HUDSON RIVER PARK ESTUARINE SANCTUARY MANAGEMENT PLAN

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with the assistance of:

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Table of Contents

Table of Contents

Table of Contents

A. BACKGROUND TO THE ESTUARINE SANCTUARY

INTRODUCTION

In 1998, with the passage of the Hudson River Park Act (the Act), a major new park was created on the west side of Manhattan. The Hudson River Park (the Park) is defined by Battery Place on the south, Pier 99/West 59th Street on the north, the Route 9A bikeway/walkway on the east, and the U.S. Pierhead line on the west. As part of the enacting legislation, the Park's water area, defined on the south by the north bulkhead of Battery Park City, north to Pier 99, and from the bulkhead out to the U.S. Pierhead line (a total of about 400 acres), as well as the 36 piers this area encompasses, was designated as an Estuarine Sanctuary. This designation acknowledges the importance of the Hudson River ecosystem and the need to provide for public access and management opportunities within the park's water areas in a manner which promotes and preserves the Sanctuary's marine resources.

The Act established the Hudson River Park Trust (HRPT) and required it to prepare a *Hudson River Park Estuarine Sanctuary Management Plan* (ESMP) in consultation with the public, New York State Department of Environmental Conservation, and other cooperating organizations and organizations (Chapter 592, S. 7845, Section 8).

Therefore, under the direction of HRPT, this *Estuarine Sanctuary Management Plan* was prepared to identify management policies for the Sanctuary with respect to resource protection, public access and recreation, education, and research activities. It provides guidance on balancing the needs of these various park purposes and also identifies procedures for monitoring and enforcing Park policies, laws, and regulations to manage and protect the Hudson River and the Hudson River Park Estuarine Sanctuary.

HISTORY OF THE WATERFRONT

The Lower Hudson River has a rich ecological and cultural history. Prior to European settlement, the Hudson River was abundant in both upland wildlife and marine resources. However, with the arrival of European settlers, the coastline began to change as local population and economic growth increased the need for a developed waterfront supporting both transportation and industrial purposes. Landfill placed in the river was used to build streets and new land, and bulkheads and docks were constructed for edge stabilization to facilitate the burgeoning maritime industry. New York City's role as a major port grew through the 19th century and into the early 20th century, as did the construction of infrastructure. As a result, the environment and water quality of the Hudson River and its once abundant upland and marine resources rapidly declined as the natural landscape and wetlands were filled and pollutants and industrial effluents increased.

Beginning in the mid 1900's, land use along the waterfront began to change. There was a major regional shift in the location of maritime industries and trade away from Manhattan's Hudson River waterfront. With the departure of the maritime industry and the corresponding growth in vacant land and underutilized waterfront infrastructure, waterfront reuse planning began. One alternative given serious consideration was a major new highway (Route 9A) and landfill project known as Westway. However, after almost two decades, Westway was abandoned in the mid-1980's due to community opposition and environmental concerns. Route 9A planning and reconstruction, however, has continued.

Subsequent to the failure of the Westway plan, a West Side Task Force was formed by the New York State Governor and the Mayor of New York City to develop recommendations for reconstruction of the waterfront along Route 9A. In 1988, the West Side Waterfront Panel was created to develop a master plan and a financing mechanism for a Hudson River waterfront esplanade, the reuse of piers, and the management of waters. The master plan was to be developed and coordinated with the Route 9A reconstruction planning efforts.

The Panel's product, a "Vision for the Hudson River Waterfront Park," was to be implemented by the Hudson River Park Conservancy (HRPC). HRPC, created by a Memorandum of Understanding between NY State and NY City, was charged with oversight of the planning, design, permitting and construction of the proposed waterfront park. Under the HRPC's leadership, a community design process was initiated to advance the plan. The result was a "Concept and Financial Plan" issued in 1995. A Design Guidelines Master Plan followed, which provided a design philosophy for the park, including alternatives for consistency in park components and provisions calling for specific design elements related to public access and ecological protection.

The Act in 1998 officially designated the Park boundaries and created HRPT to replace HRPC and implement park planning, design, construction, and maintenance operations. The Act recognized the importance of river habitat, the economic benefits of the Park, and the recreational and educational opportunities the Park could afford. It defined allowable uses, including passive and active open space, public recreation and entertainment, and habitat and wildlife protection, as well as prohibited uses including hotels, office, residential, manufacturing and many other commercial uses.

HUDSON RIVER PARK DESIGN AND ENVIRONMENTAL REVIEW

Since the outset, public participation and input into the park design process has been important to the Hudson River Park planning process. HRPT and its predecessor, HRPC, have worked closely with local community boards, appointed committees and councils, and with dozens of civic and environmental organizations throughout the planning process to ensure that the Park serves the broadest segment of the public. This outreach effort began with retaining professional landscape architects to serve as community liaisons and hold a series of design charrettes, community workshops, and meetings (more than 120 gatherings in all), as well as publishing advertisements and completing mailings to over 7,500 local residents, all during the preparation of the original Concept and Financial Plan.

As part of the subsequent Design Guidelines Master Plan effort, five open houses were held and

attended by involved groups and concerned individuals, including Federal, State and City agencies; Manhattan Community Boards 1, 2, and 4; local business improvement districts; environmental and arts organizations; and, numerous agencies and local organizations. Comments received during this phase were incorporated into the draft Design Guidelines Master Plan, released in July 1997. Following the release of the draft, HRPC received additional comments from the public and issued a revised final Master Plan in October 1997.

To comply with the State Environmental Quality Review Act and City Environmental Quality Review, Hudson River Park Conservancy planners prepared and released a Draft Environmental Impact Statement on the Park plan in April 1997. Following two public scoping meetings, HRPC held a public hearing on the draft environmental impact statement (DEIS) in February 1998, with a subsequent period for submitting written comments. In May 1998, after a period of public comment and review, a Final Environmental Impact Statement was issued.

HRPC responded to 356 comments in the Final Environmental Impact Statement (FEIS). An additional written comment period of 30 days took place prior to adoption of the FEIS Statement of Findings.

HUDSON RIVER PARK CONSTRUCTION PERMITS

With completion of the environmental review process, other aspects of the project could move forward including permit application for construction of the upland portion of the project and construction of the park's in-water elements. HRPC filed for permits from DEC and the U.S. Army Corps of Engineers (ACOE) in early 1998 for work subject to Federal and State environmental permitting requirements (pier and platform construction, etc.). Extensive public review and outreach accompanied the DEC and ACOE permit processes.

Over 100 people attended the DEC permit hearing on September 17, 1998 which was presided over by a DEC Administrative Law Judge. Afterwards, the Administrative Law Judge held an issues conference to determine whether an adjudicatory hearing was required. The judge issued a decision that the adjudicatory hearing was not necessary and that the permits should be issued. In February 1999, DEC issued the State permits for the construction of the in-water elements.

The ACOE permit process began on June 16, 1998 with a public notice describing the project, announcing a public hearing on July 16, 1998, and inviting public comment on the application. Owing to the strong interest in the project, the ACOE issued a supplemental public notice on February 18, 1999 to elicit further comments in response to modifications made to the overall application after the initial public notice of the application. In addition, ACOE and the Advisory Council on Historic Preservation held two public consultation meetings and written comment periods to address historical issues. ACOE issued its permit in May 2000.

As part of the federal permit process, the New York State Department of State and City Planning Department approved the plans as consistent with local waterfront plans and zoning and the City's Waterfront Revitalization Program. Additionally, the New York State Historic Preservation Officer confirmed that the plans adequately accounted for and were protective of the historic granite bulkhead and other historic structures within the park.

Construction of the Park is now underway and is expected to continue until 2005. As part of the construction plans, an esplanade will be built along the river in the form of walkways,

platforms, overlooks and get downs; piers along the Hudson River will be rebuilt to provide passive and active recreational space; and, new facilities will be added to support Park programs. In addition, boat docks and moorings will be provided, and public access will be facilitated. Habitat planning is integral to the design and construction process with native uplands re-created, ecological piers built, and two beach strands installed. Most bethnic environments and pile fields will be conserved, enhanced, and/or transformed into ecological habitats.

ESTUARINE SANCTUARY PUBLIC REVIEW

As part of the public participation process for the preparation of this ESMP, in July 2000, HRPT (with the assistance of Allee King Rosen and Fleming, Consultants) distributed a Draft Scope of Work for preparation of the ESMP to interested agencies and the general public for review. This Scope was accompanied by a preliminary draft of the ESMP Chapter 1 on the Sanctuary background and general description. After a 60-day review period, the Sanctuary Committee of the Board, chaired by then-DEC Commissioner and Trust Board member, John Cahill, held a public meeting on September 13, 2000 to take comment on the draft.

Over the course of the next year, Trust staff and their consultants developed a draft Plan folding in the comments received from the agencies and other interested organizations and individuals during the public review process. After initial in-houses reviews were completed, Trust staff submitted the completed draft Plan for public review and comment in September, 2001. The Board's Sanctuary Committee held a public meeting on the draft Plan on November 27th, 2001, chaired by the DEC Commissioner and Trust Board member, Erin Crotty. The public comment period remained open until December 27th.

Numerous comments were received on the draft Plan during the public review process. Those comments are addressed in the annexed *Response to Comments*, and have been incorporated, where appropriate, into the revised Plan.

B. BASE PLAN OBJECTIVES

The ESMP includes a Base Plan, Three-year Action Plan and a Responsive Summary to the Public Review of the October-December, 2001. The base plan provides overall direction for the protection, management and enhancement of the Hudson River Park Estuarine Sanctuary.

As is summarized below, the ESMP is composed of goals and objectives established in four key management areas: resource protection, public access and recreation, education, and environmental research. Each is summarized below.

RESOURCE PROTECTION

Respect the importance of the Hudson River's ecological health by preserving, and, where possible, enhancing the marine habitats of the Sanctuary.

The Hudson River is used by a wide variety of fish, shellfish, marine mammals, and birds. The Hudson River Park Trust intends to minimize effects on the aquatic resources of the Lower Hudson River Estuary during both development and operation of the upland Park and the Estuarine Sanctuary and, wherever possible, encourage indigenous species to use and recolonize the Park's upland and water areas.

The preservation objectives are aimed at managing the Estuarine Sanctuary and its public uses, as well as controlling solid waste and water pollution that may result from Park activities. Enhancement objectives focus on improving water quality, aquatics, wildlife habitat, and promoting native species and sustainable design. Through the management of public use, monitoring ecological conditions, enforcement of rules, pollution prevention, waste management programs, and integrated pest management, HRPT seeks to preserve and enhance the ecological health of the Estuarine Sanctuary.

PUBLIC ACCESS AND RECREATION

Build and operate a park that maximizes public access to the Hudson River—both visually and physically—while protecting the Estuarine Sanctuary's natural resources.

The amount of publicly accessible water area will increase significantly with the park's construction. Thus, a key goal of HRPT is to balance the increasing demand for water-based access and recreation with the need to preserve and improve the area's natural resources.

Public access and recreational objectives focus on providing additional opportunities for water-front access through the development of a variety of new facilities for water play, boating, dock-ing, fishing, and passive activities to meet the needs and uses of diverse park users; increasing the safety of concurrent in-water activities through safety training and the use of rules, regulation and schedules; and, encouraging the use of the waterfront through special events and programs.

EDUCATION

Capitalize on the Sanctuary's combination of important ecological values and prime regional location by promoting awareness, understanding, and stewardship of the Hudson River for the millions of visitors who will enjoy the Park each year.

Since the Estuarine Sanctuary is centrally located near millions of residents and thousands of boaters and, is embedded with a rich ecology and social history, it provides the opportunity to serve as a prime educational resource for both children and adults. Through partnerships with educational and cultural institutions, the educational potential of the Sanctuary can be further realized.

HRPT's educational objectives focus on expanding educational opportunities within the Sanctuary through learning facilities and special programs, and developing partnerships with local and regional educational organizations in addition to maximizing the potential of such facilities and programs.

RESEARCH

To promote research that will increase knowledge and understanding of the Hudson River, with the principal intent of improving the ecological values of the Estuarine Sanctuary and the Hudson River Park Ecosystem.

Current research goals focus on solidifying the understanding of the Estuarine Sanctuary's ecology, analyzing the river's habitats and their relationships with biotic resources, evaluating issues associated with pier demolition and construction, assessing impacts of combined sewer overflows, inventorying social use, and developing methods for improving habitat.
HRPT's future research objectives seek to support academic inquiry into the Park and Estuarine Sanctuary that increases the understanding of the Hudson River's unique resources and environmental conditions and complements ongoing research efforts elsewhere in the estuary.

C. TECHNICAL ADVISORY COMMITTEE

To aid in achieving the Plan's goals and objectives, HRPT will establish a Technical Advisory Committee ("TAC") to advise and assist HPRT on the oversight, facilitation, distribution and maintenance of efforts in resource protection, public access and recreation as they relate to the sanctuary, education, and scientific research efforts within the Estuarine Sanctuary. The TAC will be modeled after the Hudson River Estuary Management Advisory Committee and its members will be identified and selected by HRPT in consultation with the Hudson River Park Advisory Council and DEC.

D. ACTION PLAN (APPENDIX A)

To initiate implementation of the objectives cited above, HRPT has developed an Estuarine Sanctuary Action Plan. For the ESMP to be a useful management tool, it is anticipated that the Action Plan will be updated every three years and reassessed, in conjunction with park facility timelines. The Action Plan identifies near-term, short-term, and long-term implementation actions. Near-term actions will be those completed or near completion in the current action plan (2002-2005). Short-term actions are those that are planned for completion in the next action plan (2005-2008) and are sometimes associated with physical structures that will be developed as the park facilities are constructed. Long-term Actions have a planning horizon in Action Plan 2008-2011.

The Action Plan's key implementation items are outlined as follows:

PRIORITY ACTION: As stated above, HRPT will establish a Technical Advisory Committee, in consultation with the Hudson River Park Advisory Council and DEC, to advise and assist HRPT in achieving all aspects of the ESMP goals and objectives**.**

RESOURCE PROTECTION ACTIONS

Preservation and Protection Objectives

- Manage park sites and facilities to protect the integrity of the natural resources of the Lower Hudson River estuary.
- Monitor and minimize public use impacts on water quality and sensitive species.
- Prepare a status report on key species within the sanctuary.
- Protect the seasonal use of the Sanctuary by key species.
- Adopt policies for the use and management of pesticides, fertilizers and anti-foulants that avoid or minimize the need for chemicals and encourage organic alternatives.
- Develop waste-management and recycling programs that minimize the waste stream and incorporate litter control.
- Develop and enforce pollution protection programs to minimize chemical discharge.

Enhancement Objectives

- Work with government agencies to achieve water quality levels needed for unrestricted use of the Hudson River.
- Coordinate habitat enhancement plans with academic and research institutions.
- Promote landscaping with native plants.
- Research and promote use of energy efficient facilities and equipment.
- Integrate environmentally friendly materials into park features and operations.

- Further positive trends in biological productivity, abundance and/or diversity.

PUBLIC ACCESS AND RECREATION ACTIONS

- Complete design and construction to facilitate participation in a broad range of activities related to the Hudson River's recreational values.

- Continue to provide and expand safe access to the Hudson River by creating additional boating and docking opportunities.

- Establish and manage water surface zones to maximize enjoyment and passive appreciation of the Hudson River environment and minimize in-water conflicts between different types of park activities and users.

- Enforce and encourage diverse and safe boating activities that do not have significant adverse impacts on Sanctuary ecology and, allow recreational opportunities for non-boaters.

- Enforce rules and safety measures for access to the water.

- Expand opportunities for recreational fishing.

- Maintain affiliations with local, regional, state, national and international open space organizations.

- Provide barrier-free access to facilitate full enjoyment of the Park's water areas.

- Limit signage to protect uninterrupted views and scenic enjoyment of the River.

- Minimize the adverse effects of created waves on recreational activities and special park features.

EDUCATION ACTIONS

- Promote knowledge of the Hudson River's ecosystem, prehistory and history by expanding youth and adult educational programs.

- Provide facilities where park visitors can gain an appreciation and understanding of the River's ecology, the Estuarine Sanctuary, cultural history, maritime history, and anthropogenic history.

- Develop partnerships with educational and cultural institutions knowledgeable about the River's ecology and history to offer programs and interpretive materials for park visitors.

- Provide ecological and historic interpretive elements.

- Develop a range of written materials to facilitate public education.

- Provide opportunities for students and volunteers to gain knowledge of the Hudson River through internships and training.

RESEARCH ACTIONS

- Provide opportunities for academic and research institutions to augment past and current research and develop new initiatives.
- Utilize research to monitor the effectiveness of the Estuarine Sanctuary resource protection preservation, protection, and enhancements; public access and recreation; education; and, research efforts.
- Monitor recreation throughout the Park and Estuarine Sanctuary including user groups, activity locations, and the relevance of behavioral information to design planning, and management.
- Support research that evaluates the potential for regenerated wetlands and other innovative restoration and creation projects that aid the environment.
- Ensure that research results are publicly accessible.
- Establish an accessible, technical library system on the Estuarine Sanctuary's data, history and environment.
- Foster an active climate for research support and funding including grants, scientists-in-residence, internships, equipment, and facilities.

MONITORING AND ENFORCEMENT

- Coordinate enforcement among HRPT, Local, City, State, and Federal agencies.
- Oversee design, planning and construction activities to ensure compliance with permit conditions.

E. NATURAL RESOURCES INVESTIGATIONS (Appendix B)

Over seventy publications on investigations over the past thirty years within or in the vicinity of the Hudson River Park Estuarine Sanctuary are listed.

F. RESPONSIVE SUMMARY (Appendix C)

As stated previously, in September 2001, a fully developed draft ESMP was released for public review and comment. A total of 143 comments were received during the public review process. The public comments are addressed in the annexed *Responsive Summary*.

G. ORGANIZATION (Appendix D) AND BUDGETING

Organization and sanctuary budgeting are discussed in Chapter 1 with budget tables, implementation schedules, and responsible parties. These are further referenced to the Action Plan of proposed activities. The HRPT Organizational Chart is shown in Appendix D.

Chapter 1: Background and Park Description

A. PURPOSE AND NEED

INTRODUCTION

In September 1998, Governor George E. Pataki signed The Hudson River Park Act (the Act), Chapter 592 of the Laws of 1998. The Act designated the Hudson River Park along the West Side of Manhattan, generally between Battery Place and West 59th Street (see Figures 1-1 and 1-2). It also created the Hudson River Park Trust (HRPT) to design, build and operate the park, and designated the park's approximately 400 water acres as an "estuarine sanctuary." Noting that the Hudson River within the Park is a "critical habitat worthy of special protection," the Act further charged HRPT with developing an "estuarine sanctuary management plan" in consultation with the New York State Department of Environmental Conservation (DEC) and other agencies and organizations. The Act states that the Estuarine Sanctuary Management Plan is subject to the approval of DEC.

This Hudson River Park Estuarine Sanctuary Management Plan (ESMP) is a significant planning and management document for HRPT. Its purpose is to: (1) identify policies governing resource protection, facilitate public access and recreation in and along the water, and promote education and environmental research within the Sanctuary; (2) identify procedures for monitoring and enforcing policies, laws, and regulations that will protect the health of the Hudson River; and (3) provide guidance for both current and future park planners seeking to achieve the appropriate balance among public access, recreation, education, research, and natural resource protection programs in the Park. This management plan serves as a Base Plan for applying policies, procedures, and guidance to critical environmental decision making. The annexed Action Plan (Attachment A) brings specificity and task schedules to the Base Plan identifying the particular steps that will be taken within the three year Action Plan timeframe to achieve the ESMP's goals and objectives. Finally, the Responsive Summary (Attachment C) address comments received during the public review process.

The Hudson River Estuary is one of the most significant estuarine habitats in the United States. While the river provides a magnificent recreational opportunity, its aquatic habitat is also a diverse ecosystem of regional ecological importance. Reconnecting City and State residents with this natural feature will substantially increase understanding of the river. The ESMP is designed to preserve and protect resources while at the same time fostering compatible public recreation and other permitted uses within the park.

1. BACKGROUND

The Federal Coastal Zone Management Act (passed in 1972 and subsequently amended) resulted in the designation of a number of national estuarine research reserves across the country. Some reserves encompass thousands of square nautical miles, such as the Tijuana River National Research Reserve and the Florida Keys National Marine Sanctuary. In contrast, the Hudson River Park Estuarine Sanctuary is limited to a smaller geographic area of approximately 400 acres. The Hudson River Park Estuarine Sanctuary is located along one of the world's most densely populated cities and is bordered by a man-made edge which is an historic bulkhead. It also contains a variety of water-dependent municipal services and

commercial uses, such as a marine transfer station, ferries, excursion boats, and ocean liners. However, the Estuarine Sanctuary does lie within the borders of the National New York/ New Jersey Harbor Estuary Program.

This sanctuary status builds on estuary and harbor management planning already in place for the Lower Hudson River including the Hudson River Estuary Program (HREMAC). In 1982, HREMAC was established through a coordinated effort between the National Oceanic and Atmospheric Administration (NOAA), DEC, the New York State Department of State's (DOS) Division of Coastal Resources, the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP), other State agencies, and local governments. Through those efforts, four high-quality tidal wetlands along the Hudson River became part of the National Estuarine Research Reserve system: Stockport Flats, Tivoli Bays, Iona Island, and Piermont Marsh. The management plan for these systems, published in 1993, serves as a guide for this Estuarine Sanctuary Management Plan.

The ESMP is being developed under the direction of HRPT in consultation with DEC, the New York City Department of Environmental Protection (DEP), and other local, State, regional and Federal agencies with jurisdiction over the river, as well as with various institutions and community groups with an interest in the use and protection of the park and river environments.

B. HUDSON RIVER PARK

PARK COMPONENTS

Hudson River Park extends from Battery Place on the south (excluding Battery Park City) north to Pier 99 and West 59th Street. It comprises all of the lands and water west of the Route 9A corridor to the U.S. Pierhead Line and includes most of the piers, with a few exceptions (see Figure 1-1). The park elements, as defined for this study and also by the Hudson River Park Act, are discussed below.

WATER

The water portion of Hudson River Park is bounded on the south by the north bulkhead of Battery Park City and on the north by the north side of Pier 99 located at the foot of West 59th Street. The eastern boundary of the water area is a continuous historic bulkhead which includes relieving platforms. The west boundary is the U.S. Pierhead Line as designated in 1856 by the Commission for the Preservation of the Harbor. This line was delineated to protect the river's navigable channel. It was subsequently adopted by the Federal Rivers and Harbor Act of 1899 (as amended), and is also identified on the official map of the City of New York. The Act specifies that DEC has jurisdiction over "underwater lands held by the State" within this water area.

PIERS

The Sanctuary contains 36 piers, plus a number of platforms. Some of these structures are utilized for recreation and other purposes, but others are deteriorated, unsafe, and closed to the

public. Construction of commercial piers began on the Hudson in the early 1800's and progressed from south to north. Pier numbers followed this progression of development, and while many piers have been replaced or repaired over the years, they have retained their designated number. Maximum pier lengths are defined by the U.S. Pierhead Line.

Under the Act, piers not included in the park are: Pier 76*; Pier 78, which is privately owned by New York Waterway, a ferry operator; Piers 88, 90 and 92 which are currently, and will continue to be, managed by the City as passenger ship terminals; and Pier 94, which is being used for trade show operations by the City.

BULKHEAD

Nearly five miles of bulkhead define the high-water line of the Sanctuary. Constructed between 1871 and 1936, in large part by the New York City Department of Docks, this bulkhead stabilized the shoreline of the once industrial waterfront. The bulkhead has been determined to be eligible for listing on the State and National Registers of Historic Places. The ESMP addresses management of the river west of the bulkhead.

UPLAND

The Hudson River Park also includes upland area between the Route 9A bikeway/walkway and the bulkhead. The ESMP will not uniformly address the Park's upland elements, but does speak to upland issues of sustainability, habitat, and sanctuary-related features, such as the estuarium and ecological piers, and conflicting use. Those that potentially can potentially effect the Estuarine Sanctuary , such as fertilizing and litter control practices, are addressed by the plan.

PARK SEGMENTS

The Park is divided into six design segments. The southern-most segments, Segments 1 and 2, extend from Battery Place at the south to Harrison Street on the north (the north bulkhead of Battery Park City). These segments are not part of the ESMP, but are relevant to implementation, monitoring, and protection. The remaining Park segments are:

- Segment 3—Harrison Street to Clarkson Street, which includes Piers 25, 26, 32, 34, and 40;
- Segment 4—Clarkson Street to Horatio Street, which includes Piers 42, 45, 46, 49, and 51;
- Segment 5—Horatio Street to West 25th Street, which includes Piers 52a, 52, 53, 54, 56, 57, 58, 59, 60, 61, 62, 63, and 64;

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* Under the Act, the park will eventually include 50 percent of Pier 76, but this pier is currently City-owned and used by the New York Police Department (NYPD) for storing towed vehicles.

- Segment 6—West 25th to West 44th Street, which includes Piers 66, 66a, 72, 79, 81, 83, and 84; and

- Segment 7—West 44th to West 59th Street, which includes Piers 86, 95, 96, 97, 98 and 99.

C. CULTURAL HISTORY OF THE SANCTUARY

PREHISTORIC PERIOD

Earliest human occupation of the Lower Manhattan Valley dates back to the Paleo-Indian period, some 12,000 years ago. At this time, the Lower Hudson River Valley supported a wide range of big game animals and abundant plants that attracted Native Americans. In the subsequent early Archaic period, which dates back 9,500 years from the present, dependence on big game gave way to hunting small game, fishing, and gathering. Through the later Archaic period, the Lower Hudson River Valley experienced increased habitation, with increasing reliance on the river, a source of food and a prime location for encampments. Many of the Archaic period Native American sites discovered in the Northeast have been located along the Hudson River and its major tributaries.

This habitation pattern continued into the early Woodland period, which began some 3,000 years ago. While upland hunting and gathering remained important, fish provided a stable and reliable source of food. Maize and other plants were also domesticated. During this era, the New York coastal region and the eastern New York drainage basins were centers of Native American settlement. In the subsequent late Woodland period, through the time of the first European contact in the 17th century, larger and more permanent settlements near the river included inland rock shelter sites, coastal and island sites, inland sites on major drainage basins, and campsites located near swamps and along streams. Horticulture became more advanced, and hunting and gathering, including shellfish, continued. The crossing and trading location known as Sapokanikan located near what is now known as the Gansevoort Peninsula is the only known Native American site to have existed in the Hudson River Park area.

EUROPEAN DISCOVERY AND EARLY DEVELOPMENT

Written accounts of the natural wonders of the Lower Hudson River Estuary date from the earliest explorers, including Giovanni Verrazano (1524), Henry Hudson (1609), and the first Dutch settlers who described the lush oak-hickory forests of the coast with their rich diversity of aquatic and terrestrial wildlife. At that time, lower Manhattan was crossed by freshwater streams flowing into the Hudson River, including streams from Collect Pond, Minetta Brook, and marshlands in central Manhattan. By every account, the Hudson had abundant fish and shellfish, with blue crabs crowding the long flat shores and oysters up to a foot in length. It was said that oyster beds stretching from the natural tip of lower Manhattan north to Croton Point contained half the world's supply. Whales, porpoises, and seals frequented the waters off Manhattan, with Robbins Reef near the Statue of Liberty providing a popular haul-out for seals. Sturgeon, striped bass, white perch, shad, and other fish species were abundant.* The earliest

* An expanded discussion of the current natural resources conditions of the river is presented in Chapter 3,

people to benefit from this resource were the native Algonquian tribes, comprised of the Mahican, Delaware, and Wappinger confederations.

Dutch and then British settlers arriving in the early 17th century initiated a continuing alteration of the natural landscape, shoreline, and marine environments. When they arrived, most of the site that is currently the Hudson River Park was under water. Manhattan's western shoreline—bluffs with beaches below—ran between Greenwich and Washington Streets, and farther north between Tenth and Eleventh Avenues. Between West 44th and 55th Streets, the natural shoreline ran approximately along what is now the western boundary of Route 9A.

Early docks were built around 1730 near Battery Place and Liberty Street; the Washington Market was established on landfill between Fulton and Vesey Streets in the 1770's. The farmland between what are now West 14th and 125th Streets supplied produce to the growing city to the south. As people moved north to escape urban conditions in lower Manhattan, estates and small clustered settlements were built farther north.

A 1795 City ordinance called for the creation of West Street, beyond which no buildings or roads could be built; this street was not actually developed for some time. In 1811, the Commissioner's plan designated Manhattan's grid of streets. Construction of these new streets, many of which were not actually built until years later, required grading and filling, removing massive rock, flattening shoreline bluffs, and tearing down buildings that stood in the way. Streams were filled and the Great Kill, a large marsh once located around 42nd Street, was drained and channeled out to the river. While there were docks appearing along the Hudson River waterfront of lower Manhattan at this time, development of narrow piers at each street-end was more common farther north.

THE INDUSTRIAL AGE

For about 200 years, from the time of the New Amsterdam settlement at the lower tip of Manhattan, waterfront development was gradual. However, beginning in the early to mid-19th century and the days of the Industrial Revolution and following the invention of Fulton's steamship and the construction of the Erie Canal, New York City began to emerge as the nation's leading industrial port. Its waterfront transformed rapidly in response to this role as a maritime and manufacturing center of the industrial age. The deep waters of the Hudson River, coupled with miles of deep-draft navigable waterfront sheltered from the open sea, allowed New York Harbor to become one of the greatest ports in the world.

Waterfront piers and maritime and industrial buildings were constructed rapidly starting in the mid-19th century. In 1847, the New York Central Railroad extended a line along the waterfront providing freight service to the burgeoning industries, accelerating the growth of Manhattan's maritime/industrial waterfront.
As New York City and its harbor grew, significant physical modifications were made to the waterfront, including filling to expand the upland, and bulkheading that modified the shoreline.

"Resource Protection."

As inland development proceeded, sewers were installed that carried storm and sewage west to the river for untreated discharge. By the mid-1800's, with the advent of the steamship and longer ships requiring deeper berths, the growing demand for coal in New York City, and international trade, the Hudson River waterfront developed rapidly. The Hudson River Railroad, built in 1847 along Eleventh Avenue (near the shoreline at the time), brought industry to this new industrial west side. Large rail yards were built between West 30th and 37th Streets. Numerous industries—among them lumberyards, brick yards, kilns, stables, warehouses, slaughterhouses, coal yards, gas plants, iron works, and others—soon followed. Piers were built to serve these industries.

Three other railroad companies were also established at this time, using barges to transport freight to and from their yards in New Jersey. To accommodate this growth, massive earth-moving activities filled in the valleys and leveled hills. The shoreline was pushed farther and farther west by filling, with rock and earth from street construction, refuse, and sunken ships. Uncontrolled filling and haphazard waterfront construction lead to the creation of the City's Department of Docks in 1870. The Department's efforts resulted in the construction of a solid block, granite wall, and relieving platform that replaced the shoreline along Manhattan's Hudson River waterfront over the next 60 years.

As industrial development moved forward into the 20th century, the west-side piers were increasingly used by larger transatlantic passenger and freight vessels. In response, through the 1890's and early 1900's, the City built a number of west-side piers long enough to accommodate the new, larger steamships. Almost a half block of land was removed from the western shoreline for these new piers, between approximately Little West 12th and West 22nd Streets. In the 1910's, new ocean steamship terminals required the removal of 250 feet of land between West 44th and 52nd Streets. By the early 1920's, the waterfront along the Hudson River Park Estuarine Sanctuary was entirely developed. Eventually, nearly one hundred piers lined Manhattan's west side to serve the maritime shipping trades and passenger liners. There were also numerous ferries and rail floats connecting the west side with the New Jersey Hudson River waterfront, which was the eastern terminus for many cross-country rail lines. Inland, the New York City's population grew dramatically, as the waterfront and industrial workers settled in tenement housing in places like "Hells Kitchen," a neighborhood west of Eighth Avenue between West 30th and West 57th Streets (centered on 39th Street).

While this was a period of great economic growth for New York City and region, development took a toll on the once bountiful natural resources. As a result, water quality and the previously abundant marine life suffered. Oyster beds that had lined the shores disappeared and many of the fin fish populations declined.

WATERFRONT DECLINE AND REDEVELOPMENT PLANNING

Beginning in the mid-20th century, but particularly after World War II, the Hudson River working waterfront began further decline due to changes in maritime cargo shipping with a shift away from rail transport, outmoded facilities, and the development of new containerized cargo terminals along the Port Newark and Elizabeth waterfronts in New Jersey.

The City attempted to retain some of this activity by constructing new piers, but this met with little success. By the 1960's, maritime activity along Manhattan's west side, south of West 72nd Street, was limited to a few small "break-bulk" shippers and cruise ships. As a result, most of

the piers were unused and poorly maintained. Efforts to stem the decline by modernizing and rebuilding remaining piers failed. One after another, the piers closed and many were demolished. Those left standing and structurally sound were converted to other uses. In the 1970's, the piers between Pier 1 on the south and Pier 23 on the north, a distance of about one mile, were demolished and the Hudson River was filled with material excavated to create the foundations of the World Trade Center complex. This newly created land, the last of its kind after hundreds of years of landfilling, is now Battery Park City.

Around this time, the elevated West Side Highway, then 30 to 40 years old, needed extensive repair and maintenance. In the early 1970's, sections of the highway began to collapse and the roadway had to be closed. Plans for a replacement highway and waterfront redevelopment were developed by the New York State Department of Transportation (DOT) and the Federal Highway Administration (FHWA). This ambitious proposal, known as Westway, contemplated a link in the interstate highway system connecting the Brooklyn-Battery and Lincoln Tunnels via a tunnel under new land to be created by filling in the Hudson River south of 34th Street. A plan for the created upland proposed recreation and mixed-use development, while maintaining access to the then-remaining freight and passenger ship piers north of 35th Street. This proposal encountered significant criticism, particularly with respect to the potential for impacts on the natural resources of the river. Westway was challenged in the courts and was eventually abandoned in 1985. Federal funds were then directed to mass transit and local roadway improvements, with a more modest proposal for a Route 9A at-grade replacement roadway from Battery Place to West 59th Street. This set the stage for a new comprehensive proposal for the waterfront, piers, and water area that are now the Hudson River Park.

While the active industrial waterfront declined in the latter half of the 20th century, improvements to water quality were occurring due largely to the elimination of raw sewage discharge into the Hudson River. This began with the 1986 opening of the North River Water Pollution Control Plant (WPCP) located north of the Park, at about 145th Street. Until that time, much of the sewage from the west side of Manhattan had been discharged directly (untreated) into the Hudson River. The declining industrial impacts, along with water quality improvement projects both within the area and throughout the estuary as a whole, resulted in a resurgent aquatic community.

Future efforts to improve water quality, by addressing such problems as combined sewer overflows, are expected to continue this positive trend and support Hudson River estuary habitat. The water quality improvements have also supported the emergence of a new relationship between New York City residents and their use and perceptions of the river. As water quality improved, there was a renewed interest in fishing and boating on the river, and even consideration for swimming. This reconnection with the river was an important factor in the waterfront park planning processes of the later 1980's through the 1990's.

D. PLANNING HISTORY

WEST SIDE TASK FORCE

Once the Westway plan was abandoned in 1985, the Governor of New York State and the Mayor of New York City appointed a West Side Task Force to develop recommendations for the reconstruction of the west-side highway and to establish guidelines for the future development of the waterfront. In its final report (dated January 8, 1987), the Task Force recommended that the roadway be a six-lane, at-grade, urban boulevard "subject to further detailed examination," and endorsed a plan for a "broad public esplanade containing a continuous walkway, a bicycle path, and other active and passive uses coordinated to draw people to the waterfront." Subsequently, DOT established the Route 9A Reconstruction Project to plan and build the highway and an associated bikeway/walkway, based on the Task Force concepts.

WEST SIDE WATERFRONT PANEL

In 1988, acting on Task Force recommendations, the Governor and the Mayor created the West Side Waterfront Panel to develop design guidelines and a financing mechanism for a Hudson River esplanade, to develop land use recommendations for the piers and waterfront area, and to coordinate the Panel's work with the planning efforts for the reconstruction of Route 9A. The panel advanced the recommendations of the Task Force, extending the park study area from 42nd Street (the Task Force's northern boundary) to 59th Street, advocating the restoration and preservation of 13 public piers, and setting restrictive limits on new waterfront development. Working together with community groups, waterfront users, and business, civic, and labor leaders, as well as government agencies and elected officials, the panel prepared its recommendations and issued a plan entitled, "A Vision for the Hudson River Waterfront Park," (the Vision Statement) in November 1990.

Also in 1990, Section 383-a of Chapter 190 of the Laws of 1990 of the State of New York established limits on construction in and along the river from Battery Park north to West 35th Street.

HUDSON RIVER PARK CONSERVANCY

The Panel's Vision Statement recommended that the Governor and the Mayor create a successor organization to oversee the planning, design, permitting, and construction of a proposed park. That organization was the Hudson River Park Conservancy (HRPC), created by a 1992 Memorandum of Understanding (MOU) between the State and City, and made a subsidiary of the Empire State Development Corporation (ESDC). The mandate of the HRPC was to further the park plan, secure regulatory approvals, and construct the waterfront park. The Park was to be funded predominantly by capital from the State and City. Park-compatible, revenue-producing uses were to support park construction financing and maintenance.
HRPC set about meeting its objectives in two ways. The first was to refine the Vision Statement and produce a more specific design plan through a community design process. For this task, HRPC hired a master design consultant. In addition, professional landscape architects were selected by each Community Board and engaged by HRPC to serve as the local community liaisons in the design process. This broad-based community design initiative began in 1994 and lasted for a full year.

During this process, HRPC and the design team refined the park plan; listened to park user issues, needs, and suggestions that were elicited during the public outreach program; revised the project's goals and objectives; and developed the Concept and Financial Plan (the Concept

Plan) for the Hudson River Park. Completed in 1995, the Concept Plan presented a preliminary plan for the Park that was subject to further definition, review, and revision as programming and engineering details were examined. However, the plan was specific enough to be the point of departure in preparing an Environmental Impact Statement (EIS).

As park planning continued, HRPC issued the Design Guidelines Master Plan in October 1997. The Design Guidelines Master Plan established a design philosophy for the Park, and provided direction for future designers about consistent overall park components including entrances, the waterside esplanade, and provision of public access to the river. Additional purposes were to identify essential activities, uses, and design elements that must be included as more detailed designs are drafted, and to ensure that as the park design progresses, and the goals of the Park were attained.

The Design Guidelines Master Plan was guided by three principal themes: the river as a great natural and recreational resource; the cultural and human history of the river and its waterfront; and, connections to Manhattan's west-side neighborhoods.

Because public access is one of the primary goals of the Park, the plan called for renewed public access and recreational space on the piers. Ten major "gateway" entrances were proposed at key cross streets to provide safe access across Route 9A and connect Manhattan's west-side neighborhoods with the Park. Historical and ecological interpretation was suggested to enhance the park experience and further celebrate the links between the City and its waterfront. Several design elements were intended to get park users closer to the Hudson River, including look-outs and "get-downs." Boating facilities, including non-motorized watercraft launches and boat houses, water taxi landings, boat moorings, and docking facilities were proposed for on-water recreation.

Natural resource protection is another objective. To further an understanding of the ecological importance of the river, plans call for an "estuarium" as well as "ecological piers,"pile fields, and upland restoration to provide habitat for native plants, birds, and fish.

As planning for the Park continued, HRPC and ESDC commenced the project's environmental review process. Following two public scoping sessions, project planners released a Draft Environmental Impact Statement (DEIS) in April 1997. The DEIS was prepared pursuant to the State Environmental Quality Review Act (SEQRA) and its implementing regulations and the City Environmental Quality Review (CEQR) local law. After a public hearing in February 1998 and a public comment period, a Final Environmental Impact Statement (FEIS) was issued in May 1998. Following another 30-day comment period and adoption of the Statement of Findings in July 1998 by ESDC, the SEQRA lead agency, the State completed the environmental review process for the Park. Meanwhile, permit applications had been filed with DEC and the U.S. Army Corps of Engineers (ACOE).

HUDSON RIVER PARK ACT

In June 1998, the New York State legislature passed the Hudson River Park Act. Signed by Governor George E. Pataki in September 1998, the Act formally designated the project area as a park and established HRPT to continue the planning, construction, management, and operation of the park. In approving the Act, the State legislature found that:

- Planning and development of the Hudson River Park as a public resource was a matter of State concern and in the interest of the people of the State. Further, the Park will enhance the ability of New Yorkers to enjoy the Hudson River, one of the great natural and public resources of the State.

- The marine environment of the Park is known to provide critical habitat for striped bass and other aquatic species. It is in the public interest to protect and conserve this habitat.

- Quality of life and economic benefits can be derived from creating the Park.

- The Park will encourage, promote, and expand public access to the river, promote water-based recreation, and enhance the natural, cultural and historic aspects of the Hudson River.

- It is in the public interest to encourage park uses and allow limited commercial uses in the Park.

The Act defines how the Park areas may be used. For example, it cites Piers 25, 26, 32, 34, 42, 45, 46, 51, 54, 62, 63, 64, 84, 95, 96, and 97 and the railroad float bridge as being dedicated exclusively to park use. In addition, according to the Act, at least 50 percent of the footprint of Pier 40 is to be set aside as public open space (passive or active).

"Park use" as defined by the Act includes: passive and active public open space uses; the arts and performing arts; small-scale boating for recreational and educational purposes that enhance access to, and enjoyment of, the water; environmental education and research, including museums; historic or cultural preservation including historic ships and vessels; wildlife and habitat protection; and facilities incidental to public access for enjoyment of park uses such as concession and information stands, comfort stations, boathouses, marinas, and water taxis.

Specifically prohibited are residential, manufacturing, commercial office and warehousing, hotels, incompatible government uses, casino and riverboat gambling, and most motorized aircraft. Facilities specifically cited as not being a "park" use are amusement parks, television and film studios, commercial for-profit cinemas, and parking facilities.

In accordance with the Act, State lands within the Park are under the jurisdiction of the State Office of Parks, Recreation, and Historic Preservation (OPRHP), underwater lands are under the jurisdiction of the DEC, and City of New York property is under the jurisdiction of the New York City Department of Parks and Recreation (DPR). HRPT assumes the management of the lands and waters under lease agreements with the City and State.

To protect and enhance the Hudson River Park Estuarine Sanctuary, the Act requires HRPT to develop a Hudson River Park Estuarine Sanctuary Management Plan (ESMP). The Act designates the Park's water section as an Estuarine Sanctuary "subject to the environmental conservation law including the Hudson River Estuary Management Program established pursuant to Section 11-0306 . . . and the rules, regulations, and guidelines of the [DEC] applicable to that program, as well as . . . the restrictions and limitations set forth in this Act." In requiring the ESMP, the legislature recognized that the water area within the Park is an important habitat for many marine and estuarine species. The Act requires preparation of the ESMP in consultation

with DEC, DEP, and other City, State, and Federal agencies, as well as any appropriate educational and research institutes. Mandates for the plan are to:

- Conserve marine resources found in the Sanctuary with special consideration for habitat values;
- Provide for environmental education and research; and
- Allow public recreational use of the water for boating, fishing, and swimming and authorized commercial maritime uses and other permitted water-dependent uses.

The Act notes that the ESMP may designate water surface use zones where motorized and non-motorized craft can travel with preservation zones or restrictions on noise and other potential nuisance conditions.
In addition to the limitations imposed through the adoption of the ESMP, the Act mandates that within the water area:

- Only water-dependent uses are permitted;
- In the aggregate, no more than eight acres of the Park's water area may be covered or altered by floating structures or minor improvements;
- Structures built on floating structures must be limited to one-story and must be water-dependent; and
- No excavation or placement of dredge spoils are allowed.

A copy of the Act can be found at www.hudsonriverpark.org.

E. APPLICABLE ENVIRONMENTAL AND LAND USE LAWS AND PUBLIC POLICIES

Construction of the Hudson River Park requires both Federal and State environmental permits. These permits have been issued; however, at this time, HRPT has received authorization to construct only the elements in Segment 4 for which the detailed 60 percent construction drawings have been submitted. Provided below is a discussion of relevant permits and policies and how the ESMP complies with and complements these processes.

FEDERAL AND STATE PERMITS

In-water construction requires State and Federal permits from DEC and ACOE, respectively, as well as a Coastal Zone Consistency determination from the New York State Department of State (DOS) to support the Federal review.

The Park has received the following permits and approvals.

- Section 10 of the Rivers and Harbors Act of 1899. Under this Federal law, ACOE is empowered to regulate all new structures in navigable waters. It is the purpose of this law to protect navigation and navigable channels. Navigable waters include all water area up to the mean high-water line. New structures such as floating docks, moorings, and pier reconstruction are regulated pursuant to this law.

- Section 404 of the Federal Clean Water Act of 1987. ACOE is directed to regulate dredging or filling in navigable waters. Subject to this review are activities such as the proposed protective wrapping around pier piles. This is considered to be filling, and is therefore regulated pursuant to this Federal law. In regulating such activities, Section 404 requires, as a condition of Federal permit approval, a State water quality certificate to acknowledge that the proposed activities will not contravene State water quality standards. By inter-agency agreement, the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA), the Marine Wetlands Protection Branch of the U.S. Environmental Protection Agency (EPA), and the U.S. Fish and Wildlife Service of the Department of Interior, review and comment on these permit applications.

- Coastal Zone Consistency. Federal permits, in states such as New York that have approved coastal zone consistency programs, must be accompanied by a Coastal Zone Consistency determination. In New York State, these consistency determinations are made by the Division of Coastal Resources of DOS. The State's Coastal Zone Management and Consistency Review Procedures are outlined in 19 NYCRR Part 600 and include coordination with New York City Department of City Planning (DCP).

- Historic Preservation. Requirements of the Federal 1966 Historic Preservation Act and the State Historic Preservation Program must also be satisfied through a process known as a Section 106 review. This process accompanies the review of all Federal permits. The Section 106 review process is complete and a Programmatic Agreement dated March 31, 2000 was executed among ACOE, the Advisory Council on Historic Preservation, the New York State Historic Preservation Officer, and HRPT.

- Article 25, State Tidal Wetlands Law. State regulation of tidal wetlands began in the mid-1970's with the Tidal Wetlands Act (Article 25 of the Environmental Conservation Laws) and the subsequent Tidal Wetland Land Use Regulations found at 6 NYCRR Part 661 of the NYCRR. Tidal wetlands consist of all the tidal waters of the State and the tidal marshes, flats, and shorelines. Much of the Hudson River is mapped as a tidal wetland except that portion of the Park located within the pierhead line from West 35th Street south to Pier 25. The wetland categories defined in the regulations are based on vegetative cover and frequency of inundation and there is no minimum wetland size for regulation. However, for tidal wetlands (littoral zones), as is the case along most of the Park, DEC jurisdiction ends at 6 feet below mean low water. The categories of tidal wetlands, the restrictions on activities in and around them, and the standards for review of applications and permit issuance are defined in detail in Part 661. Activities that would occur along the shoreline or create new structures in the Hudson River are regulated under Article 25.

- Article 15, Protection of Waters. Protection of waters authorization is required for disturbance in the water, including such activities as pier construction, as well as dredging and filling. It is intended to limit impacts to water bodies pursuant to the Environmental Conservation Law Title 5, Article 15. To implement this policy, the Protection of Waters

Regulatory Program is designed to prevent undesirable activities on or in water bodies by establishing and enforcing regulations that are: compatible with the preservation, protection, and enhancement of the current and potential values of the natural resources; protective of the public health and welfare; and, consistent with the reasonable economic and social development of the state.

- The protection of waters program regulates disturbance of the bed or banks of a river or other water body; construction and maintenance of dams; and, excavation or filling in navigable waters. Proposed activities such as wrapping of piles are regulated under this program.

DEC issued Article 25 and Article 15 permits on February 5, 1999 and the ACOE issued Section 10 and Section 404 permits on May 31, 2000. All other permits and approvals have also been received and HRPT has commenced park construction. As stated above, permit conditions from both agencies require HRPT to submit comparable 60-percent detailed plans for all park segments for agency review prior to construction.
In issuing the permits, both DEC and ACOE identified numerous permit conditions, including the following:

- No in-water construction work can occur between November 1st and April 30th in order to protect the critical overwintering period for marine life that utilizes the Park.

- No discharge of fill is allowed with the exception of: the construction of beach areas at the Gansevoort Peninsula and immediately south of Pier 76; jacketing to protect pier piles; and, maintenance of infrastructure, such as bulkhead repairs (repaired bulkheads must not be more than 18 inches into the water from the existing bulkhead). All backfill must be clean material such as sand, gravel, or crushed rock.

- No increase in the historic load-bearing capacity of the piers to be repaired or reconstructed.

- No more than a 10-percent increase or decrease in the pile density below piers to be re-constructed or repaired during the construction process. A density of 75 percent is to be maintained in pile fields after the completion of construction.

- Techniques to protect water quality during construction such as floating containment booms, and other mechanisms, such as floating platforms, to minimize the potential for drift and suspension of debris.

SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT

The Hudson River Park is part of the Lower Hudson River Significant Coastal Fish and Wildlife Habitat, as designated by NYSDOS in 1992. While the designation report recognizes that most of the shoreline along this reach of the habitat has been disturbed through filling, bulkheading, and development, this ecosystem is considered one of only a few large tidal river

systems in the northeastern United States and provides important ecological features. For example, as stated in the designation report, the Lower Hudson River provides wintering habitat for large numbers of striped bass between mid-November and mid-April and, may be critical habitat in the life cycle of the striped bass by providing a sheltered environment with abundant food sources associated with the winter position of the river's salt front.

Juvenile striped bass may also take advantage of physiological or ecological benefits associated with the transition area between estuarine brackish and higher-salinity coastal environments. Fish surveys have also found summer/winter flounder, white perch, Atlantic tomcod, Atlantic silversides, bay anchovy, hogchokers and American eel in significant numbers. This reach may also be important for bluefish and weakfish young-of-year and both Atlantic sturgeon and shortnose (adult only) sturgeon. American shad and blue crabs also contribute to the fishery. Biota of the lower trophic levels are also present in substantial numbers and provide an important food source. These include planktonic forms such as copepods, rotifers, mysid shrimp, and benthic forms such as nematodes, oligochaetes, polychaetes, and amphipods.

As recommended in the designation report, current habitat values can be protected by maintaining the types of structural diversity found along the shoreline, limiting or preventing dredging, and filling or platforming on dense piles in this region of the Hudson River. In issuing its Coastal Zone Consistency determination, DOS found the Park project to be consistent with the preservation and protection objectives of this habitat.

CITY AND STATE ENVIRONMENTAL REVIEW

As stated above, an environmental review of the Hudson River Park was completed in accordance with SEQRA (Article 8 of the State Environmental Conservation laws), and its implementing regulations
(6 NYCRR, Part 617) and CEQR Executive Order 91. ESDC was the lead agency in this process. The environmental review process for the proposed park is complete.

NEW YORK CITY ZONING

A zoning text amendment was required to allow parkland in the M2 and M3, New York City zoning districts that cover the Park (south of 59th Street). The zoning text amendment was approved in September 1998. The project has also complied with a special zoning certification of New York City's zoning resolution (62-711[e]) with respect to waterfront public access and visual corridors and, has demonstrated compliance with the zoning text amendment through a waterfront access plan.

NEW YORK CITY LOCAL WATERFRONT REVITALIZATION PROGRAM

The Park was designed in conformity with the policies stated in the New York City's Local Waterfront Revitalization Program (LWRP). The LWRP was developed in accordance with State's Coastal Zone Management Program and the Federal Coastal Zone Management Act. The City's LWRP was approved by DOS and NOAA in 1982. The LWRP identifies the Hudson River waterfront as an area in need of public access. Other objectives were preservation and en-

hancement of visual quality and view corridors, preservation of historic resources, and protection of water resources and aquatic habitat.

An examination of the consistency of the Park with the policies of the LWRP was made during the environmental review process and examined by DOS pursuant to the coastal zone consistency provisions of the Federal permit review process. A compliance statement prepared by DOS found that the Park is consistent with the 44 State and 12 City policies of the LWRP.

NEW YORK CITY COMPREHENSIVE WATERFRONT PLAN

In 1992, the New York City adopted the NYC Comprehensive Waterfront Plan (Reclaiming the City's Edge). This was a comprehensive examination of New York City's waterfront and established a series of recommendations for the various reaches along its' 564 miles of waterfront. Recommended for the Hudson River Park reach was increased waterfront access, a continuous esplanade, and continued dockage for excursion and cruise ships. The Park meets the objectives of this plan.

COMPREHENSIVE MANHATTAN WATERFRONT PLAN

The Comprehensive Manhattan Waterfront Plan was released by the Manhattan Borough President in 1995 and a modified plan was adopted as New York City policy under Section 197-a of the New York City Charter. With specific proposals for each of Manhattan's waterfront segments, the plan calls for increased ferry transportation, tourist attractions, waterborne cargo transportation, and a continuous publicly accessible esplanade around the island. On the Hudson River waterfront south of 59th Street, the plan supports the objectives of a Hudson River Park, proposing to replace such incompatible uses as parking, tow pounds, and warehousing, with recreational and tourist facilities. This ESMP furthers the recommendations of that plan.

HUDSON RIVER VALLEY GREENWAY

In 1988, the New York State Legislature created the Hudson River Valley Greenway Council to study ways to enhance public use and enjoyment of the Hudson River Valley from the Battery in Manhattan to the Mohawk River north of Albany. The resulting report recommended that a Greenway be created by: (1) designating a geographical region encompassing the 12 counties along the Hudson River; (2) establishing a voluntary Hudson River compact, called the Hudson River Valley Greenway Committee, initially composed of the 82 municipalities and counties in the 12-county valley; (3) creating a Greenway Conservancy to fund and provide technical assistance for projects in the development of the Greenway; and (4), establishing a Hudson River Trail to extend along both sides of the river. This ESMP supports the Greenway and the Hudson River Park is a vital link in the waterfront trail.

PUBLIC TRUST DOCTRINE

The Public Trust Doctrine is a common-law doctrine that dates back to Roman times. The ancient doctrine held that, "by the law of nature these things are common to all mankind; the air, running water, the sea, and consequently the shores of the sea." Water bodies were important for commerce, sustenance, and survival, and the need for access to the shoreline and waters has been recognized historically. These rights of the public are called Public Trust Rights. Unless these rights have been conveyed, the State retains these underwater lands and waters "in trust" for the benefit of the public, hence the title Public Trust Doctrine.

Hudson River Park meets the intent of the Public Trust Doctrine by opening the waterfront to the people and enhancing access to and on the water.

F. PUBLIC INPUT AND REVIEW

PARK PLAN DEVELOPMENT

Public participation and input to the park design process has been a precept of the Hudson River Park planning process since its inception. HRPT and its predecessors have worked with local community boards, the Hudson River Park Conservancy Advisory Board and HRPT Advisory Council, and dozens of civic and environmental organizations throughout the planning process to ensure that the Park serves the public to the highest possible degree. This outreach effort began with hiring professional landscape architects to serve as community liaisons and holding a series of design charrettes, community workshops, and meetings (more than 120 gatherings in all), as well as publishing advertisements and mailings to over 7,500 local residents, all in preparation of the original Concept and Financial Plan.

As part of the subsequent Design Guidelines Master Plan effort, which further refined the Concept and Financial Plan, HRPC hosted five open houses attended by involved groups and concerned individuals, including Federal, State and City agencies; Manhattan Community Boards 1, 2, and 4; local business improvement districts; environmental and arts organizations; and many agencies and local organizations. Comments received during this phase were incorporated into the draft Design Guidelines Master Plan, released in July 1997. Following the release of the draft, HRPC received additional comments from the public and issued a revised final Master Plan in October 1997.
There was also considerable public and community input throughout the environmental review process. Following two public scoping meetings, a public hearing was held on the draft environmental impact statement (DEIS) in February 1998, with a subsequent period allowed for submitting written comments. In total, 240 commentors submitted written correspondence or spoke at the public hearing. The final environmental impact statement (FEIS) then responded to each of the 356 comments on the DEIS. Upon publication of the FEIS, an additional written comment period of 30 days took place prior to adoption of the Statement of Findings.

Further public hearings took place as part of the permitting processes. DEC published a Notice of Public Hearing on the Joint Application in the Environmental Notice Bulletin and the Daily News in July 1998 and held a public hearing on September 17, 1998. Over 100 people attended the hearing and 43 individuals spoke. Others submitted written comments. An Administrative Law Judge presided over the hearing. Afterwards, the judge held an issues conference to determine whether an ajudicatory hearing was required. After two days of hearings and lengthy

legal briefs, the judge found that the adjudicatory hearing was not necessary and that the permits should be issued. That decision was never appealed to the DEC commissioner or challenged in the courts.

ACOE also conducted a lengthy public review process before issuing its permits. On June 16, 1998, ACOE published Public Notice Number 98-00290-Y3 describing the project, announcing a public hearing on July 16, 1998, and requesting public comment. On February 18, 1999, ACOE issued a Supplemental Public Notice to elicit further comments in response to modifications to the overall application.

In addition, ACOE and the Advisory Council on Historic Preservation held two public consultation meetings and written comment periods to address historical issues.

ESTUARINE SANCTUARY PUBLIC PARTICIPATION PROCESS

As part of the public participation process, in July 2000 a Draft Scope of Work for preparation of the Estuarine Sanctuary Management Plan was distributed to interested agencies and the general public. This scope of work was accompanied by a preliminary draft of Chapter 1, "Background and Park Description." Subsequently, on September 13, 2000 a public meeting was held to take comments on that draft. This meeting was held by the Trust, along with members of the Trust's Sanctuary Plan Commitee, as well as DEC. A total of 15 people spoke at that public meeting including representatives of Chelsea Waterside Park, the Hudson River Watertrail Association, the New York Audubon Society, the River Project, the Hudson River Park Alliance, Friends of Hudson River Park, the Working Waterfront Association, the Clean Air Campaign, and the Downtown Boat House.

In addition to the public meeting, a period for submitting written public comments remained open until September 25, 2000. Written comments on the plan were submitted by the Friends of the Earth, The Fox Group, the Waterways Committee of the Hudson River Park Advisory Council and the Waterfront Committee of the Hudson River Park Advisory Council, the Waterfront Committee of the Hudson River Park Alliance, the DEC's Bureau of Marine Resources, the New York City Audubon Society, the Hudson River Park Alliance, and the Natural Resources Defense Council.

Following the close of the public comment period, HRPT staff and the consultants prepared the full draft ESMP and Action plan incorporating comments received from the involved agencies and interested organizations and individuals. This draft was revised and a public review draft was published in September 2001. The ESMP was placed on the Hudson River Park web site and released for a public comment period.

The comment period on the ESMP extended until December 24, 2001. A Public Meeting on the draft Estuarine Sanctuary Management Plan was held on November 27, 2001. Comments received during the public review process were lengthy but overall positive and constructive. Where appropriate, comments were incorporated into the revised ESMP. The annexed Response to Comments addresses the comments received throughout this process.

G. CURRENT AND PROPOSED PARK FACILITIES

Provided below is a detailed description of park facilities including those uses that are currently in-place and those that are approved as in-water elements of the Park. Hudson River Park will include many features that have no direct physical connection to the water (e.g., passive seating and viewing areas, pathways, and sports fields). Such uses have been defined and analyzed in other documents related to the project and will not be addressed in detail within the ESMP. Rather, the ESMP will focus on in-water activities for which permits were sought and on any other activities that would involve interaction with the Estuarine Sanctuary, such as litter control and pesticide policies. In addition to the pier uses and descriptions below, Table 1-1, at the end of this chapter, summarizes proposed new water components of the Park.

CURRENT AND APPROVED ACTIVITIES ON THE PIERS

Segment 3

Pier 25: Current. Manhattan Youth Recreation and Resources, Inc., has a monthly permit on Pier 25 for public and private recreational use, including a children's play area, a small cafe, miniature golf, beach volleyball, and a sculpture garden. An historic vessel—the Yankee—an approximately 70-foot vessel, is docked on the north side of the pier. On the western portion of the pier is a deck that provides chairs for sunning and views of Lower Manhattan and the harbor. Beyond the deck, the western portion of the pier is a pile field (deck removed).

Approved. This pier is to be fully rebuilt for passive and active public recreation. A small food concession will occupy no more than 10 percent of the pier deck. There will be a town dock and up to 40 moorings provided south of the pier with a water taxi landing, get-down, and historic vessel docking is contemplated as well. HRPT has also committed to installing a sewage pumpout here and plans a get-down between Piers 25 and 26.

Pier 26: Current. The Downtown Boathouse and The River Project each have a monthly permit for a portion of Pier 26. The Downtown Boathouse operates a floating launch for small water craft and kayaks. A davit is used for launching craft, and there is a gangway and floating docks. The western portion of the pier is a pile field (deck removed). An existing building provides space for boat storage.

The River Project operates a research center from an existing building on the pier, immediately adjacent to the boathouse. This facility is open to the public, provides educational programs, and exhibits on the ecology of the river. They have built an outdoor classroom and get-down on the southern side of the pier with floating docks and boats.

Approved. This pier will be fully rebuilt for passive and active recreation. The proposed uses include an expanded boathouse and an "Estuarium" for research and educational programming. Together, structures for these uses will occupy no more than 15 percent of the pier deck.

Pier 32: Current. This pier is largely undisturbed with some habitat and is closed to the public.

Approved. The deck of this pier will be removed and redesigned with native vegetation as an "ecological pier." A get-down feature at this location will allow the public to get closer to the river and will offer views of the ecological pier. No direct public access to the ecological portion will be provided.

Pier 34: Current. Pier 34 has been rebuilt by the Port Authority of New York and New Jersey to provide access to the Holland Tunnel ventilation shafts. Two pile-supported walkways were constructed on the north and south sides of the old pier. HRPT maintains the southern walkway for pedestrians, bikers, and rollerbladers, while benches allow for sitting and enjoying views of the harbor.

The northern walkway and the decking around the ventilation building are closed to the public. The Port Authority has designated this "finger" pier for emergency access and egress from the Holland Tunnel. Between the north and south walkways there is a pile field (Pier 34) that serves as an ecological habitat.

Approved. Public access will continue on the southern pier and no pier additions are proposed.

Pier 40: Current. Pier 40 Operating LLC currently has a permit until December 31, 2002, to operate Pier 40. Uses include vehicular parking (2,300 spaces), distribution (Federal Express, Airborne Express) warehouse, and office uses. Another use is rooftop and indoor soccer fields maintained by HRPT. The Pier Park Playground Association operates batting cages and other recreational uses along the southern walkway. Public access is also provided along the pier's perimeter walkway. On the north side of the pier the Star and Queen of Hearts cruising vessels are docked.

Approved. This pier will be repaired within the limits of the existing pier dimensions. As required by the Act, at least half the pier footprint must become public park space. The Act allows permissible park/commercial uses (as defined in the Act) on the remainder of the pier. Such uses could include parking, restaurants, and performance space. A public walkway will be provided around the entire pier. A water taxi will operate from the southwestern end of the pier.

Segment 4

Pier 42: Current. This pier is a pile field (deck removed).

Approved. Most of the original pier will be rebuilt for active recreation, with a floating public boat-docking facility and passive recreation at the eastern end of the pier. The docking facilities are to consist of floating docks located within the existing pier footprint. The balance of the pier will have piles cut at the mudline.

Pier 45: Current. The deck of this pier has been removed and is under construction.

Approved. Pier 45 is being rebuilt for primarily passive recreation.

Pier 46: Current. The deck on the front half of this pier has been removed and is under construction.

Approved. The landward half of this pier is being rebuilt for passive and active recreation. The western half is planned as an ecological pier with a separate pedestrian walkway along its northern side to allow public viewing of the new ecological pier.

Pier 49: Current. The deck of this pier has been removed and is under construction. Most of the pile field will remain.

Approved. The deck of this pier has been removed and will remain as a pile field. A balcony is under construction for installation at the bulkhead.

Pier 51: Current. This pier is currently a pile field under construction.

Approved. The front portion of the pier is being redeveloped for use as a children's play pier and get-down within its current footprint.

Segment 5

Pier 52 and Gansevoort Peninsula:

Current. The Gansevoort Peninsula, a man-made peninsula, is currently used by the New York City Department of Sanitation (NYCDOS) for parking and for salt storage. Per the Act, the salt storage use must discontinue by December 31, 2003 and the NYCDOS must exercise "best efforts" to relocate the remaining NYCDOS uses. Pier 52, which extends out from the peninsula, is a covered pier that no longer functions as an NYCDOS Marine Transfer Station. The second floor is used as parking and office space by NYCDOS. No public access is provided onto the peninsula or the pier. The south and north shores of the peninsula are rip-rap edges.

Approved. HRPT will convert the existing covered structure on Pier 52 into a public boathouse for non-motorized boats and a small adjacent platform will be repaired to provide public access and a water taxi stop. The embankment along the southern side of the Gansevoort Peninsula will be refurbished for use as a beach. The ACOE permit allows up to 300 linear feet of shoreline fill in this area to create this beach. DEC has also approved this use. The remaining peninsula is to be landscaped for passive and active recreation.

Pier 53: Current. This pier also extends out from the Gansevoort Peninsula. It is currently used by the City's Fire Department Marine Company One as a fire boat station.

Approved. The portion of the peninsula east of Pier 53 will be fully rebuilt. It will include floating docks on the north side to accommodate approximately 60 craft. A boat launch for hand-carried craft will also be located here. The Fire

Department will continue to operate Marine Company One from the western portion of the pier.

Pier 54: Current. A portion of the deck has been removed, but most of this pier is accessible for public access.

Approved. This pier will be repaired and rebuilt for passive and active public recreation. Up to four historic vessels could dock here.

Pier 56: Current. This pier is condemned.

Approved. Decking and piles will be removed, with piles removed at the mudline.

Pier 57: Current. This pier, the former Marine and Aviation Building, is a covered structure that is now occupied by the Manhattan and Bronx Surface Transportation Operating Authority (MaBSTOA) for bus parking and repair. No public access is provided. These buses will vacate the pier in approximately 2003. The structure (foundation only) is eligible for listing on the State and National Registers of Historic Places.

Approved. Aside from creating perimeter public access, there is no approved plan for this pier. Repairs to the few supporting piles of this pier will be undertaken.

Pier 58: Current. This pier consists of exposed piles with no decking.

Approved. Existing piles will be removed. A currently-condemned platform will be rebuilt adjacent to the esplanade to facilitate public access along the waterfront.

Pier 59: Current. Pier 59 is part of the Chelsea Piers Sports and Entertainment complex which is operating under a long term lease that expires in 2044. The activities at Chelsea Piers (see also the discussion below under Piers 60 and 61) are defined as “park/commercial” activities under the Act and are expressly allowed. Pier 59 currently houses a golf driving range with a restaurant and sports facilities. South of Pier 59 is the Surfside 3 Marina, part of the Chelsea Piers complex. This marina provides dockage for approximately 60 to 70 mid-sized cruising and sail boats about 20 to 70 feet in length. Larger boats tie up at the end of the docks. The New York Sailing School also operates from a floating dock. Support services for the Surfside 3 Marina are also provided. Larger craft are also docked along the north side of Pier 59. Public access is provided around the pier’s perimeter.

Approved. These activities will continue under the existing Chelsea Piers lease.

Pier 60: Current. Pier 60 is part of the Chelsea Piers complex. It currently has parking on the deck level with a catering facility at the west end of the pier. Above the parking, on the second floor, there is an ice rink. Public access is provided around the entire pier. A number of cruising yachts and sail craft dock at the perimeter.

Approved. These activities will continue under the existing Chelsea Piers lease.

Pier 61: Current. Pier 61 is part of the Chelsea Piers complex. It currently has ground-level parking with a second-floor health club. There are also athletic facilities and studios. Larger cruising, dining, and commercial entertainment vessels tie up along the north side of Pier 61. Public access is provided around the pier's perimeter.

Approved. These activities will continue under the existing Chelsea Piers lease.

Pier 62: Current. Pier 62 is currently part of the Chelsea Piers complex. It provides two commercial rollerblading rinks and public open space at the western pier end. Smaller power excursion and sail boats dock along the south side of Pier 62.

Approved. The Chelsea Piers lease allows for the take-back of Pier 62 for park use. The Hudson River Park Plan contemplates the repair of Pier 62 and opening it for public recreation. A water taxi landing is planned on the south side of the pier.

Pier 63: Current. Pier 63 runs parallel to the bulkhead. A small barge extends out into the river west of the pier structure. Currently, Basketball City has a permit to operate the facility. There is currently one subtenant: Pier 63 Maritime. The barge provides dockage for a mix of sail and power craft, among them a historic lightship—the Frying Pan. Gangways and floating docks provide access to the water and other boats. The initial term of the permit expired on December 31, 2000. HRPT agreed to a 2-year extension as allowed under the permit as well as the Hudson River Park Act.

Approved. Park designs call for removal of the building structure and reconstruction of the pier as a passive open space.

Pier 64: Current. This pier is closed to the public. It contains an unused 2-story shed.

Approved. This pier is to be repaired and rebuilt for public passive and active recreational uses within the same pier dimensions. The shed may remain or may be removed in part or in full.

Segment 6

Railroad Float Bridge (Pier 66A):

Current. This structure, located south of Pier 66, is the Baltimore & Ohio Railroad Float Transfer Bridge. It is eligible for listing on the S/NR.

Approved. This structure is currently undergoing preservation and repair. A floating dock for launching hand-held boats will be included.

Pier 66: Current. This pier is currently a pile field (with deck removed).

Approved. A portion of this pier would be refurbished for use as a public boat dock, with floating docks for boats to be built within the footprint. The remaining piles will be removed.

Heliport and Rail-Stubs (area between Piers 66 to 72):

Current. This area consists of an active heliport, condemned pile fields, and the remains of a former rail transfer facility. There is no public access to the water.

Approved. The current heliport activities will be relocated pursuant to the Act. Under the Act, there are two possible locations on the west side of Manhattan that are permitted for relocation (Piers 72 or 76). Existing structures will become get-downs.

Pier 72: Current. Pier 72 is currently a pile field (with deck removed).

Approved. The existing decking is removed but the piles will remain to provide habitat. The easternmost portion of this pier will be rebuilt as a get-down.

Pier 76: This pier is currently used as a City Police Department Tow Pound, with a 600-car capacity. It provides no public access. The City has committed to using its best efforts to relocate the tow pound. If successful, the pier area would be 50-percent dedicated to park use with the balance retained by the City.

Pier 78: Outside the HRPT Jurisdiction. Pier 78 is privately owned and operated as the a New York Waterway Ferry Terminal.

Pier 79: Current. New York Waterway currently uses this pier for bus storage on a month-to-month lease. The pier also contains a vent shaft to the Lincoln Tunnel, which is eligible for listing on the State and Federal Historic Registries. A water taxi stop is proposed for the northern slip.

Proposed. A new ferry terminal and waterfront public access are proposed for this pier. This project would be constructed under the jurisdiction of the New York City Economic Development Corporation (EDC).

Pier 81: Current. This pier is under long-term lease to World Yacht which operates a boat cruise operation. The lease extends to 2017. This is an allowed “park/commercial use” as defined in the Act.

Approved. No changes to the pier or its use are proposed.

Pier 83: Current. Circle Line operates a major sightseeing boat cruise business from this pier, with a lease to 2016. This is an allowed “park/ commercial use” as defined in the Act.

Approved. No changes to the pier or its use are proposed.

Pier 84: Current. The western portion of Pier 84 is a pile field (with deck removed). The eastern portion is open to public access.

Approved. This pier is to be rebuilt for passive and active recreation. A boathouse for non-motorized craft, a water taxi stop, and town docks will be constructed.

Segment 7

Pier 86: Current. This pier is occupied by the Intrepid Sea-Air-Space Museum, with permanent docking of the Intrepid aircraft carrier, Edson, Growler, and other out-of-service naval vessels. The Intrepid and Edson are National Historic Landmarks. The Museum operates a cafe and gift shop.

Approved. No changes are proposed for this pier.

Piers 88, 90, 92, and 94:

Outside the HRPT Jurisdiction. These piers are not within the defined park area and are under the jurisdiction of the City. Piers 88 and 90 are active passenger ship terminals and are expected to remain active in the future. Piers 92 and 94 are under consideration for use as exhibition space.

Pier 95: Current. This pier is a pile field (with deck removed).

Approved. A get-down will be constructed adjacent to the pedestrian esplanade to provide closer enjoyment of the river. The remaining decks and piles will be removed.

Pier 96: Current. This pier is a pile field (with deck removed).

Approved. The eastern 10 percent of the pier is to be replaced with a small public boathouse and floating launch for non-motorized boats. The remaining piles will be removed.

Pier 97: Current. Pier 97 is currently used by the New York Department of Sanitation (DOS) for truck parking. In accordance with the Act, the City is seeking to relocate the DOS facility by December 31, 2003.

Approved. With the relocation of Department of Sanitation truck parking, this pier is to be redesigned for passive and active public recreation within the same pier dimensions. Historic boats will dock here. A water taxi stop and town dock are also planned.

Pier 98: Current. This pier is operated as a Con Edison fuel delivery facility. The facility creates in-water tugboat and barge traffic.

Approved. No changes are proposed. This water-dependent use is permitted under the Act.

Pier 99: Current. This pier is a Department of Sanitation-operated marine transfer station. The facility creates in-water tugboat and barge traffic.

Approved. No changes are proposed. This water-dependent use is permitted under the Act.

H. ESTUARINE SANCTUARY ADMINISTRATION

Hudson River Park Trust was created solely for the purpose of planning, designing, constructing, operating and maintaining the Hudson River Park. Central to that mission is the protection and enhancement of the Park's estuarine sanctuary area, which is approximately 400 acres of the 550 acre Park. Consequently, all staff, operations, and administrative functions touch upon some aspect of Sanctuary planning, and management and operation. The HRPT Director of Environmental and Educational Planning has primary oversight responsibility for the Sanctuary and ensuring fulfillment of the ESMP's goals and objectives. He reports directly to the Executive Vice-President and President/CEO. To ensure that the sanctuary protection and enhance goals are met, the Director works on a daily basis with other HRPT staff including: Design and Construction (developing design and construction standards that comply with sanctuary protection and enhancement mandates), Legal (establishing policies, permit and enforcement requirements and restrictions to meet Act mandates to protect and enhance sanctuary), Public Programs (coordinating recreational programming that touches upon the sanctuary), and Maintenance and Operations (developing park operation and maintenance standards that meet all Act and permit requirements regarding sanctuary protection).

In addition to the Director, HRPT plans to establish and hire a dockmaster to more closely monitor and protect the Park's water areas and activities. Further, HRPT anticipates that there will be the need for additional environmental educators and other program staff as new park areas are opened and current outreach programming and educational development efforts mature. Appendix D includes a draft organization chart.

I. BUDGET

Consistent with the Hudson River Park Act's direction that the Park should be self-sustaining to the extent practicable, sanctuary operational and maintenance needs, as with the majority of park programming, operations and maintenance expenses, are and will be funded through HRPT's operational budget, which is, in turn, derived from HRPT tenant, permit and other progamming revenues.* As reflected on the budget set forth below, initial sanctuary planning and programming costs expended in fiscal year 2001-02, inclusive of outside consultants fees, maintenance contracts, and equipment purchases (including the purchase of a new park vessel to patrol the water areas), were approximately $593,703.00. Apart from the planned hiring of a dockmaster, current fiscal year staff and maintenance costs are budgeted the same as last year. HRPT anticipates to hire additional educators and programming staff and increase the related sanctuary budget for such staffing items as the program matures over the course of the next

* Park design and construction is funded separately through capital funding from the State and City of New York. However, there are significant additional capital construction costs, estimated at approximately $14.6 million dollars, related to meeting federal and state mandates for protection and enhancement of the sanctuary related to pile density restrictions and maintenance; seasonal in-water restrictions; beach design, eco-pier development and maintenance, etc., that should be considered as part of HRPT's commitment to sanctuary protection and enhancement efforts.

couple of years. Consultant fees and equipment purchases are expected to be less than last year.

Current and Continuing Budget

Personal Services	
Direct Technical Personnel (continuing)	
Senior Marine Engineer	23,288
Director of Environmental and Edcuational Planning	42,500
Director of Maintenance & Operations	15,008
Deputy Counsel	21,250
Interns	23,800
Administrative/Legal (continuing)	
Executive Vice President	6,308
Assistant Vice President Finance	3,840
Vice President Design & Construction	4,750
General Counsel	5,600
President	7,680
General Administration (IT, HR, PR, AP)	20,102
Subtotal	48,280
Fringe Benefits (continuing)	52,237
TOTAL PERSONAL SERVICES	**226,363**
Includes vessels and vessel maintenance, boating safety markers, signage, drift and debris removal	200,000
Contracts (continuing)	
Maintenance	25,600
Security	75,000
Cornell University Study	190,371
AKRF	66,740
TOTAL NON PERSONAL SERVICES	**557,711**
Capital (continuing)	
Beach construction (Pier 76 & Gansevoort)	3,115,895
Pier 32 Eco Pier	3,651,000
Cyberpark web monitoring	2,500,000
Sanctuary Capital Construction Mitigation	14,600,000
TOTAL CAPITAL COST	**23,866,895**
TOTAL BUDGET (continuing)	**24,650,969**

An additional approximately $190,371.00 will be spent in fiscal year 2002-03 in connection with the initial funding of a Cornell University research project to determine the impacts, if any, on the Park's lower sanctuary areas from dredging and debris removal operations necessitated by the World Trade Center disaster. The study proposed for two years has been funded initially by HRPT with the expectation of reimbursement from the State and/or federal emergency management offices. The results of the study are expected to add to the body of scientific literature and understanding of the river's resources.

In addition, HRPT is actively pursuing grants and building other fund-raising efforts to augment current revenues. For example, HRPT currently has a New York State Department of Education LGRMIF grant for inventorying archives and has applied for additional LGRMIF

grants for records inventorying and educational programming development. Grant applications from several foundations, agencies and non-profit organizations are pending as well.

J. TECHNICAL ADVISORY COMMITTEE

HRPT will to seek to achieve the goals and objectives of the Base Management and Action Plans, in part, by forming a Technical Advisory Committee ("TAC") to assist and advise on the oversight, facilitation, distribution and maintenance of efforts in resource protection, public access and recreation, education, and scientific research efforts within the Estuarine Sanctuary. The TAC will be modeled after the advisory committee of DEC's Hudson River Estuary Management Program and its members will be selected in consultation with the Hudson River Park Advisory Council.

Table 1-1

Summary of Proposed Water Components of Hudson River Park Plan

Location	Proposed Water Element*	Boat Facilities (Maximum Number Boats/Motorized)	Time/Season of Boating Use	Dimensions of In-Water Elements (square feet)	Permitted Action*
Pier 25	Mooring field, town dock, water taxi landing, floating dock connecting Piers 25 and 26, historic boats, and public get down.	Up to 40 moorings, town dock to accommodate up to 20 day-use boats, and 4 historic boats. Motorized boats permitted. Boat pumpout facility.	Seasonal operation for day-use and moored boats. Moored boats allowed for short-term docked boats at town dock for day use only. Historic boats for long-term (6 months or more).	Water taxi: 900 (30' x 30'). Public dock: 7,200 (480' x 15'). Floating bridge: 4,000 (20' x 200'). Get down: 6,800 (150' x 40'). Mooring field: (420' x 600'). Historic boats (to be determined).	ACOE/DEC approval for reconstruction of pier in existing footprint (125' x 990'), plus new footprint of water taxi stop, seasonal floating public dock, floating pedestrian bridge, get down, and mooring field.
Pier 26	Boathouse, estuarium, and small floating dock.	Boathouse will house non-motorized craft only, 800 maximum.	Small launch/dock will have seasonal in-water use.	Floating portion of boathouse: 2,000 (100' x 20'). Floating dock: 2,400 (40' x 60').	ACOE/DEC approval for reconstruction of pier in existing footprint, plus the new in-water portion of the Boat House and dock.
Pier 32	Ecological pier and public get- down feature.	None proposed.	N/A	Get down: 9,600 within pier footprint (80' x 120').	ACOE/DEC approval for repair of a portion of the pier in existing footprint as an ecological pier (125' by 800'), plus get-down feature.
Pier 34	None proposed.	None proposed.	N/A	N/A	No pier additions are proposed.
Pier 40	Water taxi stop.	None proposed.	NA	Water taxi: 900.	ACOE/DEC approval for repair of pier, reconstruction of a public access walkway on the south side of the pier (12' x 975') plus a water taxi stop.
Pier 42	Floating public boat docks and finger piers within the existing pier footprint and pile field.	Up to 30 day-use boats only. Small motorboats allowed.	Seasonal use, for day use only.	Floating dock and finger piers within existing pier footprint.	ACOE/DEC approval for repair of approximately 70% of pier in existing footprint (75' by 450'), plus floating dock facilities within remaining footprint.
Piers 42 to 45	Balcony.	N/A	N/A	Balcony: 3,146.	ACOE/DEC approval for new structure.

Summary of Proposed Water Components of Hudson River Park Plan

Pier	Proposed Water Element*	Boat Facilities (Maximum Number Boats/Motorized)	Time/Season of Boating Use	Dimensions of In-Water Elements (square feet)	Permitting Authority
Pier 45	Water taxi stop.	None proposed.	N/A	Water taxi: 900 (30' x 30').	ACOE/DEC approval for reconstruction of pier in existing footprint (100' by 860'), plus footprint of water taxi stop.
Piers 45 to 46	Bow notch.	N/A	N/A	Walkway: 900 (10' x 90').	ACOE/DEC approval for new structure.
Pier 46	Ecological pier (western portion of pier). Active and passive recreation (eastern portion).	N/A	N/A	Walkway within existing pier footprint.	ACOE/DEC approval for reconstruction of pier in existing footprint (100' by 700') for recreation and as an ecological pier.
Pier 49	Pile field and balcony.	N/A	N/A	Balcony: within footprint.	ACOE/DEC approval for removal of decking and installation of balcony within the existing footprint of the pier.
Pier 51	Get down.	N/A	N/A	Get down: 5,500 (50' x 110').	ACOE/DEC approval for pier reconstruction (110' by 170') and get down within existing footprint.
Pier 52/ Gansevoort Peninsula	Conversion of existing covered structure to a public boathouse for non-motorized boats, water taxi stop, and beach use on south side.	Up to 500 non-motorized boats to be housed in boathouse.	Year-round facility.	Water taxi stop: 900 (30' x 30'). Beach: Up to 300 linear feet of fill. Balcony: 200 (10' x 20').	ACOE/DEC approval for repair of piers, including boathouse substructure, within existing footprint, plus footprint of water taxi stop, and construction of beach.
Pier 53	Floating boat docks on north side of pier for day-use boats.	Up to 60 small, day-use sailboats and motorboats.	Floating docks are seasonal, for day-use boats only.	Finger docks: (3): 3,000. (10' x 100'); (15): 2,250 (5' x 30'). Floating docks: 10,000. (20' x 490'); 4,000 (20' x 200').	ACOE/DEC approval for construction of boat launch steps and access plus the seasonal floating dock structures, as well as pier repair.
Pier 53 to 56	Public access platform.	N/A	N/A	Platform: 42,000 (840' x 50').	ACOE/DEC approval for new structure.
Pier 54	Docking of historic boats and the *Tamoroa*.	Up to 4 historic boats, including the *Tamoroa*.	Long-term (6 months or more) possible.	*Tamoroa*: 10,850. Historic boats (to be determined).	ACOE/DEC approval for repair and replacement of existing pier (100' by 875') within footprint.

Summary of Proposed Water Components of Hudson River Park Plan

Pier	Proposed Water Element*	Boat Facilities (Maximum Number Boats/Motorized)	Time/Season of Boating Use	Dimensions of In-Water Elements (square feet)	Permitting Authority
Pier 56	Public access and overlooks.	N/A	N/A	Public overlook: 2,500 (25' x 100').	ACOE/DEC approval for removal of decking and piles and partial replacement of pier for public access.
Pier 57	Public access and walkway.	N/A	N/A	Public walkway: 1,500 (15' x 180').	ACOE/DEC approval for repairs to pile supports of existing pier as necessary, plus creation of perimeter private access.
Pier 58	N/A	N/A	N/A	Remove piles.	ACOE/DEC approval to remove piles.
Piers 57 to 59	Public access platform.	N/A	N/A	Replace platform: 18,750 (50' x 375').	ACOE/DEC approval to replace structure.
Piers 59, 60, and 61	None proposed—piers are part of currently operating Chelsea Piers sports and entertainment complex.	N/A	N/A	N/A	All boating facilities were previously authorized prior to plans for the park.
Pier 62	None proposed. Authorization to repair pier within footprint.	N/A	N/A	N/A	ACOE/DEC approval for repair of pier within existing foot print (150' by 800').
Pier 63	Water taxi and walkway.	N/A	N/A	Water taxi stop: 900 (30' x 30'). Public walkway: 1,600 (20' x 80').	ACOE/DEC approval for pier replacement (80' by 440') and added footprint of water taxi stop. Barge will be removed per Act.
Pier 64	N/A	N/A	N/A	N/A	ACOE/DEC approval for replacement and repair of pier in existing footprint only (100' by 560').
Historic Float Bridge	Floating dock proposed.	N/A	N/A	Floating dock: 1,225 (35' x 35'). Ramps (2): 250 (5' x 25').	ACOE/DEC approval for repair and reconstruction of existing float bridge and added floating dock component.
Pier 66	Floating docks for day-use boats.	Up to 20 day use boats, including motorized boats.	Seasonal docks—day use only—no overnights.	Floating dock and finger docks within existing pier footprint.	ACOE/DEC approval to replace portion of existing pier footprint and add seasonal floating docks.

Summary of Proposed Water Components of Hudson River Park Plan

Pier	Proposed Water Element*	Boat Facilities (Maximum Number Boats/Motorized)	Time/Season of Boating Use	Dimensions of In-Water Elements (square feet)	Permitting Authority
Piers 66 to 72	Three get-down features.	N/A	N/A	Get downs (3): 11,600.	ACOE/DEC approval to remove decking and piles of Pier 72, construct three get-down features.
Piers 72 to 76	Public access balcony, water taxi stop, and beach.	N/A	N/A	Water taxi stop: 900 (30' x 30').	ACOE/DEC approval for new structure, a water taxi stop, and beach amenity at river embankment adjacent to 34th Street.
Piers 76** and 78	None proposed—outside HRPT jurisdiction.	N/A	N/A	N/A	N/A
Pier 79	Possible future ferry terminal.	N/A	N/A	N/A	EDC has jurisdiction over ferry terminal plans.
Pier 81	No new uses proposed—current water use as World Yacht boat cruises.	N/A	N/A	N/A	None required—no work proposed.
Piers 81 to 83	Public access balcony.	N/A	N/A	Balcony: 2,700 (20' x 135').	ACOE/DEC approval for new structure.
Pier 83	No new uses proposed—current water use as Circle Line boat cruises.	N/A	N/A	N/A	None required—no work proposed.
Pier 84	Boathouse, public town boat docks to be installed on both sides of pier, and water taxi stop.	Up to 10, including small motorized boats.	Seasonal, day-use only.	Floating docks (2): 6,000. Water taxi: 900 (10' x 300') (30' x 30').	ACOE/DEC approval to replace pier (140' by 890') plus addition of footprint for floating docks and water taxi stop.
Piers 84 to 86	Public walkway.	N/A	N/A	Walkway: 2,000 (20' x 100').	ACOE/DEC approval for new structure.
Pier 86	No new uses proposed—current water-related use exists—*Intrepid* Air/Space Museum.	N/A	N/A	N/A	None required; no work proposed.
Piers 86 to 88	Public walkway.	N/A	N/A	Walkway: 11,100 (30' x 370').	ACOE/DEC approval for new structure.
Piers 88, 90, 92 and 94	Piers are outside HRPT's jurisdiction. Piers 88 and 90 currently support water uses as passenger ship terminals.	N/A	N/A	N/A	N/A

Summary of Proposed Water Components of Hudson River Park Plan

Pier	Proposed Water Element*	Boat Facilities (Maximum Number Boats/Motorized)	Time/Season of Boating Use	Dimensions of In-Water Elements (square feet)	Permitting Authority
Pier 95	Get down.	N/A	N/A	Get down: 2,400.	ACOE/DEC approval for installation of get down within pier footprint, and deck and pile removal.
Pier 96	Public boat house, floating launch.	Up to 150 non-motorized boats within boathouse.	No seasonal changes to in-water amenities.	Boathouse: 6,650 (70' x 95'). Boat launch: 1,400 (70' x 20').	ACOE/DEC approval for replacement of eastern 10% of pier with public boathouse and floating launch with deck and pile removal.
Piers 96 to 97	Public walkway.	N/A	N/A	Public Walkway: 1,000 (20' x 50').	ACOE/DEC approval for new structure.
Pier 97	Town dock with day slips for small boats, historic boats, water taxi stop.	Up to 20 boats, including small motorized craft and up to 4 historic boats.	Seasonal floating docks for day use only. Historic boats can be docked for 6 months or more.	Floating boat dock and water taxi stop within existing pier footprint and historic boats (to be determined).	ACOE/DEC approval for reconstructing existing pier, and installation of floating docks and water taxi stop within the existing pier footprint.
Pier 98	Existing water-dependent use as Con Ed fuel delivery facility.	N/A	N/A	N/A	None required; no work proposed.
Piers 98 to 99	Public walkway.	N/A	N/A	Public walkway: 3,200 (20' x 160').	ACOE/DEC approval for new structure.
Pier 99	Existing water-dependent use as a DOS marine transfer station.	N/A	N/A	N/A	None required; no work proposed.

Notes:

* In addition to the in-water elements listed in the table, ACOE and DEC permits include activities such as bulkhead repairs and construction of balconies, platforms, and overlooks that are not shown in these charts.

** Under the Act, following relocation of the existing tow pound, the City of New York will retain 50% of Pier 76 and convey the remainder to HRPT.

Source: Department of the Army Permit, New York District, Army Corps of Engineers, May 31, 2000.

Chapter 2: Existing Habitat Conditions

A. INTRODUCTION

This chapter of the Estuarine Sanctuary Management Plan presents a brief overview of the Lower Hudson River Estuary's natural resources and summarizes ecological and water quality investigations that have occurred in this portion of the estuary over the past 30 years, many of which are identified in Attachment B to this plan.

B. OVERVIEW

The Hudson River is the largest single freshwater input into the Hudson-Raritan estuary system—it provides approximately 87 percent of the total riverine flow into New York Harbor (Brosnan and O'Shea 1995). The 13,000-square-mile Hudson River watershed area has three primary sub-basins: the Upper Hudson, the Mohawk River, and the Lower Hudson. The Lower Hudson sub-basin, where the Hudson River Park is located, extends from Troy, New York, to upper New York Bay. The entire Lower Hudson sub-basin is tidally influenced. Salt water from the Upper New York Bay enters the Lower Hudson River Estuary during the flood phase of the tidal cycle, and lower-salinity water is discharged from the estuary to the Bay during the ebb phase. Tidal flows (200,000 to 500,000 cubic feet per second [cfs]) are considerably larger than the range of fresh water flows (19,000 to 20,000 cfs). Currents are shore-parallel and tidally influenced, with primary flows to the north during flood tide and to the south during ebb tide (Ocean Surveys, Inc. 1987).

The 5-mile portion of the Hudson River included within the Hudson River Park (the Battery to 59th Street) is relatively straight and approximately 1 mile (1.5 km) wide. The ACOE periodically dredges to maintain a navigation channel 30 to 36 feet (9 to 11 meters) deep (Moran and Limburg 1986). Water depths in the main channel in the vicinity of the park generally range from 39 to 55 feet (11.9 to 16.8 meters) at mean low water. The entire shoreline within the park is lined with bulkhead; there are no natural shoreline features (New York State Department of Transportation [NYSDOT] 1994). More than 37 piers/platforms (typically about 1,000 feet long and 100 feet wide) are located within the park. The bottom surfaces in the interpier zones are relatively flat and gently sloping; water depths can reach 30 feet (9 meters) at mean low water. Water depth under the piers is generally shallower.

C. WATER QUALITY

The salinity of the Lower Hudson River Estuary varies hourly with the tidal cycle, and seasonally with the volume of freshwater entering from upriver—saline water reaches further upstream in summer and early fall when freshwater flow is lower. Ristich (et al. 1977) classified the lower Hudson River Estuary as polyhaline (18 to 30 parts per thousand [ppt]) in late summer and fall, and mesohaline (5 to 18 ppt) in spring and early summer. Freshwater and higher-salinity waters are well mixed during low flow conditions, but stratified under high flow conditions when the freshwater overrides the saltwater layer (Moran and Limburg 1986). Water temperatures range from 1.3BC in the winter to 24.6 BC in the summer (EEA 1988).

The water quality of the Lower Hudson River Estuary is strongly affected by human activity

upstream and the densely populated and industrialized land use that surrounds it. Historically, conditions such as low dissolved oxygen (DO) content, high nutrient concentrations, algal blooms, excessive numbers of coliform bacteria, and the presence of floatables contributed to water quality impairment. However, the construction and upgrading of wastewater treatment facilities (WWTFs), and implementation of water pollution control programs throughout New York Harbor over the past 25 years have greatly reduced nutrient inputs and improved water quality (Brosnan and O'Shea 1995). Over the past three decades, DO levels have risen from levels that were inadequate for fish survival to levels that fully support ecological productivity (New York City Department of Environmental Protection [DEP] New York Harbor Water Quality Survey). This trend toward improving water quality has continued through 1998 and is documented in the 2000 DEP New York Harbor Water Quality Survey (DEP 2000). DO levels in the inner harbor in 2000 were above the water Use Class I standard (4.0 mg/L) for this portion of the river. Part 701 of Title 6 of the Codes, Rules and Regulations of the State of New York 1974 (6NYCRR), as amended in 1987, indicates the best usages for Class I saline surface waters as secondary contact recreation and fishing, and as suitable for fish propagation and survival.

While the water quality of the Lower Hudson River Estuary has improved, it is still impaired by effluent from WWTFs or industrial point sources, as well as by discharge from combined sewer overflow (CSO). The CSOs carry sanitary sewage and stormwater discharges from New York City and other towns and cities along the Hudson River. If the combined sewer flow is too high after a rain event to be treated at a WWTF, it may be discharged directly to the river with minimal treatment. Stormwater runoff and CSOs also contribute 85 percent of all floatable debris to New York Harbor.

New York City has implemented programs to minimize pollutant discharge and improve water quality. Program elements include reducing the amount of sewage bypassing WWTFs, constructing additional WWTFs, evaluating measures to capture of floatables from CSO outfalls, and a shoreline survey program to identify illegal discharges.

DEP monitors coliform bacteria as a non-conservative indicator of sewage-related pollution. Primary sources of coliform bacteria include CSOs during and immediately after rain events, illegal sewage connections to CSOs, occasional unplanned bypasses in the sewer system due to equipment malfunction; permitted dry-weather bypasses due to construction and upgrading; WWTF effluent; and stormwater and boat discharges. Disinfected WWTF effluent contributes less than 1 percent of the total coliform load to the New York Harbor. According to the DEP 1998 New York Harbor Water Quality Regional Summary, fecal coliform concentrations for the Inner Harbor Area, including the area of the Hudson River Park, showed a dramatic decline from the early 1970s, dropping from more than 2,000 cells/100 mL to below 200 cells/100 mL, below the standard for Use Class I. This decline is attributed to the abatement of raw sewage discharges through construction and upgrading of WWTF, and the City's water pollution control programs.

DO has increased in the Inner Harbor area over the past 29 years from an average of below 3 mg/L in 1970 to above 5 mg/L in 1998, which is above the 4.0 mg/L standard for Class I waters. DO concentrations in the Hudson River follow a seasonal pattern—lowest during the summer and highest in the late winter/early spring when the river water is coolest and least saline (Moran and Limburg 1986). The range of DO concentrations recorded within the Hudson River Park area by EEA (1988) extended from 3.5 mg/L in the summer to 13.0 mg/L in the winter. Areas with DO concentrations less than 4.0 mg/L are often avoided by finfish, although

most estuarine organisms can tolerate lower concentrations for short periods.
Other indicators of water quality recorded for the park area include chlorophyll a, water transparency, suspended sediment, and pH. The concentration of chlorophyll a (used to estimate phytoplankton biomass) has increased slightly in the 1990s relative to the 1980s. The average summer concentration for the Inner Harbor Area since 1991 remains about 10 μg/L (DEP 1999). Water transparency, measured with a Secchi disk, has increased gradually over 1997 and 1998 from a low of 3.1 feet recorded in 1996 (DEP 1999).

Suspended sediments vary with season and weather—near-bottom concentrations range between 100 and 200 mg/L in summer, 100 to 400 mg/L during high-discharge periods, and greater than 800 mg/L at times of maximum flow. Most of the sedimentation along the 5-mile portion of the river within the Park occurs in the shallows on the west side of the river (Geyer 1995). The mean sedimentation rate for the portion of the estuary within the Hudson River Park has been estimated at 4.1 inches/year, with higher sedimentation rates occurring in the underpier areas than interpier areas (EEA 1988).

Within the lower Hudson River Estuary, surface and bottom water pH ranges from 7.0 to 8.0 throughout the year (Stubin 1996, Brosnan and O'Shea 1995).

D. SEDIMENT CHARACTERISTICS

River sediments within the Sanctuary are primarily silt and clay (ACOE 1996, EEA 1988). Organic content ranges from 8.1 to 14.3 percent (EEA 1988). Sediments within some areas of the park have elevated levels of metals (particularly cadmium, mercury, and lead) and polychlorinated biphenyls (PCBs) that reflect the historical industrial land use surrounding the river (Rohman and Lilienthal 1987).

E. BIOTA

PHYTOPLANKTON

Phytoplankton are microscopic plants. As primary producers, they, along with other primary producers such as submerged aquatic vegetation (SAV) and benthic macroalgae, form the basis of the food web in aquatic environments. Because phytoplankton and other primary producers require sunlight as their primary energy source, their productivity, biomass, and depth distribution will be limited by light penetration, nutrients, and turbidity, and their movements within a system controlled by prevailing currents. The phytoplankton community in New York coastal waters, including the Lower Hudson River Estuary within the park, is dominated by diatoms in late winter to early spring when the diatoms are succeeded by smaller forms (Malone 1977, Malone et al. 1980, Lively et al. 1983, cited in Lonsdale and Cosper 1994). In 1991 and 1992, the diatoms S. costatum and Thalassiosira spp. dominated the phytoplankton community, followed by dinoflagellates such as Prorocentrum spp. In 1993, the diatom Skeletonema costatum and the green algae Nannochloris atomus were the most abundant species within the New York Harbor (Brosnan and O'Shea 1995).

Phytoplankton biomass in the Lower Hudson River Estuary is considered low, considering the consistently high nutrient concentrations. Low light penetration caused by high levels of suspended sediments appears to limit phytoplankton productivity (Malone 1977, Garside et al. 1975, Brosnan and O'Shea 1995), along with flushing rate, weather conditions, and zooplankton grazing (Brosnan and O'Shea 1995).

SUBMERGED AQUATIC VEGETATION AND BENTHIC MACROALGAE

Submerged Aquatic Vegetation (SAV) are vascular plants that live or grow completely underwater, or just up to the water surface. They are found in shallow areas where light sufficient for photosynthesis can penetrate through the water column. Light penetration, along with salinity, temperature, substrate type, water currents, and wave action influence the distribution of SAV (Hurley 1990). SAV provide prey with refuge from predators, increase availability of food, provide attachment areas for plant epiphytes, act as nutrient buffer and sediment trap, and lower current flow and the associated erosion potential.

In the Hudson River, most SAV are restricted to shallow bays and shoals at the mouths of tributaries in less than 3 meters (10 feet) of water (Moran and Limburg (1986). Within the Lower Hudson River Estuary, turbidity and light penetration limitations, frequent dredging, and lack of hard substrate makes the area unsuitable for SAV colonization. Benthic macroalgae are found on rocks, jetties, pilings, and sandy or muddy bottoms that face the light. Species reported within the vicinity of the Hudson River Park include sea lettuce (Ulva lactuca), Enteromorpha sp., green fleece (Codium fragile), the red algae Cerium sp. and Dasya pedicellata (chenille weed), and the brown algae Fucus (AKRF 1993, LMS 1980).

ZOOPLANKTON

Zooplankton are another integral component of the aquatic food web—they are primary grazers on phytoplankton and detrital material, and are themselves consumed by fish such as bay anchovy, and early life stages of commercially and recreationally important fish species such as striped bass and white perch. Zooplankton also include life stages of other organisms such as fish eggs and larvae and decapod larvae that spend only part of their life cycle in the plankton. In the Lower Hudson River Estuary, copepods are the dominant mesozooplankton group (retained on nets with mesh openings greater than 200 μm) throughout the year (Stepien et al. 1981). Important species include Eurytemora affinia (late winter to early summer), Acartia hudsonica and Temora longicornis (spring and early summer) when the phytoplankton shift from larger to smaller species, and Acartia tonsa (late spring to fall) (Malone 1977, Malone et al. 1980 cited in Lonsdale and Cosper 1994). Copepods, rotifers, and barnacle larva (Cirripedia) are the most common microzooplankton (smallest zooplankton) collected within the vicinity of the park. They are least abundant from mid-fall to early winter (ACOE 1984). The most common macrozooplankton (retained on nets with mesh openings of 505 μm) are mysid shrimp (Neomysis americana), cumaceans, and amphipods (ACOE 1984).

BENTHIC INVERTEBRATES

Benthic invertebrates inhabit the sediments and surfaces of submerged objects such as rock, pilings or debris. They are important to the energy flow of aquatic systems because they use detrital and suspended organic matter as food, and are important food for invertebrates, fish, and waterfowl. Benthic invertebrates include those that are retained on a 0.5-mm screen (macroinvertebrates) and smaller forms (such as nematodes and harpacticoid copepods) call meiofauna. Some of these animals live on top of the substratum (epifauna) and some within the substratum (infauna). Substrate type (rocks, pilings, sediment grain size, etc.) is the primary factor influencing benthic invertebrate communities, followed by currents, wave action, predation, succession, and disturbance.

The most common macroinvertebrates collected within the vicinity of the Park include aquatic earthworms (oligochaetes), segmented worms (polychaetes), snails (gastropods), bivalves, barnacles (Balanus improvisus), cumaceans, amphipods, isopods, crabs and shrimp (EEA 1988, EA Engineering Science & Technology 1990, NJDEP 1984, Princeton Aqua Science 1985a and b, LMS 1980, 1984). Infauna collected within the park by various researchers include: oligochaete worms, the polychaetes (Streblospio benedicti) and Scoloplos sp, the bivalve mollusk Mulina lateralis and soft shell clam (Mya arenaria), and isopod Edotea triloba (EEA 1988, EA Engineering, Science and Technology 1990). The benthic community in the interpier and underpier areas appears to be similar.

Epifauna collected on artificial substrates placed in the park include hydrozoans, sea anemones (anthozoans), flatworms, oligochaete worms, polychaetes, bivalve, barnacles, gammaridean and capellid amphipods, isopods, and sea squirts (EEA 1988).

Invertebrate communities recorded on rocks and walls near the Park include barnacles (Balanus spp.), sand-builder worms (Sabellaria vulgaris), sea squirt (Mogula manhattensis) and the ghost anemone (Diadumene leucolena) (LMS 1980). Other abundant invertebrates include bryozoans, sand shrimp (Crangon septemspinosa), hermit crabs (Pagurus longicarpus), and rock crabs (Cancer irroratus). Large invertebrates collected by fish trawls and traps within the park include grass shrimp (Palaemonetes spp.), sand shrimp, blue crabs (Callinectes sapidus), mud dog whelks (Illyanassa obsoletus), mud crabs (xanthids), rock crab (Cancer irroratus), horshoe crab (Limulus polyphemus), blue mussel (Mytisis edulis), softshell clams (Mya arenaria), and the sea slug nudibranch (EA Engineering, Science & Technology 1990, Able et al. 1995). Two marine woodborers have also reappeared in the Hudson River: isopods Limnoria spp (gribbles), and bivalve shipworms Teredo sp. (WRI 1994). Both of these woodborers can and have caused severe structural problems for wood piers.

FISH

More than 70 fish species have been reported from the Lower Hudson River Estuary (Woodhead 1990). The fish populations within the vicinity of the park appear to be fairly stable from year to year (Able et al. 1995, Stoecker et al. 1992). The most frequently observed marine species include winter flounder, bay anchovy, weakfish (summer resident), cunner (year-round), Atlantic silverside (year-round residents that school in shallows), Atlantic menhaden (summer), spotted hake (channel), and seaboard goby (EEA 1988, LMS 1980). Bay anchovy is the only species that uses the Lower Hudson River Estuary extensively for spawning, embryonic

development and hatching—peak concentrations occur in the late summer and early fall with spawning from
May to June, through August to early September (Houde and Zastrow 1991). In addition to these species, American sand lance can be the most common larval species collected in the vicinity of the park (LMS 1980).

The most common estuarine fish inhabiting the Lower Hudson Estuary include hogchoker and white perch. Because these species migrate within the estuary they occur seasonally (Berg and Levinton 1985, Heimbuch et al. 1994).

Anadromous fish spend most of their lives at sea but migrate to freshwater to spawn. Anadromous species found within the Lower Hudson River Estuary, typically in the spring and fall, include Atlantic tomcod, striped bass, alewife, and American shad (Bigelow and Schroeder 1953, Heimbuch and Hoenig 1989, Howe 1971, Klauda et al. 1988). Striped bass have also been reported to use the interpier areas associated with the Hudson River Park and also other portions of the Hudson River as overwintering habitats (ACOE 1984, EEA 1988). While striped bass have historically been a recreationally and commercially important species in the river, high levels of PCBs in this fish have restricted it to recreational catch only. Recreational fisherman are continuously notified of health advisories and catch limits for certain finfish.

The American eel is the only catadromous species found near the park. Eels spawn at sea and the young move into the estuary in the spring, between February and March (Fahay 1978). They are found within the river near the park from February through June (EEA 1988).

SIGNIFICANT HABITAT AND THREATENED/ENDANGERED SPECIES

According to the New York State Natural Heritage Program, no State-listed rare, threatened or endangered plant or animal species are known to occur within the Sanctuary portion of the Hudson River. As stated above, this area is a designated Significant Coastal Fish and Wildlife Habitat, part of the New York State Coastal Management Program administered by the New York State Department of State (NYSDOS), because it is one of the few large tidal systems in the northeastern United States. Land and water uses in Significant Coastal Fish and Wildlife Habitats must not destroy or significantly impair the viability of the area as a habitat (NYSDOS 1992).

Federally listed species and species under consideration for listing as endangered and threatened marine species, which are under the responsibility of the National Marine Fisheries Service (NMFS), include shortnose sturgeon (Acipenser brevirostrum), green turtle (Chelonia mydas), Hawksbill turtle (Eretmochlys imbricata), leatherback turtle (Democholy coriacea), loggerhead turtle (Caretta caretta), and Atlantic Ridley turtle (Lepidochelys kempii). The shortnose sturgeon would not be expected in the Sanctuary. They spawn, mature, and overwinter well upriver and prefer colder, deeper waters. Individuals passing through this reach of the river would be expected to use the deeper channel areas. The four listed turtle species are also not expected to be found in the Sanctuary, with the exception of occasional individuals. In New York, these turtles primarily inhabit Long Island Sound, the Peconic, and Great South Bay. They neither nest in the New York City area, nor reside there year-round. With the exception of the leatherback, all turtles in New York waters are juveniles or subadults. They generally arrive in June and July and leave in October when colder temperatures force them to migrate south. Turtles leaving Long Island Sound for the winter will usually head east to the Atlantic Ocean

before turning south. Therefore, it is unlikely that they would enter the East River and then the New York Harbor to emigrate south.
The northern harrier (Circus cyaneus), least tern (sterna albifrons), and peregrine falcon (Falco peregrinus), which are State-listed threatened and endangered species, respectively, are known to breed in the New York Harbor area.

MARINE MAMMALS

Marine mammals are not commonly observed in the Lower Hudson River Estuary. Of the potential species, the harbor seal (Phoco vitulina) is more likely to be seen. The grey seal (Halichoerus grypus) is less common, but there are occasional sighting. (U.S. Fish and Wildlife Service [FWS] 1997).

AMPHIBIANS AND REPTILES

Reptiles are uncommon in the Lower Hudson River Estuary. They include the estuarine northern diamondback terrapin (Maclemys t. terrapin), and four species of threatened or endangered marine turtles, the loggerhead, green, leatherback and Atlantic Ridley. The northern diamondback terrapin feeds and nests in salt marshes and adjacent uplands throughout the New York Harbor (FWS 1997).

BIRDS

Birds use various habitats available along the Hudson River for nesting and feeding, for overwintering, and during fall migration. Several species of waterfowl, primarily mallard (Anas platyrhynchos), black duck (Anas rubripes), Canada goose (Branta canadensis) and gadwall (Anas strepera) breed in and around the Lower Hudson River Estuary. During the fall migration, the area is used by the Atlantic Brant (Branta bernicla), Greater Scaup (Athya marila), American black duck, and canvasback (Aytha valisneria) (FWS 1997). More than 30 species of shorebirds regularly migrate through the estuary area, using the area as a feeding stop before continuing on their migration. The most abundant of these species include the semipalmated sandpiper (Calidris pusilla), semipalmated plover (Charadrius semipalmatus), sanderling (Calidris alba), ruddy turnstone (Arenaria interpres), black-bellied plover (Pluvialis squatarola), dunline (Calidris alpina), short-billed dowitcher (Limnodromus griseus), greater and lesser yellowlegs (Tringa melanoleuca and T. flavipes), and least sandpiper (Calidris minutilla) (FWS 1997).

Wading birds from the large colonies in the Arthur Kill and Kill van Kull feed throughout the shallow waters and marshes of the New York-New Jersey Harbor. These species include black-crowned night-heron (Nycticorax nycticorax), snowy egret (Egretta thula), glossy ibis (Plegadis falcinellus), cattle egret (Bubulcus ibis), and great egret (Casmoerodius albus) (FWS 1997).

Breeding raptors in the Lower Hudson River Estuary area include northern harrier, osprey (Pandion haliatus), pregrine falcon, and common barn owl (Tyto alba). Raptors known to overwinter in the area include rough-legged hawk (Buteo lagopus), American kestrel (Falco sparverius), short-eared owl (Asio flameus), and long-eared owl (Asio otus).
Both short-and long-distance migratory songbirds occur throughout the area, as well as resident

and overwintering songbirds. Breeding songbirds include the song sparrow (Melospiza melodia), American robin (Turdus migratorius), gray catbird (Dumatella carollinensis), yellow warbler (Dendroica petechia), and red-winged blackbird (Agelaius phoeniceus) (FWS 1997).

Chapter 3: Resource Protection

A. PURPOSE

Respect the importance of the Hudson River's ecological health by preserving, and, where possible, enhancing the estuarine habitat of the Sanctuary.

B. PRESERVATION OVERVIEW

Human disturbance has profoundly altered the Sanctuary over several centuries, and yet, remarkably diverse and abundant biological communities inhabit this area today. As described in Chapter 2, "Existing Habitat Conditions," more than 70 marine, estuarine, and anadromous fish species can be found in the Sanctuary. Some species use the Sanctuary year-round (cunner, Atlantic silverside, winter flounder and bay anchovy), while others, such as striped bass, weakfish, white perch, and Atlantic menhaden use it seasonally. The Sanctuary has been documented as providing over-wintering habitat for species such as striped bass and winter flounder. The sediments and hard surfaces such as rocks, pilings and debris also provide habitat for a variety of invertebrates that include oligochaetes, polychaetes, snails, barnacles, amphipods, isopods, shrimp and crabs. In addition, the waters support numerous kinds of phytoplankton and zooplankton. The New York State Department of State (NYSDOS) has designated the lower portion of the Hudson River, including the Sanctuary, as a Significant Coastal Fish and Wildlife Habitat. Land and water uses in these designated areas are not permitted to destroy or significantly impair the viability of the habitat. Thus, the Hudson River Park Trust's (HRPT's) priority—both during and after the park construction phase—is to construct and operate the park so that it does not degrade aquatic habitat or adversely affect the biota of the river.

To this end, over the course of the permitting processes for the park, the Trust worked extensively with Federal, State and local agencies to draft permit conditions that, along with the use restrictions contained in the Hudson River Park Act, will minimize adverse effects to the resources of the Lower Hudson River Estuary.

C. OBJECTIVES

PRESERVATION AND PROTECTION

A. Plan and manage park sites and facilities to protect the integrity of the natural resources of the Lower Hudson River Estuary ecosystem.

B. Monitor public use impacts, especially with respect to water quality and sensitive species, and take measures necessary to minimize such impacts.

C. Prepare a status report on key species of the Sanctuary which includes, but is not limited to, striped bass, winter flounder, Atlantic tomcod, American eel, northern pipefish, cunner, black seabass, white perch, and blue crab.

D. Protect the seasonal use of the Sanctuary by key species.

E. Adopt policies for the management and use of pesticides, fertilizers, antifoulants and encourage organic alternatives.

F. Implement waste management and recycling programs that incorporate litter control requirements, and develop such requirements for tenants to be used in all lease agreements.

G. Enforce pollution prevention programs to minimize the discharge of petroleum products, pesticides, and other chemicals into the river.

ENHANCEMENT

A. Marine habitat will be protected and restored for shellfish, wading birds, and waterfowl.

B. Work with Federal, State and local agencies to attain water quality conditions that allow full enjoyment of the water by park visitors.

C. Coordinate with academic and research organizations to develop enhancement plans for ecological piers and pile fields.

D. Promote landscaping with native plants to increase the re-introduction of indigenous species and minimize impacts associated with the proliferation of non-native species.

E. Research and promote the use of facilities and equipment that are energy efficient.

F. Work with agencies and research institutions to integrate the use of environmentally friendly materials into the design of upland and in-water features, as well as in park maintenance.

G. Further positive trends in biological productivity, abundance, or diversity that may result from preservation or enhancement efforts.

Chapter 4: Public Access and Recreation

A. PURPOSE

Build and operate a park that maximizes public access to the Hudson River—both visual and physical—while protecting the Sanctuary's natural resources.

B. OVERVIEW

Unlike other established sanctuaries in New York State and elsewhere, this Sanctuary is unique in two key respects:

- Over a decade of park planning has occurred prior to the establishment of the Sanctuary. New York State law recognizes this planning process by mandating development of the park consistent with the General Project Plan, a plan that predated the Hudson River Park Act. Thus, the basic framework for the park predates the Estuarine Sanctuary Management Plan.

- The Sanctuary is located within a dense, urban environment where many activities, including commercial and municipal boating, parking, and construction are already occurring. The area also has a hard edge—an historic bulkhead—running parallel to the entire site, and many public park uses already occur on the more than 37 piers and platforms located within the Sanctuary. However, despite this situation, the approximately 400 acres of water comprising the Sanctuary support a healthy and diverse ecological system. As the amount of publicly accessible parkland increases in the Sanctuary due to park construction, the HRPT needs to preserve this resource while managing corresponding increases in the demand for water-based recreation.

C. OBJECTIVES

A. Complete the park design and construction consistent with the master plan and applicable permits, to ensure that all park visitors can participate in a broad range of activities relating to the recreational opportunities of the Hudson River.

B. While design and construction proceed, continue to provide and expand safe access to the river by creating additional boating and docking opportunities consistent with General Project Plan (GPP) and permit requirements.

C. Manage water surface zones to minimize in-water conflicts between different park activities.

D. Enforce boating policies that encourage diverse and safe activities that do not have significant adverse impacts on the Sanctuary's ecology.

E. Formalize rules for public access to and on the water.

F. Expand opportunities for recreational fishing.

G. Maintain affiliations with regional and local open space organizations.

H. Provide barrier-free access, so that all people can enjoy and participate fully in the park.

I. Limit signage to protect scenic views and enjoyment of the river.

J. Minimize the adverse impacts of waves on recreational activities and special features.

Chapter 5: Education

A. PURPOSE

Capitalize on the Sanctuary's combination of important ecological values and prime regional location by promoting awareness, understanding, and stewardship of the Hudson River among the millions of visitors who will enjoy the park each year.

B. OVERVIEW

One of the most important uses of any park is to provide a forum for educational discovery. The Hudson River Park is particularly well suited as a resource for learning and teaching. Not only is it in close proximity to millions of local residents and visitors, the park also has a rich natural and social history.

Hudson River Park presents an excellent opportunity, as a waterfront open space, recreation area, and natural resource, to enrich the lives of residents and visitors in the region by furthering their knowledge of the river and its history. Educational programs can enhance public awareness and bring people closer to the water. They can also instill an appreciation of and respect for this ecosystem that flows through a community of millions.

Enhanced educational opportunities along the waterfront will combine new and expanded programs for children, adults and seniors, with the construction of park facilities and other infrastructure along the waterfront to enhance these programs. The park currently has plans for classrooms, interpretive elements, and an estuarium that will serve as the focus of educational and research programs. As plans for these programs and facilities progress, HRPT must develop partnerships with New York's many educational and cultural institutions to ensure that park visitors can learn from experts in the fields that relate to the park's history and ecology.

C. OBJECTIVES

A. Promote knowledge of the Hudson River—its ecology, prehistory and history—through educational programs.

B.Provide facilities where park visitors can gain an appreciation and understanding of the river, the Sanctuary, and its ecological and anthropogenic history.

C. Institute partnerships with educational and cultural institutions knowledgeable in the river's ecology and history.

D. Provide ecological and historic interpretive elements.

E .Develop written materials to facilitate public education.

F. Provide opportunities for students and volunteers to gain knowledge about the river through hands-on internships and training.

G. Provide opportunities for educational institutions interested in conducting research or programs within the Sanctuary.

Chapter 6: Environmental Research

A. PURPOSE

The research goals contained in the Hudson River National Estuarine Research Reserve Final Management Plan (New York State Department of Environmental Conservation [DEC] 1993) form the basis of HRPT's plans. To promote research that will increase knowledge and understanding of the sanctuary, and its biological, physical, chemical, and social components, with the principal intent of improving the ecology of the Hudson River.

B. OVERVIEW

Current research projects and proposed studies located within or near the Sanctuary suggest that water quality, sediment, deposition, terrestrial resources, and aquatic resources (fish, benthic invertebrates, and plankton) are or will be monitored as part of many efforts, including the Hudson River Estuary Program, the New York/New Jersey Harbor Estuary Program, the New York City Department of Environmental Protection (DEP), research sponsored by the Hudson River Foundation, or as part of a site-specific research program to meet the requirements of a particular permit application or condition. Because sampling already occurs within the Lower Hudson reach due to these efforts, research conducted or funded by HRPT in support of the Sanctuary should highlight ~~the~~ unique resources and conditions not already assessed within the park.

HPRT has been diligently assessing past and current research specifically related to the Estuarine Sanctuary to determine needs in building a database for long term monitoring. Archives from predecessor agencies and projects, such as Westway, are extensive and HRPT has begun the effort to inventory and catalogue this information in a retrieval format through a grant from the New York State Archives. HRPT has also been collecting data from ongoing monitoring efforts, such as those by the Rutgers Institute of Marine and Coastal Sciences on sediment deposition and those of the Audubon Society on avian distribution. HRPT is pursuing inventory and monitoring funds for a fisheries survey and a social science recreational use survey.

Supportive programs currently involved with the Park include the Clearwater, River Project, Floating the Apple, Chelsea Piers, Circle Line, and the *Intrepid*. Programs expecting an increased role include NYCDEP, NYSDEC, Yankee Maritime, Downtown Boathouse, Pier 63 Maritime, NY Waterways, and Con Edison. The Hudson River Estuarium will serve as the centerpiece of the Park's education and research program. It is envisioned as a partnership between HRPT and institutions ~~who~~ that support the goals of learning and teaching. The plans for research labs and exhibits at the Estuarium hold the potential for cooperation with many universities, museums, agencies, and special initiatives, such as the Rivers and Estuaries Center.

To meet the goal of furthering our understanding of this ecosystem, the Hudson River Park Trust (HRPT) will promote research within the Sanctuary that focuses on:

- Providing a better understanding of the life history and ecology of the aquatic biota using the Sanctuary.

- Describing habitat features provided by the Sanctuary including water quality, tides, and currents, evaluating the relationships between these features and the biotic resources known to use or with the potential to use the habitats of the Sanctuary, and the habitat value and impacts of structures within the sanctuary.

- Evaluating issues or problems of concern in this portion of the river, including evaluating methods to enhance constructed structures for habitat, assessing potential damage to piers from marine borers, measures to promote the more efficient capture of floatables discharged by combined sewer outflows (CSOs), long-term water quality improvements necessary to provide swimming opportunities, methods to improve fish and macroinvertebrate habitat, (including evaluating the potential for submerged aquatic vegetation [SAV]), efforts to improve waterfowl habitat, and strategies for increasing recreational fishing use.

- Providing opportunities to conduct ecological and cultural research within the Sanctuary for faculty and students.

- Compiling data collected as a result of research and monitoring conducted within the Sanctuary in a database, and providing public access to the database.

C. OBJECTIVES

A. Encourage research that improves the understanding of the Sanctuary's ecological, physical, hydrodynamic, and water quality features, and the relationships between these features.

B. Encourage research on all types of recreation in the park through surveys, observations and site locations.

C. Support research that evaluates the potential for regenerated wetlands and other restoration projects.

D. Coordinate work with agencies involved in monitoring the Hudson River ecosystem to identify issues or activities with the potential to impact Sanctuary resources, or to further the understanding of the Sanctuary ecosystem.

E. Monitor the effectiveness of Sanctuary Plan resource protection actions.

F. Ensure that research conducted in the Sanctuary is publicly accessible.

G.Establish a library of technical reports and data collected from research and monitoring conducted within the Sanctuary.

Hudson River Park Trust

Appendix A
Action Plan

Attachment A: Action Plan

A. INTRODUCTION

The action plan for the *Hudson River Park Estuarine Sanctuary Management Plan* addresses the key objectives outlined in the preceding chapters on natural resources protection, public access and recreation, environmental education, and environmental research in the Sanctuary. This action plan sets forth the steps by which objectives will be realized and identifies near-term, short-term, and long-term steps. Near-term steps are defined as activities that are either currently underway or nearing their start (i.e., within the next two years). Short-term steps are planned for implementation over the next three to four years, which is expected to coincide with the anticipated build-out of in-water park facilities (e.g., piers, docks, etc.). They are generally associated with the park design, planning, and construction process. Finally, there are long-term steps, which have a planning horizon beyond five years at a time when the park is fully functional.

It is expected that this action plan will be subject to regular updates to allow it to remain a useful management tool for the Hudson River Park Trust (HRPT). After three years, HRPT will report on its progress and success in meeting the stated near and short term steps set forth in the Action Plan and will review and update the action plan, as necessary, in conjunction with the completion of several areas of the park. Such report and proposed updates to the Action Plan will be submitted for public review and comment.

A priority for HRPT and a key component to the success of the management plan is the establishment and selection of a Technical Advisory Committee. Such Committee, to be selected in consultation with the Hudson River Advisory Council and DEC, will meet regularly to advise and assist HRPT with regard to implementing and achieving the stated goals and objectives as well as refining those goals and identifying additional steps to be taken.

1. Appoint members to the TAC who will:

    a. Identify appropriate resource protection, public access and recreation, education, and research topics and provide advice.

    b. Review proposals, with particular attention to issues of stratification and replicability.

    c. Facilitate peer reviews.

    d. Act as the editorial board for the Sanctuary Journal and disseminate information in general. (Short term.)

B. RESOURCE PROTECTION

PURPOSE

To respect the importance of the river's ecological health by preserving, protecting, and, where possible, enhancing the marine habitat of the Sanctuary.

IMPLEMENTATION

PRESERVATION AND PROTECTION OBJECTIVES

A. *Manage park sites and facilities to protect the integrity of the natural resources of the Lower Hudson River Estuary ecosystem.*

1. Prohibit activities that would have significant adverse effects on marine resources of the Sanctuary. (Near term.)

   Prohibited activities include:

   a. Collection of plants, animals, artifacts, or other materials without HRPT approval and the appropriate State or park permits.

   b. Hunting and trapping (the taking of fish and shellfish is permitted).

   c. Discharge of hazardous or toxic materials.

2. Prohibit activities that would significantly impact natural resources or water quality, and evaluate any in-water activities proposed in the Sanctuary that were not included as part of the original Federal, State and City permitting process as to their potential environmental impacts. (Near term.)

3. Coordinate with design and operations staff for the purpose of meeting the objectives of the natural resource protection elements. (Near term.)

4. Coordinate with any appropriate local and regional activities related to resource management in the *Estuarine Sanctuary Management Plan*, such as the New York/New Jersey Harbor Estuary Program. (Near Term.)

5. Post information on how park users can help protect and improve the quality of the Estuarine Sanctuary. (Near term.)

6. Establish procedures to assist park tenants in developing operating policies that support public use while protecting natural resources and water quality. (Near term.)

   a. HRPT staff will review operating procedures for current park tenants to assess compliance with this objective and to assist in developing measures for existing

activities that do not comply.

b. For future tenants, incorporate protection measures into construction plans and lease agreements.

B. *Monitor public use impacts, especially with respect to water quality and sensitive species, and take measures necessary to minimize such impacts.*

1. Manage public water access through water use designations and, where necessary, limit use impacts on habitats. (Near term.)

2. Control public access and, where necessary, preserve the integrity of research projects (see the discussion below under "Environmental Research"). (Near term.)

C. *Prepare a status report on key species of the Sanctuary which includes, but is not limited to, striped bass, winter flounder, Atlantic tomcod, American eel, northern pipefish, cunner, black seabass, white perch, and blue crab, as well as plants and birds*.

1. An initial report will be prepared in the near term and then updated every five years. The initial status report will provide an understanding of current resource assessments and project needs for further study. This report will serve as a baseline for understanding the Sanctuary habitats and use by the various species, as well as for evaluating any future actions involving construction within the Sanctuary. The report should include the following reference materials. (Near term):

a. Natural resources of the Hudson River Park as presented in Appendix B of the Final Environmental Impact Statement (Allee King Rosen & Fleming, Inc., et al. May, 1998). This appendix provides a description of the resources found within the Lower Hudson River Estuary and the Sanctuary.

b. U.S. Army Corps of Engineers (ACOE) Statement of Findings and Environmental Assessment that identified the species of the Sanctuary subject to regulation under the Fish and Wildlife Coordination Act, the Magnuson-Stevens Act Provisions—Essential Fish Habitat (EFH), and the Endangered Species Act Biological Assessment, which included additional background information on all relevant species.

c. New York City Audubon Society surveys that currently document birds within the Sanctuary.

d. The current archives of HRPT, including materials gathered by staff and the archives inherited from predecessor agencies and projects (Hudson River Park Conservancy, Westway Project, etc.), which are currently being inventoried through a Local Government Records Management Improvement Fund (LGRMIF) grant from the New York State Department of Education.

e. Sedimentation and deposition studies underway by the Rutgers University Department of Environmental Science and Institute of Marine and Coastal Science.

f. Cornell University research findings of the impacts, if any, on the park's sanctuary areas as a result of the dredging and debris removals operations related to the World Trade Center disaster.

D. *Protect the seasonal use of the Sanctuary by key species*.

1. As stated previously, there are a number of key species in the Sanctuary for which a status report will be prepared. Certain species use the Sanctuary in particular seasons for migrating or overwintering. Management policies shall be developed to specifically protect the seasonal use of the Sanctuary by these species. These policies shall be modified as needed based on the updated status reports. Currently, in-water construction activities are restricted from November to April to minimize effects to striped bass and winter flounder overwintering populations and nursery areas used for juvenile fish. Current regulations regarding the use of the park can be found at www.hudsonriverpark.org. (Near term.)

E. *Adopt policies for the use and management of pesticides, fertilizers, and antifoulants and encourage organic alternatives. (Near term.)*

1. Develop and implement an Integrated Pest Management (IPM) program to unite various pest-control tactics, insecticides, herbicides, fertilizers, and any other pest-control measures into a plan that prevents unacceptable levels of pest damage to vegetation planted within the park, but minimizes the discharge of pollutants to the river. Integrate organic pesticides and natural predator control (such as nematodes) into the IPM where feasible. The IPM will promote the use of pesticides in appropriate amounts, and only after other control measures have been used. Monitor soil nutrition so that fertilizers are applied only at the most appropriate time and in the appropriate amounts, such that excess nutrients are not carried off the site in stormwater runoff. Use organic fertilizers wherever possible. Select plants appropriate for this portion of the lower Hudson to avoid or minimize the need for aggressive care and management. (Short term.)

2. Promote design techniques that reduce runoff and the discharge of pesticides and fertilizer. (Short term.)

F. *Implement waste-management and recycling programs that incorporate litter control requirements and develop such requirements for tenants to use in all lease agreements. (Near term.)*

1. Monitor the effectiveness of litter control measures and implement additional measures, as necessary, to control litter within the Sanctuary and to minimize the introduction of park-generated trash into the Hudson River. (Near term)

2. Install facilities and equipment for litter control and modify maintenance as necessary to reduce uncontrolled waste or ineffective recycling. (Ongoing.)

3. Develop litter control program requirements for park tenants. (Near term.)

G. *Enforce pollution prevention programs to minimize the discharge of petroleum products, pesticides, and other chemicals into the river.*

1. Fueling and repairing boats within the park is prohibited.

2. Provide a pumpout facility at Pier 25 and a vessel-mounted pumpout near boating facilities. Construct and operate the pumpout(s) in accordance with the New York State Clean Vessel Assistance Program. (Short term.)

   The pumpout will:

   a. Provide an efficient means of removing sewage from boats and of disposing of the sewage in a safe and sanitary manner.

   b. Include all the equipment, structures, and disposal facilities necessary to collect boat sewage in an efficient, safe, and sanitary manner without causing a health hazard.

   c. Include equipment for rinsing boat holding tanks.

   d. Be operated and maintained to provide adequate service and to function as intended.

   e. Be reliable, corrosion resistant, easy to use and clean, and require low maintenance.

   f. Be conveniently located to encourage boaters to use the facility.

   g. Use pumps specifically designed for handling sewage that are able to pump against the maximum head developed by elevation changes and line losses. Pumps must be properly sized and able to transport flows out of the holding tank.

   h. Include signage specifying the fee, if any, hours of operation, and a contact name and telephone number if problems occur.

   i. Install signage at selected locations within the park with the following statement:

      "The discharge of untreated sewage into the waters of the United States and New York State is prohibited by Law. [33 USC 1322; NYS Navigation Law Section 33-c] Boat sewage from holding tanks shall be pumped at onshore facilities. Facilities are located at Pier 25."

3. All rental and lease agreements for slips at docking and mooring facilities shall include conditions specifying that under the Federal Clean Water Act and New York State Navigation Law Section 33-c, any vessel with a Type III marine sanitation device (holding tank) is prohibited from discharging untreated sewage within U.S. territorial waters, which includes the Hudson River. All such vessels must dispose of waste at pumpout facilities. The rental or lease agreement will specify the hours of operation of park pumpout facilities, as well as the location of other pumpout services outside the park. (Ongoing.)

4. Prepare and implement a pollution prevention plan (PPP) to minimize the discharge of oil and other pollutants (paints, paint thinners, cleaning products, hazardous materials, etc.) into the river. (Near term.)

This plan will include:

a. Good housekeeping procedures that describe the appropriate storage areas and handling procedures for equipment, proper containment around chemical supplies, materials, and wastes to minimize discharge to the environment.
b. An inventory of all materials with a database for managing chemicals so the oldest materials are used first to minimize the need to discard unused material as hazardous waste.

c. A training program for employees to recognize pollution prevention opportunities, waste minimization, the efficient use of chemicals, and proper disposal of materials.

d. Maintenance of material safety data sheets (MSDS) on all materials including information on chemicals that are released, flammable materials, soluble or insoluble characteristics, and how to respond to an accidental release of the chemicals.

e. Preventive maintenance on all equipment.

f. Preparation of a spill response plan that is posted in all chemical storage/mixing areas and boating areas, with an employee trained in spill response procedures. The spill response plan will contain at a minimum: an inventory of all materials; a floor plan identifying chemical storage areas and locations of drains, exits, fire extinguishers, and spill-response supplies; a list of all spill-control supplies; emergency response and spill-control procedures including the name and telephone. Also, work with tenants to ensure that, where relevant, each tenant has a similar spill-response plan.

5. HRPT will investigate the feasibility of marking all stormwater grates within the park drainage to assure that neighborhoods are aware of proper disposal methods. (Near term.)

6. Require all tenants to prepare a PPP, with assistance from HRPT, as part of their lease agreements. (Near term.)

ENHANCEMENT OBJECTIVES

A. *Work with Federal, State, and local agencies to attain water quality conditions that allow full enjoyment of the water by park visitors.*

1. While water quality improvements in the harbor are well documented, there remain a number of water quality impairments. The 1989-90 New York Harbor Water Quality Survey conducted by the New York City Department of Environmental Protection (DEP) observed low dissolved oxygen, high nutrient concentrations, algal blooms, excessive coliform bacteria, and the presence of floatables. However, more recent harbor surveys by DEP show that water quality has improved in recent years in response to several factors, including City projects that have constructed and upgraded water pollution control facilities, increased maintenance of sewer systems, reduced combined sewer outflows (CSOs), abated illegal discharges, and implemented pretreat-

ment programs. The 2000 New York Harbor Water Quality Survey noted continued trends in improved water quality, particularly with respect to coliform bacteria and dissolved oxygen concentrations.

While HRPT cannot undertake extensive and expensive capital projects such as the creation of holding tanks for CSOs, nor is HRPT the agency responsible for such systems, HRPT will work with Federal, State, and local agencies to address water quality issues within the Sanctuary. These actions may include:

a. Assisting DEP and DEC in identifying priority sites near or within the park for CSO
abatement and working with DEP and DEC, elected officials, and others to implement abatement measures. There are 35 current CSOs in the length of the park, with 30 in HRPT waters. Of these 30 CSOs within HRPT waters, there are 19 priority CSOs (54 percent of the total). (Long term.)

b. Participating in the New York State beach survey underway. (Near term.)

c. Providing substantive comments on projects outside the Sanctuary with the potential to improve water quality in the Sanctuary. (Near term.)

B. Coordinate with academic and research organizations to develop enhancement plans for ecological piers and pile fields.

1. The current park design contemplates development of two ecological piers within the Sanctuary. These piers will be designed to create ecological communities that can attract native bird and butterfly species. To this end, the design concept should incorporate the use of native planting schemes that best re-create the natural coastal habitats of the Hudson River. (Short term.)

2. Extant pile fields are known to provide foraging and protected areas for fish species. These fields will be protected at a number of locations in the Sanctuary (e.g., Piers 34, 58 and 72). (Short term.)

3. To further the use of ecological piers and pile fields for resource enhancement, develop protection zones that limit human interference with these potential biological communities. (Short term.)

C. *Promote landscaping with native plants to increase the re-introduction of indigenous species and minimize impacts associated with the proliferation of non-native species. (Near term.)*

1. Develop a list of woody and herbaceous species that are indigenous to the Lower Hudson River Estuary shoreline. (Near term.)

2. When possible, select plant species that also attract indigenous wildlife. (Short term.)

3. Require landscaping plans to identify native and non-native species. (Short term.)

4. Review all landscaping plans to verify that the use of native species is a priority. (Near term.)

D. *Research and promote the use of facilities and equipment that are energy efficient. (Short term.)*

1. Park designers have assessed the feasibility of using solar and wind power technologies to operate facilities, but (to date) have not found any that are economical. However, such innovative efforts should continue with respect to energy-demanding facilities. (Short term.)

E. *Work with agencies and research institutions to integrate the use of environmentally friendly materials into the design of upland and in-water features as well as in park maintenance.*

1. Incorporate the use of recycled plastics or composite materials into the park design where suitable and within budget constraints. (Near term.)

2. Use locally composted materials as organic fertilizers whenever possible. (Near term.)

E. *Further positive trends in biological productivity, abundance, or diversity that may result from preservation efforts.*

1. As the resource preservation efforts are implemented, and as the overall quality of the Lower Hudson River improves due to other programs and projects, it is expected that there will be a number of successes with respect to increasing aquatic and avian species populations and diversity. Identify and monitor such improvements so that further actions to support such trends can be put forth. (Long term.)

C. PUBLIC ACCESS AND RECREATION

PURPOSE

Build and operate a park that maximizes public access to the Hudson River—both visual and physical— while protecting the park's natural resources.

IMPLEMENTATION

A. *Complete the park design and construction consistent with the master plan and applicable permits, to ensure that all park visitors can participate in a broad range of activities relating to the recreational opportunities of the Hudson River.*

1. The Hudson River Park is currently under design and construction. As stated in the Design Guidelines Master Plan, "direct and easy access to the river—both visual and physical—is paramount." Hence, approved park plans include many elements that allow people to enjoy direct contact with the water including: beaches, get-downs, boating facilities (e.g., boat houses, moorings, launches, town docks), and landings for

waterborne transportation (water taxis). These park elements have been approved by regulatory agencies as part of the ACOE and DEC permitting processes. Design and construction are moving forward under the direction of the HRPT's Board of Directors, with guidance from the Advisory Council. Construction will continue over the next four years, with substantial park completion by 2005. (Short term.)

In addition to in-water park elements, numerous other design features contribute to park visitors' enjoyment of the river. Key features that were previously identified in the Design Guidelines Master Plan include:

a. Railings and safety features that do not compromise safety, but minimize physical separation the river.

b. Lighting that provides security, while allowing clear nighttime views of the river.

c. Features that facilitate accessibility for local residents as well as residents of the entire City and region as a whole through the provision of major and minor park entrances from the east, as well as water taxi landings, and motorized and non-motorized boat access.

d. Signage showing the relationship of the park to the Hudson River Greenway and Blueway.

B. *While design and construction proceed, continue to provide and expand safe access to the river by creating additional boating and docking opportunities.*

1. Demand for boating increases every year within the Sanctuary. HRPT has adopted rules and regulations that address a number of issues related to boating management. These rules and regulations are provided at www.hudsonriverpark.org and establish among other things:

a. An active boating season that extends from May 1 to October 31 of each calender year. (Ongoing.)

b. Speed limits of 5 mph or no wake within the park waters. (Ongoing.)

c. Rules for short- and long-term docking, mooring, and storage, including locations where boats can and cannot dock. (Ongoing.)

d. Noise controls on boating operation, so it is illegal to operate a vessel without having engine exhaust run through a device constructed and used to muffle the noise. (Ongoing.)

e. Prohibition of personal watercraft and speed boats. (Ongoing.)

f. Post information on easy-to-read signs and relate signs to the urban grid for way finding. (Near term.)

g. Designate a "no discharge zone." (Short term.)

h. Install navigational aids to identify water use controls and restrictions, as well as resource and research protection areas.

i. Require boat-safety training certification for any boat owner or captain who has a slip or mooring in the park. (Near term.)

2. In addition to promulgating and enforcing park rules and regulations, the following steps are planned to facilitate public access and recreation:
   a. Water Taxis: The current park design contemplates water taxi stops at general locations throughout the park. HRPT will seek a suitable water taxi vendor(s) through a bid process. (Short term.)

   b. Dockmaster/Harbormaster: HRPT will investigate the need for (or designation of) a Dockmaster or Harbormaster to oversee boating operations within the park including regulation of the numbers and types of boats within particular areas of the park. (Near term.)

   c. Water use control: Certain inter-pier areas may be designated by the Trust as non-motorized boating areas. (Near term.)

   d. ADA Access: The Master Plan and General Project Plan for Hudson River Park have always contemplated incorporating areas where the public can have actual contact with the river, such as get-downs. HRPT will ensure that the entire park, including get downs, will be accessible and compliant with all laws, including the Americans with Disabilities Act (ADA). (Short term.)

   e. Warnings/Advisory Notices: Park personnel will post necessary warnings and make announcements, as appropriate, to ensure the public's safety. HRPT encourages all boaters within the park to maintain radios on board and will also investigate ways in which the public can be alerted to dangerous conditions within the Sanctuary, including the possibility of acquiring a dedicated radio channel. (Near term.)
   f. Swim Programs: HRPT, in conjunction with the Manhattan Island Foundation, currently sponsors swim programs which include a series of races of various lengths that start and/or finish in the Sanctuary. Each swimmer is prequalified and pre-registered and is required to sign a waiver of liability form. Swims are postponed or cancelled if water quality dictates. Subject to water quality and safety restrictions, additional swim programs will be pursued. (Short term).

   g. Fishing Programs: HRPT runs a Catch and Release Fishing program as part of its summer program and provides similar programs to school class trips during the school year. HRPT posts DEC fishing regulations which address the legal lengths for keeping fish, and provides allowable quantities for fish consumption. HRPT is also participating in the American Littoral Society's fish tagging program. (Near term.)

   h. Onsite Medical Relief: Medical relief may be obtained throughout the park at comfort stations and information booths where first-aid kits will be available. Park Enforcement officers are trained in First aid and carry radios in the event an ambulance is required. As construction is completed, call boxes will be strategically placed throughout the park. (Near term.)

   i. Operation and Maintenance of Facilities: Tenants are responsible for the operation and maintenance of their parking, toilets, lighting, water and electrical lines,

phones, and floats/ramps. HRPT is looking into the frequency and placement of public facilities within the park. (Short term.)

j. Security: Consistent with the park rules and regulations, HRPT will provide security throughout the park. Presently, New York City Department of Parks and Recreation (DPR) and Parks Enforcement Patrol (PEP) officers are the primary source for security. In addition, HRPT can call on the New York City Police Department (NYPD), DEC officers, and State Parks officers to enforce park rules and protect park users if additional aid is needed. (Near term.)

3. Currently there are a number of active programs that provide access to the river. These include moorings, temporary docks, opportunities for hand-powered craft, motorized and non-motorized boating, and commercial operations that provide the opportunity for thousands of people to get on the river and enjoy the marine air and scenic vistas of New York Harbor and the Lower Hudson River Estuary. While these opportunities will be expanded in the long term, in the short term, construction could require the temporary disruption of existing activities that allow the public to enjoy the water. Where particular activities may be displaced by construction, alternative and replacement facilities should be considered and provided, where feasible. These facilities would meet all requirements of the law and permitting processes. (Short term.)

4. Expand interim access to the river. This could include the use of modular economical docking facilities, moorings, or barges that facilitate access to the water on an interim basis while the permanent facilities are being designed and constructed. (Near term.)

5. Expand the opportunities for safe and environmentally sound boating within the park.

   a. There are many safe boating programs operated by the United States Power Squadron, U.S. Coast Guard, the Sea Scouts, and boating clubs on the Hudson River. However, given the history of the Sanctuary and the limited public recreational boating activities along Manhattan's West Side, there has not been a great demand for safe boating programs in the Sanctuary. With an expected resurgence of boating activities, it would be appropriate to support increased safe boating programs. This could be organized by HRPT, possibly in conjunction with one of the Manhattan-based boating clubs or associations. Topics could include CPR and first aid, PFD use, reading charts, tides and currents, weather prediction, fire prevention and response, interpreting navigational aids, and pollution prevention. (Near term.)

   b. Facilitate non-motorized boating events in the Sanctuary such as kayaking and rowing. (Near term.)

   c. Participate in Blueway programs that encourage hand-powered boating along the Hudson River Estuary. (Near term.)

   d. Notify waterway and nautical guides of the recreational benefits and safety precautions when visiting the Sanctuary by water. (Near term.)

e. Encourage the National Atmospheric and Oceanic Administration (NOAA) to update charts reflecting the current and proposed piers and mooring areas in the Sanctuary. (Near term.)

f. Install appropriate navigational aids that manage use of the water surface and facilitate proper boating operations in the park. (Near term.)

g. Prohibit the use of solvents and non-biodegradable materials for boat cleaning. (Near term.)

h. Provide facilities for day boaters which may include ice, water, and other amenities at docks, mooring locations, and other facilities. (Short term.)

i. Prohibit anchoring as and where needed within the Sanctuary, based on closures for danger and water use conflicts. (Near term.)

j. Provide facilities such as davits, floating docks, and other equipment for launching hand-powered craft. (Near term.)

k. Develop plans and disseminate materials to the boating public regarding use of the Sanctuary waters during special events, such as Tall Ships, Fourth of July, Fleet Week, and other special events with increased on-water activity. (Short term.)

l. Provide ladders, personal flotation devices, cleats, heaving lines, and other facilities at numerous points along the bulkhead and piers for persons overboard or boaters in distress. (Short term.)

m. Provide signs that display the following: (Short term.)

- Safety warnings.
- Sources for weather and wave conditions.
- Sources for water quality.
- Water uses zones (i.e., where motorized and non-motorized crafts are permitted; see the map at the end of this action plan).
- Public service announcements.

C. *Manage water surface zones to minimize in-water conflicts between different park activities.*

1. The waters of the Sanctuary currently support a wide range of in-water activities and uses including the operation of large commercial and military vessels, ferry operations, working barges, historic boats and facilities (such as the float bridge), recreational motorized boating, non-motorized recreational boating, fishing and water contact, and natural habitats such as pile fields. The activities and uses will be coordinated for the purposes of clustering like uses around the facilities that support them and defining where and how Sanctuary investments will be made. Some water areas of the park are currently closed to all boating, based on dangerous conditions. It is expected that some areas may be closed in the future, in whole or in part, due to critical habitat needs, with all such closures subject to continuous review. Water use areas will eventually allow visitors to experience and recognize different areas of the Sanctuary for the varied (and

sometimes conflicting) uses in the Sanctuary. As a first step in this process, a draft Water Use Map is provided as part of this action plan (see Attachment E).

2. There are four different Water Use Areas Categories preliminarily designated by this *Estuarine Sanctuary Management Plan*. These areas are not permanent and may be altered based on changing conditions. Delineation of categories was based on a number of factors, including boat/water taxi/ferry locations, CSO locations and conditions, past use, current and proposed water surface use, ecological piers, existing and proposed facilities, leases and agreements, management efficiency, mooring/marina/dock/-terminal locations, New York City Economic Development Commission (EDC) holdings, pile fields, river bottom conditions, shoreline and beaches, and upland land use.

   The areas are categorized and described below as water play (31 percent), motorized boats (45 percent), reserve (15 percent), and economic development (9 percent).

   a. Water Play: The concept of water play is based on the future goals of the Clean Water Act to foster water contact and swimming in the Lower Hudson River. Proposals for floating swimming pools are under consideration. The water play areas center on the large park areas of the waterfront and will receive special attention in improving water quality. Water play is generally considered to be non-motorized boating, such as canoes, kayaks, paddleboats, bumper boats, rowboats, and inflatable rafts. It also includes get-downs for water contact, model boats, recreational fishing, fountains, art, and other similar activities. There are five water play areas: on the north side of Pier 26, on the south side of Gansevoort Peninsula, from Piers 62 to 64 along Chelsea Waterside Park, from Pier 66 to just beyond Pier 76, and from Piers 94 to 97 at Clinton Cove.

   b. Motorized Boats: Motorized boats are small- to medium-sized vessels that are under power. Small- to medium-sized sailboats are only considered to be motorized when they are under power. For large vessels, water taxis, ferries, harbor cruise boats, passenger ships, ocean liners, fuel tankers, sanitation barges, and naval ships and carriers, the Water Use Map has crosshatching on the large terminals and wharves. There are seven motorized boating areas: the moorings and historic vessels around Pier 25, Pier 34 through Pier 45, the docks and marinas from Gansevoort Peninsula to Pier 62 (Chelsea Piers), Pier 64 to the north side of the planned boat dock at Pier 66, the west and north sides of Pier 76, from Pier 81 to Pier 86 (the Intrepid), and the planned docks on the north side of Pier 97 through Pier 99.

   c. Reserve: The reserve areas encompass ecological piers, pile fields, and extended areas of marine benthic habitat where riverfront commercial activity has long ago declined. These areas offer the best long-term opportunity for HRPT to invest in marine habitat restoration. Non-motorized boating is currently permitted (except in closed areas due to dangerous conditions), but reserves are primarily devoted to marine habitat preservation, enhancement, education, and research. There are two reserve areas: from mid-way between Pier 26 and Pier 32 to Pier 34 and Pier 45 to midway between Pier 49 and Pier 51. The upland habitat encompasses 28 percent of the esplanade, while active recreation covers 72 percent.

d. Economic Development: These pier areas are not currently directed by the Hudson River Park, being privately owned or managed by the New York City Economic Development Corporation (EDC). The economic development areas include the ferry terminals at Piers 78 and 79 in addition to the Passenger Ship Terminals at Piers 88, 90 and 92 through Convention Pier 94.

3. Park Water Use Areas will be reevaluated periodically to attain a future goal of water play (20 percent), motorized boats (40 percent), reserve (30 percent), and economic development (10 percent). Those goals are based on the plan program to increase habitat, finalize decisions on competing land uses, and manage operations to lessen impacts. The most potential to attain increased reserve goals might occur between Pier 34 to Pier 40 and Pier 66A to Pier 78.

4. HRPT may temporarily restrict access to any portion of a water use area if there is an emergency, special event, or a concentration of use that appears to be causing or contributing to a degradation of resources.

5. There is a need for water-borne signage for the water play and reserve areas to avoid boating conflicts. There may also be a need for wave attenuation and directional buoys. Installing float lines, anchored buoys and attenuators will be evaluated (on a case-by-case basis depending on cost, funding, and environmental impact) from the head of Pier 26 to the head of Pier 40, the head of Pier 45 to the Gansevoort Peninsula, the head of Piers 62 to 64, West 28th Street to Pier 76, and north of Pier 94 to Pier 97.

D. *Enforce rules for public access to and on the water*.

1. Access:

a. The bikeway (and esplanades that are combined with bikeways) will remain open 24 hours a day. (Near term.)

b. Esplanades that are separate from the bikeways will close at 1 AM and reopen at 6 AM, with the exception that specific activities may be permitted on a case-by-case basis due to need or demand.

c. Piers will close at 1 AM and open at 6 AM; however, such closure may be modified depending on the particular programs on each pier at any given time. (Near term.)

d. Camping without a permit and houseboats are prohibited. (Near term.)

e. Manage motorized vehicles within the Sanctuary, including personal watercraft. (Near term.)

2. Safety:

a. There will be no unregulated swimming until water quality and potential physical hazards are addressed. (Near term.)

b. Undertake a water quality monitoring program at several locations where small boating currently occurs. Use this information to monitor the need for public health restrictions on boating within the Sanctuary. (Short term.)

E. *Expand opportunities for recreational fishing.*

1. Identify designated areas where fishing is appropriate. Provide facilities at these locations (e.g., pole stands, bait cutting boards). (Short term.)

2. Disseminate informational materials and signage on recreational fish species of the river, minimum sizes, and public health advisories. (Near term.)

3. Encourage participation in "tag and release" programs. (Near term.)

4. Sponsor fishing tournaments. (Near term.)

5. Participate in urban fishing programs where equipment can be donated or loaned to children for a day. (Near term.)

F. *Maintain affiliations with regional and local open space organizations.*

1. The Hudson River Park is a major unique open space for the Hudson River Estuary and the region as a whole. To this end, HRPT should be a participant in regional open space planning activities. HRPT is presently working with and will continue to develop its relationship with such groups as the New York State Department of State, Hudson Greenway Communities Council, New York State Department of Environmental Conservation (DEC), New York City Department of Parks and Recreation (DPR), and the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). (Ongoing.)

2. Interact with local, city, regional, state, national and international reserve and park planning networks and the New York/New Jersey Harbor Estuary Program. (Near term.)

3. Collaborate with other waterfront open space planning projects in the region, specifically within the Hudson River Estuary and seek physical and programmatic linkages with those programs. (Near term.)

4. Engage national river foundations and waterfront organizations in Sanctuary open space projects. (Near term.)

5. Solicit organizations with innovative and creative concepts for waterfront and in-water recreation in an urban setting. (Ongoing).

G. *Provide barrier-free access, so that all people can enjoy and participate fully in the park.*

1. Throughout the park's design, the area will strive to be accessible to all individuals. Publications and web information will include site-specific information regarding ADA access. (Near term.)

2. All park design is to be consistent with ADA standards. Review all design plans for compatibility with ADA requirements. (Near term.)

3. Identify areas of the Sanctuary that will allow members of less mobile groups to get access over the water on piers or other facilities (e.g., handicapped persons, pregnant women, the elderly, etc.). (Short term.)

4. Provide fishing facilities for ADA individuals. (Short term.)

5. Identify potential programs and facilities (e.g., boating programs, water taxis, etc.) that will allow people with limited mobility to directly use and appreciate the river. (Short term.)

H. *Limit signage to protect scenic views and enjoyment of the river.*

1. HRPT has engaged a consultant to develop a plan to address signage throughout the park. This plan is expected to be completed by the beginning of 2002. Signage will attempt to provide directions and "wayfinding" information; cultural history, art and ecology; and, allowable and prohibited park behavior and uses. (Near term.)

2. Limit signage on piers to small instructional or directional aids that do not impede views. (Near term.)

I. *Minimize the adverse impact of waves on recreational activities and special features.*

1. Provide notification to the boating public as to the potential for significant boat-wake waves and the Sanctuary due to river traffic. (Near term.)

2. Design docking and ferry landing facilities to handle the local wave action and to allow the safe transfer of passengers. (Near term.)

3. Site natural features restoration and other projects where wind and wake wave climates are less intense. (Short term.)

D. EDUCATION

PURPOSE

Capitalize on the Sanctuary's combination of important ecological values, historic resources, culture, and prime regional location by promoting awareness, understanding, and stewardship of the Hudson River among the millions of visitors who will enjoy the park each year.

IMPLEMENTATION

A. *Promote knowledge of the Hudson River—its resources, prehistory, and history—by expanding youth and adult educational programs in the park.*

1. HRPT currently operates an educational program for local schools. Students can participate in three curricula: Fish and Fish Biology (Grades K-4), Plankton and Food Web (Grades 2-6), and Water Quality (Grades 6-9). In addition, over the past ten years, various park tenants and agencies have also run educational programs; this includes the Intrepid Sea-Air-Space Museum, The River Project, Floating the Apple, Chelsea Piers, DEC, and DEP. During the year 2000, over 10,000 students visited the park for educational field trips.

   HRPT will therefore implement an "Expanded Education Program" targeted to City schoolchildren. This initiative will aim to: coordinate HRPT and tenant programs through a "Park Education Clearinghouse;" expand the number of available programs; and promote school programs, including coordinating curriculum with the New York City Board of Education (BOE). This approach has the advantage of reaching significantly more students than HRPT staff can do alone. (Near term.)

2. Collaborate with BOE programs. (Near term.)

   a. Seek BOE accreditation of teacher training programs and science exposition days, thereby ensuring teacher participation in park programs.

   b. Meet with members of the BOE to ensure that tenant-initiated programs meet appropriate standards, thereby ensuring school participation.

3. Conduct outreach to attract schools to Hudson River Park's programs. (Near term.)

   a. Distribute brochures to school principals and continue to offer the "Fish of Hudson River Park" poster to promote awareness.

   b. Organize an annual boat ride for school principals to promote educational programs.

   c. Secure listings within the National Academy of Science's "Master Guide for Teachers" describing available programs within Hudson River Park.

   d. Become an active member of the Environmental Education Advisory Council.

4. Develop annual teacher training days showcasing educational opportunities within the Sanctuary. (Near term.)

5. Work with colleges and universities to develop curriculum, internships, and ecological research.

6. Work with other tenants and agencies to create a broad range of adult educational opportunities. (Near term.)

7. Create promotional educational materials. (Near term.)

a. Create a brochure describing "Educational Programs in Hudson River Park." This will include descriptions of HRPT's programs as well as other current tenant and agency programs occurring within the park.

b. Develop interactive materials for inclusion in an HRPT "educational packet" to accompany current curricula.

c. Work with tenants/agencies to supply their own educational packets.

d. Devote a portion of HRPT's web site to educational programs within the park, and ensure that all educational materials can be downloaded from the web site.

B. *Provide facilities where park visitors can gain an appreciation and understanding of the river ecology, the Sanctuary, cultural history, maritime history, and anthropogenic history.*

1. During the segment design process, develop plans for "open-air classroom" installations highlighting tides, wind, plants, sun, currents, etc. (Short term.)

a. In the design for Segment 3, include "demonstration gardens" showcasing plant species native to the City's littoral zone.

b. Develop interactive interpretive information, including themes for educational clusters along the river, to be installed at park kiosks at major entrances.

c. Commence planning for the estuarium on Pier 26, particularly with respect to the following:

- Collaborate with the Rivers and Estuaries Center on the Hudson, Clearwater, and other research and educational organizations to ensure that the facility is appropriate for both the research and education communities.

- Prepare and issue a Request for Proposals (RFP) to identify potential partners/operators for an estuarium facility.

2. When designing proposed facilities, work with appropriate partners and the local communities to plan indoor exhibit or interactive activities within or adjacent to the boathouses. (Short term.)

a. Meet with existing park tenants and neighbors, including municipal tenants, to incorporate interpretive information or interactive exhibits within their facilities : Pier 53 (fireboat facility), Chelsea Piers, the interim Pier 63 Maritime, Pier 78 (ferry terminal), Circle Line, Intrepid Sea-Air-Space Museum, Passenger Ship Terminals, Pier 98, Con Edison, and Pier 99 (Department of Sanitation).

b. Identify facilities for short-term and special event docking at certain piers to accommodate visiting and educational vessels, for example, the Hudson River Sloop Clearwater, Cornell University Kingsborough and SUNY Stony Brook vessels, ACOE and DEC vessels, U.S. Fish and Wildlife Service vessels, Rivers and Estuaries Center on the Hudson research vessels, and others.

c. Consider the dockage needs of tall (large) ships during special events.

d. Identify criteria for historic vessels to be located at Piers 25, 54 and 97, and conduct a public selection process. Vessels should be encouraged to provide classroom space onboard.

e. As part of the design process for Piers 26, 40, 57, 64, 76, and 97, consider including areas for indoor classrooms or programming.

f. Develop plans for bus layways and student and student and visitor drop-off at the primary education destination areas.

C. *Institute partnerships with educational and cultural institutions knowledgeable in the river's ecology and history.*

1. Identify potential partners, which could include: American Museum of Natural History, Audubon Society, Columbia University, Cornell University, Coney Island Aquarium, Hudson River Foundation, Liberty Science Center, National Museum of the American Indian, New York Hall of Science, New York Historical Society, New York University, North River Historic Ship Society, The River Project, Ocean Liner Museum, Rivers and Estuaries Center on the Hudson, Rutgers University, South Street Seaport, Steamship Historical Society of America, SUNY Stony Brook, and the World Ship Society. (Near term.)

2. Consider providing satellite space for some of these institutions. (Near term.)

3. Work with partners to host periodic conferences and seminars within or near the park. (Short term.)

D. *Provide ecological and historic interpretive elements.*

1. List potential interpretative opportunities and identify appropriate interpretive themes (for marine and terrestrial environments), including those identified in the Design Guidelines Master Plan in collaboration with HRPC's Advisory Historical Working Group. (Near term.)

2. Identify the audiences for interpretation. With the exception of students either visiting the estuarium or participating in an educational park program, most visitors to the park will not be coming with the express intention of learning about the river or its history. Target interpretation so that it is appropriate in both its message and implementation to people whose intent is only to visit the park. (Near term.)

3. Identify locations for interpretation (with particular attention to wayfinding). (Short term.) At a minimum, interpretation will occur at the following locations:

a. Piers 25 and 26—ecology and science.

b. Pier 40—(park facilities, culture, and sports).

c. Gansevoort Peninsula and Pier 54—social history.

d. Chelsea Waterside Park and Piers 62, 63, 64, and 66—(early Waterfront).

e. Pier 76—transportation and trade.

f. Circle Line and the Intrepid at Piers 83, 84, 86, and 87—(ocean liners and maritime military).

g. Clinton Cove at Piers 92, 94, and 97—(Waterfront today).

E. *Develop written materials to facilitate public education.*

1. Using Hudsonia and DEC's Almanac as a model, develop a Sanctuary Journal. This will include written observations, illustrations of nature, Sanctuary projects, personal profiles, and cultural and baseline biological assessment research that take place in sanctuaries. While the Journal should be compiled and drafted by HRPT staff, material could come from many sources. HRPT will advertise the Journal on its web site, in its newsletter, through its BOE contacts, and through other outreach vehicles. (Short term.)

2. Develop a Hudson River Park Oral History project. (Short term.)

3. Create a "Birds of Hudson River Park" publication. Together with the "Fish of Hudson River Park" poster, use it to encourage the public to view the world with ecological eyes. (Short term.)

4. Initiate walking tours that emphasize the history and ecology in each park segment and build a volunteer corps to conduct these walking tours. (Near term.)

F. *Provide opportunities for students and volunteers to gain knowledge about the river through hands-on internships and training.*

1. Reach out to educational institutions interested in conducting research or programs within the park. (Near term.)

2. Educate the public about being on and near the water in connection with boating, kayaking, fishing, or swimming. (Near term.)

This could be accomplished in a number of ways:

a. Work with existing boating programs to develop training seminars, workshops, and school programs to provide hands-on experiences and contact with the water. These could be developed for students, teachers, parents, and staff.

b. Organize Special Park Events to get the public on the river and generate excitement about this resource. Potential events could include:

i. Poster contests about enjoying the water.

ii. A River Day where people can learn about ways to use the river that are personally and environmentally safe.

iii. Public forums, meetings or lecture series on particular aspects of the river, including spawning seasons, waterfowl ecology, and river reading. Public forums provide a voice for users as well as more formal education about the river.

iv. Brochures and other media so park users can take away "new found" knowledge.

v. Support of park tenant programs such as Historic Ships Day that emphasize local and park-wide programs.

3. Initiate a water and boating column in the park newsletter. (Near term.)

   The column would contain:

   a. Educational insight.

   b. Fact sheets regarding activities on the water, including but not limited to appropriate fishing methods, kayaking instructions, etc.

4. Provide audio-visual equipment at certain locations with instructional and educational tapes. (Long term.)

G. *Provide opportunities for educational institutions interested in conducting research in the Sanctuary.*

1. The Sanctuary provides an excellent opportunity as an enormous laboratory. It is a complex estuarine ecosystem located a short distance from some of the world's premier institutions of higher learning. HRPT will use the Sanctuary for scientific and research purposes that will benefit the Hudson River and the ecosystem of New York Harbor (see also the policies below under "Environmental Research"). (Near term).

E. ENVIRONMENTAL RESEARCH

PURPOSE

To promote research that will increase knowledge and understanding of the Sanctuary, and its biological, physical, and chemical components, with the principal intent of improving the ecology of the Hudson River Estuary.

IMPLEMENTATION

A. *Encourage research that will improve the understanding of the Sanctuary's ecological, physical, hydrodynamic, and water quality features, and the relationship between these features.*

1. Coordinate with agencies involved in monitoring the Hudson River ecosystem to identify issues to further the understanding of the ecosystem or activities with the potential to impact the Sanctuary ecosystem (Near Term).

2. Develop objectives for a research program on marine water elements in the Sanctuary. Initially, this program could include an evaluation of tide cycles, water quality, chemical characteristics, water depth, currents and circulation, temperature and stratification, bathymetric studies to understand water depths, and sediment sources and deposition rates as well as the physical and chemical characteristics of the sediments (Near Term)

3. Establish baseline social science data for use in managing recreational use (Near Term).

4. Establish review procedures to evaluate research consistent with these objectives (Near Term).

5. Establish a program for sharing information between the HRPT and agencies that collect data in or near the Sanctuary, which could include, but not be limited to, DEC, DEP, the Interstate Sanitation Commission, the New Jersey Department of Environmental Protection, and the Harbor Estuary Program (Near Term).

6. Utilize the Estuarium as the central facility for education and research activities within the Park (Short Term).

7. Make research, lab, and classroom space available at the Estuarium and possibly Piers 40, 57, 64, 76, and 97 for visiting researchers (Long Term).

8. Coordinate with New York State toward a satellite office of the Rivers and Estuaries Center on the Hudson in the Sanctuary (Long Term).

B. Monitor the effectiveness of the ESMP resource protection actions.

1. Develop a set of baseline ecological conditions against which future changes and trends can be measured (Short Term).

2. Promote research that documents and monitors possible changes in primary and secondary production or community diversity and, evaluates possible changes caused by activities within the Sanctuary. Similarly, initiate monitoring efforts to evaluate trends over time (Near Term).

3. Examine the vegetative and wildlife community on the ecological piers and small abandoned pockets in the Park and, utilize this information in pier preservation or reconstruction and habitat planning (Near Term).

4. Facilitate research on critical issues related to the natural environment and impacts from

use and construction especially, regarding size, shape and composition of construction materials that may be considered for use in the Sanctuary. This could include different piling materials such as wood, concrete, steel, vinyl and/or coatings (Short Term).

5. Promote research to increase shellfish and other marine organism habitat on piles (Short Term).

6. Promote research to document the presence of organisms, such as marine borers, that can damage the structural stability of piers or pile fields and, to assess the effectiveness of materials in reducing impacts from these organisms (Short Term).

7. Evaluate measures that can be implemented to improve water quality, such as increasing the capture of floatables and improving combined sewage outfalls (Near Term).

8. Monitor progress toward reaching the water quality target for swimming opportunities within the Sanctuary. Evaluate what parameters should be sampled and whether a sampling station should be located within the Sanctuary (Long Term).

9. Monitor recreational boating activity and patterns within the Sanctuary, documenting any effects of these activities particularly with respect to wildlife disturbance and habitat impacts (Short Term).

C. Monitor recreation throughout the park including user groups, activity locations, and the relevance of behavioral information to park design and management.

1. Track information on visitor profiles, frequency, trends and projections (Near Term).

2. Tracking information on fishing such as physical characteristics and the species caught (Near Term).

   a. In conjunction with expanding public fishing opportunities in the Sanctuary, coordinate with the recreational fishing public in an effort to develop data regarding fish use and presence in the Sanctuary (Sort Term).

   b. Coordinate with the tag and release programs of the American Littoral Society, DEC and other groups (Long Term).

D. Support research that evaluates the potential for regenerated wetlands and other innovative restoration projects (Short Term).

1. Submerged aquatic vegetation (SAV) beds.

2. Artificial substrate or reefs.

3. Intertidal marsh.

4. Oyster beds.

5. Mariculture.

E. Ensure that research conducted within the Sanctuary is publicly accessible (Short Term).

1. Coordinate the public distribution and release of scientific studies conducted within the Sanctuary.

2. Establish the Sanctuary Journal as the main venue for research on the Hudson River Park.

3. Post the results of studies and research on the web site.
4. Provide the data to local libraries and institutions.

F. Establish a library of technical reports and data on research and monitoring conducted within the Sanctuary.

1. Create a library of publications regarding scientific research conducted in the Sanctuary. (Near term.)

2. Develop affiliations with local libraries, both public and private (Long Term).

G. Foster an active climate for research support and funding including grants, scientists in residence programs, internships, equipment, and facilities.

1. Investigate any and all opportunities for giants and funding of Sanctuary activities (Near Term).

2. Aid researchers in obtaining funding for research deemed important to the Sanctuary (Near Term).

3. Encourage research that improves the understanding and relationships of the Estuarine Sanctuary's ecological, physical, hydrodynamic, and water quality features (Short Term).

4. Augment current and encourage new research that provides a clearer understanding of the Sanctuary's ecological features and relationships to tidal cycles, circulation dynamics, currents, stratification patterns, and sediment dynamics (Short Term).

5. Encourage research that expands the knowledge base regarding biotic communities and relationships between these communities and the Sanctuary's physical features and potential impacts such as light penetration, shading, and river bottom disturbance (Short Term).

6. Encourage research on all types of recreation in the park through surveys, observations, and site locations (Short Term).

7. Support research into the potential for regenerated intertidal wetlands (Long Term).

8. Work with agencies involved in monitoring the Hudson River ecosystem to identify issues or activities with the potential to affect Sanctuary resources, or to further the understanding of the ecosystem (Near Term).

9. Foster an active climate for research support and funding (Near Term).

10. Evaluate sediment sources and deposition patterns within the Sanctuary.

11. Ensure the pubic availability of research conducted within the Sanctuary.

12. Establish a library of technical reports and data collected from research and monitoring conducted within the Sanctuary.

F. MONITORING AND ENFORCEMENT

PURPOSE

Ensure compliance with the Estuarine Sanctuary Management Plan, park regulations, Federal, State, and City requirements, and DEC and ACOE permits that are intended to protect the public health, safety and welfare, and the marine habitat of the Sanctuary.

IMPLEMENTATION

A. *Coordinate enforcement activities among HRPT, City, State and Federal agencies.*

1. In coordination with the State, NYPD and the Coast Guard, HRPT will prepare an enforcement plan that defines the respective roles of DEC police officers and Rangers, New York State Parks, New York City Parks Enforcement Patrol (PEP), HRPT staff, NYPD, and the Coast Guard. (Near term.)

2. Designate an HRPT "contact" for enforcement actions. (Near term.)

3. Post park regulations in the park and at www.hudsonriverpark.org. (Ongoing.)

4. Assure that the damage or removal of signs, markers, buoys, or scientific and maintenance equipment is strictly prohibited. (Near term.)

B. *Oversee construction activities to assure compliance with permit conditions*[*]

[*] There are two permits that regulate activities within the water area of the park, i.e., the Sanctuary. The first is a DEC permit issued in February 1999. The other is an ACOE permit issued in May 2000. Provided under "B" are the conditions that must be satisfied in order to maintain compliance with the issued permits.

1. Monitor in-water construction activities to assure compliance with prohibition of installation and removal of pilings between November 1st and April 30th. (Ongoing.)

2. Monitor construction activities to assure that best management practices are being employed to prevent construction materials, sediment, and debris from entering the water during construction/demolition activities. (Ongoing.)

3. Review design plans to assure that new bulkheading will be installed within 18 inches of existing structure and that the plans specify that backfill consist of uncontaminated inorganic granular material. (Ongoing.)

4. When the pumpout facility is completed at Pier 25 and the vessel-mounted pumpout is operational, install signs informing boaters of their location and the use requirements. (Short term.)

5. Review design plans to verify that the load-bearing capacity of reconstructed or repaired piers does not exceed the original or historic design limits. (Ongoing.)

6. Initiate the development of a separate Integrated Pest Management Program (IPM) for the ecological piers to be approved by DEC concurrent with development of the design plans for the ecological piers. (Near term.)

7. Prepare and submit detailed design drawings to ACOE and DEC when available for the segments of the park not currently under construction. (Near term.)

8. Review design plans to confirm that where the piles are to be removed at piers 56, 58, 95, 96 and portions of piers 42, 46 and 66, such piles will be removed completely or cut at the mudline using methods that will not result in substantial resuspension of bottom sediment. (Ongoing.)

9. Develop a containment plan for habitat at Piers 34, 49 and 72 pile fields to minimize sources of drift and maximize structural integrity. (Ongoing.)

10. Review design plans to confirm that all piers and pile fields have U.S. Coast Guard-approved lighting or markings (in consultation with the Harbor Safety and Operations Committee as needed (Ongoing.)

11. Assure that plans being developed for the ecological piers include engineering analyses and warranties that the structures will be serviceable for a minimum of 10 years after construction is completed. The engineering analyses must be designed to demonstrate that the structures can withstand load changes associated with the growth of marine borers, vegetation, soil weight, and snow. (Short term.)12. Initiate development of a long-term maintenance plan for the ecological piers and pile fields to track compliance with the requirement to maintain a minimum of 75 percent of the pilings within a pile field footprint. The maintenance plan will include an emergency response plan should the ecological pier(s) or pile field(s) partially or totally collapse into the waterway. (Short term.)

12. Initiate development of a monitoring plan for the ecological pier(s) to assess the status of the structural integrity and ecological community five years following completion of the pier(s). Identify modifications needed to correct any deficiencies, and reassess the piers needing modification 10 years following modification activities. The monitoring plan will address the landscaping plan, changes to the vegetation community over time, and use of the ecological piers by wildlife.
(Long term.)

13. Provide the Coast Guard, as needed, with up-to-date information on the construction schedule. (Ongoing.)

14. Ensure that the design plans for each of the get-downs are submitted to NOAA in addition to COE and DEC (Ongoing.)

15. Assess the need for a research program to monitor those water quality parameters within the Sanctuary with standards that must be met to fulfill the goal of providing swimming opportunities within the park as well as the goal of preserving and possibly enhancing the marine habitat within the Sanctuary. This may be accomplished with the aid of the Science Advisory Group. (Near term.)

16. Review design plans to assure that indigenous plants capable of enhancing the habitat for terrestrial biota (such as butterfly gardens) are incorporated into the project. Preference will be given to indigenous plants that require minimal care and can withstand a harsh estuarine environment. (Ongoing.)

17. Assure that the discharge of fill at the Gansevoort Peninsula Beach does not exceed 1.46 acres and that the Pier 76 beach does not exceed 0.98 acres. HRPT must estimate the annual rate of granular erosion at the beaches during the design phase. (Ongoing.)

18. Monitor recreational fishing, tracking information such as the species caught and the physical characteristics of the individual specimen.

19. Monitor the effectiveness of the Sanctuary Management Plan resource protection efforts (Near Term).

Hudson River Park Trust

Appendix B

Natural Resource Investigations

Attachment B

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Able, K.W., A.L. Studholme and J.P. Manderson, 1995. Habitat quality in the New York/New Jersey Harbor Estuary: An evaluation of pier effects on fishes. Final Report. Hudson River Foundation, NY, NY.							X	X				Reported abundance of large invertebrates collected in traps. Data from under pier, interpier and pilefield traps in vicinity of Piers 40 and 32 and sites across the river during May to September 1994.
Abood, K.A., G.A. Apicella and A.W. Wells. 1992. General Evaluation of Hudson River Freshwater Flow Trends. In: Estuarine Research in the 1980s, C. Lavett Smith, E.D., State University of New York Press, Albany , NY pp. 3-28.	X		X									Reviewed and modeled sedimentation rates in NY Harbor—at Hudson River Park rates were 2-9”/year interpier and 4-8”/year in channel.
Abood, K.A., E.A. Makita, TB Vanderbeek and M.U. McGowan. 1992b. Evaluation of Induced Sedimentation in New York Harbor. In: Estuarine Research in the 1980s, C. Kavett Smith, E.D., State University of New York Press, Albany, NY pp. 105-1338.	X		X									
Allee King Rosen & Fleming , Inc. (AKRF), Philip Habib &Associates, EEA, Inc. 1993. Chelsea Piers, New York, New York, Final Environmental Impact Statement. Prepared for Chelsea Piers, L.P., New York, NY.			X			X						
Belton, K.E. 1979. Phytoplankton Distribution in New York Harbor. Ph.D. dissertation, Fordham University, Bronx, NY.				X								
Berg, D.L. and J.S. Leinton. 1985. The Biology of the Hudson-Raritan Estuary, with emphasis on Fish. NOAA Technical Memorandum NOS OMA 16.								X				

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Berndt, V.V. and C. Bognacki. 1991. 1991 Marine Borer Report. Materials Engineering Section, Construction Division Engineering Department, Port Authority of New York and New Jersey							X					
Bopp, R. F. and J.H. Simpson. 1989. Contamination of the Hudson River, the Sediment Record. In: Contaminated Marine Sediments—Assessment and Remediation. Committee of Contaminated Marine Sediments, eds., National Research Council. National Academy Press, Washington, DC.		X										Concentration of PCBs and Pesticides in sediments of tidal Hudson—majority of PCBs deposited in NY Harbor, the area of highest sediment deposition. The maximum PCB accumulation occurred when Fort Edward dam was removed in 1973 and decreased since then.
Bopp, R.F., H.J. Simpson, C.R. Olsen, R.M. Trier and N. Kostyk. 1982. Chlorinated hydrocarbons and radionuclide chronologies in sediment of the Hudson River and Estuary, NT, Environmental Science and Technology 16:666-676.		X										
Brosnan, T.M. and M.L.O'Shea. 1996. Sewage abatement and coliform bacteria trends in the lower Hudson-Raritan Estuary since passage of the Clean Water Acr. Water Environment Research 68(1):25-35.	X	X	X	X								Collected water quality-salinity, DO. Nutrients, pH chlorophylia, coliform, phytoplankton.
Busby, M.W., and K.I. Darmer, 1970. A look at the Hudson Estuary. Water Resources Bulletin 6:802-812.			X									
Cerrato, R.M., H.J. Bokuniewicz, and M.H. Wiggins. 1989. A spatial and seasonal study of the benthic fauns of the Lower Bay of New York Harbor. Special Report 84, Ref 89-1.							X					

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Clark, J.R. 1968. Seasonal Movements of striped bass contingents of Long Island Sound and the New York Bight. Transactions if the American Fisheries Society 97:320-343.								X				
Coastal Environmental Services, Inc. 1987. Television City Project: Characterization of the Aquatic Ecology of the Site and Assessment of Potential Impacts of the Project on the Aquatic Biota, Prepared for Berle, Kass, and Case, NY, NY.							X					
Dew, C.B. 1991. Earky Life history and Population Dynamic of Atlantic tomcod (*Microgadus tomcod*) in the Hudson River Estuary, NY. Ph.D. dissertation, City University of New York, NY, NY.								X				
Diaz, R.J., R.J., Neubauer, L.C. Schaffner, L. Phihl and S.P. Baden. 1992. Continuous monitoring of dissolved oxygen in an estuary experiencing perdiodic hypoxia and the effect of hypoxia on macrobenthos and fish. Science of the Total Environment, Supplement 1992:1055-1068.	X						X	X				

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
EEA, Inc. 1988. Report on Aquatic Studies—Hudson River Center Site. Prepared for the New York City Public Development Corporation, NY, NY.	X	X	X				X	X				Grain size and organic content of interpier and underpier sediments at Piers 76 and 81. Measured sedimentation rates March-November 1987-4.1"/year, collected salinity and temperature at mid-depth between February 1986- Marcj 1988, and macroinvertebrate from soft substrata around Piers 76-81 quarterly. Conducted macroinvertebrate artificial substrate study in area of Piers 76-81, and interpier and underpier trawls and gill nets in vicinity of Hudson River Center Site-Pier76.
Garside, C.T.C. Malone, O.A. Moels and B.C. Shastein. 1975. An evaluation of sewage-derived nutrients and their influence on the Hudson Estuary and New York Bight. Estuarine and Coastal Marine Science 4:281-289.	X			X								
Geyer, W.R. 1995. Final report: Particle trapping in the Lower Hudson Estuary. Submitted to the Hudson River Foundation, NY, NY.	X	X	X									Levels of suspended sediments.
Gibbs, R.J. 1994. Metals in the sediments along the Hudson River Estuary. Environment International 20:507-516.		X										Measured distribution of metals from ocean to 43.5 miles (7km) above the Battery. Two sites were within Hudson River Park Area.

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Gottholm, B.W., M.R. Harmon and D.D. Turgeon. 1993. Toxic Contaminants in the Hudson-Raritan Estuary and Coastal New Jersey Area. Draft Report. National Status and Trends Program for Marine Environmental Quality, NOAA. June 1993.	X	X						X				
Howells, C.P., T.J. Kneipe and M. Eisenbud. 1970. Water quality in industrial areas: profile of a river. Environmental Science and Technology 4:26-35.	X											
Klauda, R.J. R.E. Moos and R.E. Schmidt. 1988. Life history of Atlantic tomcod, Microgadus tomcod, in the Hudson River estuary, with emphasis on spatio-temporal distribution and movements. In: Fisheries Research in the Hudson River C.L. Schmidt (E.D.). SUNY Press, Albany, NY. Pp219-251.								X				
Koski, R.T. 1978. Age, growth, and maturity of the hogchoker, Tinectes maculates in the Hudson River, NY. Transactions of the American Fisheries Society 107:449-453.								X				
Lawler, Matusky & Skelly Engineers (LMS). 1996. 1991 Year Class Report for the Hudson River Estuary Monitoring Program. Prepared for Consolidated Edison Company of New York, Inc.	X											Collected salinity data upstream of Park from April-October 1991
LMS. 1992. 1990 Year class Report for the Hudson River Estuary Monitoring Program. Prepared for Consolidated Edison Company of New York, Inc.	X		X									

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
LMS. 1984. Westway Mitigation Studies. Phase II—Summer 183 Data Report. Prepared for New York State Department of Transportation.							X	X				
LMS. 1983. 1982-1983 Westway Winter Sampling Program. Volume 1. Trawl Data. Prepared for New York State Department of Transportation.							X	X				
LMS. 1980b. Report and Photographic Documentation for the Batteru Park City Underwater Recolonization Study. Prepared for the New York State Department of Transportation and Parsons, Brinkerhoff, Quade and Douglas.						X	X					Observed percent coverage of rocks in vicinity of Battery Park City.
Limburg, K.E., M.A. Moran and W.H. McDowell. 1986. The Hudson River Ecosystem. Springer-Verlag, NY, NY.												
Lively, J.S., Z. Kaufman and E.J. Carpenter. 1983. Phytoplankton ecology of a barrier island estuary: Great South Bay New York. Estuarine, Coastal and Shelf Science 16:51-68.				X								
Lochan, H.K. 1993. Assessment of Changes and Health of Biota in New York Harbor: Fish, Birds, Mammals, and Reptiles. Bureau of Clean Water, NYC DEP. Intradepartmental Memorandum. April 23, 1993.							X	X	X	X		
Londsdale, D.J. and E.M. Cosper. 1994. Phytoplankton productivity and zooplankton feeding and productivity in the lower Hudson River estuary. Marine Sciences Research Center, SUNY, Stony Brook NY. Final Report to the Hudson River Foundation, NY, NY.				X	X							Conducted investigations of phytoplankton and zooplankton from 1990-1992 between George Washington and Verrazano bridges.

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Malcolm Pimie, Inc. 1982. Hudson River Estuary Fish Habitat Study. Prepared for the US Army Corps of Engineers, NY District, NY, NY.			X	X								
McLaren, J.B., T.H. Peck, W.P. Day, and M.Gardinier. 1988. Biology of Atlantic Tomcod in the Hudson River Estuary. American Fisheries Society monograph 4:102-112								X				
Moran , M.A. and K.E. Limburg. 1986. The Hudson River Ecosystem. In: The Hudson River Ecosystem, Limburg, K.E.,M.A. Moran, and W. H. McDowell. 1986. Springer-Veriag, New York, NY. Pp 6-40.	X		X			X						Summarized SAV information.
Mueser Rutledge, Consulting Engineers. 1997. Hudson River Park Project bulkhead condition review. Prepared for Hudson River Park Conservancy, NY, NY.												
New York Cit Dept. of Environmental Protection (NYCDE). 1999. 1998 New York Harbor Water Quality Survey. NYCDEP, Bureau of Waste Water Pollution Annual Harbor Water Quality Survey	X	X	X	X								
New York City Department of Health. 1992b, 1991, 1990. Beach and Harbor Water Sampling Program. NYCDOH, Bureau of Public Health Engineering, NY, NY.	X											
New York State DEC. 1988. A Study if the Striped Bass in the Marine District of New York. NYS DEC Division of Marine Resources. Albany, NY. Project AFC-13-3, Grant Number NA85EA-D-00019.								X				

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
New York State DEC. 1967. Perdiodic Report of the Water Quality Surveillance Network; 1965 through 1967 water years. NYS Dept. of Environmental Conservation, Albany, NY.	X											Reported pH and other water quality parameters.
New York State Department of Transportation. 1994. Route 9A Reconstruction project Final Environmental Impact Statement. New York State Department of Transportation in cooperation with Federal highway Administration and the City of New York.			X									
Ocean Survey, Inc.. 1987. Final Report, Field Investigations of the Hudson River Center Site, NY. Prepared fro EEA, Inc. Garden City , NY. Prepared by Ocean Surveys, Inc., Old Saybrook, CT.			X									Hyrdrology study vicinity of Piers 76 and 81—2 underpier and 2 interpier locations outside main channel.
O'Shea, Marie L. 1993. Estuarine Benthos: Their Functional Role and the Eggect of Periodic Hypoxia. Bureau of Clean Water, New York City Dept. of Environmental Protection intradepartmental memorandum. April 1, 1993.							X					
O'Shea, M.L., and T.M. Brosnan. 1997. New York Harbor Water Quality Survey, 1995. Marine Sciences Sect., Bureau of Clean Water, NYCDEP, Wards Island, NY	X	X	X	X								
Pathogens Work Group. 1990. New York Bight Restoration Plan, Phase II Report to Congress: Attachment 3, A Review of closed Shellfish Areas and Bathing Beaches in the New York Bight. August 1990.	X											

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Pearce, J. 1974. Invertebrates of the Hudson River Estuary. Annals of the New York Academy of Science 250: 137-143.							X					
Rohman, S.O., and N. Lilienthal. 1987. Tracing A River;s Toxic Pollution: a Case Study of the Hudson, Phase II. Inform, Inc. NY, NY.	X	X										Summary of sediment contamination studies.
Simpson, H.J. r. Bopp and D. Thurbar. 1974. Salt movement patterns in the Hudson. Hudson River Ecology (Paper 9) 3rd Symp. Hudson River Environ. Sic. Bronx, NY.			X									Sampled the Hudson River channel and shallows where sediments were suitable for Petersen grab, near George Washington bridge.
Sloan, R.J. and R.W. Armstrong. 1988. PCB Patterns in Hudson River Fish: ll. Migrant and Marine species. In: Fisheries Research in the Hudson River. C.L. Smith, ed., State University of New York Press, Albany, NY pp. 325-350.								X				
Smith, C.E., T.H. Peck, R.J. Klauda and J.B. McLAren. 1979. Hepatomas in Atlantic tomcod and MIcrogadus tomcod (Walbaoum) collected in the Hudson River estuary in New York. Journal of Fish Diseases 2:313-319.								X				
Stepien, J.C., T.C. Malone and M.B. Chervin. 1981. Copepod communities in the estuary and coastal plume of the Hudson River. Estuarine, Coastal and Shelf Science 13:185-194.					X							Examined copepod community between George Washington Bridge and Verrazano Bridge.
Stoecker, R.R., J. Collura, and P.J. Fallon, Jr. 1992. Aquatic studies at the Hudson River Center Site. In: Estuarine Research in the 1980s. C.L. Smith, ed., State University of New York Press, Albany, NY pp.407-427.								X				

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Texas Instruments. 1979. Year-Class Report for the Multiplant Impact Study of the Hudson River Estuary. Prepared by Texas Instruments Incorporated for consolidated Edison Co, of NY, Inc.	X											Included water quality data.
Texas Instruments. 1976. A Synthesis of Available Data Pertaining to Major Physiochemical Variables Within the Hudson River Estuary Emphasizing the Period from 1972 through 1975. Prepared by Texas Instruments for Consolidated Edison Co. of NY, Inc.				X								
Texas Instruments, Inc. 1976. Liberty State Park Ecological Study. Final Report. Prepared for the Port Authority of New York and New Jersey, NY, NY.				X	X		X	X				
Tofflemire, T.J., and L.J. Hetling. 1969. Pollution Sources and Loads in the Lower Hudson River. Roc. Sym. Hudson River Ecology New York State Dept. Envir. Conservation Bulletin.	X											
US Army Corps of Engineers. 1996. Hudson River Channel, NY: A federal navigation project maintenance dredging. Public Notice No. 96-4-FFP. New York District, Operations Support Branch, NY, NY.		X	X									Evaluated grain size, percent of sand, silt and clay, in area adjacent to Manhattan shoreline from Ellis Island to West 59th Street. Two reaches were within the Hudson River Park. Also conducted bioassay testing.
USFWS. 1995. Significant Habitats and Habitat Complexes of the New York Bight Watershed—Draft Report. Prepared by the US Fish and Wildlife Service, Southern New England, New York Bight Coastal Ecosystems Program, Charlestown, RI.									X	X	X	

Attachment B (continued)

Natural Resources Investigation Within the Past Thirty Years In or Within the Vicinity of the Hudson River Park

References	Water Quality	Sediment Characteristic	Hydrology	Phytoplankton	Zooplankton	SAV/Benthic Macroalgae	Benthic Invertebrates (Biota)	Fish	Marine Mammals	Amphibians/Reptiles	Birds	Comments
Van Allen, B. 1989. NY Harbor Marine Borer Update. Annual Meeting of the Marine Borer Research Committee of NY Harbor, World Trade Center, NY, NY. November 14, 1989.							X					
Weinstein, L.H. 1977. Atlas of the Biological Resources of the Hudson River Estuary. L.H. Weistein (E.D.). Boyce Thompson Institute for Plant Research, Yonkers, NY.	X			X								
Wolfe, D.A., E.R. Long, A. Robertson, E.A. Stem, and G. Thursby. 1993. Contaminant Bioeffects Assessment in the Hudson-Raritan Estuary. Abstracts, The Science & Management of Coastal Estuarine Systems, 12th Biennial International Estuarine Federation conference, November 14-18, 1993. Hilton Head, South Carolina, p. 138.	X	X										
Woodhead, P.M.J. 1991. Inventory and Assessment of Habitat and Fish Resources and Assessment of Information on Toxic Effects in the New York/New Jersey Harbor Estuary. State University of New York, Stony Brook, NY.	X	X						X				
WRI (New York State Water Resources Institute, Cornell University). 1994. The State of the City;s Waters, 1994: The New York Harbor Estuary. Prepared under the direction of the New York City Department of Environmental Protection, NY, NY.							X					Reported on borer damage.

Appendix C
Responsive Summary

Appendix C: Responsive Summary

Comments on the Estuarine Sanctuary Management Plan (ESMP) for Hudson River Park include oral comments made at the public hearing held on Tuesday, November 27, 2001 at St. Vincent's Hospital and written comments submitted to the Hudson River Park Trust between October 18, 2001 and December 24, 2001.

If multiple comments were made on the same subject, they have been summarized into a single comment. Only comments related to the ESMP are responded to herein. Comments under separate public review such as the Park Design and Construction Process are not formally addressed. The ESMP is a complement to and not a replacement or revision of previously adopted HRPT policies and procedures such as the Park Rules and Regulations. Other policies, procedures, and design efforts are also underway such as the Final Segment Designs, Historic Vessels Policy, Interpretive Signage, Spill Response Plan (SRP), Pollution Prevention Plan (PPP), Litter Control and Recycling, Integrated Pest Management, Regulations and Enforcement, and Pile Field Management Plans that also integrate ESMP concerns.

Where a response indicates a comment noted, the Trust has made appropriate changes in the management plan pursuant to that comment. The following is the comment response:

EXECUTIVE SUMMARY

Comment 1: **Scope of Plan.** Hudson River Park Act (Act) in Section 8.1 defined this ESMP as the park's water from the bulkhead out to the U. S. Pierhead Line and, directed the Trust to develop a management plan consistent with the Act for the water section and the marine environments under the piers. The language of the Act makes it clear that the water portion of the park does not include the piers or the float bridge but rather contains them. It is further clear that the plan must be limited to the sanctuary and thus the water section of the park, although other direct impacts are certainly under the jurisdiction of the Trust and may reasonably be addressed in this plan. With the best of intentions, the approach of some Action Plan sections seems to risk overstepping true sanctuary concerns.

Response: The Trust agrees that, as part of the Act, the Estuarine Sanctuary is limited to the water areas of the Park. However, the Trust is also aware that the interweaving of park facilities make it necessary in the ESMP to address issues that might overlap several other upland Park planning efforts. An example would be upland habitat planning where forage, cover and nesting may occur for predominantly marine related species. Further examples would be the monitoring of permit restrictions on in-water construction during the winter as well as providing guidelines for design elements such as beaches and docks.

Comment 2: **History of Fill.** of this reads, an upland that "spilled into the river as fill..." This should be rewritten to reflect that purposeful land filling and edge stabilization occurred.

Response: Comment Noted.

Comment 3: **Ecological Piers.** Change: "transformed" to "transformed, enhanced or conserved".

Response: Comment Noted.

Comment 4: **Indigenous Species**. Add: "and wherever possible, encourage indigenous species to use and recolonize the Park."

Response: Comment Noted.

Comment 5: **Monitoring**. Replace: "monitoring impacts" with "monitoring ecological conditions".

Response: Comment Noted.

Comment 6: **Improvement of Natural Resources.** Add: "and improve" the area's natural resources.

Response: Comment Noted.

Comment 7: **Passive Activities**. Edit and add: "and passive activities" to meet the needs and uses.

Response: Comment Noted.

Comment 8: **Edit**. The last sentence in paragraph one is awkward.

Response: Comment Noted.

Comment 9: **Fish and Wildlife.** Change: "fisheries and wildlife" to "fish and other wildlife".

Response: Comment Noted.

Comment 10: **Chemicals.** Add: fertilizers and antifoulants "that minimize the need for chemicals..."

Response: Comment Noted.

Comment 11: **Waste Stream.** Add "minimize the waste stream and"

Response: Comment Noted.

Comment 12: **Passive Appreciation**. Add: "Expand passive appreciation of the Hudson River and its' natural environment."

Response: Comment Noted.

Comment 13: **Water Enjoyment.** Add: full enjoyment of the park "and water."

Response: Comment Noted.

Comment 14: **River Ecosystem.** Change: Hudson River's "resources" to "Hudson River's ecosystem".

Response: Comment Noted.

Comment 15: **Research Provision.** Revise: "Augment current and provide new" research opportunities.

Response: Comment Noted.

Comment 16: **Research Encouragement**. Revise: "Augment current and encourage new" research.

Response: Comment Noted.

CHAPTER 1: BACKGROUND AND PARK DESCRIPTIONS

Comment 17: **Introduction**. An introduction of the plan's format is needed here, perhaps at the end of paragraph one. This section should discuss both the Base (or Master) Plan and the Action Plan.

Response: Comment Noted.

Comment 18: **Use of HREMP in Developing Sanctuary Plan.** As at time of the hearing on the scope, there were concerns about the choice of the Hudson River Estuary Management Plan (HREMP) for four other high-quality tidal wetlands in the estuary as the primary guide for this Plan. While the sanctuary is indeed part of the lower Hudson River, it is a very different environment. This choice of the HREMP model may have led, no matter how indirectly, to an approach that does not always accurately reflect the nature and purpose of this sanctuary. The implications of this approach affect the balance of recreation and environmental goals.

Response: Section 8.1 of the Act mandates that the Trust be consistent with NYS Department of Environmental Conservation (DEC) regulations and guidelines under the Hudson River Estuary Program in developing the ESMP. However, the Act recognizes the urban setting of the Estuarine Sanctuary and, identifies in Section 8.2 several different interests that are to be addressed in the ESMP. Consideration of those interests, (1) conservation, (2) environmental education and research, (3) public recreational use, and (4) authorized park/commercial uses, form the outline for all ESMP Chapters. Beyond these requirements and as stated in the ESMP (page 1-1) the Trust did, in fact, review and consider many varied sanctuary plans from around the nation and the world.

Comment 19: **Other Planning Models.** If other planning models aside from the HREMP had been used in formulating the ESMP, there would be less controversy over its implementation.

Response: See Comment 18.

Comment 20: **Upland and Marine Overlap.** The scope of this Plan via the HREMP is reflected in the inconsistent treatments of the clearly non-marine sections of the Park. The paragraph on the bulkhead states that the Estuarine Sanctuary Management Plan addresses management of the river west of the bulkhead while the paragraph on the upland states that the Estuarine Sanctuary Management Plan will not uniformly address the park's upland elements. However, the plan does speak to upland issues of sustainability, habitat, and sanctuary related features, such as the estuarium, ecological piers, conflicting use, fertilizer and litter control practices.

Response: See response to Comment 1.

Comment 21: **Native Americans**. It may worth noting that the only known Indian/Native American site in or adjacent to the Park was a probable crossing and trading location near the Gansevoort peninsula and the 15th Street Park, known by some version of the name Sapokanikan.

Response: Comment Noted.

Comment 22: **Hudson River Railroad.** The Hudson River Railroad was actually built adjacent to the shoreline, along Eleventh Avenue (the previous location of the shoreline) north of the 30th Street Yards.

Response: Comment Noted.

Comment 23: **Relieving Platforms**. The relieving platform was just back of the concrete and granite wall (the visible upper part of the bulkhead).

Response: Comment Noted.

Comment 24: **Edit**. The phrase industrial craze seems to be a bit loaded. This was the climax of a period of expansion that went through periods of recession but did not crash in the same way as the boom of the 1920's.

Response: Comment Noted.

Comment 25: **Hell's Kitchen.** Hell's Kitchen was variously defined but clearly extended at least as far south as the 30th Street rail yards. The original site identified by that name was on 39th Street.

Response: Comment Noted.

Comment 26: **Small-scale Boating Instead of Water Play**. Small-scale boating is an excellent term interpreting the Act's intentions for recreational uses in the water area, and might in some cases be used instead of water play.

Response: Water play is an all-inclusive term implying water contact, swimming, model boats and many other activities beyond small-scale boating. Water Play Areas will receive the Trust's highest priority for water quality improvement (see Comments 87, 91 and 135).

Comment 27: **Dredge Spoils**. Change to: "No excavation or placement of dredge spoils is allowed (except for approved fill at two beach areas)."

Response: Comment Noted.

Comment 28: **Tidal Wetlands**. The tidal wetland boundary is located at the pierhead line from approximately 35th street south to Pier 25, where the boundary line returns to the bulkhead. Therefore, the paragraph at the top of the page is technically incorrect and should be revised.

Response: Comment Noted.

Comment 29: **Pile Density.** The restrictions listed on the top of the page related to changes in pile density raise significant issues. The reconstructed piers appear to have some loss in pile density and certainly a considerable loss in bracing and intermediate structures that may be habitat for water birds and possibly other creatures. The impacts of this change need to be checked and remedied. The visual effect of the piers, especially at low tide, is different from the typically varied and usually heavier historic ones. This is a loss in many ways.

Response: The densities are continuously monitored by HRPT staff and consultants and comply with the provisions specified in the ACOE and DEC permits. Pile field decisions are being addressed as part of the Park Design Review Process.

Comment 30: **Pile Density After Construction**. During construction, the pile fields must maintain a density ranging from +10% to B10%. After construction is completed, the density of pile fields cannot fall below 75% of the original field.

Response: Comment Noted.

Comment 31: **Edit.** The usual spelling is "commenters."

Response: Comment Noted.

Comment 32: **River Project.** Change: "educational program and exhibits" on the ecology of the river.

Response: Comment Noted.

Comment 33: **River Project Update**. Update: "They have built an outdoor classroom and a get-down on the southern side of the pier with floating docks and boats."

Response: Comment Noted.

Comment 34: **Pier Update.** This pier "is largely undisturbed with some habitat and" is closed to the public.

Response: Comment Noted.

Comment 35: **Pier Update.** The status of the Pier 46 needs updating since construction has advanced.

Response: Comment Noted.

Comment 36: **Pier Update**. The status of the Pier 49 needs updating since construction has advanced.

Response: Comment Noted.

Comment 37: **Pier Update**. The status of the Pier 51 needs updating since construction has advanced.

Response: Comment Noted.

Comment 38: **Pier Update**. The status of the Pier 66A needs updating since construction has advanced.

Response: Comment Noted.

Comment 39: **Tidal Cycle**. Change: varies "daily" to "hourly" with the tidal cycle.

Response: Comment Noted.

Comment 40: **Water Temperature.** The units used to represent the water temperature range are incorrect. It should read "...range from 1.3 C in winter to 24.6C in the summer..."

Response: Comment Noted.

Comment 41: **Invertebrates**. Add: are important food for "invertebrates, fish, and waterfowl."

Response: Comment Noted.

Comment 42: **Barnacles**. There is likely two species of barnacles in the Estuarine

Sanctuary. Change the text from (Balanus improvisus) to (Balanus spp.).

Response: Comment Noted.

Comment 43: **Fish Size Limits**. There is a different size limit for striped bass in the marine waters of the Hudson (i.e., below the George Washington Bridge). Moreover, since this is a living document, it would be better to leave out specifics on size limits and consumption rates as they may change in the future. The section could just mention that there are health advisories and catch limits for certain finfish.

Response: Comment Noted.

Comment 44: **Endangered Species**. Add the Least Tern (Sterna albifrons) to the last paragraph on Significant Habitat and Threatened and Endangered Species.

Response: Comment Noted.

CHAPTER 3: RESOURCE PROTECTION

Comment 45: **Edit**. "marine habitat" should be "estuarine habitat".

Response: Comment Noted.

Comment 46: **Expand Species**. Instead of listing only aquatic species, include important bird and plant species as well. This would make it more consistent with the Action Items.

Response: Comment Noted.

Comment 47: **Marine Habitat.** Marine habitat should be protected and restored for shellfish, wading birds, and waterfowl.

Response: Comment Noted.

CHAPTER 4: PUBLIC ACCESS AND RECREATION

Comment 48: **Edit**. Edit: "...consistent with the General Program Plan (GPP) and permit requirements..."

Response: Comment Noted.

CHAPTER 5: EDUCATION

Comment 49: **Estuarium.** This would be an ideal place to introduce the Estuarium and how it will support this program.

Response: Comment Noted.

CHAPTER 6: ENVIRONMENTAL RESEARCH

Comment 50: **Research Scope**. The purpose stated is too general and not likely achievable. If the research is focused only within the boundaries of the sanctuary, the purpose of the research program needs to reflect these boundaries. Throughout the section, reference is made to certain monitoring information needs and it is stated that through research these needs will be met. There is a need to monitor the biota (fish, birds, aquatic invertebrates) and water quality (not just for recreational use) to identify long-term trends and relationships to human activities. It is strongly recommend that these sections specifically address the need for long-term monitoring within the sanctuary. The Research section is also an important place to discuss the Estuarium and how it will support this program.

Response: Comment Noted.

Comment 51: **Structures Within Sanctuary.** The second bullet needs to include the habitat values/impacts of structures within the sanctuary.

Response: Comment Noted.

Comment 52: **Structure Enhancement**. The third bullet under this section should include evaluating methods to enhance structures for habitat. For example, piers are a dominant feature within the sanctuary and make for an excellent opportunity to focus both research and monitoring on the highly debated management of pier design improvement.

Response: Comment Noted.

Comment 53: **Cultural Research**. Cultural research should be emphasized as well as ecological.

Response: Comment Noted.

Comment 54: **Technical Advisory Committee**. The Technical Advisory Committee should be expanded to include education, research and resource protection issues.

Response: Comment Noted.

ATTACHMENT A: ACTION PLAN

Comment 55: **ESMP Review Cycle**. The five-year review cycle for the ESMP is insufficient to ensure adequate public participation.

Response: The Action Plan will be updated every three years.

Comment 56: **Taking of Fish**. The ESMP needs to acknowledge the taking of fish and shellfish.

Response: Comment Noted.

Comment 57: **Director of Environmental and Educational Planning**. A new position, the HRPT environmental planner, has been introduced into the sanctuary planning and management process. Who is this person and what is their role?

Response: Comment Noted (see Chapter 1 and Appendix D).

Comment 58: **Coordination**. Change: "Incorporate" to "Coordinate with" any appropriate local and regional activities.

Response: Comment Noted.

Comment 59: **Water Access**. Further define what water use management action(s) will be taken.

Response: Comment Noted.

Comment 60: **Status Report on Key Species**. Explain key species status report in more detail.

Response: Comment Noted.

Comment 61: **Seasonal Use by Key Species**. Action Plan should be changed to read: "Management policies shall be developed..." and the following sentence changed to "These policies shall be modified as needed based on the updated status reports."

Response: Comment Noted.

Comment 62: **Litter Control**. What is the status of the litter control program?

Response: Litter control is the venue of HRPT Maintenance and Operations (M & O) Program.

Comment 63: **Litter and Tenants**. Could these litter control programs be incorporated into a tenant's lease?

Response: Litter control is a requirement for provision within Park leases and permits.

Comment 64: **Fueling and Repairing Boats**. Fueling and repairing boats in the sanctuary is prohibited by law and permits.

Response: Comment Noted.

Comment 65: **Pumpout Facilities**. Please explain who would establish and run the pumpout facility and, how would construction be funded?

Response: The pumpout facility at Pier 25 will be built with HRPT Capital Funding and managed by staff or their designees. HRPT or their designees will manage the pumpout vessel. The pumpout facilities are being addressed as part of the Park Design Review Process and M & O functions.

Comment 66: **Water Spill Response**. Will there be on-site response equipment and budget for spill response?

Response: HRPT does have limited equipment and some staff training for small spills but will not have on-site response equipment for large water borne spills. HRPT does maintain relationships with other agencies and contractors in the event of a significant emergency.

Comment 67: **Upland Spill Response.** Is there going to be a requirement that a trained employee be on site at all times, or that all employees must be trained in spill response?

Response: HRPT will have three staff (covering 24-hours) trained in small scale spills and will develop a SRP. HRPT does maintain relationships with other agencies and contractors in the event of a significant upland spill emergency.

Comment 68: **PPP Approval**. The PPP needs approval by the Trust.

Response: HRPT by-laws guide approval and operation policies.

Comment 69: **Pile Field Significance**. Perhaps this section should note that the woodpile fields are currently under attack from borers, and that based on their ecological significance, a plan will be developed to preserve this habitat into the future.

Response: A pile field management plan will be developed by HRPT.

Comment 70: **Pier Reconstruction**. Most of the pile fields offer environmental areas for fish and other species but also allow the possibility of restoring a number of piers of which the DCMP said (on page 23) that the costs of restoring them would be prohibitive. The unspoken understanding was that if circumstances changed and it turned out to be financially feasible and otherwise desirable to rebuild piers for true park uses, it might be possible to gain permits to restore a few as existing structures. This was how Pier 49 and even to some extent the partial ecological Pier 42 were presented as a compromise to those strong voices in Greenwich Village calling for the retention of even more piers than the several they had obtained. The pile field at Pier 72 has several times been explicitly proposed as a pier to be restored for park (or less appropriate) uses if and when the Long Island rail yards were developed.

Response: Pier reconstruction is being addressed as part of the Park Design Review Process.

Comment 71: **Native Plants**. The choice of plantings should recognize that many non-native plants have long been naturalized in this area and form part of its history.

Response: Many non-native plants are and will be used through out the Park.

Comment 72: **Railings**. Park visitors seated on benches should not have their views blocked by top rails on fencing. Sections of railings should be removable to permit access to and from visiting tall ships and access during Fleet Week festivities. During times of emergency, access by fire boats and other emergency vessels may be needed and removal of sections of fencing and railings would be necessary.

Response: Boat docking and rail design is being addressed as part of the Park Design Review Process. Park rails will have strategically located emergency access gates.

Comment 73: **Waterfront Lighting.** Existing waterfront lights often interfere with the safe operation of vessels in New York Harbor. Park lighting should not contribute to the increasing light pollution in our city environment. Safety of pedestrians should be maintained but lighting should be shielded in direction and not shine upward.

Response: Lighting is being addressed as part of the Park Design Review Process. Any lighting used at the bulkhead for safety and security will not significantly increase the level of light. Lighting will comply with applicable U.S. Coast Guard (USGC) and other applicable requirements (see Comment 127).

Comment 74: **Park Rules and Regulations.** Do elements of the ESMP supercede the Rules and Regulations?

Response: The Park Rules and Regulations are integral to the ESMP.

Comment 75: **Posting of Fishing RegulationsRevision:** "HRPT posts DEC fishing regulations which address the legal lengths for keeping fish, and the NYS Department of Health: Health Advisory which provides recommended quantities for fish consumption."

Response: Comment Noted.

Comment 76: **Boating Season.** A boating season from May 1 to October 31 implies that normal river boating traffic is to be excluded from November through April.

Response: Boating restrictions are limited and only apply to certain park facilities in accordance with the Act and ACOE/DEC Permit requirements where seasonal reduction in activity directly benefits Hudson River fish migration. Most boating traffic is not affected but boating seasons are normally reduced during the winter by the beneficial choice of boaters.

Comment 77: **Integration of Rules and Regulations**. Regulations should be reviewed for consistency with State and Federal boating navigation law so boaters entering the Park from other locales do not become confused with conflicting regulations. Existing laws already cover speed, noise, discharge, and navigational aids.

Response: Rules and Regulations have been reviewed for integration and adopted by HRPT.

Comment 78: **Sign Legibility**. Signage legible from boats needs to be large with wayfinding related to the urban street grid.

Response: Comment Noted.

Comment 79: **Water Taxis.** A goal of encouraging as many water taxi routes as possible would be a plus for business interests as well as the public.

Response: Comment Noted.

Comment 80: **Park Security.** NYC Parks and Recreation Department (NYCDPR) Parks Enforcement Patrol (PEP) Officers are not police, are unarmed, and cannot make criminal arrests. If a crime is being committed, they have to find the police. Why not use DEC Enforcement Compliance Officers (ECOs), NYS Office of Parks, Recreation and Historic Preservation (NYSPRHP) Rangers or State Park Police for enforcement since they are police and have training in the environmental compliance legal and natural resources issues.

Response: PEP are police officers and do have the power of arrest although they are unarmed. ECO's, Rangers, and State Park Police have overlapping jurisdiction with the Park. HRPT relies on a number of personnel and agencies for security and will continue to review future security arrangements and agreements.

Comment 81: **Temporary Structures.** Include language noting that temporary structures would need to be consistent with the law and regulations.

Response Comment Noted.

Comment 82: **Boating Safety Courses**. Public education courses would likely minimize violation of regulations due to lack of knowledge on the part of boaters. The United States Power Squadron provides the largest number of public boating safety courses offered in Manhattan. There are 2 squadrons in Manhattan and others in the outer boroughs? At least one of these squadrons has a website: www.northriversquadron.org.

Response: Comment Noted.

Comment 83: **Anchoring**. Please expand on anchorage prohibitions.

Response: Comment Noted.

Comment 84: **Authority to Designate Water Use Areas**. The Water Use Area categories limiting the access of various types of vessels to specified areas of the Park is arbitrary and unenforceable.

Response: The Hudson River Park Act, Chapter 592 of the Laws of 1998 (Act), finds that the planning and development of the Hudson River Park is in the public interest as, among other things, it "will encourage, promote and expand public access to the Hudson River, promote water-based recreation, and enhance the natural, cultural, and historic aspects of the Hudson River (Act, Section 2). To effectuate creation of the Park and achievement of that goal, the Act grants the Trust a possessory interest in the real property within the Park boundaries, which includes the approximately 400 acres of water and underwater lands, west to the U.S. Pierhead Line. The Trust has the power and duty under the Act (Section 7) Ato plan, design, develop, construct, operate, and maintain the Hudson River Park."

Further, the Act designates the water areas of the Park as an estuarine sanctuary and charges the Trust with protecting and enhancing the natural resources, while at the same time providing access to the water for recreational, educational and other water dependent uses permitted under the Act. The Trust is expressly empowered to "determine where water dependent activities are to occur" including "establishing sanctuary/preserve areas and areas where motorized or non-motorized vessels are or are not permitted, and restrictions on noise and other potential nuisance conditions (Act, Section 8)."

The Water Use Areas are in furtherance of the Act's mandates and are designed to balance the duty to provide and enhance public access to the river, and recreational and educational opportunities within the Park while at the same time, protecting and enhancing the Park's natural resources. The Act specifically authorizes the Trust to develop and maintain the Park including water areas. The Water Use Areas are consistent with other pertinent federal, state and local requirements concerning the Hudson River Park and are wholly consistent with the directive of the Act. The Trust will rely on USCG standards and will utilize the services of staff qualified by the USCG to apply those standards. All provisions at issue are consistent with those standards found in HRPT, NYSOPRHP and NYCDPR rules and regulations.

Comment 85: **Reserve Water Use Management.** There appears to be no sound science or approved waterway management practices justifying the vessel use restrictions set forth in the Water Use Area categories, and the assumptions underlying those restrictions.

Response: See Comments 84 and 97.

Comment 86: **Expanded Definitions of Water Use**. There should be better definitions of the Water Use Areas and Maps.

Response: Comment Noted.

Comment 87: **Water Play Terminology**. The phrase water play is ambiguous and unfortunate.

Response: See Comment 26, 91 and 135.

Comment 88: **Water Use Area Conflicts**. To manage water surface areas to minimize in-water conflicts between different park activities, together with the associated maps, explicitly reflects potential conflicts and raises issues with significant implications.

Response: These conflicts currently exist and the mandate for managing water use explicitly seeks to reduce conflicts.

Comment 89: **Water Areas Coverage**. Where did percentage breakdown for Water Use Areas come from?

Response: These were acreage calculations translated into percentages of cover.

Comment 90: **Changes in Water Use**. The number of changes from non-motorized uses to motorized, economic development, terminals and wharf uses has the potential to be very confusing from the user perspective. Recreational and commercial operators on the river will not be accustomed to Park regulations.

These changes in zones would be especially confusing in areas beyond pier ends, where boundaries would be difficult to identify.

Response: The eventual water use management goal is to familiarize operators and boaters with the differing use areas in the Park, make known the danger areas and restrictions, and develop a proper signing and wayfinding program that will clearly identify different use areas (see Comment 106).

Comment 91: **Water Play Definitions**. Water play is too broadly defined. The association is with sprinklers, model boating or games like water polo. Here, it includes art, which is confusing. Non-motorized boating is quite a different category, large in itself, and should be considered as a sport. The definition needs rethinking and non-motorized boating should be a category of its own like "motorized boats."

Locations for some aspects of true water play like swimming and swimming-related games should have defined areas where, with the appropriate safeguards, they should be given priority, since there are potential conflicts with most types of boating. In maps the water play area seems largely to represent non-motorized boating and should be allotted appropriately.

Response: Water play is envisioned in use areas where water contact activities will be emphasized with improved water quality. Art will be integrated throughout the Park, e.g. the Estuarine Sanctuary might include a fountain that is both aesthetic and serves water aeration needs. There will be the opportunity in the future to further refine and define water play uses as the design master plan for the Park proceeds. Water play currently includes non-motorized boats. Regarding swimming, see Comment 135.

Comment 92: **Pier 76 Northside Water Play Area** Pier 76 is commercial on the north side yet is labeled water play. The north side of Pier 76 near the Ferry Terminal should be motorized boats.

Response: Comment Noted.

Comment 93: **Water Play Area Around Pier 51.** The purpose of the relatively small water play area around Pier 51 is puzzling, since it is not yet clear what kind of boating is intended in the area.

Response: This area includes Pier 51 (children's water and sprinkler playground), Gansevoort Beach, and non-motorized boats.

Comment 94: **Large Motorized Boats**. Most historic ships, tall ships, and similar vessels are motorized and this should be reflected in the motorized boating category. Perhaps special accommodations for them should be laid out in the ESMP.

Response: Comment Noted.

Comment 95: **Pier 66**. Pier 66 is apparently to be a base for motorized boats. It had been the impression that the entire area between Pier 64 and the south side of Pier 76 was to be a basin for non-motorized boats and that the boathouse at Pier 66 and the float at 66A (the float bridge) were designed to serve such boats. Although at Pier 84 a water-taxi stop and public docks were planned on the south side, the principal water activity on the north side is to be Floating the Apple with its boathouse. For safety and to preserve an appropriate environment for this activity, motorized boating might be excluded on this pier.

Response: The design and uses of Piers 66, 66A and 84 are being addressed as part of the Park Design Review Process for Segments 6 and 7.

Comment 96: **Reserve Definitions**. Reserve areas are ill defined. Reserve typically applies to a place where human activity is restricted on environmental grounds and therefore, raises potential questions of use conflicts. It should be made explicit in the plan what type of regulation is intended for these areas in the long run. If the only regulatory intention were to limit boating in water areas to non-motorized types, establishment of these areas would be pointless.

The statement that the park water uses will be reevaluated periodically to attain a future goal of 30% reserve, clearly indicates an intention, not backed up by any rationale, to increase these areas. This makes sense only if there is to be a real difference in regulation. If the ESMP has the result of reducing human park uses, presumably boating, by approximately one-third while quite specifically increasing areas for economic development, it would be inconsistent with the earlier plans.

Response: Reserves are considered sensitive habitats as explained in the ESMP (areas of long ago ceased commercial activity, surrounding ecological piers and pile fields, etc.). Reserve designations will be reviewed periodically and, because of estuarine sanctuary status, there is a goal of increasing reserve areas to 30% of the Park based on habitat suitability but currently under conflicting uses. Reserve areas will have use restrictions based on impacts and implications for future investments of public funds in improving and restoring habitat quality. There are no plans to increase the economic development areas.

Comment 97: **Reserve Boating Conflicts.** The general statement that non-motorized boating is permitted in reserve areas is too open-ended. Any encroachment is going to have to be considered carefully. Encroachment into these areas, even by such non-motorized craft, can disrupt the behavior of fish and wildlife as stated by DEC. There may be a need to restrict boating further by establishing a strict exclusion zone or season, or by limiting access to certain vessel types. The language here should be changed to reflect a need for review.

Response: Comment Noted.

Comment 98: **Extent of Reserves**. In general, the main goal of the "reserves" should be to protect sensitive ecological areas at or near the surface. The depths and bottom of the water portion will not be disturbed if there is appropriate regulation of surface activities to limit motorized boating and other potentially disturbing activities.

Response: Marine reserves universally include bethnic (bottom) habitats.

Comment 99: **Reduction of Reserves.** Reduce the reserves, especially since the demand for boating is great and clearly on the increase. The boundaries of the Segment 3 Reserve Area incorporates Ecological Pier 32, the estuarium (a truly environmental purpose), and the pile field enclosed by the arms of Pier 34 and these facilities already limit boating and provide teaching. Reducing its extent by perhaps 200-300 feet on the south should be studied to extend the area fully available to non-motorized boating.

Response: The reserve designation currently allows for non-motorized boating.

Comment 100: **Upland Habitat Definitions.** Upland habitat areas that relate to the sanctuary and marine habitat should be better explained and defined.

Response: Comment Noted.

Comment 101: **Need for Upland Habitat.** Upland Habitat is in conflict with the intent of the Act.

Response: Protecting and developing upland habitat is consistent with the Act. The Act is clear that aquatic habitat (Section 1:2:a) and wildlife habitat are to be protected (Section 1:3:g: vii). Consistent with the Act, HRPT is committed to conserving and restoring habitat within the Park. The Final Environmental Impact Statement (FEIS) calls for a continuous ribbon of habitat along the whole park, not little separate islands of habitat (page 10-38). Further, both the FEIS (page 10-38) and the DEC permit findings (page 26) request more bird nesting, resting, and foraging in the design of uplands. The GPP specifically designates the upland area between Piers 64 and 76 as native waterfront plantings, the Chelsea section as broad promenades of native salt-tolerant plantings, and the use of a diversity of native plants: emergent, marsh, groundcovers, shrubs, understory and canopy (pages 8, 11 and 12). The FEIS notes that HRPT will convert 26 acres of impervious surfaces to native riverside and salt-tolerant plants (pages 10-45).

Comment 102: **Extent of Upland Habitat.** The Water Use Maps have crosshatching on upland habitat area that have reserve potential. However, the Design Guide lines Master Plan (DGMP) shows most of these areas as expanded park areas proposed for narrow strip planting, excluding the hard areas.

Response: The GPP is the adopted refinement of the DGMP. See Comment 101.

Comment 103: **Upland Reserve Calculations**. The upland habitat encompasses 28% of the waterfront, while esplanades cover 72%. What is the basis of this calculation?

Response: The Upland Reserve Areas shown as crosshatched on the Water Use Maps, correspond (and are adjacent) to the current and potential sanctuary reserve areas. The calculation of coverage is a simple linear measurement of esplanade length related to upland habitat.

Comment 104: **Upland Habitat in Segment 4**. The upland habitat areas include Segment 4 in Greenwich Village consisting largely of relatively small lawns buffered by plantings from the highway. Before the current reconstruction these were jammed at almost all seasons by people using them in multiple ways. Are human uses here to be restricted?

Response: Segment 4 uplands adjacent to the reserve will gradually be transformed, where possible, to increase the use of native plants in normal landscape maintenance and plant material replacement. No new restrictions on human uses are contemplated in the area (see Comment 97).

Comment 105: **Pier 66 to Pier 76 Upland Habitat.** The other Upland Habitat Area extends between Pier 66 to 76 and is described in the DGMP as "passive recreation upland park." It was indeed to be a rather wild area planted with native species but like the pile field nearby at Pier 72 it was implicitly understood as being banked for the time when the rail yards were developed and a constituency developed requiring real park uses. It had other functions like reflecting waterfront history using remnants of rail transport. Some courts and perhaps a playground are already in the DGMP. The DGMP clearly states on page 29 that the planting design for Hudson River Park will also recognize multiple uses. Proposed habitat would extend problematically the jurisdiction of the ESMP beyond the limits set by the Act and threatens serious conflicts of uses potentially reducing the value of the park to human communities both nearby and more widely.

Response: See Comment 101.

Comment 106: **Number of Water Use Areas**. The number of Water Use Areas in water play, motorized, economic development, terminals and wharf uses has the potential to be very confusing from the user perspective. Recreational and commercial operators are used to current operational regulations. These water use areas would be especially confusing in areas beyond pier ends, where boundaries would be difficult to identify.

Response: See Comment 90.

Comment 107: **Wakes.** A problem for the whole park is the damaging wake cause by fast ferries and boats too close to the Park. The Trust should take a more proactive role in seeking to mitigate the damage to the Park from wakes, both now and in the future.

Response: Comment Noted.

Comment 108: **Marine Markers**. Some signage may not be necessary if consistent with existing boating regulations already understood by the boating public. Any float lines should be reviewed by all regulatory agencies, as they would likely be a hazard to navigation.

Response: USCG approved navigation guidelines and markers will be utilized.

Comment 109: **Park Closure.** There may be recreational fishing conflicts with the 1AM to 6AM closure.

Response: Comment Noted.

Comment 110: **Pier Closures.** Locking pier gates and fencing that prevent access during emergency situations, whether they occur on water or land, must not be enforced during closed hours.

Response: Closure of park areas is being addressed as part of the Park Design Review Process. Generally, there will be no park-wide gating of piers. However, children's playgrounds such as Pier 51 will be gated with other piers considered on a case-by-case basis.

Comment 111: **NYS Open Space Plan.** Without membership in the NYS Open Space Plan, will the Trust continue to participate in open space planning initiatives?

Response: The Trust relinquished active participation in the NYS Open Space Planning Process because its' mission is limited geographically to the Hudson River Park and its' advisory seat on the committee would be better filled by an organization with a statewide task. Nonetheless, the Trust continues to work with DEC, NYSOPRHP, and many other organizations on open space initiatives.

Comment 112: **Adult Education**. Youth education is extremely important, but so is adult education, especially on ecology. The ESMP should include adequate adult education.

Response: Comment Noted.

Comment 113: **Education Funding.** The ESMP needs some discussion on funding alternatives.

Response: Comment Noted (see new section of Chapter 1).

Comment 114: **Special Event Docking**. The temporary dockage needs of tall ships during events such as OpSail should be considered with others already identified.

Response: Special event docking is being addressed as part of the Park Design Review Process.

Comment 115: **Edit**. The correct spelling is "SUNY Stony Brook".

Response: Comment Noted.

Comment 116: **Education Vessel Docks**. Docks used by larger educational vessels should resemble standard 90-100' tugboat docks with piles (preferably), bollards or cleats averaging a 30' spacing and, access to wading platforms, electricity, fresh water taps, and salt-water taps.

Response: Comment Noted.

Comment 117: **Historic Vessel Policy**. The criteria to be established for historic vessels need to include the permissible uses and/or activities on such vessels. Such uses and activities must comply with the Law and regulations.

Response: HRPT is currently developing an Historic Vessel Policy.

Comment 118: **Maritime Organizations**. Maritime history organizations should be included such as the Steamship Historical Society of America, the World Ship Society, the Ocean Liner Museum and South Street Seaport.

Response: Comment Noted.

Comment 119: **Interpretive Signage**. Historic signage and interpretation can only take place on the upland. Placing education in the ESMP runs the practical risk that the ecological aspect will tend to outweigh others.

Response: The interpretive and signage programs are being addressed as part of the Park Design Review Process where historic and ecological interpretation shares a common concern. Estuarine Sanctuary waters will have interpretive and functional signage.

Comment 120: **Research Funding.** The ESMP should establish a program to actively identify funding opportunities and solicit funding to support research in the Sanctuary. This is a critical program and should be described more clearly and in more detail.

Response: Comment Noted (see new section of Chapter 1).

Comment 121: **Impact Research**. Research should be facilitated to answer critical questions about issues related to the natural environment of the sanctuary and impacts from use and construction

Response: Comment Noted.

Comment 122: **Edit.** Add "...particularly with respect to wildlife disturbance and habitat impacts."

Response: Comment Noted.

Comment 123: **Compliance to ESMP**. Add the ESMP to the list of things that need to be complied with.

Response: Comment Noted.

Comment 124: **Edit.** Change to "DEC Police Officers and Rangers".

Response: Comment Noted.

Comment 125: **Protection of Waters**. The footnote references only a tidal wetlands permit from DEC. The permit also covers protection of waters.

Response: Comment Noted.

Comment 126: **Edit.** Change language to "...drawings to ACOE and DEC when available."

Response: Comment Noted.

Comment 127: **Lighting and Signage Review**. The Harbor Safety and Operations Committee should review all lighting and signage.

Response: Comment Noted and see response to Comment 73.

Comment 128: **Marine Borers.** Add "and the effects of marine borers" to the list of things to be evaluated.

Response: Comment Noted.

Comment 129: **Edit**. Add "Grants from several foundations".

Response: Comment Noted

GENERAL COMMENTS

Comment 130: **Wave Attenuation.** It is strongly advised that a wake attenuation system be immediately installed along the pierhead line from the northern boundary of Pier 25 and 26.

Response: Wave protection devices are being addressed as part of the Park Design Review Process and will require a separate Permit Application.

Comment 131: **Bulkhead**. The historic bulkhead should be restored where possible and not simply reconstructed

.

Response: Bulkhead decisions are under the purview of the Park Design Review Process. All decisions related to the bulkhead, however, will be in compliance with the programmatic agreement between HRPT and NYSOPRHP.

Comment 132: **Pier Strength**. Piers should be reconstructed with the strength and fendering systems for docking, mooring of large vessels, and ability to withstand collisions.

Response: Pier design and construction is being addressed as part of the Park Design Review Process.

Comment 133: **Ecological Pier Reductions**. The number of reconstructed ecological piers have been reduced and concern is expressed that there will be no further reductions. All ecological piers in the plan should be built.

Response: Ecological piers are being addressed as part of the Park Design Review Process.

Comment 134: **Water Use Mapping.** Is there a way that the water use map could be scaled down with only reserve areas shown?

Response: HRPT policy on the ESMP is to show all current planning for water use areas.

Comment 135: **Swimming.** More work should be done to create safe swimming areas in the Park.

Response: HRPT is working with the City, State of New York, and the Federal Government on efforts to facilitate improved water quality and swimming in the Hudson River.

Comment 136: **Estuarine Sanctuary Personnel**. Identify key Trust personnel responsible for the Estuarine Sanctuary.

Response: Comment Noted (see new section of Chapter 1).

Comment 137: **Estuarine Sanctuary Budget.** The plan should explain current a budgeting procedures and costs.

Response: Comment Noted (see new section of Chapter 1).

Comment 138: **ESMP Environmental Review.** Adoption of the ESMP constitutes an action requiring environmental review pursuant to the State Environmental Quality Review Act.

Response: Such a review has been conducted.

Comment 139: **Non-endangered and Selected Timber**. Non-endangered and selected timber should be used in the Park.

Response: The Park Design Review Process has endorsed this concept.

Comment 140: **Grass on Piers**. Grass should not be utilized on the piers.

Response: Pier design is being addressed as part of the Park Design Review Process.

Comment 141: **Pesticides**. The environmental impacts of pesticides should be of utmost concern for the Estuarine Sanctuary. As an example, selective use of larvicides is a better option than spraying for mosquitoes (also see comment 10).

Response: Comment noted (the issue swill be addressed in the Integrated Pest Management Plan).

Comment 142: **Recycling**. Recycling show be encouraged, now.

Response: Recycling is endorsed by the ESMP and HRPT recycling programs are underway.

Comment 143: **Harbormaster.** HRPT should hire a knowledgeable and experienced harbormaster.

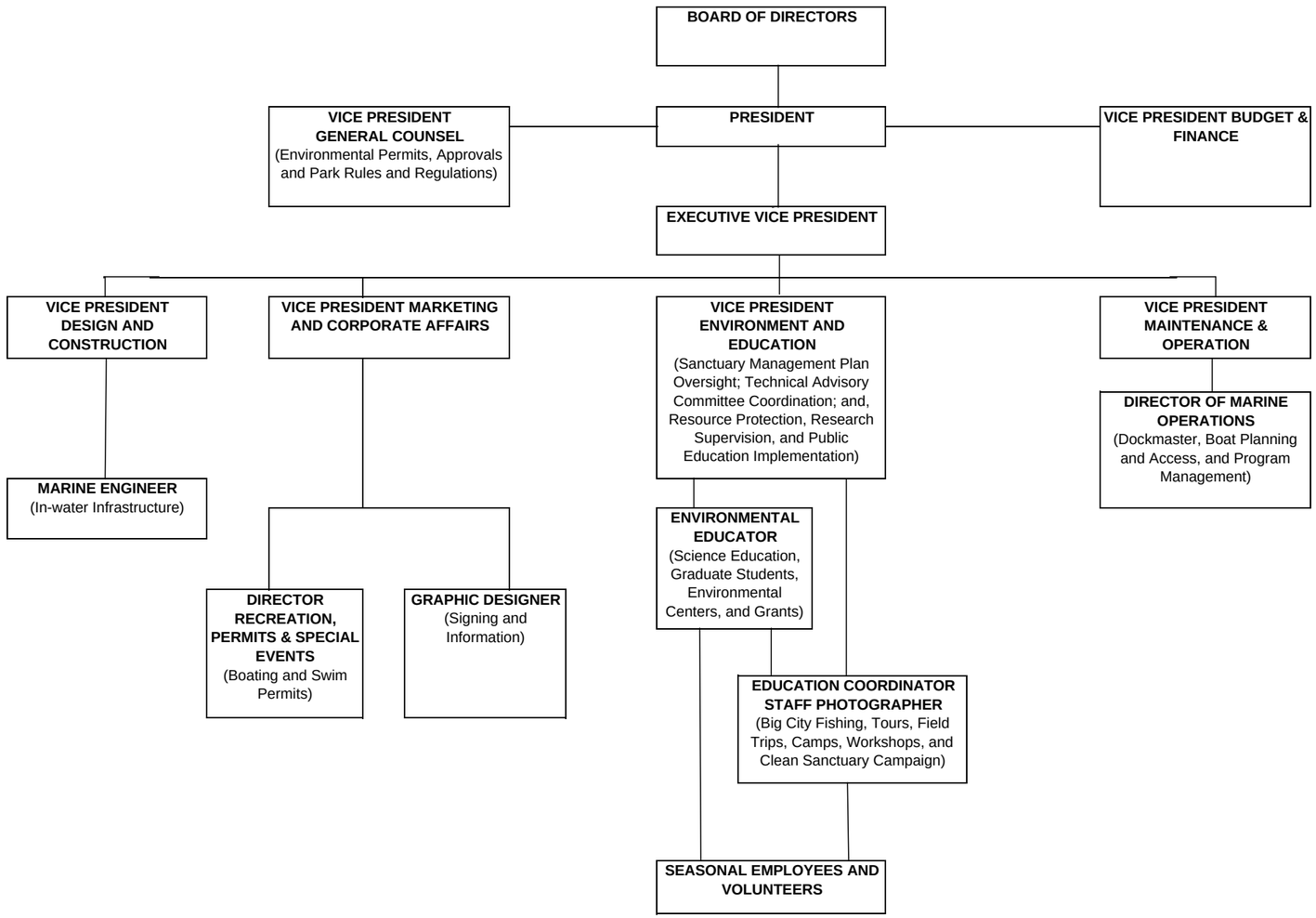
Response: HRPT plans to establish and hire a Dockmaster.

Hudson River Park Trust

Appendix D

Organization Chart

HUDSON RIVER PARK ESTUARINE SANCTUARY
ORGANIIZATION CHART



Hudson River Park Trust

Appendix E
Water Use Map

Hudson River Park Trust

Water Use Map

- Hudson River Park
- Pile Field
- Not Part of Park
- Reserve
- Water Play
- Motorized Boats
- Terminals & Wharves
- Economic Development