsh and restores an additional 1.9 acres of low marsh, 0.7 acres of high marsh, 2.5 acres of meadow, and 2.4 acres of maritime forest to prevent the spread of invasive species into the aquatic habitat. ✓ Soil excavated to regrade for the marsh creation will be used for onsite landscaping.	**Recommended at AFB 2010 and Approved:** ✓ In addition to the tidal fringe marsh of Alternative 1, Alt. 2 maximizes marsh habitat protection and creates macroinvertebrate habitat by creating offshore rubble mounds. ✓ The grounded barge at this site shows that offshore structures are capable of protecting the marshes and creating beneficial habitat for macroinvertebrates. Three rock mounds are needed to protect the point from the ongoing erosion. The rocks will be placed randomly within a trapezoidal shape to create interstitial spaces of various sizes that can be used as refugia by various species.
Average Annual Functional Capacity Units (AAFCUs)	12	**27**

Tentatively Selected Plan Design

East Rockaway to Rockaway- Jamaica Bay Reformulation Study Optimization:

- ✓ No change to acreage, cost updated below. In addition to the tidal fringe marsh of Alt. 1, Alt. 2 maximizes marsh habitat protection and creates macroinvertebrate habitat by creating offshore rubble mounds.
- ✓ The grounded barge at this site shows that offshore structures are capable of protecting the marshes and creating beneficial habitat for macroinvertebrates. Three rock mounds are needed to protect the point from the ongoing erosion. The rocks will be placed randomly within a trapezoidal shape to create interstitial spaces of various sizes that can be used as refugia by various species.
- ✓ This Alt. protects the existing 1.2 acres of marsh, but also restores an additional 1.9 acres of low marsh, 0.7 acres of high marsh, 2.5 acres of meadow, and 2.4 acres of maritime forest to prevent the spread of invasive species into the aquatic habitat.
- ✓ Soil excavated to regrade for the marsh creation will be used for onsite landscaping.
- ✓ Reformulation Study would recommend a composite sea wall if the perimeter plan was the TSP. If this measure was implemented, the cost would be borne by the local sponsor.

Significance of Restoration in the Region and at the Site

- ✓ One of two last major parcels of contiguous wildlife habitat in NY Bigh
- ✓ Major stopover point in the Atlantic Flyway for over 300 species of migratory shorebirds
- ✓ Valuable nursery and feeding area for many finfish species
- ✓ Designated by NYC as a Special Natural Waterfront Area (1999)
- ✓ Recognized as Critical Environmental Area by NYS Dept of Environmental Conservation
- ✓ Singled out by USFWS as highly productive habitat (1999)
- ✓ USEPA's CCMP identified Jamaica Bay as only one of two sites in the HRE area targeted for special efforts to protect and restore ecological integrity and values.

Selected Alternative Map
Brant Point, Jamaica Bay, New York

Source: NYS GIS Clearinghouse 2014 Orthoimagery

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYC Environmental Protection

NYC Parks

NEW YORK STATE OF OPPORTUNITY. Parks, Recreation and Historic Preservation

HRE- Jamaica Bay- Bayswater State Park

Jamaica Bay Planning Region

★ Bayswater State Park

• Other Jamaica Bay Restoration Recommendations

Baseline Conditions and Water Resource Problems

- **Loss of marsh habitat** – Jamaica Bay has lost over 2000 acres in the last century, a 75% reduction from historic levels.
- Site contains a mature native oak forest, rare for this area.
- Site is **dominated by non-native, invasive plant species**, which is a threat to existing desirable wetland habitats
- Potential loss of habitat due to **deteriorating seawall**
- Severe **shoreline erosion**
- **Fill and hardening of shorelines**

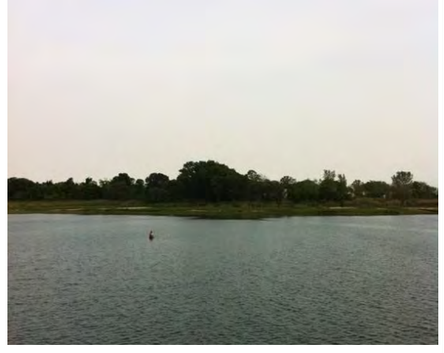
Restoration Opportunities/Measures

- Habitat Improvements
- Wetland creation/preservation
- Invasive species removal/native species plantings
- Bank/shoreline stabilization

Jamaica Bay, Marine Park and Plumb Beach Feasibility Study History

- ✓ Study Resolution in 1990, Recon Report in 1994, FCSA with NYCDEP in 1996
- ✓ 39 restoration opportunities identified in the "Jamaica Bay: Navigational Channels and Shoreline Environmental Surveys" Report in 1997
- ✓ 8 restoration sites recommended and approved at the Alternative Formulation Briefing (AFB) December 2010 and included in the Nov 2010 Preliminary Draft Feasibility Report/Environmental Assessment.
- ✓ Sandy 113-2: Interim Report 2 identified study to be evaluated for CSRM
- ✓ Restoration opportunities considered in the East Rockaway to Rockaway - Jamaica Bay Reformulation Study; using Evaluation of Planned Wetlands to characterize functionality at each site (2015)
- ✓ Designs were not optimized and were integrated in the "perimeter plan" alternative considered in the Reformulation Study
- ✓ Storm Surge Barrier selected as the coastal flooding measure for interior communities within Jamaica Bay as part of the Reformulation TSP
- ✓ Restoration recommended in HRE Feasibility Study (per strategy approved by Director of Civil Works, Aug 2014)
- ✓ Updated MII Micro-Computer Aided Cost Estimating System (MCASES) costs

Alternative	1	2	3
Description	✓ Removes invasive dominated areas by regrading and creating a tidal channel of approximately 0.21 acres and associated salt marsh of 2.0 acres low marsh and 0.4 acres high marsh. All existing areas of marsh or native species will be preserved to the extent possible. ✓ Creation of ~ 0.7 acres of beach/dune ✓ Through selective removal of invasive/non-native vegetation, the mature woodland stands will be restored and replanted with native vegetation to prevent the spread of invasive species into the aquatic habitat and to provide a protective buffer for the marsh system. ✓ Training structures will be created on the banks at the mouth of the creek to stabilize the tidal creek and protect the existing beach and salt marsh habitat.	**Recommended at AFB 2010 and Approved:** ✓ Similar to Alt. 1, but with the addition of creating a tidal pool to the west of the creek/marsh complex. The tidal pool will cover approximately 0.6 acres to allow the creation of an additional 0.5 acres of low marsh. ✓ This area currently includes small patches of salt marsh and switchgrass, as well as some mowed areas that are mugwort-dominated. ✓ Hard structures will cover approximately 0.6 acres including armoring of the point and training structures at the mouth of the channel to protect the area from erosion.	✓ Integrates the tidal creek and marsh system of Alt. 1, but adds in the creation of a T-groin system and coastal dune restoration. ✓ The tidal creek area of restoration is exactly the same as in Alt. 1 and 2. The T-groin system would allow further inundation of tides creating 0.4 acres of shallow water and creating 0.5 acres of low marsh. ✓ Approximately 1.0 acre of dunes/ beach would also be constructed behind the groins. Low/high marsh will be planted in between rocks where tidal inundation and wave climate permit habitat survival.
Average Annual Functional Capacity Units (AAFCUs)	41	76	69



Tentatively Selected Plan Design

East Rockaway to Rockaway- Jamaica Bay Reformulation Study Optimization:

✓ Based on recent field observations, no optimization is recommended.

Significance of Restoration in the Region and at the Site

- ✓One of two last major parcels of contiguous wildlife habitat in NY Bight
- ✓Major stopover point in the Atlantic Flyway for over 300 species of migratory shorebirds
- ✓Valuable nursery and feeding area for many finfish species
- ✓Designated by NYC as a Special Natural Waterfront Area (1999)
- ✓Recognized as Critical Environmental Area by NYS Dept of Environmental Conservation
- ✓Singled out by USFWS as highly productive habitat (1999)
- ✓USEPA's CCMP identified Jamaica Bay as only one of two sites in the HRE area targeted for special efforts to protect and restore ecological integrity and values.

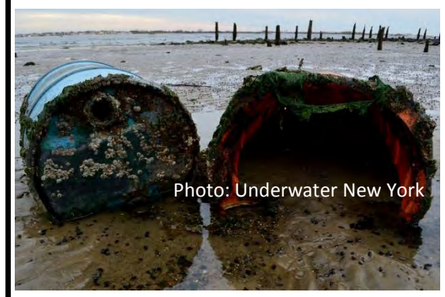
NEW YORK STATE OF OPPORTUNITY. Parks, Recreation and Historic Preservation

HRE- Jamaica Bay- Dead Horse Bay

Jamaica Bay Planning Region

★ Dead Horse Bay

● Other Jamaica Bay Restoration Recommendations



Baseline Conditions and Water Resource Problems

- **Loss of marsh habitat –** Jamaica Bay has lost over 2000 acres in the last century, a 75% reduction from historic levels.
- Site is **dominated by non-native, invasive plant species**, which is a threat to existing desirable wetland habitats
- **Poor benthic habitat**
- **Poor tidal flushing and circulation**
- **Fill and hardening of shorelines**
- **Landfill leachate, CSO and waste water discharges**
- **Erosion and exposure of the solid waste landfill**
- **Steep bathymetry** of the southwest and southern shorelines

Restoration Opportunities/Measures

- Habitat improvements
- Wetland creation
- Dune creation in high energy southern parcel
- Invasive species removal/native species plantings
- Channel modification/realignment
- Bank and landfill stabilization
- Shoreline protection stragegies
- Stream geomorphology restoration
- Secondary benefits of water quality improvements
- Sediment load reduction
- Public education/access
- Beneficially reuse the excavated fill onsite

Jamaica Bay, Marine Park and Plumb Beach Feasibility Study History

- ✓ Study Resolution in 1990, Recon Report in 1994, FCSA with NYCDEP in 1996
- ✓ 39 restoration opportunities identified in the "Jamaica Bay: Navigational Channels and Shoreline Environmental Surveys" Report in 1997
- ✓ 8 restoration sites recommended and approved at the Alternative Formulation Briefing (AFB) December 2010 and included in the Nov 2010 Preliminary Draft Feasibility Report/Environmental Assessment.
- ✓ Sandy 113-2: Interim Report 2 identified study to be evaluated for CSRM
- ✓ Restoration opportunities considered in the East Rockaway to Rockaway - Jamaica Bay Reformulation Study; using Evaluation of Planned Wetlands to characterize functionality at each site (2015)
- ✓ Designs were not optimized and were integrated in the "perimeter plan" alternative considered in the Reformulation Study
- ✓ Storm Surge Barrier selected as the coastal flooding measure for interior communities within Jamaica Bay as part of the Reformulation TSP
- ✓ Restoration recommended in HRE Feasibility Study (per strategy approved by Director of Civil Works, Aug 2014)
- ✓ Updated MII Micro-Computer Aided Cost Estimating System (MCASES) costs

Alternative	1	**2**	**3**	**4**
Description	✓ Replace existing *Phragmites* stands in the northern portion of the site with fringe marsh system and native maritime forest species. ✓ The eroding shoreline and landfill in the southern portion of the site will be covered with clean fill and sand from the northern portion of the site. The sand will be used to create dunes along the edge of the water. ✓ Creation of dunes on ~ 31 acres, restore 10 acres of low marsh, and 3 acres of high marsh. Additionally, 87 acres of maritime forest will be restored to act as a protective buffer and provide habitat for the species that utilize the area.	✓ Alt. 2 includes all the elements of Alternative 1. ✓ Removal of 31 acres of the landfill closest to the water which covers the old existing marsh. ✓ Geotubes will be used to stabilize the remaining landfill and to prevent future erosion along the southern bank.	✓ Alt. 3 maximizes marsh habitat by creating a tidal channel in the northern portion of the site and regrading this existing upland *Phragmites* stand to salt marsh elevations. ✓ A tidal channel of ~ 4 acres will be built in the northern parcel and ~31 acres of low marsh and 7 acres of high marsh will be restored. ✓ Clean fill and sand will be beneficially reused to create dunes, and to restore the maritime forest. ✓ Creation of ~ 28 acres of dunes on the site and consequently restores over 60 acres of maritime forest. ~9 acres of existing beach will be preserved in the north. ✓ Stabilize the tidal creek and protect the existing beach habitat, training structures will be created on the banks at the mouth of the creek.	**Recommended at AFB 2010 and Approved:** ✓ Alt. 4 includes all the elements of Alt. 3, and also includes removal of 31 acres of landfill in the southern portion. ✓ The area will also be stabilized with geotubes beneath the dunes to avoid erosion of the site back into the remaining landfill. ✓ Materials will be beneficially reused on site to create dunes along the edge of the water and to restore a buffer to the maritime forest. ✓ This alt. will remove landfill and create dunes on ~27.7 acres of the site and will restore 61 acres of maritime forest on the southern parcel of the project area. Roughly 9 acres of existing beach will be preserved in the north. ✓ To stabilize the tidal creek and protect the existing beach habitat, training structures will be created on the banks at the mouth of the creek.
Average Annual Functional Capacity Units (AAFCUs)	116	166	334	**413**

Tentatively Selected Plan Design

East Rockaway to Rockaway- Jamaica Bay Reformulation Study

✓ Based on recent field observations, no optimization is recommended.

Significance of Restoration in the Region and at the Site

- ✓One of two last major parcels of contiguous wildlife habitat in NY Bight
- ✓Major stopover point in the Atlantic Flyway for over 300 species of migratory shorebirds
- ✓Valuable nursery and feeding area for many finfish species
- ✓Designated by NYC as a Special Natural Waterfront Area (1999)
- ✓Recognized as Critical Environmental Area by NYS Dept of Environmental Conservation
- ✓Singled out by USFWS as highly productive habitat (1999)
- ✓USEPA's CCMP identified Jamaica Bay as only one of two sites in the HRE area targeted for special efforts to protect and restore ecological integrity and values.

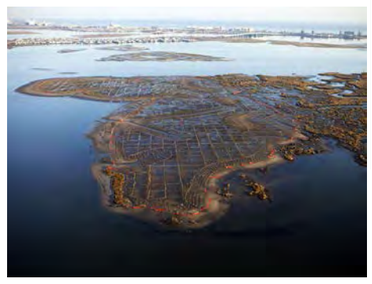
NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYC Environmental Protection

NYC Parks

HRE – JAMAICA BAY MARSH ISLANDS

Jamaica Bay Planning Region



Baseline Conditions and Water Resource Problems

- Marsh Islands located in the USDOI National Park Service Gateway National Recreation Area
- More than 1,400 acres of tidal salt marsh have been lost from the marsh islands since 1924. Marsh island loss has been estimated at 47 acres/year.

Leveraging Lessons Learned and Plan Formulation

- Builds upon the success of construction of Elders East (2007- 43 acres, CYD), Elders West (2010- 40 acres, CYD), Yellow Bar (2012- 47 acres, 375,000 CYD), Black Wall (2012- 20 acres, 155,000 CYD) and Rulers Bar (2012- 10 acres, 95,000 CYD)
- Jamaica Bay Integrated Ecosystem Restoration Report and EA (2006), Engineering Documentation Report for Yellow Bar (2011), Structures of Coastal Resilience (2015)
- Ecological output for a given acre of marsh island is constant while the cost is dependent upon existing condition depth and the cost of the sand material and material transport.
- Size of the marsh island is influenced by the amount of contiguous and sustainable acreage within the 1974 regulatory footprint within a given range of elevations. The range of acreage at each marsh island has a minimum area driven by cost constraints of mobilization and demobilization, and maximum area described by the existing depth (contour) at which sand placement becomes more expensive and less cost-effective.
- ~50% Subsidence of sand following placement
- Islands selected based on constructability, bathymetry, hydrodynamics
- Past construction/monitoring indicated success of hummock replanting, tri-plugs, optimal spacing (18-in on center), seeding
- Islands selected based on minimum sand volumes for maximum wetland acreage and sustainability
- Marsh islands provide secondary coastal storm risk management benefits

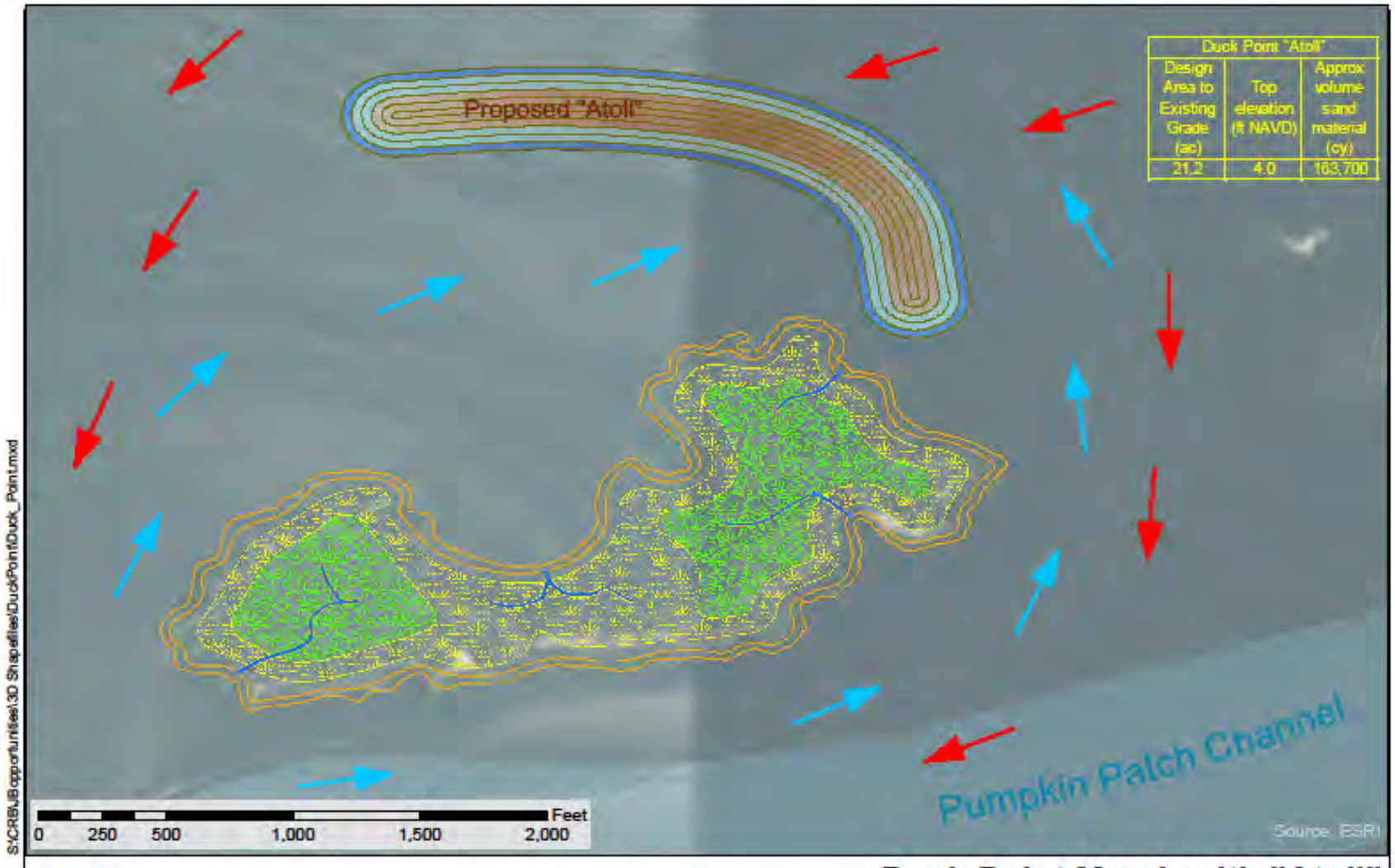
Site	Elders Center	Pumpkin Patch East	Pumpkin Patch West	Duck Point with Atoll Terrace	Stony Creek
CYD Sand	236,410	432,790	206,810	259,800	151,360
Total Marsh Created (ac)	16	35.3	16.3	27.9	51
Description	✓ Restoration of 8.5 aces low marsh and 7.5 acres of high marsh. ✓ Restores an area largely within the 1974 footprint of Elders West and connects two prior restorations ✓ Improves the sustainability of the Elders Marsh complex ✓ Serves as a potential area for natural sediment deposition and accretion.	✓ Restoration of 18.5 acres of low marsh and 16.8 acres of high marsh, returning this portion of Pumpkin Patch Marsh to the approximate dimensions of the 1974 footprint. ✓ Increases land above MTL (-0.27 ft NAVD88) from existing condition area of less than 5 acres to 35.3 acres.	✓ Restoration of 10.8 acres of low marsh and 5.5 acres of high marsh, returning this portion of Pumpkin Patch Marsh to the approximate dimensions of the 1974 footprint. ✓ As with the other recommended restorations, continued restoration within this northeast portion of Jamaica Bay will reestablish a system of marsh islands, resulting in reinforced sustainability for all individual islands. ✓ Increases land above MTL (-0.27 ft NAVD88) from existing condition area of less 4.5 acres to 20.2 acres	✓ Restoration of 15.4 acres of low marsh and 12.5 acres of high marsh ✓ Restores the “core’ of this marsh to approximate 1974 dimensions ✓ Highly efficient restoration (cubic yards: marsh acres ratio) owing to the high existing condition elevations found within the 1974 footprint ✓ Atoll terrace design, based on Structures of Costal Resilience research, seeks to harness natural processes of sediment transport to promote sediment accretion and sustainability.	✓ Restoration of 26 acres of low marsh and 25.3 acres of high marsh ✓ Highly efficient restoration (cubic yards: marsh acres ratio) owing to the high existing condition elevations found within the 1974 footprint. ✓ The 1974 footprint of Stony Creek Marsh reveals a land area of approx. 85.0 acres. This restoration effort may be appreciably enlarged without a significant decrease in cubic yards: marsh acres efficiency. ✓ Pending further investigation of existing conditions, certain areas may not be restored or disturbed, thereby resulting in greater efficiency

Significance of Restoration in the Region and at the Site

- ✓ Surrounded by heavily urbanized and densely populated areas of Brooklyn and Queens, including JFK International Airport, there is little remaining habitat suitable for avian and marine wildlife in the region.
- ✓ The rapidly eroding marsh islands of Jamaica Bay are visited by more than 300 bird species annually, providing important nesting habitat to many of them. Wetlands within these islands are home to shellfish, invertebrates and more than 4 dozen fish species.
- ✓ Continued erosion of the marsh islands further reduces the quality of the existing available habitat.
- ✓ Jamaica Bay has been designated by the US Fish & Wildlife Service as a Significant Habitat Complex of the New York Bight Watershed.
- ✓ The enhancement of the marsh islands could help to reduce the fetch distance across Jamaica Bay, thereby potentially reducing such damage to the surrounding neighborhoods as occurred during catastrophic hurricane Sandy.

Tentatively Selected Plan Design

Tentatively Selected Plan Design



NYC Environmental Protection

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Tentatively Selected Plan Designs

Tentatively Selected Plan Design

Stony Creek Marsh			
Design Area to Existing Grade (ac)	Low Marsh (ac)	High Marsh (ac)	Total Marsh Created (ac)
69.6	26.0	25.3	51.3

S:\CRB\Opportunities\3D Shapefiles\Stony Creek\Stony_Creek.mxd

Legend

- Proposed Tidal Channel
- Proposed Low Marsh
- Proposed High Marsh
- Proposed Scrub-shrub

0 150 300 600 900 1,200 Feet

Stony Point Marsh

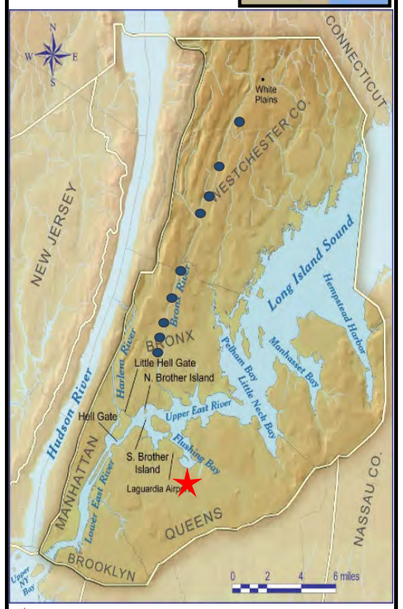
Jamaica Bay, New York

NYC Environmental Protection

NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation

HRE – Flushing Creek

**Harlem River,
East River,
Long Island Sound
Planning Region**



★ Flushing Creek
● Restoration Sites Recommended in Planning Region

Baseline Conditions and Water Resource Problems

- Study area included Flushing Bay and Creek and the 20,577 ac watershed including ~16,700 ac of highly-urbanized densely-developed land.
- Prior to 1939 World's Fair, Flushing Creek was a sinuous tidal creek that supported an extensive tidal wetland system.
- Development of World's Fair site included **significant straightening of the stream, filling in wetlands**, and reconfiguring headwaters of Flushing Creek.
- Remaining **wetlands are significantly degraded** and are limited to fringe areas.
- Banks of Flushing Creek are organically rich muck **severely eroding** into the creek at low tide.
- **Shorelines and upland habitat are dominated by disturbed invasive species**.
- **Benthic communities are dominated by common pollution-tolerant marine annelids.**
- **Fisheries resources are limited in species diversity and abundance.**
- **Poor hydrologic connection, water circulation and tidal flushing** between Flushing Bay, Flushing Creek and Meadow Lake. **Poor water quality, hypoxic/anoxic conditions and odor problems** from exposed mudflats will be addressed by complementary NYCDEP Long Term Control Plan (CSO abatement) measures and environmental dredging activities.

Restoration Opportunities/Measures

- Habitat improvement
- Wetland creation
- Invasive species removal and native plantings
- Channel modification/realignment to improve flushing and erosion
- Bank stabilization
- Stream geomorphology restoration
- Improve suitability of bottom substrate for benthic community
- Secondary benefits of water quality improvements
- Sediment load reduction

Alternative	A	B	C
Description	✓ Open Water (4.84 ac): Further narrow creek bank to improve tidal flow, mixing from CSO outfalls, and flushing of sediments from upper Flushing Creek. ✓ Mudflat (1.25 ac): Eliminate or minimize mudflats by raising the elevation of low salt marsh surface and use a coir log or other tidal bank revetment to protect the edge from erosion. ✓ Low Marsh (4.01 ac): Re-grade existing common reed-dominated areas to create low salt marsh through planting saltmarsh cordgrass. ✓ High Marsh (0.41 ac): Establish transitional salt shrub/high marsh area between low marsh and upland maritime forest. ✓ Maritime Forest (6.85 ac): Restore existing upland forest area to a Maritime forest Community. ✓ Stormwater infiltration features would be placed to collect runoff from adjacent roads and areas to improve stormwater quality and sustainability of the wetland.	✓ Open Water (5.32 ac): Restoration of tidal creek by narrowing Flushing Creek to promote the flushing of sediments and optimize water quality by improved circulation. ✓ Mudflat (1.16 ac): Re-grade tidal creek edges to establish mudflats with a target elevation between Mean Low Water and Mean Tide Line ✓ Low Marsh (3.67 ac): Re-grade existing common reed-dominated areas to create low salt marsh consisting of saltmarsh cordgrass. ✓ High Marsh (0.44 ac): Establish transitional high marsh/shrub swamp area between low marsh and upland maritime forest. ✓ Maritime Forest (6.77 ac): Restore existing upland forest area to a Maritime forest Community.	✓ Open Water (8.38 ac): No habitat restoration within the tidal creek. ✓ Lower Marsh (2.42 ac): Re-grade existing common reed-dominated areas to create low salt marsh consisting of saltmarsh cordgrass. ✓ Existing Upland (6.56 ac): Preserve existing upland forest with no re-grading or replanting proposed.

Alternatives C is the "Best Buy Plan"

Flushing Bay and Creek Ecosystem Restoration Feasibility Study History

- ✓ Reconnaissance Report (1996) demonstrated Federal interest in ecosystem restoration and related water quality improvements.
- ✓ The Preliminary Draft Feasibility Report prepared November 2007 evaluated 1) tidal and freshwater wetland restoration; 2) dredging in Flushing Bay and Creek; 3) partial or total removal of breakwater at La Guardia Airport; 4) reorientation of Federal Navigation Channel; and 5) Bank Stabilization, Site Cleanup and Debris Removal.
- ✓ A total of 17 Alternatives were evaluated. Cost Effectiveness/ Incremental Cost Analysis "Best Buy Plan" included the recommendation of 4.4 ac of riparian habitat, 5 ac of wetland habitat (both banks).
- ✓ NYCDEP requested coordination between restoration and NYCDEP's Long Term Control Plan (CSO Abatement) and dredging efforts in creek. Draft recommendation was optimized as a result of additional sampling and 3 additional alternatives were prepared.

Tentatively Selected Plan Design

Significance of Restoration in the Region and at the Site

- ✓Proposed restoration improves habitat for fish, birds and wildlife communities.
- ✓Restoration provides sediment stabilization, will reduce sediment scouring and improve water quality for fish propagation.

- ✓T&E species, critical habitat, ecological significance: [search standard databases IPAC, FWS NMFS..)
- ✓ Advancement of TECs and Regional Goals? (calculate contribution to goals)

- ✓Habitats will provide secondary benefits of flood control to a flood prone area.

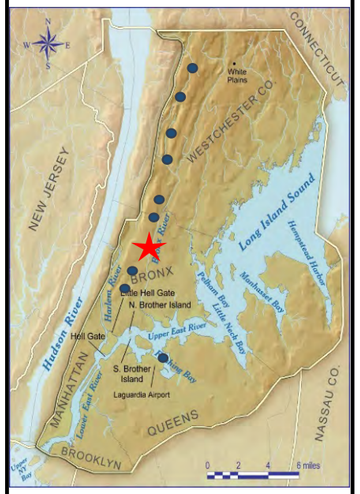
Leveraging with Partner Programs

- ✓Restoration coordinated and sequenced following the completion of NYCDEP water quality improvements resulting from their Long Term Control Plan and dredging and capping of Flushing Creek and Bay.
- ✓Habitat Sustainability expected from ongoing and continued operation of the Flushing Creek CSO tank.
- ✓Restoration will complement the NYC Mayor's Flushing West Neighborhood Plan as part of the *Housing New York* program and the Flushing West Brownfield Opportunity Area.

NYC Environmental Protection

HRE- Stone Mill Dam

Harlem River, East River, Long Island Sound Planning Region



★ Stone Mill Dam

● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- The Stone Mill Dam Site (also called Snuff Mill Dam) is situated in a steep valley within the New York Botanical Garden (NYBG). The valley side slopes are over 40-percent grade with numerous rock outcrops. The presence of a dam divides the site into two hydrologic regimes: a slow-flowing waterbody upstream of the dam and a swift-flowing waterbody downstream of the dam.
- A distinct **sewage odor** was encountered downwind of the dam. NYBG staff noted that samples from the River often contained **high levels of coliform bacteria**.
- Wetlands at the site consist only of a few, very small (less than five (<5) square feet), discontinuous pockets of emergent vegetation adjacent to the shoreline.
- Uplands consist of wooded slopes with large rock outcrops.
- Above the dam, the river is ponded and forms a large pool that is over four (4)-feet deep; NYBG personnel indicated that the pool contains a **thick sediment deposit**.
- Below the dam, swifter flows occur and the river bottom consists of cobbles and boulders. Pools in excess of four (4) feet occur below the dam. Most of the shoreline and banks consist of bedrock and boulders.
- At the southeast limits of the project, a stone and masonry retaining wall that separates a paved walkway from the shoreline has partially collapsed.

Restoration Opportunities/Measures

- Invasive species removal and replacement with native plantings
- Installation of fish ladder and concomitant attractors/habitat improvements
- Installation of native plantings area
- Bed Restoration

Alternative	A	B	C
Description	✓ Installation of a fish ladder to link the slow-flowing pool upstream of the dam and the faster-flowing channel downstream of the dam. ✓ Placement of clay-pipe fish attractors at both the upstream and downstream ends of the fish ladder to function as refuge habitats for fish. ✓ Planting of native vegetation along the east bank of the river, abutting the fish ladder (0.03 ac). ✓ Removal of invasive vegetation from a small area along the west bank, immediately downstream of the dam, and replacement with native vegetation.	✓ Installation of a fish ladder to link the slow-flowing pool upstream of the dam and the faster-flowing channel downstream of the dam. ✓ Planting of native vegetation along the east bank of the river, abutting the fish ladder (0.03 ac).	✓ River bed excavation and material replacement upstream of the dam (0.09 ac).

Significance of Restoration in the Region and at the Site

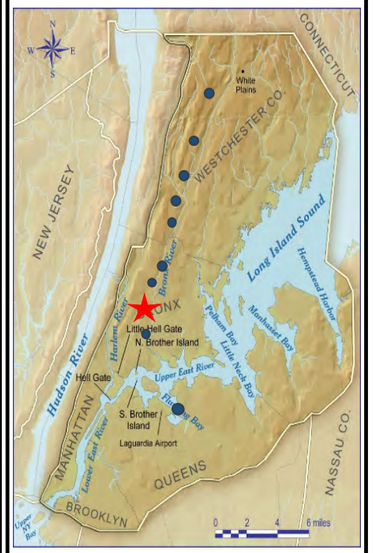
- ✓ Fulfills HRE mission by promoting Target Ecosystem Characteristics by increasing /improving, tributary connections, shoreline and shallows, and habitats for fish, crab and lobsters.
- ✓ Improved fish connectivity- providing access for anadromous species
- ✓ Stone Mill Dam fish ladder is a critical component of fish passage projects along the Bronx River which will complement downstream fish ladder projects in order to expand fish passage and provide additional upstream habitat for anadromous fish
- ✓ Reduction of invasive plant species

Tentatively Selected Plan Design

NYC Parks

HRE- Bronx Zoo and Dam

Harlem River, East River, Long Island Sound Planning Region



★ Bronx Zoo and Dam
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- The Bronx Zoo and Dam site is generally flat and occupied with roadways, parking lots, and the installations of the Bronx Zoo.
- River flow is affected by a dam system consisting of two dams abreast of each other separated by a mid-stream island.
- A distinct **sewage odor** was encountered upon entering the water (downstream of East Fordham Road.)
- Upstream of the dams, the majority of the observed wetlands are narrow strips of emergent vegetation along the banks of the river. However, in the northwest corner, an emergent wetland-mudflat complex has formed. In the southeastern portion of the site, a small stream drains into a flat, low area, resulting in a small forested/scrub/shrub wetland.
- Downstream of the dam, **wetlands are very limited** and consist of only small, **discontinuous pockets of emergent vegetation** adjacent to the shoreline.
- Upstream of the dams, the uplands consist of lawns and a thin wooded strip along the shoreline. Downstream of the dam, the upland areas are comprised of deciduous woodlands. On the west bank, the zoo's amenities limit the width of these woods to fewer than 20 feet. In contrast, the woodlands extend for approximately 150 feet on the east side.
- In the northernmost portion of the site, the river is broader (~100-feet wide) and water flows more slowly than other typical channel sections, with depth over five (5) feet at some locations. Just upstream of the dam, an upland island vegetated mostly by **invasive species** splits the river into two channels that rejoin between the two dams. The west bank of the upstream portion of the river is mostly armored and directly adjacent to a zoo enclosure; **the east bank is fairly steep with lightly vegetated and bare areas**. Downstream of the dams, the narrower channel has a moderate flow with a rocky bottom and bank.
- Stream Visual Assessment Protocol (SVAP) revealed score of 3.9 for overall **POOR water quality** (< 6 considered Poor)

Restoration Opportunities/Measures

- Invasive species removal with native species plantings
- Channel modification with in stream structures
- Debris removal
- Forested scrub/shrub wetland creation
- Emergent wetland creation
- Select native plantings
- Shoreline softening
- Sediment load reduction
- Fish ladder installation
- Public access

Alternative	A	B	C
Description	✓ Removal of invasive vegetation and native planting (0.27 ac) along both banks, on the upland island upstream of the dams, and additional location downstream of the dams. ✓ Channel modification (~0.35 ac): river bottom excavation and bed material replacement between the island and the west bank . ✓ Bank softening of the west side (415 lf) by select removal of the existing armor and native planting. ✓ Installation of a fish ladder (0.04 ac) to link the excavated channel area upstream of the dams to the river channel below the dams . ✓ Creation of emergent wetlands (0.99 ac) along both banks upstream of the dams, and along the west bank downstream of the dams. ✓ Creation of forested wetlands (0.29 ac) in two locations upstream of the dams, along the east bank and on the island . ✓ Debris removal between the dams (0.09 ac). ✓ Installation of a sediment trap to reduce sediment loads reaching the river. ✓ Improved public access.	✓ Removal of invasive vegetation and native planting (0.56 ac) along both banks, on the upland island upstream of the dams, and additional location downstream of the dams. ✓ Channel modification (~0.35 ac): river bottom excavation and bed material replacement between the island and the west bank . ✓ Bank softening of the west side (415 lf) by select removal of the existing armor and native planting. ✓ Installation of a fish ladder (0.04 ac) to link the excavated channel area upstream of the dams to the river channel below the dams . ✓ Creation of emergent wetlands (0.70 ac) along both banks upstream of the dams, and along the west bank downstream of the dams. ✓ Debris removal between the dams (0.09 ac). ✓ Installation of a sediment trap to reduce sediment loads reaching the river. ✓ Improved public access.	✓ Removal of invasive vegetation and native planting (0.56 ac) along both banks, on the upland island upstream of the dams, and additional location downstream of the dams. ✓ Installation of a fish ladder (0.04 ac) to link the excavated channel area upstream of the dams to the river channel below the dams . ✓ Creation of emergent wetlands (0.54 ac) along both banks upstream of the dams, and along the west bank downstream of the dams. ✓ Debris removal between the dams (0.09 ac). ✓ Installation of a sediment trap to reduce sediment loads reaching the river. ✓ Improved public access.

Alternatives A, B and C were all "Best Buy Plans", Alternative most cost-effective; however, Alternative A could be justified

Significance of Restoration in the Region and at the Site

✓ Improved aquatic habitat and water quality

✓ Improved flow regime

✓ Created wetlands provide habitats for migratory birds

✓ Created forested wetlands may provide potential habitat and roosting resources for endangered bat species, if present

✓ Improved fish connectivity- providing access for anadromous species

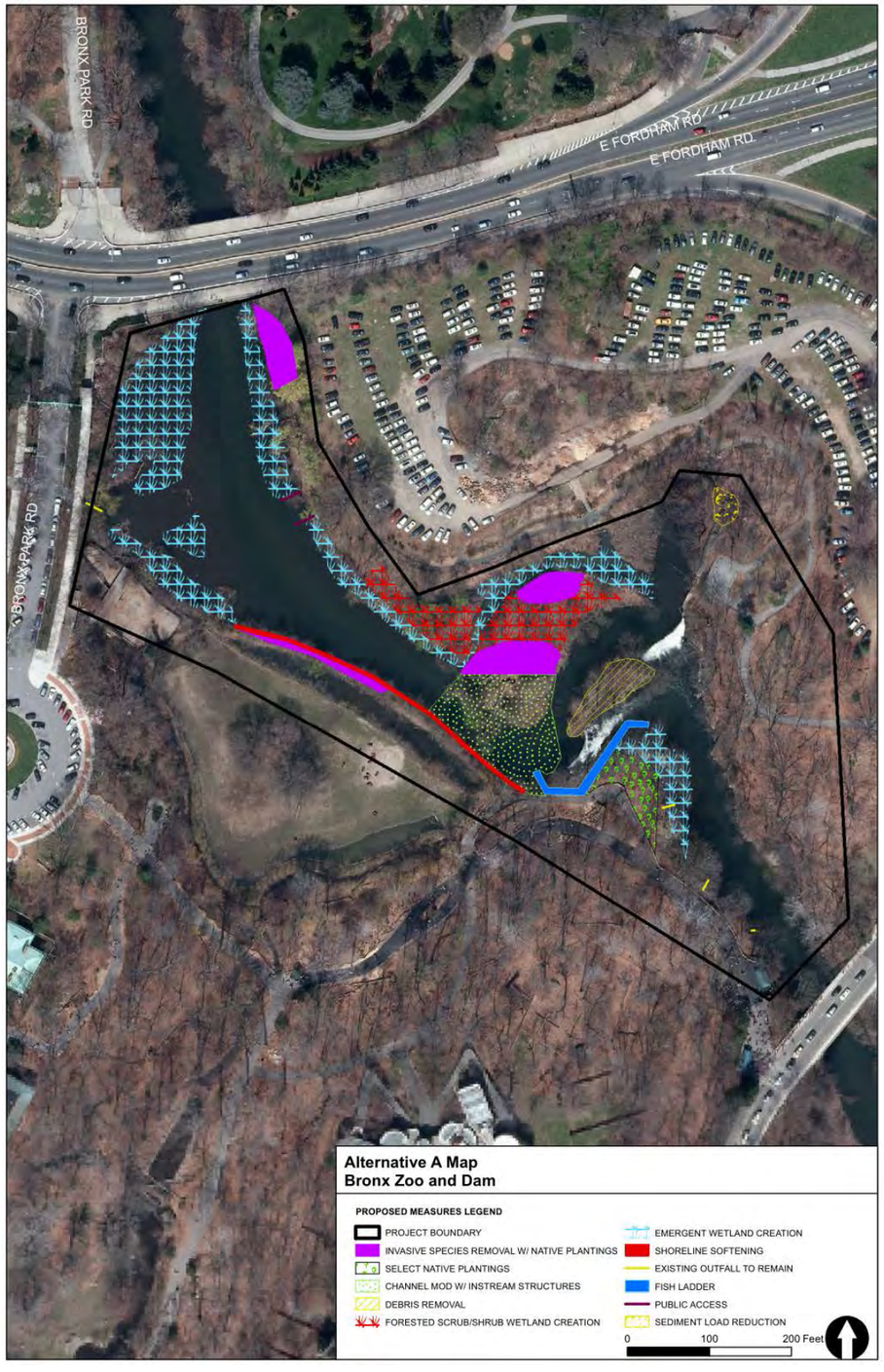
✓ Increased native biodiversity through wetland creation and targeted removals of invasive plant species

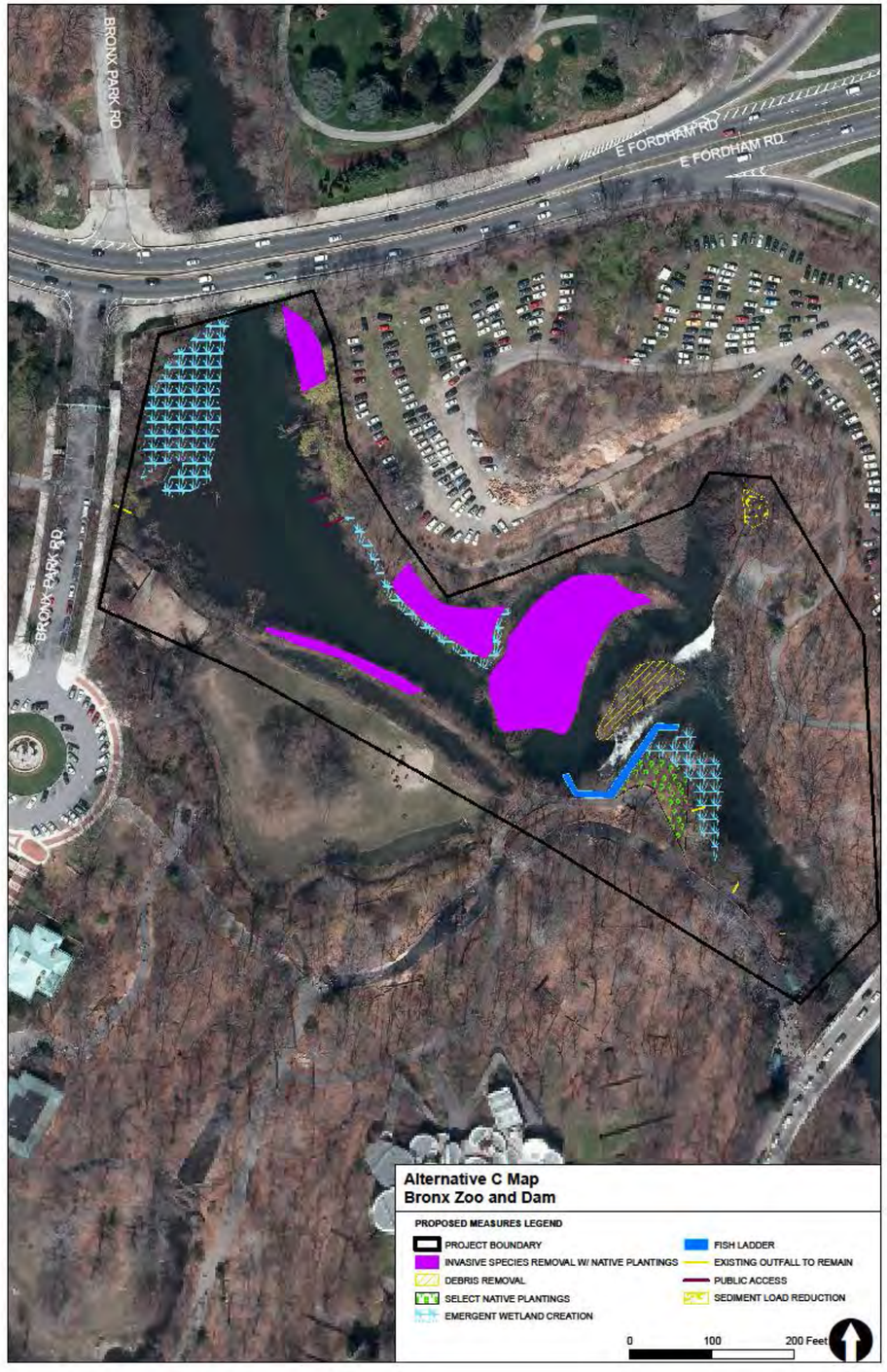
✓ Secondary benefit of increased flood control value through wetland creation

✓ Alternatives Improve water quality from score of 3.9 to 5.3 (Alternative A), 5.3 (Alternative B) and 4.9 (Alternative C)

✓ Improved public access

Tentatively Selected Plan Design



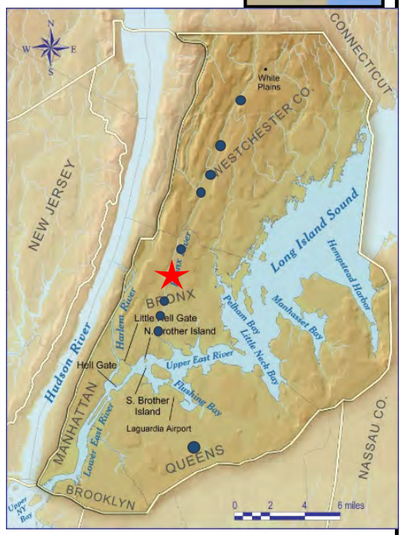


NYC Environmental Protection

NYC Parks

HRE- Shoelace Park North and South

**Harlem River,
East River,
Long Island Sound
Planning Region**



★ Shoelace Park
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- Shoelace Park is surrounded by dense, urban development. The west side of the site consists largely of the Bronx River Parkway's roadway embankment.
- Site characterized by **over-widened channel** with **steep vertical banks and eroded shoreline**.
- The eastern side of the site is parkland, predominantly consisting of maintained lawns that rise on a slope of notable steepness (~25- to 30-% grade) to 60 feet in elevation from the River channel.
- Banks are sparsely vegetated and wetlands are limited to very narrow, dispersed strips of emergent vegetation. The wetlands and large portions of the upland riverine corridor provide **low quality upland buffer** and are **dominated by invasive species**.
- Much of the uplands consist of Park lawns with pockets of deciduous woodlots in the extreme north and south sections.
- The channel bottom is sandy and generally one to three feet deep with limited riffles and pools, **poor water quality** and **increased sediment load.**

Restoration Opportunities/Measures

- Habitat Improvement
- Wetland Creation
- Invasive species removal/native species plantings
- Channel modification/realignment
- Bank Stabilization
- Stream geomorphology restoration
- Secondary benefits of water quality improvements
- Sediment load reduction
- Public education/access

Alternative	A	B	C
Description	✓ Restoration of Bronx River reach to pre-industrialization conditions: realigns channel with natural meanders and restores large tracts of forested wetlands along the banks. ✓ Entire channel modification with instream structures (1.3 mi): restoration of natural pools, thalweg, riffle complexes, etc. - resulting in a substantial increase of aquatic habitat value. ✓ Bank stabilization with environmental engineering techniques that provide vegetation coverage along the banks (>1.1 mi on both sides). ✓ Select native plantings (>2.95 ac) would provide a wooded riparian corridor along the banks of the entire reach. The riparian woodlands and restored forested wetlands would provide habitat resources that are currently very limited in the Bronx urban environment and reduce nutrient inputs to the water. ✓ Sediment load reduction with bank stabilization and installation of rain gardens, bioretention basins, etc. ✓ Invasive removal and select native plantings (~3.5 ac). ✓ Public access to the river would be maintained.	✓ Entire channel modified with instream structures (1.3 mi): restoration of natural pools, thalweg, riffle complexes, etc. - resulting in a substantial increase of aquatic habitat value. ✓ Bank stabilization with environmental engineering techniques that provide vegetation coverage along the banks (>1 mi on both sides). ✓ Select native plantings would provide a wooded riparian corridor along the banks of the entire reach. ✓ Sediment load reduction with bank stabilization and installation of rain gardens, bioretention basins, etc. ✓ Invasive removal and select native plantings (~3.5 ac). ✓ Public access to the river would be maintained.	✓ Entire channel modified with instream structures (~1.2 mi): restoration of natural pools, thalweg, riffle complexes, etc. - resulting in a substantial increase of aquatic habitat value. ✓ Bank stabilization with environmental engineering techniques that provide vegetation coverage along the banks (>1.1 mi). ✓ Sediment load reduction with bank stabilization and installation of rain gardens, bioretention basins, etc. ✓ Invasive removal and select native plantings (3.5 ac). ✓ Public access to the river would be maintained.

Alternative A is the "Best Buy Plan"

Significance of Restoration in the Region and at the Site

- ✓ Leverages proposed NYCDEP and NYCDP&R improvements including sediment load reduction within lawn areas of the park, invasive species removal and select native plantings.
- ✓ Restoration would reduce nutrient inputs to the water.
- ✓ Habitats will provide secondary benefits of flood control to a flood prone area.
- ✓ Creation of wetland forest would restore a limited habitat resource in the Bronx. Large trees could be a potential roosting/habitat resource for protected bat species, if present.
- ✓ Fulfills HRE mission by promoting Target Ecosystem Characteristics by increasing /improving wetlands, public access, shoreline and shallows, and habitats for fish, crab and lobsters.
- ✓ Environmental Justice: Restoration provides benefits for significant underserved population
- ✓ NYCDEP Coordination with CSO Abatement Program

Tentatively Selected Plan Design

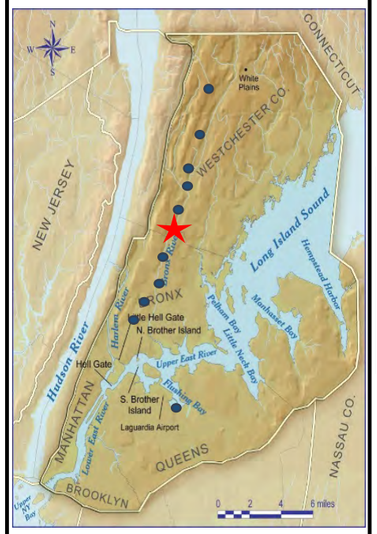
North

South (downstream)

NYC Parks

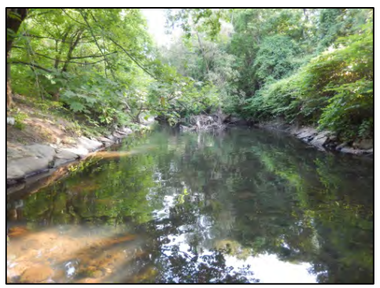
HRE- Muskrat Cove

Harlem River, East River, Long Island Sound Planning Region



★ Muskrat Cove

● Other Restoration Sites in Region



Baseline Conditions and Water Resource Problems

- The Muskrat Cove site is located just north of the Shoelace Park Site, flowing through a small valley located between a Metro North commuter rail line and the Bronx River Parkway, and intersected by Webster Avenue.
- The majority of the terrestrial area of the site consists of wooded slopes dominated by deciduous species.
- The **wetlands are limited** to very small isolated pockets with **sparse vegetation**.
- The uplands consist of maintained lawns associated with the park and Parkway right-of-way. Portions of the upland slopes were occupied by **dense stands of Japanese knotweed**. Paved walkways, retaining walls and other infrastructure fragment the woodlands.
- The river is shallow and widened with limited pools and riffles. The river bottom is sandy with large boulders.
- **Banks are armored** throughout much of the site, including almost the entire western shoreline; in some areas vegetation has grown up through cracks in the armor. In the northeastern half of the site, unarmored **banks are generally steep and some are undercut.**

Restoration Opportunities/Measures

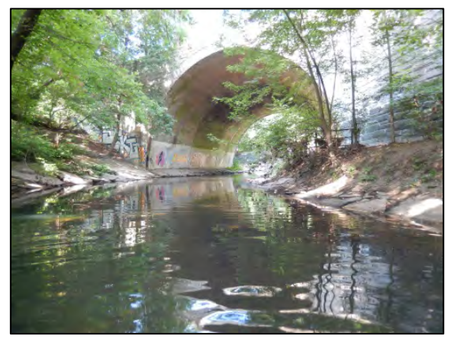
- Invasive species removal and replacement with native plantings
- Channel modification with instream structures
- Debris and snag removal
- Shoreline softening and bank stabilization
- Sediment basin installation

Alternative	A	B	C
Description	✓ Invasive species removal with native plantings on the upland slopes and along both banks throughout the length of the site (~0.49 ac). ✓ River bank stabilization between Nereid Avenue and the rail line bridge over the river, construction of vegetated cribwalls, softening using drilling with native plant materials (1,350 lf). ✓ Removal of debris and log jams from the river (1.24 ac). ✓ Channel modification along two segments (1.24 ac), excavation and replacement of bed material, and construction of instream cross vanes and J-hooks. ✓ Installation of a sediment basin at an existing outfall to reduce sediment loads reaching the river.	✓ Invasive species removal with native plantings on the upland slopes and along both banks throughout the length of the site (~0.49 ac). ✓ River bank stabilization between Nereid Avenue and the rail line bridge over the river, construction of vegetated cribwalls, softening using drilling with native plant materials (1,350 lf). ✓ Removal of debris and log jams from the river (1.24 ac). ✓ Channel modification along one segment, excavation and replacement of bed material, and instream structures (0.11 ac). ✓ Bed restoration along another segment (0.26 ac) with creation of a riffle-pool complex. Excavation and replacement of bed material (0.10 ac), and placement of cut and round boulders. ✓ Installation of a sediment basin at an existing outfall to reduce sediment loads reaching the river.	✓ Invasive species removal with native plantings on the upland slopes and along both banks throughout the length of the site (~0.49 ac). ✓ River bank stabilization between Nereid Avenue and the rail line bridge over the river (640 lf). ✓ Removal of debris and log jams from the river (1.24 ac). ✓ Bed restoration along another segment (0.26 ac) with creation of a riffle-pool complex. Excavation and replacement of bed material (0.10 ac), and placement of cut and round boulders. ✓ Installation of a sediment basin at an existing outfall to reduce sediment loads reaching the river.

Alternatives A and B are “Best Buy Plans” and Alternative A is the most cost effective.

Significance of Restoration in the Region and at the Site

- ✓ Fulfills HRE mission by promoting Target Ecosystem Characteristics by increasing /improving wetlands, public access, shoreline and shallows, and habitats for fish, crab and lobsters.
- ✓ Improvements designed to act in concert with future Parks Department activities.
- ✓ Improved aquatic habitat and water quality
- ✓ Improved flow regime
- ✓ Reduction of invasive plant species
- ✓ Due to the proximity of major arterial infrastructure (road and rail embankments), shorelines were engineered with excessive amounts of concrete. Restoration efforts were designed to retain structural integrity -yet provide some opportunities for vegetative growth.
- ✓ Park is the only natural resource in a dense urban environment, debris removal and other improvements will enhance the user’s experience.



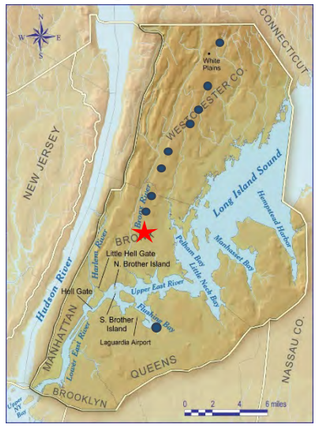
Tentatively Selected Plan Design

NYC Environmental Protection

NYC Parks

HRE- River Park/West Farm Rapids Park

Harlem River, East River, Long Island Sound Planning Region



★ Bronx River Park
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- River Park/West Farm Rapids Park is approximately 900 feet in length, bisected by 180th Street, located within a **densely populated, urban area**.
- Strong anthropogenic pressures: proximity of commercial and residential developments, roads, and urban parks with **limited and/or disturbed natural areas**.
- **Wetland resources are extremely limited**: few very small pockets and **sparsely vegetated wetlands**.
- Uplands consist of developed areas and an urban park, interspersed with a few small woodlots. The woodlots are **fragmented and offer limited, if any, habitat resources** to organisms not adapted for an urban environment. The site's uplands are **further impaired by garbage and stormwater runoff**.
- The river's benthic substrate largely consists of large pieces of concrete, bricks, other construction debris, and some boulders. Several large shaded pools occur. **Algae and anthropogenic debris** are present throughout the site. **Engineered Channel** with most of the **shoreline is armored**, consisting of vertical concrete debris/stone armoring or engineered walls constructed of tires and other man-made materials.
- Stream Visual Assessment Protocol (SVAP) revealed score of 4.3 for overall **POOR water quality** (< 6 considered Poor)

Restoration Opportunities/Measures

- Invasive species removal with native planting
- Debris removal
- Channel modifications with instream structures
- Select native plantings
- Emergent wetland creation
- Shoreline softening
- River bed restoration

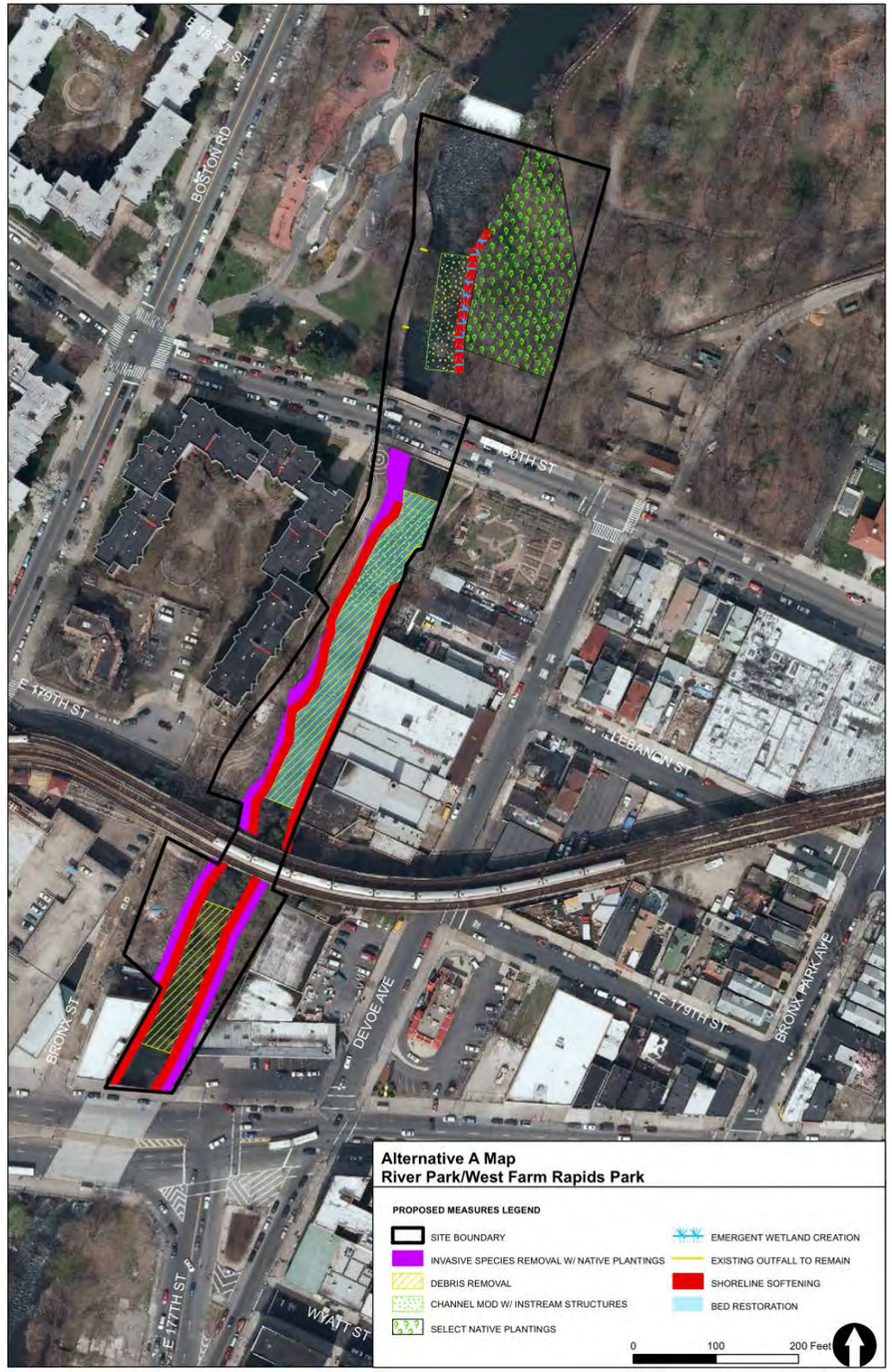
Alternative	A	B	C
Description	✓ Creation woodland area along the east side of the site with native upland trees and shrubs (~0.59 ac). ✓ Shoreline softening on the east and west channel banks (~0.31 ac) using boulders and facultative plants between the dam and 180th Street, stacked rock walls with brush layers along the east bank, and drilling with native plant materials along the west bank down stream of 180th Street. ✓ Creation of emergent wetlands (~0.04 ac). ✓ Channel modification between the dam and 180th Street (0.03 mi) with 3 instream cross vanes and 4 J-hooks. ✓ Removal of of invasive vegetation and replacement with native upland shrubs and herbaceous vegetation upslope from both banks of the river down stream of 180th Street (~0.20 ac). ✓ Removal of debris from river bottom downstream of 180th Street (0.52 ac along 0.07 mi stretch). ✓ Restoration of river bed by substrate excavation and replacement with with bedding stone (~0.36 ac). ✓ improvement of public access to the river.	✓ Creation woodland area along the east side of the site with native upland trees and shrubs (~0.59 ac). ✓ Shoreline softening on the east and west channel banks (~0.31 ac) using boulders and facultative plants between the dam and 180th Street, stacked rock walls with brush layers along the east bank, and drilling with native plant materials along the west bank down stream of 180th Street. ✓ Creation of emergent wetlands (~0.04 ac). ✓ Bed restoration between the dam and 180th Street (0.47 ac). ✓ Removal of of invasive vegetation and replacement with native upland shrubs and herbaceous vegetation upslope from both banks of the river down stream of 180th Street (~0.20 ac). ✓ Removal of debris from river bottom downstream of 180th Street (0.36 ac). ✓ Restoration of river bed by substrate excavation and replacement with with bedding stone (~0.36 ac). ✓ improvement of public access to the river.	✓ Creation woodland area along the east side of the site with native upland trees and shrubs (~0.59 ac). ✓ Shoreline softening on the east bank (~0.07 ac) using stacked rock walls with brush layers. ✓ Removal of of invasive vegetation and replacement with native upland shrubs and herbaceous vegetation upslope from both banks of the river down stream of 180th Street (~0.20 ac). ✓ Removal of debris from river bottom downstream of 180th Street (0.36 ac). ✓ Restoration of river bed by substrate excavation and replacement with with bedding stone (~0.36 ac). ✓ Improvement of public access to the river.

Alternatives A and B are the "Best Buy Plans" and Alternative B is slightly more cost effective.

Significance of Restoration in the Region and at the Site

- ✓ Fulfills HRE mission by promoting Target Ecosystem Characteristics by increasing /improving wetlands, public access, shoreline and shallows, and habitat for fish, crabs and lobster.
- ✓ Created wetlands provide important habitats for migratory birds in a dense urban setting.
- ✓ Increased native biodiversity through wetlands creation and targeted reduction of invasive plant species
- ✓ Improved aquatic habitat, hydrologic flow regime and water quality
- ✓ Dense urban settings with limited natural environments; ecological enhancements increase the user experience of the park.
- ✓ Increased flood control value through wetlands creation
- ✓ Alternatives Improve water quality from score of 4.3 to 6.1 (Alternative A), 6.0 (Alternative B) and 5.9 (Alternative C)
- ✓ Improved public access

Tentatively Selected Plan Design

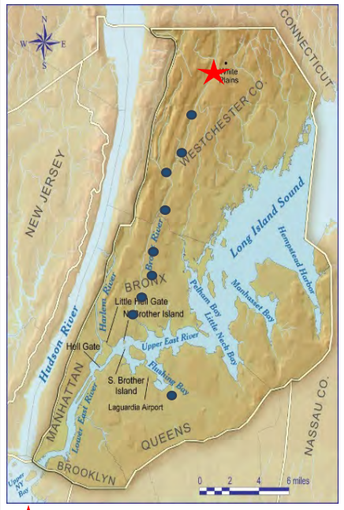


Environmental Protection

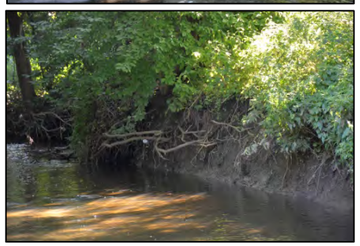
NYC Parks

HRE- Westchester County Center

Harlem River, East River, Long Island Sound Planning Region



★ Westchester County Center
● Other Restoration Sites in Region



Baseline Conditions and Water Resource Problems

- The Westchester County Center site is bounded by the southbound lanes of the Bronx River Parkway to the west, the Metro North right-of-way to the east, and the Westchester County Center East Parking lot to the south, with large tracts of maintained lawn with trees. The topography is generally flat with the Bronx River flowing through the middle of the site. The only notable change in elevation is along the eastern boundary of the site where the embankment for the rail line rises about twenty to thirty (20-30) feet.
- Two tributaries: the Manhattan Brook and the Fulton Brook flow into the Bronx River at this site .
- Existing wetlands include thin, sparsely vegetated strips of emergent vegetation along the banks, and a few pockets of emergent species along a gas line next to the eastern boundary adjacent to the rail line. In the lower half of the site, along the western bank, larger pockets of emergent wetlands occur on a shelf that is of lower elevation.
- The majority of the uplands on site consist of flat, maintained park and right-of-way lawns with single or clustered trees. Adjacent to the banks, **thick stands of Japanese knotweed and numerous vines dominate**. Along the easternmost portion of the site, a thin strip of woodlands occurs. Within these woodlands, there appear to be pockets of wetlands and potential vernal pool habitat.
- The river has a moderate flow with a mostly sandy bottom. It is generally shallow with some intermittent deep pools. Several mudflats and sparsely vegetated **sediment deposits** were observed; a large deposit, collecting some **garbage and debris** is located just north of the Fulton Brook.
- Sediment staining on vegetation, wrack lines, and other hydrologic indicators implies that this portion of the River is subject to **strong and high flows during storm events**.
- The river's **vertical banks** show sign of **active erosion and are sparsely vegetated**. Only the extreme southernmost portion and northern portion of the site have armored banks.

Restoration Opportunities/Measures

- Invasive species removal and replacement with native plantings
- Select native plantings
- Emergent wetland creation
- Channel realignment with in-stream structures
- Installation of sediment basin
- Installation of channel plug with native plantings
- Path creation
- Shoreline softening
- Bed restoration

Alternative	A	B	C
Description	✓ Realignment of river channel (4.79 ac) and section of Manhattan Brook, with excavation and replacement of bed material, construction of instream cross vanes ✓ Creation of emergent wetlands along both shores of the Bronx River and the Manhattan Brook. ✓ Construction of in-stream sediment basins in the Manhattan Brook and at the Fulton Brook confluence with the Bronx River. ✓ Construction of channel plugs at the upstream and downstream ends of the channel on the east side of the island. Planting of upland vegetation on the plugs. ✓ Native planting of upland trees and shrubs along the west side of the Parkway northbound lanes (~3.45 ac). ✓ Removal of invasive vegetation at two locations along the eastern boundary of the site, and replacement with select native vegetation (0.26 ac). ✓ Creation emergent wetlands along the east and west banks of the channel (4.79 ac). ✓ Construction of a 500-foot-long paved path to divert pedestrian traffic away from emergent wetlands creation.	✓ Channel modification (0.83 ac), excavation and replacement of bed material, and installation of 10 in-stream cross vanes and 6 J-hooks ✓ Creation of emergent wetlands along both shores of the Bronx River and the Manhattan Brook. ✓ Construction of in-stream sediment basins in the Manhattan Brook and at the Fulton Brook confluence with the Bronx River. ✓ Construction of channel plugs at the upstream and downstream ends of the channel on the west side of the island will shift the Fulton Brook confluence to the east. ✓ Native planting of upland trees and shrubs along the west side of the Parkway northbound lanes (~3.45 ac). ✓ Removal of invasive vegetation at two locations along the eastern boundary of the site and Manhattan Brook. Native planting along channel (0.28 ac). ✓ Creation emergent wetlands along the east and west banks of the channel (2.64 ac). ✓ Construction of a 500-foot-long paved path to divert pedestrian traffic away from emergent wetlands creation. ✓ Bank stabilization on the west bank with a tiered rock slope, and on the east bank with a stacked rock wall (285 lf).	✓ Creation of emergent wetlands along both shores of the Bronx River and the Manhattan Brook. ✓ Construction of in-stream sediment basins in the Manhattan Brook and at the Fulton Brook confluence with the Bronx River. ✓ Native planting of upland trees and shrubs along the west side of the Parkway northbound lanes (~3.45 ac). ✓ Removal of invasive vegetation at two locations along the eastern boundary of the site and Manhattan Brook. Native planting along channel (0.28 ac). ✓ Creation emergent wetlands along the east and west banks of the channel (2.64 ac). ✓ Construction of a 500-foot-long paved path to divert pedestrian traffic away from emergent wetlands creation. ✓ Bank stabilization on the west bank with a tiered rock slope, and on the east bank with a stacked rock wall (285 lf). ✓ Removal of debris from the upstream portion of the island (0.07 ac).

Significance of Restoration in the Region and at the Site

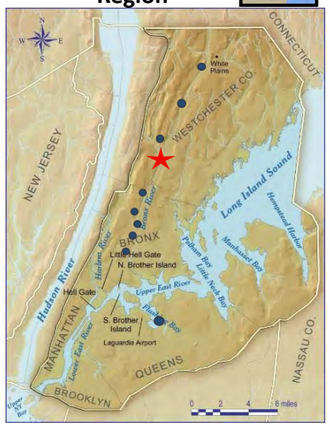
- ✓ Fulfills HRE mission by promoting Target Ecosystem Characteristics by increasing /improving wetlands, tributary connections, public access, shoreline and shallows, and habitats for fish, crabs and lobsters.
- ✓ Proposed restoration designed to compliment future Westchester County restoration actions at adjacent Fulton Brook.
- ✓ Restoration action designed to act in concert with viewscapes of the Bronx River Parkway.
- ✓ Improved habitat quality and water quality
- ✓ Improved flow regime
- ✓ Increased native biodiversity through wetlands creation
- ✓ Secondary benefit of increased flood control value through wetlands creation
- ✓ Created forested wetlands may provide a potential habitat/roosting resource for endangered bat species, if present.
- ✓ Reduction of invasive plant species
- ✓ Improved public access

** Alternatives A and B are the "Best Buy Plans"; however, Alternative B is the most cost effective

Tentatively Selected Plan Design

HRE- Bronxville Lake

Harlem River, East River, Long Island Sound Planning Region



★ Bronxville Lake
• Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- River flows through a broad valley (~400-feet wide) with sides twenty to forty (20-40) feet high. The weir across the River at the southern end of the site creates a broad and shallow lake in the southern two-thirds (2/3) of the site.
- A park, part of the Bronx River Parkway Reservation maintained by the Westchester County Department of Parks, Recreation, and Conservation, surrounds the lake. The park consists largely of maintained lawns with trees, with several pockets of emergent wetlands that are landscaped and mowed.
- **Canada geese and their fecal matter** throughout the site and an **odor of sewage** present downwind of the weir.
- Edge of lake has **narrow and sparsely vegetated wetlands**. Wetlands extend to ~ five (5) feet in width for short distances on western side of lake. Several **sediment bars** have formed with limited amounts of emergent vegetation within the lake.
- Several small pockets of **interspersed mowed wetlands in shallow depressions in the uplands**.
- The majority of the uplands at this site are maintained lawns with isolated trees located within the park and Parkway right-of-way. Dominated by deciduous species, **small woodlots are present but fragmented and provide limited habitat value**.
- The broad, shallow lake in the southern portion of the site is subject to **nutrient-enriched runoff** from the park. Several **drainage pipes** that empty into the lake from the Parkway and other upland areas were observed at the site. The shoreline in the northern portions of the site and the area in the south adjacent to the bridge are armored with large boulders. Around the lake, the short **banks are generally vertical**, with the upper bank predominantly lined with a single row of trees (e.g., alders, maples, etc.) that are impacted with **heavy vine growth**. To the north, the channel is narrower with steeper and higher banks.
- Stream Visual Assessment Protocol (SVAP) revealed score of 2.9 for overall **POOR water quality** (< 6 considered Poor)

Restoration Opportunities/Measures

- Invasive species removal and native plantings
- Channel realignment with in stream structures
- Forested subshrub wetland creation
- Emergent wetland creation
- Select native plantings
- Sediment load reduction
- Weir modification (fish passage)
- Forebay installation

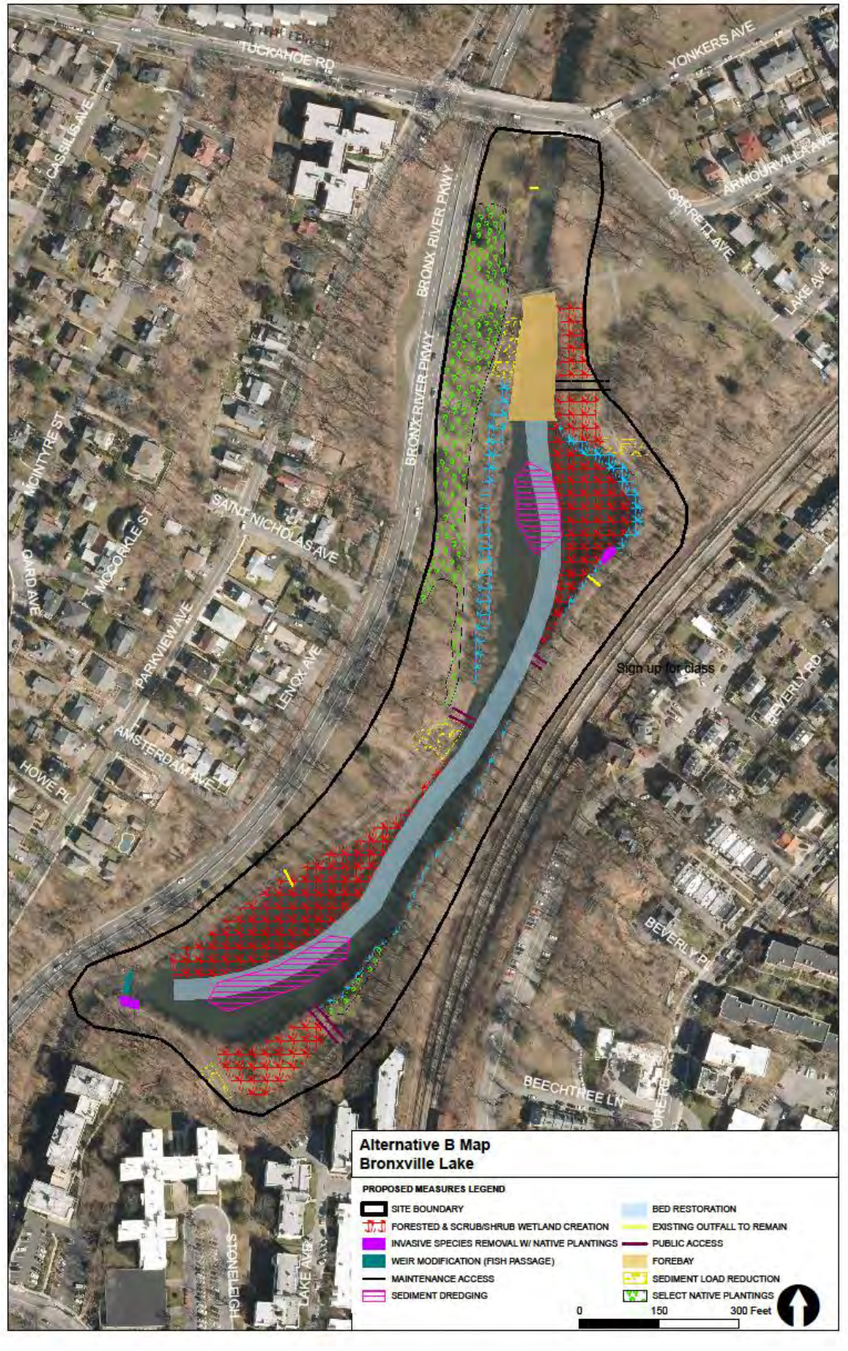
Alternative	A	B	C
Description	✓ Native planting: upland trees and shrubs in the northwest portion of the site along the Bronx River Parkway (~1.3 ac) and along the southeast portion of the lake (~0.09 ac). ✓ Construction of a rip rap forebay upstream of the lake (0.43 ac). ✓ Channel realignment (1.28 ac) with replacement of bed material and construction of 11 instream cross vanes. ✓ Creation of emergent wetlands between the channel and the lake banks (3.67 ac) and forested and scrub/shrub wetlands around the lake perimeter (1.02 ac). ✓ Modification of the existing rock weir at the southern end of the lake to facilitate fish passage. ✓ Removal invasive vegetation (0.03 ac) and replacement/addition of native species (1.40 ac). ✓ Sediment load reduction with installation of vegetated swales, bioretention basins, and rain gardens at three locations (0.24 ac). ✓ Improved public access to the river.	✓ Native planting: upland trees and shrubs in the northwest portion of the site along the Bronx River Parkway (~1.3 ac) , and along the southeast portion of the lake (~0.09 ac). ✓ Construction of a rip rap forebay upstream of the lake (0.43 ac). ✓ Channel bed restoration with excavation and bedding stone installation (~1.28 ac). ✓ Creation of emergent wetlands in narrow strips along the banks of the lake (0.59 ac) ✓ Creation of forested and scrub/shrub wetlands around sections of lake perimeter and in filled areas (2.90 ac). ✓ Modification of the existing rock weir at the southern end of the lake to facilitate fish passage. ✓ Removal invasive vegetation (0.03 ac) and replacement/addition of native species (1.40 ac). ✓ Sediment dredging in two small sections of the channel. ✓ Sediment load reduction with installation of vegetated swales, bioretention basins, and rain gardens at three locations (0.24 ac). ✓ Improved public access to the river.	✓ Native planting: upland trees and shrubs in the northwest portion of the site along the Bronx River Parkway (~1.3 ac) , and along the southeast portion of the lake (~0.09 ac). ✓ Construction of a rip rap forebay upstream of the lake (0.43 ac). ✓ Channel bed restoration along the intervening river channel (0.37 ac). ✓ Creation of emergent wetlands in smaller and narrower strips along the lake shore (~0.2 ac) ✓ Creation of forested and scrub/shrub wetlands east bank of the river, upstream of the lake (0.57 ac). ✓ Installation of fish passage to link the lake and the river downstream of the existing weir. ✓ Removal invasive vegetation (0.03 ac) and replacement/addition of native species (1.40 ac). ✓ Sediment dredging both broad, shallow lobes of lake. ✓ Sediment load reduction with installation of vegetated swales, bioretention basins, and rain gardens at three locations (0.24 ac). ✓ Improved public access to the river.

Significance of Restoration in the Region and at the Site

- ✓ Improved aquatic habitat and water quality
- ✓ Improved flow regime and improved fish connectivity- providing access for anadromous species
- ✓ Created wetlands provide important habitats for migratory bird.
- ✓ Increased native biodiversity through wetlands creation and targeted removal of invasive plant species
- ✓ Created forested wetlands may provide a potential habitat/roosting resource for endangered bat species, if present.
- ✓ Increased flood control value through wetlands creation
- ✓ Alternatives Improve water quality from score of 2.9 to 5.8 (Alternative A), 4.9 (Alternative B) and 4.6 (Alternative C)
- ✓ Improved public access

** Alternatives A and B are "Best Buy Plans and Alternative B is the most cost effective.

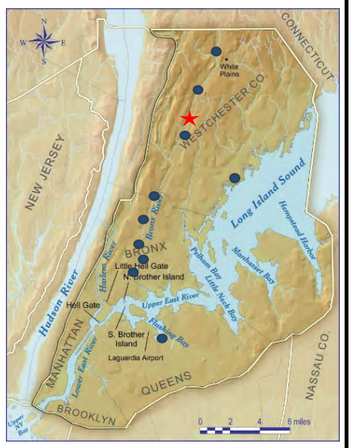
Tentatively Selected Plan Design



Westchestergov.com

HRE- Crestwood Lake

Harlem River, East River, Long Island Sound Planning Region



★ Crestwood Lake
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems (EPW Report)

- Crestwood Lake site flows through a broad valley (~400- to 600-feet wide), the sides of which are approximately 20 feet in elevation. At the southern end, the River is dammed, forming a broad, shallow lake approximately three (3) times the width of the river upstream. On the Westside of the lake, there is a confluence with a small tributary of moderate flow named Troublesome Creek. A walking trail and lawns with trees border the eastern side of the lake; woodlots and lawns bordering the northwest side of the lake are part of the Bronx River Parkway Reservation. A portion of the southeast side of the project overlaps the Parkway Oval Recreation area.
- **Canada geese and their fecal matter** present throughout the site.
- Around the lake, the wetlands generally consist of a vegetated strip that varies in width from two to ten (2-10) feet.
- The majority of the uplands are maintained lawns with single trees and woodlands. In the northern portion of the site, wetlands are bounded by a **thin riparian strip** with several dense pockets of **invasive vegetation**.
- The majority of the site is a broad and shallow lake habitat subject to **nutrient enriched runoff** from the lawns and potential upstream sources.
- In the northern portion of the site, a small reach of shady river channel exists with a rock and sand bottom.
- **Armored shoreline** on northern and southern ends adjacent to the roadway and pedestrian bridges, respectively.
- A vegetated sediment bar is present at the Troublesome Creek tributary confluence and several additional **sediment bars**, both vegetated and mudflat, are present within the lake.

Restoration Opportunities/Measures

- Invasive species removal and replacement with native plantings
- Select native plantings
- Channel modification with in-stream structures
- Emergent wetland creation
- Weir modification (fish passage)
- Forebay installation
- Path installation
- Public access

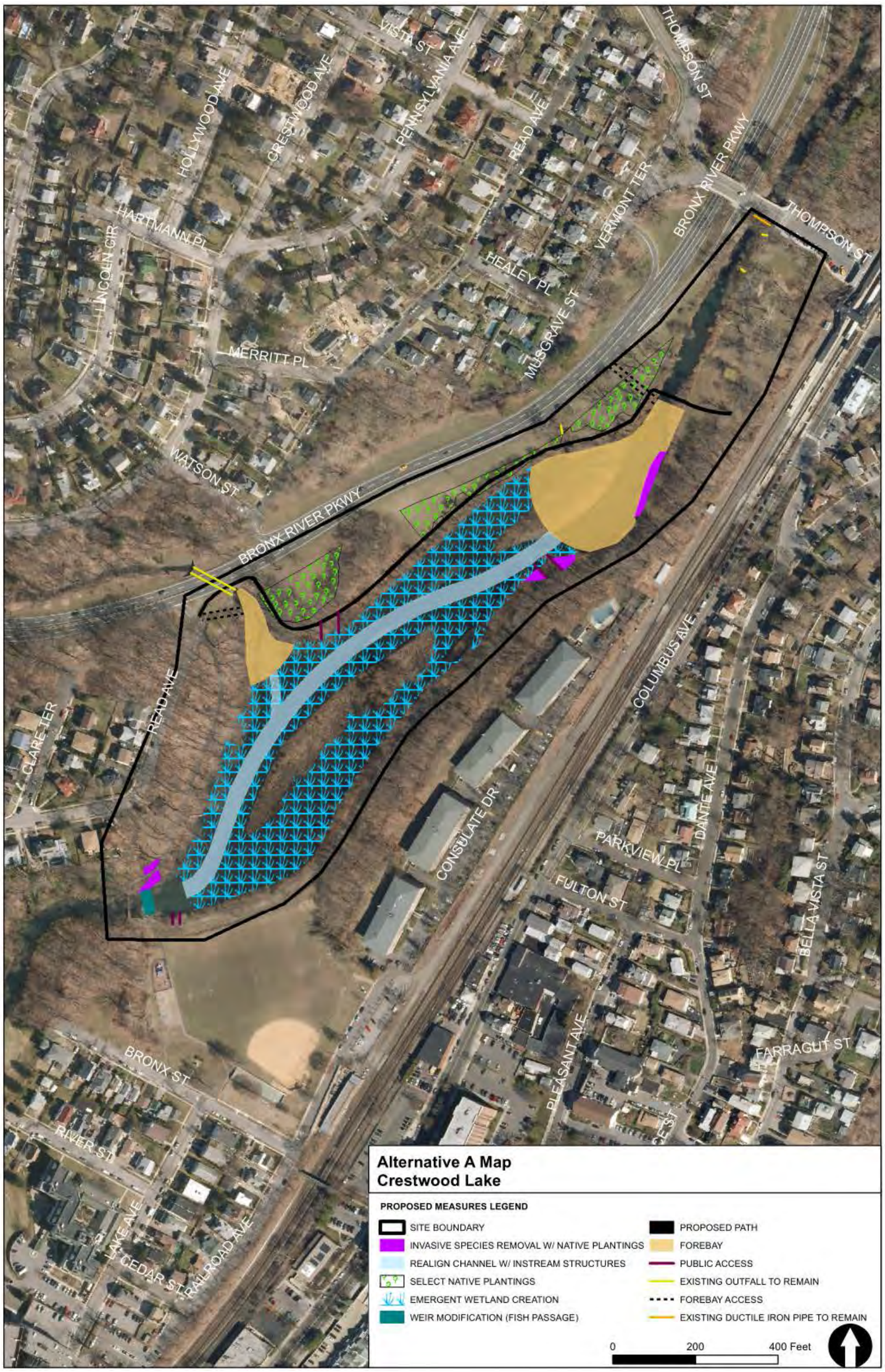
Alternative	A	B	C
Description	✓ Native planting of upland trees and shrubs at three in the western portion of the site along the Bronx River Parkway areas (1.12 ac). ✓ Invasive species removal and native planting along the lake shore and at two other locations near the weir (0.14 ac). ✓ Construction of two rip rap forebays with access roads at the upstream end of the lake, and at the Troublesome Creek tributary confluence. ✓ Channel realignment, replacement of bed material and construction of 11 instream cross vanes (1.24 ac). ✓ Creation of emergent wetlands (4.79 acres) between the channel and the lake banks. ✓ Modification of existing rock weir at the southern end of the lake to include slopes and pools in order to promote fish passage. ✓ Improved public access to the river.	✓ Native planting of upland trees and shrubs at three in the western portion of the site along the Bronx River Parkway areas (1.12 ac). ✓ Invasive species removal and native planting along the lake shore and at two other locations near the weir (0.14 ac). ✓ Construction of two rip rap forebays with access roads at the upstream end of the lake, and at the Troublesome Creek tributary confluence. ✓ Channel bed restoration: excavation and installation of bedding stones (1.24 ac). ✓ Creation of emergent wetlands at a single location at the river inlet along the west bank of the lake (0.94 ac). ✓ Modification of existing rock weir at the southern end of the lake to include slopes and pools in order to promote fish passage. ✓ Improved public access to the river.	✓ Native planting of upland trees and shrubs at three in the western portion of the site along the Bronx River Parkway areas (1.12 ac). ✓ Invasive species removal and native planting along the lake shore and at two other locations near the weir (0.14 ac). ✓ Construction of two rip rap forebays with access roads at the upstream end of the lake, and at the Troublesome Creek tributary confluence. ✓ Creation of emergent wetlands at a single location at the river inlet along the west bank of the lake (0.32 ac). ✓ Installation of fish passage to link the lake and the river downstream of the weir. ✓ Sediment dredging in the channel and the lake to create deeper pools (1.21 ac). ✓ Improved public access to the river.

Significance of Restoration in the Region and at the Site

- ✓ Improved flow regime
- ✓ Improved fish connectivity- providing access for anadromous species
- ✓ Created wetlands providing important habitats for migratory birds
- ✓ Increased native biodiversity through wetlands creation, plantings and targeted reduction of invasive vegetation
- ✓ Created forested uplands providing a habitat for endangered bat species
- ✓ Improved water quality and aquatic habitat
- ✓ Increased flood control value through wetlands creation
- ✓ Improved public access

** Alternative A is the “Best Buy Plan”

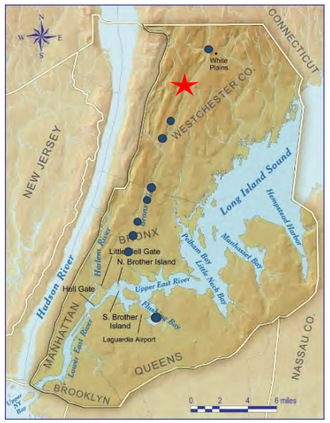
Tentatively Selected Plan Design



Westchestergov.com

HRE- Harney Road & Garth Woods

Harlem River, East River, Long Island Sound Planning Region



★ Harney Road/Garth Woods
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- The majority of the **Harney Road** site is located north of Harney Road between the northbound and southbound lanes of the Bronx River Parkway. The eastern portion of the site is bounded by Parkway's northbound lanes. The southbound lanes cut through the western portion of the site.
- The **channel is over-widened and shallow**, with a ponded area upstream of the weir located immediately south of Harney Road bridge.
- A paved path and park on the east side of the River are part of the Bronx River Parkway Reservation maintained by the Westchester County Department of Parks, Recreation, and Conservation.
- Along the water's edge, the **wetlands are often very narrow**. Within the mowed lawn area west of the Parkway, several emergent wetlands occur in depressional areas. **These wetlands are also mowed**. Banks south of Harney Road are armored.
- This site's upland landscape essentially consists of road embankment slopes. On the western side, the slopes are steep narrow between the channel and Parkway, with a strip of lawn and some pockets of trees and shrubs. The eastern side is wider, with shallower slopes of maintained lawns and a strip of woodland adjacent to the Parkway. On the eastern side of the site, just north of Harney Road, a **buried storm drain is causing sediment deposition and minor erosion**. West of the southbound lanes of the Parkway, there is a large mowed lawn area with few single trees; as stated above, pockets of emergent wetlands are present within the lawn.
- North of Harney Road, the River is an **over-widened, broad (~60 feet wide), slow moving channel**, with depths often less than two (2) feet. A single deep pool exists at the northern end, just below the Garth Woods site. The banks are generally vertical and show signs of moderate erosion. **Dense growths of Japanese knotweed** were also observed along the banks. Immediately south of Harney Road, the River flows over a four (4)-foot high weir, creating swifter flows and a semi-vegetated alluvial bar.
- The **Garth Wood site is immediately north of the Harney Road Site,** consists of a large forested area, traversed by the Bronx River Parkway Reservation path on the east, and bordered by the Bronx River on the west. **Wetlands are absent along the western shoreline** and consist of **very thin strips of sparse emergent vegetation along the eastern shoreline** occurring in wet depressions within the adjacent forests, mostly within the remnant channel east/north of the river. Evidence of likely vernal pools was also observed within the forested areas. The majority of the uplands consist of **invasive dominated** deciduous forest characteristic in structure to that of a floodplain forest.
- Stream Visual Assessment Protocol (SVAP) score of 4.0 characterized as **poor water quality** (<6 considered poor water quality)

Restoration Opportunities/Measures

- Invasive species removal and replacement with native plantings
- Channel modification with in stream structures
- Shoreline softening
- Forested and Scrub/Shrub wetland creation
- Emergent wetland creation
- Weir modification (fish passage)
- Installation of select native plantings
- Sediment load reduction
- Installation of select native plantings

Alternative	A-2	B	C
Description	✓ Modification of the existing weir at the southern end of the site to promote fish passage. ✓ Modification of 0.85 acres of the river channel upstream of Harney Road and a short off-site section of river channel downstream of the weir by replacing the bed material and construction of approximately 15 instream cross vanes. ✓ Creation of 0.79 acres of emergent wetlands along both shores of the river. ✓ Installation of native upland trees and shrubs between the created emergent wetlands on the east shore and the paved path. ✓ Construction of three culverts under the southbound lanes of Bronx River Parkway to transfer river water to emergent cattail-dominated wetlands created throughout most of the maintained lawn area on the west side. ✓ Removal of 0.03 acres of invasive Japanese knotweed from the west bank of the river, just north of Harney Road, and replacement with native, upland or wetland shrubs and herbaceous vegetation ✓ Installation of a raingarden/bioretention area at the upstream end of the buried storm drain. ✓ Softening a segment (190 linear feet) of the west bank of the river, down of the weir, by constructing a stacked rock wall with brush layers.	✓ The restoration measures included in Alternative A also are included in Alternative B, with the exception of channel modification with instream structures, upstream of Harney Road and shoreline softening. ✓ Alternative B will restore the channel bed by excavating and replacing 1.34 acres of bed material. ✓ Alternative B will not construct culverts under the southbound lanes of the Parkway. ✓ The extent of emergent wetland creation is restricted to 0.21 acres of cattail-dominated core described in Alternative A ✓ Native upland trees and shrubs will be planted within the Alternative A wet meadow. ✓ Weir modification will not incorporate slopes and pools to promote fish passage; the west bank of the river.	✓ Relative to Alternative B, Alternative C will not restore the river bed, nor will the channel be modified. ✓ Forested and scrub/shrub wetland creation will replace approximately 0.52 acres of emergent wetland creation within the maintained lawn to the west of the southbound lanes of the Parkway. Emergent wetland creation will reduce to approximately 0.21 acres. ✓ The existing weir at the southern end of the site will not be modified; rather, a fish passage will be installed to link the upstream and downstream segments of the river.
	Note: For each alternative, the same actions are proposed for the Garth Woods site. The actions are the following: ✓ Creation of forested and scrub/shrub wetlands along the west bank of the river at the upstream end of the site (0.03 ac). ✓ Select native plantings in the adjacent lawn, on both sides of the paved path (0.14 ac). ✓ Removal of invasive species near the northern border of the site and replacement with native upland or wetland shrubs and herbaceous vegetation (0.02 ac).		

Significance of Restoration in the Region and at the Site

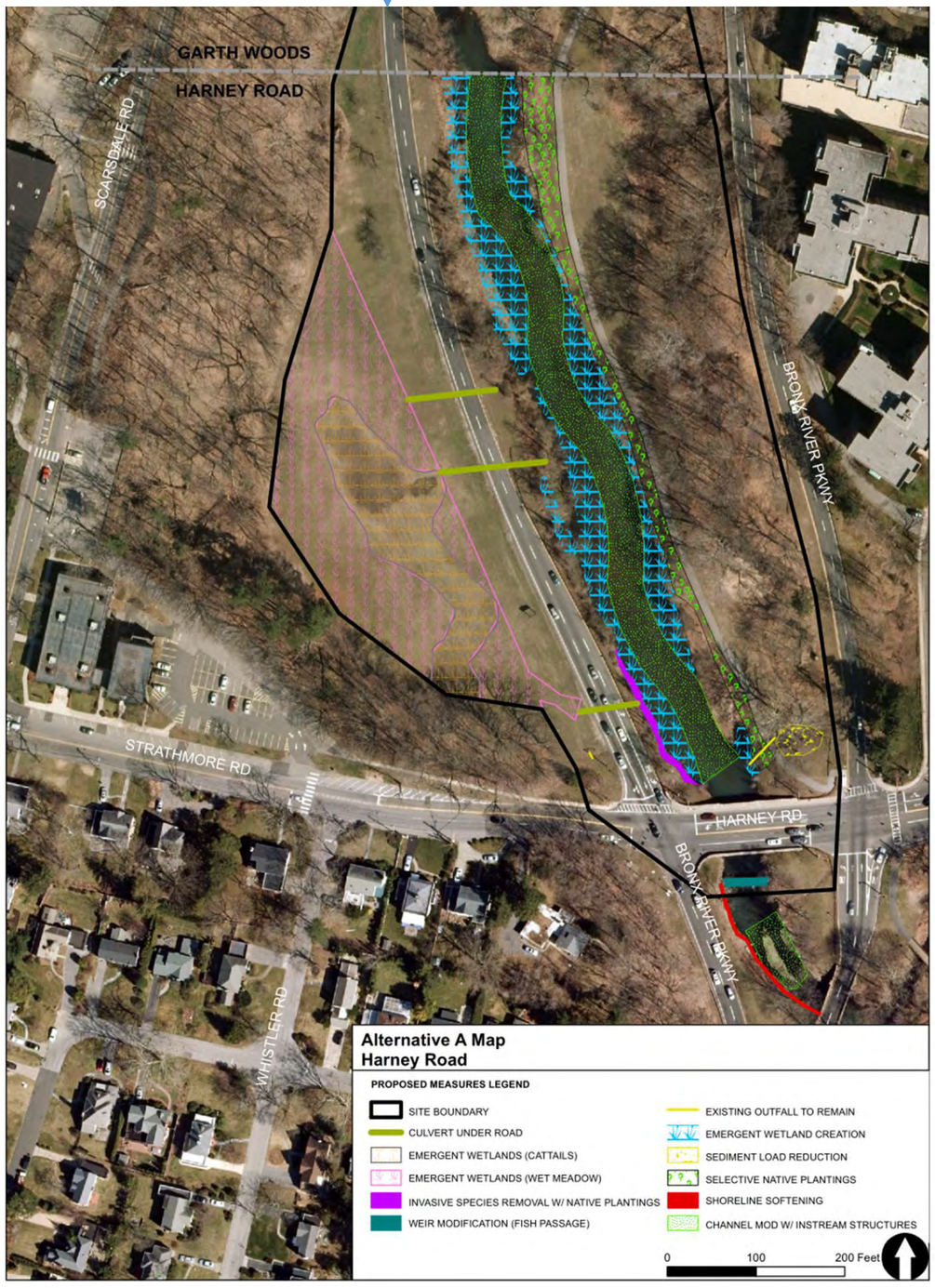
- ✓ Designed to compliment future habitat enhancements at Garth Woods to be performed by Westchester County.
- ✓ Restoration actions were designed to act in concert with viewscapes of the Bronx River Parkway.
- ✓ Improved aquatic habitat and water quality
- ✓ Increased native biodiversity through wetland creation.
- ✓ Created forested wetlands may provide potential habitat/roosting resources for endangered bat species, if present
- ✓ Secondary benefit of increased flood control through wetland creation
- ✓ Reduction of invasive plant species
- ✓ Water quality improved by Alternatives from baseline conditions (4.0) to scores of 5.8 (Alternative A), 5.0 (Alternative B) and 4.7 (Alternative C)

** Alternatives A and C are the "Best Buy Plans"; Alternative C is the most cost-effective although Alternative A could be justified.

Tentatively Selected Plan Design

Harney Road

Garth Woods



HRE- Meadowlark Marsh

Hackensack River, Hackensack Planning Region

★ Meadowlark Marsh
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- The Hackensack Meadowlands is an ecologically significant wetlands complex in the heavily industrialized and densely populated NY Bight region that drains approximately 200 square miles of the Hackensack River basin.
- Significant pressure to continue to fill the remaining 8,500 acres of open waters and wetlands for industrial, commercial and residential use has greatly **fragmented this wetlands complex**. Meadowlark Marsh is an approximately 85-acre site within the Meadowlands, generally of **poor habitat value** that is largely **overrun by *phragmites australis***.
- **Tidal flow into the interior of the site is impeded by crushed and/or blocked culverts**.
- The Meadowlands support more than 7 dozen species of special interest or listed fish and bird species; they serve as important open space for migratory birds and provide flood storage. Further losses of wetlands and open space would lead to the continued decline of fish and wildlife populations in a heavily urbanized area where little such habitat remains.

Restoration Opportunities/Measures

- Emergent wetland creation (Low Marsh, High Marsh)
- Forested scrub shrub wetland creation
- Invasive species removal and native plantings
- Bank stabilization
- Coastal Maritime Forest
- Habitat for fish, crabs and lobster
- Secondary benefits of water quality improvements
- Public education/access

Alternative	A	B	C
Description	✓ Improvements and restoration to existing wetlands to include removal of debris, historic fill and invasive vegetation and re-introducing proper tidal inundation with the development of new, deepened and wider, secondary and tertiary channels (8,319 lf). Construction of 2 open span bridges to maintain access roads over proposed tidal channels. Restoration of low marsh (57.78 ac) by excavation and removal of 0.5 feet of sediment and *Phragmites* root mat and replanting with native species. Creation of high marsh by importing clean planting substrate (sand) and replanting with native species (6.89 ac). ✓ Debris, fill and invasive vegetation removal and planting of native trees and shrubs (2.33 ac). ✓ Restoration/creation of riparian shrub and wooded area (~2.31 ac). ✓ Removal of invasive plant species and creation of habitat connectivity along new mudflats/tidal channels (~12.33 ac) and existing habitat (2.58 ac). ✓ Excavation of top 0.5 ft of sediment plant (~ 46,609 cy), off-site disposal to remove any surface soil/roots of the invasive *Phragmites*. Excavation of additional sediments (120,584 cy) and off-site disposal. Importation of clean planting substrate (sand) to create high marsh areas (3,080 cy).	✓ Re-establishment of degraded portion of wetlands by re-introduction of proper tidal inundation with the development of new, deepened and wider, secondary and tertiary channels (7,086 lf). Invasive species removal and native species planting of low marsh (60.96 ac) and high marsh (5.01 ac). Installation of 1 culvert to maintain gas pipeline access road over proposed tidal channel. ✓ Forested and Scrub Shrub Wetlands – Debris, fill and invasive vegetation removal and planting with native trees and shrubs (2.33 ac). ✓ Restoration/creation of riparian shrub and wooded area (2.44 ac). ✓ Removal of invasive plant species and creation of habitat connectivity along new mudflats/tidal channels (~10.33 ac) and existing habitat (3.28 ac). ✓ Excavation of additional sediments (102,639 cy) and off-site disposal.	✓ Re-establishment of degraded portion of wetlands. Invasive species removal and native species planting of low marsh (60.21 ac) and high marsh (4.64 ac) by excavation and removal of 0.5 feet of sediment and *Phragmites* root mat and replanting with native species. Installation of 1 culvert to maintain gas pipeline access road over proposed tidal channel. ✓ Debris, fill and invasive vegetation removal and planting of native trees and shrubs to restore and create habitat (1.89 ac). ✓ Restoration/creation of maritime forest habitat through debris removal and native plantings (3.21 ac). ✓ Removal of invasive species to restore existing mudflats/tidal channels and associated habitats within the interior marsh (~12.72 ac). ✓ No sediment removal.

Alternatives B and C were “Best Buy Plans” and Alternative C is the most cost-effective plan

Significance of Restoration in the Region and at the Site

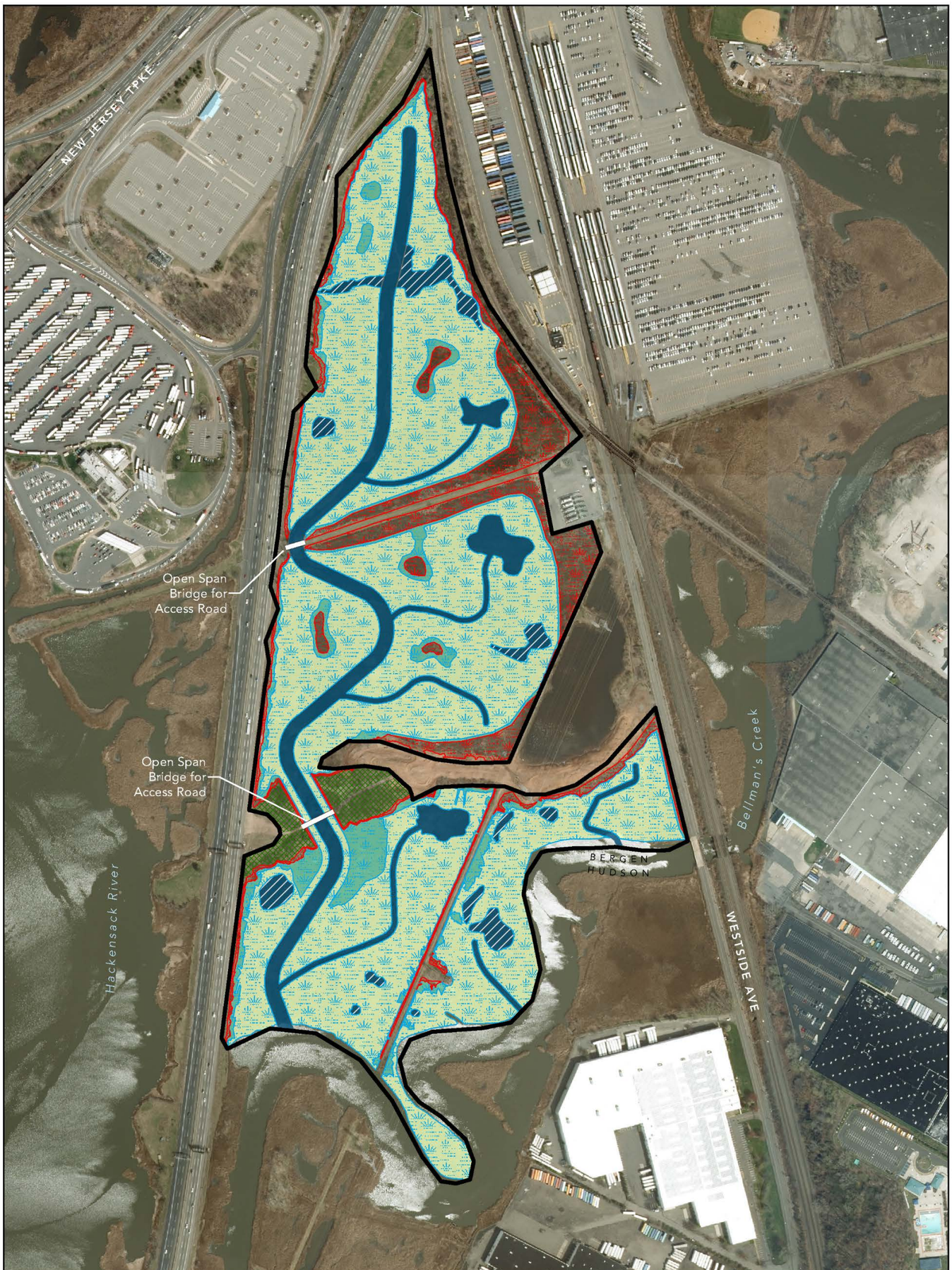
✓ The restoration of Meadowlark Marsh will contribute greatly to the joint effort among many public interest groups, local, state and Federal agencies and academia to restore and/or enhance the remaining 8,500 acres of open water and wetlands.

✓ Once Meadowlark Marsh is restored, it will combine with the adjacent and previously restored Bellman’s Creek Marsh to create a contiguous expanse of approximately 100 acres.

✓ The Meadowlands are located within the Atlantic Flyway, a significant coastal pathway for migratory birds; the wetlands provide food and resting ground for hundreds of migratory bird species as well as breeding habitat for more than 60 resident bird species. Numerous juvenile fish species depend on the Meadowlands for nursery habitat

✓ The only other large estuarine wetlands complex in the NY Metropolitan area is the Jamaica Bay Wildlife Refuge, another significant restoration concern within the HRE study area.

Tentatively Selected Plan Design



Source: NJGIN NJ 2015 Orthoimagery

Alternative A Map
Meadowlark Marsh, New Jersey Meadowlands

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- FORESTED AND SCRUB/SHRUB WETLAND
- EMERGENT WETLAND (HIGH MARSH)
- EMERGENT WETLAND (LOW MARSH)
- COASTAL AND MARITIME FOREST
- EXISTING HABITAT FOR FISH, CRAB AND LOBSTER
- HABITAT FOR FISH, CRAB AND LOBSTER

0 250 500 Feet

KEY MAP

HRE- Metromedia Tract

Hackensack River, Hackensack Planning Region

★ Metromedia Tract
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- The Hackensack Meadowlands is an ecologically significant wetlands complex in the **heavily industrialized** and densely populated NY Bight region that drains approximately 200 square miles of the Hackensack River basin.
- Significant pressure to continue to fill the remaining 8,500 acres of open waters and wetlands for industrial, commercial and residential use has greatly **fragmented** this wetlands complex. The Metromedia tract is an approximately 67-acre site within the Meadowlands, generally of **poor habitat value** that is largely **overrun by *phragmites australis***.
- The Meadowlands support more than 7 dozen species of special interest or listed fish and bird species; they serve as important open space for migratory birds and provide flood storage. Further **losses of wetlands** and open space would lead to the continued decline of fish and wildlife populations in a heavily urbanized area where little such habitat remains.

Restoration Opportunities/Measures

- Emergent wetland creation (Low Marsh, High Marsh)
- Forested scrub shrub wetland creation
- Invasive species removal and native plantings
- Bank stabilization
- Coastal Maritime Forest
- Habitat for fish, crabs and lobster
- Secondary benefits of water quality improvements
- Public education/access

Alternative	A	B	C
Description	✓ Reconnect fragmented areas within the parcel, introduce new tidal channels and make improvements to the existing channels. ✓ Create approximately 38.2 acres of low marsh, 13.0 acres of high marsh, 5.3 acres of scrub-shrub and 11.5 acres of maritime upland ✓ Removal of approximately 38,000 cy of excavated material to an upland disposal facility in order to remove the top 0.6 inches of invasive root mass. ✓ A 1-ft cap of clean soil growing medium is required at high marsh elevations in order to prevent invasive recolonization.	✓ Reconnect fragmented areas within the parcel, introduce new tidal channels and make improvements upon the existing channels. ✓ Create approximately 43.1 acres of low marsh, 4.5 acres of high marsh and 11.8 acres of scrub-shrub ✓ Removal of approximately 63,000 cy of excavated material to an upland disposal facility in order to remove the top 0.6 inches of invasive root mass. ✓ A 1-ft cap of clean soil growing medium is required at high marsh elevations and above in order to prevent invasive recolonization.	✓ Reconnect fragmented areas within the parcel, introduce new tidal channels and make improvements upon the existing channels. ✓ Create approximately 50.6 acres of low marsh, 4.1 acres of high marsh, 3.5 acres of scrub-shrub and 1.1 acres of maritime upland ✓ Removal of approximately 74,000 cy of excavated material to an upland disposal facility to remove the top 0.6 inches of invasive root mass. ✓ A 1-ft cap of clean soil growing medium is required at high marsh elevations and above in order to prevent invasive recolonization.

Significance of Restoration in the Region and at the Site

- ✓ The restoration of the Metromedia Tract will contribute greatly to the joint effort among a coalition of public interest groups, local, state and Federal agencies and academia to restore and/or enhance the remaining 8,500 acres of open water and wetlands.
- ✓ Once the Metromedia Tract is restored, it will combine with an adjacent previously restored tract to create a contiguous connected expanse of approximately 200 acres.
- ✓ The Meadowlands are located within the Atlantic Flyway, a significant coastal pathway for migratory birds; the wetlands provide food and resting ground for hundreds of migratory bird species as well as breeding habitat for more than 60 resident bird species. Numerous juvenile fish species depend on the Meadowlands for nursery habitat
- ✓ The only other large estuarine wetlands complex in the NY Metropolitan area is the Jamaica Bay Wildlife Refuge, another significant restoration concern within the HRE study area.

Tentatively Selected Plan Design

HRE- Essex County Branch Brook Park

Passaic River, Lower Passaic Planning Region

★ Essex County Branch Brook Park
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems (EPW Report)

- This site contains of approximately 4,200 linear feet of Branch Brook and adjacent parkland in Newark, NJ.
- The surrounding environment consists primarily of commercial and residential developments and roadways.
- The site includes a day-lighted section of Branch Brook as well as 3 larger pond features (Branch Brook Lake, Clarks Pond, and an unnamed pond) that were created using weirs.
- Branch Brook Park was established by Essex County as the first county park in the nation.
- The park is notable as having the largest collection of cherry blossom trees in the United States.
- The park is four miles long and a quarter mile wide and includes open grassland with patches of forest stands that line Branch Brook.
- The stream and adjacent forest areas experience considerable amounts of **anthropogenic trash**.
- The ponds suffer from **algal blooms and eutrophication** indicative of excess nutrient inputs.
- The stream is characterized by the presence of **invasive vegetation.**

Restoration Opportunities/Measures

- Emergent wetland creation (Low Marsh, High Marsh)
- Forested scrub shrub wetland creation
- Invasive species removal and native plantings
- Bank stabilization
- Sediment basins
- Shoreline softening
- Secondary benefits of water quality improvements
- Public education/access

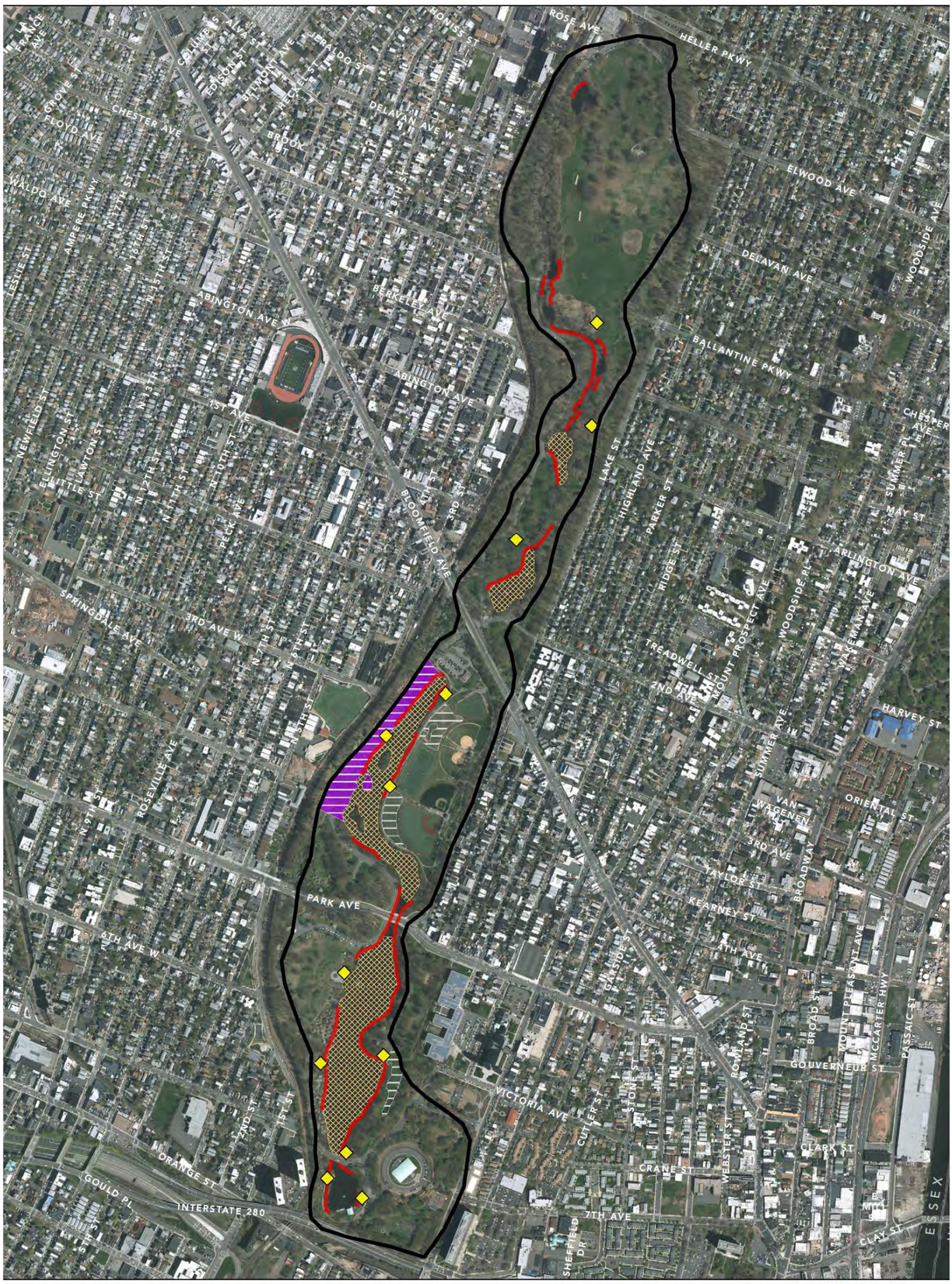
Alternative	A	B	C
Description	✓ Debris, fill, pipes, and invasive vegetation removal and planting of native trees and shrubs (26.3 ac). ✓ Invasive plant removal with native plantings to create a riparian forest accessible to avian migrants and residents. ✓ Tributary Connections – Stream Naturalization and Clearing – Decrease channelization in 2.04 acres to restore freshwater stream to provide a range of quality habitats to aquatic organisms. ✓ Channel dredging to restore freshwater stream (23.52 ac). ✓ Floodplain erosion control through management of steep slopes, planting of understory vegetation, and control of surface runoff and foot traffic (8.25 ac). ✓ Planting of native vegetation to reduce damage to habitat and water quality by Canada geese (29.98 ac). ✓ Installation of sediment basins and clean silt from existing storm drains and plant wetland (3.8 ac). ✓ Support to ongoing public access improvements by installing 17 interpretative signs, improving access to the water and creating linkages to other recreational areas, as well as providing increased opportunities for boating, hiking, education, and passive recreation	✓ Remove debris and invasive vegetation and increase the density of 22.9 acres of wetland and riparian native vegetation ✓ Remove invasive plant species and plant with native vegetation to create a riparian forest accessible to avian migrants and residents. ✓ Channel dredging to restore freshwater stream and floodplain (17.07 ac). ✓ Floodplain erosion control through management of steep slopes, planting of understory vegetation, and control of surface runoff and foot traffic (8.25 ac). ✓ Planting of native vegetation to reduce damage to habitat and water quality by Canada geese (29.98 ac). ✓ Installation of sediment basins and clean silt from existing storm drains and plant wetland (5.32 ac). ✓ Install retention basins and plant wetland vegetation ✓ Support to ongoing public access improvements by installing 17 interpretive signs.	✓ Invasive plant removal and planting of native vegetation (5.23 ac).. ✓ Channel dredging to restore freshwater stream and floodplain (23.52 ac). ✓ Planting of native vegetation to reduce damage to habitat and water quality by Canada geese (8.49 ac). ✓ Debris removal and erosion control on the banks and shorelines with stormwater control and planting native understory vegetation along (10,320 lf). ✓ Support to ongoing public access improvements through development of 12 new public interpretive signs.

Alternatives C and A are the “Best Buy Plans” and Alternative C is the most cost-effective.

Significance of Restoration in the Region and at the Site

- ✓ Shoreline stabilization will reduce erosion and turbidity in waters and improve aquatic habitat.
- ✓ Restoration and enhance actions would reduce nutrient inputs to the waters and increase opportunity for nutrient transformation.
- ✓ First County Park Provides opportunities for public education/engagement.
- ✓ Shoreline stabilization and habitat improvements will provide secondary benefits of flood control to a flood prone area.
- ✓ Stabilizes ecologically significant urban wetlands/riparian areas.
- ✓ Advancement of TECs and Regional Goals
- ✓ Environmental Justice

Tentatively Selected Plan Design



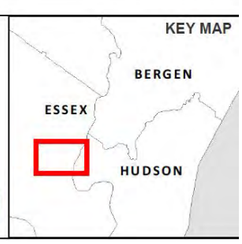
Source: NJGIN NJ 2015 Orthoimagery

Alternative C Map
Essex County Branch Brook Park, Newark, New Jersey

PROPOSED MEASURES LEGEND

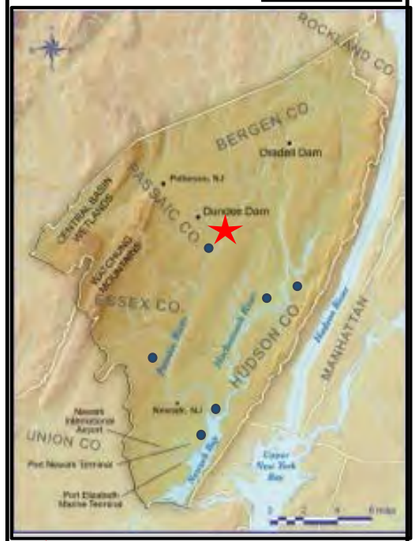
- SITE BOUNDARY
- INTERPRETIVE SIGNS
- SHORELINE SOFTENING
- CHANNEL DEEPENING
- INVASIVE SPECIES REMOVAL WITH NATIVE PLANTINGS
- GOOSE MANAGEMENT

0 500 1,000 Feet



HRE- Dundee Island Park/Pulaski Park

Passaic River, Lower Passaic Planning Region



★ Dundee Island Park
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- This site consists of approximately 2,370 linear feet of the western shoreline of the Lower Passaic River approximately 1.3 miles downstream of the Dundee Dam in Passaic, NJ.
- An inactive set of railroad tracks and right-of-way border the site to the west and north; a church and commercial properties border the site to the south.
- The City of Passaic has established Dundee Island Park within the site which includes a soccer field, benches, a playground, a boat launch and fish consumption advisory signage.
- Flood-driven **woody debris and floatable trash** have been deposited along the shore of the site.
- Large ash trees have been removed from the shoreline and bank is now dominated by i**nvasive Japanese knotweed**.
- Within the boundary of the site the bank of the Passaic River is **very steep and stabilized with rip-rap and concrete**.

Restoration Opportunities/Measures

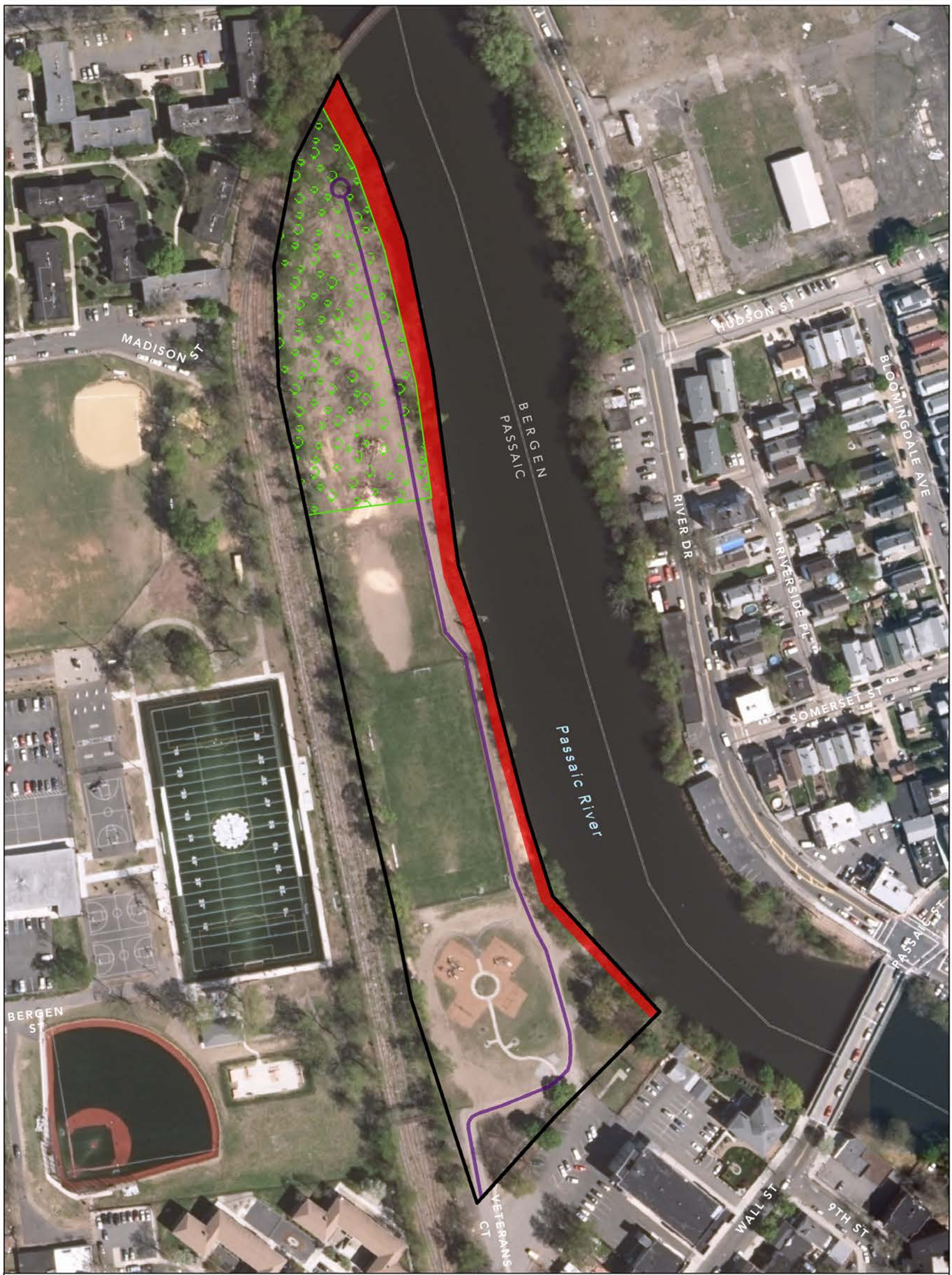
- Invasive species removal/native species plantings
- Bank stabilization
- Secondary benefits of water quality improvements
- Public education/access

Alternative	A	B	C
Description	✓ Debris removal, natural bank vegetation preservation, bank stabilization and shoreline softening by planting willow stakes in the existing riprap stream bank (~0.71 ac). ✓ Restoration of riparian vegetation through removal of debris and invasive plant species and planting of native trees and shrubs (~1.23 ac). ✓ Support City of Passaic plans for public access improvements through development of site trail and enhancement of existing trail (~1,580 lf).	N/A	N/A
Average Annual Functional Capacity Units (AAFCUs)	**1.29**	N/A	N/A

Significance of Restoration in the Region and at the Site

- ✓ Shoreline stabilization will reduce erosion and turbidity in waters.
- ✓ Shoreline stabilization and habitat improvements will provide secondary benefits of flood control to a flood prone area.
- ✓ T&E species habitat will be enhanced; stabilizes ecologically significant urban wetlands/riparian areas.
- ✓ Enhancement actions would reduce nutrient inputs to the waters and increase opportunity for nutrient transformation.
- ✓ Provides for additional public access and education opportunities.
- ✓ Advancement of TECs and Regional Goals
- ✓ Environmental Justice

Tentatively Selected Plan Design



Source: NJGIN NJ 2015 Orthoimagery

Alternative A Map
Dundee Island Park/Pulaski Park, Passaic, New Jersey

PROPOSED MEASURES LEGEND

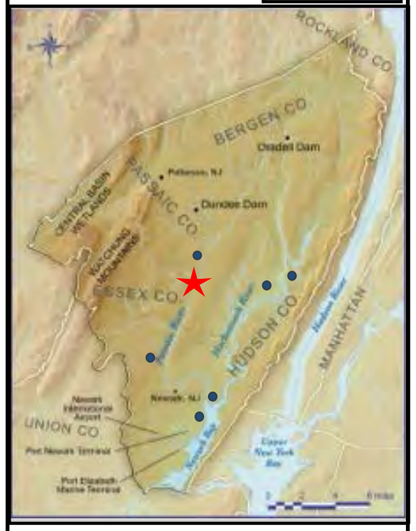
- SITE BOUNDARY
- BANK STABILIZATION / SHORELINE SOFTENING
- SELECT NATIVE PLANTINGS
- PUBLIC ACCESS

0 100 200 Feet

KEY MAP

HRE- Clifton Dundee Canal Green Acres Purchase

Passaic River, Lower Passaic Planning Region



★ Clifton Dundee Canal Green Acres
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- This site consists of approximately 1,800 linear feet of the western shoreline of the Lower Passaic River downstream of the Dundee Dam in Clifton, NJ. Rt 21 and a commercial property border the landward side of the site.
- The City of Clifton has established Dundee Island Park within the site which includes a trail network, benches, interpretive signage and fish consumption advisory signage.
- This site includes the Safas property, which is subject to an **NJDEP environmental investigation/cleanup** (NJDEP case # E20050092). Large volumes of flood-driven **woody debris and floatable trash** has been deposited along the shore of the central portion of the site, immediately below a low, flat peninsula projecting out into the river.
- An ancient stone fish weir is present in the middle of the river between this site and the Semel Ave & River Road Parcel site. An **active vagrant campsite strewn with trash** was observed within the southern portion of the site near Ackerman Ave during the site visit.

Restoration Opportunities/Measures

- Invasive species removal and native plantings
- Bank stabilization
- Secondary benefits of water quality improvements
- Public education/access

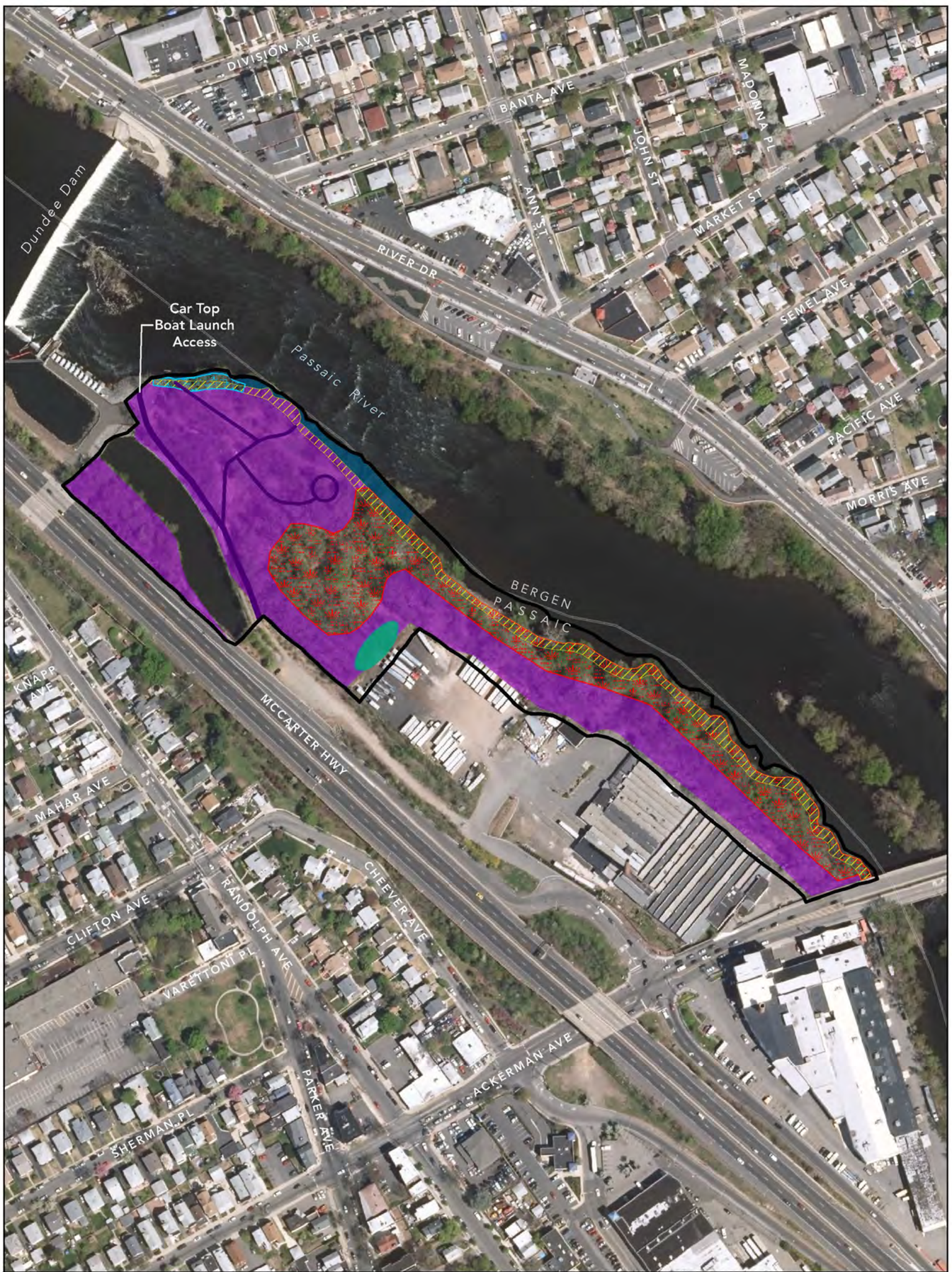
Alternative	A	B	C
Description	✓ Debris and invasive vegetation removal, re-grading, and planting of native emergent wetland (0.1 ac). ✓ Debris, fill and invasive vegetation removal and planting with native trees and shrubs to restore and create habitat for waterbirds (2.84 ac). ✓ Restoration and stabilization of riparian forest. Invasive species removal and planting with native vegetation to create a forest accessible to avian migrants and residents. Grading to improve hydrology and soil stability within the riparian zone (5.50 ac). ✓ Remove debris along stable shoreline (0.82 acres). ✓ Support Dundee Island Preserve plans for improvements to riparian floodplain by reconnecting riparian buffers and floodplains to the estuary to provide a range of quality habitats to aquatic organisms. ✓ Debris removal, improvement of shallow water habitat with incorporation and/or preservation of natural cobble and riffle structures (0.27 ac). ✓ Installation of sediment basin to treat stormwater runoff (0.11 ac). ✓ Support Dundee Island Preserve plans for improvements to public access. Creation of public trails through native vegetation habitat (1,081 lf), public overlook (0.01 ac), and public boat launch with access road.	✓ Debris and invasive vegetation removal, re-grading, and planting of native emergent wetland vegetation (0.1 ac). ✓ Remove invasive plant species and plant with native vegetation to create a forest accessible to avian migrants and residents. Conduct grading to provide proper hydrology and soil stability within the riparian zone (totaling 7.86 acres). ✓ Debris removal along stable shoreline (0.82 ac). ✓ Support Dundee Island Preserve plans for improvements to riparian floodplain by reconnecting riparian buffers and floodplains to the estuary to provide a range of quality habitats to aquatic organisms. ✓ Debris removal, improvement of shallow water habitat with incorporation and/or preservation of natural cobble and riffle structures (0.27 ac). ✓ Installation of sediment basin to treat stormwater runoff (0.11 ac). ✓ Support Dundee Island Preserve plans for improvements to public access. Creation of public trails through native vegetation habitat (1,081 lf) and public overlook (0.01 ac).	✓ Restoration and stabilization of riparian forest. Invasive species removal and planting with native vegetation to create a forest accessible to avian migrants and residents. Grading to improve hydrology and soil stability within the riparian zone (7.93 ac). ✓ Debris removal along stable shoreline (0.82 ac). ✓ Support Dundee Island Preserve plans for improvements to riparian floodplain by reconnecting riparian buffers and floodplains to the estuary to provide a range of quality habitats to aquatic organisms. ✓ Support Dundee Island Preserve plans for improvements to public access. Creation of public trails through native vegetation habitat (1,081 lf) and public overlook (0.01 ac).
Average Annual Functional Capacity Units (AAFCUs)	**14.43**	8.36	6.74

Alternative A is the “Best Buy Plan”

Significance of Restoration in the Region and at the Site

- ✓ Shoreline stabilization will reduce erosion and turbidity in waters.
- ✓ Restoration and enhancement actions would reduce nutrient inputs to the waters and increase opportunity for nutrient transformation.
- ✓ T&E species habitat will be enhanced; stabilizes ecologically significant urban wetlands/riparian areas.
- ✓ Shoreline stabilization and habitat improvements will provide secondary benefits of flood control to a flood prone area.
- ✓ Provides for additional public access and education opportunities.
- ✓ Advancement of TECs and Regional Goals
- ✓ Environmental Justice: Restoration and improvements to underserved communities

Tentatively Selected Plan Design



Source: NJGIN NJ 2015 Orthoimagery

Alternative A Map
Clifton Dundee Canal Green Acres Purchase and Dundee Island Preserve, Clifton, New Jersey

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- PUBLIC ACCESS
- EMERGENT WETLAND
- FORESTED WETLAND & SCRUB SHRUB WETLAND
- DEBRIS REMOVAL
- HABITAT FOR FISH, CRAB AND LOBSTER
- INVASIVE SPECIES REMOVAL WITH NATIVE PLANTINGS
- SEDIMENT BASIN

0 125 250 Feet

HRE- Oak Island Yards (Deferred Lower Passaic River Site)

Passaic River, Lower Passaic Planning Region

★ Oak Island Yards
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- Oak Island Yards contains Newark's largest extent of tidal marsh, tidal creeks, and palustrine emergent wetland.
- The **dominant vegetative species are invasive** *Phragmites*, mugwart and sumac. The substrate type is predominantly fine (sand/silt/clay) with some coarse cobble/gravel. Hydrologic environments include tidal, subtidal, and intertidal.
- The water regime is permanently and intermittently flooded with a drainage pathway on the east-west southern property.
- This site is located along approximately 900 feet of Newark Bay and is bordered by a shipping container yard, railroad tracks, and a HESS petroleum tank farm. A semi-tidal ditch with a tide gate is located adjacent to the site, below the railroad track embankment on the southeast border of the site. Since the date of the project mapping aerial photo, the shipping container storage yard has been extended southeast to within approximately 100 feet of the pond and runs the full width of the northwestern boundary of the site. Also, a considerable amount of **rock and gravel fill** has been placed onsite since the aerial photo was taken. Rock fill extends from the shipping containers all the way to the river along the southeast portion of the site and has also been placed in the river. The remainder of the site is vegetated.

Restoration Opportunities/Measures

- USEPA Remedial Action followed by restoration
- Emergent wetland creation (Low Marsh, High Marsh)
- Forested scrub shrub wetland creation
- Invasive species removal and native plantings
- Bank Stabilization
- Coastal Maritime Forest
- Habitat for fish, crabs and lobster
- Secondary benefits of water quality improvements
- Public education/access

Alternative	A	B	C
Description	✓ Restoration and creation of low marsh (7.13 ac). ✓ Creation of new tidal channels (1,821 lf). ✓ Debris and invasive vegetation removal, re-grading and planting of native emergent high marsh vegetation (0.73 ac). ✓ Debris, fill and invasive vegetation removal and planting of native trees and shrubs (0.84 ac). ✓ Stabilization of riparian forest by removing invasive species and planting with native vegetation (1.86 ac). ✓ Debris removal and preservation of natural bank vegetation (0.23 ac). ✓ Invasive plant removal and creation of habitat connectivity along new mudflats/tidal channels (1.02 ac) and existing habitat (1.32 ac). ✓ Provide Oyster Reef habitat (0.08 acres- not included in cost). ✓ Improved public access to water and increased opportunities for boating, hiking, education, and passive recreation by upgrading existing pedestrian path, replacing portion of path with pier deck system on southern perimeter of property (3,711 lf), and constructing overlook pier and dock for kayak and canoe launch (0.04 ac). ✓ Deepening and/or capping of contaminated sediment will be required conducted as part of the EPA Superfund Program.	✓ Restoration and creation of low marsh (5.97 ac).0 ✓ Creation of new tidal channels (1,987 lf). ✓ Planting of emergent high marsh vegetation (1.48 ac). ✓ Debris, fill and invasive vegetation removal and planting of native trees and shrubs (0.84 ac). ✓ Stabilization of riparian forest by removing invasive species and planting with native vegetation (1.86 ac). ✓ Debris removal and preservation of natural bank vegetation (0.33 ac). ✓ Invasive plant removal and creation of habitat connectivity along new mudflats/tidal channels (1.31 ac) and existing habitat (1.40 ac). ✓ Improved public access to water (3,711 lf), and construction of overlook pier and dock for kayak and canoe launch (0.04 ac). ✓ Deepening and/or capping of contaminated sediment will be required conducted as part of the EPA Superfund Program.	✓ Restoration and creation of low marsh (2.43 ac). ✓ Creation of new tidal channels (1,369 lf). ✓ Planting of emergent high marsh vegetation (5.66 ac). ✓ Debris, fill and invasive vegetation removal and planting of native trees and shrubs (0.84 ac). ✓ Stabilization of riparian forest by removing invasive species and planting with native vegetation (1.86 ac). ✓ Debris removal and preservation of natural bank vegetation (0.33 ac). ✓ Invasive plant removal and creation of habitat connectivity along new mudflats/tidal channels (0.54 ac) and existing habitat (1.55 ac). ✓ Improved public access to water (3,711 lf), and construction of overlook pier and dock for kayak and canoe launch (0.04 ac). ✓ Deepening and/or capping of contaminated sediment will be required as part of the EPA Superfund Program.
Avg Annual Functional Capacity Units (AAFCUs)	**30.77**	29.03	29.54
Average Cost/AAFCU			

Alternatives A and C were "Best Buy Plans" and Alternative A can be justified as TSP

Significance of Restoration in the Region and at the Site

- ✓ Creates/restores habitat (wetlands) lost, improves hydrology and functionality of site.
- ✓ Restoration would improve tidal flow and improve water quality through nutrient update and exchange.
- ✓ Habitats will provide secondary benefits of flood control to a flood prone area.
- ✓ T&E species habitat will be expanded; stabilizes ecologically significant urban wetlands/riparian areas.
- ✓ Advancement of TECs and Regional Goals: Alternative A restores ~5acres more low marsh
- ✓ Environmental Justice: restoration in underserved communities of Newark NJ that have been significantly impacted
- ✓ Improves recreational opportunities.

Tentatively Selected Plan Design

Alternative A Map
Oak Island Yards, Newark, New Jersey (Deferred Site)

Source: NJGIN NJ 2015 Orthoimagery

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- SHORELINE STABILIZATION
- PUBLIC ACCESS
- EMERGENT WETLAND (HIGH MARSH)
- EMERGENT WETLAND (LOW MARSH)
- FORESTED AND SCRUB/SHRUB WETLAND
- COASTAL AND MARITIME FOREST
- EXISTING HABITAT FOR FISH, CRAB AND LOBSTER
- HABITAT FOR FISH, CRAB AND LOBSTER

KEY MAP

Note: This site is a "Deferred Site" and would be restored following remediation as outlined in US EPA's Record of Decision (11 March 2016) of dredging and capping of the lower Passaic River.

0 100 200 Feet

HRE- Kearny Point (Deferred Lower Passaic River Site)

Passaic River, Lower Passaic Planning Region

★ Kearny Point
● Other Restoration Sites in Region

Baseline Conditions and Water Resource Problems

- The Kearny Point restoration site is a **decommissioned industrial facility** built entirely of **historic fill dominated by invasive species**. It contains a forested area on the eastern half of the site which is the location of an active bald eagle nest.
- This site consists of a 300 to 1,000 foot wide area located along approximately 3,000 feet of the northern shore of Newark Bay in Kearny, NJ.
- The surrounding environment consists entirely of **commercial develo**pments and roadways.
- Adjacent commercial developments include Hudson County Correctional Center and River Terminal, which is a massive distribution warehouse that includes the former site of a Western Electric's Kearny Works manufacturing plant and the Kearny Yard of Federal Shipbuilding and Drydock Company.
- Within the site boundary, half of the site is an active construction soil sorting site and half of the site is an undeveloped forested area.

Restoration Opportunities/Measures

- USEPA Remedial Action followed by Restoration
- Emergent wetland creation (Low Marsh, High Marsh)
- Forested scrub shrub wetland creation
- Invasive species removal and native plantings
- Bank stabilization
- Coastal Maritime Forest
- Habitat for fish, crabs and lobster
- Secondary benefits of water quality improvements
- Public education/access

Alternative	A	B	C
Description	✓ Re-establishment of existing low marsh along the eastern portion of the point and creation of new marsh along the western portion of the point. Creation of native emergent low marsh (25.98 ac). ✓ Debris and invasive vegetation removal and planting native emergent high marsh vegetation (0.41 ac). ✓ Debris, fill and invasive vegetation removal and planting with native trees and shrubs (0.99 ac). ✓ Stabilization of riparian forest and protection of area for continued use by bald eagles. Invasive plant species removal and planting with native vegetation to create a forest accessible to avian migrants and residents (6.55 ac). ✓ Debris removal and preservation of natural bank vegetation of existing bank stabilization (1,724 lf). ✓ Creation of new tidal channels (1.82 ac). ✓ Creation of an elevated path system that spans several habitats and that leads to a public overlook (1,614 lf). ✓ Deepening and/or capping of contaminated sediment will be required conducted as part of the EPA Superfund Program.	✓ Re-establishment of existing low marsh along the eastern portion of the point and creation of new marsh along the western portion of the point. Creation of native emergent low marsh (18.62 ac). ✓ Debris and invasive vegetation removal and planting native emergent high marsh vegetation (2.18 ac). ✓ Debris, fill and invasive vegetation removal and planting with native trees and shrubs (2.33 ac). ✓ Stabilization of riparian forest and protection of area for continued use by bald eagles. Invasive plant species removal and planting with native vegetation to create a forest accessible to avian migrants and residents (11.28 ac). ✓ Debris removal and preservation of natural bank vegetation of existing bank stabilization (1,771 lf). ✓ Creation of new tidal channels (1.81 ac). ✓ Creation of an elevated path system that spans several habitats and that leads to a public overlook (~ 3,097 lf). ✓ Deepening and/or capping of contaminated sediment will be required conducted as part of the EPA Superfund Program.	✓ Re-establishment of existing low marsh along the eastern portion of the point and creation of new marsh along the western portion of the point. Creation of native emergent low marsh (8.77 ac). ✓ Debris and invasive vegetation removal and planting native emergent high marsh vegetation (1.69 ac). ✓ Debris, fill and invasive vegetation removal and planting with native trees and shrubs (1.84 ac). ✓ Stabilization of riparian forest and protection of area for continued use by bald eagles. ✓ Creation of new tidal channels (0.49 ac). ✓ Creation of an elevated path system that spans several habitats and that leads to a public overlook (4,455 lf). ✓ Deepening and/or capping of contaminated sediment will be required conducted as part of the EPA Superfund Program.
Average Annual Functional Capacity Units (AAFCUs)	145.00	135.01	125.27

Alternatives A and C were “Best Buy Plans”, Alternative C most cost-effective

Significance of Restoration in the Region and at the Site

- ✓ Leverages prior and ongoing regional wetland restoration and enhancements within watershed.
- ✓ Restoration would improve tidal flow and improve water quality through nutrient update and exchange, improve connectivity of habitats.
- ✓ Habitats will provide secondary benefits of flood control to a flood prone area.
- ✓ T&E species habitat will be expanded; stabilizes ecologically significant urban wetlands/riparian areas.
- ✓ Kearny Point restores significant acreage of wetland habitat to achieve TEC goals
- ✓ Environmental Justice: Lower Passaic River damages from impacts and loss of habitat to underserved community
- ✓ Improves recreational opportunities.

Tentatively Selected Plan Design

Alternative C Map
Kearny Point, Kearny, New Jersey (Deferred Site)

Source: NJGIN NJ 2015 Orthoimagery

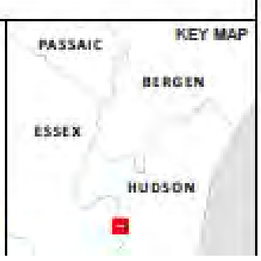
PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- PUBLIC ACCESS
- BANK STABILIZATION
- FORESTED WETLAND & SCRUB SHRUB WETLAND
- COASTAL AND MARITIME FOREST
- EMERGENT WETLAND (HIGH MARSH)
- EMERGENT WETLAND (LOW MARSH)
- EXISTING HABITAT FOR FISH, CRAB AND LOBSTER
- HABITAT FOR FISH, CRAB AND LOBSTER

Note: This site is a "Deferred Site" and would be restored following remediation as outlined in US EPA's Record of Decision (11 March 2016) of dredging and capping of the lower Passaic River.

0 200 400 Feet

KEY MAP



HRE – SMALL SCALE OYSTER RESTORATION

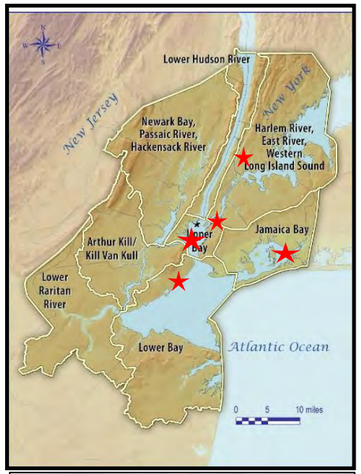



Photo1


Photo2


Photo3


Photo 4

Prior to European colonization, oysters and oyster reefs were key components of the estuarine habitat in HRE. It is believed that approximately 350 square miles of oyster beds were present in the HRE. Principal concentrations occurred long the Brooklyn, Manhattan, and Queens shorelines, Jamaica Bay, and Hudson and East Rivers.

Due to **overharvesting, pollution and habitat disturbances**, **oysters became practically non-existent** by the mid 20th Century. However, with the passage of the Clean Water Act and other environmental legislation, water quality has improved and limited isolated populations do exist in a few areas of the HRE. Initial pilot programs to restore oysters began in the early 2000s, such as the Oyster Restoration Research Partnership Program (ORRP), a partnership of over 30 not-for-profit organizations, Federal (including NYD), state and city agencies, scientists and citizens. ORRP initial programs , along with the NYCDEP, NY/NJ Baykeeper, NY Harbor School, etc. have determined that restored oysters and created oyster beds can survive in the HRE. However, oysters are sessile organisms and offspring are often dispersed into the current with little chance of resettlement. Thus, a more targeted oyster restoration effort, as proposed, in the HRE would promote and enhance the oyster recovery to attain the TEC Goal of 20+ acres of oyster beds by the year 2020 - as well as provide critical scientific information on how to restore oysters more efficiently in the future.

As part of the HRE, five sites were selected for oyster restoration throughout the estuary. The sites were selected based on past successes and/or to work in concert with other ecological improvements. The sites are generally along the shoreline in depths of water that range from 3-12 feet in depth.

Restoration Opportunities/Measures

- Habitat Creation and Improvement
- Shoreline Stabilization
- Public education/access
- Water Quality Improvement

Site	Governors Island	Soundview Park	Jamaica Bay	Naval Station Earle	Bush Terminal
Partner	NY Harbor Foundation	Hudson River Foundation	NYCDEP	NY/NJ Baykeeper	NY Harbor Foundation
Pilot	Many prior experiments /restoration efforts as part of the ORRP and Harbor School have occurred. The laboratory and aquaculture facilities at the school can grow more than a million oysters per year.	ORRP Phase I 2010-2012 2013 Community Based Restoration of Oyster Reef Habitat in the Bronx River. To date, one of the largest oyster restoration projects in the HRE.	NYCDEP has conducted studies in Jamaica Bay on oysters from 2010-2015 and documented oyster survival. Current oyster pilot is ongoing at this site.	The NY/NJ Baykeeper has conducted oyster restoration at NWS Earle since 2010 on a small 0.25-acre plot. Oyster survival has been documented.	Complements other restoration work by NYCDP&R at the adjacent Bush Terminal Piers Park. Close proximity to Harbor School.
Recommended Oyster Restoration Techniques					
Description	✓ **Gabion Blocks** (Photo 1). The blocks are 12x3x3 ft wire cages (smaller cages shown in photo) filled with oyster shells pre-seeded with spat. (1.66 ac) ✓ **Oyster Condos** (Photo 2) - Triangular structures; mimics the rugosity (three dimensionality) of an oyster reef. (1.79 ac) ✓ **Hanging Trays/Super Trays** (Photo 3). The trays are submerged and suspended from a float or pier to serve as larval source for adjacent habitat. (0.68 ac) <u>Rationale:</u> Restoration designed to place reproductive stock (hanging trays) in close proximity to suitable hard substrate (condos and gabion blocks) for settlement. The use of Governors island, in concert with the Harbor School, provides facilities, technical experts and a cost-effective means for construction and maintenance, as well as an excellent teaching/research opportunities for future generations of scientists.	✓ **Spat on Shell (SoS)**. (Photo 4). Produced by the Harbor School using local broodstock, with a veneer layer of mollusk shell on a base of rock/rubble. Suited to lower energy environments with firm substrate, or in combination with other techniques that shelter the SoS from strong currents and smothering by sediments, and prevent sinking into loose substrate. (0.83 ac) ✓ **Gabion Blocks**. (0.14 ac) <u>Rationale:</u> Restoration designed to build on past successes. Restoration will occur in an area with subtidal rock out crops to form a ~2.75 ac reef/bed complex The design would continue to provide excellent research opportunities.	✓ **Oyster Beds (shells, gravel, porcelain)** (.5 ac) ✓ **Hanging Trays/Super Trays** 200 trays (1ft x 5 ft) place oysters vertically in the water column, with immediate benefits to water quality as oysters filter the water and can disperse veliger (larvae) to nearby constructed reefs, beds (>0.5 ac), or other hard substrate as receiver site. <u>Rationale</u>: Builds on past success of NYCDEP and provides valuable information on substrates (e.g., shells, gravel, etc.), recruitment, and settlement patterns of oysters spawned from the hanging tray stocks.	✓ **Spat on Shell (SoS)** (3.10 ac) ✓ **Gabion Blocks** (3.20 ac) ✓ **Reef Balls** (Photo 5). Reef balls are half-dome, concrete structures, with holes that allow water to flow through, and fish and other aquatic creatures to inhabit the interior. Although used successfully to construct intertidal reefs, reef balls are better suited to subtidal areas to avoid damage from waves and currents. (1.30 ac) <u>Rationale:</u> Builds on past success of NY//NJ Baykeeper. Security provided by Naval forces would eliminate any potential poaching.	✓ **Spat on Shell (SoS)** (31.65 ac) ✓ **Gabion Blocks** (8.48 ac) provide protection for adjacent spat on shell habitat ✓ **Oyster Condos** (3.49 ac) ✓ **Hanging Trays/Super Trays** (0.1 ac) <u>Rationale:</u> Would serve as a model for the re-utilization of derelict portions of the harbor shoreline and has positive synergistic effect with adjacent park development. The derelict piers provide wave attenuation and depth variability provide habitat diversity. Site is close to Harbor School resulting in reduced transport costs for future placement of oysters. Provides excellent public access, stewardship and future study.

Significance of Restoration in the Region and at the Site

- ✓ Builds/expands on previous successful oyster restoration in the HRE
- ✓ Achieves the HRE Regional Goal of establishing 20 acres of reef habitat across several sites by 2020 and advances the Billion Oyster Program (BOP) to restore one billion live oysters to New York Harbor over the next twenty years.
- ✓ Ecological Uplift includes:
  - **Improve habitat quality for invertebrates, fish and vegetation;**
  - **Improve ecosystem function**
  - **Improve water quality through filtration of nutrients, water turbidity, nitrogen, phosphorous, organic carbon;**
  - **Carbon sequestration**
  - **Stabilize the shoreline to prevent erosion; and**
  - **Wave attenuation**
- ✓ Innovative solution to reutilizing derelict shorelines and piers.
- ✓ Restores an important estuarine species in NY Harbor.
- ✓ Provides unique opportunity to work with Harbor School for construction and maintenance of reefs


Photo 5

Tentatively Selected Plan Design

Source: NYS GIS Clearinghouse 2014 Orthoimagery

Hudson-Raritan Estuary (HRE) Feasibility Study
Governors Island, New York City, New York

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- HANGING TRAYS
- GABION BLOCKS
- OYSTER CONDOS

0 200 400 Feet

Tentatively Selected Plan Design

Hudson-Raritan Estuary (HRE) Feasibility Study
Soundview Park, Bronx, New York

Source: NYS GIS Clearinghouse 2014 Orthoimagery

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- GABION BLOCKS
- SPAT-ON-SHELL*
- EXISTING SPAT-ON-SHELL
- EXISTING HARD ROCK SUBSTRATE
- EXISTING SHELL BASE

*Existing shell base (2013) to be set with 250,000 additional spat on shell

0 100 200 Feet

Tentatively Selected Plan Design

Hudson-Raritan Estuary (HRE) Feasibility Study
Jamaica Bay, Queens, New York

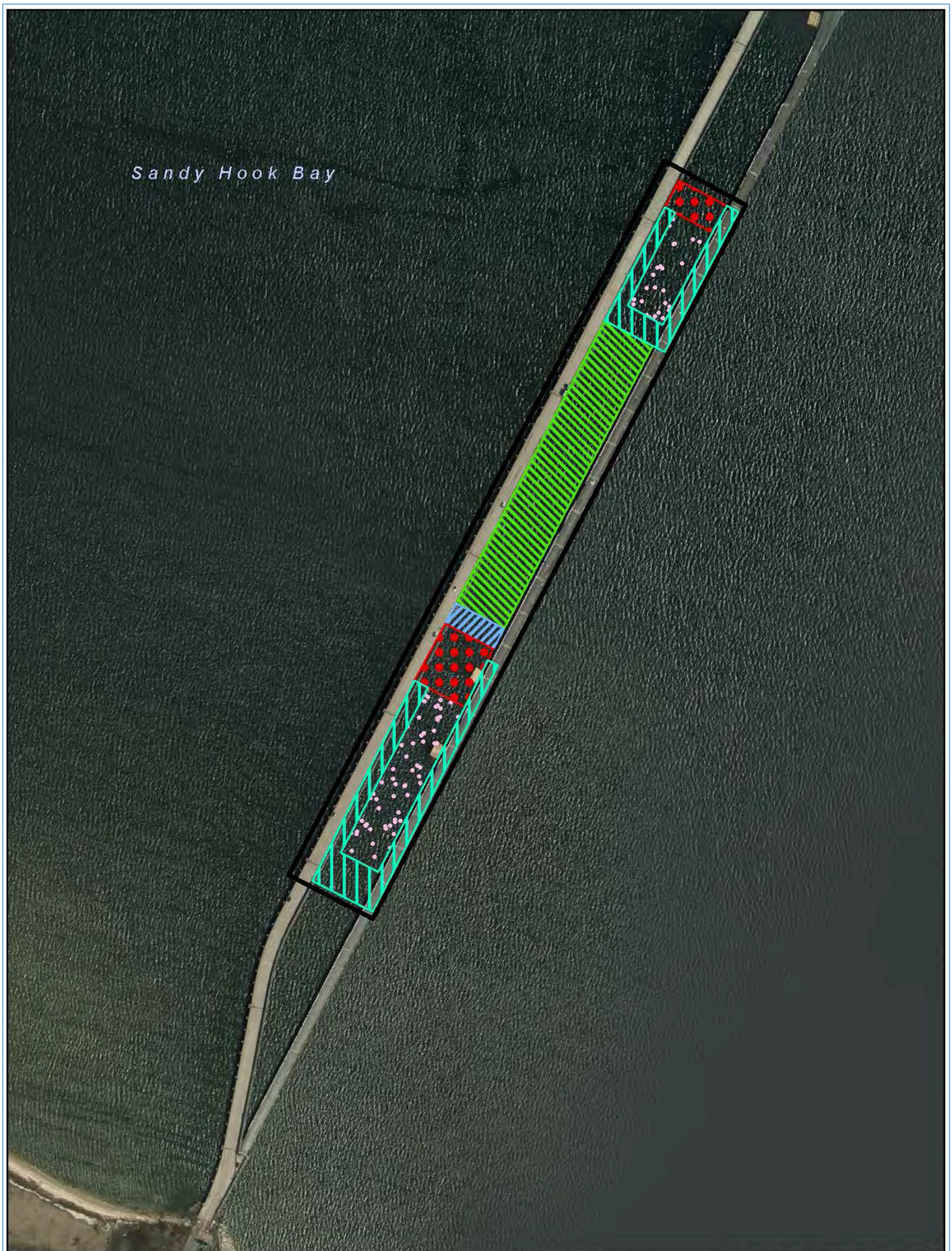
Source: NYS GIS Clearinghouse 2013 & 2014 Orthoimagery

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- OYSTER BEDS (SHELLS, GRAVEL AND/OR PORCELAIN)
- OYSTER STRUCTURES (HANGING SUPER TRAYS AND CABLE)

0 200 400 Feet

Tentatively Selected Plan Design



Hudson-Raritan Estuary (HRE) Feasibility Study
Navy Earle Pier, Middletown, New Jersey

Source: NJGIN 2015 Orthoimagery

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- GABION BLOCKS
- OYSTER CONDOS
- REEF BALLS
- SPAT-ON-SHELL
- EXISTING OYSTER ENHANCEMENT AREA
- OYSTER AREA UNDER DEVELOPMENT

0 300 600 Feet

Tentatively Selected Plan Design

Source: NYS GIS Clearinghouse 2014 Orthoimagery

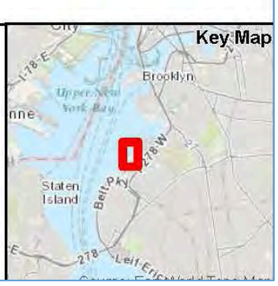
Hudson-Raritan Estuary (HRE) Feasibility Study
Bush Terminal Park, Brooklyn, New York

PROPOSED MEASURES LEGEND

- SITE BOUNDARY
- GABION BLOCKS
- HANGING TRAY
- OYSTER CONDOS
- SPAT-ON-SHELL

0 250 500 Feet

Key Map



Appendix B – Cultural Resource by TSP Restoration Site

Section B.1 – New York Sites

Section B.2 – New Jersey Sites

Cultural Resources by Restoration Site – New York

Planning Region	HRE Site	Historic Resources (1 Mile Radius)	AWOIS (1 Mile Radius)	Archaeological Sites (1 Mile Radius)	Within an Archaeological Sensitivity Area	Surveys (1/2 Mile Radius)
Jamaica Bay	Fresh Creek	----	----	3609, 3607, 3610, 7390, 04701.000113, 04701.000118	Yes	**02PR02030/Queens County 31**, **Kings County 32**, 08PR0211/Kings County 60,
	Hawtree Park (Hawtree Point)	08101.009386	----	4534, 8431	Yes	**02PR2030/King or Queens County 31/ Queens County 1**
	Dubos Point	08101.009536, 08101.007210	----	----	No	**02PR2030/King County 31**
	Brant Point	08101.009536, 08101.007210, 08101.009399	----	----	No	**02PR2030/Kings County 31**
	Bayswater	08101.009417	----	4050	No	**02PR2030/Kings County 31-**
	Dead Horse Bay	08501.007322, Fort Tilden Historic District, Jacob Riis Park Historic District	13261, 13519, 13520, 13521, 13522, 13523, 13524, 13525, 13528, 13529, 14520, 14521, 14533, 14534, 14536	04701.000124, 04701.000114	Yes	646/D388/Kings County 54, 09PR00796
	Elders Center Marsh Island*	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Duck Point Marsh Island	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Pumpkin Patch East	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Pumpkin Patch West	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Stony Point Marsh Island	----	----	04701.000116	No	02PR2030/Kings County 31/Queens County 1
Harlem River/East River/Western Long Island Sound	Flushing Creek	22 Records	1686	**4542, 4545, 4544**, 719, 4524, 4526, 4540, 08101.000133, 08101.011526	Yes	**03PR2845/Queens County 38**, 03PR3481, 06PR0556
	Stone Mill Dam (Snuff Mill Dam)	**New York Botanical Gardens**	----	----	No	**05PR3926**, 04PR6033,
	Bronx Zoo and Dam	Rainey Memorial Gates, 24 Records within 1 mile	----	----	No	04PR6033, 05PR3926
	Shoelace Park	18 records within 1 mile	----	2837, 7726	Yes	--------
	Muskrat Cove	--------	----	2837, 7725, 7726	Yes	--------
	Bronx River Park/West Farm Rapids Park	**00501.001398**, 19 Records within 1 mile	----	2831	No	05PR1491, 09PR5898
	Bronxville Lake	**Bronx River Parkway Reservation,** Lawrence Park Historic District 15 Records within 1 mile	----	5221, 5222, 5197	Yes	--------
	Crestwood Lake	**Bronx River Parkway Reservation**, Lawrence Park Historic District, 12 Records within 1 mile	----	**5222,** 5221	Yes	--------
	Garth Woods/Harney Road	**Bronx River Parkway Reservation,** Scarsdale RR Station, U.S. Post Office Scarsdale, Caleb Hyatt House, 11903.000058, 11948.000023	----	5222, 11916.000006, 6800, 6801, 6805	Yes	**07PR5557, 09PR0636, Westchester County 224, 234**
	Westchester County Center	**Bronx River Parkway Reservation,** 23 Records within 1 mile	----	**5231**, 5194, 5230, 7783, 11943.000693, 11943.000766	Yes	**03PR2938/Westchester County 295, Westchester County 247,** 03PR3321, 10PR5274

Planning Region	HRE Site	Historic Resources (1 Mile Radius)	AWOIS (1 Mile Radius)	Archaeological Sites (1 Mile Radius)	Within an Archaeological Sensitivity Area	Surveys (1/2 Mile Radius)
Oyster Restoration	Jamaica Bay – Head of Bay *	----	----	4548, 4050	Yes	02PR2030/Kings County 31
	Soundview Park *	00501.001349	1626, 1624, 1629, 1625	2840, 713	Yes	------
	Bush Terminal	13 Records within 1 mile	13402, 13403, 13488, 13489	----	No	**07PR00965/Richmond 105**, HUD A 271a
	Governors Island	**Governors Island,** 68 Records within I Mile	30 Records within 1 mile	24 Records within 1 mile	Yes	**07PR0965**, **10PR6038, 06PR5797, 05PR5362**, 08PR2349, 09PR5177, 07PR0965, 05PR4529, 08PR1195, 07PR3361, 05PR1931, 06PR4540, 06PR5859, 07PR5050, 08PR1568, 08PR1195, 06PR4539, HUD N 65, a

NOTES: Bolded items are located within the site boundaries. Surveys are listed only when they cover areas within ½ mile of the site boundaries. Some sites had more resources than could be listed in the table, all sites within the site boundaries are listed. Jamaica Bay and Soundview Park Oyster Restoration sites were not included in the Cultural Resources Overview Survey.

Cultural Resources by Restoration Site – New Jersey

Planning Region	HRE Site	Historic Resources (1 Mile Radius)	AWOIS (1 Mile Radius)	Archaeological Sites (1 Mile Radius)	Within an Archaeological Sensitivity Area	Surveys (1/2 Mile Radius)
Newark Bay/Hackensack River/Passaic River	Meadowlark Marsh	16 Records within 1 mile	----	----	No	BER A 132, A 240a, A 747, A 278, R 76, E 36, E 46**, MULT A 240, a, A 181, a**, F 41, A55, A55(1)a, A55(2), **HUD Z 21**
	Metro Media Marsh	NYS&W RR Tunnel and Cut	----	----	No	BER A 132, **A 240a**, **A 747,** A 295, R 76, Z 179, HUD V 1, MULT A 240, a, A55, A55(1)a, A55(2), F41
	Branch Brook Park	**Branch Brook Park Historic District, Morris Canal Historic District, The City of Newark Subways,** 1900 Records within 1 mile	----	28-ES-079, 099, 100, 101, 102, 103, 111, 112, 113, 114, 115, 116 ,117, 123, 124, 125	No	**ESS B 3, Y 144, Y 742, F 97, MULT 236a, Z 28a,** ESS AA 299, AA369, AA 371, AA 431, AA 468, AA 89a, B 12, F 560, F 633, F 633a, F 856, Z 140, F 239a, b, H 12, H 15, H 126, H 126a, H 126 b, d, H 13, H 161, H43, H 51, HSR 169, HSR 178, HSR 64, J 2, S 5, Y 142, Y 143, Z 112, Z 201, Z 26, Z 26a, Z 29a, b, MULT F 97, J 2, 251, 53
	Clifton Dundee Canal Green Acres	**Dundee Dam, Dundee Canal Industrial Complex Historic District including Dundee Textile Complex and Dundee Canal**, 41 Records within 1 mile	----	28-PA-037, 038, 039, 040, 142, 143, **144**, **145**, 148A, 148B, 172, 28-BE-032, 033, 034, 089, 090, 092, **093**, **094**, 095, 096	Yes	**MULT F 34,** F 128, F 362, **PASS F 128, a, AA 510,** HSR 318dv3, Y 38, a, b, BER AA 226, AA 295,
	Oak Island Yards (Deferred)	**Lehigh Valley Railroad Historic District, Pennsylvania Railroad New York Bay Branch Historic District, Lehigh Valley Railroad Oak Island Yard HD,** 8 Records within 1 mile	10622, 10623, 10624, 10625	----	No	**ESS Y 143**, E 23, AA 580, **MULT R 89, A 12, A 201, a**
	Dundee Island Park	45 records within 1 mile	----	28-PA-041, 042, 142, 143, 148A, 148B, 174 28-BE-096, 097	Yes	**MULT A 44**, AA 413**, D 2, D 25**, H 130, F 128 PASS F 128, F 128a, Z 188, Y 38, Y 38a, Y 38b
	Kearny Point (Deferred)	39 Records within 1 mile	-----	28-HD-009, 28-HD-010	No	**MULT A 185, HUD E 14,** ESS E 23, F 348, Z 56, Y 143, HUD AA 366, A 285a, MULT F 142
Oyster Restoration	Naval Weapons Station Earle	**Naval Weapons Station Earle Historic District and Alexander Hamilton Steamship**	5750, 3183, 2339, 2338, 2329, 5750	----	No	**Mon Q 17, Q 169, Q 9, Q 14**

NOTES: Bolded items are located within the site boundaries. Surveys are listed only when they cover areas within ½ mile of the site boundaries. Some sites had more resources than could be listed in the table, all sites within the site boundaries are listed.

Appendix C – Correspondence

Section C.1 – Jamaica Bay Correspondence

Section C.2 – Hackensack Meadowlands Correspondence

Section C.3 – HRE Correspondence

Section C.1 – Jamaica Bay 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

October 5, 2004

Environmental Analysis Branch

Ms. Sherry White
Cultural Resources Officer
Stockbridge-Munsee Band of Mohicans
N8476 MohHeConNuck Road
Bowler, Wisconsin 54416

Dear Ms. White:

An earlier letter, dated March 15, 2004, announced the development of a Programmatic Agreement (PA) between the US Army Corps of Engineers, the New York State Office of Parks, Recreation, and Historic Preservation, the New York City Landmarks Commission, the National Park Service and the New York City Department of Parks (Enclosure 1).

The Stockbridge-Munsee Tribe, due to its extensive cultural heritage in the region, has been identified as a possibly interested party in the development of this Agreement. I would like to take this opportunity to provide the Tribe with a draft copy of the PA, and offer the opportunity to comment on the draft PA and proposed project, before they are finalized.

I would also like to take this opportunity to solicit your opinion as to other non-agency groups this PA could potentially be sent to. Those that we are considering at this time include:

The Canarsie Historical Society
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Brooklyn College Archaeological Research Center
The Delaware Nation

If there are other groups that you feel may be interested in the Jamaica Bay Ecosystem Restoration Project and its subsequent PA, please include the names and contact information with your comments.

Please review the enclosed draft and present any comments within 30 days to the following address:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

If you feel that it would be beneficial to schedule a meeting, amongst the signatories, to discuss the PA, please include the request in your comments.

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

Delaware Nation NAGPRA Office

P.O. Box 825, Anadarko, OK 73005
Phone: (405) 247-2448
Fax: (405) 247-9393

October 28, 2004

Kirsten Davis, Project Archaeologist
US Army Corp of Engineers
26 Federal Plaza, Rm. 2136
New York, NY 10278

RE: Programmatic Agreement with US Army Corp of Engineers, the New York State Office of Parks, Recreation, and Historic Preservation, the New York City Landmarks Commission, the National Park Service and the New York City Department of Parks

Dear Ms. Davis:

Thank you for contacting the Delaware Nation regarding the above referenced project. The Delaware Nation is committed to protecting archaeologist sites that are important to tribal heritage, culture, and religion. Furthermore, the tribe is particularly concerned with archaeologist sites that may contain human burial remains and associated funerary objects.

The Delaware Nation is agreeable to provide input for programmatic agreements within our area of interest. However, after reviewing your draft it is evident that there has been an omission of a primary party with whom you should also be consulting with on this programmatic agreement. Please contact and include the Delaware Tribe of Oklahoma located in Bartlesville, Oklahoma in your revised draft. When the revised draft is complete we request that you provide a copy to our office for review.

We appreciate our cooperation in contacting the Delaware Nation. Should you have any questions, feel free to contact me.

Sincerely,

Tamara Francis
NAGPRA/Cultural Preservation Director

The Delaware Nation

P.O. Box 825
Anadarko, OK 73005
405-247-2448
Fax: 405-247-9393

8 October 2004

RE: Points of Contacts (POCs)

To Whom It May Concern:

Thank you for contacting the Delaware Nation. The Delaware Nation believes that it is crucial for our nation to have an obligation to comment on government-to-government consultations not only with the Government Agencies but also with other sovereign Indian nations.

Please add the following people to the points of contacts for the Delaware Nation:

Mr. Edgar L. French
President

Ms. Linda Poolaw
NAGPRA Representative

Ms. Tamara Francis
NAGPRA/Cultural Preservation Director

Should you have questions or concerns, do not hesitate to contact the Delaware Nation. We look forward to establishing a long and productive working relationship between your organization and the Delaware Nation.

Sincerely,

Edgar L. French
President

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

October 5, 2004

Environmental Analysis Branch

Bruce Gonzales, President
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Dear Mr. Gonzales:

An earlier letter, dated March 15, 2004, announced the development of a Programmatic Agreement (PA) between the US Army Corps of Engineers, the New York State Office of Parks, Recreation, and Historic Preservation, the New York City Landmarks Commission, the National Park Service and the New York City Department of Parks (Enclosure 1).

The Delaware Nation, due to its extensive cultural heritage in the region, has been identified as a possibly interested party in the development of this Agreement. I would like to take this opportunity to provide the Nation with a draft copy of the PA, and offer the opportunity to comment on the draft PA and the proposed project, before they are finalized.

I would also like to take this opportunity to solicit your opinion as to other non-agency groups this PA could potentially be sent to. Those that we are considering at this time include:

The Canarsie Historical Society
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Brooklyn College Archaeological Research Center
The Stockbridge-Munsee Tribe

If there are other groups that you feel may be interested in the Jamaica Bay Ecosystem Restoration Project and its subsequent PA, please include the names and contact information with your comments.

Please review the enclosed draft and present any comments within 30 days to the following address:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

If you feel that it would be beneficial to schedule a meeting, amongst the signatories, to discuss the PA, please include the request in your comments.

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

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

REPLY TO
ATTENTION OF

November 19, 2004

Environmental Analysis Branch

Poospatuck Reservation
Eastern Area Office
P.O. Box 86
Mastic, NY 11950

Re: USACE Jamaica Bay Ecosystem Restoration
Kings and Queens Counties, New York
Programmatic Agreement

To Whom it May Concern:

This letter is in reference to a project that the United States Army Corps of Engineers, New York District (Corps) is currently undertaking in the Jamaica Bay Area. The Corps is developing a plan to restore the ecosystem of eight specific Jamaica Bay sites to their original ecological levels.

This letter is meant to serve two purposes: 1) to inform you of the project and 2) to request information as to who to best contact in regards to Cultural Resource issues. The Corps is currently drafting a Programmatic Agreement between itself and other State and Federal Agencies that will ensure the proper execution of the National Register of Historic Places, Section 106 mandate as well as follow all NAGPRA regulations.

I would like to request the name and contact information for the person on the Poospatuck Reservation who would best be contacted to deal with the above-mentioned project as well as the cultural resources of the Poospatuck. The contact information can be sent to the following address:

Kirsten R. Davis, Project Archaeologist
US Army Corps of Engineers
Environmental Analysis Branch
26 Federal Plaza, Rm. 2136
New York, New York 10278

Sincerely,

Leonard Houston
Chief, Environmental Analysis Branch

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

March 8, 2004

Kirsten Davis
New York District Office
Army Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 0278-0090

Dear Ms. Davis:

Re: CORPS
Jamaica Bay Ecosystem Restoration
Kings, Queens and Nassau Counties, NY
Programmatic Agreement
02PR02030

Thank you for requesting the comments of the State Historic Preservation Office (SHPO) with regard to the potential for this project to affect significant cultural/historical resources. SHPO has reviewed your submission regarding the proposal to develop a Programmatic Agreement for this project. The SHPO concurs with this proposal and looks forward to working with you in this process. We have reviewed the material submitted with your cover letter, including the archaeological recommendations for each of the proposed units. While we concur with the majority of the proposed Phase 1B work, there is some concern regarding the proposed work at Locations 6 and 7 (Hawtree Point and Motts Point). At both these locations, the Phase 1A investigation identified a potential for prehistoric deposits, however the Phase 1B proposal at each indicates "Surface and subsurface examination with largely mechanical means". This methodology seems to be aimed at identifying historic deposits, but it is not clear that the potential for prehistoric deposits has been considered in developing this proposal. Therefore, SHPO recommends that for these two locations the proposed testing methodology be reconsidered, or if there are reasons to suspect that prehistoric deposits may not be present, they should be presented clearly in the Programmatic Agreement documents. We look forward to working with you on this project.

Please contact me at extension 3291 if you have any questions regarding these comments.

Sincerely

Douglas P. Mackey
Historic Preservation Program Analyst
Archaeology

An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

November 9, 2004

Kirsten Davis
US Army corps of Engineers
26 Federal Plaza, Rm. 2136
New York, NY 10278

Dear Ms. Davis;

Re: CORPS
Jamaica Bay Ecosystem Restoration
Kings, Queens and Nassau Counties, NY
Draft Programmatic Agreement
02PR02030

Thank your for requesting the comments of the New York State Historic Preservation Office (SHPO) with regard to the potential for this project to affect significant historical/cultural resources. SHPO has reviewed the Draft Programmatic Agreement (PA) that was included with your letter of October 5, 2004 and received in our office on October 25, 2004. Based on this review, the SHPO concurs with the language of the Draft PA. Our one comment would be to insure that all of the appropriate Native American Tribes that may have an interest in the project have been consulted.

Please contact me at extension 3291 if you have any questions regarding these comments.

Sincerely

Douglas P. Mackey
Historic Preservation Program Analyst
Archaeology

An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

In an effort to better serve the public and other agencies, the New York State Historic Preservation Office (SHPO) is introducing its **On Line Resource Center**. This tool is part of our new web site. Simply go to www.nysparks.state.ny.us/shpo and select **On Line Resources** from the menu. Here users will discover links to three new web based programs:

Geographic Information System (GIS)
A map based program that allows the user to select a community and view the boundaries of properties listed in the State and National Registers of Historic Places in New York State. The site also allows the user the ability to see a graphic depiction of areas that may be archeologically sensitive. These two components will provide most users with a comprehensive initial overview of the cultural resources of a specific location within the state.

National Register Document Imaging Program
This program contains the images of New York's more than 4,400 State and National Registers of Historic Places documents. An easy search program allows the user to select listed resources by community, type, style, materials, or historic use.

SPHINX (**S**tate **P**reservation **H**istoric **I**nventory **N**etwork **Ex**change)
This system provides access to the State Historic Preservation Office's program-wide database for bureau records. This database includes information on more than 250,000 addresses in the state. (requires a password signup)

We are requesting that you utilize these applications to determine the ***general*** presence or absence of cultural resources in your community or project area **prior** to submitting a request for this data to our office. It is expected that these on-line tools should eliminate your need to submit information queries where only the State Environmental Quality Review Act (SEQRA) is involved. Consultation with the SHPO is mandatory when there is any state or federal involvement in a project.

If you should have questions regarding these new programs please do not hesitate to contact John Bonafide at (518) 237-8643, ext. 3263

Thank you for your assistance in helping us to streamline our process and to better meet your needs.

ATTENTION

Please find attached a REVISED *Project Review Cover Form*. This new version replaces the one currently in circulation. Please include this form with ALL submissions to this office.

Rev 6-04

An Equal Opportunity/Affirmative Action Agency
printed on recycled paper

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island Resource Center, PO Box 189, Waterford, NY 12188-0189 (Mail)
Delaware Avenue, Cohoes 12047 (Delivery)
(518) 237-8343

PROJECT REVIEW COVER FORM

Rev. 10-04

Please complete this form and attach it to the top of ***any and all information submitted to this office*** *for review.*
Accurate and complete forms will assist this office in the timely processing and response to your request.

This information relates to a previously submitted project.

PROJECT NUMBER ____ PR_____

COUNTY _____

☐ If you have checked this box and noted the previous Project Review (PR) number assigned by this office you do not need to continue unless any of the required information below has changed.

---

2. This is a new project. ☐ If you have checked this box you will need to complete ALL of the following information.

Project Name _____

Location _____
You MUST include street number, street name and/or County, State or Interstate route number if applicable

City/Town/Village _____
List the correct municipality in which your project is being undertaken. If in a hamlet you must also provide the name of the town.

County _____
If your undertaking* covers multiple communities/counties please attach a list defining all municipalities/counties included.

TYPE OF REVIEW REQUIRED/REQUESTED (Please answer both questions)

A. Does this action involve a permit approval or funding, now or ultimately from any other governmental agency?

☐ No ☐ Yes

If Yes, list agency name(s) and permit(s)/approval(s)

Agency involved	Type of permit/approval	State	Federal
		☐	☐
		☐	☐
		☐	☐

B. Have you consulted the NYSHPO web site at http://www.nysparks.state.ny.us/shpo to determine the preliminary presence or absence of previously identified cultural resources within or adjacent to the project area? If yes:

Was the project site wholly or partially included within an identified archeologically sensitive area?	☐ Yes	☐ No
Does the project site involve or is it substantially contiguous to a property listed or recommended for listing in the NY State or National Registers of Historic Places?	☐ Yes	☐ No

CONTACT PERSON FOR PROJECT

Name _____ **Title** _____

Firm/Agency _____

Address _____ **City** _____ **STATE** _____ **Zip** _____

Phone (____) _____ **Fax** (____) _____ **E-Mail** _____

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

October 5, 2004

Environmental Analysis Branch

Ruth Pierpont, Director
New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Service Bureau
Peebles Island, P.O. Box 189
Waterford, New York 12188-0189

Re: USACE Jamaica Bay Ecosystem Restoration
Kings, Queens, and Nassau Counties, New York
Programmatic Agreement
Project Number: 02PR02030

Dear Ms. Pierpont:

In a letter dated February 23, 2004 the US Army Corps of Engineers announced our intent to draft and execute a Programmatic Agreement, among interested Agencies, in reference to the Jamaica Bay Ecosystem Restoration Project (Enclosure 1). The decision to execute the Programmatic Agreement was based upon the fact that project sites have yet to be finalized and funding is uncertain at this time. As funds become available, and project sites are more clearly defined, aspects of the Programmatic Agreement will be put into effect.

I would like to take this opportunity to invite the New State Office of Parks, Recreation and IIistoric Preservation to comment upon the draft Programmatic Agreement (PA) for the Jamaica Bay Ecosystem Restoration Project. The PA is to be entered into by the US Army Corps of Engineers, the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service. A copy of the draft PA is included with this letter and has also been sent to the above referenced parties.

I would also like to take this opportunity to solicit your opinion as to other non-agency groups who should be consulted as part of this process. Those that we are considering at this time include:

The Canarsie Historical Society
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Brooklyn College Archaeological Research Center
The Stockbridge-Munsee Tribe
The Delaware Nation

If there are other groups that you feel may be interested in the Jamaica Bay Ecosystem Restoration Project and its subsequent PA, please include the names and contact information with your comments.

Please review the enclosed draft and provide any comments within 30 days of your receipt of this letter to the following address:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

If you feel that it would be beneficial to schedule a meeting, amongst the signatories, to discuss the PA, please include this with your comments.

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

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

REPLY TO
ATTENTION OF

October 5, 2004

Environmental Analysis Branch

Dr. Arthur Bankoff
Brooklyn College Archaeological Research Center
Brooklyn College, CUNY
2900 Bedford Avenue and Avenue H
Brooklyn, New York 11210-2889

Dear Dr Bankoff:

I would like to take this opportunity, on behalf of the US Army Corps of Engineers, New York District (District) to introduce the Jamaica Bay Ecosystem Restoration Project (JABERP). The project is intended to revitalize the environmental ecosystem of the Jamaica Bay area. Eight sites in Jamaica Bay have been chosen for study, and possible restoration. These sites include: Dead Horse Bay, Paerdegat Basin, Fresh Creek, Spring Creek, Hawtree/Bergen Basin, Bayswater State Park, Dubos Point, and Brant Point (Enclosure 1). Cultural Resources may be affected by this project and it is the goal of the US Army Corps to protect and minimize the impact of the proposed ecosystem restoration. The overall purpose of the project is to improve the environmental quality of Jamaica Bay by ameliorating the adverse impacts of past activities at the project sites. Field observations of the sites indicate that the ecology of the areas are degraded, due to past filling of tidal wetlands, poor water quality, and the predominance of introduced invasive species. JBERP includes the restoration of over 161 acres of salt marsh, almost 80 acres of beach/dune habitat, and over 217 acres of upland around Jamaica Bay.

This project will include the excavation of fill from shoreline areas to restore tidal marshes. Some sites (Dead Horse Bay, Bayswater, Dubos Point, Spring Creek) include the creation of tidal creeks to permit proper tidal inundation of newly created marshes, and to prevent the recolonization of invasive species. Most of the excavated materials will be reused onsite for landscaping of adjacent upland features, such as maritime forests and grasslands, which will protect the marshes and provide transitional zones to the surrounding uplands.

I would like to take this opportunity to invite the Brooklyn College Archaeological Research Center to comment upon the draft Programmatic Agreement (PA), to be entered into by the US Army Corps of Engineers (Corps), the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service.

This PA has been drafted in an attempt to satisfy the Section 106 requirements in accordance with the National Historic Preservation Act of 1966. Due to project timelines

and funding all required cultural resources work cannot be completed at this stage of the feasibility study. The included PA describes the actions and responsibilities that will be undertaken by the Corps throughout the duration of the project and their direct impact on any cultural resources encountered.

Other parties that have been asked to comment upon the draft PA are:

The Canarsie Historical Society
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Stockbridge-Munsee Tribe
The Delaware Nation

Should you feel that there are other interest groups that would like to be involved please contact the Project Archaeologist, Kirsten Davis, (212) 264-0248.

Please review the enclosed draft and present any comments within 30 days to Kirsten Davis:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

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

REPLY TO
ATTENTION OF

October 5, 2004

Environmental Analysis Branch

Mike Steffens
Friends of Marine Park and Gerritsen Creek
P.O. Box 340701
Brooklyn, New York 11234-0701

Dear Mr. Steffens:

I would like to take this opportunity, on behalf of the US Army Corps of Engineers, New York District (District), to introduce the Jamaica Bay Ecosystem Restoration Project (JABERP). The project is intended to revitalize the environmental ecosystem of the Jamaica Bay area. Eight sites in Jamaica Bay have been chosen for study, and possible restoration. These sites include: Dead Horse Bay, Paerdegat Basin, Fresh Creek, Spring Creek, Hawtree/Bergen Basin, Bayswater State Park, Dubos Point, and Brant Point (Enclosure 1). The overall purpose of the project is to improve the environmental quality of Jamaica Bay by ameliorating the adverse impacts of past activities at the project sites. Field observations of the sites indicate that the ecology of the areas are degraded, due to past filling of tidal wetlands, poor water quality, and the predominance of introduced invasive species. JABERP includes the restoration of over 161 acres of salt marsh, almost 80 acres of beach/dune habitat, and over 217 acres of upland around Jamaica Bay. Cultural Resources may be affected by this project and it is the goal of the District to protect and minimize the impact of the proposed ecosystem restoration on these resources.

This project will include the excavation of fill from shoreline areas to restore tidal marshes. Some sites (Dead Horse Bay, Bayswater, Dubos Point, Spring Creek) include the creation of tidal creeks to permit proper tidal inundation of newly created marshes, and to prevent the recolonization of invasive species. Most of the excavated materials will be reused onsite for landscaping of adjacent upland features, such as maritime forests and grasslands, which will protect the marshes and provide transitional zones to the surrounding uplands

I would like to take this opportunity to invite the Friends of Marine Park and Gerritsen Creek to comment upon the draft Programmatic Agreement (PA), to be entered into by the US Army Corps of Engineers (Corps), the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service.

This PA has been drafted in an attempt to satisfy the Section 106 requirements in accordance with the National Historic Preservation Act of 1966. The decision to execute the Programmatic Agreement was based upon the fact that project plans have yet to be finalized and funding is uncertain at this time. As funds become available and project plans are more clearly defined, aspects of the Programmatic Agreement will be put into

effect. The included PA describes the actions and responsibilities that will be undertaken by the District throughout the duration of the project and their direct impact on any cultural resources encountered.

Other parties that have been asked to comment upon the draft PA are:

The Canarsie Historical Society
Brooklyn College Archaeological Research Center
The Marine Park Civic Association
The Stockbridge-Munsee Tribe
The Delaware Nation

Should you feel that there are other interest groups that would like to be involved please contact the Project Archaeologist, Kirsten Davis, (212) 264-0248.

Please review the enclosed draft and present any comments within 30 days to Kirsten Davis:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

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

REPLY TO
ATTENTION OF

October 5, 2004

Environmental Analysis Branch

Ira M. Kluger, President
Canarsie Historical Society
661 East 82nd Street
Brooklyn, New York 11236

Dear Mr. Kluger:

I would like to take this opportunity, on behalf of the US Army Corps of Engineers, New York District (District), to introduce the Jamaica Bay Ecosystem Restoration Project (JBERP). The project is intended to revitalize the environmental ecosystem of the Jamaica Bay area. Eight sites in Jamaica Bay have been chosen for study, and possible restoration. These sites include: Dead Horse Bay, Paerdegat Basin, Fresh Creek, Spring Creek, Hawtree/Bergen Basin, Bayswater State Park, Dubos Point, and Brant Point (Enclosure 1). The overall purpose of the project is to improve the environmental quality of Jamaica Bay by ameliorating the adverse impacts of past activities at the project sites. Field observations of the sites indicate that the ecology of the areas are degraded, due to past filling of tidal wetlands, poor water quality, and the predominance of introduced invasive species. JBERP includes the restoration of over 161 acres of salt marsh, almost 80 acres of beach/dune habitat, and over 217 acres of upland around Jamaica Bay. Cultural Resources may be affected by this project and it is the goal of the District to protect and minimize the impact of the proposed ecosystem restoration on these resources.

This project will include the excavation of fill from shoreline areas to restore tidal marshes. Some sites (Dead Horse Bay, Bayswater, Dubos Point, Spring Creek) include the creation of tidal creeks to permit proper tidal inundation of newly created marshes, and to prevent the recolonization of invasive species. Most of the excavated materials will be reused onsite for landscaping of adjacent upland features, such as maritime forests and grasslands, which will protect the marshes and provide transitional zones to the surrounding uplands

I would like to take this opportunity to invite the Canarsie Historical Society to comment upon the draft Programmatic Agreement (PA), to be entered into by the US Army Corps of Engineers (Corps), the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service.

This PA has been drafted in an attempt to satisfy the Section 106 requirements in accordance with the National Historic Preservation Act of 1966. The decision to execute the Programmatic Agreement was based upon the fact that project plans have yet to be finalized and funding is uncertain at this time. As funds become available and project

plans are more clearly defined, aspects of the Programmatic Agreement will be put into effect. The included PA describes the actions and responsibilities that will be undertaken by the District throughout the duration of the project and their direct impact on any cultural resources encountered.

Other parties that have been asked to comment upon the draft PA are:

Brooklyn College Archaeological Research Center
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Stockbridge-Munsee Tribe
The Delaware Nation

Should you feel that there are other interest groups that would like to be involved please contact the Project Archaeologist, Kirsten Davis, (212) 264-0248.

Please review the enclosed draft and present any comments within 30 days to Kirsten Davis:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

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

REPLY TO
ATTENTION OF

October 7, 2004

Environmental Analysis Branch

Kathy Foppes, NPS
Gateway National Recreation Area
Cultural Resource
210 New York Avenue
Staten Island, NY 10305

Dear Ms. Foppes:

In a letter dated February 23, 2004 the US Army Corps of Engineers announced our intent to draft and execute a Programmatic Agreement, among interested Agencies, in reference to the Jamaica Bay Ecosystem Restoration Project (Enclosure 1). The decision to execute the Programmatic Agreement was based upon the fact that project sites have yet to be finalized and funding is uncertain at this time. As funds become available, and project sites are more clearly defined, aspects of the Programmatic Agreement will be put into effect.

I would like to take this opportunity to invite National Parks Service to comment upon the draft Programmatic Agreement (PA) for the Jamaica Bay Ecosystem Restoration Project. The PA is to be entered into by the US Army Corps of Engineers, the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service. A copy of the draft PA is included with this letter and has also been sent to the above referenced parties.

I would also like to take this opportunity to solicit your opinion as to other non-agency groups who should be consulted as part of this process. Those that we are considering at this time include:

The Canarsie Historical Society
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Brooklyn College Archaeological Research Center
The Stockbridge-Munsee Tribe
The Delaware Nation

If there are other groups that you feel may be interested in the Jamaica Bay Ecosystem Restoration Project and its subsequent PA, please include the names and contact information with your comments.

Please review the enclosed draft and present any comments within 30 days of your receipt of this letter to the following address:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

If you feel that it would be beneficial to schedule a meeting amongst the signatories, to discuss the PA, please include this with your comments.

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
1 Centre St, 9N, New York, NY 10007 (212) 669-7700

ENVIRONMENTAL REVIEW

USACE/106-Y — 10/11/04

PROJECT NUMBER — DATE RECEIVED

PROJECT JAMAICA BAY ECOSYSTEM RES

[ ] No architectural significance

[ ] No archaeological significance

[ ] Designated New York City Landmark or Within Designated Historic District

[ ] Listed on National Register of Historic Places

[ ] Appears to be eligible for National Register Listing and/or New York City Landmark Designation

[ ] May be archaeologically significant; requesting additional materials

COMMENTS The LPC is in receipt of the Draft Programmatic Agreement for the Jamaica Bay Restoration Project. We concur with the substance of the document and would like to be consulted but would prefer not to be signatories of the agreement.

cc: NYSOPRHP

Amanda Sutphin — 11/08/04

SIGNATURE — DATE

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

October 7, 2004

Environmental Analysis Branch

Amanda Sutphin
New York City Landmarks Preservation Commission
Director of Archaeology
One Center Street
9th Floor
New York, NY 10007

Dear Ms. Sutphin:

In a letter dated February 23, 2004 the US Army Corps of Engineers announced our intent to draft and execute a Programmatic Agreement, among interested Agencies, in reference to the Jamaica Bay Ecosystem Restoration Project (Enclosure 1). The decision to execute the Programmatic Agreement was based upon the fact that project sites have yet to be finalized and funding is uncertain at this time. As funds become available, via Congressional legislation, and project sites are more clearly defined, aspects of the Programmatic Agreement will be put into effect.

I would like to take this opportunity to invite the New York City Landmarks Preservation Commission to comment upon the draft Programmatic Agreement (PA) for the Jamaica Bay Ecosystem Restoration Project. The PA is to be entered into by the US Army Corps of Engineers, the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service. A copy of the draft PA is included with this letter and has also been sent to the above referenced parties.

I would also like to take this opportunity to solicit your opinion as to other non-agency groups who should be consulted as part of this process. Those that we are considering at this time include:

The Canarsie Historical Society
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Brooklyn College Archaeological Research Center
The Stockbridge-Munsee Tribe
The Delaware Nation

If there are other groups that you feel may be interested in the Jamaica Bay Ecosystem Restoration Project and its subsequent PA, please include the names and contact information with your comments.

Please review the enclosed draft and provide any comments within 30 days of your receipt of this letter to the following address:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

If you feel that it would be beneficial to schedule a meeting amongst the signatories, to discuss the PA, please include this with your comments.

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

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

REPLY TO
ATTENTION OF

October 5, 2004

Environmental Analysis Branch

Bill Tai
Natural Resources Group
City of New York, Parks and Recreation
The Arsenal
Central Park
830 5th Avenue
New York, NY 10021

Dear Mr. Tai:

In a letter dated February 23, 2004 the US Army Corps of Engineers announced our intent to draft and execute a Programmatic Agreement, among interested Agencies, in reference to the Jamaica Bay Ecosystem Restoration Project (Enclosure 1). The decision to execute the Programmatic Agreement was based upon the fact that project sites have yet to be finalized and funding is uncertain at this time. As funds become available, and project sites are more clearly defined, aspects of the Programmatic Agreement will be put into effect.

I would like to take this opportunity to invite the New York City Parks Department to comment upon the draft Programmatic Agreement (PA) for the Jamaica Bay Ecosystem Restoration Project. The PA is to be entered into by the US Army Corps of Engineers, the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service. A copy of the draft PA is included with this letter and has also been sent to the above referenced parties.

I would also like to take this opportunity to solicit your opinion as to other non-agency groups who should be consulted as part of this process. Those that we are considering at this time include:

The Canarsie Historical Society
Friends of Marine Park and Gerritsen Creek
The Marine Park Civic Association
The Brooklyn College Archaeological Research Center
The Stockbridge-Munsee Tribe
The Delaware Nation

If there are other groups that you feel may be interested in the Jamaica Bay Ecosystem Restoration Project and its subsequent PA, please include the names and contact information with your comments.

Please review the enclosed draft and provide any comments within 30 days of your receipt of this letter to the following address:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

If you feel that it would be beneficial to schedule a meeting, amongst the signatories, to discuss the PA, please include this with your comments.

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

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

REPLY TO
ATTENTION OF

October 5, 2004

Environmental Analysis Branch

Martha Catlin, Federal Agencies Services Program Analyst
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW
Suite 809
Washington, DC 20004

Re: USACE Jamaica Bay Ecosystem Restoration
Kings, Queens, and Nassau Counties, New York
Programmatic Agreement

Dear Ms. Catlin:

I would like to take this opportunity to invite the Advisory Council on Historic Preservation to comment upon the draft Programmatic Agreement, to be entered into by the US Army Corps of Engineers, the New York State Office of Parks, Recreation and Historic Preservation, the New York City Landmarks Commission, the New York City Department of Parks, and the National Park Service.

Please review the enclosed draft and present any comments within 30 days to the Project Archaeologist, Kirsten Davis:

Kirsten Davis, Project Archaeologist
US Army Corps of Engineers
26 Federal Plaza, Rm. 2136
New York, New York 10278

It is assumed that the Council will not participate in this PA, however should the Council like to participate, please feel free to contact Kirsten Davis to schedule a meeting and/or conference call.

We look forward to working with you on the Jamaica Bay Ecosystem Restoration Project.

Sincerely,

L. Houston

Leonard Houston
Chief, Environmental Analysis Branch

Enclosure

DRAFT

PROGRAMMATIC AGREEMENT
AMONG
THE U. S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION,
THE NEW YORK CITY LANDMARKS PRESERVATION COMMISION,
NEW YORK CITY PARKS DEPARTMENT,
NATIONAL PARKS SERVICE
AND
THE NEW YORK STATE OFFICE OF PARKS, RECREATION, AND HISTORIC PRESERVATION
REGARDING
THE JAMAICA BAY ECOSYSTEM RESTORATION PROJECT

WHEREAS, the U.S. Army Corps of Engineers, New York District, (New York District) proposes to implement ecosystem restoration projects at eight sites within Jamaica Bay (the Project) in cooperation with its local sponsor (a map depicting Jamaica Bay and the proposed restoration sites is included as Appendix 1 of this Programmatic Agreement), located in Kings and Queens Counties, New York (PA).

WHEREAS, the proposed project elements at each of the proposed restoration sites may include one or more of the following: channel modifications, regrading, replanting, and recontouring of marshland, phragmites control and removal, dredging, and the excavation of fill.

WHEREAS, the New York District is authorized to undertake the implementation of this Project by a resolution of the Committee on Public Works and Transportation of the United States House of Representatives adopted 1 August 1990.

WHEREAS, the New York District and State of New York intend to execute a Project Cooperation Agreement to formalize the roles and responsibilities of the federal and state governments in the implementation of the Jamaica Bay Ecosystem Restoration Project;

WIIEREAS, the New York District will continue to develop plans and implement the provisions of this PA for each site within the Project as funds are appropriated in future years.

WHEREAS, the New York District has defined the "Area of Potential Effect" (APE) for this undertaking to include all areas impacted by activities required to construct the channel modifications, regrading, replanting, and recontouring of marshland, phragmites control and removal, dredging, and the excavation of fill, including all construction staging and borrow areas, and all access roads (detailed conceptual plans for each restoration site are provided in Appendix 2 of this PA. The APE maybe redefined based upon revisions to the proposed project plan;

WHEREAS, the New York District has completed a Phase IA Cultural Resources survey

that identifies potentially significant cultural resources in the Project area.

WHEREAS, the New York District has identified several interested parties to participate in the Section 106 consultation process and project planning, to include the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), the National Park Service, Gateway National Recreation Area (NPS), New York City Landmarks Preservation Commission (NYCLPC) and the New York City, Department of Parks and Recreation (NYCDPR), to be known throughout this PA as "other Agencies" and the Stockbridge-Munsee Tribe and the Delaware Nation (to be known throughout this PA as "the Tribes" "), and will consider subsequent requests as appropriate. In accordance with 36 CFR Part 800.13, the New York District, and the OPRHP have determined that execution of this PA and the Project Cooperation Agreement will establish alternative procedures to streamline the coordination of the Project;

WHEREAS, the New York District shall continue to consult with the NYSOPRHP, other Agencies, and the Tribes regarding plans and surveys to identify, evaluate and treat historic properties as the New York District and its agents implement all phases of the Jamaica Bay Ecosystem Restoration Project;

WHEREAS the New York District is coordinating, and shall continue to coordinate a public outreach program for this undertaking, which in the past has consisted of a number of public meetings and the circulation of cultural resource and environmental documents related to the Section 106 review process; and

NOW, THEREFORE, the New York District, and the NYSOPRHP agree that the Project shall be administered in accordance with the following stipulations to satisfy the New York District's Section 106 responsibility for all individual undertakings of the Project.

Stipulations

The New York District shall ensure that the following measures are carried out:

I. IDENTIFICATION AND EVALUATION

A. The New York District shall consult with the NYSOPRHP to develop plans to complete the identification and evaluation of cultural resources within the Project's APE. The NYSOPRHP will provide comments on the scope of work and final plans within 15 days of receipt.

B. The New York District shall revise scopes of work to address comments and recommendations provided by the NYSOPRHP, and the other Agencies and the Tribes, as appropriate, prior to proceeding with identification and evaluation activities.

C. The New York District shall ensure that qualified professionals meeting the NPS professional qualifications for the appropriate discipline [NPS Professional Qualification Standards, Secretary of the Interior's Standards and

Guidelines for Archaeology and Historic Preservation (48 FR 44738-39)] will complete all identification and evaluation investigations related to this undertaking, to include archaeological surveys and testing, and documentation.

D. The New York District shall ensure that all archaeological surveys the APE are conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the New York Archaeological Council (NYAC) Cultural Resources Standards Handbook; Guidelines for Understanding and Applying New York State Standards for New York State Cultural Resources (2000), and take into account the NPS publication The Archaeological Survey: Methods and Uses (1978) and the statewide historic contexts developed by the NYSOPRHP.

E. The New York District shall consider the views of the public or interested parties in completing its identification and evaluation responsibilities.

F. The New York District, in consultation with the NYSOPRHP, shall evaluate cultural resources using the National Register of Historic Places (NRHP) criteria, Regulation number 16 U.S. C 470;

G. Traditional Cultural Properties.

1. The New York District and the NYSOPRHP have agreed that there are six potential sites that may contain traditional cultural properties located within the APE. These sites will be investigated further and results will be coordinated with other Agencies as to determine NRHP eligibility.

2. The New York District shall ensure that future surveys within the the APE includes procedures to identify Traditional Cultural Properties and to consult with the Tribes and other affected parties in accordance with the guidelines provided by NPS Bulletin 38, Guidelines for Evaluating and.

3. In the event that the Tribes or affected group contacts the New York District regarding its recognition of a Traditional Cultural Property, located within the APE, the New York District shall notify the NYSOPRHP and other Agencies, as appropriate, and initiate discussions with all parties to evaluate whether the property is a Traditional Cultural Property that meets the Criteria.

II. TREATMENT OF HISTORIC PROPERTIES.

The New York District shall adhere to the following treatment strategies in order to avoid adverse effect to historic properties.

A. The New York District shall ensure that treatment plans are developed and implemented for all historic properties within the APE consistent with the terms of the PA, determined eligible for listing in the N RHP.

B. The New York District, in consultation with the NYSOPRHP, other Agencies, and the Tribes, as appropriate shall develop appropriate treatment plans for historic properties identified within the APE, which may be affected by the Project. Unless the NYSOPRHP, the other Agencies, and the Tribes, as appropriate, objects within 30 days of receipt of any plan, the New York District shall ensure that treatment plans are implemented by the New York District or its representative(s). The New York District shall revise Plans to address comments and recommendations provided by the NYSOPRHP, the other Agencies, and the Tribes, as appropriate..

C. The New York District shall ensure that qualified professionals meeting the N PS professional qualifications for the appropriate discipline [NPS Professional Qualification Standards, Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44738-39)] are used to develop and implement all treatment plans.

D. Avoidance. The preferred treatment is avoidance of effects to historic properties. The New York District shall, to the extent feasible, avoid historic properties either through project design changes, use of temporary fencing or barricades, realignments, landscaping, or other measures that will protect historic properties. The New York District, the NYSOPRHP other Agencies, and the Tribes, as appropriate shall consult to develop plans for avoiding impacts to historic properties. The New York District shall incorporate feasible avoidance measures into project activities as part of the implementation of the Project. If, in consultation with the NYSOPRHP, the other Agencies, and the Tribes, as appropriate, avoidance is determined to be infeasible, the New York District shall develop and implement treatment plans consistent with Stipulations II.E or II.F of this PA.

E. Preservation In Place.

When the New York District the NYSOPRHP, the other Agencies, and the Tribes, as appropriate, agree that complete avoidance of historic properties is infeasible, the New York District shall explore preservation in place, if appropriate. Preservation in place may entail partial avoidance or protection of historic properties against project related activities in proximity to the property. The New York District shall preserve properties in place through project design, i.e. incorporating color, texture, scale, materials, which are compatible with the architectural or historic character of the historic property, use of fencing, berms or barricades, preservation of vegetation including mature trees, landscaping and planting that screen the property. If the New York District, in consultation with the NYSOPRHP, the other Agencies, and the Tribes, as appropriate, determines that preservation in place is infeasible, the New York District shall develop and implement treatment plans consistent with Stipulation II.F of this PA.

F. Data Recovery

1. When the New York District, in consultation with the NYSOPRHP, the other

Agencies, and the Tribes, as appropriate, determines that project activities will have an adverse effect on sites that have been determined to be eligible for the NRHP, the New York District shall conduct data recovery as follows:

a. The New York District shall develop a data recovery plan to retrieve significant archaeological information. The New York District shall ensure that the data recovery plan for each historic property that will be adversely affected by the project addresses substantive research questions developed in consultation with the NYSOPRHP, the NYCLPC, NYCDP, NPS, The Stockbridge-Munsee Tribe, and the Delaware Nation.

b. The plan shall be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48 FR 44734-37) and take into account 's publication, Treatment of Archaeological Properties. Each plan shall specify, at a minimum, the following:

(i) the property, properties, or portions of properties where data recovery is to be carried out;
(ii) the research questions to be addressed through the data recovery, with an explanation of their relevance and importance;
(iii) the methods to be used, with an explanation of their relevance to and effectiveness in addressing the research questions;
(iv) a proposed schedule for the submission of progress reports and the draft and final data recovery reports to the NYSOPRHP, the other Agencies, and the Tribes.

c. The New York District shall submit data recovery plans to the NYSOPRHP, the other Agencies, and the Tribes, as appropriate, for review and approval. The New York District and NYSOPRHP, the other Agencies, and the Tribes, as appropriate, shall consult to resolve any objections to the data recovery plan as proposed. The New York District once approved by the NYSOPRHP shall then implement the data recovery plan. If no response is received from the NYSOPRHP, the other Agencies, and the Tribes, as appropriate, after 30 days of receipt of adequate documentation, the New York District may assume the concurrence and proceed with implementation of the plan submitted.

d. The New York District shall ensure that data recovery plan(s) will be carried out by or under the direct supervision of an archaeologist(s) who meets, at minimum, the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9).

e. The New York District, in consultation with the NYSOPRHP, and other Agencies, as appropriate, shall develop adequate provisions for site security during data recovery to avoid vandalism.

G. Curation and Dissemination of Information

1. The New York District or its designee, in consultation with the NYSOPRHP shall ensure that all materials and records resulting from the survey, evaluation, and data recovery conducted for the Project will be curated in accordance with 36 CFR Part 79 "Curation of Federally-Owned and Administered Archaeological Collections" and ER 1130-2- 433 "Project Operations: Collections Management and Curation of Archaeological and Historical Data." All material and records recovered from non-Federally owned land shall be maintained in accordance with 36 CFR Part 79 until their analysis is complete and, if necessary, are returned to their owner(s).

2. The New York District shall ensure that all final reports resulting from actions pursuant to this PA will be provided, to the NYSOPRHP, the other Agencies, the Tribes, and upon request, to other interested parties. All such plans shall be responsive to contemporary standards. Final plans shall be submitted to NYSOPRHP, the other Agencies, and the Tribes, as appropriate, for review and approval. The New York District shall implement approved final plans.

3. The New York District, in consultation with other Agencies as appropriate ensures that all artifacts recovered as part of the work identified in this PA be returned to their respective owners for curation and storage.

III. PUBLIC OUTREACH EFFORT

A. The New York District shall consult with the NYSOPRHP, and other Agencies, and the Tribes, as appropriate to develop a plan for the creation of a public outreach program as part of mitigation for project related impacts.

B. The Scope of Work prepared for the public outreach shall be submitted with the New York District's schedule for implementation to the NYSOPRHP, the other Agencies, and the Tribes, as appropriate, for review and approval. The New York District other Agencies and the NYSOPRHP shall consult to resolve any objections. The New York District once approved by the Agencies shall implement the final plan. If no response is received from the Agencies within 30 days following receipt of adequate documentation the plan shall be implemented as submitted.

C. The plan for public outreach programs will be implemented only if, through consultation of the New York District, the other Agencies, and the Tribes, as appropriate, historic properties are encountered at a given site within the Project area and project funds are appropriated.

III. UNANTICIPATED DISCOVERY

A. If previously unidentified cultural resources are discovered during Project

implementation, the New York District shall cease all work in the vicinity of the discovered cultural resources until it can be evaluated pursuant to the guidelines in Stipulation I of this PA. If the property is determined to be eligible, the New York District shall consult with the NYSOPRHP and other Agencies to develop a treatment plan.

B. The New York District shall implement the treatment plan once approved by the NYSOPRHP, the other Agencies, and the Tribes, as appropriate.

C. The New York District shall ensure that all archaeological surveys within the portions of the APE are conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the (NYAC) Cultural Resources Standards Handbook: Guidelines for Understanding and Applying New York State Standards for New York State Cultural Resources (2000), and take into account the NPS publication The Archaeological Survey: Methods and Uses (1978) and the statewide historic contexts developed by the NYSOPRHP.

IV. COORDINATION OF REVIEWS FOR PROJECT ACTIVITIES

A. All plans, documents, reports, and materials shall be submitted by the New York District (or its representative) to the other Agencies, and the Tribes, as appropriate, for a 30 day review period unless otherwise stipulated in this PA. If the Agencies fail to comment within the specified time, the New York District must request comments unless the PA provides for the New York District to assume concurrence when the 30-day review period has elapsed.

B. When interested parties are participating in the review of activities or actions outlined in this PA the New York District shall ensure that all interested parties are provided documentation at the time it is forwarded to the NYSOPRHP and afforded a 30-day review period. As appropriate, the New York District shall submit the comments of interested parties to the NYSOPRHP to facilitate further consultation.

C. If after consulting with the NYSOPRHP and interested parties for a period of 90 days on any action or activity provided for in this PA, the New York District or NYSOPRHP concludes there is no progress in developing treatment/mitigation plan or other documents required by this PA, the New York District or NYSOPRHP may notify and request the involvement of the Advisory Council on Historic Preservation (Council) to expedite completion of the consultation process.

D. The New York District shall ensure that all submissions to the NYSOPRHP, the other Agencies, and the Tribes will include all relevant information to facilitate their review. The New York District shall provide all additional information requested by NYSOPRHP, the Council, the other Agencies, and the Tribes, within a timely manner unless the signatories to this PA agree otherwise.

E. The New York District shall ensure that all draft and final reports resulting from actions pursuant to the Stipulations of this PA will be provided to the NYSOPRHP, the other Agencies, and the Tribes, and upon request, to other interested parties and will identify the Principal Investigator responsible for the report. All reports will be responsive to contemporary standards, and as appropriate to the Department of the Interior's Format Standards for Final Reports of Data Recovery Programs (42 FR 5377-79) and SHPO report standards. Precise locational data may be provided only in a separate appendix if it appears that its release could jeopardize archaeological sites consistent with National Register Bulletin Number 29, Guidelines for Restricting Information about Historic and Prehistoric Resources.

F. If the District proposes revisions or addenda to NYSOPRHP approved treatment plans or other documents; the New York District and NYSOPRHP shall consult to determine whether additional conditions are appropriate.

G. The New York District shall certify in writing that all requirements for identification and evaluation, and the implementation of treatment plans have been satisfactorily completed prior to the initiation of construction activities for a specified portion of the Project. The New York District shall submit a copy of this certification to the NYSOPRHP by certified mail. The NYSOPRHP shall have 30 days to object to the certification based on the NYSOPRHP's finding of incomplete compliance or inadequate compliance with the terms of this PA. If the NYSOPRHP does not object, the District may proceed with construction for the specified segment of the Project.

V. DISPUTE RESOLUTION

A. The NYSOPRHP, other Agencies, and the Tribes shall have 30 days to object to determinations, evaluations, plans, and documents submitted by the New York District. The New York District, the NYSOPRHP, other Agencies, and the Tribes shall attempt to resolve any disagreement arising from implementation of this PA. If there is a determination that the disagreement cannot be resolved, the New York District shall request 's recommendations or request the comments in accordance with 36 CFR Part 800.6(b).

B. Any Council recommendations or comments provided in response will be considered in accordance with 36 CFR Part 800.6(c)(2), with reference only to the subject of the dispute. The New York District shall respond to the Council recommendations or comments indicating how the New York District has taken the Council's recommendations or comments into account and complied with same, prior to proceeding with Project activities that are subject to dispute. Responsibility to carry out all other actions under this PA that are not the subject of the dispute will remain unchanged.

VI. PUBLIC INVOLVEMENT

A. Copies of this Agreement and relevant documentation prepared pursuant to the terms of this PA shall be made available for public inspection (information regarding the

locations of archaeological sites will be withheld in accordance with the Freedom of Information Act and National Register Bulletin 29, if it appears that this information could jeopardize archaeological sites). The New York District shall take any comments received from the public under this Agreement into account.

B. The New York District shall review and resolve timely substantive public objections. Public objections shall be considered timely when they are provided within the review periods specified in this PA. The New York District shall consult with the other Agencies to resolve objections. Project actions, which are not the subject of the objection, may proceed while the consultation is conducted.

VII. MONITORING

A. Upon execution of the Project Cooperation Agreement, the New York District shall prepare annual reports summarizing the status of compliance with the terms of this PA and a summary of the completed activities and the exempt activities for the past year and proposed activities for the next fiscal year to the NYSOPRHP, Council, the other Agencies, and the Tribes by the New York District. Reports shall be submitted by January 31 of every year. The Annual Reports shall be provided to NYSOPRHP, other Agencies, and the Tribes, as appropriate, until the Project-related activities are complete.

B. NYSOPRHP may request a site visit to follow up information in the annual report or to monitor activities carried out pursuant to this PA. The NYSOPRHP shall provide the New York District with 30 days written notice when requesting a site visit unless otherwise agreed. The New York District may also schedule a site visit with the NYSOPRHP and at its discretion.

VII. AMENDMENTS

Any signatory to this PA may request that it be amended, whereupon all the parties will consult in accordance with 36 CFR Part 800.13 to consider such amendment.

VIII. TERMINATION

Any signatory to this PA may terminate it by providing 30 days notice to the other parties, provided that the parties will consult during the period prior to termination by certified mail to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the New York District will comply with 36 CFR Parts 800.4 through 800.6 with regard to individual undertakings covered by this Agreement.

IX. SUNSET CLAUSE.

A. This PA will continue in full force and effect for five years ensuring that all terms of this PA are met, unless the Project is terminated or authorization is rescinded. The New York District and other Agencies will revisit this PA after five years to ensure all parties

are still in agreement that that Project authorization continues.

Execution and implementation of this PA evidences that the New York District has satisfied its Section 106 responsibilities for all individual undertakings of the Project, and that the New York District has afforded the NYSOPRHP an opportunity to comment on the undertaking and its effects on historic properties.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: _____
John M. Fowler, Executive Director

NEW YORK STATE OFFICE OF PARKS, RECTREATION, AND HISTORIC PRESERVATION

By: _____ Date: _____
Ruth Pierpont, State Historic Preservation Officer

NEW YORK CITY LANDMARKS PRESERVATION COMMISSION

By: _____ Date: _____
Amanda Sutphin, Director of Archaeology

City of New York, Parks and Recreation
By: _____ Date: _____
Bill Tai, Natural Resources Group

NATIONAL PARK SERVICE, GATEWAY NATIONAL RECREATION AREA

By: _____ Date: _____
Kathy Foppes, Cultural Resource Coordinator

U.S. ARMY CORPS OF ENGINEERS

By: _____ Date: _____
Richard Polo
District Engineer, New York District.

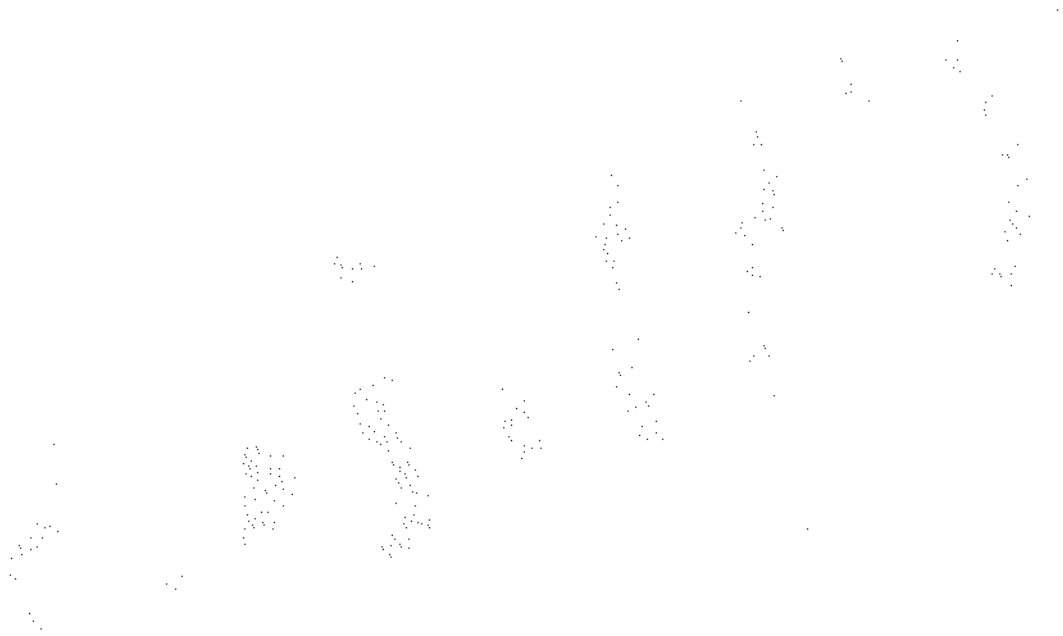
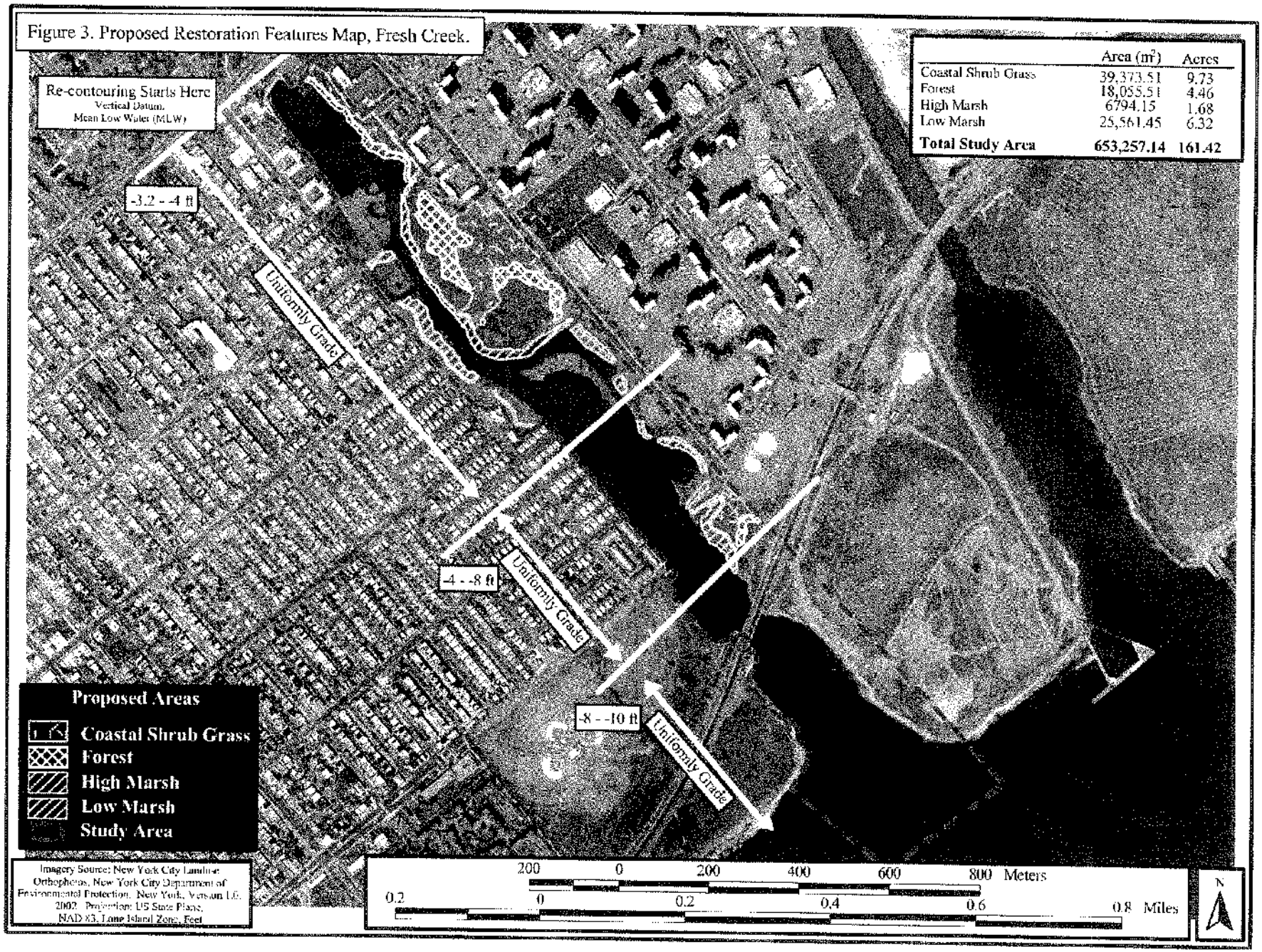


Figure 3. Proposed Restoration Features Map, Fresh Creek.



	Area (m^2)	Acres
Coastal Shrub Grass	39,373.51	9.73
Forest	18,055.51	4.46
High Marsh	6794.15	1.68
Low Marsh	25,561.45	6.32
Total Study Area	**653,257.14**	**161.42**

Figure 3. Proposed Restoration Features Map, Hawtree Point.

Figure 3. Proposed Restoration Features Map, Spring Creek.

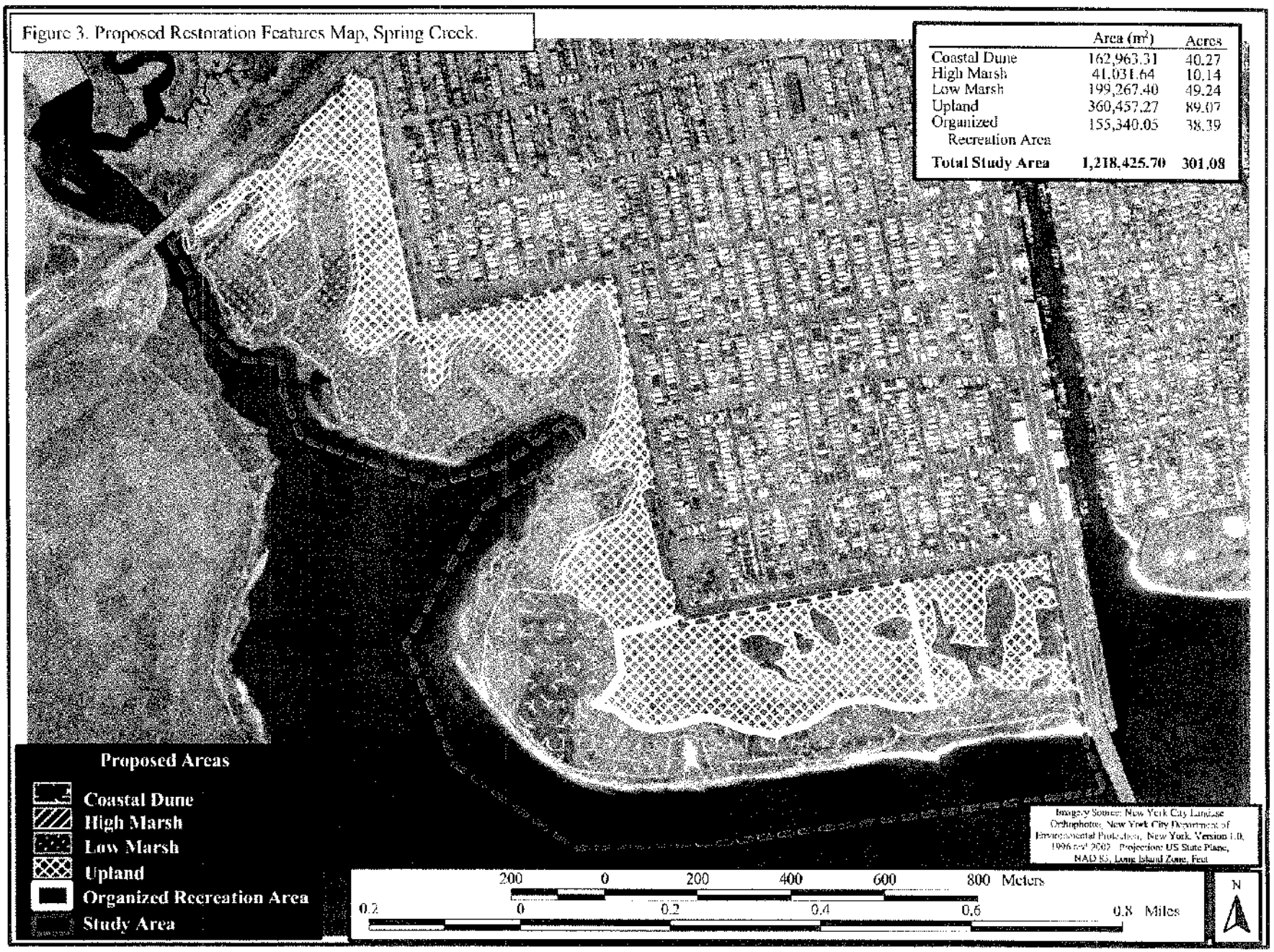



Figure 3. Proposed Restoration Features Map, Paerdegat Basin.
Re-contouring Starts Here
Vertical Datum:
Mean Low Water (MLW)
-3.2 - -8 Feet
Uniformly Graded
Area (sf) Acres
Coastal Shrub Grass 184,942.74 45.70
High Marsh 24,228.07 5.99
Low Marsh 105,319.13 26.02
Ecology Park 10,062.11 2.49
Total Study Area 837,184.72 206.87
Imagery Source: New York City Landuse Orthophotos, New York City Department of Environmental Protection, New York, Version 1.0, 1996 and 2002. Projection: US State Plane, NAD 83, Long Island Zone, Feet
Proposed Areas
Coastal Shrub Grass
High Marsh
Low Marsh
Ecology Park
Study Area
200 0 200 400 600 Meters
0.2 0 0.2 0.4 0.6 Miles
N

Figure 4. Proposed Restoration Features Map, Dead Horse Bay.

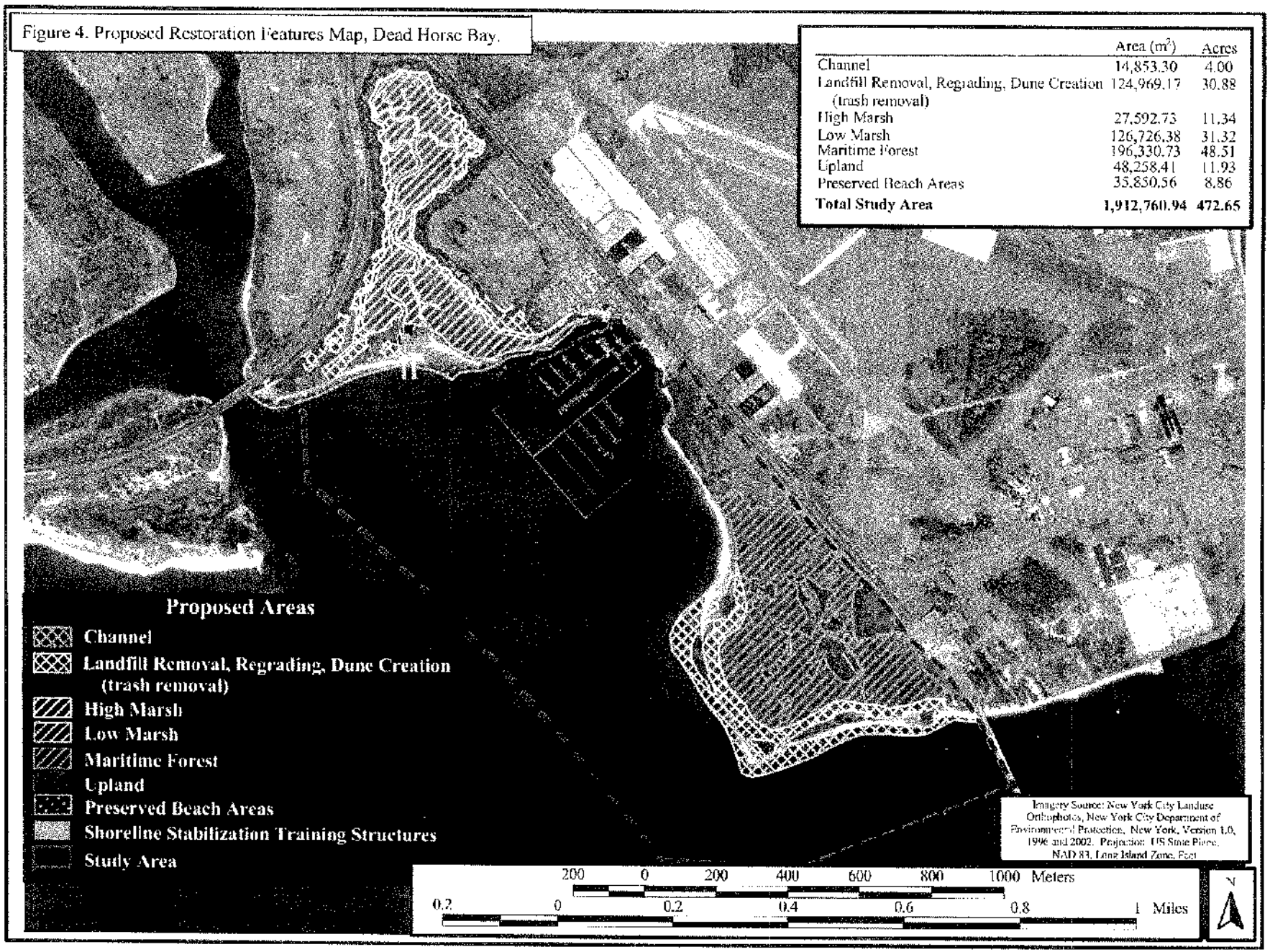


Figure 2. Existing Conditions Baseline Map, Bayswater State Park.

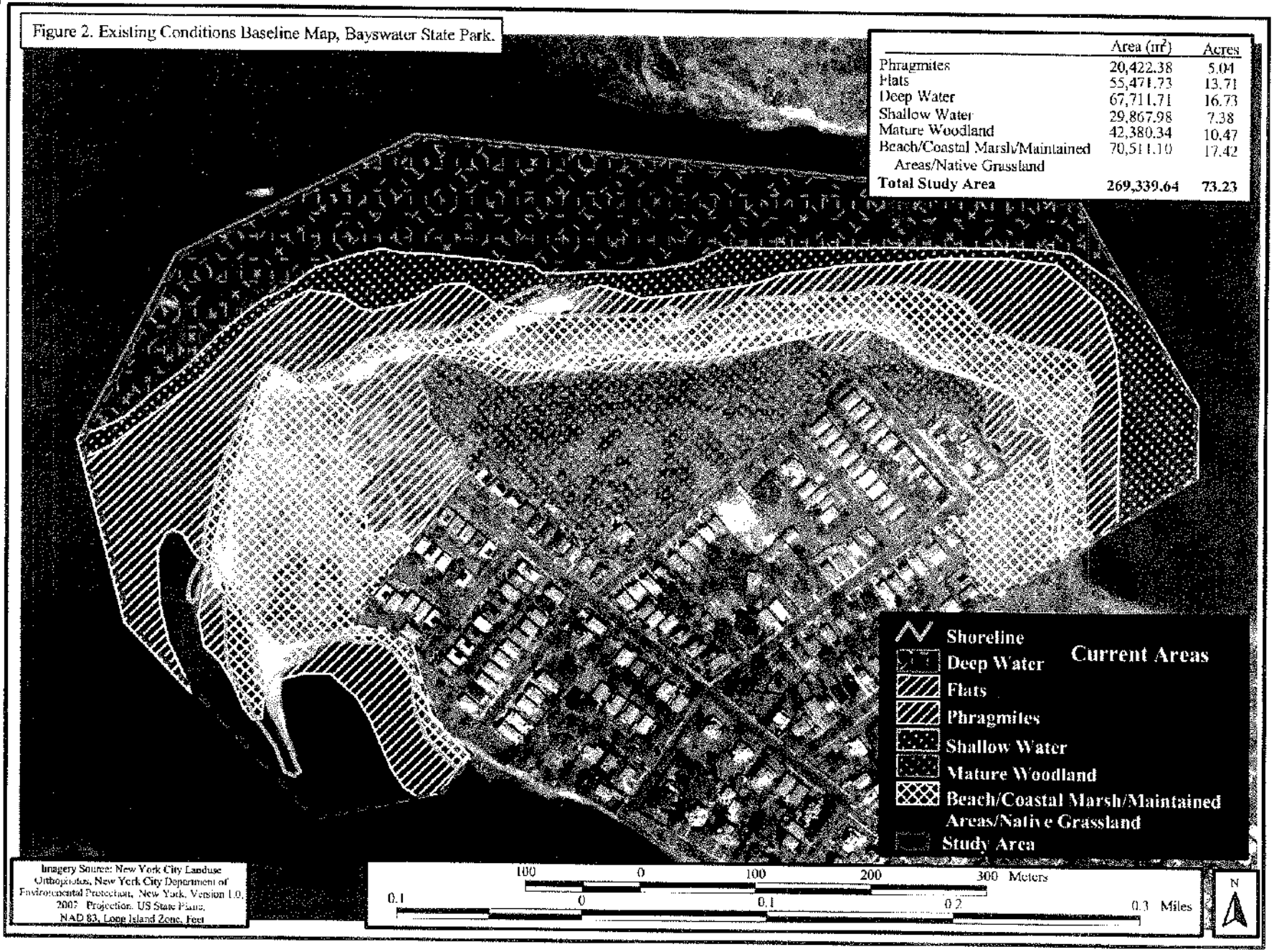


Figure 3. Proposed Restoration Features Map, Dubos Point.

Figure 3. Proposed Restoration Features Map, Brant Point.

	Area (m^2)	Acres
Low Marsh	7,515.07	1.86
Upland Forest	11,991.62	2.96
Upland Meadow	11,590.05	2.86
High Marsh	2,944.43	0.73
Total Study Area	**862,566.40**	**19.80**

Imagery Source: New York City Landuse Orthophotos, New York City Department of Environmental Protection, New York. Version 1.0. 2002. Projection: US State Plane. NAD 83, Long Island Zone, Feet

Section C.2 – Hackensack Meadowlands 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 31, 2006

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), is pleased to furnish you with the draft *Phase I Cultural Resource Investigation of Ten Sites in the Hackensack Meadowlands, Hackensack Meadowlands Restoration Project, Hudson and Bergen Counties, New Jersey* (Enclosure). This report synthesized available archaeological, geormorphological, and palynological data relevant to ten sites (totaling at least 1100 acres) that have been selected by the Corps for ecosystem restoration within the New Jersey Meadowlands District (Meadowlands). Reconnaissance was conducted at all ten sites but subsurface testing was only possible at one site, Meadowlark Marsh.

The survey identified two potentially significant historic sites; a series of historic drainage features at a number of the sites and *circa* 1917-1930 fill material at Meadowlark Marsh. In addition to this, a site sensitivity ranking system was developed to place the ten sites into a testing framework employing a much broader, Meadowlands-wide, approach to quantifying impacts and satisfying the Corps' Section 106 responsibilities. Considering the problematic nature of archaeological investigations within wetland environments, the recommended approach advocates analysis of high integrity cores at three of the ten sites. This data will allow for documentation of environmental change and is anticipated to provide an assessment of archaeological potential throughout the Meadowlands.

The Corps plans to implement the recommendations that are found in this report including the series of probes and high integrity cores at Meadowlark Marsh, Anderson Creek Marsh, and Riverbend Wetlands Preserve and the eligibility assessments of the historic drainage features and the historic fill materials. It is the Corps' intention to undertake these measures to fulfill its Section 106 responsibilities for the project. The coring strategy, in particular, will serve to address any early historic and prehistoric cultural resource potential.

We would appreciate receiving any Section 106 comments that you may have regarding the enclosed report and, of course, any comments or recommendations you may have concerning the Corps' plan of action. Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist at (917) 790-8612.

Sincerely,

L. Houston

Leonard Houston,
Chief, Environmental Analysis Branch

Enclosure

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

Natural and Historic Resources, Historic Preservation Office
PO Box 404, Trenton, NJ 08625
TEL: (609) 292-2023 FAX: (609) 984-0578
www.state.nj.us/dep/hpo

LISA P. JACKSON
Commissioner

HPO-E2006-41
106/06-1376-1
May 4, 2006

Leonard Houston
Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Re: *Phase I Cultural Resource Investigation of the Ten Sites in the Hackensack Meadowlands, Hackensack Meadowlands restoration Project, Hudson and Bergen Counties, New Jersey*

Dear Mr. Houston:

Thank you so much for providing the opportunity to review the February 2006 Draft report, *Phase I Cultural Resource Investigation of the Ten Sites in the Hackensack Meadowlands, Hackensack Meadowlands restoration Project, Hudson and Bergen Counties, New Jersey* prepared by Hunter research, Inc., Grossmand and associates, inc. and Dorothy Peteet, Ph.D. The report provides an excellent summary regarding the breadth of our knowledge about the Meadowlands natural and human land use history, the hypotheses necessary to better refine these models, and means to better represent the information cartographically. The report will be accessioned into the Historic Preservation Office's permanent library under accession designation MULT A 240 (ID6538).

Implementation of the recommendations presented in Chapter 6 will greatly enhance our knowledge and site settlement potential of the Meadowlands and provide a substantive contribution to satisfying the U.S. Army Corps of Engineers' responsibilities relating to this project under Section 106 of the National Historic Preservation Act. The approach and recommendations, given the problematic nature of addressing cultural resources in this project setting, is both creative and commendable.

I have three comments/questions relating to the proposed work. First, it would be extremely useful if the updated SAMP imagery is plotted on both large scale USGS maps and flown State aerials. This may already be part of the imagery that is proposed.

Second, although it is stated on page 6-7 of the recommendations that the results of the column analysis will be presented in a peer-reviewed article for publication, it would be appropriate to develop a list of perhaps a dozen institutions/repositories that will receive report copies. I am certain it is your intention to distribute one the New Jersey Meadowlands Commission. However, this document and its findings are relevant to a broad audience. Perhaps alternately the work could be available on a web site or compact discs. HPO would like to receive two copies.

Finally, it is stated on page 6-6 that although three high resolution columns will be extracted only one will be subjected to full analysis, including pollen and spores. Wouldn't duplication or redundancy of data be of value, especially since the three columns will be extracted from three different area (the north, central and south) across the Meadowlands? Would it be prudent and possible to at least reconsider full analysis of one or both of the other columns after the selected column is analyzed?

Thank you again for providing this opportunity for review and Consultation. HPO looks forward to the results of the next phase of survey and analysis. If you have any questions, please do not hesitate to contact Deborah Fimbel, staff reviewer for this project, at 609-984-6019.

Sincerely,

Dorothy P. Guzzo
Deputy State Historic
Preservation Officer

DPG:DRF

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

September 7, 2006

REPLY TO
ATTENTION OF

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
Re: HPO-E2006-41
106-06-1376-1

Dear Ms. Guzzo:

The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with two bound copies of the final report entitled *Cultural Resource Investigation of Ten Sites in the Hackensack Meadowlands, Hackensack Meadowlands Restoration Project, Hudson and Bergen Counties, New Jersey* (Enclosures 1 and 2). This report has received accession designation MULT A 240 (ID6538) in your office's permanent library.

In a May 4, 2006 letter (Enclosure 3) you made recommendations regarding our plans for undertaking future cultural resources surveys in accordance with our Section 106 responsibilities. As recommended by your office the Corps will use flown State aerials in addition to USGS maps for the updated sub-marsh topography model imagery and we will develop a list of institutions and repositories that will receive this report and the results of the core analyses. The Corps will carefully consider doing pollen, spore, and foraminifera data collection from all three high-integrity cores taken in the next phase of work as you have requested. This will require further discussion, however, between your office, the palynologist, the geomorphologist and the Corps and will be subject to the estimated value of the testing to the research, the cost of these tests, and the availability of funds.

Thank you for your careful review of this report and for providing comments in accordance with the Section 106 process. The Corps will continue to coordinate with your office as further cultural resources surveys are undertaken. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist at (917) 790-8612.

Sincerely,

for Peter Weppler

Leonard Houston,
Chief, Environmental Analysis Branch

Enclosures

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

September 15, 2009

Environmental Assessment Section
Environmental Analysis Branch

Mr. Daniel Saunders
Acting Administrator and Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625-0404

Re: HPO-E2006-41
106/06-1376-1

Dear Mr. Saunders:

The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with the draft *Historic Context Development, Hackensack Meadowlands Drainage Systems and Features, Hackensack Ecosystem Restoration Project, Hudson and Bergen Counties, New Jersey* (Enclosure). This report draws a historic context for historic drainage systems in the New Jersey Meadowlands District of northeastern New Jersey which has been selected by the Corps for ecosystem restoration. This study implements a recommendation of the 2006 cultural resource study of ten restoration sites in the Meadowlands (HPO-E2006-41; 106-06-1376-1).

A history of drainage technology and practice in the Meadowlands was collected and divided into distinct time periods. With each distinct period a description of the expected resources as well as a provisional assessment of significance was developed. A GIS data layer compatible with the New Jersey Meadowlands GIS system was created using period maps and a "pilot" field verification survey was undertaken in the Carlstadt Meadows to get a sense of the actual rate of survival for the historic features.

The survey revealed the Meadowlands to be a busy and highly complex landscape. The field survey identified mainly 20th Century gates and systems and underscored the difficulties of inspecting these features within the marsh. The report concluded that it is very unlikely that complete historic ditching and diking systems are likely to survive with integrity anywhere in the Meadowlands. In consideration of this the report puts forward a recommended approach for evaluating the significance of individual components of drainage systems. The Corps plans to make use of this survey and the 2006 survey to prepare a programmatic agreement for treatment of cultural properties within the framework of the restoration project.

We would appreciate receiving any Section 106 comments that you may have regarding the enclosed report and, of course, any comments or recommendations you may have concerning the Corps' plan of action. Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist at (917) 790-8612.

Sincerely,

Peter Weppler,
Chief, Coastal Ecosystems Section

Enclosure

HPO-K2009-252
Log # 06-1376-3 VM

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

NATURAL & HISTORIC RESOURCES, HISTORIC PRESERVATION OFFICE
PO Box 404, Trenton, NJ 08625
TEL: (609) 984-0176 FAX: (609) 984-0578
www.state.nj.us/dep/hpo

MARK N. MAURIELLO
Acting Commissioner

December 3, 2009

Peter Weppler
Chief, Coastal Ecosystems Section
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: *Historic Context Development, Hackensack Meadowlands, Drainage Systems and Features, Hackensack Ecosystem Restoration Project, Hudson and Bergen Counties, New Jersey.*

Dear Mr. Weppler:

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the Draft May 2009 *Historic Context Development, Hackensack Meadowlands, Drainage Systems and Features, Hackensack Ecosystem Restoration Project, Hudson and Bergen Counties, New Jersey* prepared by Hunter Research, Inc. The report provides an excellent summary of the five major historic period drainage systems (ditches, dikes, sluices and gates) within the Hackensack Meadowlands. This report will be accessioned into the HPO report collection as MULT A 240b.

The recommendations provided in Chapter 7 for the identification and National Register evaluation of historic period drainage features within the Hackensack Meadowlands is appropriate for satisfying the U.S. Army Corps of Engineers' responsibilities under Section 106 of the National Historic Preservation Act. The HPO recommends, however, that based on the lack of any subsurface testing as part of the historic context, that any National Register evaluation for the integrity of complete drainage systems and/or individual drainage system elements is restrained until the presence and/or absence of such archaeological features are established through future archaeological investigations. The evaluation of the integrity of archaeological properties shall be conducted in conformance with Chapter VIII "How to evaluate the integrity of a Property" within National Register Bulletin No. 15, *How to Apply the National Register Criteria for Evaluation.* In addition, it is the HPO's feeling that any archaeological remains of the 1867 Driggs' iron-core dike or any component drainage features would be New Jersey and National Register eligible (SR/NR). Finally, please be aware, any drainage

New Jersey is an Equal Opportunity Employer • Printed on Recycled Paper and Recyclable

component features that are identified as part of the SR/NR Morris Canal shall be considered contributing to the canal district.

The HPO looks forward to future consultation with the U.S. Army Corps of Engineers to create a programmatic agreement, based on the recommendations within the above referenced and 2006 reports, for the identification and treatment of historic properties as part of the Hackensack Meadowlands ecosystem restoration project.

Additional Comments

Thank you for providing the opportunity to comment on the potential for this project to affect historic and archaeological properties. The HPO would appreciate receiving a copy of the drainage feature GIS shapefile layers from the above-referenced report to aid in compliance review within the Hackensack Meadowlands. If you have any questions, please feel free to contact Vincent Maresca of my staff at (609) 633-2395 or Vincent.Maresca@dep.state.nj.us

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

c: Carissa Scarpa, New York District, USACE
Ian Burrow, Hunter Research, Inc.

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

Reply to
Environmental Assessment Section
Environmental Analysis Branch

March 30, 2011

Mr. Daniel Saunders
Acting Administrator and Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625-0404

Re: HPO-K2009-252
Log # 06-1376-3 VM

Dear Mr. Saunders:

The U.S. Army Corps of Engineers, New York District (Corps), is pleased to furnish you with the final draft of the report entitled *Historic Context Development, Hackensack Meadowlands Drainage Systems and Features, Hackensack Ecosystem Restoration Project, Hudson and Bergen Counties, New Jersey* (Enclosure). This report developed a historic context for historic drainage systems in the Hackensack Meadowlands, specifically within the New Jersey Meadowlands District (NJMD), which is currently the subject of studies being undertaken by the Corps and the NJMC that are aimed at identifying opportunities for ecosystem restoration. This historic context study implements a recommendation made in the 2006 cultural resource study *Phase I Cultural Resource Investigation of Ten Sites in the Hackensack Meadowlands, Hackensack Meadowlands Restoration Project, Hudson and Bergen Counties, New Jersey* (HPO-E2006-41; 106-06-1376-1).

In accordance with comments received from your office on December 3, 2009, the Corps shall consider any archaeological remains of the 1867 Driggs' iron-core dike or component drainage features New Jersey and National Register eligible and drainage component features related to the SR/NR Morris Canal shall be considered a part of the canal district. The Corps is aware of the possibility of intact drainage systems and components existing within the Meadowlands that may not be directly observable at this time. The recommendations in the report call for archaeological review as a first step toward addressing the impacts of proposed undertakings and a programmatic agreement shall be prepared in coordination with your office and the NJMD, to ensure that a suitable management protocol is followed in all future restoration undertakings. The Corps has amended

some sections of the recommendations of this report to better address your concerns on these points.

Thank you for your assistance in the Section 106 process. If you or your staff require additional information or have any questions, please contact Heather Morgan, Project Archaeologist at (917) 790-8730.

Sincerely,

Peter Weppler,
Chief, Coastal Ecosystems Section

Enclosure

Section C.3 – HRE Overall 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

May 27, 2014

Environmental Assessment Section
Environmental Analysis Branch

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
State of New Jersey Department of Environmental Protection
Historic Preservation Office
PO Box420
Trenton, NJ 08625-0420

Dear Mr. Saunders:

The US Army Corps of Engineers, New York District (Corps) is undertaking the Hudson-Raritan Estuary (HRE), NY & NJ, Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey, and is situated within a 25 mile radius of the Statue of Liberty. The HRE study area includes eight (8) Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay (Enclosure 1). These planning regions cover multiple municipalities and counties in New Jersey and New York.

As part of the HRE Feasibility Study, the Corps and The Port Authority of New York & New Jersey prepared a Comprehensive Restoration Plan (CRP). The CRP was developed in collaboration with Federal, State, municipal, non-governmental organizations and other regional stakeholders and sets forth a consensus vision, master plan and strategy for future ecosystem restoration in the New York/New Jersey Harbor. The CRP established estuary-wide goals and restoration targets (TECs) (Enclosure 2). The TECs are being used to identify and design restoration projects and measure programmatic success. The feasibility study assesses the potential restoration actions (described in Enclosure 2), the ecological benefits and costs for restoration opportunities throughout the estuary. The feasibility study will recommend construction for a subset of restoration opportunities that already have detailed feasibility-level designs, while recommending the remaining restoration sites for future study.

As the study area is vast and there are over three hundred potential restoration areas, none of which have yet been selected yet to move forward for further study, the Corps did not conduct site specific work but prepared a cultural resources overview for each of the planning regions with a data collection focused on the 301 restoration areas. This effort included the development of a GIS database of all known resources that were available through the New Jersey Historic

Preservation Office, New Jersey State Museum, New York State Office of Parks, Recreation, and Historic Preservation, New York Landmarks Preservation Commission, and National Oceanic and Atmospheric Administration.. These restoration areas include onshore and offshore sites that area located primarily within sensitive ecological, estuarine, riverine and wetland environments; both coastal and upland. To begin compiling the overall cultural resources database, buffers of one-mile and one half-mile were added to the restoration sites to act as a survey boundary. It is within these buffers that the majority of the data collection effort was focused. However, background, environmental, and cultural resources data where readily available was collected for the entire planning region study area. The report,"Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan" by the URS Corporation, is enclosed for your review as is the associated GIS database (Enclosure 3).

Approximately 20,000 resources within the study area have been mapped or noted. While, the vast majority of these data come from a single source, the New Jersey above ground historic resources GIS layer, over 3,000 additional survey areas, archaeological sites, NR listed and eligible resources, underwater obstructions, and archaeological sensitivity areas have been collected.

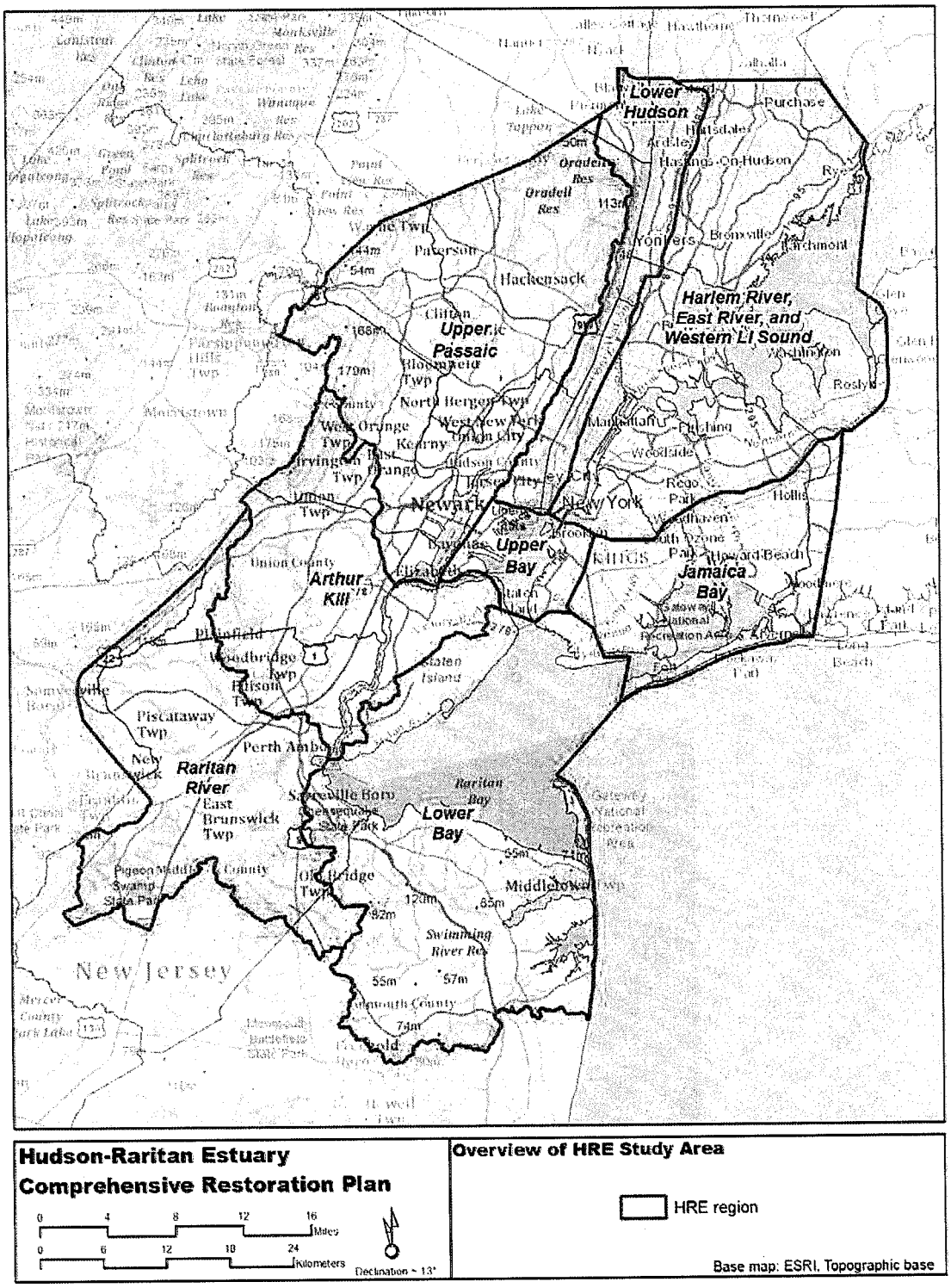
Chapter 5 of the report contains an overview of the proposed restoration measures and steps to prepare a Programmatic Agreement (PA). The project had been anticipated to include a PA to cover the entire suite of TECs and potential impacts expected with each. That approach is no longer being taken due to the scale of the proposed work as a whole. Each restoration site will subject to environmental and Section 106 compliance as they are advanced. Reference to the PA and the Section 106 process in Chapter 5 will be removed from the final report.

The Corps will use these data as a planning tool for the HRE to identify restoration areas with known resources, identify locations that are archeologically sensitive and determine which areas require surveys. Please review the enclosed report and GIS data and provide Section 106 comments, pursuant to 36 CFR 800.5. The Corps' comments on the draft report and GIS data are enclosed for your information (Enclosure 4). We will continue to coordinate the HRE study with you as the project proceeds. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629

Sincerely,

Nancy J. Brighton
Acting Chief, Environmental Analysis Branch

Enclosures



Enclosure 1. Overview of the Hudson-Raritan Estuary Study Area.

Enclosure 2. HRE Target Ecosystem Characteristics and Potential Restoration Activities

Target Ecosystem Characteristic	Potential Restoration Activities
Wetlands	• Removal of historic fill • Regrading slopes to proper elevations for wetland plantings • Removal of invasive species • Native plant species plantings
Islands for Waterbirds	• Removal of invasive species • Expansion of existing islands using clean sand from the Harbor Deepening • Planting of native species
Maritime Communities	• Removal of invasive species • Native plant species plantings • Stabilization of dunes
Oyster Reefs	• Deposition of bolders or other appropriate materials at optimal locations in water to create reefs for spat
Eelgrass Beds	• Plantings of eelgrass at optimal locations
Shorelines & Shallows	• Removal of hard or bulkheaded shorelines • Regrading slopes to transitional intertidal and littoral elevations • Underwater baffles or training walls to redirect flows/maintain desirable depths • Increase light transmission to water through piers by increasing height or decreasing width of piers • Use texturized bulkheads/reef balls/ stacked hollow cubes to add physical complexity to environment
Habitat Complexes for Fish, Crabs, & Lobsters	• Removal of historic fill • Regrading slopes to proper elevations for wetland plantings • Removal of invasive species • Native plant species plantings • Deposition of bolders or other appropriate materials at optimal locations to create habitat complexes in water
Tributary Connections	• Dam removal • Modification of weirs, rock ramps • Fish ladders • Construction of canals • Widening of culverts
Enclosed and Confined Waters	• Removal of hardened/bulkheaded shorelines • Address extreme differences in bathymetry by depositing clean sand to restore more natural slope as found in historic tidal creeks
Sediment Contamination	• Remediate sediments (non-USACE) • Cap or contain sediments (non-USACE)
Public Access	• Construct direct access points for swimming, boating, fish (local action) • Indirect access (waterfront promenade) or waterfront vistas may be recreational component of restoration action

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

June 27, 2014

Nancy J. Brighton
Acting Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Ms. Brighton:

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 December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing Consultation Comments for the following proposed undertaking:

Bergen, Hudson, Union, Middlesex, and Monmouth Counties
Cultural Resources Overview
Hudson-Raritan Estuary Comprehensive Restoration Plan
United States Department of the Army, Corps of Engineers

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the following cultural resources overview report, received at this office on June 2, 2014, for the above-referenced undertaking:

Harris, Matthew D. Eileen K. Hood, and Joel Dworsky
2014 *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan.* Prepared for the United States Department of the Army, Corps of Engineers – New York District. Prepared by URS Corporation, Burlington, New Jersey.

800.4 Identification of Historic Properties

This cultural resource report represents a thorough and detailed review of the existing cultural resources represented within the Hudson-Raritan Estuary Comprehensive Restoration Plan survey area. The compiling of this assessment will provides future researchers with a detailed

record of the evolution of the area and will help guide research Hudson-Raritan Estuary. This report will be accessioned into the report collection at the HPO for future reference

.

According to the documentation submitted, the United States Department of the Army, Corps of Engineers (Corps) has identified 301 proposed restoration areas as part of this undertaking. However, none of these areas have yet been selected to move forward for further study, As a result, the documentation notes that site specific assessments are not being undertaken at this time. The HPO looks forward to further consultation with the Corps, once project plans are generated, to identify historic properties within the undertaking's area of potential effects, as well as develop means to avoid, minimize, and/or mitigate potential project effects, pursuant to Section 106 of the National Historic Preservation Act.

Additional Comments

Report Comments

The report received by the HPO for review and comment represents only Volume I of a three volume report. Please note, reports must be submitted as individual documents for accessioning into the HPO's reference library. The HPO requests that a bound final copy of the complete report, including all volumes and appendices, be submitted to our office so that it may be accessioned into our report collection for future reference.

In addition to the report comments provided by the Corps, which the HPO concurs with, the following issues must be addressed in a revised copy of the report, incorporating the revisions within the main body of the report not as an appendix, and submitted to the HPO for review and comment:

- P.190, First Paragraph, Last Sentence: The sentence is not finished in the text provided. Please complete this sentence.
- P.191, Last Paragraph, Line 3: The text references Arthur Kill County, which does not exist. Please clarify this.
- To understand potential submerged historic properties within the survey area, the report utilizes the National Oceanographic and Atmospheric Administration's Automated Wreck and Obstruction Information System (AWOIS) as the primary source for this data. However, the report does not clarify the quality of this data. The AWOIS database is not a comprehensive repository of potential submerged historic properties and as a result should not be utilized solely on its own. Please clarify the quality of this data in the report and evaluate future avenues of research that will be appropriate to assess the potential for submerged historic properties to be present within the project's area of potential effects (APE).
- The report utilizes the HPO's Archaeological Site Grid as a source of data for the assessment of historic properties within the study area. The HPO would like to note that our Archaeological Site Grid does not represent a sensitivity model, but is instead utilized to manage sensitive archaeological data regarding the specific locations of archaeological sites for access by the public. The data displayed by the grid simply represents either the presence or absence of archaeological data within the grid squares and does not represent

comprehensive survey of the State of New Jersey. As a result, the potential for archaeological historic properties to exist within areas not highlighted by the Archaeological Site Grid still exists. Please clarify the quality of this data in the report.

Thank you for providing the opportunity to review and comment on the potential for the above-referenced project to affect historic properties. The HPO looks forward to further consultation to regarding the identification and evaluation of the project's potential effects on historic properties. Please do not hesitate to contact Jesse West-Rosenthal of my staff at (609) 984-6019 with any questions regarding archaeology. Please reference the HPO project number 14-3348, in any future calls, emails, or written correspondence to help expedite your review and response.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

Cc: Lynn Rakos – USACE

DDS/JWR

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

REPLY TO
ATTENTION OF

November 13, 2014

Environmental Assessment Section
Environmental Analysis Branch

Ms. Amanda Sutphin
New York City Landmarks Preservation Commission
Municipal Building
One Center Street, 9th Floor
New York, N.Y. 10007

Dear Ms. Sutphin:

The US Army Corps of Engineers, New York District (Corps) is undertaking the Hudson-Raritan Estuary (HRE), NY & NJ, Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey, and is situated within a 25-mile radius of the Statue of Liberty. The study area includes eight (8) Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay (Enclosure 1). These planning regions cover multiple municipalities and counties in New Jersey and New York.

The Corps and the Port Authority of New York & New Jersey prepared a Comprehensive Restoration Plan (CRP) in collaboration with Federal, State, municipal, non-governmental organizations and other regional stakeholders. The document set forth a consensus vision, master plan and strategy for future ecosystem restoration in the New York/New Jersey Harbor. The CRP established estuary-wide goals and restoration targets (TECs) (Enclosure 2). The TECs are being used to identify and design restoration projects and measure programmatic success. The approach was initially programmatic and included approximately 300 sites identified as potential restoration opportunities. An Environmental Assessment was prepared in 2013 and included in that document was a cultural resources overview of all locations.

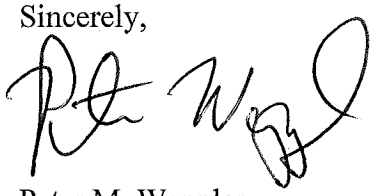
This cultural resources effort included the development of a GIS database of all known resources that were available through your office, the New Jersey Historic Preservation Office, New Jersey State Museum, New York State Office of Parks, Recreation and Historic Preservation and the National Oceanic and Atmospheric Administration. These restoration areas include onshore and offshore sites that area located primarily within sensitive ecological, estuarine, riverine and wetland environments; both coastal and upland. To begin compiling the overall cultural resources database, buffers of one-mile and one half-mile were added to the restoration sites to act as a survey boundary. It is within these buffers that the majority of the data collection effort

was focused. However, background, environmental, and cultural resources data where readily available was collected for the entire planning region study area.

We are pleased to furnish you with the final report resulting from the study entitled "Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan" by the URS Corporation (Enclosure 3). The CD contains digital versions of all three volumes. The associated GIS database on CD is also enclosed (Enclosure 4). We apologize that your office was inadvertently not provided an opportunity to review the draft of this report. The New Jersey Historic Preservation Office did review the draft and had comments that were addressed in the final document (Enclosure 5).

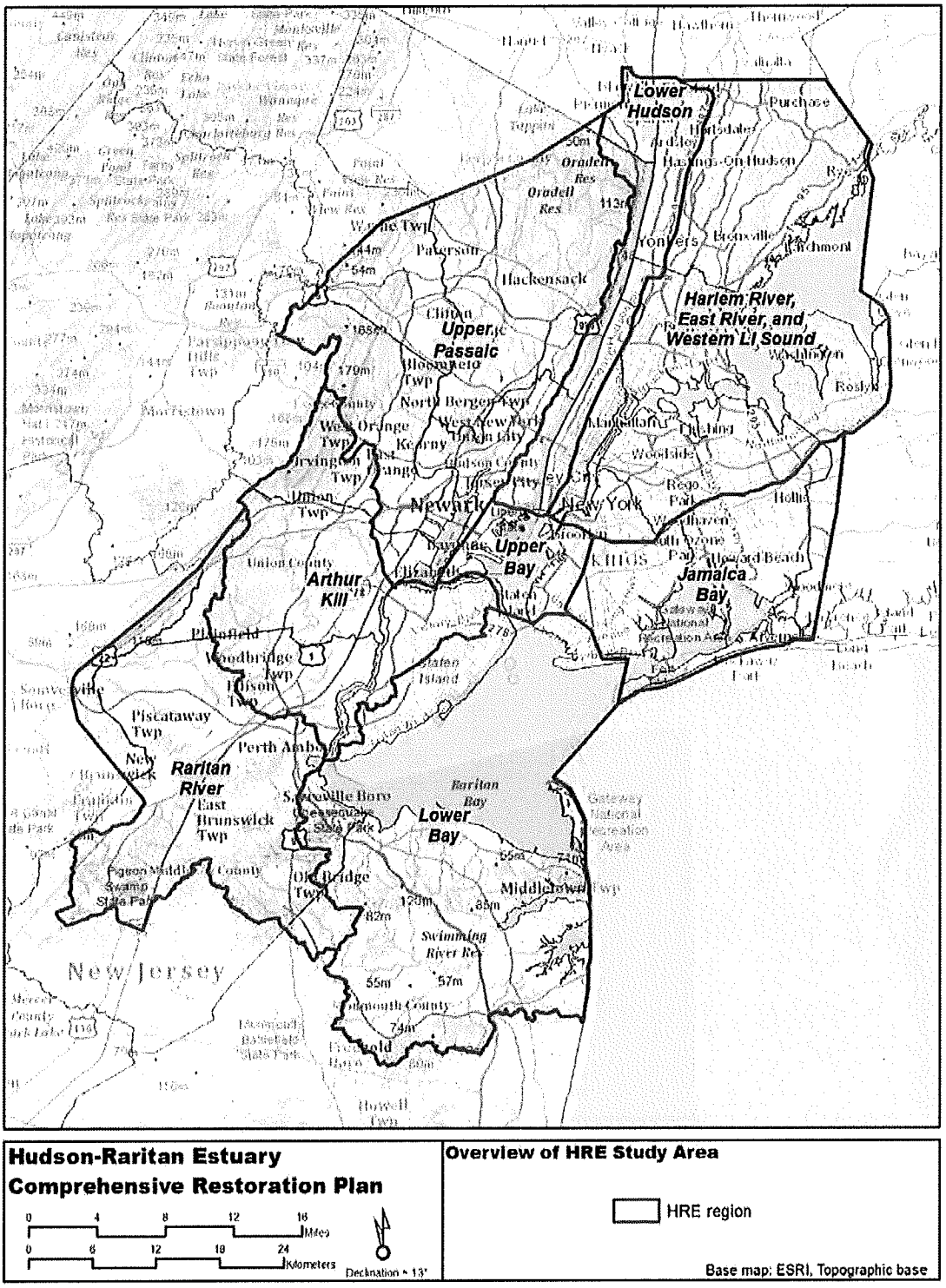
The HRE study is proceeding. In the feasibility study just a subset of sites will be evaluated in detail. We will continue to coordinate the HRE study with you as the project proceeds and specific sites are selected. It is likely that a Draft Programmatic Agreement will be prepared which will be coordinated with your office. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629.

Sincerely,



Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures



Enclosure 1. Overview of the Hudson-Raritan Estuary Study Area.

Enclosure 2. HRE Target Ecosystem Characteristics and Potential Restoration Activities

Target Ecosystem Characteristic	Potential Restoration Activities
Wetlands	• Removal of historic fill • Regrading slopes to proper elevations for wetland plantings • Removal of invasive species • Native plant species plantings
Islands for Waterbirds	• Removal of invasive species • Expansion of existing islands using clean sand from the Harbor Deepening • Planting of native species
Maritime Communities	• Removal of invasive species • Native plant species plantings • Stabilization of dunes
Oyster Reefs	• Deposition of bolders or other appropriate materials at optimal locations in water to create reefs for spat
Eelgrass Beds	• Plantings of eelgrass at optimal locations
Shorelines & Shallows	• Removal of hard or bulkheaded shorelines • Regrading slopes to transitional intertidal and littoral elevations • Underwater baffles or training walls to redirect flows/maintain desirable depths • Increase light transmission to water through piers by increasing height or decreasing width of piers • Use texturized bulkheads/reef balls/ stacked hollow cubes to add physical complexity to environment
Habitat Complexes for Fish, Crabs, & Lobsters	• Removal of historic fill • Regrading slopes to proper elevations for wetland plantings • Removal of invasive species • Native plant species plantings • Deposition of bolders or other appropriate materials at optimal locations to create habitat complexes in water
Tributary Connections	• Dam removal • Modification of weirs, rock ramps • Fish ladders • Construction of canals • Widening of culverts
Enclosed and Confined Waters	• Removal of hardened/bulkheaded shorelines • Address extreme differences in bathymetry by depositing clean sand to restore more natural slope as found in historic tidal creeks
Acquisition	• Protection of land through acquisition
Sediment Contamination	• Remediate sediments (non-USACE) • Cap or contain sediments (non-USACE)
Public Access	• Construct direct access points for swimming, boating, fish (local action) • Indirect access (waterfront promenade) or waterfront vistas may be recreational component of restoration action

ENCLOSURE 5

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

June 27, 2014

Nancy J. Brighton
Acting Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Ms. Brighton:

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 December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing Consultation Comments for the following proposed undertaking:

Bergen, Hudson, Union, Middlesex, and Monmouth Counties
Cultural Resources Overview
Hudson-Raritan Estuary Comprehensive Restoration Plan
United States Department of the Army, Corps of Engineers

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the following cultural resources overview report, received at this office on June 2, 2014, for the above-referenced undertaking:

Harris, Matthew D. Eileen K. Hood, and Joel Dworsky
2014 *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan.* Prepared for the United States Department of the Army, Corps of Engineers – New York District. Prepared by URS Corporation, Burlington, New Jersey.

800.4 Identification of Historic Properties

This cultural resource report represents a thorough and detailed review of the existing cultural resources represented within the Hudson-Raritan Estuary Comprehensive Restoration Plan survey area. The compiling of this assessment will provides future researchers with a detailed

record of the evolution of the area and will help guide research Hudson-Raritan Estuary. This report will be accessioned into the report collection at the HPO for future reference

According to the documentation submitted, the United States Department of the Army, Corps of Engineers (Corps) has identified 301 proposed restoration areas as part of this undertaking. However, none of these areas have yet been selected to move forward for further study, As a result, the documentation notes that site specific assessments are not being undertaken at this time. The HPO looks forward to further consultation with the Corps, once project plans are generated, to identify historic properties within the undertaking's area of potential effects, as well as develop means to avoid, minimize, and/or mitigate potential project effects, pursuant to Section 106 of the National Historic Preservation Act.

Additional Comments

Report Comments

The report received by the HPO for review and comment represents only Volume I of a three volume report. Please note, reports must be submitted as individual documents for accessioning into the HPO's reference library. The HPO requests that a bound final copy of the complete report, including all volumes and appendices, be submitted to our office so that it may be accessioned into our report collection for future reference.

In addition to the report comments provided by the Corps, which the HPO concurs with, the following issues must be addressed in a revised copy of the report, incorporating the revisions within the main body of the report not as an appendix, and submitted to the HPO for review and comment:

- P.190, First Paragraph, Last Sentence: The sentence is not finished in the text provided. Please complete this sentence.
- P.191, Last Paragraph, Line 3: The text references Arthur Kill County, which does not exist. Please clarify this.
- To understand potential submerged historic properties within the survey area, the report utilizes the National Oceanographic and Atmospheric Administration's Automated Wreck and Obstruction Information System (AWOIS) as the primary source for this data. However, the report does not clarify the quality of this data. The AWOIS database is not a comprehensive repository of potential submerged historic properties and as a result should not be utilized solely on its own. Please clarify the quality of this data in the report and evaluate future avenues of research that will be appropriate to assess the potential for submerged historic properties to be present within the project's area of potential effects (APE).
- The report utilizes the HPO's Archaeological Site Grid as a source of data for the assessment of historic properties within the study area. The HPO would like to note that our Archaeological Site Grid does not represent a sensitivity model, but is instead utilized to manage sensitive archaeological data regarding the specific locations of archaeological sites for access by the public. The data displayed by the grid simply represents either the presence or absence of archaeological data within the grid squares and does not represent

comprehensive survey of the State of New Jersey. As a result, the potential for archaeological historic properties to exist within areas not highlighted by the Archaeological Site Grid still exists. Please clarify the quality of this data in the report.

Thank you for providing the opportunity to review and comment on the potential for the above-referenced project to affect historic properties. The HPO looks forward to further consultation to regarding the identification and evaluation of the project's potential effects on historic properties. Please do not hesitate to contact Jesse West-Rosenthal of my staff at (609) 984-6019 with any questions regarding archaeology. Please reference the HPO project number 14-3348, in any future calls, emails, or written correspondence to help expedite your review and response.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

Cc: Lynn Rakos – USACE

DDS/JWR

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

REPLY TO ATTENTION OF

November 13, 2014

Environmental Assessment Section
Environmental Analysis Branch

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
State of New Jersey Department of Environmental Protection
Historic Preservation Office
PO Box420
Trenton, NJ 08625-0420

Dear Mr. Saunders:

The US Army Corps of Engineers, New York District (Corps) is undertaking the Hudson-Raritan Estuary (HRE), NY & NJ, Ecosystem Restoration Feasibility Study (HPO #14-3348-1, HPO-F2014-459) . We are pleased to furnish you with the final report entitled"Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan" by the URS Corporation (Enclosure 1). The final report contains a CD in a pocket bound into a hard copy of Volume I of a three volume document. The CD contains digital versions of all three volumes. Volumes II and II are contained on CD only due to the quantity of data contained therein and the large size of a printed complete report. Lynn Rakos coordinated the submission of the Volumes II and III on CD with Jesse West-Rosenthal of your staff (Enclosure 2). The associated GIS database is also on CD and is enclosed as is an extra CD containing Volumes I - III. Your office reviewed the report and had comments which were addressed in the final document (Enclosure 3).

The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The study area is vast. At the time of the study there were over 301 potential restoration areas, none of which had been selected to move forward for further study. The Corps did not conduct site specific work but prepared a cultural resources overview for each of the planning regions with a data collection focused on the restoration areas then under consideration.

We will continue to coordinate the HRE study with you as the project proceeds. A Draft Programmatic Agreement will be prepared and coordinated with your office. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

From: Jesse West-Rosenthal
To: Rakos, Lynn NAN02
Subject: [EXTERNAL] RE: Hudson Raritan Estuary Cultural Resources Report (UNCLASSIFIED)
Date: Friday, July 11, 2014 3:36:13 PM

Hi Lynn,

Kate and I had a discussion with Kinney regarding this, since he is our data management person. Based on our discussions, we will forgo the paper copy of the additional volumes and will figure something out on our end for making the information available to consultants when necessary. At this point in time, as you've seen, our research library is strictly maintained on paper. At some point in the future we intend to adopt some form of digital access, however, we do not have that capability now. Just something to keep in mind for future submissions.

If you have any other questions, please feel free to contact me.

Have a great weekend.

-Jesse

Jesse West-Rosenthal
Historic Preservation Specialist
Historic Preservation Office
Department of Environmental Protection
Mail Code 501-04B
501 E. State Street
PO Box 420
Trenton, NJ 08625
Phone: (609) 984-6019
Fax: (609) 984-0578
Website: http://www.nj.gov/dep/hpo

Please Note: My E-mail address had changed. I can now be reached at Jesse.West-Rosenthal@dep.nj.gov Please update your records accordingly.

HPO's cultural resources GIS data is now available in GeoWeb:
http://www.state.nj.us/dep/gis/geowebsplash.htm

-----Original Message-----
From: Rakos, Lynn NAN02 [mailto:Lynn.Rakos@usace.army.mil]
Sent: Friday, July 11, 2014 2:07 PM
To: Jesse West-Rosenthal
Subject: Hudson Raritan Estuary Cultural Resources Report (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Jesse,

I asked URS to print the full volumes as we discussed. They just got back to me saying it will be about 4,465 pages that will be bound in about 15 volumes. Do you still want all the material printed? I can give you extra copies of the CDs so if one goes missing you have more.

The material is largely scans of forms from your office and NYSHPO. They would be next to impossible

to use without an ability to search them using the "find" capability of a computer. They were really intended to be electronic files.

If you do want the printed volumes would it be ok to put them in binders as opposed to spiral bound?

Thanks!
Lynn

Classification: UNCLASSIFIED
Caveats: NONE

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

June 27, 2014

Nancy J. Brighton
Acting Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Ms. Brighton:

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 December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing Consultation Comments for the following proposed undertaking:

Bergen, Hudson, Union, Middlesex, and Monmouth Counties
Cultural Resources Overview
Hudson-Raritan Estuary Comprehensive Restoration Plan
United States Department of the Army, Corps of Engineers

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the following cultural resources overview report, received at this office on June 2, 2014, for the above-referenced undertaking:

Harris, Matthew D. Eileen K. Hood, and Joel Dworsky
2014 *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan.* Prepared for the United States Department of the Army, Corps of Engineers – New York District. Prepared by URS Corporation, Burlington, New Jersey.

800.4 Identification of Historic Properties

This cultural resource report represents a thorough and detailed review of the existing cultural resources represented within the Hudson-Raritan Estuary Comprehensive Restoration Plan survey area. The compiling of this assessment will provides future researchers with a detailed

record of the evolution of the area and will help guide research Hudson-Raritan Estuary. This report will be accessioned into the report collection at the HPO for future reference

.

According to the documentation submitted, the United States Department of the Army, Corps of Engineers (Corps) has identified 301 proposed restoration areas as part of this undertaking. However, none of these areas have yet been selected to move forward for further study, As a result, the documentation notes that site specific assessments are not being undertaken at this time. The HPO looks forward to further consultation with the Corps, once project plans are generated, to identify historic properties within the undertaking's area of potential effects, as well as develop means to avoid, minimize, and/or mitigate potential project effects, pursuant to Section 106 of the National Historic Preservation Act.

Additional Comments

Report Comments

The report received by the HPO for review and comment represents only Volume I of a three volume report. Please note, reports must be submitted as individual documents for accessioning into the HPO's reference library. The HPO requests that a bound final copy of the complete report, including all volumes and appendices, be submitted to our office so that it may be accessioned into our report collection for future reference.

In addition to the report comments provided by the Corps, which the HPO concurs with, the following issues must be addressed in a revised copy of the report, incorporating the revisions within the main body of the report not as an appendix, and submitted to the HPO for review and comment:

- P.190, First Paragraph, Last Sentence: The sentence is not finished in the text provided. Please complete this sentence.
- P.191, Last Paragraph, Line 3: The text references Arthur Kill County, which does not exist. Please clarify this.
- To understand potential submerged historic properties within the survey area, the report utilizes the National Oceanographic and Atmospheric Administration's Automated Wreck and Obstruction Information System (AWOIS) as the primary source for this data. However, the report does not clarify the quality of this data. The AWOIS database is not a comprehensive repository of potential submerged historic properties and as a result should not be utilized solely on its own. Please clarify the quality of this data in the report and evaluate future avenues of research that will be appropriate to assess the potential for submerged historic properties to be present within the project's area of potential effects (APE).
- The report utilizes the HPO's Archaeological Site Grid as a source of data for the assessment of historic properties within the study area. The HPO would like to note that our Archaeological Site Grid does not represent a sensitivity model, but is instead utilized to manage sensitive archaeological data regarding the specific locations of archaeological sites for access by the public. The data displayed by the grid simply represents either the presence or absence of archaeological data within the grid squares and does not represent

comprehensive survey of the State of New Jersey. As a result, the potential for archaeological historic properties to exist within areas not highlighted by the Archaeological Site Grid still exists. Please clarify the quality of this data in the report.

Thank you for providing the opportunity to review and comment on the potential for the above-referenced project to affect historic properties. The HPO looks forward to further consultation to regarding the identification and evaluation of the project's potential effects on historic properties. Please do not hesitate to contact Jesse West-Rosenthal of my staff at (609) 984-6019 with any questions regarding archaeology. Please reference the HPO project number 14-3348, in any future calls, emails, or written correspondence to help expedite your review and response.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

Cc: Lynn Rakos – USACE

DDS/JWR

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

REPLY TO
ATTENTION OF

November 13, 2014

Environmental Assessment Section
Environmental Analysis Branch

Ms. Ruth L. Pierpont
New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Dear Ms. Pierpont:

The US Army Corps of Engineers, New York District (Corps) is undertaking the Hudson-Raritan Estuary (HRE), NY & NJ, Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey, and is situated within a 25-mile radius of the Statue of Liberty. The study area includes eight (8) Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay (Enclosure 1). These planning regions cover multiple municipalities and counties in New Jersey and New York.

The Corps and the Port Authority of New York & New Jersey prepared a Comprehensive Restoration Plan (CRP) in collaboration with Federal, State, municipal, non-governmental organizations and other regional stakeholders. The document set forth a consensus vision, master plan and strategy for future ecosystem restoration in the New York/New Jersey Harbor. The CRP established estuary-wide goals and restoration targets (TECs) (Enclosure 2). The TECs are being used to identify and design restoration projects and measure programmatic success. The approach was initially programmatic and included approximately 300 sites identified as potential restoration opportunities. An Environmental Assessment was prepared in 2013 and included in that document was a cultural resources overview of all locations.

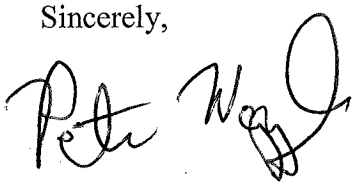
This cultural resources effort included the development of a GIS database of all known resources that were available through your office, the New Jersey Historic Preservation Office, New Jersey State Museum, New York Landmarks Preservation Commission and the National Oceanic and Atmospheric Administration. These restoration areas include onshore and offshore sites that area located primarily within sensitive ecological, estuarine, riverine and wetland environments; both coastal and upland. To begin compiling the overall cultural resources database, buffers of one-mile and one half-mile were added to the restoration sites to act as a survey boundary. It is

within these buffers that the majority of the data collection effort was focused. However, background, environmental, and cultural resources data where readily available was collected for the entire planning region study area.

We are pleased to furnish you with the final report resulting from the study entitled "Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan" by the URS Corporation (Enclosure 3). The CD contains digital versions of all three volumes. The associated GIS database on CD is also enclosed (Enclosure 4). We apologize that your office was inadvertently not provided an opportunity to review the draft of this report. The New Jersey Historic Preservation Office did review the draft and had comments that were addressed in the final document (Enclosure 5).

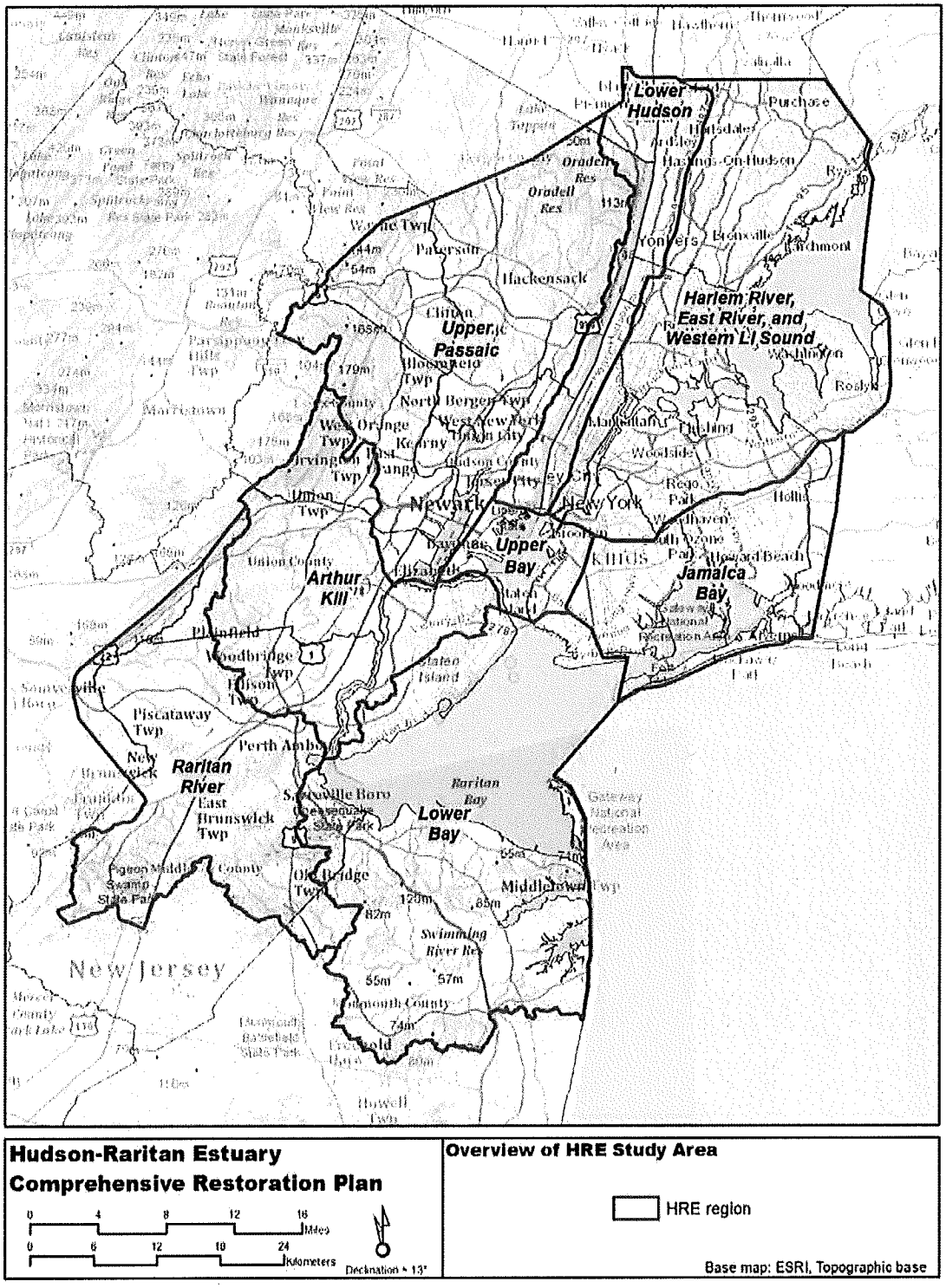
The HRE study is proceeding. In the feasibility study just a subset of sites will be evaluated in detail. We will continue to coordinate the HRE study with you as the project proceeds and specific sites are selected. It is likely that a Draft Programmatic Agreement will be prepared which will be coordinated with your office. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629.

Sincerely,



Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures



Enclosure 1. Overview of the Hudson-Raritan Estuary Study Area.

Enclosure 2. HRE Target Ecosystem Characteristics and Potential Restoration Activities

Target Ecosystem Characteristic	Potential Restoration Activities
Wetlands	• Removal of historic fill • Regrading slopes to proper elevations for wetland plantings • Removal of invasive species • Native plant species plantings
Islands for Waterbirds	• Removal of invasive species • Expansion of existing islands using clean sand from the Harbor Deepening • Planting of native species
Maritime Communities	• Removal of invasive species • Native plant species plantings • Stabilization of dunes
Oyster Reefs	• Deposition of bolders or other appropriate materials at optimal locations in water to create reefs for spat
Eelgrass Beds	• Plantings of eelgrass at optimal locations
Shorelines & Shallows	• Removal of hard or bulkheaded shorelines • Regrading slopes to transitional intertidal and littoral elevations • Underwater baffles or training walls to redirect flows/maintain desirable depths • Increase light transmission to water through piers by increasing height or decreasing width of piers • Use texturized bulkheads/reef balls/ stacked hollow cubes to add physical complexity to environment
Habitat Complexes for Fish, Crabs, & Lobsters	• Removal of historic fill • Regrading slopes to proper elevations for wetland plantings • Removal of invasive species • Native plant species plantings • Deposition of bolders or other appropriate materials at optimal locations to create habitat complexes in water
Tributary Connections	• Dam removal • Modification of weirs, rock ramps • Fish ladders • Construction of canals • Widening of culverts
Enclosed and Confined Waters	• Removal of hardened/bulkheaded shorelines • Address extreme differences in bathymetry by depositing clean sand to restore more natural slope as found in historic tidal creeks
Acquisition	• Protection of land through acquisition
Sediment Contamination	• Remediate sediments (non-USACE) • Cap or contain sediments (non-USACE)
Public Access	• Construct direct access points for swimming, boating, fish (local action) • Indirect access (waterfront promenade) or waterfront vistas may be recreational component of restoration action

ENCLOSURE 5

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

June 27, 2014

Nancy J. Brighton
Acting Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Ms. Brighton:

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 December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing Consultation Comments for the following proposed undertaking:

Bergen, Hudson, Union, Middlesex, and Monmouth Counties
Cultural Resources Overview
Hudson-Raritan Estuary Comprehensive Restoration Plan
United States Department of the Army, Corps of Engineers

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the following cultural resources overview report, received at this office on June 2, 2014, for the above-referenced undertaking:

Harris, Matthew D. Eileen K. Hood, and Joel Dworsky
2014 *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan.* Prepared for the United States Department of the Army, Corps of Engineers – New York District. Prepared by URS Corporation, Burlington, New Jersey.

800.4 Identification of Historic Properties

This cultural resource report represents a thorough and detailed review of the existing cultural resources represented within the Hudson-Raritan Estuary Comprehensive Restoration Plan survey area. The compiling of this assessment will provides future researchers with a detailed

record of the evolution of the area and will help guide research Hudson-Raritan Estuary. This report will be accessioned into the report collection at the HPO for future reference

According to the documentation submitted, the United States Department of the Army, Corps of Engineers (Corps) has identified 301 proposed restoration areas as part of this undertaking. However, none of these areas have yet been selected to move forward for further study, As a result, the documentation notes that site specific assessments are not being undertaken at this time. The HPO looks forward to further consultation with the Corps, once project plans are generated, to identify historic properties within the undertaking's area of potential effects, as well as develop means to avoid, minimize, and/or mitigate potential project effects, pursuant to Section 106 of the National Historic Preservation Act.

Additional Comments

Report Comments

The report received by the HPO for review and comment represents only Volume I of a three volume report. Please note, reports must be submitted as individual documents for accessioning into the HPO's reference library. The HPO requests that a bound final copy of the complete report, including all volumes and appendices, be submitted to our office so that it may be accessioned into our report collection for future reference.

In addition to the report comments provided by the Corps, which the HPO concurs with, the following issues must be addressed in a revised copy of the report, incorporating the revisions within the main body of the report not as an appendix, and submitted to the HPO for review and comment:

- P.190, First Paragraph, Last Sentence: The sentence is not finished in the text provided. Please complete this sentence.
- P.191, Last Paragraph, Line 3: The text references Arthur Kill County, which does not exist. Please clarify this.
- To understand potential submerged historic properties within the survey area, the report utilizes the National Oceanographic and Atmospheric Administration's Automated Wreck and Obstruction Information System (AWOIS) as the primary source for this data. However, the report does not clarify the quality of this data. The AWOIS database is not a comprehensive repository of potential submerged historic properties and as a result should not be utilized solely on its own. Please clarify the quality of this data in the report and evaluate future avenues of research that will be appropriate to assess the potential for submerged historic properties to be present within the project's area of potential effects (APE).
- The report utilizes the HPO's Archaeological Site Grid as a source of data for the assessment of historic properties within the study area. The HPO would like to note that our Archaeological Site Grid does not represent a sensitivity model, but is instead utilized to manage sensitive archaeological data regarding the specific locations of archaeological sites for access by the public. The data displayed by the grid simply represents either the presence or absence of archaeological data within the grid squares and does not represent

comprehensive survey of the State of New Jersey. As a result, the potential for archaeological historic properties to exist within areas not highlighted by the Archaeological Site Grid still exists. Please clarify the quality of this data in the report.

Thank you for providing the opportunity to review and comment on the potential for the above-referenced project to affect historic properties. The HPO looks forward to further consultation to regarding the identification and evaluation of the project's potential effects on historic properties. Please do not hesitate to contact Jesse West-Rosenthal of my staff at (609) 984-6019 with any questions regarding archaeology. Please reference the HPO project number 14-3348, in any future calls, emails, or written correspondence to help expedite your review and response.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

Cc: Lynn Rakos – USACE

DDS/JWR

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

REPLY TO
ATTENTION OF

November 17, 2014

Environmental Assessment Section
Environmental Analysis Branch

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
State of New Jersey Department of Environmental Protection
Historic Preservation Office
PO Box420
Trenton, NJ 08625-0420

Dear Mr. Saunders:

The US Army Corps of Engineers, New York District (Corps) is undertaking the Hudson-Raritan Estuary (HRE), NY & NJ, Ecosystem Restoration Feasibility Study (HPO #14-3348-1, HPO-F2014-459) . We are pleased to furnish you with the final report entitled"Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan" by the URS Corporation (Enclosure 1). The final report contains a CD in a pocket bound into a hard copy of Volume I of a three volume document. The CD contains digital versions of all three volumes. Volumes II and III are contained only on CD due to the quantity of data contained therein and the large size of a printed complete report. Lynn Rakos coordinated the submission of the Volumes II and III on disk with Jesse West-Rosenthal of your staff (Enclosure 2). The associated GIS database is also on CD and is enclosed as is an extra CD containing Volumes I - III. Your office reviewed the report and had comments which were addressed in the final document (Enclosure 3).

The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The study area is vast. At the time of the study there were over 301 potential restoration areas, none of which had been selected to move forward for further study. The Corps did not conduct site specific work but prepared a cultural resources overview for each of the planning regions with a data collection focused on the restoration areas then under consideration. In the feasibility study just a subset of sites will be evaluated in detail.

We will continue to coordinate the HRE study with you as the project proceeds. A Draft Programmatic Agreement will be prepared and coordinated with your office. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

ENCLOSURE 2

From: Jesse West-Rosenthal
To: Rakos, Lynn NAN02
Subject: [EXTERNAL] RE: Hudson Raritan Estuary Cultural Resources Report (UNCLASSIFIED)
Date: Friday, July 11, 2014 3:36:13 PM

Hi Lynn,

Kate and I had a discussion with Kinney regarding this, since he is our data management person. Based on our discussions, we will forgo the paper copy of the additional volumes and will figure something out on our end for making the information available to consultants when necessary. At this point in time, as you've seen, our research library is strictly maintained on paper. At some point in the future we intend to adopt some form of digital access, however, we do not have that capability now. Just something to keep in mind for future submissions.

If you have any other questions, please feel free to contact me.

Have a great weekend.

-Jesse

Jesse West-Rosenthal
Historic Preservation Specialist
Historic Preservation Office
Department of Environmental Protection
Mail Code 501-04B
501 E. State Street
PO Box 420
Trenton, NJ 08625
Phone: (609) 984-6019
Fax: (609) 984-0578
Website: http://www.nj.gov/dep/hpo

Please Note: My E-mail address had changed. I can now be reached at Jesse.West-Rosenthal@dep.nj.gov Please update your records accordingly.

HPO's cultural resources GIS data is now available in GeoWeb:
http://www.state.nj.us/dep/gis/geowebsplash.htm

-----Original Message-----
From: Rakos, Lynn NAN02 [mailto:Lynn.Rakos@usace.army.mil]
Sent: Friday, July 11, 2014 2:07 PM
To: Jesse West-Rosenthal
Subject: Hudson Raritan Estuary Cultural Resources Report (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Jesse,

I asked URS to print the full volumes as we discussed. They just got back to me saying it will be about 4,465 pages that will be bound in about 15 volumes. Do you still want all the material printed? I can give you extra copies of the CDs so if one goes missing you have more.

The material is largely scans of forms from your office and NYSHPO. They would be next to impossible

ENCLOSURE 3

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

June 27, 2014

Nancy J. Brighton
Acting Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Ms. Brighton:

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 December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing Consultation Comments for the following proposed undertaking:

Bergen, Hudson, Union, Middlesex, and Monmouth Counties
Cultural Resources Overview
Hudson-Raritan Estuary Comprehensive Restoration Plan
United States Department of the Army, Corps of Engineers

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the following cultural resources overview report, received at this office on June 2, 2014, for the above-referenced undertaking:

Harris, Matthew D. Eileen K. Hood, and Joel Dworsky
2014 *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan.* Prepared for the United States Department of the Army, Corps of Engineers – New York District. Prepared by URS Corporation, Burlington, New Jersey.

800.4 Identification of Historic Properties

This cultural resource report represents a thorough and detailed review of the existing cultural resources represented within the Hudson-Raritan Estuary Comprehensive Restoration Plan survey area. The compiling of this assessment will provides future researchers with a detailed

record of the evolution of the area and will help guide research Hudson-Raritan Estuary. This report will be accessioned into the report collection at the HPO for future reference

According to the documentation submitted, the United States Department of the Army, Corps of Engineers (Corps) has identified 301 proposed restoration areas as part of this undertaking. However, none of these areas have yet been selected to move forward for further study, As a result, the documentation notes that site specific assessments are not being undertaken at this time. The HPO looks forward to further consultation with the Corps, once project plans are generated, to identify historic properties within the undertaking's area of potential effects, as well as develop means to avoid, minimize, and/or mitigate potential project effects, pursuant to Section 106 of the National Historic Preservation Act.

Additional Comments

Report Comments

The report received by the HPO for review and comment represents only Volume I of a three volume report. Please note, reports must be submitted as individual documents for accessioning into the HPO's reference library. The HPO requests that a bound final copy of the complete report, including all volumes and appendices, be submitted to our office so that it may be accessioned into our report collection for future reference.

In addition to the report comments provided by the Corps, which the HPO concurs with, the following issues must be addressed in a revised copy of the report, incorporating the revisions within the main body of the report not as an appendix, and submitted to the HPO for review and comment:

- P.190, First Paragraph, Last Sentence: The sentence is not finished in the text provided. Please complete this sentence.
- P.191, Last Paragraph, Line 3: The text references Arthur Kill County, which does not exist. Please clarify this.
- To understand potential submerged historic properties within the survey area, the report utilizes the National Oceanographic and Atmospheric Administration's Automated Wreck and Obstruction Information System (AWOIS) as the primary source for this data. However, the report does not clarify the quality of this data. The AWOIS database is not a comprehensive repository of potential submerged historic properties and as a result should not be utilized solely on its own. Please clarify the quality of this data in the report and evaluate future avenues of research that will be appropriate to assess the potential for submerged historic properties to be present within the project's area of potential effects (APE).
- The report utilizes the HPO's Archaeological Site Grid as a source of data for the assessment of historic properties within the study area. The HPO would like to note that our Archaeological Site Grid does not represent a sensitivity model, but is instead utilized to manage sensitive archaeological data regarding the specific locations of archaeological sites for access by the public. The data displayed by the grid simply represents either the presence or absence of archaeological data within the grid squares and does not represent

comprehensive survey of the State of New Jersey. As a result, the potential for archaeological historic properties to exist within areas not highlighted by the Archaeological Site Grid still exists. Please clarify the quality of this data in the report.

Thank you for providing the opportunity to review and comment on the potential for the above-referenced project to affect historic properties. The HPO looks forward to further consultation to regarding the identification and evaluation of the project's potential effects on historic properties. Please do not hesitate to contact Jesse West-Rosenthal of my staff at (609) 984-6019 with any questions regarding archaeology. Please reference the HPO project number 14-3348, in any future calls, emails, or written correspondence to help expedite your review and response.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

Cc: Lynn Rakos – USACE

DDS/JWR

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

December 18, 2014

Peter M. Weppler
Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Weppler:

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 December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing Consultation Comments for the following proposed undertaking:

Bergen, Hudson, Union, Middlesex, and Monmouth Counties
Cultural Resources Overview
Hudson-Raritan Estuary Comprehensive Restoration Plan
United States Department of the Army, Corps of Engineers

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the following final copy of the cultural resources overview report, received at this office on November 24, 2014, for the above-referenced undertaking:

Harris, Matthew D. Eileen K. Hood, and Joel Dworsky
2014 *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan.* Prepared for the United States Department of the Army, Corps of Engineers – New York District. Prepared by URS Corporation, Burlington, New Jersey.

800.4 Identification of Historic Properties

The HPO has reviewed the above-referenced final copy of the submitted cultural resources overview report and believe the comments outlined in our June 27, 2014 letter have been adequately addressed.

This cultural resource report represents a thorough and detailed review of the existing cultural resources represented within the Hudson-Raritan Estuary Comprehensive Restoration Plan survey area. The compiling of this assessment will provides future researchers with a detailed record of the evolution of the area and will help guide research Hudson-Raritan Estuary. This report will be accessioned into the report collection at the HPO for future reference.

According to the documentation submitted, the United States Department of the Army, Corps of Engineers (Corps) has identified 301 proposed restoration areas as part of this undertaking. However, none of these areas have yet been selected to move forward for further study, As a result, the documentation notes that site specific assessments are not being undertaken at this time. The HPO looks forward to further consultation with the Corps, once project plans are generated, to identify historic properties within the undertaking's area of potential effects, as well as develop means to avoid, minimize, and/or mitigate potential project effects, pursuant to Section 106 of the National Historic Preservation Act.

Additional Comments

Thank you for providing the opportunity to review and comment on the potential for the above-referenced project to affect historic properties. The HPO looks forward to further consultation to regarding the identification and evaluation of the project's potential effects on historic properties. Please do not hesitate to contact Jesse West-Rosenthal of my staff at (609) 984-6019 with any questions regarding archaeology. Please reference the HPO project number 14-3348, in any future calls, emails, or written correspondence to help expedite your review and response.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

Cc: Lynn Rakos – USACE

Appendix D – Programmatic Agreements

Section D.1 – New York PA

Section D.2 – New Jersey PA

DRAFT PROGRAMMATIC AGREEMENT
AMONG
THE U. S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT,
THE NEW YORK STATE HISTORIC PRESERVATION OFFICE,
AND THE NEW YORK CITY LANDMARKS PRESERVATION COMMISSION
REGARDING
THE HUDSON-RARITAN ESTUARY ECOSYSTEM RESTORATION PROJECT

WHEREAS, the U.S. Army Corps of Engineers, New York District, (New York District), has been authorized under the General Investigations (GI) Program to conduct a feasibility study to evaluate federal participation in ecosystem restoration in the Hudson Raritan Estuary (HRE). The study was authorized by resolution of the U.S. House of Representatives Committee on Transportation and Infrastructure on 15 April 1999, to determine the feasibility of carrying out improvements, including the creation and enhancement of aquatic, wetland, and adjacent upland habitats as specific areas of interest; and

WHEREAS, the U.S. Army Corps of Engineers has been conducting several feasibility studies for ecosystem restoration within the Hudson Raritan Estuary (HRE) that have been consolidated into the HRE Ecosystem Restoration Feasibility Study and these are the Bronx River Basin Ecosystem Restoration Feasibility Study; the HRE - Lower Passaic River Ecosystem Restoration Feasibility Study; the HRE - Hackensack Meadowlands Ecosystem Restoration Feasibility Study; the Jamaica Bay, Marine Park, Plumb Beach Ecosystem Restoration Feasibility Study; and the Flushing Creek and Bay Ecosystem Restoration Feasibility Study; and

WHEREAS, The Hudson Raritan Estuary (HRE) is within the boundaries of the Port District of New York and New Jersey, and is situated within a 25 mile radius of the Statue of Liberty. The HRE study area includes the following 8 Planning regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay; and

WHEREAS, the scope of the HRE Ecosystem Restoration Project is to restore and protect lost or degraded aquatic, wetland and terrestrial habitats within the HRE study area. These activities will be accomplished by implementing various site-specific ecosystem restoration projects formulated within the context of an overall strategic plan. As a first step, the USACE, with the participation of the regional stakeholders, has developed a Comprehensive Restoration Plan (CRP) that serves as a master plan and blueprint for future restoration in the HRE region. The Corps has identified roughly 300 restoration sites spread throughout the eight planning regions. These restoration sites include onshore and offshore sites ranging in size from 2,102 acres to 0.3 acres, for a total of 31,932 acres; and

WHEREAS, the New York District has selected thirty-three sites to recommend for construction for which plans are being developed (Appendix A); and

WHEREAS, the New York District has defined the "Area of Potential Effect" (APE) for this Undertaking to include all areas within the HRE that are selected for restoration and the associated staging areas if they are located outside of the restoration area; and

WHEREAS, the New York District has conducted a reconnaissance-level cultural resources survey of the 300 HRE restoration sites within the study area and a GIS database has been created for the HRE Ecosystem Restoration Project which compiled all of the cultural resource data collected during the survey for each of the candidate HRE restoration sites. The HRE cultural resources database contains data on historic sites and districts, archaeological sites and sensitive areas, National Register of Historic Places (NRHP)-eligible and listed resources, and submerged resources recorded in the Automated Wreck and Obstruction Information System (AWOIS) database which are located within the restoration site boundaries and within a one-mile buffer surrounding each site. In addition to the restoration sites and boundary areas, background history, and environmental and cultural resources data was collected for the entire HRE study area; and

WHEREAS, the New York District has determined that properties listed and/or eligible for listing on the National Register of Historic Places (National Register) may be adversely affected by implementation of the restoration measures (Appendix B); and

WHEREAS, the New York District has determined that, due in part to the previous studies carried out by the District, as well as studies carried out by other parties, significant amounts of data exist in varying levels of detail throughout the HRE study area, however, for most of the APE additional survey is required to determine the presence or absence of significant cultural resources and to make an assessment of archaeological sensitivity; and

WHEREAS, the New York District has identified several potential interested parties to invite to participate in the Section 106 consultation process and study planning, including the National Parks Service, the Delaware Nation, the Delaware Tribe of Indians, the Shinnecock Nation, and the Stockbridge-Munsee Band of Mohican Indians; and

WHEREAS, a number of the restoration sites, Elders Center Marsh Island, Duck Point Marsh Island, Pumpkin Patch East, Pumpkin Patch West, and Stony Point Marsh, are part of the National Park Service (NPS) Gateway National Recreation Area (GNRA); and

WHEREAS, for the purposes of the Undertaking, the New York District will act as the lead for compliance with Section 106 on behalf of the NPS for the portion that includes NPS lands [36 CFR 800.2(a)(2)], and the NPS is invited to be a signatory to this PA; and

WHEREAS, the New York District is preparing a separate PA with the New Jersey State Historic Preservation Office and other interested parties to address the restoration sites located within New Jersey; and

WHEREAS, the New York District, in consultation with the New York State Historic Preservation Office (NYSHPO) and all other consulting parties plans to carry out additional work to identify significant resources, develop treatment plans for significant cultural resources, and to develop mitigation plans for the proposed undertakings to ensure that the project will avoid or minimize adverse effects to significant historic properties and archaeological sites; and

WHEREAS the New York District is coordinating, and shall continue to coordinate a public outreach program for this undertaking which in the past has consisted of a

number of public meetings and the circulation of cultural resource and environmental documents related to the Section 106 review process; and

NOW, THEREFORE, the New York District, the NYSHPO and all other consulting parties agree that the project shall be administered in accordance with the following stipulations to satisfy the New York District's Section 106 responsibilities for all individual actions of the Undertaking.

Stipulations

The New York District shall ensure that the following measures are carried out:

I. IDENTIFICATION AND EVALUATION

A. The New York District shall consult with the NYSHPO and other consulting parties to carry out surveys for each restoration site to identify significant cultural resources within the APE. Survey methodology shall be tailored to the unique environment of the restoration site to detect resources and will consider previous survey results and consultation comments when designing the surveys. The NYSHPO and other signatories will provide comments on the scopes of work and final plans within 30 days of receipt.

B. Prior to the initiation of construction-related activities which may affect historic properties, the New York District, in consultation with the NYSHPO, shall identify and evaluate:

1. Archaeological Sites

a. The New York District shall ensure that archaeological surveys within the uninvestigated portions of the APE are conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the New York Archaeological Council's Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State (1994, adopted by NYSHPO in 1995), and take into account the National Park Service publication The Archaeological Survey: Methods and Uses (1978) and the statewide historic contexts developed by the NYSHPO.

b. The survey shall be conducted following consultation with the NYSHPO and all other signatories, and the survey report shall be submitted to the NYSHPO and all other signatories and relevant interested parties for review and consultation.

2. Traditional Cultural Properties.

a. The New York District shall ensure that future surveys within the uninvestigated portions of the APE include procedures to identify traditional cultural properties and to consult with federally recognized tribes and other affected parties in accordance with the guidelines provided by National Park Service Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties.

b. In the event that a federally recognized tribe or affected group contacts the New York District regarding its recognition of a traditional cultural property, located within the APE, the New York District shall notify the NYSHPO and all other signatories and interested parties, to initiate discussions with all parties to evaluate whether the property is a traditional cultural property that meets the Criteria.

3. Buildings and Structures

a. The New York District shall ensure that surveys are conducted for buildings and structures in the APE in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and which takes into account the statewide historic contexts developed by the NYSHPO. The survey shall be conducted following consultation with the NYSHPO and other signatories, and a report of the survey, consistent with the NYSHPO Recommended Standards for Historic Resources Surveys, shall be submitted to the NYSHPO and all other signatories for review and consultation.

b. The New York District, in consultation with the NYSHPO and other signatories and interested parties, shall identify and evaluate buildings and structures that are located adjacent to NRHP-listed or eligible historic districts to determine whether such properties should be considered as part of the historic district or an expanded district.

4. Historic Landscapes and View Sheds

a. The New York District shall consult with the NYSHPO and other signatories to identify and evaluate historic landscapes and view sheds located within the APE. The New York District shall consult National Park Service Bulletins 18, How to Evaluate and Nominate Designed Historic Landscapes, and 30 Guidelines for Evaluating and Documenting Rural Historic Landscapes, National Park Service Preservation Brief 36, Protecting Cultural Landscapes, and other publications and materials made available by the NYSHPO to assist in defining the criteria that should be applied to such properties.

b. The objective in conducting the surveys is to identity NRHP listed or potentially eligible historic landscapes and affected view sheds within the project area that may be adversely affected by the Undertaking implementation, and to determine whether they meet the NRHP criteria set forth in 36 CFR Part 60.4.

C. The New York District shall ensure that qualified professionals meeting the National Park Service professional qualifications for the appropriate discipline [National Park Service Professional Qualification Standards, Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44738-39)] are used to complete all identification and evaluation plans related to this undertaking, to includegeomorphological, palynological, and archaeological surveys and testing, and documentation.

D. The New York District, the NYSHPO, and all other signatories shall consider the views of the public and interested parties in completing its identification and evaluation responsibilities.

E. The New York District shall maintain records of all decisions it makes related to the National Register eligibility of properties.

F. Application of Criteria:

1. The New York District, in consultation with the NYSHPO and other signatories, shall evaluate historic properties using the Criteria established for the NRHP [36 CFR 800.4(c)(1)]:

   a. If the New York District and the NYSHPO and other signatories agree that the Criteria apply or do not apply, in evaluating the NRHP eligibility of a property, the property shall be treated accordingly for purposes of this PA.

   b. If the New York District and the NYSHPO and other signatories disagree regarding NRHP eligibility, prior to the start of any project-related work at the site or in the vicinity of the property, the New York District shall obtain a formal Determination of Eligibility (DOE) from the Keeper of the National Register (Keeper), National Park Service, whose determination shall be final.

2. The New York District shall ensure that the identification and evaluation of historic properties that may be affected by each phase of the Undertaking is completed prior to the initiation of any formal action by the Corps including rehabilitation, relocation, demolition, etc.

II. TREATMENT OF HISTORIC PROPERTIES

The New York District shall adhere to the following treatment strategies in order to avoid adverse effects to historic properties.

A. The New York District shall ensure that treatment plans are developed and implemented for all NRHP-eligible or listed historic properties within the APE that may be affected by project activities. Unless the relevant SHPO and the other participating parties object within 30 days of receipt of any plan, the New York District shall ensure that treatment plans are implemented by the New York District or its representative(s). The New York District shall revise plans to address comments and recommendations provided by the NYSHPO and the other participating parties.

B. The New York District shall ensure that qualified professionals meeting the NPS professional qualifications for the appropriate discipline [NPS Professional Qualification Standards, Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44738-39)] are used to develop and implement all treatment plans.

C. Avoidance. The preferred treatment is avoidance of effects to prehistoric sites and historic properties. The New York District shall, to the extent feasible, avoid significant archaeological sites through design changes. The New York District,

the NYSHPO and all other signatories shall consult to develop plans for avoiding impacts to NRHP-eligible sites. The New York District shall incorporate feasible avoidance measures into study activities as part of the implementation of the restoration measures. If avoidance is determined to be infeasible, the New York District shall develop and implement treatment/mitigation plans.

D. Preservation in Place. When the New York District, the NYSHPO and the other signatories agree that complete avoidance of historic properties is infeasible, the New York District shall explore preservation in place, if appropriate. Preservation in place may entail partial avoidance or protection of historic properties against project-related activities in proximity to the historic property. The New York District shall preserve historic properties in place through project design, such as incorporating color, texture, scale, and materials, which are compatible with the architectural or historic character of the historic property, use of fencing, berms or barricades, preservation of vegetation including mature trees, landscaping and planting that would screen the property.

III. RESOLUTION OF ADVERSE EFFECTS

A. If the New York District, in consultation with the NYSHPO and other signatories, determines that the Undertaking will have an adverse effect on historic resources, the New York District shall:

1. Develop a Standard Mitigation Agreement (SMA) with the NYSHPO; or

2. Consult with the Council to develop a Memorandum of Agreement (MOA) in accordance with 36 CFR Part 800.6 (c).

B. The New York District shall invite the Council to participate in consultation when:

1. The New York District, the NYSHPO, and other signatories determine that an agreement or a SMA cannot be reached;

2. substantial impacts to important properties is anticipated;

3. there are questions regarding policy matters;

4. there is widespread public interest in a historic property or properties; or

5. there are issues of concern to Indian Tribes.

C. The New York District, the NYSHPO, and other signatories and interested parties as appropriate, shall consult to develop alternatives to mitigate or minimize adverse effects. The analysis of alternatives shall consider program needs, cost, public benefit and values, and design feasibility.

D. Development of Standard Mitigation Agreements (SMA).

1. The New York District, in consultation with the NYSHPO and other signatories, in consultation with interested parties, shall develop SMAs for historic properties

which will be adversely affected by the Undertaking. The New York District shall submit the SMA to the NYSHPO for review and approval by certified mail. The NYSHPO shall have 30 days from receipt of adequate information in which to review and comment on the SMA(s). If the NYSHPO fails to respond within 30 days, or if there is disagreement, the New York District shall notify the Council and consult to develop the proposed SMA into an MOA and submit copies of background information and the proposed SMA to facilitate consultation to develop an MOA in accordance with 36 CFR Part 800.

2. After signing by the New York District, the NYSHPO, and others, the New York District shall file all SMAs with the Advisory Council.

3. SMAs developed between the New York District and the NYSHPO, may include one or more of the following stipulations which address routine adverse effects that may occur to historic properties as a result of Study implementation.

   a. Recordation. The New York District shall consult with the NJSHPO to determine the appropriate level and type of recordation for affected resources. For historic properties with state and/or local significance, recordation shall be consistent with the requirements and standards of the Department of the Interior (October 1997). All documentation must be submitted to SHPO for acceptance, prior to the initiation of Study activities, unless otherwise agreed to by the SHPO. HABS/HAER documentation may also be required.

   b. Salvage and Donation of Significant Structural Elements. Prior to removal, partial removal, or substantial alteration of historic properties, the New York District, in consultation with the SHPO, shall develop a salvage and donation plan to identify appropriate parties willing and capable of receiving and preserving the salvaged significant structural elements. The New York District shall submit the plans to the SHPO for review and approval.

   c. Archaeological Data Recovery. The New York District shall conduct data recovery on archaeological sites following agreement on the perspective data recovery and treatment plans between the New York District and the SHPO when the archaeological sites are eligible for National Register inclusion under additional Criteria than Criterion D (for the information which they contain) or when the full informational value of the site cannot be substantially preserved through the conduct of appropriate research to professional standards and guidelines. To the maximum extent feasible, data recovery and treatment plans shall be developed to take into account and mitigate for the fullest range of archaeological site values and significance. Prior to construction, the New York District shall develop a data recovery plan for archaeological sites eligible under Criterion D and others. The New York District shall submit the plans to the SHPO for review and approval.

IV. DISCOVERY

A. If previously unidentified and unanticipated historic resources are discovered during implementation of the Undertaking, the New York District shall cease all work in the vicinity of the discovered historic resource until it can be evaluated pursuant to the guidelines in Stipulations I and II of this PA. If the property is determined to be

eligible, the New York District shall consult with the NYSHPO to develop a treatment plan or SMA in accordance with Stipulation III of this PA.

B. The New York District shall implement the treatment plan or SMA once approved by the SHPO.

V. TREATMENT OF HUMAN REMAINS:

A. If any human remains and/or grave-associated artifacts are encountered, the New York District, the NYSHPO and Tribes shall consult to develop a treatment plan that is responsive to the Council's "Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects" (February 23, 2007), the Native American Grave Protection and Repatriation Act, As Amended (PL 101-601, 25 U.S.C. 3001 et seq.), the U.S. Army Corps of Engineers, Tribal Consultation Policy (4 October 2012) and the NYSHPO Human Remains Discovery Protocol (October 2013).

B. Human remains must be treated with the utmost respect and dignity. All work must stop in the vicinity of the find and the site will be secured.

C. The medical examiner/coroner, local law enforcement, the NYSHPO and tribes will be notified. The coroner and local law enforcement will determine if the remains are forensic or archaeological in nature.

D. If the human remains are determined to be Native American they shall be left in place and protected from further disturbance until a treatment plan has been developed and approved by the New York District, NYSHPO and Tribes.

E. If human remains are determined to be non-Native American, the remains will be left in place and protected from further disturbance until a plan for avoidance or removal is developed and approved by the New York District, NYSHPO, Federally Recognized Tribes and other parties, as appropriate.

VI. COORDINATION OF REVIEWS FOR STUDY ACTIVITIES

A. All plans, documents, reports, and materials shall be submitted by the New York District (or its representative) to the SHPO by certified mail, for a 30 day review period unless otherwise stipulated in this PA. If the SHPO and other signatories fail to comment within the specified time the New York District shall assume the agencies concurrence.

B. When interested parties are participating in the review of activities or actions outlined in this PA the New York District shall ensure that all interested parties are provided documentation at the time it is forwarded to the SHPO and afforded a 30 day review period. As appropriate, the New York District shall submit the comments of interested parties to the SHPO to facilitate further consultation.

C. If after consulting with the relevant SHPO and interested parties for a period of 90 days on any action or activity provided for in this PA, the New York District or SHPO concludes there is no progress in developing treatment/mitigation plans or other documents required by this PA, the New York District or SHPO may notify the Council and request the Council's involvement to expedite completion of the

consultation process.

D. The New York District shall ensure that all submissions to the SHPO, interested parties, and the Council include all relevant information to facilitate their review. The New York District shall provide all additional information requested by SHPO, interested parties, or Council within a timely manner unless the signatories to this PA agree otherwise.

E. The New York District shall ensure that all draft and final reports resulting from actions pursuant to the Stipulations of this PA will be provided to the SHPO, and upon request, to interested parties and will identify the Principal Investigator responsible for the report. All reports will be responsive to contemporary standards, and as appropriate to the Department of the Interior's Format Standards for Final Reports of Data Recovery Programs (42 FR 5377-79) and HPO report standards. Precise locational data may be provided only in a separate appendix if it appears that its release could jeopardize archaeological sites consistent with National Register Bulletin Number 29, Guidelines for Restricting Information about Historic and Prehistoric Resources.

F. If the District proposes revisions or addenda to SHPO approved treatment/mitigation plans or other documents, the New York District and SHPO shall consult to determine whether additional conditions or mitigation measures are appropriate.

G. The New York District shall certify in writing that all requirements for identification and evaluation, and the implementation of treatment/mitigation plans have been satisfactorily completed prior to the initiation of construction activities for a specified portion of the navigation improvements recommended in the Study. The New York District shall submit a copy of this certification to the SHPO and other signatories by certified mail. The SHPO and other signatories shall have 30 days to object to the certification based on the SHPO's finding of incomplete compliance or inadequate compliance with the terms of this PA. If the SHPO does not object, the District may proceed with construction for the specified segment of the Study.

VII. ACTIVITIES ON NATIONAL PARK SERVICE LANDS

For those portions of the Undertaking which take place on NPS lands, the New York District will fully engage the NPS in all consultations and secure NPS concurrence for all decisions related to identification, evaluation, effect determinations, and treatment of adverse effects. USACE will submit all documentation and determination findings for properties on NPS land to NPS for review and concurrence prior to submission to NYSHPO or Council. All adverse effects on NPS land will be resolved through an MOA to which NPS will be a signatory. Such agreement documents will be developed and ratified by the 30% design of the specific project segment in which there is an adverse effect to NPS property. If the NPS, New York District, and NYSHPO cannot come to agreement on any such matters, the provisions of stipulations I.I (b), II.I, or VIII.B will apply, as most appropriate.

VIII. ACTIVITIES ON NEW YORK CITY LANDS

For those portions of the Undertaking which take place on New York City (NYC) owned property, the New York District will fully engage the NYCLPC in all consultations and secure NYCLPC concurrence for all decisions related to identification, evaluation, effect determinations, and treatment of adverse effects. USACE will submit all documentation and determination findings for properties on NYC land to the NYCLPC for review and concurrence prior to submission to NYSHPO or Council. If the NYCLPC, New York District, and NYSHPO cannot come to agreement on any such matters, the provisions of stipulations I.F, II.B, III.D, and VI.C. will apply, as most appropriate.

IX. ADMINISTRATIVE TERMS

A. Review Periods

The NYSHPO and signatories shall have 30 days to review and /or object to determinations, evaluations, plans, reports, and other documents submitted to them by the New York District.

B. Dispute Resolution

1) The New York District and signatories shall attempt to resolve any disagreement arising from implementation of this PA. If there is a determination that the disagreement cannot be resolved, the New York District shall request the Council`s recommendations or request the comments of the Council in accordance with 36 CFR Part 800.6(b).

2) Any Council recommendations or comments provided in response will be considered in accordance with 36 CFR Part 800.6(c)(2), with reference only to the subject of the dispute. The New York District shall respond to Council recommendations or comments indicating how the New York District has taken the Council's recommendations or comments into account and complied with same prior to proceeding with Undertaking activities that are subject to dispute. Responsibility to carry out all other actions under this PA that are not the subject of the dispute will remain unchanged.

C. Public Involvement

1. In consultation with the NYSHPO, the New York District shall develop a plan to inform the interested parties of the existence of this Agreement. Copies of this Agreement and relevant documentation prepared pursuant to the terms of this PA shall be made available for public inspection (information regarding the locations of archaeological sites will be withheld in accordance with the Freedom of Information Act and National Register Bulletin 29, if it appears that this information could jeopardize archaeological sites). Any comments received from the public under this Agreement shall be taken into account by the New York District.

2. Public Objections. The New York District shall review and resolve timely substantive public objections. Public objections shall be considered timely when they are provided within the review periods of this PA public participation plan specified. The New York District shall consult with the relevant SHPO, and as appropriate with the Council, to resolve objections. Study actions which are not

the subject of the objection may proceed while the consultation is conducted.

D. Monitoring

1. The New York District shall prepare annual reports summarizing the status of compliance with the terms of this PA and a summary of the completed activities and the exempt activities for the past year and proposed activities for the next fiscal year. Reports shall be submitted by January 31 of every year. The Annual Reports shall be provided to Council, the NYSHPO, all other signatories and interested parties until the Study-related activities are complete.

2. The Council and the SHPO may request a site visit to follow up information in the annual report or to monitor activities carried out pursuant to this PA. The Council and the SHPO shall provide the New York District with 30 days written notice when requesting a site visit unless otherwise agreed. The New York District may also schedule a site visit with the SHPO's and the Council at its discretion.

E. Amendments

Any signatory to this PA may request that it be amended, whereupon all the parties will consult in accordance with 36 CFR Part 800.6(b)(7) to consider such amendment.

F. Termination

Any signatory to this PA may terminate it by providing thirty days' notice to the other parties, provided that the parties will consult during the period prior to termination by certified mail to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the New York District will comply with 36 CFR Parts 800.4 through 800.6 with regard to individual undertakings covered by this Agreement.

G. Sunset Clause

This PA will continue in full force and effect until the Undertaking is complete and all terms of this PA are met, unless the Undertaking is terminated or authorization is rescinded.

H. Anti-Deficiency Act

All requirements set forth in this PA requiring expenditure of funds by the New York District are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. 1341). No obligation undertaken by the New York District under the terms of this PA shall require or be interpreted to require a commitment to extend funds not appropriated for a particular purpose. If the New York District cannot perform any obligation set forth in this PA because of unavailability of funds, that obligation must be renegotiated among the New York District and the signatories as necessary.

Execution and implementation of this PA evidences that the New York District has satisfied its Section 106 responsibilities for all individual Undertakings of the Project, and

that the New York District has afforded the Council an opportunity to comment on the Undertaking and its effects on historic properties.

NEW YORK STATE OFFICE OF PARKS, RECREATION, AND HISTORIC PRESERVATION

By: _____ Date: _____
Dorothy P. Guzzo, Deputy State Historic Preservation Officer

U.S. ARMY CORPS OF ENGINEERS

By: _____ Date: _____
Col. David A. Caldwell, New York District Commander

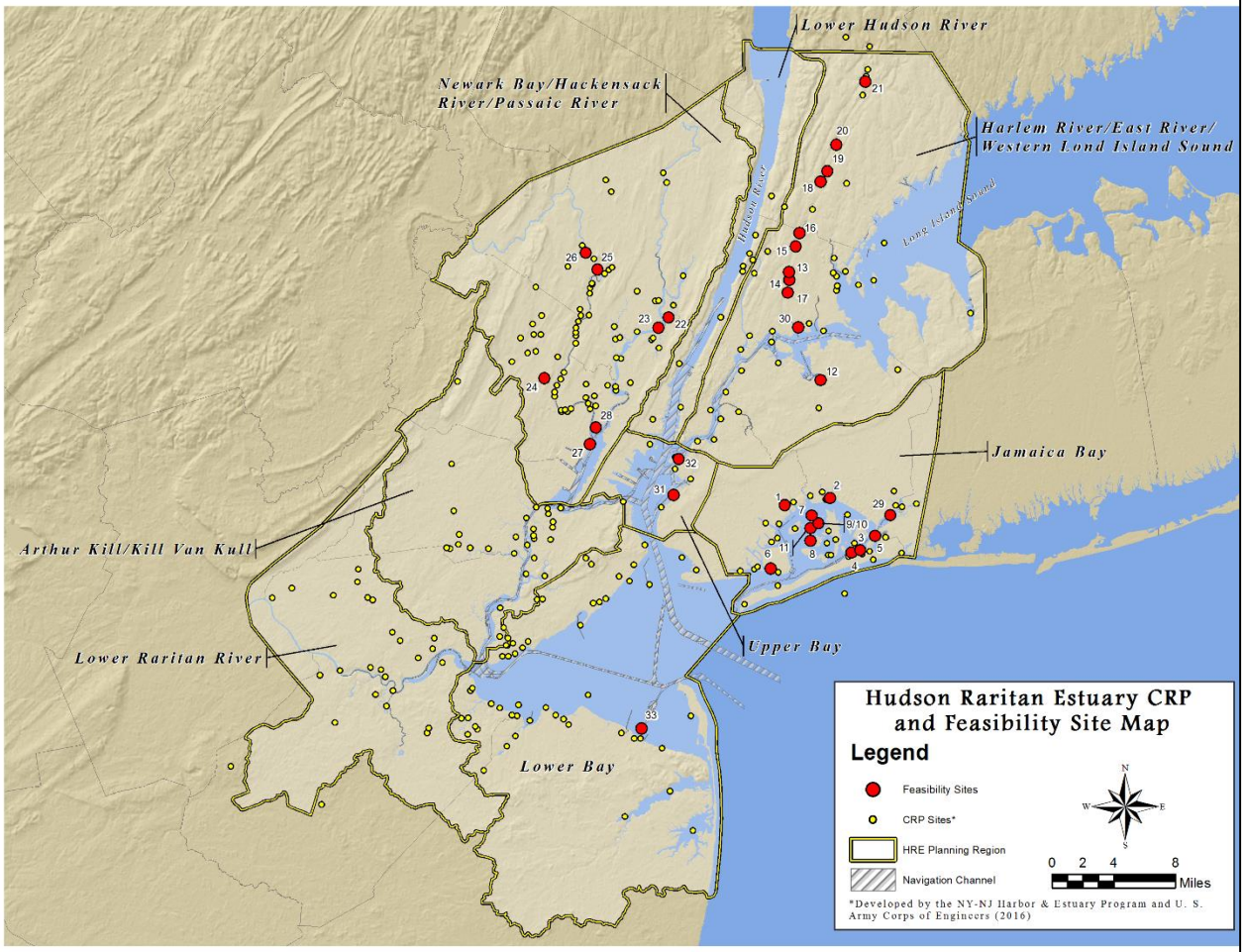
NEW YORK CITY LANDMARKS PRESERVATION COMMISSION

By: _____ Date: _____

Appendix A: Map of HRE Restoration Sites
Appendix B: Cultural Resources by Restoration Site

Appendix A – Map of HRE Restoration Sites

Hudson Raritan Estuary Ecosystem
Restoration Feasibility Study
TSP Sites



Restoration Sites

1. Fresh Creek (CRP ID 730)
2. Hawtree Point (CRP ID 161)
3. Dubos Point (CRP ID 149)
4. Brant Point (CRP ID 172)
5. Bayswater State Park (CRP ID 148)
6. Dead Horse Bay (CRP ID 732)
7. Elders Center Marsh Island (CRP ID 939)
8. Duck Point Marsh Island (CRP ID 935)
9. Pumpkin Patch- East Marsh Island (CRP ID 936)
10. Pumpkin Patch-West Marsh Island (CRP ID 936)
11. Stony Point Marsh Island (CRP ID 937)
12. Flushing Creek (CRP ID 188)
13. Stone Mill Dam (CRP ID 945)
14. Bronx Zoo and Dam (CRP ID 944)
15. Shoelace Park (CRP ID 113)
16. Muskrat Cove (CRP ID 862)
17. River Park/West Farm Rapids Park (CRP ID 860)
18. Bronxville Lake (CRP ID 857)
19. Crestwood Lake (CRP ID 852)
20. Garth Woods/Harney Road (CRP ID 942)
21. Westchester County Center (CRP ID 854)
22. Meadowlark Tract (CRP ID 719)
23. Metromedia Marsh (CRP ID 721)
24. Essex County Branch Brook Park (CRP ID 887)
25. Dundee Island Park (CRP ID 900)
26. Clifton Dundee Canal Green Acres (CRP ID 902)
27. Lower Passaic River "Deferred" Site- Oak Island Yards (CRP ID 866)
28. Lower Passaic River "Deferred Site"- Kearny Point (CRP ID 865)

<u>Oyster Restoration:</u>

29. Jamaica Bay - Head of Bay
30. Soundview Park
31. Bush Terminal
32. Governors Island
33. Naval Weapons Station Earle

Appendix B – Cultural Resource by Restoration Site

Cultural Resources by Restoration Site – New York

Planning Region	HRE Site	Historic Resources (1 Mile Radius)	AWOIS (1 Mile Radius)	Archaeological Sites (1 Mile Radius)	Within an Archaeological Sensitivity Area	Surveys (1/2 Mile Radius)
Jamaica Bay	Fresh Creek	----	----	3609, 3607, 3610, 7390, 04701.000113, 04701.000118	Yes	**02PR02030/Queens County 31**, **Kings County 32**, 08PR0211/Kings County 60,
	Hawtree Park (Hawtree Point)	08101.009386	----	4534, 8431	Yes	**02PR2030/King or Queens County 31/ Queens County 1**
	Dubos Point	08101.009536, 08101.007210	----	----	No	**02PR2030/King County 31**
	Brant Point	08101.009536, 08101.007210, 08101.009399	----	----	No	**02PR2030/Kings County 31**
	Bayswater	08101.009417	----	4050	No	**02PR2030/Kings County 31-**
	Dead Horse Bay	08501.007322, Fort Tilden Historic District, Jacob Riis Park Historic District	13261, 13519, 13520, 13521, 13522, 13523, 13524, 13525, 13528, 13529, 14520, 14521, 14533, 14534, 14536	04701.000124, 04701.000114	Yes	646/D388/Kings County 54, 09PR00796
	Elders Center Marsh Island*	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Duck Point Marsh Island	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Pumpkin Patch East	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Pumpkin Patch West	----	----	----	No	02PR2030/Kings County 31/Queens County 1
	Stony Point Marsh Island	----	----	04701.000116	No	02PR2030/Kings County 31/Queens County 1
Harlem River/East River/Western Long Island Sound	Flushing Creek	22 Records	1686	**4542, 4545, 4544**, 719, 4524, 4526, 4540, 08101.000133, 08101.011526	Yes	**03PR2845/Queens County 38**, 03PR3481, 06PR0556
	Stone Mill Dam (Snuff Mill Dam)	**New York Botanical Gardens**	----	----	No	**05PR3926**, 04PR6033,
	Bronx Zoo and Dam	Rainey Memorial Gates, 24 Records within 1 mile	----	----	No	04PR6033, 05PR3926
	Shoelace Park	18 records within 1 mile	----	2837, 7726	Yes	--------
	Muskrat Cove	--------	----	2837, 7725, 7726	Yes	--------
	Bronx River Park/West Farm Rapids Park	**00501.001398**, 19 Records within 1 mile	----	2831	No	05PR1491, 09PR5898
	Bronxville Lake	**Bronx River Parkway Reservation,** Lawrence Park Historic District 15 Records within 1 mile	----	5221, 5222, 5197	Yes	--------
	Crestwood Lake	**Bronx River Parkway Reservation**, Lawrence Park Historic District, 12 Records within 1 mile	----	**5222,** 5221	Yes	--------
	Garth Woods/Harney Road	**Bronx River Parkway Reservation,** Scarsdale RR Station, U.S. Post Office Scarsdale, Caleb Hyatt House, 11903.000058, 11948.000023	----	5222, 11916.000006, 6800, 6801, 6805	Yes	**07PR5557, 09PR0636, Westchester County 224, 234**
	Westchester County Center	**Bronx River Parkway Reservation,** 23 Records within 1 mile	----	**5231**, 5194, 5230, 7783, 11943.000693, 11943.000766	Yes	**03PR2938/Westchester County 295, Westchester County 247,** 03PR3321, 10PR5274

Planning Region	HRE Site	Historic Resources (1 Mile Radius)	AWOIS (1 Mile Radius)	Archaeological Sites (1 Mile Radius)	Within an Archaeological Sensitivity Area	Surveys (1/2 Mile Radius)
Oyster Restoration	Jamaica Bay – Head of Bay *	----	----	4548, 4050	Yes	02PR2030/Kings County 31
	Soundview Park *	00501.001349	1626, 1624, 1629, 1625	2840, 713	Yes	------
	Bush Terminal	13 Records within 1 mile	13402, 13403, 13488, 13489	----	No	**07PR00965/Richmond 105**, HUD A 271a
	Governors Island	**Governors Island,** 68 Records within I Mile	30 Records within 1 mile	24 Records within 1 mile	Yes	**07PR0965**, **10PR6038, 06PR5797, 05PR5362**, 08PR2349, 09PR5177, 07PR0965, 05PR4529, 08PR1195, 07PR3361, 05PR1931, 06PR4540, 06PR5859, 07PR5050, 08PR1568, 08PR1195, 06PR4539, HUD N 65, a

NOTES: Bolded items are located within the site boundaries. Surveys are listed only when they cover areas within ½ mile of the site boundaries. Some sites had more resources than could be listed in the table, all sites within the site boundaries are listed. Jamaica Bay and Soundview Park Oyster Restoration sites were not included in the Cultural Resources Overview Survey.

DRAFT PROGRAMMATIC AGREEMENT
AMONG
THE U. S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT,
AND THE NEW JERSEY STATE HISTORIC PRESERVATION OFFICE,
REGARDING
THE HUDSON-RARITAN ESTUARY ECOSYSTEM RESTORATION PROJECT

WHEREAS, the U.S. Army Corps of Engineers, New York District, (New York District), has been authorized under the General Investigations (GI) Program to conduct a feasibility study to evaluate federal participation in ecosystem restoration in the Hudson Raritan Estuary (HRE). The study was authorized by resolution of the U.S. House of Representatives Committee on Transportation and Infrastructure on 15 April 1999, to determine the feasibility of carrying out improvements, including the creation and enhancement of aquatic, wetland, and adjacent upland habitats as specific areas of interest; and

WHEREAS, the U.S. Army Corps of Engineers has been conducting several feasibility studies for ecosystem restoration within the Hudson Raritan Estuary (HRE) that have been consolidated into the HRE Ecosystem Restoration Feasibility Study and these are the Bronx River Basin Ecosystem Restoration Feasibility Study; the HRE - Lower Passaic River Ecosystem Restoration Feasibility Study; the HRE - Hackensack Meadowlands Ecosystem Restoration Feasibility Study; the Jamaica Bay, Marine Park, Plumb Beach Ecosystem Restoration Feasibility Study; and the Flushing Creek and Bay Ecosystem Restoration Feasibility Study; and

WHEREAS, The Hudson Raritan Estuary (HRE) is within the boundaries of the Port District of New York and New Jersey, and is situated within a 25 mile radius of the Statue of Liberty. The HRE study area includes the following 8 Planning regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay; and

WHEREAS, the scope of the HRE Ecosystem Restoration Project is to restore and protect lost or degraded aquatic, wetland and terrestrial habitats within the HRE study area. These activities will be accomplished by implementing various site-specific ecosystem restoration projects formulated within the context of an overall strategic plan. The Corps has identified roughly 300 potential restoration sites spread throughout the eight planning regions. These restoration sites include onshore and offshore sites ranging in size from 2,102 acres to 0.3 acres, for a total of 31,932 acres; and

WHEREAS, the New York District has selected thirty-three sites to recommend for construction for which plans are being developed (Appendix A); and

WHEREAS, the New York District has defined the "Area of Potential Effect" (APE) for this Undertaking to include all areas within the HRE that are selected for restoration and the associated staging areas if they are located outside of the restoration area; and

WHEREAS, the New York District has conducted a reconnaissance-level cultural resources survey of the 300 HRE restoration sites within the study area and a GIS database has been created for the HRE Ecosystem Restoration Project which compiled

all of the cultural resource data collected during the survey for each of the HRE restoration sites. The HRE cultural resources database contains data on historic sites and districts, archaeological sites and sensitive areas, National Register of Historic Places (NRHP)-eligible and listed resources, and submerged resources recorded in the Automated Wreck and Obstruction Information System (AWOIS) database which are located within the restoration site boundaries and within a one-mile buffer surrounding each site. In addition to the restoration sites and boundary areas, background history, and environmental and cultural resources data was collected for the entire HRE study area; and

WHEREAS, the New York District has determined that properties listed and/or eligible for listing on the National Register of Historic Places (NRHP) may be adversely affected by implementation of the restoration measures (Appendix B); and

WHEREAS, the New York District has determined that, due in part to the previous studies carried out by the District, as well as studies carried out by other parties, significant amounts of data exist in varying levels of detail throughout the HRE study area, however, for most of the APE additional survey is required to determine the presence or absence of significant cultural resources and to make an assessment of archaeological sensitivity; and

WHEREAS, the New York District has identified several potential interested parties to invite to participate in the Section 106 consultation process and study planning, including the Advisory Council on Historic Preservation (Council), the Delaware Nation, the Delaware Tribe of Indians, and the Shawnee Tribe of Oklahoma; and

WHEREAS, the New York District is preparing a separate programmatic agreement with the New York State Historic Preservation Office and other interested parties to address the restoration sites located within New York; and

WHEREAS, the New York District, in consultation with the New Jersey State Historic Preservation Office (NJSHPO), and other consulting parties plans to carry out additional work to identify significant resources, develop treatment plans and mitigation plans, if necessary, for the proposed undertakings to ensure that the project will avoid or minimize adverse effects to significant historic properties and archaeological sites; and

WHEREAS the New York District is coordinating, and shall continue to coordinate a public outreach program for this undertaking which in the past has consisted of a number of public meetings and the circulation of cultural resource and environmental documents related to the Section 106 review process; and

NOW, THEREFORE, the New York District, the NJSHPO and all other signatories agree that the project shall be administered in accordance with the following stipulations to satisfy the New York District's Section 106 responsibilities for all individual actions of the Undertaking.

Stipulations

The New York District shall ensure that the following measures are carried out:

I. IDENTIFICATION AND EVALUATION

A. The New York District shall carry out surveys for each restoration site that is advanced past feasibility phase to identify significant cultural resources within the APE. Survey methodology shall be tailored to the unique environment of the restoration site to detect resources and will consider previous survey results and consultation comments when designing the surveys. The NJSHPO and other consulting parties will be provided the opportunity to comment on the scopes of work and resulting reports within 30 days of receipt.

B. Prior to the initiation of construction-related activities which may affect historic properties, the New York District, in consultation with the NJSHPO and all other consulting parties, shall identify and evaluate:

1. Archaeological Sites

a. The New York District shall ensure that archaeological surveys within the uninvestigated portions of the APE are conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the and the NJSHPOs Guidelines for Phase I Archaeological Investigations, and take into account the National Park Service publication The Archaeological Survey: Methods and Uses (1978) and the statewide historic contexts developed by the NJSHPO.

b. The survey shall be conducted following consultation with the NJSHPO and all other consulting parties, and the survey report shall be submitted to the NJSHPO and all other consulting parties for review.

2. Traditional Cultural Properties.

a. The New York District shall ensure that future surveys within the uninvestigated portions of the APE include procedures to identify traditional cultural properties and to consult with federally recognized tribes and other affected parties in accordance with the guidelines provided by National Park Service Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties.

b. In the event that a federally recognized tribe or affected group contacts the New York District regarding its recognition of a traditional cultural property, located within the APE, the New York District shall notify the NJSHPO to initiate discussions to consider whether the property is a traditional cultural property that meets the Criteria.

3. Buildings and Structures

a. The New York District shall ensure that surveys are conducted for buildings and structures in the APE in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and which takes into account the statewide historic contexts developed by the NJSHPO. The survey shall be conducted following consultation with the NJSHPO and other consulting parties, and a report of the survey, consistent

with the NJSHPO's Guidelines for Architectural Survey, shall be submitted to the NJSHPO and other consulting parties for review.

b. The New York District, in consultation with the NJSHPO and other consulting parties, shall identify and evaluate buildings and structures that are located adjacent to listed or eligible NRHP historic districts to determine whether such properties should be considered as part of the historic district or an expanded district.

4. Historic Landscapes and View Sheds

a. The New York District shall consult with the NJSHPO and other consulting parties, including local historical societies, to identify and evaluate historic landscapes and view sheds located within the APE. The New York District shall consult National Park Service Bulletins 18, How to Evaluate and Nominate Designed Historic Landscapes, and 30 Guidelines for Evaluating and Documenting Rural Historic Landscapes, National Park Service Preservation Brief 36, Protecting Cultural Landscapes, and other publications and materials made available by the NJSHPO to assist in defining the criteria that should be applied to such properties.

b. The objective in conducting the surveys is to identity NRHP-listed or eligible historic landscapes and affected viewsheds within the project area that may be adversely affected by the Undertaking, and to determine whether they meet the NRHP criteria set forth in 36 CFR Part 60.4.

C. The New York District shall ensure that qualified professionals meeting the National Park Service professional qualifications for the appropriate discipline [National Park Service Professional Qualification Standards, Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44738-39)] are used to complete all identification and evaluation plans related to this undertaking, to include geomorphological, palynological, and archaeological surveys and testing, and documentation.

D. The New York District, the NJSHPO, and all other consulting parties shall consider the views of the public and interested parties, including local historic preservation groups, in completing its identification and evaluation responsibilities.

E. The New York District shall maintain records of all decisions it makes related to the NRHP eligibility of properties.

F. Application of Criteria:

1. The New York District, in consultation with the NJSHPO and other consulting parties, shall evaluate historic properties using the Criteria established for the NRHP [36 CFR 800.4(c)(1)]:

a. If the New York District, the NJSHPO, and other consulting parties agree that the Criteria apply or do not apply, in evaluating the NRHP eligibility of a property, the property shall be treated accordingly for purposes of this PA.

b. If the New York District, the NJSHPO, and other consulting parties disagree regarding NRHP eligibility, prior to the start of any project-related work at the site or in the vicinity of the property, the New York District shall obtain a formal Determination of Eligibility (DOE) from the Keeper of the National Register (Keeper), National Park Service, whose determination shall be final.

2. The New York District shall ensure that the identification and evaluation of historic properties that may be affected by each phase of the Undertaking is completed prior to the initiation of any formal action by the Corps including rehabilitation, relocation, demolition, etc.

II. TREATMENT OF HISTORIC PROPERTIES.

The New York District shall adhere to the following treatment strategies in order to avoid adverse effects to historic properties.

A. The New York District shall ensure that treatment plans are developed and implemented for all historic properties determined eligible for listing in the NRHP that may be affected by project activities. Unless the NJSHPO and the other consulting parties object within 30 days of receipt of any plan, the New York District shall ensure that treatment plans are implemented by the New York District or its representative(s). The New York District shall revise plans to address comments and recommendations provided by the NJSHPO and the other consulting parties.

B. The New York District shall ensure that qualified professionals meeting the NPS professional qualifications for the appropriate discipline [NPS Professional Qualification Standards, Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44738-39)] are used to develop and implement all treatment plans.

C. Avoidance. The preferred treatment is avoidance of effects to prehistoric sites and historic properties. The New York District shall, to the extent feasible, avoid significant archaeological sites through design changes. The New York District, the NJSHPO, and consulting parties shall consult to develop plans for avoiding impacts to NRHP-eligible sites. The New York District shall incorporate feasible avoidance measures into study activities as part of the implementation of the restoration measures. If avoidance is determined to be infeasible, the New York District shall develop and implement treatment/mitigation plans.

D. Preservation in Place. When the New York District, the NJSHPO and the other consulting parties agree that complete avoidance of historic properties is infeasible, the New York District shall explore preservation in place, if appropriate. Preservation in place may entail partial avoidance or protection of historic properties against project-related activities in proximity to the historic property. The New York District shall preserve historic properties in place through project design, such as incorporating color, texture, scale, and materials, which are compatible with the architectural or historic character of the historic property, use of fencing, berms or barricades, preservation of vegetation including mature

trees, landscaping and planting that would screen the property.

III. RESOLUTION OF ADVERSE EFFECTS

A. If the New York District, in consultation with the NJSHPO and other consulting parties, determines that the Undertaking will have an adverse effect on historic resources, the New York District shall:

1. consult to develop alternatives to mitigate or minimize adverse effects. The analysis of alternatives shall consider program needs, cost, public benefit and values, and design feasibility.

2. Develop a Standard Mitigation Agreement (SMA) with the NJSHPO and other consulting parties; or

3. Consult with the Council to develop a Memorandum of Agreement (MOA) in accordance with 36 CFR Part 800.6 (c).

B. The New York District shall invite the Council to participate in consultation when:

1. The New York District and NJSHPO and other consulting parties determine that an agreement or a SMA cannot be reached;

2. substantial impacts to important properties is anticipated;

3. there are questions regarding policy matters;

4. there is widespread public interest in a historic property or properties; or

5. there are issues of concern to Indian Tribes.

C. Development of Standard Mitigation Agreements (SMA).

1. The New York District, in consultation with the NJSHPO and consulting parties, shall develop SMAs for historic properties which will be adversely affected by the Undertaking. The New York District shall submit the SMA to the NJSHPO for review and approval by certified mail. The NJSHPO and consulting parties shall have 30 days from receipt of adequate information in which to review and comment on the SMA(s). If the NJSHPO fails to respond within 30 days, or if there is disagreement, the New York District shall notify the Council and consult to develop the proposed SMA into an MOA and submit copies of background information and the proposed SMA to facilitate consultation to develop an MOA in accordance with 36 CFR Part 800.

2. After signing by the New York District, the NJSHPO, and other signatories, the New York District shall file all SMAs with the Council.

3. SMAs developed between the New York District and the NJSHPO and other signatories, may include one or more of the following stipulations which address routine adverse effects that may occur to historic properties as a

result of Study implementation.

a. Recordation. The New York District shall consult with the NJSHPO to determine the appropriate level and type of recordation for affected resources. For historic properties with state and/or local significance, recordation shall be consistent with the requirements and standards of the Department of the Interior (October 1997). All documentation must be submitted to SHPO for acceptance, prior to the initiation of Study activities, unless otherwise agreed to by the SHPO. HABS/HAER documentation may also be required.

b. Salvage and Donation of Significant Structural Elements. Prior to removal, partial removal, or substantial alteration of historic properties, the New York District, in consultation with the SHPO, shall develop a salvage and donation plan to identify appropriate parties willing and capable of receiving and preserving the salvaged significant structural elements. The New York District shall submit the plans to the SHPO for review and approval.

c. Archaeological Data Recovery. The New York District shall conduct data recovery on archaeological sites following agreement on the perspective data recovery and treatment plans between the New York District and the SHPO when the archaeological sites are eligible for National Register inclusion under additional Criteria than Criterion D (for the information which they contain) or when the full informational value of the site cannot be substantially preserved through the conduct of appropriate research to professional standards and guidelines. To the maximum extent feasible, data recovery and treatment plans shall be developed to take into account and mitigate for the fullest range of archaeological site values and significance. Prior to construction, the New York District shall develop a data recovery plan for archaeological sites eligible under Criterion D and others. The New York District shall submit the plans to the SHPO for review and approval.

IV. DISCOVERY

A. If previously unidentified and unanticipated historic resources are discovered during implementation of the Undertaking, the New York District shall cease all work in the vicinity of the discovered historic resource until it can be evaluated pursuant to the guidelines in Stipulations I and II of this PA. If the property is determined to be eligible, the New York District shall consult with the NJSHPO and other consulting parties to develop a treatment plan or SMA in accordance with Stipulation III of this PA.

B. The New York District shall implement the treatment plan or SMA once approved by the SHPO.

V. TREATMENT OF HUMAN REMAINS:

A. If any human remains and/or grave-associated artifacts are encountered, the New York District, the NJSHPO and Tribes shall consult to develop a treatment plan that is responsive to the Council's "Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects" (February 23, 2007), the

Native American Grave Protection and Repatriation Act, As Amended (PL 101-601, 25 U.S.C. 3001 et seq.), the U.S. Army Corps of Engineers, Tribal Consultation Policy (4 October 2012).

B. Human remains must be treated with the utmost respect and dignity. All work must stop in the vicinity of the find and the site will be secured.

C. The medical examiner/coroner, local law enforcement, the NJSHPO and Tribes will be notified. The coroner and local law enforcement will determine if the remains are forensic or archaeological in nature.

D. If the remains are determined to be archaeological in nature a forensic anthropologist will be employed to determine whether the remains are Native American or of other origin.

E. If the human remains are determined to be Native American they shall be left in place and protected from further disturbance until a treatment plan has been developed and approved by the New York District, NJSHPO and Tribes.

F. If human remains are determined to be non-Native American, the remains will be left in place and protected from further disturbance until a plan for avoidance or removal is developed and approved by the New York District, NJSHPO, Federally Recognized Tribes and other parties, as appropriate.

VI. COORDINATION OF REVIEWS FOR STUDY ACTIVITIES

A. All plans, documents, reports, and materials shall be submitted by the New York District (or its representative) to the NJSHPO and other consulting parties by mail, for a 30 day review period unless otherwise stipulated in this PA. If the NJSHPO and other consulting parties fail to comment within the specified time the New York District shall assume the agencies concurrence.

B. When interested parties are participating in the review of activities or actions outlined in this PA (i.e., consulting parties) the New York District shall ensure that all parties are provided documentation at the time it is forwarded to the NJSHPO and afforded a 30 day review period. As appropriate, the New York District shall submit the comments of interested parties to the NJSHPO to facilitate further consultation.

C. If, after consulting with the NJSHPO, and other consulting parties for a period of 90 days on any action or activity provided for in this PA, the New York District, NJSHPO, or other signatories conclude there is no progress in developing treatment/mitigation plans or other documents required by this PA, the New York District, NJSHPO, or other signatories may notify the Council and request the Council's involvement to expedite completion of the consultation process.

D. The New York District shall ensure that all submissions to the NJSHPO, and all other consulting parties include all the relevant information required to facilitate their review. The New York District shall provide all additional information requested by NJSHPO, and other consulting parties within a timely manner unless the signatories to this PA agree otherwise.

E. The New York District shall ensure that all draft and final reports resulting from actions pursuant to the Stipulations of this PA will be provided to the NJSHPO, and other consulting parties and will identify the Principal Investigator responsible for the report. All reports will be responsive to contemporary standards, and as appropriate to the Department of the Interior's Format Standards for Final Reports of Data Recovery Programs (42 FR 5377-79) and HPO report standards. Precise locational data may be provided only in a separate appendix if it appears that its release could jeopardize archaeological sites consistent with National Register Bulletin Number 29, Guidelines for Restricting Information about Historic and Prehistoric Resources.

F. If the District proposes revisions or addenda to NJSHPO approved treatment/ mitigation plans or other documents, the New York District, NJSHPO, and other consulting parties shall meet to determine whether additional conditions or mitigation measures are appropriate.

G. The New York District shall certify in writing that all requirements for identification and evaluation, and the implementation of treatment/mitigation plans have been satisfactorily completed prior to the initiation of construction activities. The New York District shall submit a copy of this certification to the NJSHPO and other consulting parties by mail. The NJSHPO and other consulting parties shall have 30 days to object to the certification based a finding of incomplete compliance or inadequate compliance with the terms of this PA. If the NJSHPO or other consulting parties do not object, the District may proceed with construction.

VII. ADMINISTRATIVE TERMS

A. Review Periods

The NJSHPO and other consulting parties shall have 30 days to review and /or object to determinations, evaluations, plans, reports, and other documents submitted to them by the New York District.

B. Dispute Resolution

1. The New York District and consulting parties shall attempt to resolve any disagreement arising from implementation of this PA. If there is a determination that the disagreement cannot be resolved, the New York District shall request the Council`s recommendations or request the comments of the Council in accordance with 36 CFR Part 800.6(b).

2. Any Council recommendations or comments provided in response will be considered in accordance with 36 CFR Part 800.6(c)(2), with reference only to the subject of the dispute. The New York District shall respond to Council recommendations or comments indicating how the New York District has

taken the Council's recommendations or comments into account and complied with same prior to proceeding with Undertaking activities that are subject to dispute. Responsibility to carry out all other actions under this PA that are not the subject of the dispute will remain unchanged.

C. Public Involvement

1. In consultation with the NJSHPO and other consulting parties, the New York District shall develop a plan to inform the interested parties of the existence of this Agreement. Copies of this Agreement and relevant documentation prepared pursuant to the terms of this PA shall be made available for public inspection (information regarding the locations of archaeological sites will be withheld in accordance with the Freedom of Information Act and National Register Bulletin 29, if it appears that this information could jeopardize archaeological sites). Any comments received from the public under this Agreement shall be taken into account by the New York District.

2. Public Objections. The New York District shall review and resolve timely substantive public objections. Public objections shall be considered timely when they are provided within the review periods specified in this PA. The New York District shall consult with the relevant consulting parties and as appropriate with the Council, to resolve objections. Study actions which are not the subject of the objection may proceed while the consultation is conducted.

D. Monitoring

1. The New York District shall prepare annual reports summarizing the status of compliance with the terms of this PA and a summary of the completed activities and the exempt activities for the past year and proposed activities for the next fiscal year. Reports shall be submitted by January 31 of every year. The Annual Reports shall be provided to Council, the NJSHPO, all other signatories and interested parties until the Study-related activities are complete.

2. The Council and the NJSHPO may request a site visit to follow up information in the annual report or to monitor activities carried out pursuant to this PA. The Council and the NJSHPO shall provide the New York District with 30 days written notice when requesting a site visit unless otherwise agreed. The New York District may also schedule a site visit with the NJSHPO's and the Council at its discretion.

E. Amendments

Any signatory to this PA may request that it be amended, whereupon all the parties will consult in accordance with 36 CFR Part 800.6(b)(7) to consider such amendment.

F. Termination

Any signatory to this PA may terminate it by providing thirty days' notice to the other

parties, provided that the parties will consult during the period prior to termination by certified mail to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the New York District will comply with 36 CFR Parts 800.4 through 800.6 with regard to individual undertakings covered by this Agreement.

G. Sunset Clause

This PA will continue in full force and effect until the Undertaking is complete and all terms of this PA are met, unless the Undertaking is terminated or authorization is rescinded.

H. Anti-Deficiency Act

All requirements set forth in this PA requiring expenditure of funds by the New York District are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. 1341). No obligation undertaken by the New York District under the terms of this PA shall require or be interpreted to require a commitment to extend funds not appropriated for a particular purpose. If the New York District cannot perform any obligation set forth in this PA because of unavailability of funds, that obligation must be renegotiated among the New York District and the signatories as necessary.

Execution and implementation of this PA evidences that the New York District has satisfied its Section 106 responsibilities for all individual Undertakings of the Project, and that the New York District has afforded the Council an opportunity to comment on the Undertaking and its effects on historic properties.

NEW JERSEY STATE HISTORIC PRESERVATION OFFICE

By: _____ Date: _____
Dorothy P. Guzzo, Deputy State Historic Preservation Officer

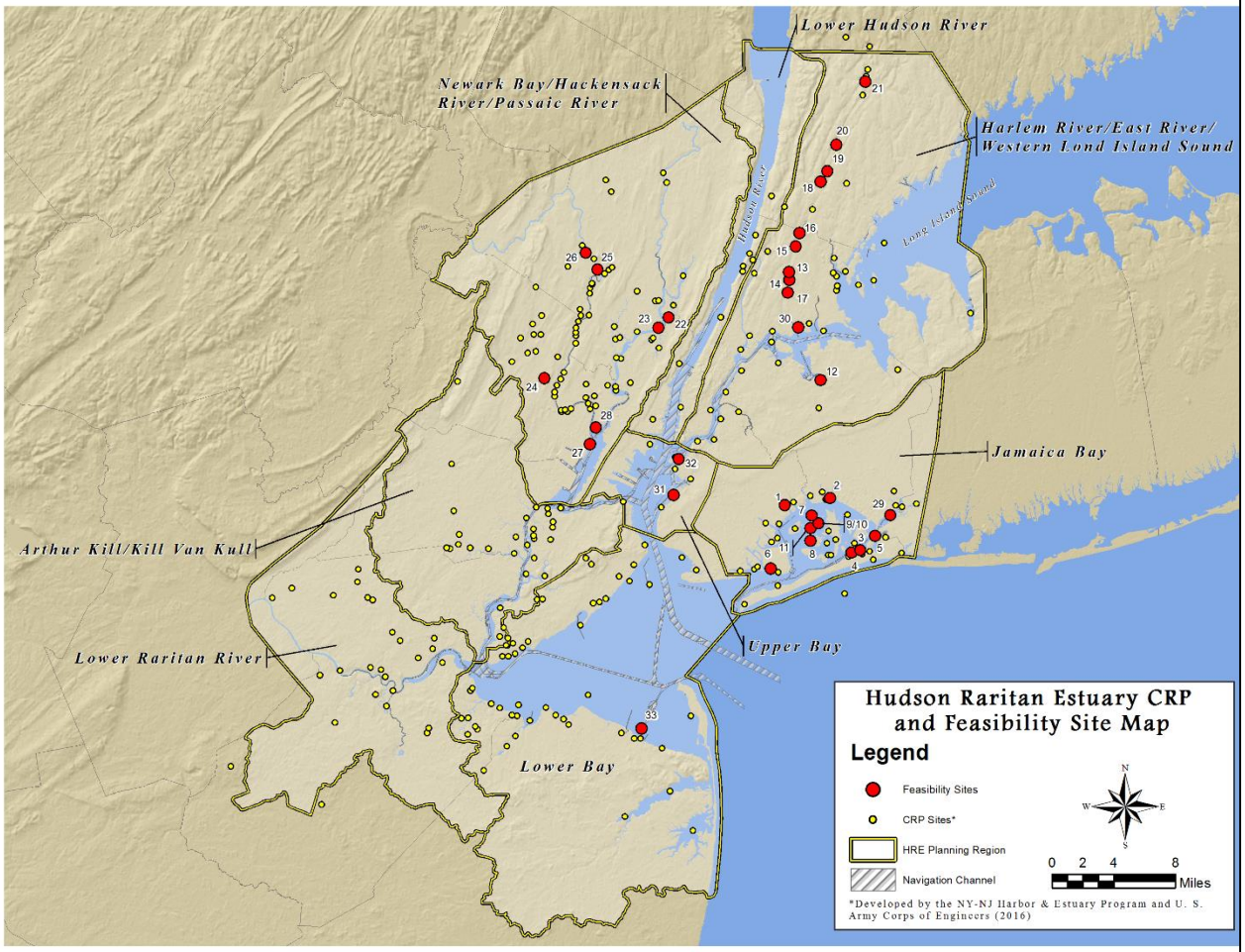
U.S. ARMY CORPS OF ENGINEERS

By: _____ Date: _____
Col. David A. Caldwell, New York District Commander

Appendix A: Map of HRE Restoration Sites
Appendix B: Cultural Resources by Restoration Site

Appendix A – Map of HRE Restoration Sites

Hudson Raritan Estuary Ecosystem
Restoration Feasibility Study
TSP Sites



Restoration Sites

1. Fresh Creek (CRP ID 730)
2. Hawtree Point (CRP ID 161)
3. Dubos Point (CRP ID 149)
4. Brant Point (CRP ID 172)
5. Bayswater State Park (CRP ID 148)
6. Dead Horse Bay (CRP ID 732)
7. Elders Center Marsh Island (CRP ID 939)
8. Duck Point Marsh Island (CRP ID 935)
9. Pumpkin Patch- East Marsh Island (CRP ID 936)
10. Pumpkin Patch-West Marsh Island (CRP ID 936)
11. Stony Point Marsh Island (CRP ID 937)
12. Flushing Creek (CRP ID 188)
13. Stone Mill Dam (CRP ID 945)
14. Bronx Zoo and Dam (CRP ID 944)
15. Shoelace Park (CRP ID 113)
16. Muskrat Cove (CRP ID 862)
17. River Park/West Farm Rapids Park (CRP ID 860)
18. Bronxville Lake (CRP ID 857)
19. Crestwood Lake (CRP ID 852)
20. Garth Woods/Harney Road (CRP ID 942)
21. Westchester County Center (CRP ID 854)
22. Meadowlark Tract (CRP ID 719)
23. Metromedia Marsh (CRP ID 721)
24. Essex County Branch Brook Park (CRP ID 887)
25. Dundee Island Park (CRP ID 900)
26. Clifton Dundee Canal Green Acres (CRP ID 902)
27. Lower Passaic River "Deferred" Site- Oak Island Yards (CRP ID 866)
28. Lower Passaic River "Deferred Site"- Kearny Point (CRP ID 865)

<u>Oyster Restoration:</u>

29. Jamaica Bay - Head of Bay
30. Soundview Park
31. Bush Terminal
32. Governors Island
33. Naval Weapons Station Earle

Appendix B – Cultural Resource by Restoration Site

Cultural Resources by Restoration Site – New Jersey

Planning Region	HRE Site	Historic Resources (1 Mile Radius)	AWOIS (1 Mile Radius)	Archaeological Sites (1 Mile Radius)	Within an Archaeological Sensitivity Area	Surveys (1/2 Mile Radius)
Newark Bay/Hackensack River/Passaic River	Meadowlark Marsh	16 Records within 1 mile	----	----	No	BER A 132, A 240a, A 747, A 278, R 76, E 36, E 46**, MULT A 240, a, A 181, a**, F 41, A55, A55(1)a, A55(2), **HUD Z 21**
	Metro Media Marsh	NYS&W RR Tunnel and Cut	----	----	No	BER A 132, **A 240a**, **A 747,** A 295, R 76, Z 179, HUD V 1, MULT A 240, a, A55, A55(1)a, A55(2), F41
	Branch Brook Park	**Branch Brook Park Historic District, Morris Canal Historic District, The City of Newark Subways,** 1900 Records within 1 mile	----	28-ES-079, 099, 100, 101, 102, 103, 111, 112, 113, 114, 115, 116 ,117, 123, 124, 125	No	**ESS B 3, Y 144, Y 742, F 97, MULT 236a, Z 28a,** ESS AA 299, AA369, AA 371, AA 431, AA 468, AA 89a, B 12, F 560, F 633, F 633a, F 856, Z 140, F 239a, b, H 12, H 15, H 126, H 126a, H 126 b, d, H 13, H 161, H43, H 51, HSR 169, HSR 178, HSR 64, J 2, S 5, Y 142, Y 143, Z 112, Z 201, Z 26, Z 26a, Z 29a, b, MULT F 97, J 2, 251, 53
	Clifton Dundee Canal Green Acres	**Dundee Dam, Dundee Canal Industrial Complex Historic District including Dundee Textile Complex and Dundee Canal**, 41 Records within 1 mile	----	28-PA-037, 038, 039, 040, 142, 143, **144**, **145**, 148A, 148B, 172, 28-BE-032, 033, 034, 089, 090, 092, **093**, **094**, 095, 096	Yes	**MULT F 34,** F 128, F 362, **PASS F 128, a, AA 510,** HSR 318dv3, Y 38, a, b, BER AA 226, AA 295,
	Oak Island Yards (Deferred)	**Lehigh Valley Railroad Historic District, Pennsylvania Railroad New York Bay Branch Historic District, Lehigh Valley Railroad Oak Island Yard HD,** 8 Records within 1 mile	10622, 10623, 10624, 10625	----	No	**ESS Y 143**, E 23, AA 580, **MULT R 89, A 12, A 201, a**
	Dundee Island Park	45 records within 1 mile	----	28-PA-041, 042, 142, 143, 148A, 148B, 174 28-BE-096, 097	Yes	**MULT A 44**, AA 413**, D 2, D 25**, H 130, F 128 PASS F 128, F 128a, Z 188, Y 38, Y 38a, Y 38b
	Kearny Point (Deferred)	39 Records within 1 mile	-----	28-HD-009, 28-HD-010	No	**MULT A 185, HUD E 14,** ESS E 23, F 348, Z 56, Y 143, HUD AA 366, A 285a, MULT F 142
Oyster Restoration	Naval Weapons Station Earle	**Naval Weapons Station Earle Historic District and Alexander Hamilton Steamship**	5750, 3183, 2339, 2338, 2329, 5750	----	No	**Mon Q 17, Q 169, Q 9, Q 14**

NOTES: Bolded items are located within the site boundaries. Surveys are listed only when they cover areas within ½ mile of the site boundaries. Some sites had more resources than could be listed in the table, all sites within the site boundaries are listed.

Appendix C - Correspondence

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 4, 2016

Reply to Attention of

Environmental Assessment Section
Environmental Analysis Branch

Ms. Katherine Marcopul
Deputy State Historic Preservation Officer
State of New Jersey Department of Environmental Protection
Historic Preservation Office
PO Box 420
Trenton, NJ 08625-0420

REF: Project # 14-3348

Dear Ms. Marcopul:

The U.S. Army Corps of Engineers, New York District (District) is concluding the Hudson-Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. In 2014 a report titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan* was submitted to your office for review. The survey consisted of a cultural resources overview of 301 potential restoration sites within the HRE. Your office reviewed that report and provided comments. In November of 2014, the District declared its intent to draft and execute a Programmatic Agreement and in May of this year the Project Archaeologist met with your staff to present the tentatively selected plan (TSP), which consists of a subset of 33 restoration sites. Of the 33 restoration sites that are advancing at this time, eight are located within New Jersey and 25 are located in New York State. To simplify coordination, two Programmatic Agreements (PAs) have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with interested parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources surveys undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure).

I would like to take this opportunity to invite the New Jersey State Historic Preservation Office to comment upon the draft Programmatic Agreement for the New Jersey portion of HRE Ecosystem Restoration Feasibility Study. The PA is to be entered into by the U.S. Army Corps of Engineers and the SHPO. The Advisory Council on Historic Preservation are also invited to participate in this Agreement along with a number of Native American Tribes who have extensive cultural heritage in the region. The invited Tribes are the Delaware Nation, the Delaware Tribe of Indians, and the Shawnee Tribe of Oklahoma. Should there be any other groups who your office feels should participate in this process please include that information

with your comments.

Please review the enclosed case report and draft PA for the New Jersey portion of the project and provide any Section 106 comments pursuant to 36 CFR 800.5. If you feel it would be beneficial to schedule a meeting amongst the consulting parties, please include that with your comments. We look forward to working with you on the HRE Ecosystem Restoration Project. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist, at (917) 790-8612 or Carissa.a.scarpa@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 4, 2016

Reply to Attention of

Environmental Assessment Section
Environmental Analysis Branch

Ms. Ruth L. Pierpont
New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, P.O. Box 189
Waterford, NY 12188-0189

Dear Ms. Pierpont:

The U.S. Army Corps of Engineers, New York District (District) is concluding the Hudson-Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study and Environmental Assessment. In 2014 a report titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan* was prepared and submitted to your office for review. The survey consisted of a cultural resources overview of 301 potential restoration sites within the HRE. The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and eight are located in New Jersey.

The District has identified cultural resources within the Area of Potential Effect (APE) that could be impacted by the project and has determined that additional investigations will be required to determine whether the project will have an adverse effect on cultural resources. To that end the District has elected to develop a Programmatic Agreement to outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with interested parties, determining adverse effects, and, if necessary, mitigation for adverse effects. To simplify coordination moving forward, two PAs have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. A Preliminary Case Report has also been prepared that includes a summary of the cultural resources surveys undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure).

I would like to take this opportunity to invite the New York State Office of Parks, Recreation, and Historic Preservation to comment upon the draft Programmatic Agreement for the New York portion of HRE Ecosystem Restoration Feasibility Study. The PA is to be entered into by the U.S. Army Corps of Engineers and the New York State Historic Preservation Office, and the New York City Landmarks Preservation Commission. The National Park Service Gateway National Recreation Area, and the Advisory Council on Historic Preservation are also invited to participate in this Agreement along with a number of Native American Tribes who have extensive cultural heritage in the region. The invited Tribes are the Delaware Nation, the

Delaware Tribe of Indians, the Stockbridge-Munsee Band of Mohicans, and the Shinnecock Nation. Should there be any other groups who your office feels should participate in this process please include that information with your comments.

Please review the enclosed case report and draft PA for the New York portion of the project and provide any Section 106 comments pursuant to 36 CFR 800.5. If you feel it would be beneficial to schedule a meeting amongst the signatories, please include that with your comments. We look forward to working with you on the HRE Ecosystem Restoration Project. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist, at (917) 790-8612 or Carissa.a.scarpa@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 22, 2016

Reply to the Attention of

Environmental Assessment Section
Environmental Analysis Branch

Gateway National Recreation Area
ATTN: Marilou Ehrler
Historical Architect
210 New York Avenue
Staten Island, New York 10305

Dear Ms. Ehrler:

The U.S. Army Corps of Engineers, New York District (District) is undertaking the Hudson Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty. The HRE study includes eight (8) Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay. In 2014 as part of the Environmental Assessment a cultural resources overview was carried out for 301 sites that were identified as potential restoration opportunities within the HRE. The report titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan* combined background data on the prehistory and history of the eight planning regions including historic maps and Geographical Information System (GIS) data layers on previously recorded cultural resources to aid in identifying and managing impacts to cultural resources (Enclosure 1).

The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites selected from the 301 potential sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and 8 are located in New Jersey. Of these, eight sites are located within Gateway National Recreation Area. The District has determined that the project is likely to impact significant cultural resources and has elected to draft an agreement document to ensure that impacts are addressed as the project moves forward. To simplify agency coordination, two Programmatic Agreements have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources surveys undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure 2).

We invite you to participate as a Consulting Party to the PA for the New York portion of the HRE

Ecosystem Restoration Project. The PA will also be coordinated with the SHPO, Advisory Council on Historic Preservation, Delaware Nation, Delaware Tribe of Indians, the Shinnecock Nation, the Shawnee Tribe of Oklahoma, the Stockbridge Munsee Community Band of Mohicans, the New York City Landmarks Preservation Commission, and other potential interested parties. The draft PA will also be available for public review in the project's draft EIS prepared under the National Environmental Policy Act which will serve as part of the Corps' Section 106 public coordination. The final PA will incorporate comments received on the draft document, as appropriate.

As the project proceeds it is our intent to meet with you and your staff to discuss working together to meet our Section 106 responsibilities in a way that will facilitate your goals for Gateway. Please review the enclosed material and provide comments. Should you require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist, at (917) 790-8612 or by email at Carissa.a.scarpa@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 22, 2016

Reply to the Attention of

Environmental Assessment Section
Environmental Analysis Branch

Mr. Reid Nelson, Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Avenue, N.W., Suite 809
Washington, D.C. 20004

Dear Mr. Nelson:

The U.S. Army Corps of Engineers, New York District (District) is concluding the Hudson-Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty. The HRE study includes eight (8) Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay. In 2014 as part of the Environmental Assessment a cultural resources overview was carried out for 301 sites that were identified as potential restoration opportunities within the HRE. The report titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan* combined background data on the prehistory and history of the eight planning regions including historic maps and Geographical Information System (GIS) data layers on previously recorded cultural resources to aid in identifying and managing impacts to cultural resources (Enclosure 1).

The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and 8 are located in New Jersey. The District has determined that the project is likely to impact significant cultural resources and has elected to draft an agreement document to ensure that impacts are addressed as the project moves forward. To simplify coordination moving forward, two Programmatic Agreements have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources surveys undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure 2).

I would like to take this opportunity to invite the Advisory Council on Historic Preservation to comment upon the draft PAs for the HRE Ecosystem Restoration Feasibility Study and to participate in the PAs as per 36 CFR Part 800.6. The District is coordinating the documents with the SHPOs, the Delaware Nation, the Delaware Tribe of Indians, the Shinnecock Nation, the Shawnee Tribe of Oklahoma, the Stockbridge Munsee Community Band of Mohicans, the New York City Landmarks Preservation Commission, and the National Park Service. The draft PA will also be available for public review in the project's draft EIS prepared under the National Environmental Policy Act which will serve as part of the Corps' Section 106 public coordination. If you or your staff require additional information or have any questions, please contact Carissa Scarpa, Project Archaeologist, at (917) 790-8612 or Carissa.a.scarpa@usace.army.mil.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 22, 2016

Reply to the Attention of

Environmental Assessment Section
Environmental Analysis Branch

Ms. Nekole Alligood
Cultural Preservation Director
Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Dear Ms. Alligood:

The U.S. Army Corps of Engineers, New York District (District) is undertaking the Hudson Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty. The HRE study includes eight planning regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay. In 2014 as part of the Environmental Assessment a cultural resources overview was carried out for 301 sites that were identified as potential restoration opportunities within the HRE (Enclosure 1). The report, titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan,* compiled background data on the prehistory and history of the eight planning regions including historic maps and Geographical Information System (GIS) data layers on previously recorded cultural resources to aid in identifying and managing impacts to cultural resources.

The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites selected from the 301 potential sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and 8 are located in New Jersey. The District has determined that the project has the potential to adversely affect significant historic resources and has elected to draft an agreement document to ensure impacts are addressed as the project moves forward. To simplify agency coordination two Programmatic Agreements (PAs) have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources work undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure 2).

As a tribe with significant cultural heritage in the region, I would like to take this opportunity to

invite you to review and comment upon the draft PAs for the HRE Ecosystem Restoration Feasibility Study. The PAs are also being coordinated with the SHPO, Advisory Council on Historic Preservation, Delaware Tribe of Indians, the Shinnecock Nation, the Stockbridge Munsee Community Band of Mohicans, the New York City Landmarks Preservation Commission, and the National Park Service. The draft PAs will be available for public review in the project's draft EIS, prepared under the National Environmental Policy Act, which will serve as part of the Corps' Section 106 public coordination. The final PAs will incorporate comments received on the draft document, as appropriate.

We invite the Delaware Nation to participate in the PAs and the project as a consulting party. Please provide a written response within 30 days to the project archaeologist, Carissa Scarpa by mail (US Army Corps of Engineers, CENAN-PL-EA, 26 Federal Plaza, Room 2151, New York, NY 10278) or by email to Carissa.a.scarpa@usace.army.mil. If you or your staff require additional information or have any questions, please contact Ms. Scarpa at (917) 790-8612.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 22, 2016

Reply to the Attention of

Environmental Assessment Section
Environmental Analysis Branch

Ms. Susan Bachor
Delaware Tribe
Historic Preservation Representative
P.O. Box 64
Pocono Lake, PA 18347

Dear Ms. Bachor:

The U.S. Army Corps of Engineers, New York District (District) is undertaking the Hudson Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty. The HRE study includes eight planning regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay. In 2014, as part of the Environmental Assessment, a cultural resources overview was carried out for 301 sites that were identified as potential restoration opportunities within the HRE. The report, titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan,* compiled background data on the prehistory and history of the eight planning regions including historic maps and Geographical Information System (GIS) data layers on previously recorded cultural resources to aid in identifying and managing impacts to cultural resources (Enclosure 1).

The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites selected from the 301 potential sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and 8 are located in New Jersey. To simplify agency coordination moving forward, two draft Programmatic Agreements (PAs) have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources work undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure 2).

As a tribe with significant cultural heritage in the region, I would like to take this opportunity to invite you to review and comment upon the draft PAs for the HRE Ecosystem Restoration Feasibility Study and to invite the Delaware Tribe to participate in the PA as a consulting party.

The PAs will also be coordinated with the SHPOs, Advisory Council on Historic Preservation, Delaware Nation, the Shinnecock Nation, the Shawnee Tribe of Oklahoma, the Stockbridge Munsee Community Band of Mohicans, the New York City Landmarks Preservation Commission, the National Park Service, and other potential interested parties. The draft PAs will also be available for public review in the project's draft EIS prepared under the National Environmental Policy Act which will serve as part of the Corps' Section 106 public coordination. The final PA will incorporate comments received on the draft document, as appropriate.

Please provide a written response within 30 days to the project archaeologist, Ms. Carissa Scarpa by mail (US Army Corps of Engineers, CENAN-PL-EA, 26 Federal Plaza, Room 2151, New York, NY 10278) or by email to Carissa.a.scarpa@usace.army.mil. If you or your staff require additional information or have any questions, please contact Ms. Scarpa at (917) 790-8612.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosure

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 22, 2016

Reply to the Attention of

Environmental Assessment Section
Environmental Analysis Branch

Ms. Kim Jumper
Tribal Historic Preservation Officer
Shawnee Tribe of Oklahoma
29S HWY69A
Miami, OK 74355

Dear Ms. Jumper:

The U.S. Army Corps of Engineers, New York District (District) is undertaking the Hudson Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty. The HRE study includes eight planning regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay. In 2014, as part of the Environmental Assessment, a cultural resources survey was carried out for 301 sites that were identified as potential restoration opportunities within the HRE (Enclosure 1). The report, titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan,* compiled background data on the prehistory and history of the eight planning regions including historic maps and Geographical Information System (GIS) data layers of previously recorded cultural resources to aid in identifying and managing impacts to cultural resource.

The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites selected from the 301 potential sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and 8 are located in New Jersey. The District has determined that the project is likely to impact significant cultural resources and has elected to draft an agreement document to ensure that impacts are addressed as the project moves forward. Two Programmatic Agreements (PAs) have been prepared to simplify agency coordination, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources work undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure 2).

As a tribe with significant cultural heritage in the region, I would like to take this opportunity to

invite you to review and comment upon the draft PA for the New Jersey portion of the HRE Ecosystem Restoration Feasibility Study. The PA is also being coordinated with the New Jersey State Historic Preservation Office, the Advisory Council on Historic Preservation, the Delaware Nation, and the Delaware Tribe of Indians. The draft PA will be available for public review in the project's draft EIS prepared under the National Environmental Policy Act which will serve as part of the Corps' Section 106 public coordination. The final PA will incorporate comments received on the draft document, as appropriate.

We invite the Shawnee Tribe of Oklahoma to participate in the PA and the project as a consulting party. Please provide a written response within 30 days to the project archaeologist, Carissa Scarpa, by mail (US Army Corps of Engineers, CENAN-PL-EA, 26 Federal Plaza, Room 2151, New York, NY 10278) or by email to Carissa.a.scarpa@usace.army.mil. If you or your staff require additional information or have any questions, please contact Ms. Scarpa at (917) 790-8612.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 22, 2016

Reply to the Attention of

Environmental Assessment Section
Environmental Analysis Branch

Mr. Bryan Polite
Chairman
Shinnecock Nation
P. O. Box 5006
Southampton, NY 11969

Dear Mr. Polite:

The U.S. Army Corps of Engineers, New York District (District) is undertaking the Hudson Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty. The HRE study includes eight (8) Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay. In 2014, as part of the Environmental Assessment, a cultural resources overview was carried out for 301 sites that were identified as potential restoration opportunities within the HRE (Enclosure 1). The report, titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan,* compiled background data on the prehistory and history of the eight planning regions including historic maps and Geographical Information System (GIS) data layers of previously recorded cultural resources to aid in identifying and managing impacts to cultural resources as the project advances.

The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites selected from the 301 potential sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and 8 are located in New Jersey. The District has determined that the project has the potential to adversely affect significant historic resources and has elected to draft an agreement document to ensure impacts are addressed as the project moves forward. To simplify agency coordination, two Programmatic Agreements (PAs) have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources work undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure 2).

I would like to take this opportunity to invite the Shinnecock Nation to review the Preliminary Case Report and comment upon the New York portion of the draft PA for the HRE Ecosystem Restoration Feasibility Study. The PA is also being coordinated with the SHPO, the Advisory Council on Historic Preservation, the Delaware Nation, the Delaware Tribe of Indians, the Stockbridge-Munsee Community Band of Mohicans, the New York City Landmarks Preservation Commission, and the National Park Service. The draft PA will be available for public review in the project's draft EIS prepared under the National Environmental Policy Act which will serve as part of the Corps' Section 106 public coordination. The final PA will incorporate comments received on the draft document, as appropriate.

We invite the Shinnecock Nation to participate in the PA and the project as a consulting party. Please provide a written response within 30 days to the project archaeologist, Carissa Scarpa by mail (US Army Corps of Engineers, CENAN-PL-EA, 26 Federal Plaza, Room 2131, New York, NY 10278) or by email to Carissa.a.scarpa@usace.army.mil. If you or your staff require additional information or have any questions, please contact Ms. Scarpa at (917) 790-8612.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK NY 10278-0090

November 22, 2016

Reply to the Attention of

Environmental Assessment Section
Environmental Analysis Branch

Ms. Bonney Hartley
Stockbridge-Munsee Community
Band of Mohicans
THPO-New York Office
65 1st Street
Troy, NY 12180

Dear Ms. Hartley:

The U.S. Army Corps of Engineers, New York District (District) is undertaking the Hudson Raritan Estuary (HRE) Ecosystem Restoration Feasibility Study. The purpose of the study is to recommend implementation of ecosystem restoration opportunities at multiple sites within the HRE. The HRE is within the boundaries of the Port District of New York and New Jersey and is situated within a 25-mile radius of the Statue of Liberty. The HRE study includes eight planning regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay. In 2014, as part of the Environmental Assessment for the project, a cultural resources overview was carried out for 301 sites that were identified as potential restoration opportunities within the HRE (Enclosure 1). The report, titled *Cultural Resources Overview for Hudson-Raritan Estuary Comprehensive Restoration Plan,* combined background data on the prehistory and history of the eight planning regions including historic maps and Geographical Information System (GIS) data layers of previously recorded cultural resources to aid in identifying and managing impacts to cultural resources as the project advances.

The HRE study is proceeding and has recently identified a tentatively selected plan (TSP) which consists of a subset of 33 restoration sites selected from the 301 potential sites. Of the 33 restoration sites that are advancing at this time, 25 are located within New York State and 8 are located in New Jersey. The District has determined that the project is likely to adversely affect significant historic resources and has elected to draft an agreement document to ensure impacts are addressed as the project moves forward. To simplify agency coordination two Programmatic Agreements (PAs) have been prepared, one that addresses the restoration sites located in New Jersey, and another that addresses the restoration sites in New York State. The PAs outline the steps required to carry out the District's remaining Section 106 responsibilities including conducting additional surveys, consultation with participating parties, determining adverse effects, and, if necessary, mitigation for adverse effects. A Preliminary Case Report has been prepared that includes a summary of the cultural resources work undertaken to date, agency coordination letters, the draft PAs, and project maps along with other relevant project information (Enclosure 2).

As a tribe with significant cultural heritage in the region, I would like to take this opportunity to invite you to review and comment upon the Case Report and the New York portion of the draft PA for the HRE Ecosystem Restoration Feasibility Study. The PA is also being coordinated with the New York State Historic Preservation Office, the Advisory Council on Historic Preservation, the Delaware Tribe of Indians, the Delaware Nation, the Shinnecock Nation, the New York City Landmarks Preservation Commission, and the National Park Service. The draft PA will be available for public review in the project's draft EIS prepared under the National Environmental Policy Act which will serve as part of the Corps' Section 106 public coordination. The final PA will incorporate comments received on the draft document, as appropriate.

We invite the Stockbridge-Munsee Community to participate in the PA and the project as a consulting party. Please provide a written response within 30 days to the project archaeologist, Ms. Carissa Scarpa by mail (US Army Corps of Engineers, CENAN-PL-EA, 26 Federal Plaza, Room 2151, New York, NY 10278) or by email to Carissa.a.scarpa@usace.army.mil. If you or your staff require additional information or have any questions, please contact Ms. Scarpa at (917) 790-8612.

Sincerely,

Peter M. Weppler
Chief, Environmental Analysis Branch

Enclosures